Sectoral and Regional Connectedness: The Case of Credit Default Swap Spreads and Equity Prices

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Abstract

This study focuses on assessing sectoral and regional volatility connectedness within and between Credit Default Swap (CDS) and equity markets. The study analyses two main periods: the *crisis-period* [01/01/2008 – 31/12/2012] and the *after-crisis period* [01/01/2013 – 30/06/2017] and considers the following regions: US, UK, EU and Japan. This research contributes further to the existing literature by studying spillovers at sectoral and regional level. The analysis at sector and regional level sheds further insights on the connectedness levels and spillover effects across sectors and regions within the CDS and equity markets. This research uses Multivariate-GARCH models, the Diebold and Yilmaz (2012) connectedness index and the VIRF methodology of Gabauer (2020) and an extension to Gabauer (2020) to determine connectedness and spillover characteristics between sectors and regions for both CDS and equity markets.

Results suggest that during periods of distress, volatility connectedness tends to be higher across sectors and regions. In addition, connectedness between the two asset classes is also higher during the crisis period in line with Merton (1974). The dynamic results using both the Diebold and Yilmaz (2012) and Gabauer (2020) methodology validate the results of the static volatility connectedness indices. The findings of the study provide important implications for policymakers, market participants, asset managers and risk managers.

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Author's Declaration

I, Christian Manicaro, declare that this thesis is a presentation of original work and I am the sole author. This work has not previously been presented for an award at the University of York, or any other, University. All sources are acknowledged as References.

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Chapter 1: Introduction, Motivation, and Objectives

1.0 Introduction

Extreme events, such as jumps in asset prices, as well as events concerning the probability of default of a given debt instrument, tend to occur not in isolation but in clusters, both in time and across sectors. The unprecedented global crisis of 2009, and the subsequent European sovereign debt crisis triggered the resurgence in research on volatility transmission, as it showed that shocks originating in one region or sector, or asset class not only affected the region or sector or asset class in question but extended to others. The examination of interconnectedness is therefore key to the understanding of crises and their propagation mechanisms (Belke and Gokus (2011), Diebold and Yilmaz (2012), Diebold and Yilmaz (2014), Alter and Beyer (2014), Narayan (2015) and, Gencer and Hurata (2017).

In recent times, credit related investments, like Credit Default Swaps (CDS), have grown tremendously (ISDA, 2019) both from a size and liquidity perspective. The magnitude of CDS spreads gauges the level of default risk exposure in different industry sectors. The link between CDS spreads and equity prices did not go unnoticed, with the first study dating back to the work of Merton (1974) who argues that there exists a strong tie between the two asset classes. The relationship stems from the fact that credit spreads theoretically represent credit risk, which is synonymous to the default probability

introduced by Merton (1974). In addition, given that debt and equities are contingent claims on the same firm value, they share common systemic risk sources. Common systemic risk sources increase during turbulent times when markets are enduring a crisis. Therefore, this relationship becomes relatively more critical during crises periods (Trutwein and Schiereck (2011), Castellano and Scaccia (2014), Narayan (2015), Marra (2017), and Mateev and Marinova (2019).

1.1 Motivation

This study contributes to the strand of literature on connectedness and spillover effects with a focus on the link between CDS spreads and equity volatility. Earlier studies have examined the interrelation of credit spreads and equity at an aggregate market level, however, studies at a sectoral and regional level have been given little attention. Furthermore, most of the available empirical analyses have focused on the first moment of statistics (mean/return) with minor attention to the second moment (variance/volatility). The patterns of the latter played a fundamental role in the crisis of 2009, with an evident increase in volatility spillovers and connectedness (Diebold and Yilmaz (2012), Diebold and Yilmaz (2014), and Alter and Beyer (2014)).

Sectoral spillovers are asymmetric, in the sense that some sectors are more severely impacted by external shocks than other sectors within the economy. This research contributes further to the existing literature by studying spillovers at sector and sub-sectoral level. This allows for the examination of heterogeneous performance emanating

from the several sectors under consideration which is often masked by market level data. Interconnectedness is crucial during perturbed periods as some sectors become central to the economy wherein volatility in a sector leads to propagation of shocks to all the other sectors, resulting in systematic risk. The same is true for regional associations. This study also extends on existing literature by considering and aggregating the major regions from a financial market perspective, the United States (US), United Kingdom (UK), European Union (EU) and Japan in one single study. These regions are the most prominent in terms of their importance to the global financial markets volume (ISDA, 2019). This extension allows for assessment of the connectedness both within and across regions for the asset classes and sectors under study. Therefore, the analysis at sector and regional level shall shed light on whether spillover effects are also a broad-based phenomenon across sectors and regions.

This study also contributes to understanding connectedness and spillovers by considering two separate time periods, the crisis period and the after-crisis period. The connectedness levels between sectors, asset classes and regions in both periods shall shed more light on how connectedness and spillovers vary between perturbed and tranquil periods and the extent to which the return and volatility characteristics of asset classes, sectors and regions change across both periods under consideration.

Finally, this study extends on previous methodology by analysing how the effect of shock equivalent to the 99% VaR scenario evolved across time. This part shall shed light on

the connectedness levels between asset classes, sectors and regions when considering a conservative approach to assessing volatility spillovers and connectedness.

1.2 Objectives of the Study

Understanding the dynamic link between CDS spreads and equity sectoral volatilty within and across regions is important for several reasons. A shock in one of the asset classes or regions considered may lead to shock in other as apparently illustrated by the global financial crisis which started in the US and spread to almost all other world economies. In addition, financial markets volatility correlation has important implications for portfolio selection and diversification, optimal hedging strategy, risk management and markets regulation.

The aim of this research is, therefore, two-fold: to assess correlation dynamics and leverage between CDS spreads and equity sectoral volatility across and within regions and to investigate connectedness and volatility transmissions between the CDS and equity sectoral volatility within and across regions. This should help assess the return and volatility characteristics of the two asset classes and their behaviour across the regions under study. To achieve these research aims, this study uses Multivariate GARCH models and in static and dynamic [time-variant] fashion using the Diebold-Yilmaz (2012) and Gabauer (2020) methodologies. Finally, this study would extend on Gabauer (2020) methodology to consider a 2.33σ shock to assess connectedness and spillovers. A crisis- and an after-crisis period are considered to achieve this aim.

This research finds evidence of time-varying correlation between CDS spreads and equity sectoral returns and that connectedness dynamics are stronger during the crisis period. On average connectedness between asset classes, sectors and regions is higher during the crisis period in line with a-priori expectations. The dynamic analysis show that across both subsets of time periods under consideration, connectedness and spillovers are higher amid periods of volatility. Finally, when considering the 2.33σ shock, connectedness remains high across both periods. The findings of this research provide important implications to policymakers, market participants, asset managers and risk managers. This study provides useful information on diversification and downside risk which can help portfolio managers to design an asset allocation and diversified portfolio together with a sound risk management framework. Moreover, this study provides practical information on sectoral and regional rotation, hedging strategies and appropriate risk management tools for rare events. Finally, this study also has implications for policymakers to minimise systematic risk and formulate adequate policies and financial reforms.

1.3 Overview of Study

This study is structured as follows. Chapter 2 is a review of existing literature on the CDS and equity market and their association, covering the theoretical background of this study. In addition, literature on contagion and spillover effects, in relation to both markets is also discussed. Chapter 3 details the methodology used and discusses sources

of information that are used in this study. Chapter 4 describes the dataset used and examines correlation between CDS and equity sectors across and within regions. Chapter 5 assesses correlation dynamics, leverage effects and spillover between CDS spreads and equity sectoral volatility across and within US, UK, EU and Japan in the crisis- and after-crisis periods, using Multivariate-GARCH models. Chapter 6 assesses connectedness between sectors and regions for the asset classes under consideration using the static methodology of Diebold and Yilmaz (2012). Chapter 7 allows for a graphical network representation of the findings under Chapter 6. Chapter 8 aims to measure connectedness between sectors and regions for the asset classes under consideration using the dynamic methodology of Diebold and Yilmaz (2012). Chapter 9 uses the methodology of Gabauer (2020) and an extension to assess connectedness between the two asset classes under consideration within and across sectors/regions. Finally, Chapter 10 provides a summary of the main conclusions vis-à-vis the research aims, the study's limitations and results' implications and avenues for further research. Appendices A-H show the representation of tables and figures for the analysis chapters.

Chapter 2: Literature Review

2.0 Introduction

This chapter provides a review of the existing literature on the link between CDS spreads and equities. In addition, the notions of contagion and associated spillovers are also discussed.

2.1 Initial Remark

Equity and fixed-income instruments are different asset classes with different risk-return characteristics. However, their valuation is reliant on the same underlying asset of the company in subject, and hence the risk-return trade-off should be systematically related. In other words, the joint behaviour of equity premiums and credit spreads on securities of the same company provides a direct statistical indication of the level of efficiency of the two markets, where market participants are expected to provide a long-term common risk assessment (Consigli, 2004).

This theoretical link between equity and fixed-income instruments is fully defined by Merton (1974) through a structural approach applied on the option pricing theory of Black and Scholes (1973). The link between these two asset classes becomes relatively more important during periods of financial stress and volatility. In essence, the default risk of a company increases when the company is in distress because its ability to fulfil

its debt obligations becomes more uncertain. Merton (1974) argues that when a company's financial health deteriorates, its probability of default increases because its asset value may decline relative to its debt, increasing the likelihood that the company may be unable to meet its debt payments, leading to a higher default risk.

2.2 Merton's Structural Approach (1974)

The structural approach of Merton (1974) is based on the seminal work of Modigliani and Miller (1958) which recognises that equity and fixed-income instruments as essentially different claims on the same company's assets. The structural model is fundamentally based on the assumption that capital markets are efficient, meaning that credit information is already reflected in equity prices. This makes credit and equity markets closely integrated, ensuring the absence of arbitrage.

In this structural approach, Merton (1974) shows that the value of equity instruments can be thought of as the value of a call option on the assets of the firm. This is because owning a share of the equity in a firm gives the holder the right, but not the obligation, to participate in the upside potential of the firm's assets. If the firm's assets increase in value, the value of the equity increases, similar to how the value of a call option increases as the underlying asset price rises.

In addition, in Merton's model (1974) the market value of risky fixed-income instruments, such as corporate bonds, is higher than the value of a risk-free fixed-income

instrument due to the presence of a risk premium. Merton (1974) models the value of corporate debt as a combination of the value of a risk-free bond and the value of a put option on the assets of the firm, with the strike price equal to the face value of the debt.

The value of the put option is dependent on the probability of default, the volatility of the firm's assets, and the amount of outstanding debt. As default risk increases, the value of the put option increases, which in turn reduces the value of the debt. This means that the risk premium that investors demand for holding corporate debt increases, which in turn increases the yield on the debt.

This approach derives a solution for the value of any security depending on the value of firm's assets as well as the probability of default and the credit spread in case of fixed-income instruments. Therefore, by definition, the model fully captures the relationship between the value of equity and fixed-income or debt securities of the same company. Having said this, the sensitivity of the value of debt to the variations in the value of equity increases, as the leverage ratio[1] approaches unity. Intuitively, the sensitivity is at its highest when the subject company is in financial distress and higher volatility in equity securities increases the probability that the leverage will approach unity, triggering default. The probability of default can be captured by the difference between the market value of the company's assets and the book value of the company's debt

[1] The ratio of debt over equity.

relative to the volatility of the market value of assets. In essence, Merton's model describes how equity volatility should affect credit spreads.

2.3 Credit Default Swaps Explained

A Credit Default Swap (CDS) is an over-the-counter (OTC) credit derivative that provides insurance to the buyer against a loss of principal due to a specified reference entity experiencing a credit event, like default or restructuring (Mengle, 2007). In other words, a CDS contract allows the transfer of credit risk of a firm between two agents for a predetermined amount of time. For this protection, the buyer pays a periodic premium to the seller usually expressed as a percentage of the bond's notional value, known as spread, until the maturity of the contract. Intuitively, CDS spread provide an alternative market price of credit risk to the corporate credit yield from the cash market (Zhu, 2006).

In the case the reference entity is affected by a credit event[2], the contract terminates, and the buyer can claim from the seller a payment less the recovery value of the underlying asset. In practice, the terms of CDS may involve physical delivery of the underlying defaulted asset[3] or cash settlement. If the terms of the swap require physical delivery, the swap buyer delivers the bonds to the seller in exchange for their par value

[2] Three important credit events are defined by International Swaps and Derivatives Association (ISDA) (Barclays, 2010): i) Failure to pay principal or coupon when due [technical default]; ii) Restructuring; and iii) Repudiation/moratorium.

[3] A bond of equal seniority can also be delivered.

(Hull and White, 2000). If the settlement is done in cash, the settlement is equal to $(100 - Q)\%$ of the notional principal, where Q is the mid-market price of the reference obligation determined by dealers, some specified number of days after the credit event (Hull and White 2000).

The opacity in the CDS OTC market, whereby contracts are negotiated privately, may create uncertainty among market participants. However, in recent years contracts have become more standardised, following the guidelines of International Swaps and Derivatives Association (ISDA). This standardisation made the CDS market more liquid with low transaction costs and multiple dealers quoting prices (Blanco *et al.*, 2005; Longstaff *et al.*, 2005). Another reason for this growth is that being a liquid market, an efficient way to adjust exposure to credit risk is to enter into new CDS contracts (possibly offsetting existing ones) rather than entering directly into the corporate bond market or terminating existing CDS contracts (Giglio, 2016).

Being traded OTC, counterparty risk is inherent in a CDS contract. In other words, the seller may be in financial distress and might not be able to honour the commitments arising from the contract. In this case, the buyer of the CDS contract has a claim against the defaulted counterparty and the larger the increase in the CDS spread of the reference entity when the seller defaults, the larger the amount the seller owes to the buyer. In the extreme case, where the default of the seller occurs in tandem with that of the reference entity, the payment due under the contract would be equal to a full insurance

payment (Giglio, 2016). Certain CDS contracts may involve a collateral agreement in which collateral calls are tied with the changes in the value of the CDS contract, as well as to the downgrade of the rating of the protection seller. These agreements protect buyers from counterparty risk.

Arora *et al.* (2012) identify three sources of counterparty risk. The first is that the seller is undercapitalised in the event of a credit event. Secondly, the seller becomes insolvent, and the buyer becomes a general unsecured creditor of the CDS seller. Thirdly, the buyer losing the claim on the collateral posted by the seller, in the event the latter becomes insolvent, and the collateral has been rehypothecated to another protection buyer. Moloney *et al.* (2016) identify also wrong-way risk as a source of counterparty risk. This type of risk arises if the reference entities and the sellers of the CDS contracts become strongly correlated. This risk may be exacerbated due to the high level of concentration of counterparties in the CDS market (Peltonen *et al.*, 2014). Furthermore, Moloney *et al.* (2016) notes that CDS market participants hedge their counterparty credit risk by entering into another transaction which has the opposite sign, creating a complex web which can ultimately increase counterparty risk. In addition, mitigation techniques may create other types of risk like liquidity, legal and operational risks (Gregory, 2012).

2.4 Equity Prices Explained

Equity securities represent ownership claims on a company's net assets. When a company issues equity security, it is not contractually obligated to repay the amount it receives from shareholders, nor it is contractually obligated to make periodic payments to shareholders. Shareholders have a claim on the company's assets after all liabilities have been paid. More specifically, after the holders of debt claims are paid, the management of the firm can either distribute out the remaining earnings to shareholders in the form of dividends or reinvest part or all the earnings in business (Elton, 2007).

In essence, investors who purchase equity securities are seeking total return (capital appreciation and dividend income) and as a result, equity investors expect the company's management to act in their best interest and maximise shareholders' wealth. Indeed, two key components of equity pricing models are firms' expected earnings and dividends, which to different degrees are reasonably expected to be dependent on the general macroeconomic environment. Stock markets operate as an intermediary between savers and users of capital by means of pooling funds, sharing risk, and transferring wealth.

Equity is not only an investment opportunity, but it can also be regarded as a speculative tool, as the price of equity is determined by demand and supply and the volatility in the price is very sporadic. Factors affecting the price of equity include the expectations of

risk and future return. The degree of efficiency in the market is important because it affects how quickly information is incorporated into equity prices.

The behaviour of equity prices is an extensively researched subject, with theories like the efficient market hypothesis and random walk who shaped the initial discussions on the behaviour of equity prices.

Mishkin (2007) states that the assumption of rational expectations implies that economic agents hold optimal forecasts about the future by making the best use of all available information, including information about expected dividends. In financial markets this theory is known as the Efficient Market Hypothesis, which implies that current stock prices are an unbiased result of all publicly available information including the risk entailed in owning a security. Fama (1970) distinguishes between three forms of this theory: the weak, semi-strong and strong form. The stronger the form of efficiency, the higher the information content in prices being assumed, limiting arbitrage. According to Nordmark (2009), this concept has two important implications. Firstly, stock prices move in reaction to the flow of newly available information, implying that they should follow a random walk. Given that new information is both random and unpredictable, it follows that stock price movements should also be expected to be so. The second implication is that since economic information influences stock prices and given that stock prices quickly react to such information, then equity prices should be leading indicators of economic activity.

Many criticised this approach as it fails to consider psychological factors and introduced behavioural finance which attempts to understand and explain observed investor and market behaviours (see Simon (1955); Festinger *et al.* (1956); Tversky and Kahneman (1973, 1974, 1979, 1981); De Bondt and Thaler (1985); Barberis *et al* (1998); Thaler (1999, 2008); Statman (1999); Grinblatt and Keloharju (2001); Fromlet (2001); Coval and Shumway (2006); Subrahmanyam (2008); and Parikh (2011)). This branch of finance relaxes the assumption of rationality present in traditional finance theories and delve into psychological biases. These biases get translated into the behaviour of investors, inducing them to take suboptimal decisions. Such decisions, on a large scale, can cause disruptions in the market and are referred to as market anomalies (Kapoor and Prosad, 2017).

2.5 Dissecting CDS and Bond Markets

Duffie (1999) shows that subject to certain assumptions, a long position in a par priced floating rate note and the purchase of a CDS contract with the same face value of protection, creates a combined position with no credit risk in the event of default. This implies that the CDS spread should be equal to the credit spread of the par priced floating rate note. More specifically, a similar association between bond credit spreads and equity prices and between CDS spreads and equity prices should be expected. This stems from the fact that bond credit spreads and CDS spreads are close substitutes. Following this elementary notion, several studies have investigated the relationship

between CDS and corporate bonds and it was shown that CDS spreads lead the corporate bond spreads.

Blanco *et al.* (2005) using a sample of 33 North American and European firms and a Vector Error Correction Model (VECM) further confirmed that CDS market leads the bond market. The study showed that in a tranquil period, 2002-2003, the theoretical arbitrage relationship between corporate credit spreads to CDS holds reasonably well. In addition, Blanco *et al.* (2005) found that the repo cost of short-selling the cash bond influences the positive basis and that temporary deviations are due to a lead for CDS prices over bond spreads in the price discovery process. The authors explained this discovery by referring to micro-structural factors that make the CDS market more suitable for the trading of credit risk and because the reason why different participants trade in the cash and derivative market is sporadic. Zhu (2006) using an international sample of 24 entities implemented the Granger causality test and concluded that the CDS market and the bond market appear to be equally vital to the incorporation of new information about the credit risk of the entities. However, when structuring a VECM, the leading role of the CDS market is evidenced. One of the reasons could be liquidity, meaning that a higher liquidity prevails in the CDS market because of the more active role of the derivatives market in price discovery. Zhu (2006) states that the short-sale restriction in the corporate cash market appear to only have a very small impact.

Norden and Weber (2009) analysing both daily and weekly data of 58 international firms in a Vector Autoregressive Model (VAR) found that the CDS market has a leading role vis-à-vis the bond market. Norden and Weber (2009) explained this finding by arguing that the CDS market is more flexible and less-capital intense, CDS can easily be shorted compared to corporate bonds[4] and the CDS market is more standardised and less dependent on the primary market. Norden and Weber (2009) and Zhu (2006) both found that the contribution to price discovery of the CDS market relative to the corporate credit market is substantially stronger for US reference entities while in Europe and Asia, the corporate bond market appears to still lead the CDS market in price discovery. Alexopoulou *et al.* (2009) using mid-CDS spreads for 29 large European financial and non-financial firms, confirm the existence of a long-run relationship between CDS and corporate bond markets, and the tendency for CDS markets to lead corporate bond markets in terms of price discovery.

Coudert and Gex (2010) considered CDS spreads and bond spreads of both corporate and sovereign entities in their study. The sample includes eighteen governments and seventeen financials. For each entity the daily CDS spread is compared with the generic five-year bond spread. The results for the corporates entities are in a line with findings of Blanco *et al.* (2005), Zhu (2006) Norden and Weber (2009) and Alexopoulou *et al.* (2009) wherein the CDS market leads the corporate bond market. Moreover, the results

[4] In contrast to the explanation of Zhu (2006).

are more profound in turbulent periods. On the other hand, the results for sovereigns are more challenging as the size of the sovereign CDS market is relatively small when compared to the corporate debt market. In this instance, the lead of the CDS market only holds for high-yield countries; whereas the sovereign bond market still leads the CDS spreads in low-yield countries. Fontana and Scheicher (2010) carried out an analysis of euro-area sovereign CDS and their link with sovereign bonds. The study uses weekly CDS and bond spreads of ten euro-area countries from January 2006 to June 2010. Applying a Granger causality test and a VECM on a daily data for two periods: i) *before the crisis* and ii) *since September 2008*, Fontana and Scheicher (2010) found no lead-lag relationship between the markets. Also, the limited trading activity in the periods preceding the crisis, affected price discovery and the relation between the bond and the derivative market. However, in the period after September 2008, market integration for bonds and CDS varies across countries, concluding that price discovery is apparently dependent on trading by informed investors. In addition, Arce *et al.* (2013) assessed whether the CDS and bond markets reflect the same information on credit risk in the context of the European Monetary Union. The data consists of daily five-year sovereign bond yields and CDS spreads for eleven EMU countries for the period between January 2004 and October 2011. The results suggest that the price discovery process, which is a process by which the fair value of a security is determined through the interaction of

demand and supply, is state dependent, that is, influenced by a specific EU member state, through its market participants, at any given time.

Given that existing literature shows that in most cases the CDS market leads the bond market, this study opts to make use of CDS spreads. This study shall not make use of sovereign data which further reinforces the choice in using CDS spreads rather than credit spreads.

2.6 Empirical Evidence on the Relation between CDS, Bond and Equity Markets

There are several studies that aim to assess and provide explanations to the link between equity, bond and CDS markets. Early studies focused on the relationship between equity and bond markets while recent studies included CDS markets in the assessment.

Early studies like Blume *et al.* (1991), Cornell and Green (1991) and Fama and French (1993) found a contemporary and somewhat positive and statistically significant relation between equity and bond returns. Kwan (1996) reported that changes in the bond yields are positively affected by the Treasury yields and negatively affected by contemporaneous and lagged equity returns. Later, Alexander *et al.* (2000) documented a positive association between daily equity returns and bonds when investigating certain

events like wealth transferring[5], which imply higher volatility, during the period between 1994 and 1997. Hotchkiss and Ronen (2002) analysed lead-lag relationships between equities and bond markets and found no evidence that the equity market lead the bond market, albeit finding a somewhat positive contemporaneous relation between the two markets.

Using a sample of 67 North American firms, Longstaff *et al.* (2003) applied a VAR model to investigate the relationship between equity returns, changes in bond spreads and changes in CDS spreads. It was concluded that information flows first into the CDS and equity market and then into the corporate bond market. However, no evidence was found that the equity market leads the CDS market. Lake and Apergis (2009) investigated the association between the equity market and CDS market in terms of mean as well as volatility spillovers, using, 1612 daily observations from four stock market: US, German, UK and Greek markets, as well as from two European CDS indices. Applying an error correction model together with a multivariable generalized heteroskedasticity in mean (MVGARCH-M) modelling, the authors found that the CDS market appears to lead the stock market, implying that information contents coming from the firm's environment seems to first affect the CDS market and then the equity market. In addition, equity market volatility has a positive impact on CDS spreads. Zhang (2005) using a dataset

[5] Alexander *et al.* (2000) define wealth-transfer event as an activity that is likely to benefit the stockholders at the expense of the bondholders, or vice-versa.

spanning from December 1997 to March 2003, with North American industrial corporate as reference entities found that credit contagion is captured earlier and stronger by the CDS market when compared to the equity market, suggesting that the CDS market leads the equity market.

The study of Berndt and Ostrovnaya (2008) found that both CDS and option markets lead the equity market. Forte and Pena (2009) using a VECM and an international sample of seventeen non-financial firms, analysed the relation between equity market implied credit spreads, CDS spreads and corporate bond spreads. On the contrary to Berndt and Ostrovnaya (2008), the key finding of the study was that equity markets lead those of CDS, which in turn lead the corporate bond market. The latter lead-lag relationship finding is in line with Norden and Weber (2009) and Blanco *et al.* (2005).

In addition, Fung *et al.* (2008) investigated the link between equity [S&P 500] and CDS markets in the US by using indices to smooth the noise in information flow attributable to firm-specific risk. Implementing a VAR model and Granger causality test, they discovered strong links between the two markets and that the lead/lag relationships between the markets under study depend on credit quality. Specifically, significant apparent mutual feedback of information between the equity market and the high-yield segment of the CDS market in terms of pricing and volatility was found, while the stock market leads the investment-grade segment of the CDS index in the pricing process. Fung *et al.* (2008) state that reference entities of the high-yield CDS index are subject

to deeper scrutiny and therefore, information flow between CDS and equity markets is stronger for high-risk entities. Indeed, Forte and Lovreta (2008) confirmed that a stronger relationship existed at lower credit quality levels. Trutwein and Schiereck (2011) examine the link between equity and credit markets for major financial institutions during times of financial stress and increased default risk, focusing on sizeable US firms, which either failed or required substantial government support during 2008 unprecedented crisis. The assessment of daily lead–lag relationships of five-year CDS, equity prices, and implied option volatility shows that equity and credit markets become more connected during times of heightened stress and that fast equity price changes lead furious CDS spread changes. Avino *et al.* (2013) investigated the price discovery process in single-name credit spreads obtained from bond, CDS, equity and equity option prices. Using daily observations, from a sample of 30 US and European non-financial companies covering the period between January 2006 and December 2012, the authors found that CDSs and equities lead the long run price discovery of credit spreads during the pre-crisis period and the EU sovereign crisis. However, the corporate credit market becomes dominant in the sub-prime crisis and especially for the EU market, where it appears as the leading market. On the contrary for the US market, the CDS market leads the long run price discovery during the sub-prime crisis. Hilscher *et al.* (2015) for a large representative sample of US listed firms provides evidence that equity returns lead credit protection returns on daily and weekly frequencies, whereas

credit protection returns do not lead equity returns. The results indicate that informed traders are primarily active in the equity market rather than the CDS market.

Byström (2006) assessed the Dow Jones iTraxx CDS indices[6] which incorporates seven sectors; industrials, automobiles, energy, technology-media-telecommunications, consumers, senior financials and sub-ordinated financials, covering the European market. This study found a link between iTraxx CDS index market and the equity market, wherein informed traders could systematically choose to trade in either the CDS or the equity market. The equity price volatility was highly correlated with CDS spreads and there was a significant positive autocorrelation in the iTraxx market, indicating an inefficient market. Byström (2006) explains the conflict of results with Longstaff *et al.* (2003) by arguing that the US CDS market is more efficient. On the other hand, Zhu (2006) found a long-run comovement between credit risk in the corporate credit market and CDS market by using a VECM.

Acharya and Johnson (2007) using daily closing CDS quotes for the most widely traded, North American reference entities from January 1, 2001 through October 20, 2004, provide empirical evidence that an information flow exists from the CDS markets to equity markets. The flow occurs only for negative credit events and for entities that subsequently experience adverse shocks and is more significant for entities with a greater

[6] These indices are designed to track the credit risk of a basket of corporate bonds issued by European companies.

number of bank relationships. Trutwein *et al.* (2011) using daily prices of single-name (North American entities) five-year maturity CDS between April 2005 and March 2008, studies the impact of severe changes in default risk, as measured by jumps in CDS spreads, on equity returns. During favourable credit market environment, both credit widening and narrowing events are associated with positive equity returns, especially for high-yield credits.

Da Fonseca and Gottschalk (2012) focus on the Australian, Japanese, Korean, and Hong Kong CDS markets and used a weekly sample comprising data from September 2007 to December 2010 to study the comovement of credit and equity markets. It was documented that realised volatility is a key determinant of CDS spreads levels along with other firm-level variables. Furthermore, at firm level equity returns lead the CDS and volatility markets, whereas at index level the lead-lag relationships are shared among all asset classes. Dupuis *et al.* (2009) show that equity returns and CDS are negatively related when studying the influence of credit risk on the performance of automobile equities. Pereira da Silva *et al.* (2014) using copula methods and simulation-based inference to address the relation between European banks equities and CDS markets. They report symmetric dependence and tail dependency equality between the two markets, meaning that the association between the two markets does not increase in periods of financial distress, contradicting Merton (1974). In addition, the authors found

evidence that the dependence between the two markets is autoregressive and potentially time-variant.

Narayan *et al.* (2014) found empirical evidence that the equity market contributes to price discovery in most sectors while the CDS market contributes to price discovery in only a few sectors. When both markets contribute to price discovery, it is the equity market that dominates the price discovery. Also, Narayan *et al.* (2014) argued that when equities which have an investment grade credit rating are considered, the importance of the CDS market in price discovery improves but the equity market still dominates the price discovery process.

Ratner and Chiu (2013) examined the impact of CDS on the level of risk in the US equity market for the period between 2004 and 2011, using a DCC-GARCH. The authors reported that CDS are a strong hedge against equity risk in all sectors under consideration and during extreme volatility periods, CDS demonstrate both strong and weak safe-haven[7] characteristics against equity risk. More specifically, in times of extreme equity market volatility, CDS provide some evidence of a strong safe haven in the broadest measure of volatility (ten percent quantile) in Basic Materials, Industrials, Healthcare, Telecommunications, Financials, and Technology. In these sectors, the CDS

[7] Safe-haven is an asset that is consistently uncorrelated or negatively correlated to stock price movements during times of market turmoil (Ratner and Chiu, 2013). If the parameters measuring safe-haven assets are insignificant, the assets are considered as weak safe-haven and if they are significant and negative, these assets are considered as strong safe-haven.

market is most responsive to extreme downturns in equities and may prove useful to contain portfolio volatility. On the other hand, from the sectors which function as weak safe havens, investors should not expect much protection from CDS during perturbed periods.

In recent years the relationship between sovereign CDS and bonds and equity markets is being documented. One early attempt was that of that Coronado *et al.* (2012) in which the connection between sovereign CDS and equity indexes was examined for the period between 2007 and 2010. To investigate the lead-lag relationship, a VAR model and a panel data model with daily data were used. Similarly, to the vast literature on corporate entities, Coronado *et al.* (2012) found that the equity market had a leading role vis-à-vis the CDS market. This conclusion changed in 2010 implying that the general market conditions underlying the credit information flow between the equity and CDS markets are fundamental as discussed in Fung *et al.* (2008). Finally, the increasing role of the sovereign CDS appear to be stronger for countries with high risk spread, as documented in Fontana and Scheicher (2010). Corzo *et al.* (2012) extended on Coronado *et al.* (2012) by incorporating bonds spread into the analysis and an improved sample of thirteen countries analysed over the period between 2008 and 2011. The study supports the findings in Coronado *et al.* (2012). Chan *et al.* (2009) study the relationship between sovereign CDS spreads and equity prices for seven Asian countries (China, Japan, Korea, Indonesia, Malaysia, Philippines, and Thailand) for the period from January 2001 to

February 2007. The authors found a strong negative correlation between the CDS spread and the equity index for most Asian countries. In terms of price discovery, it was reported that CDS markets lead in five out of seven countries. The equity market has a feedback effect for two countries and lead the price discovery for only one country. Chan *et al.* (2009), argued that equity investors should span the CDS market for incremental information.

Castellano and Scaccia (2014) make use of a Markov switching model in CDS and equity market index quotes to assess whether CDS volatility can be an indicator of market turmoil in Europe and US. Indeed, CDS volatility is a reliable instrument for predicting stock market crashes. Marra (2017) employs a correlation analysis to study comovements in CDS and equity liquidity measures. The author report that illiquidity in CDS market tends to spillover into equity markets, but not vice-versa. Moreover, the correlation between equity and CDS bid-ask spreads is time-varying but increases during periods of crisis. Haas and Reynolds (2017) examine liquidity spillovers between CDS and equity markets and implementing a VAR and Granger causality tests show that measures of CDS price noisiness tend to lead measures of equity illiquidity.

Esen *et al.* (2015) investigated the relation between CDS spreads and equity indices using panel cointegration and causality tests. Causality from the equity markets to CDS spreads has been detected. In addition, positive trends in equity markets enhance the confidence of investors and lead to lower CDS premiums. Esen *et al.* (2015) conclude

that when CDS premiums are considered as indicators for financial crises, equity markets can be accepted as precursor indicator for financial crises. Malhotra and Corelli (2018) show that equity markets lead in price discovery, where information flow comes from the equity markets to different sector CDS.

Mateev and Marinova (2019) investigated the relation between credit risk, as implied in the CDS market and equity prices of the Markit iTraxx Europe index companies. They found a long-run relation between CDS and equity prices of European companies, showing possible evidence for possible transmission of shocks between the two asset classes.

The exiting literature shows that there is indeed a strong relationship between CDS and equity markets which is exacerbated during period of distress. In addition, literature is mostly based on aggregate market data level, omitting important information at sectoral level. This study shall extend on existing literature by assessing the connectedness between CDS and equity markets at sectoral level and further distinguishing between distress and tranquil periods. In addition, the study shall also serve to ascertain whether the findings of existing literature still holds when using the methodologies proposed in this study.

2.7 The Link between Equity Volatility and Credit Spreads

A priori, equity volatility should be positively correlated with corporate credit spreads. This stems from the fact that an increase in asset volatility or leverage will result into a higher probability that the value of assets relative to the value of debt will fall, resulting in default. Campbell and Taksler (2003) study the link between idiosyncratic equity volatility and credit spreads. It was found that idiosyncratic equity volatility accounts between six and ten per cent of the change in credit spreads. Building on Campbell and Taksler (2003), Cremers *et al.* (2008) use option-based volatility to explain credit spreads levels. The study confirms the positive relation between equity volatility and credit spreads.

Abid and Naifar (2005) study the impact of equity returns volatility of reference entities on CDS for the Japanese market using GARCH modelling and a cupola-based approach. The authors report that the dependence structure between CDS rates and equity return volatility is asymmetric and positive and displays right tail dependence. In addition, the authors found evidence that entities having higher credit ratings have a weaker dependence and that equity return volatility has a larger impact on CDS rates for low-credit rating entities.

Steeley (2006) make use of multivariate GARCH framework to examine volatility connectedness between short term bond, long term bond and equity markets in the UK

for the period between 1984 and 2004. While the results suggest that short-term interest rate volatility appears, at least in part, drive both equity and bond market volatility, the empirical evidence suggests that past bond market volatility affects both markets and feeds back into short-term yield volatility. Steeley (2006) examined also the time-varying correlation structure between volatility in the equity and bond markets and finds that the sign of this correlation has reversed for the period between June 1984 and June 2004. Chuliá and Torró (2008) analysed volatility transmission between equity and bonds in European markets using the DJ Euro Stoxx 50 index futures contract and the Euro Bund futures contract for the period between January 1991 and January 2006. Through an asymmetric multivariate GARCH structuring, volatility spillovers take place in both directions. More specifically, shocks coming from the equity market affects bond market volatility, and vice-versa shocks emanating from the bond market affects equity markets.

Zhang *et al.* (2009) using high-frequency data use equity volatility and jump risks[8] to explain CDS premiums. It was found that the equity volatility alone predicts 48% of the change in CDS spread levels. On the other hand, jump risks seem to explain nineteen

[8] Zhang *et al.* (2009) use high-frequency equity return data to construct volatility and jump risk measures, which enabled them to better capture the potential effects on credit spreads from time-varying volatility and jumps in the underlying asset return process. Two sets of measures are used for equity volatility of individual firms, being historical volatility calculated from the daily equity prices and realised volatility calculated from intraday equity prices. This allowed the authors to create a proxy for the time variation in equity volatility. The jump risk is defined as the possibility of rare, significant, and abrupt price movements in the stock prices of companies. Jump risk was defined as the ratio between realised variance and realised bi-power variation.

per cent of the changes and appear to affect CDS premia. However, from the study of Zhang *et al.* (2009) a key factor resulted in that, negative jumps in equities affect three times more CDS spreads than positive jumps. This means that the relationship between equity volatility and credit spreads is asymmetric: an increase in volatility has a bigger impact on credit spreads than a decrease in volatility of a similar magnitude. In general, Zhang *et al.* (2009) found that positive jumps reduce spreads by eight basis points, but negative jumps can increase spreads by as much as 25 basis points.

Meng *et al.* (2009) investigates the volatility transmission among the bond, CDS and equity markets using ten large US entities. It was found that shocks from the CDS market to the other two markets on average take longer to be absorbed than shocks received by the CDS market from the equity and bond market. However, from the volatility transmission analysis through a multivariate GARCH model, it resulted that the CDS market transmits less volatility than it receives from the bond and equity markets. Schreiber *et al.* (2012) study the lead-lag dependence between aggregate credit spreads, equity prices and implied equity volatility for the period between June 2004 and April 2009. Using daily quotes of daily quotes of the iTraxx Europe index, the Dow Jones Euro Stoxx 50 index, and the Dow Jones VStoxx index, the authors found that equity returns are insignificant predictors of spread changes during the crisis. In addition, spread changes significantly, and positively leads changes in equity market volatility. Schreiber *et al.* (2012) explained that while information in spreads is not driving

aggregate market risks, it may do so in distressed periods where stress in credit markets spills over to equity markets.

Kajurova (2015) aims to analyse the influence of selected firm specific and market factors on credit default swap spreads of the UK financial institution, it was documented that equity volatility explains CDS spreads, with results being more significant during crisis periods. Köseoğlu (2013) investigated the transmission of volatility between the CDS and equity returns in Turkey, dividing the data into three sub-samples; before, during and after the financial crisis. The empirical findings indicate that there are significant ARCH and GARCH effects of equity returns and CDS spreads for all the periods. Moreover, both conditional variances and covariances have higher values during the perturbed period, implying a volatility contagion effect between the variables. Galil *et al.* (2014) investigated the determinants of credit spread changes using a broad dataset of 718 US firms during the period from January 2002 to February 2013. The authors found that equity return, changes in equity return volatility and the change in the median CDS spread in the rating class are the strongest explanatory variables of changes in CDS spreads.

Narayan (2015) assessed whether shocks emanating from CDS spread returns explain the forecast error variance of equity returns and equity return volatility at the sector level using a VAR model. Narayan (2015) found that CDS return shocks are key in explaining the forecast error variance of sectoral equity returns for the US, especially

during the 2009 crisis period. CDS return shocks have different effects on sectors from a return and volatility perspective during the pre- and crisis periods. In addition, CDS return shocks are most dominant during the global financial crisis, with their role maximised in the post-Lehman crisis period. Moreover, CDS return shocks have a heterogeneous effect, with some sectors being more affected than others. Finally, constructing a spillover index, Narayan (2015) suggests that spillovers are key to the connectedness between CDS returns and equity returns.

Guo (2016) develops a direct connection by inferring underlying asset volatility from CDS spreads. Guo (2016) finds that inferred volatility from CDS spreads and implied volatility from out-of-the money options are mutually complementary. In addition, CDS inferred volatility is an effective forecast of the underlying equity future realised volatility.

Mateev (2019) investigated the relation between volatility of CDS and equity prices using a sample of 109 European investment-grade companies, during the period of January 2012 to January 2016, using a DCC- and BEKK-GARCH models. In addition, volatility spillover between the two asset classes was found to be bi-directional. Mateev (2019) found supportive evidence that for many companies both correlations and covariances between CDS and equity prices exhibit time-varying pattern. In addition, for 32 companies, the volatility spillover is transmitted from the CDS market to the equity market, while for eleven companies the direction of the spillover is the opposite.

Anton and Nucu (2020) investigated the relationship between sovereign CDS and equity markets in nine emerging economies from Central and Eastern Europe, using daily data over the period January 2008–April 2018. The authors found the presence of bidirectional feedback between sovereign CDS and equity markets. Another finding is that the linkage between the CDS spreads and equity markets is time-varying and subject to regime shifts, depending on global financial conditions.

This study shall extend on existing literature by analysing volatility connectedness at sectoral and regional level. Only Narayan (2015) has carried out a sectoral level but only for the US region and considering few sectors. This study shall consider US, UK, EU and Japan markets and the analysis shall also consider sub-sectoral levels during the crisis and after-crisis periods.

2.8 Contagion as a Transmission Mechanism of Shocks

The term contagion broadly is defined as the transmission of shocks across some group of countries, regions, markets or sectors by a direct or indirect interaction. Bekaert *et al.* (2005) assert that contagion is defined as excess correlation, that is, correlation over and above what one would expect from economic fundamentals. Forbes and Rigobon (2002) affirm that a contagion effect is an increase of common movements of financial assets at a point in time, that is an increase in association during a period of distress. Similarly, Dungey *et al.* (2005) posit that a contagious transmission mechanism is

represented by local shocks from the asset market in one country to other markets or countries. Contagion can also be regarded as the spread of shock because of panic movements and herding behaviour of investors (Khallouli and Sandretto, 2012). More generally, contagion can also be regarded as a negative externality triggered by institutions or market participants in distress that affect other players (Alter and Beyer, 2014, Tamakoshi and Hamori, 2016).

Hartmann *et al.* (2005) summarise the five main criteria to identify contagion as: i) an idiosyncratic negative shock that affects a financial institution and spreads to other parts of the financial system or an idiosyncratic negative shock that affects an asset and triggers declines in other asset prices; ii) the interdependencies between asset prices or defaults are different than in tranquil times; iii) the excess dependencies cannot be explained by common shocks; iv) events associated with extreme left tail returns; and v) interdependencies evolve sequentially. Constâncio (2012) extends the identification of contagion in two ways: the existence of an initial trigger-event and the abnormal speed, strength or scope that accompanies financial instability.

According to Dornbusch *et al.* (2000), reasons for contagion can be segmented into two: i) fundamental based reasons and ii) investor behaviour-based reasons. While fundamental based contagion works through real and financial linkages across countries, behaviour-based contagion is more sentiment driven.

Contagion can also be referred to as spillover and must be distinguished from interdependency or comovement (Soriano and Climent, 2005). Comovement is defined as contemporaneous shocks transmitted between assets, while spillover is defined as the lagged shocks transmitted between assets (Meng *et al.*, 2009). Contagion is therefore the phenomenon of extreme amplification of spillover effects and spillover effects are necessary, though not sufficient, condition for contagion (Allen and Gale, 2000; and Alter and Beyer, 2014). In other words, if shocks emanating from a region serve as indicators that ameliorate the prediction of shocks to other regions, then a crisis in the former region creates the expectation of a crisis in the latter region (Alter and Bayer, 2014).[9]

Spillover and contagion effects in equity markets have been extensively investigated in the extant literature. In addition, recent studies have assessed spillovers in the sovereign credit risk market.

The field of studies investigating contagion in equity markets is quite rich, especially after the 1987 crash, but quite broad. King and Wadhwani (1990) using cross-market correlation coefficients found evidence for contagion in the US, UK and Japan for the period between July 1987 to February 1988. The authors argue that contemporaneous declines in different markets cannot be attributed to fundamentals and that contagion occurs because of rational investors inferring information from different markets to their

[9] This may be referred to as self-fulfilling expectation.

own market. In a later study, King *et al.* (1994) find little support for a trend increase in correlations among equity markets for the period between 1970 and 1990. They conclude that a distinction should be made between a transitory increase in correlations (around the 1987 crash) and a permanent increase in correlations. Indeed, Ross (1989) after surveying several papers asserted that the increase in correlations from the 1970s to the 1980s is only of a small magnitude. Further Corsetti *et al.* (2001) document that correlation between equity market is not necessarily larger during distress periods when compared to low-volatile periods. In response to King and Wadhwani (1990), Forbes and Rigobon (2002) found no evidence of contagion during the 1987 US crash, 1994 Mexican crisis and the 1997 Asian crisis. The authors argue that in the study of King and Wadhwani (1990), correlation coefficients are biased due to heteroskedasticity.

Hamao *et al.* (1990) assessed the US, UK and Japan markets during the period between April 1985 and March 1988. Using a GARCH model, statistically significant volatility spillovers from the US to Japan and from UK to Japan were found, while spillovers to Japan to the other two markets are much weaker. Theodossiou and Lee (1993) extended on Hamao *et al.* (1990) by considering Canadian and German markets also into the analysis for the period between January 1980 to December 1991. Volatility spillovers from US market to UK, Canadian, German and Japanese markets are positive, of which spillovers to Germany are the weakest. In addition, the authors inferred that returns

volatility in the UK and Canada trace in large parts to the US and that the German market is the least connected.

Karolyi (1995) investigated the effects of US shocks on returns and volatility on the Canadian equity market for the period between 1981 to 1989. Shocks originated in the US appear to have a decreasing impact on the returns and volatility of the Canadian market and that the magnitude and persistence of US shocks is greater for Canadian equities which are not dually listed. Longin and Solnik (1995) study correlations between seven major stock markets[10] over the period between 1960 and 1990, finding evidence of increasing conditional correlations over the 30-year period. The authors suggest that correlations increase when market volatility increases. Furthermore, Rangvid (2001) conducts a recursive common stochastic trends analysis and found increasing convergence (in levels) among European equity markets. Goetzmann *et al.* (2001) examine the correlation structure of the major world equity markets over 150 years, including a combined sample of combined sample Eastern and Western Europe, North and South America, South and East Asia, Africa and Australasia markets. The authors found that correlations vary considerably through time and are highest during periods of economic and financial integration, like the late 19th and late 20th centuries.

[10] US, UK, Japan, Canada, Germany, France and Switzerland.

Worthington and Higgs (2004) examine spillovers among nine Asian stock markets (three developed and six emerging economies) over the period 1988 to 2000. The authors suggest that all markets are highly integrated but domestic news matter more than news shocks from developed countries. More specifically, mean spillovers from the developed to the emerging markets are not homogenous across the emerging markets, and own-volatility spillovers are generally higher than cross-volatility spillovers for all markets, but especially for the emerging market. Karunanayake *et al.* (2009) uses a diagonal VECH model to provide an insight into the nature of interaction between equity market returns of four countries, namely, Australia, Singapore, the UK, and the US. The results indicate that all markets, especially Australia and Singapore display significant positive mean-spillovers from the US market returns but not the contrary. Strong evidence was also found for both own and cross ARCH and GARCH effects among all four markets, indicating the existence of significant volatility and cross volatility spillovers across all four markets.

Irem *et al.* (2012) using a Diagonal BEKK approach show emerging countries derive their volatility from global, rather than domestic markets. Moreover, it was found that significant and strong volatility spillover effects exist for all five emerging markets under study (Turkey, Hungary, Poland, Brazil and India). Kutlar and Torun (2014) analysed volatility dynamics between the equity markets of developed market economies and emerging market economies. According to the findings, while a strong volatility spillover

among developed country markets was found, there is a weak volatility spillover, when it comes from developed countries towards developing countries. However, domestic shocks in the previous period and the volatility of the previous period affect current period of volatility.

Baele (2005) using a weekly sample of compounded equity return covering the period between January 1980 and August 2001 for a few EU regions and the US. Shock spillover intensified over the 1980s and 1990s, though the rise is more significant for EU spillovers. Also, Baele (2005) found evidence for contagion from the US market to a number of domestic EU equity markets during periods of high volatility. Hyde *et al.* (2007) studied correlation dynamics in the equity markets for the period between January 1991 to December 2006 and found that during the bear market of the 2000s, correlations of Asian-Pacific countries increased with the US and EU, albeit immune to the Asian crisis. Sun and Zhang (2009) investigate the impacts of the recent unprecedented US crisis on the Chinese and Hong-Kong markets. The results suggest that China is not insusceptible to crisis, albeit the price and volatility spillovers from US to Hong Kong is more profound and persistent than those to China. Sun and Zhang (2009) attribute this result to Hong Kong being a financial centre.

Bekaert *et al.* (2014) analysed the transmission of the recent crisis to 415 country-industry equity portfolios. The authors found weak evidence of contagion from US markets to equity markets globally. However, substantial contagion has been found from

domestic markets to individual domestic portfolios. Dungey and Gajurel (2014) tested whether contagion is present during the crisis from US equity markets to other advanced and emerging markets. Employing a latent factor model, the results suggest convincing evidence of contagion effects in both advanced and emerging markets, as the US explains a sizeable portion of the variance in equity returns, bar for the financial sector indices. Diebold and Yilmaz (2014) documented a dynamic spillover index using rolling window estimations found that dynamic connectedness for financial firms increased during the recent financial distress.

Buncic and Gisler (2016) using volatility data for the US and seventeen foreign equity markets report that the US plays a key role as a source of information and its role is not only in forecasting return but also volatility in international equity markets. Diebold and Yilmaz (2016) analysed equity return volatility connectedness in the network of major US and European financial institutions for the period between 2004 and 2014. The authors found that during the pre-crisis period the direction of connectedness was coming from the US to Europe, but that connectedness became bi-directional starting in late 2008. In addition, Diebold and Yilmaz (2016) reported that directional connectedness from EU to US financial institutional have increased drastically, during the EU debt crisis. Demirer *et al.* (2017) used LASSO methods to estimate high-dimensional network linking publicly traded subset of the world's top 150 banks between 2003 and 2014. The authors found that equity connectedness increased during the crises, with clear peaks

during the 2009 global recession and the subsequent European debt crisis, with movements coming from cross-country bank linkages, rather than within-country.

Gencer and Hurata (2017) adopts a multivariate BEKK-GARCH to examine time-varying volatility spillovers between the US and other large stock markets. Overall, there is a significant shock and volatility transmission from the US to other stock markets, while the opposite is observed for some market-pairs. Furthermore, correlations changed significantly during the crisis phase of 2009, with variances and correlations increasing, signifying crisis spillover and contagion.

Zhang and Jorion (2006) investigated the intra-industry information transfer effect of Chapter Seven and Eleven bankruptcies[11] and jump events captured by the CDS and equity markets. Chapter Eleven bankruptcies appear to create contagion effects, as indicated by increases in spreads of industry competitors. On the other hand, Chapter Seven bankruptcies are associated with significant competitive effects. Moreover, unexpected jumps in a company's CDS spread leads to a credit contagion across the industry. Belke and Gokus (2011) apply a GARCH model to the data of four large US banks over the period ranging from January 2006 to December 2009 to examine the volatility of equity returns, CDS and bonds spreads. Findings suggest that volatility

[11] In the United States, bankruptcies include Chapter 11 reorganisation and Chapter 7 liquidation. Chapter 11 protects a firm from its creditors while it works out a formal plan of reorganisation. It is designed to save supposedly economic viable firms that are in temporary distress. In contrast, Chapter 7 forces the liquidation of the distressed firm (Zhang and Jorion, 2006).

increases in times of crisis, especially for equity returns and CDS spread changes. In addition, correlations and covariances increased in absolute values after the crisis, indicating stronger dependency among the examined variables. Andenmatten and Brill (2011) perform a bivariate test for contagion with daily data between October 2008 and July 2010 for 39 countries including both emerging and industrialised countries to test whether the comovement of sovereign debt CDS premia increased significantly after the Greek debt crisis. The authors suggest that during the Greek debt crisis there were not only periods of interdependence but also periods characterised by a significant increase in the comovement of sovereign credit risk as measured in CDS premia. Anderson (2011) investigated contagion and excess correlation in daily CDS spreads changes during the financial turmoil between 2007 and 2009. Anderson (2011) reported that an increase in the volatility factors that determine credit risk was not fully responsible for exacerbating correlations during the crisis, suggesting that contagion occurred.

Alter and Beyer (2014) modify and extend the framework of Diebold and Yilmaz (2012) to quantify spillovers between sovereign credit markets and banks in the euro area for the period between October 2009 and July 2012. The contagion index fluctuates within the sample and is high around important policy events. Banks to sovereign and sovereigns to banks components increase during the period, which suggests intensifying feedback loops between euro-area banks and sovereigns. Chen *et al.* (2014) make use of US and EU indices for the period between October 2004 and June 2011 to study whether

CDS markets across regions, maturities and credit rating having integrated more in the crisis. Indeed, the study reveals that there has been a potential shift in CDS integration during the crisis period, signifying that the CDS system is tied to a long-run equilibrium path and shares more credit risk than before the 2009 crisis.

Tamakoshi and Hamori (2014a) investigated causality-in-variance and causality-in-mean among CDS indexes of the banking, insurance, and financial services in the US from January 2004 to December 2011 using the cross-correlation function approach. The authors found significant causality-in-mean effects running from the banking sector to the insurance and financial services sector and from the financial services sector to the insurance sector. On the other hand, significant causality-in-variance effects from the financial services sector to the banking sector, indicating the existence of information transmission and contagion from the financial services sector, the least regulated of the three sectors. In a parallel study, Tamakoshi and Hamori (2016) use weekly data on five-year CDS indexes for the three UK financial sectors (banking, life insurance, and other financial sectors) for the period between January 2008 and December 2013. The study evidenced substantial increase in the dynamic conditional correlations for all pairs after the 2009 crisis, indicating evidence of contagion and that banking sector was mostly a net transmitter of volatility spillovers. Arouri *et al.* (2014) using CDS index spreads for banking, financial and insurance sectors over the period January 2004 and July 2011 assessed the dynamic relationships between US five-year financial CDS indices in the

short- and long-run. Overall the results show more contagion between the banking and financial services, and between the banking and insurance services than between the financial services and insurance sectors. Bedendo and Colla (2015) using weekly CDS spreads for firms having publicly traded equity found evidence of credit risk spillovers from the sovereign to the non-financial corporate segment during the recent Euro debt crisis. The authors report that for the period between January 2008 and December 2011, an increase in sovereign risk translates into a significant increase in corporate credit risk, even after controlling for a set of firm- and time-specific variables.

Alemany *et al.* (2015) employing an asymmetric multivariate BEKK model using European CDS spreads for the period from January 2006 to March 2013 shed light on credit risk volatility transmission between Eurozone and non-Eurozone banks and between peripheral and core countries inside the Eurozone. The authors found that the 2009 global financial crisis is characterised by unidirectional volatility spillovers in credit risk from inside to outside Eurozone with greater impact of negative shocks (increases in credit risk) that take long to die out. By contrast, the Eurozone debt crisis is revealed to be local in nature with the euro currency being the crucial factor. Sabkha *et al.* (2018) analysed the dynamics of CDS spreads to understand whether sovereign CDS spread market is prone to contagion effects by studying data of 23 worldwide countries. The authors found that contagion effects are indeed present during the crisis, regardless of economic status and/or geographical positions and that effects are more severe during

the eurozone crisis. Da Fonseca and Ignatieva (2018) study volatility spillover effects between CDS sector indexes during the period from April 2007 to January 2012. Financial, consumer goods, consumer services and basic materials sectors are the main contributors to the overall market volatility. The dynamic analysis shows a propagation of volatility spillover effects between the sectors.

Bouoiyour and Selmi (2019) study the impact of uncertainty surrounding the Brexit event on UK and European (France, Germany, Italy and Spain) CDS volatility spillovers. Results reveal that the uncertainty surrounding the UK's EU membership referendum undermines the credit-worthiness in both UK and Europe, with France and Germany to a lesser extent. While UK seems the major net transmitter of volatility, followed by Italy and Spain, France and Germany are likely to be volatility receivers.

Existing literature focused on connectedness within the CDS and equity markets, with most of the studies considering the equity market. Studies are mostly at an aggregate level and focusing on the US region. Little or no attention was given to the connectedness between the two asset classes or analysis at a sectoral level. This study extends on existing literature by considering the connectedness between CDS and equity markets at a sectoral and regional level taking into consideration the US, UK, EU and Japanese markets.

2.9 Recap of Literature

The empirical findings for testing the relationship between the CDS and the equity markets have mixed results, in some studies CDS market leads the equity one while in others the reverse is true. However, studies testing the association between CDS market and corporate bond market share a common finding in that CDS market leads the corporate bond market. These relationships are of crucial importance for the understanding of contagions and/or spillovers and their propagation mechanisms. Overall, contagion or spillover effects were reported in the equity and CDS market, both at an aggregate and sectoral level. The few studies which assessed contagion between the CDS and equity markets found that the association between the two increased during perturbed periods.

This study extends on existing literature by assessing connectedness and volatility spillovers between CDS and equity markets at a sectoral and regional level. This study considers CDS and equity markets in the US, UK, EU and Japan and further distinguishes between the crisis and after-crisis period. The findings show that on average connectedness between asset classes, sectors and regions is higher during the crisis period in line with a-priori expectations and existing literature. However, this study shall provide an additional insight to policymakers and market practitioners as it offers a granular analysis in terms of sectoral and regional connectedness and spillovers.

Chapter 3: Methodology

3.0 Introduction

This chapter describes the theory behind the techniques used in this research to analyse connectedness and spillovers mechanisms between the asset classes under study at a sectoral and regional level.

3.1 Multivariate GARCH Models

In investigating volatility interdependence and transmission, multivariate settings like the DCC-MGARCH model of Engle (2002) and the BEKK-GARCH model of Baba *et al.* (1985) and Engle and Kroner (1995) are more relevant than univariate models.

The multivariate GARCH model is defined as:

$$\boldsymbol{r}_t = \mu_t + e_t$$
$$\boldsymbol{e}_t = \mathbf{H}_t^{\frac{1}{2}} \epsilon_t$$

where

$\boldsymbol{r}_t$ is a $n \times 1$ vector of continuously compounded daily returns of n CDS spreads and equity indices in a region at time t.

μ_t is a $n \times 1$ vector of expected value of the conditional $\boldsymbol{r}_t$.

$\boldsymbol{e}_t$ is a $n \times 1$ vector of mean-corrected returns of n CDS spreads and equity indices with $\boldsymbol{e}_t \sim \mathrm{N}(0, \mathbf{H}_t)$, where $\mathbf{H}_t$ is the conditional covariance matrix at time t.

ϵ_t is an $n \times 1$ vector of identical and independent (iid) errors such that $\mathbb{E}[\epsilon_t] = 0, \mathbb{E}[\epsilon_t \epsilon_t^T] = I$.

3.2 The DCC-GARCH Model

Correlation is a well-established concept for measuring interdependence. Although the correlation coefficient is sometimes assumed constant for simplicity, financial quantities are correlated in a strongly non-linear way in financial markets, advocating time-dependent correlation models.

The DCC-GARCH model, which was introduced by Engle and Sheppard (2001), generalises the Constant Conditional Correlation model of Bollerslev (1990), in which volatility of returns can vary but pairwise conditional correlations are assumed to be constant. The CCC model is, however, too restrictive as it does not consider the variation in comovements of the assets across time.

The DCC-GARCH model assumes that returns from the n series are multivariate normally distributed with zero mean and conditional variance-covariance matrix $\mathbf{H}_t$. The multivariate DCC-GARCH model can be represented as:

$$\boldsymbol{r}_t = \mu_t + \boldsymbol{e}_t$$

with $\boldsymbol{e_t}|\Omega_{t-1} \sim N(0, \mathbf{H}_t)$ where $\boldsymbol{r_t}$ is the $n \times 1$ vector returns of CDS spreads and equity sectoral indices of each region considered under study and $\boldsymbol{e_t}$ is the $n \times 1$ vector of zero mean return innovations which distribution depends on the information set, Ω_{t-1}, that is, the set of all the information available at time $t-1$. For this study n shall take the value of 2 when considering the interdependence between the two asset classes under study and a value of 2, 3 or 4[12] when considering regional connectedness. More specifically, n takes the value of 2 when analysing the relationship between CDS spreads and equity returns, while, n takes the value of 2, 3 or 4 when analysing regional spillovers and links between the regions under consideration. In this study, AR(1) is used to define the conditional mean of the returns.

In the DCC model, Engle and Sheppard (2001) proposed the following decomposition of the conditional variance-covariance matrix $\mathbf{H}_t$:

$$\mathbf{H}_t = \mathbf{D}_t \mathbf{R}_t \mathbf{D}_t$$

where $\mathbf{D}_t$ represents a $(n \times n)$ diagonal matrix of the conditional volatility of the CDS spreads and equity returns. The process of the estimation of the DCC-GARCH parameters is made up of two steps. In the initial stage, the mean equation ($\mu_t = \alpha + \beta\varepsilon_{t-1} + \gamma\mu_{t-1}$) of each series in the sample, nested in a univariate GARCH model of its conditional variance is estimated using E-views. $\mathbf{D}_t$ can be represented in a matrix fashion as follows:

[12] Depending on data availability.

$$\begin{bmatrix} \sqrt{h_{1t}} & 0 & \cdots & 0 \\ 0 & \sqrt{h_{2t}} & \cdots & \vdots \\ \vdots & \vdots & \ddots & 0 \\ 0 & \cdots & 0 & \sqrt{h_{nt}} \end{bmatrix}$$

where h_{it} is the conditional variance of CDS spreads and equity sectoral returns or regional returns and each index is assumed to follow a univariate GARCH(p, q) process as per below:

$$h_{it} = \alpha_{i0} + \sum_{p=1}^{P_i} \alpha_{i,p} e_{i,t-p}^2 + \sum_{q=1}^{Q_i} \beta_{i,q}\, h_{i,t-q}$$

These are shown as the ARCH effects ($\sum_{p=1}^{P_i} \alpha_{i,p} e_{i,t-p}^2$) and the GARCH effects ($\sum_{q=1}^{Q_i} \beta_{i,q}\, h_{i,t-q}$) in Panel B (Conditional Variance Estimates) in Tables 66 to 77 in Appendix B. The ARCH parameters capture the impact of past squared error terms on the current conditional variance (h_{it}), reflecting the persistence of volatility shocks. On the other hand, the GARCH parameters capture the impact of past conditional variances on the current conditional variance (h_{it}), reflecting the persistence of volatility over time.

The following restrictions shall also apply:

$$\alpha_{i,p} > 0, \beta_{i,q} > 0, \text{ and } \alpha_{i,p} + \beta_{i,q} < 1$$

For this study the GARCH$(1,1)$ model will be used. These univariate estimates shall then be used to standardise the zero mean return innovations for each sectoral and regional CDS spread and equity index returns.

$\mathbf{R}_t$ is the conditional correlation matrix of the standardised disturbances ϵ_t, that is:

$$\epsilon_t = \mathbf{D}_t^{-1}\boldsymbol{e}_t \sim N(0, \mathbf{R}_t)$$

$\mathbf{R}_t$ can be represented in matrix form as:

$$\begin{bmatrix} 1 & \rho_{12,t} & \rho_{13,t} & \cdots & \rho_{1n,t} \\ \rho_{21,t} & 1 & \rho_{23,t} & \cdots & \rho_{2n,t} \\ \rho_{31,t} & \rho_{32,t} & 1 & \cdots & \rho_{3n,t} \\ \vdots & \vdots & \vdots & 1 & \vdots \\ \rho_{n1,t} & \rho_{n2,t} & \rho_{n3,t} & \cdots & 1 \end{bmatrix}$$

In this study the dynamic conditional correlation is analysed between CDS spreads and equity sectoral returns for a particular region under study and CDS spreads and equity regional returns for each respective sectoral index. Therefore n takes the value of 2 when analysing the relationship between CDS spreads and equity and $2, 3$ or 4 when analysing the relationship between the two asset classes at a regional level. Logarithmic return data of CDS spreads and equity is used in all instances. The elements of $\mathbf{H}_t = \mathbf{D}_t\mathbf{R}_t\mathbf{D}_t$ are:

$$[\mathbf{H}_t]_{ij} = \sqrt{h_{it}h_{jt}}\rho_{ij}$$

where $\rho_{ii} = 1$. In specifying $\mathbf{R}_t$ two requirements must be considered:

i. $\mathbf{H}_t$ must be positive definite[13], being a covariance matrix. For $\mathbf{H}_t$ to be positive definite, $\mathbf{R}_t$ must be positive, since $\mathbf{D}_t$ is positive definite since all diagonal elements are positive.
ii. All the elements in $\mathbf{R}_t$ must be equal to or less than one.

[13] Positive definite matrix is a symmetric matrix with all positive eigenvalues.

The above conditions are satisfied if $\mathbf{R}_t$ is decomposed as follows:

$$\mathbf{R}_t = \mathbf{Q}_t^{*-1}\mathbf{Q}_t\mathbf{Q}_t^{*-1}$$
$$\mathbf{Q}_t = (1 - a - b)\overline{\mathbf{Q}} + a\epsilon_{t-1}\epsilon_{t-1}^T + b\mathbf{Q}_{t-1}$$

where $\mathbf{Q}_t$ refers to an $(n \times n)$ time varying covariance matrix of ϵ_t, $\overline{\mathbf{Q}} = Cov[\epsilon_t\epsilon_{t-1}^T] = \mathbb{E}[\boldsymbol{\epsilon}_t\epsilon_t^T]$ represents the unconditional covariance matrix of the standardised errors a and b are non-negative scalar parameters satisfying $a + b < 1$. In addition, $\overline{\mathbf{Q}}$ can be estimated as:

$$\overline{\mathbf{Q}} = \frac{1}{T}\sum_{t-1}^{T}\epsilon_t\epsilon_t^T$$

$\mathbf{Q}_t^*$ is a diagonal matrix with the square root of the diagonal elements of Q_t at the diagonal:

$$\begin{bmatrix} \sqrt{q_{11t}} & 0 & \cdots & 0 \\ 0 & \sqrt{q_{22t}} & \ddots & \vdots \\ \vdots & \ddots & \ddots & 0 \\ 0 & \cdots & 0 & \sqrt{q_{nnt}} \end{bmatrix}$$

$\mathbf{Q}_t^*$ rescales the elements in $\mathbf{Q}_t$ in order to ensure the second requirement of $\mathbf{R}_t$, that is:

$$|\rho_{ij}| = \left|\frac{q_{ijt}}{\sqrt{q_{iit}\sqrt{q_{jjt}}}}\right| \leq 1 \text{ for } i, j = 1,2,\ldots,n \text{ and } i \neq j.$$

$\mathbf{Q}_t$ must be positive definite to ensure that $\mathbf{R}_t$ is positive definite. There are some conditions imposed on the parameters a and b to guarantee $\mathbf{H}_t$ to be positive definite. In addition to the conditions for the univariate GARCH, the scalars a and b must satisfy:

$$a \geq 0, b \geq 0 \text{ and } a + b < 1$$

The general form that Engle and Sheppard (2001) proposed is as follows:

$$\mathbf{Q}_t = (1 - \sum_{m=1}^{M} a_m - \sum_{n=1}^{N} b_n)\overline{\mathbf{Q}} + \sum_{m=1}^{M} a_m \epsilon_{t-m} \epsilon_{t-m}^T + \sum_{n=1}^{N} b_n \mathbf{Q}_{t-n}$$

with the following restrictions:

$$a_m \geq 0 \forall m \in [1, \dots, M]$$
$$b_n \geq 0 \forall n \in [1, \dots, N]$$
$$\sum_{m=1}^{M} a_m + \sum_{n=1}^{N} b_n < 1$$

In this study a DCC(1,1)-GARCH model will be considered. This model is chosen on the basis of being parsimonious while capturing the high persistence of volatility which is characteristic of financial time-series (Enders, 2010).

3.3 Estimation of the DCC-GARCH Model

When the standardised errors, ϵ_t, are Multivariate Gaussian distributed, the joint distribution of $\epsilon_1, \dots \dots, \epsilon_T$ is:

$$f(\epsilon_t) = \prod_{t=1}^{T} \frac{1}{(2\pi)^{\frac{n}{2}} |\mathbf{H}_t|^{\frac{1}{2}}} e^{\left\{-\frac{1}{2}\epsilon_t^T \epsilon_t\right\}}$$

where $\mathbb{E}[\epsilon_t] = 0, \mathbb{E}[\epsilon_t \epsilon_t^T] = I_n$ and $t = 1, \dots, T$ is the period used in estimating the model. $|\cdot|$ identifies the determinant of the matrix.

The likelihood function for $\boldsymbol{e}_t = \mathbf{H}_t^{\frac{1}{2}}\epsilon_t$ is as follows:

$$L(\theta) = \prod_{t=1}^{T} \frac{1}{(2\pi)^{\frac{n}{2}}|\mathbf{H}_t|^{\frac{1}{2}}} e^{\left\{-\frac{1}{2}\mathbf{e}_t^T\mathbf{H}_t^{-1}\mathbf{e}_t\right\}}$$

where θ denotes the parameters of the model. In this study the parameters θ shall be divided into two groups: $(\phi, \varphi) = (\phi_1, \dots, \phi_n, \varphi)$, where $\phi_i = (\alpha_{io}, \alpha_{i1}, \beta_{i1})$ are the parameters of the univariate GARCH(1,1) model employed in this study. On the other hand, $\varphi = (a, b)$ are the parameters of the correlation structure in $\mathbf{Q}_t = (1 - a - b)\bar{\mathbf{Q}} + \alpha\epsilon_{t-1}\epsilon_{t-1}^T + b\mathbf{Q}_{t-1}$. Taking the logarithm of $L(\theta) = \prod_{t=1}^{T} \frac{1}{(2\pi)^{\frac{n}{2}}|\mathbf{H}_t|^{\frac{1}{2}}} e^{\left\{-\frac{1}{2}\mathbf{e}_t^T\mathbf{H}_t^{-1}\mathbf{e}_t\right\}}$ and substituting $\mathbf{H}_t = \mathbf{D}_t\mathbf{R}_t\mathbf{D}_t$, the log-likelihood function would be represented as:

$$\begin{aligned}
\ln\big(L(\theta)\big) &= -\frac{1}{2}\sum_{t=1}^{T}(n\ln(2\pi) + \ln(|\mathbf{H}_t|) + \mathbf{e}_t^T\mathbf{H}_t^{-1}\mathbf{e}_t) \\
&= -\frac{1}{2}\sum_{t=1}^{T}(n\ln(2\pi) + \ln(|\mathbf{D}_t\mathbf{R}_t\mathbf{D}_t|) + \mathbf{e}_t^T\mathbf{D}_t^{-1}\mathbf{R}_t^{-1}\mathbf{D}_t^{-1}\mathbf{e}_t) \\
&= -\frac{1}{2}\sum_{t=1}^{T}(n\ln(2\pi) + 2\ln(|\mathbf{D}_t|) + \ln(|\mathbf{R}_t|) + \mathbf{e}_t^T\mathbf{D}_t^{-1}\mathbf{R}_t^{-1}\mathbf{D}_t^{-1}\mathbf{e}_t)
\end{aligned}$$

The DCC model is designed to allow for two stage estimation. In the first stage, the parameters in ϕ of the univariate GARCH(1,1) are estimated. The likelihood used in this first stage is obtained by in replacing $\mathbf{R}_t$ with the identity matrix I_n.

When replacing $\mathbf{R}_t$ with the identity matrix I_n, the quasi-likelihood function will result:

$$\ln\big(L_1(\theta)\big) = -\frac{1}{2}\sum_{t=1}^{T}(n\ln(2\pi) + 2\ln(|\mathbf{D}_t|) + \ln(|I_n|) + \mathbf{e}_t^T\mathbf{D}_t^{-1}\mathbf{R}_t^{-1}\mathbf{D}_t^{-1}\mathbf{e}_t)$$

$$= -\frac{1}{2}\sum_{t=1}^{T}(n\ln(2\pi) + 2\ln(|\mathbf{D}_t|) + \mathbf{e}_t^T\mathbf{D}_t^{-1}\mathbf{R}_t^{-1}\mathbf{D}_t^{-1}\mathbf{e}_t)$$

Using the relation $\mathbf{H}_t = \mathbf{D}_t\mathbf{R}_t\mathbf{D}_t$ where $\mathbf{R}_t = I_n$, $-\frac{1}{2}\sum_{t=1}^{T}(n\ln(2\pi) + 2\ln(|\mathbf{D}_t|) + \mathbf{e}_t^T\mathbf{D}_t^{-1}\mathbf{R}_t^{-1}\mathbf{D}_t^{-1}\mathbf{e}_t)$ becomes:

$$\ln\big(L_1(\theta)\big) = -\frac{1}{2}\sum_{t=1}^{T}\left(n\ln(2\pi) + \sum_{i=1}^{n}\left[\ln(h_{it}) + \frac{\mathbf{e}_{it}^2}{h_{ie}}\right]\right)$$

$$= \sum_{i=1}^{n}\left(-\frac{1}{2}\sum_{t=1}^{T}\left[\ln(h_{it}) + \frac{\mathbf{e}_{it}^2}{h_{ie}}\right] + constant\right)$$

From this first step, that parameter set $\phi = \phi_1, \phi_2, \dots, \phi_n$ is estimated. When ϕ is estimated, also the conditional variance h_{it} is estimated for CDS spreads and equity sectoral and regional index series $i = 1, \dots, n$ and $\epsilon_t = \mathbf{D}_t^{-1}\mathbf{e}_t$ and $\overline{\mathbf{Q}} = \mathbb{E}[\epsilon_t\epsilon_t^T]$ can be estimated. The parameters a and b shall be estimated in the second step.

In the second stage, $\varphi = (a, b)$ is estimated using the correctly specified log-likelihood in $-\frac{1}{2}\sum_{t=1}^{T}(n\ln(2\pi) + 2\ln(|\mathbf{D}_t|) + \mathbf{e}_t^T\mathbf{D}_t^{-1}\mathbf{R}_t^{-1}\mathbf{D}_t^{-1}\mathbf{e}_t)$, given the estimated parameters from step one. The second stage quasi-likelihood function is then:

$$\ln\big(L_2(\theta)\big) = -\frac{1}{2}\sum_{t=1}^{T}(n\ln(2\pi) + 2\ln(|\mathbf{D}_t|) + \ln(|\mathbf{R}_t|) + \mathbf{e}_t^T\mathbf{D}_t^{-1}\mathbf{R}_t^{-1}\mathbf{D}_t^{-1}\mathbf{e}_t)$$

$$= -\frac{1}{2}\sum_{t=1}^{T}(n\ln(2\pi) + 2\ln(|\mathbf{D}_t|) + \ln(|\mathbf{R}_t|) + \epsilon_t^T\mathbf{R}_t^{-1}\epsilon_t)$$

$\mathbf{D}_t$ would be considered as constant, conditioning on the parameters from step one. Excluding the constant terms, the following relation will be maximised:

$$\ln(L_2^*(\varphi)) = -\frac{1}{2}\sum_{t=1}^{T}(\ln(|\mathbf{R}_t|) + +\epsilon_t^T \mathbf{R}_t^{-1}\epsilon_t)$$

3.4 The Scalar Asymmetric DCC-GARCH

Cappiello, *et al.* (2006) propose a new model which allows for the conditional correlation to vary differently based on the sign of the innovation in the series. In the asymmetric DCC-GARCH, the term η_t and a parameter λ are introduced to the dynamic correlation structure of Engle and Sheppard (2001).

η_t, is a $k \times 1$ vector which takes the value of ϵ_t, if $\epsilon_t < 0$, and 0 otherwise. Additionally, the matrix $\overline{\mathbf{N}}$ represents the covariance matrix of η_t:

$$\overline{\mathbf{N}} = E[\eta_t \eta_t^T]$$

and the coefficient λ, which controls for the impact of a negative shock. The new dynamic structure becomes:

$$\mathbf{Q}_t = (\overline{\mathbf{Q}} - \mathrm{a}^2\overline{\mathbf{Q}} - \mathrm{b}^2\overline{\mathbf{Q}} - \lambda^2\overline{\mathbf{N}}) + \mathrm{a}^2\epsilon_t\epsilon_t^T + \lambda^2\eta_t\eta_t^T + \mathrm{b}^2\mathbf{Q}_{t-1}$$

The only necessary and sufficient condition for $\mathbf{Q}_t$ to be positive is that:

$$\mathrm{a}^2 + \mathrm{b}^2 + \delta\lambda^2 < 1$$

with λ being a maximum eigen value of $\left[\overline{\mathbf{Q}}^{-1/2}\overline{\mathbf{N}}\overline{\mathbf{Q}}^{-1/2}\right]$.

3.5 The BEKK-GARCH Model

The BEKK-GARCH model is an extension of the GARCH model which can capture volatility transmission or spillovers among different series, as well as the persistence of volatility within each series. The Full-BEKK models of Baba *et al.* (1985) and Engle and Kroner (1995)have been extensively applied in empirical practice. However, Chang and McAleer (2019) show that the Full-BEKK has no underlying stochastic process that leads to its specification[14], regularity conditions, or asymptotic properties. Therefore, the purported statistical properties of Full-BEKK exist by assumption. According to Allen and McAleer (2018), these properties have either not yet been established, or are simply assumed rather than derived, yet these conditions and properties are essential for the existence of the likelihood function, and hence valid statistical analysis of the empirical estimates. This means that when the model is estimated its coefficients and statistical properties may not be valid to make inferences.

These limitations do not apply to the Diagonal BEKK(DBEKK)-GARCH model. The DBEKK-GARCH (Engle and Kroner, 1995) is a multivariate GARCH model that permits the explicit and dynamic parameterisation of conditional covariances. It reduced the number of parameters estimated by restricting the parameter matrices to be diagonal and addresses the difficulty with VECH (Bollerslev, Engle and Wooldridge, 1988) by

[14] Chang and McAleer (2019) show that the stochastic process underlying univariate GARCH is not a special case of that underlying multivariate GARCH.

ensuring that the conditional covariance, $\mathbf{H}_t$, matrix is always positive definite by incorporating quadratic forms.

3.6 The Diagonal BEKK(DBEKK)-GARCH Model

The first step in the GARCH methodology is to specify the mean equation. In the study, like in the DCC-GARCH model, an AR(1) model is used to define the conditional mean of the CDS and equity sectoral returns across all regions. The BEKK parametrisation is represented by:

$$\mathbf{H_t} = \mathbf{C'C} + \mathbf{A'}\epsilon'_{t-1}\epsilon_{t-1}\mathbf{A} + \mathbf{B'H}_{t-1}\mathbf{B}$$

where $\mathbf{H_t}$ is the conditional variance, C is an upper triangular matrix of parameters and ϵ_{t-1} is an $n\,x\,1$ vector. **B** is a $n\,x\,n$ diagonal matrix of parameters which depicts the extent to which current levels of conditional variances are related to past conditional variances. **A** is a $n\,x\,n$ diagonal matrix of parameters which measures the extent to which conditional variances are correlated with past squared errors. For the spillovers assessment between the two asset classes a bi-variate DBEKK-GARCH model is used, while for the regional volatility spillovers part a bi-variate or tri-variate or a four-variate DBEKK-GARCH models are used depending on data availability. More specifically the bi-variate case is used to analyse the links between CDS spreads and equity returns, while, the bi-variate, tri-variate and four-variate cases will be used to analyse the regional links between the US, UK, EU and Japan, depending on data availability.

The individual elements for **C**, **A** and **B** matrices are given as:

$$\text{Bivariate case: } \mathbf{C} = \begin{pmatrix} \alpha_{11} & \alpha_{12} \\ 0 & \alpha_{22} \end{pmatrix} \mathbf{A} = \begin{pmatrix} \beta_1 & 0 \\ 0 & \beta_2 \end{pmatrix} \mathbf{B} = \begin{pmatrix} \delta_1 & 0 \\ 0 & \delta_2 \end{pmatrix}$$

$$\text{Tri-variate case: } \mathbf{C} = \begin{pmatrix} \alpha_{11} & \alpha_{12} & \alpha_{13} \\ 0 & \alpha_{22} & \alpha_{23} \\ 0 & 0 & \alpha_{33} \end{pmatrix} \mathbf{A} = \begin{pmatrix} \beta_1 & 0 & 0 \\ 0 & \beta_2 & 0 \\ 0 & 0 & \beta_3 \end{pmatrix} \mathbf{B} = \begin{pmatrix} \delta_1 & 0 & 0 \\ 0 & \delta_2 & 0 \\ 0 & 0 & \delta_3 \end{pmatrix}$$

$$\text{Four-variate case: } \mathbf{C} = \begin{pmatrix} \alpha_{11} & \alpha_{12} & \alpha_{13} & \alpha_{14} \\ 0 & \alpha_{22} & \alpha_{23} & \alpha_{24} \\ 0 & 0 & \alpha_{33} & \alpha_{34} \\ 0 & 0 & 0 & \alpha_{44} \end{pmatrix} \mathbf{A} = \begin{pmatrix} \beta_1 & 0 & 0 & 0 \\ 0 & \beta_2 & 0 & 0 \\ 0 & 0 & \beta_3 & 0 \\ 0 & 0 & 0 & \beta_4 \end{pmatrix}$$

$$\mathbf{B} = \begin{pmatrix} \delta_1 & 0 & 0 & 0 \\ 0 & \delta_2 & 0 & 0 \\ 0 & 0 & \delta_3 & 0 \\ 0 & 0 & 0 & \delta_4 \end{pmatrix}$$

The total number of estimated elements for the variance equation is seven (7) in the bivariate case, twelve (12) in the tri-variate case and eighteen (18) in the four-variate case.

3.6.1 The BEKK Parameterisation for the Bivariate GARCH(1,1) Model[15]

The BEKK parametrisation for the bivariate GARCH(1,1) model is represented by:

$$\mathbf{H}_t = \mathbf{C}'\mathbf{C} + \mathbf{A}'\epsilon'_{t-1}\epsilon_{t-1}\mathbf{A} + \mathbf{B}'\mathbf{H}_{t-1}\mathbf{B}$$

[15] A more detailed parameterisation can be made available by request. The parameterisation of the bivariate GARCH(1,1) model was manually derived. It was not presented in the text not to distort the reader.

where $\mathbf{C} = \begin{pmatrix} \alpha_{11} & \alpha_{12} \\ 0 & \alpha_{22} \end{pmatrix}$ $\mathbf{A} = \begin{pmatrix} \beta_1 & 0 \\ 0 & \beta_2 \end{pmatrix}$ $\mathbf{B} = \begin{pmatrix} \delta_1 & 0 \\ 0 & \delta_2 \end{pmatrix}$

$\mathbf{H}_t$ can be represented in matrix form as:

$$\begin{pmatrix} h_{1,t}^2 & h_{12,t} \\ h_{21,t} & h_{2,t}^2 \end{pmatrix} = \begin{pmatrix} \alpha_{11} & 0 \\ \alpha_{12} & \alpha_{22} \end{pmatrix}\begin{pmatrix} \alpha_{11} & \alpha_{12} \\ 0 & \alpha_{22} \end{pmatrix}$$

$$+\begin{pmatrix} \beta_1 & 0 \\ 0 & \beta_2 \end{pmatrix}\begin{pmatrix} \epsilon_{1,t-1}^2 & \epsilon_{1,t-1}\epsilon_{2,t-1} \\ \epsilon_{2,t-1}\epsilon_{1,t-1} & \epsilon_{2,t-1}^2 \end{pmatrix}\begin{pmatrix} \beta_1 & 0 \\ 0 & \beta_2 \end{pmatrix} + \begin{pmatrix} \delta_1 & 0 \\ 0 & \delta_2 \end{pmatrix}\begin{pmatrix} h_{1,t-1}^2 & h_{12,t-1} \\ h_{21,t-1} & h_{2,t-1}^2 \end{pmatrix}\begin{pmatrix} \delta_1 & 0 \\ 0 & \delta_2 \end{pmatrix}$$

where $h_{12,t} = h_{21,t}$. Multiplying and summing all the matrices in the bi-variate BEKK-GARCH results in:

$$h_1^2 = \Omega_{11} + \beta_1^2\epsilon_{1,t-1}^2 + \delta_1^2 h_{1,t-1}^2$$

$$h_{12} = \Omega_{12} + \beta_2\beta_1\epsilon_{1,t-1}\epsilon_{2,t-1} + \delta_2\delta_1 h_{1,t-1}h_{2,t-1}$$

$$h_2^2 = \Omega_{22} + \beta_2^2\epsilon_{2,t-1}^2 + \delta_2^2 h_{2,t-1}^2$$

This form allows measuring volatility spillovers between CDS spreads and equity sectoral returns in the variance equations. Moreover, this representation will be used to measure volatility spillovers between regions for sectors within an asset class.

3.6.2 The BEKK Parameterisation for the Tri-variate GARCH(1,1) Model[16]

The BEKK parametrisation for the tri-variate GARCH(1,1) model is represented by:

$$\mathbf{H}_t = \mathbf{C}'\mathbf{C} + \mathbf{A}'\epsilon'_{t-1}\epsilon_{t-1}\mathbf{A} + \mathbf{B}'\mathbf{H}_{t-1}\mathbf{B}$$

where $\mathbf{C} = \begin{pmatrix} \alpha_{11} & \alpha_{12} & \alpha_{13} \\ 0 & \alpha_{22} & \alpha_{23} \\ 0 & 0 & \alpha_{33} \end{pmatrix}$ $\mathbf{A} = \begin{pmatrix} \beta_1 & 0 & 0 \\ 0 & \beta_2 & 0 \\ 0 & 0 & \beta_3 \end{pmatrix}$ $\mathbf{B} = \begin{pmatrix} \delta_1 & 0 & 0 \\ 0 & \delta_2 & 0 \\ 0 & 0 & \delta_3 \end{pmatrix}$

$\mathbf{H}_t$ can be represented in matrix form as:

$$\begin{pmatrix} h_{1,t}^2 & h_{12,t} & h_{13,t} \\ h_{21,t} & h_{2,t}^2 & h_{23,t} \\ h_{31,t} & h_{32,t} & h_{3,t}^2 \end{pmatrix}$$

$$= \begin{pmatrix} \alpha_{11} & 0 & 0 \\ \alpha_{12} & \alpha_{22} & 0 \\ \alpha_{13} & \alpha_{23} & \alpha_{33} \end{pmatrix} \begin{pmatrix} \alpha_{11} & \alpha_{12} & \alpha_{13} \\ 0 & \alpha_{22} & \alpha_{23} \\ 0 & 0 & \alpha_{33} \end{pmatrix}$$

$$+ \begin{pmatrix} \beta_1 & 0 & 0 \\ 0 & \beta_2 & 0 \\ 0 & 0 & \beta_3 \end{pmatrix} \begin{pmatrix} \epsilon_{1,t-1}^2 & \epsilon_{1,t-1}\epsilon_{2,t-1} & \epsilon_{1,t-1}\epsilon_{3,t-1} \\ \epsilon_{2,t-1}\epsilon_{1,t-1} & \epsilon_{2,t-1}^2 & \epsilon_{2,t-1}\epsilon_{3,t-1} \\ \epsilon_{3,t-1}\epsilon_{1,t-1} & \epsilon_{3,t-1}\epsilon_{2,t-1} & \epsilon_{3,t-1}^2 \end{pmatrix} \begin{pmatrix} \beta_1 & 0 & 0 \\ 0 & \beta_2 & 0 \\ 0 & 0 & \beta_3 \end{pmatrix}$$

$$+ \begin{pmatrix} \delta_1 & 0 & 0 \\ 0 & \delta_2 & 0 \\ 0 & 0 & \delta_3 \end{pmatrix} \begin{pmatrix} h_{1,t-1}^2 & h_{12,t-1} & h_{13,t-1} \\ h_{21,t-1} & h_{2,t-1}^2 & h_{23,t-1} \\ h_{31,t-1} & h_{32,t-1} & h_{3,t-1}^2 \end{pmatrix} \begin{pmatrix} \delta_1 & 0 & 0 \\ 0 & \delta_2 & 0 \\ 0 & 0 & \delta_3 \end{pmatrix}$$

where $h_{12,t} = h_{21,t}; h_{13,t} = h_{31,t}; h_{23,t} = h_{32,t}$. Multiplying and summing all the matrices in the tri-variate BEKK-GARCH results in:

$$h_1^2 = \Omega_{11} + \beta_1^2\epsilon_{1,t-1}^2 + \delta_1^2 h_{1,t-1}^2$$

$$h_{12} = \Omega_{12} + \beta_2\beta_1\epsilon_{1,t-1}\epsilon_{2,t-1} + \delta_2\delta_1 h_{1,t-1}h_{2,t-1}$$

[16] A more detailed parameterisation can be made available by request. The parameterisation of the tri-variate GARCH(1,1) model was manually derived. It was not presented in the text not to distort the reader.

$$h_{13} = \Omega_{13} + \beta_3\beta_1\epsilon_{1,t-1}\epsilon_{3,t-1} + \delta_3\delta_1 h_{1,t-1}h_{3,t-1}$$

$$h_2^2 = \Omega_{22} + \beta_2^2\epsilon_{2,t-1}^2 + \delta_2^2 h_{2,t-1}^2$$

$$h_{23} = \Omega_{23} + \beta_3\beta_2\epsilon_{2,t-1}\epsilon_{3,t-1} + \delta_3\delta_2 h_{2,t-1}h_{3,t-1}$$

$$h_3^2 = \Omega_{33} + \beta_3^2\epsilon_{3,t-1}^2 + \delta_3^2 h_{3,t-1}^2$$

This representation will be used to measure volatility spillovers between regions for sectors within an asset class.

3.6.3 The BEKK Parameterisation for the Four-variate GARCH(1,1) Model[17]

The BEKK parametrisation for the four-variate GARCH(1,1) model is represented by:

$$\mathbf{H}_t = \mathbf{C}'\mathbf{C} + \mathbf{A}'\epsilon_{t-1}'\epsilon_{t-1}\mathbf{A} + \mathbf{B}'\mathbf{H}_{t-1}\mathbf{B}$$

Where $\mathbf{C} = \begin{pmatrix} \alpha_{11} & \alpha_{12} & \alpha_{13} & \alpha_{14} \\ 0 & \alpha_{22} & \alpha_{23} & \alpha_{24} \\ 0 & 0 & \alpha_{33} & \alpha_{34} \\ 0 & 0 & 0 & \alpha_{44} \end{pmatrix}$ $\mathbf{A} = \begin{pmatrix} \beta_1 & 0 & 0 & 0 \\ 0 & \beta_2 & 0 & 0 \\ 0 & 0 & \beta_3 & 0 \\ 0 & 0 & 0 & \beta_4 \end{pmatrix}$

$$\mathbf{B} = \begin{pmatrix} \delta_1 & 0 & 0 & 0 \\ 0 & \delta_2 & 0 & 0 \\ 0 & 0 & \delta_3 & 0 \\ 0 & 0 & 0 & \delta_4 \end{pmatrix}$$

[17] A more detailed parameterisation can be made available by request. The parameterisation of the four-variate GARCH(1,1) model was manually derived. It was not presented in the text not to distort the reader.

$\mathbf{H}_t$ can be represented in matrix form as: $\begin{pmatrix} h_{1,t}^2 & h_{12,t} & h_{13,t} & h_{14,t} \\ h_{21,t} & h_{2,t}^2 & h_{23,t} & h_{24,t} \\ h_{31,t} & h_{32,t} & h_{3,t}^2 & h_{34,t} \\ h_{41,t} & h_{42,t} & h_{43,t} & h_{4,t}^2 \end{pmatrix} =$

$$\begin{pmatrix} \alpha_{11} & 0 & 0 & 0 \\ \alpha_{12} & \alpha_{22} & 0 & 0 \\ \alpha_{13} & \alpha_{23} & \alpha_{33} & 0 \\ \alpha_{14} & \alpha_{24} & \alpha_{34} & \alpha_{44} \end{pmatrix} \begin{pmatrix} \alpha_{11} & \alpha_{12} & \alpha_{13} & \alpha_{14} \\ 0 & \alpha_{22} & \alpha_{23} & \alpha_{24} \\ 0 & 0 & \alpha_{33} & \alpha_{34} \\ 0 & 0 & 0 & \alpha_{44} \end{pmatrix} +$$

$$\begin{pmatrix} \beta_1 & 0 & 0 & 0 \\ 0 & \beta_2 & 0 & 0 \\ 0 & 0 & \beta_3 & 0 \\ 0 & 0 & 0 & \beta_4 \end{pmatrix} \begin{pmatrix} \epsilon_{1,t-1}^2 & \epsilon_{1,t-1}\epsilon_{2,t-1} & \epsilon_{1,t-1}\epsilon_{3,t-1} & \epsilon_{1,t-1}\epsilon_{4,t-1} \\ \epsilon_{2,t-1}\epsilon_{1,t-1} & \epsilon_{2,t-1}^2 & \epsilon_{2,t-1}\epsilon_{3,t-1} & \epsilon_{2,t-1}\epsilon_{4,t-1} \\ \epsilon_{3,t-1}\epsilon_{1,t-1} & \epsilon_{3,t-1}\epsilon_{2,t-1} & \epsilon_{3,t-1}^2 & \epsilon_{3,t-1}\epsilon_{4,t-1} \\ \epsilon_{4,t-1}\epsilon_{1,t-1} & \epsilon_{4,t-1}\epsilon_{2,t-1} & \epsilon_{4,t-1}\epsilon_{3,t-1} & \epsilon_{4,t-1}^2 \end{pmatrix} \begin{pmatrix} \beta_1 & 0 & 0 & 0 \\ 0 & \beta_2 & 0 & 0 \\ 0 & 0 & \beta_3 & 0 \\ 0 & 0 & 0 & \beta_4 \end{pmatrix} +$$

$$\begin{pmatrix} \delta_1 & 0 & 0 & 0 \\ 0 & \delta_2 & 0 & 0 \\ 0 & 0 & \delta_3 & 0 \\ 0 & 0 & 0 & \delta_4 \end{pmatrix} \begin{pmatrix} h_{1,t-1}^2 & h_{12,t-1} & h_{13,t-1} & h_{14,t-1} \\ h_{21,t-1} & h_{2,t-1}^2 & h_{23,t-1} & h_{24,t-1} \\ h_{31,t-1} & h_{32,t-1} & h_{3,t-1}^2 & h_{34,t-1} \\ h_{41,t-1} & h_{42,t-1} & h_{43,t-1} & h_{4,t-1}^2 \end{pmatrix} \begin{pmatrix} \delta_1 & 0 & 0 & 0 \\ 0 & \delta_2 & 0 & 0 \\ 0 & 0 & \delta_3 & 0 \\ 0 & 0 & 0 & \delta_4 \end{pmatrix}$$

where $h_{12,t} = h_{21,t}; h_{13,t} = h_{31,t}; h_{14,t} = h_{41,t}; h_{23,t} = h_{32,t}; h_{24,t} = h_{42,t}; h_{34,t} = h_{43,t}$.

Multiplying and summing all the matrices in the four-variate BEKK-GARCH results in:

$$h_1^2 = \Omega_{11} + \beta_1^2\epsilon_{1,t-1}^2 + \delta_1^2 h_{1,t-1}^2$$

$$h_{12} = \Omega_{12} + \beta_2\beta_1\epsilon_{1,t-1}\epsilon_{2,t-1} + \delta_2\delta_1 h_{1,t-1}h_{2,t-1}$$

$$h_{13} = \Omega_{13} + \beta_3\beta_1\epsilon_{1,t-1}\epsilon_{3,t-1} + \delta_3\delta_1 h_{1,t-1}h_{3,t-1}$$

$$h_{14} = \Omega_{14} + \beta_4\beta_1\epsilon_{1,t-1}\epsilon_{4,t-1} + \delta_4\delta_1 h_{1,t-1}h_{4,t-1}$$

$$h_2^2 = \Omega_{22} + \beta_2^2\epsilon_{2,t-1}^2 + \delta_2^2 h_{2,t-1}^2$$

$$h_{23} = \Omega_{23} + \beta_3\beta_2\epsilon_{2,t-1}\epsilon_{3,t-1} + \delta_3\delta_2 h_{2,t-1}h_{3,t-1}$$

$$h_{24} = \Omega_{24} + \beta_4\beta_2\epsilon_{2,t-1}\epsilon_{4,t-1} + \delta_4\delta_2 h_{2,t-1}h_{4,t-1}$$

$$h_3^2 = \Omega_{33} + \beta_3^2\epsilon_{3,t-1}^2 + \delta_3^2 h_{3,t-1}^2$$

$$h_{34} = \Omega_{34} + \beta_4\beta_3\epsilon_{3,t-1}\epsilon_{4,t-1} + \delta_4\delta_3 h_{3,t-1}h_{4,t-1}$$

$$h_4^2 = \Omega_{44} + \beta_4^2 \epsilon_{4,t-1}^2 + \delta_4^2 h_{4,t-1}^2$$

This representation will be used to measure volatility spillovers between regions for sectors within an asset class.

3.7 Estimation of the BEKK-GARCH Model

Under the assumption of conditional normality of $\boldsymbol{e}_t$, the parameters of a multivariate GARCH model can be estimated by maximising the log-likelihood function:

$$\text{Max} \ln L_t(\theta) = \sum_{t=1}^{T} l_t(\theta)$$

$$l_t(\theta) = -\frac{1}{2}\sum_{t=1}^{T}(n\ln(2\pi) + \ln(|\mathbf{H}_t|) + \epsilon_t^T \mathbf{H}_t^{-1}\epsilon_t)$$

$$= \frac{Tn}{2}\ln(2\pi) - \frac{1}{2}\sum_{t=1}^{T}(\ln(|\mathbf{H}_t|) + \epsilon_t^T \mathbf{H}_t^{-1}\epsilon_t)$$

Where θ denotes all the unknown parameters to be estimated, n is the number of series and T is the number of observations.

3.8 Concluding Remark on Multivariate GARCH Models

As noted above, this study uses a Multivariate GARCH approach to analyse connectedness and spillovers and make use of DCC-MGARCH model of Engle (2002), the ADCC-MGARCH of Cappiello, Engle and Sheppard (2006) and the Diagonal BEKK-GARCH model of Engle and Kroner (1995). The motivation in using this methodology

lies in the following reasons. The DCC model examines the patterns of conditional volatility and the dynamics of conditional correlations while the ADCC model assesses asymmetric dynamics. On the other hand, the BEKK model shall measure volatility spillovers across sectors, asset classes and regions. Finally, these models allow the use of daily data.

3.9 Diebold-Yilmaz Connectedness Framework

Modern portfolio and risk management calls for an understanding of volatility connectedness beyond simple linear return correlations. Correlation-based measures assess pairwise associations only and say nothing about how the shocks of one variable affect the other variables or how shocks surrounding one variable contribute to shocks into the system (market). Moreover, correlations do not show the roots of the shocks. Diebold and Yilmaz (2012) developed a unified framework to measure connectedness at different levels, from pairwise through system-wide. Connectedness plays an important role among the entire process of any contagion effects.

Since in most of the instances, the connections between entities (nodes) in the network are not directly observable, all network connectivity analyses make use of approximating models to establish whether a link (edge) exists between two nodes. This approach follows the variance decomposition (VD) technique which gives the proportion of the movements in variables due to their 'own' shocks, versus shocks to the other variables (Brooks, 2008). In other words, VDs show how much of the H-step-ahead forecast-error

variance of a given variable is explained by innovations to other variables. VDs are approximated using VAR models. VDs allow for aggregate spillover effects across financial markets, providing important information into a single spillover measure. This is because VDs allow for a split of the *H*-step-ahead forecast error variances of each variable into parts attributable to the system shocks.

The framework is built from the VD matrix of a VAR approximating model. Considering a covariance-stationary *N*-variable VAR(p), $\boldsymbol{x_t} = \sum_{i=1}^{p} \boldsymbol{\Phi}_i \boldsymbol{x_{t-i}} + \boldsymbol{\varepsilon}_t$, where $\boldsymbol{\varepsilon} \sim (0, \boldsymbol{\Sigma})$ is a vector of independently and identically distributed disturbances. Using a moving average (MA) representation $\boldsymbol{x_t} = \sum_{i=0}^{\infty} \boldsymbol{A}_i \boldsymbol{\varepsilon_{t-i}}$ and the associated transformed VDs is key to the understanding of the connectedness system.

In a standard orthogonalised MA representation of the VAR model, the calculation of VDs requires orthogonal innovations[18] and identification schemes like the Cholesky factorisation. With this method, the VDs would be heavily dependent on the ordering of the variables into the VAR system, potentially undermining the robustness of the framework. Diebold and Yilmaz (2012) exploited an alternative procedure to the orthogonalised forecast error VD (FEVD) by explicitly allowing for contemporaneous correlations into the VAR. This is the VAR framework developed by Koop *et al.* (1996)

[18] By using orthogonalised innovations, the variance decomposition can isolate the contributions of each shock to the overall variability of the variables. This provides important insights into the relative importance of different shocks in explaining the fluctuations in the system. Identification schemes are used to obtain orthogonalised innovations.

and Pesaran and Shin (1998) which allows for VDs that are invariant to the ordering of the variables. Since the shocks to each variable into the system are not orthogonalised, the sum of the contributions to the variance of the forecast error is not necessarily equal to one.

3.10 Generalised Forecast Error Variance Decomposition [GFEVD]

In the GFEVD framework, "*own variance shares*" are considered as fractions of the *H*-step-ahead error variances in forecasting x_i that are due to shocks to x_i, for $i = 1,2,\dots,N$, and "cross variance shares", or as known in literature "spillovers", as the fractions of the *H*-step-ahead error variances in forecasting x_i that are due to shocks to x_j, for $i,j = 1,2,\dots,N$, such that $i \neq j$. Therefore, denoting *H*-step-ahead FEVD by $\theta_{ij}^{g}(H)$, for $H = 1,2,\dots$, the GFEVD is represented by:

$$\boldsymbol{\theta}_{ij}^{g}(H) = \frac{\sigma_{jj}^{-1}\sum_{h=0}^{H-1}\left(\boldsymbol{e}_i'\boldsymbol{A}_h\Sigma\boldsymbol{e}_j\right)^2}{\sum_{h=0}^{H-1}(\boldsymbol{e}_i'\boldsymbol{A}_h\Sigma\boldsymbol{A}_h'\boldsymbol{e}_i)^2};$$

where $\boldsymbol{\Sigma}$ is the variance matrix for the error vector $\boldsymbol{\varepsilon}$, σ_{jj} is the standard deviation of the error term for the j^{th} equation, $\boldsymbol{\varepsilon_j}$, and $\boldsymbol{\varepsilon_i}$ is the selection vector with i^{th} element unity and zeros elsewhere. $\boldsymbol{A}_h$, $h = 0,1,2,\dots$ are the coefficient matrices in the infinite moving average representation. As noted above, the sum of the VD matrix may not equal unity

$\left[\sum_{j=1}^{N} \boldsymbol{\theta}_{ij}^{g}(H) \neq 1\right]$ and therefore each entry of the VD matrix in the calculation of the spillover index is normalised by:

$$\tilde{\theta}_{ij}^{g}(H) = \frac{\theta_{ij}^{g}(H)}{\sum_{j=1}^{N} \theta_{ij}^{g}(H)} \quad .$$

It is important to note that by construction, $\sum_{j=1}^{N} \tilde{\theta}_{ij}^{g}(H) = 1$ and $\sum_{i,j=1}^{N} \tilde{\theta}_{ij}^{g}(H) = N$.

Apart from enabling us to understand how much of shocks spill over different variables, the generalised framework also provides relevant information on the direction of spillovers. $\tilde{\theta}_{ij}^{g}(H)$ provides a measure of *pairwise directional connectedness* from j to i at horizon H: $C_{i \leftarrow j}(H)$.

The *directional connectedness* is calculated using the normalised elements of the generalised VDs. The directional spillovers are aggregated into two versions: the "from" and "to". The directional volatility spillovers absorbed by market i from all other markets j is measured as:

$$C_{i \leftarrow .}(H) = \frac{\sum_{\substack{j=1 \\ j \neq 1}}^{N} \tilde{\theta}_{ij}^{g}(H)}{\sum_{i,j=1}^{N} \tilde{\theta}_{ij}^{g}(H)} \times 100 = \frac{\sum_{\substack{j=1 \\ j \neq 1}}^{N} \tilde{\theta}_{ij}^{g}(H)}{N} \times 100.$$

In a similar fashion, the directional spillovers transmitted by the market i to all other markets j is measured as:

$$C_{\cdot\leftarrow i}(H) = \frac{\sum_{\substack{j=1 \\ j\neq 1}}^{N} \tilde{\theta}_{ji}^{g}(H)}{\sum_{i,j=1}^{N} \tilde{\theta}_{ji}^{g}(H)} \times 100 = \frac{\sum_{\substack{i,j=1 \\ j\neq 1}}^{N} \tilde{\theta}_{ji}^{g}(H)}{N} \times 100.$$

Directional connectedness should prove useful in providing a decomposition of the total spillovers to those coming from (or to) a particular shock. Therefore, the net total directional connectedness is obtained by:

$$C_i(H) = C_{\cdot\leftarrow i}(H) - C_{i\leftarrow\cdot}(H)$$

The *net total connectedness* is the difference between the gross shocks transmitted to and those received from all the other variables. In addition, the *net pairwise total connectedness* $C_{ij}(H) = C_{i\leftarrow j}(H) - C_{j\leftarrow i}(H)$ can be measured as:

$$\begin{aligned} C_{ij}(H) &= \left(\frac{\tilde{\theta}_{ji}^{g}(H)}{\sum_{i,k=1}^{N} \tilde{\theta}_{ik}^{g}(H)} - \frac{\tilde{\theta}_{ij}^{g}(H)}{\sum_{j,k=1}^{N} \tilde{\theta}_{jk}^{g}(H)} \right) \times 100 \\ &= \left(\frac{\tilde{\theta}_{ji}^{g}(H) - \tilde{\theta}_{ij}^{g}(H)}{N} \right) \times 100. \end{aligned}$$

The net pairwise connectedness between market i and j is simply the difference between the gross volatility shocks transmitted from market i to market j and those transmitted from market j to market i.

Finally, *total connectedness* or *system-wide connectedness* can be measured as:

$$C(H) = \frac{\sum_{\substack{i,j=1 \\ i\neq j}}^{N} \tilde{\theta}_{ij}^{g}(H)}{\sum_{i,j=1}^{N} \tilde{\theta}_{ij}^{g}(H)} \times 100 = \frac{\sum_{\substack{i,j=1 \\ i\neq j}}^{N} \tilde{\theta}_{ij}^{g}(H)}{N} \times 100.$$

This is the connectedness index developed by Diebold and Yilmaz (2012) measuring the contribution of spillovers of shocks across all the variables into the system.

3.11 The Connectedness Table

Variable	x_1	x_2	$\cdots$	x_N	*From others*
x_1	$\theta_{11}^{g}(H)$	$\theta_{12}^{g}(H)$	$\cdots$	$\theta_{1N}^{g}(H)$	$\sum_{j=1}^{N} \theta_{1j}^{g}(H), j \neq 1$
x_2	$\theta_{21}^{g}(H)$	$\theta_{22}^{g}(H)$	$\cdots$	$\theta_{2N}^{g}(H)$	$\sum_{j=1}^{N} \theta_{2j}^{g}(H), j \neq 2$
$\vdots$	$\vdots$	$\vdots$	$\ddots$	$\vdots$	$\vdots$
x_N	$\theta_{N1}^{g}(H)$	$\theta_{N2}^{g}(H)$	$\cdots$	$\theta_{NN}^{g}(H)$	$\sum_{j=1}^{N} \theta_{Nj}^{g}(H), j \neq N$
To others	$\sum_{\substack{i=1 \\ i \neq 1}}^{N} \theta_{i1}^{g}(H)$	$\sum_{\substack{i=1 \\ i \neq 2}}^{N} \theta_{i2}^{g}(H)$	$\cdots$	$\sum_{\substack{i=1 \\ i \neq N}}^{N} \theta_{iN}^{g}(H)$	$\frac{\sum_{i,j=1, i \neq j}^{N} \tilde{\theta}_{ij}^{g}(H)}{N}$

Table 1: Connectedness Table Schematic

The above measures can be summarised in Table 1 above. The upper-left $N \times N$ block is referred to as the 'VD matrix' denoted by $\theta^{g}(H) = \theta_{ij}^{g}(H)$. The diagonal entries of $\theta^{g}(H)$ measure the shocks from the variables' 'own' connectedness. On the other hand, off-diagonal entries measure shocks arising from other variables. These are referred to as pairwise directional connectedness. The pairwise directional connectedness from j to i is defined as $C_{i \leftarrow j}^{H} = d_{ij}^{H}$ as denoted above. Generally, $C_{i \leftarrow j}^{H} \neq C_{j \leftarrow i}^{H}$, making pairwise directional connectedness measures sum to $N^2 - N$. The sum of the off-diagonal elements gives the share of the *H*-step forecast-error variance of variable i due to shocks coming from other variables. The sums labelled 'from' and 'to' in the table below measure total directional connectedness measures. Thus, there are $2N$ total directional connectedness

measures. Moreover, the *net total directional connectedness for variable* i is defined as: $C_i^H = C_{\cdot \leftarrow i}^H - C_{i \leftarrow \cdot}^H$, making the net total directional connectedness measures sum to N. Finally, the total of the off-diagonal entries in $\theta^g(H)$ measures *total connectedness* in the system.

3.12 The Approximating Model

This study uses a VAR (2) approximating model to obtain the VDs and subsequent connectedness measures. The approximated VAR models can be represented by:

$$\boldsymbol{x}_{t,j,s} = \boldsymbol{\alpha}_0 + \sum_{i=1}^{k} \boldsymbol{\beta}_i \boldsymbol{x}_{t-i,j,s} + \boldsymbol{\varepsilon}_t;$$
$$\boldsymbol{x}_{t,j,\bullet} = \boldsymbol{\alpha}_0 + \sum_{i=1}^{k} \boldsymbol{\beta}_i \boldsymbol{x}_{t-i,j} + \boldsymbol{\varepsilon}_t;$$

where $\boldsymbol{x_{t,j,s}}$ is an $\mathrm{N} \times 1$ column vector representing N CDS spreads and/or equity volatility for sector s and country j. The first model aims to represent CDS spreads or equity volatility spillovers between sectors or sub-sectors within country j. The second model on the other hand represent spillovers for a particular sector or sub-sector across all countries j from a CDS and/or equity perspective.

Volatility is proxied by the rolling five-day[19] period standard deviation and was taken in natural logarithm to approximate normality[20], given that volatilities have a right-skewed distribution. α_0 is an $\mathrm{N} \times 1$ column vector of constant terms while β_i are $\mathrm{N} \times \mathrm{N}$ matrices of coefficients. ε_t is an $\mathrm{N} \times 1$ column vector of disturbances or shocks. While in the Multivariate GARCH analysis, the returns of the respective asset classes are used, in the Diebold and Yilmaz (2012) methodology, a volatility proxy[21] of returns is used. Given that in the Multivariate-GARCH analysis, time-varying volatilities are estimated and extracted for the analysis, the second moment of statistics had to be used in the Diebold and Yilmaz (2012) methodology to ensure consistency in the analysis.

Network measures are defined in relation to a set of reference entities, namely the set of $\boldsymbol{x}$'s. The choice of $\boldsymbol{x}$ has important implications for the appropriate approximating model and accordingly $\boldsymbol{x}$ is sub-divided into three functions: i) $\boldsymbol{x}$ object which refers to the type of variable being studied; ii) $\boldsymbol{x}$ choice which refers to which and how many variables are selected for the study; iii) $\boldsymbol{x}$ frequency which refers to the observational frequency of $\boldsymbol{x}$ variables. Succinctly, the $\boldsymbol{x}$ object is the natural log of volatility, $\boldsymbol{x}$ choice are the 72

[19] Standard deviation is selected as a measure of volatility since it is the most highly recognisable and useful measure of volatility for asset returns and adaptable to different time windows. The use of a rolling window estimation is used to capture the time-variation of the spillovers. The selection of the 5-day window is based on the conditions observed in the CDS markets and equities. These tend to change very rapidly and generally react to the publication of "new" news, especially negative news. The 5-day window captures a rolling week of data that should reflect the most relevant price reactions without capturing the 'noise' of smaller changes. A longer window could potentially make use of irrelevant data in explaining the most recent price reactions and presents higher smoothing while a shorter window could potentially be less stable and explain more 'noise' than an underlying trend.

[20] As suggested in Andersen *et al.* (2003) and Yilmaz *et al.* (2017).

[21] Rolling five-day period standard deviation.

main sectors and 148 sub-sectors in US, EU, UK and Japan, while the $\boldsymbol{x}$ frequency is daily. Moving to the connectedness horizon, this study uses a horizon of $H = 10$ days[22].

As is known, connectedness is with high probability a non-linear phenomenon, moving away from the linear-Gaussian world (Diebold and Yilmaz, 2012). Thus, it is of essence to also allow for time-varying parameters to allow for non-linearity in the approximating model. This study opts for the rolling estimation window to allow for time-varying parameters. The choice of window width w is of essence in this method. In this study a window of $w = 200$[23] will be used. Therefore, this study shall have both a static (sub-divided into three samples) and a dynamic analysis. The static analysis shall capture an overall average, or unconditional behaviour, while the dynamic analysis shall capture the secular and cyclical movements in the spillovers.

3.13 Variance Decompositions as Networks

The VD matrix which is a network adjacency matrix A.[24] In this study, the networks are defined by VDs, but the latter are more sophisticated then classical network structures.

[22] A horizon of ten days is a common choice in existing literature as it captures the short to medium term effects. Longer horizons might incorporate irrelevant data or effects and shorter time windows tend to be less stable and be subject to more noise.

[23] A 200-day window is chosen to smooth out short-term fluctuations or noise in the data that shorter time windows present in line with Diebold and Yilmaz (2012). In addition, with longer time windows the analysis may lose important information on the trends and patterns, especially during the high volatile periods.

[24] The adjacency matrix A, is an $N \times N$ matrix of zeros and ones, $A = [A_{ij}]$, where if $A_{ij} = 1$ the nodes i and j are linked, and if $A_{ij} = 0$ same nodes are not linked.

The VD does not contain only zeros and ones entries but it contains weights which are in parts strong and in other parts weak. Moreover, the links in the VD matrix are directed and not symmetric; that is, the strength of the link ij is not necessarily the same as the link ji. Finally, the rows of A are somewhat constrained by the fact that the row must sum to 1 because the entries are variance shares. Therefore, the diagonal elements are represented by $A_{ii} = 1 - \sum_{\substack{j=1 \\ j \neq i}}^{N} A_{ij}$. In addition, the diagonal elements of A are no longer zero.

$C_{i\leftarrow\cdot}^{H}$ and $C_{\cdot\leftarrow j}^{H}$ are the from-degrees[25] and to-degrees[10] in network literature. A node's degree[26] is its number of links to other nodes. The from-degree of node i is $\delta_i^{from} = \sum_{\substack{j=1 \\ j \neq 1}}^{N} A_{ij}$. The to-degree of node j is $\delta_i^{to} = \sum_{\substack{i=1 \\ i \neq j}}^{N} A_{ij}$. Finally, and most importantly, the location of the degree distribution is of essence, and the standard location measure is the mean. The mean measures the overall connectedness into the network. By definition, the larger the mean, the greater the overall network connectedness. In the methodology of Diebold and Yilmaz (2012), the total connectedness measure C is the mean degree of the network.

[25] The "to(out)-degrees" and "from(in)-degrees" corresponds to row sums and column sums.
[26] The degree of a node i is $\delta_i = \sum_{j=1}^{N} A_{ij} = \sum_{j=1}^{N} A_{ji}$.

3.14 Concluding Remark on Diebold-Yilmaz Framework

This study makes use of the methodology of Diebold and Yilmaz (2012) in further analysis connectedness and spillovers between CDS spreads and equity sectoral volatility within and across regions. The motivation in using this methodology lies in the following reasons. First, VDs are intuitively appealing for being connectedness measures; they show what percentage of the future uncertainty of asset i is due to shocks to asset j. Second, VDs allow for any horizon for future uncertainty. Third, the output of VDs can directly be represented as a network. Fourth, the predictive power of these measures is among the highest (Arsov *et al.* (2013)) of the existing indicators as they adapt to the changes in data relatively faster. Finally, this framework allows the use of daily data.

3.15 Volatility Impulse Response Function

In Diebold and Yilmaz (2012) the volatility transmission method has been examined via a rolling-window VAR estimation procedure. The rolling-window approach has two fundamental shortcomings: i) window size is chosen arbitrarily and ii) the rolling-window analysis leads to a loss of observations (Gabauer, 2020). Gabauer (2020) proposed an alternative to the volatility connectedness approach of Diebold and Yilmaz (2012) by introducing volatility impulse response functions (VIRFs).

VIRF represents the impact of a shock in variable i on variable j's conditional volatilities, which can be written as:

$$\Psi^g = VIRF(J, \delta_{j,t}, \Omega_{t-1}) = E(H_{t+J}|\epsilon_{j,t} = \delta_{j,t}, \Omega_{t-1}) - E(H_{t+J}|\epsilon_{j,t} = 0, \Omega_{t-1})$$

where $\delta_{j,t}$ is a selection vector with a one at the jth position and zero otherwise.

The forecasted conditional variance-covariances derived using a DCC-GARCH model (Engle and Sheppard, 2001) is pivotal to the VIRF and can be accomplished iteratively in three steps. A univariate GARCH(1,1) shall be used in line with the previous methodology.

The GARCH(1,1) shall forecast the conditional volatilities $D_{t+h}|\Omega_t$ by:

$$E(h_{ii,t+1}|\Omega_t) = \omega + \alpha\delta_{1,t}^2 + \beta h_{ii,t} h = 1,$$

$$E(h_{ii,t+h}|\Omega_t) = \sum_{i=0}^{h-1} \omega(\alpha+\beta)^i + (\alpha+\beta)^{h-1} E(h_{ii,t+h-1}|\Omega_t)\, h > 1$$

This is the first iterative step. In a second step,

$$E\ Q_{t+1}|\Omega_t \ = \ 1 - a - b\ \overline{Q} + \alpha u_t u_t' + bQ_t h = 1,$$

$$E\ Q_{t+h}|\Omega_t \ = \ 1 - a - b\ \overline{Q} + aE\ u_{t+h-1} u'_{t+h-1}|\Omega_t \ + bE\ Q_{t+h-1}|\Omega_t \ h > 1$$

where $E\ u_{t+h-1} u'_{t+h-1}|\Omega_t \approx E\ Q_{t+h-1}|\Omega_t$. This shall be used to forecast the dynamic conditional correlations and the conditional variance-covariance in the third iterative step.

$$E\ R_{t+h}|\Omega_t \approx \text{diag}\left[E\left(q_{iit+h}^{-\frac{1}{2}}\middle|\Omega_t\right), \ldots, E\left(q_{NNt+h}^{-\frac{1}{2}}\middle|\Omega_t\right)\right]$$

$$E\ Q_{t+h}\ \text{diag}\big[E\big(q_{iit+h}^{-1/2}\big|\Omega_t\big), \ldots, E\big(q_{NNt+h}^{-1/2}\big|\Omega_t\big)\big],$$

$$E\ H_{t+h}|\Omega_t\ \approx E\ D_{t+h}|\Omega_t\ E\ R_{t+h}|\Omega_t\ E\ D_{t+h}|\Omega_t\ .$$

Following the computation of the VIRF, the GFEVD is computed in line with the above methodology in Section 3.10, which can be interpreted as the variance share one variable explains on others. As in the previous methodology, the variance shares are normalised so that all variables together account for 100 per cent of variable i's forecast error variance.

In line with the DCC methodology in Section 3.2, The study applies a DCC-GARCH (1,1) with a constant mean $y_t = \mu_t + \varepsilon_t$.

3.16 Extension to Gabauer (2020)

This study further extends on Gabauer (2020) by considering a Full-BEKK GARCH model in deriving the forecasted conditional variance-covariances. In this model, the selection vector $\delta_{j,t}$ is considered with a $2.33\boldsymbol{\sigma}$ shock at the jth position and zero otherwise. The idea is to represent the Value-at-Risk scenario at the 99% confidence level, which is a common metric that is used by hedge funds and other types of collective investment schemes as it works on multiple levels, from the position-specific micro level to the portfolio-based macro level. The idea is therefore to contribute to a better understanding of the broader elements of risk management to guide market practitioners and policy makers on the aggregate market risk.

In this model, the Full-BEKK GARCH was chosen, rather than the Diagonal BEKK, to incorporate all types of spillovers being i) *full volatility spillovers*; ii) *full covolatility spillovers;* and iii) *partial covolatility spillovers* (Chang *et al.*)[27]. With Diagonal BEKK only partial covolatility can be tested. Although Chang and McAleer (2019) and McAleer and Hafner (2018) outline uncertainty in relation to the underlying stochastic processes, regulatory conditions and asymptotic properties of the Full-BEKK GARCH, this study shall nevertheless employ the Full-BEKK GARCH as the main aim is to develop the VIRFs and hence a volatility transmission mechanism that is not affected by the dimensionality reduction. The Full-BEKK will only serve as a tool to extract conditional volatilities for the VIRFs. In addition, in estimating the time-varying volatilities it is of essence to consider all types of spillovers in the context of aggregate market risk.

The regional connectedness analysis for the respective sectors make use of the bi-variate, tri-variate and four-variate cases. The analysis of the connectedness between CDS spreads and equity at regional level make use of the four-variate, six-variate and eight-variate cases.[28]

[27] *Full volatility spillovers* occur when the returns shock from financial asset *i* affects the volatility of a different financial asset *j*. *Full covolatility spillovers* occur when the returns shock from financial asset *i* affects the covolatility between two different financial assets, *j* and *k*. *Partial covolatility spillovers* occur when the returns shock from financial asset *i* affects the covolatility between two financial assets *j* and *k*, one of which can be asset *i*.

[28] The parameterisation of the Full-BEKK bi-variate, tri-variate, four-variate, six-variate, and eighth-variate GARCH has been manually derived. The author can make it available upon request as it was not included in the text not to distort the reader.

3.17 Concluding Remark on Gabauer Framework

This study proposes the use of Gabauer (2020) as an alternative to the rolling windows approach of Diebold and Yilmaz (2012) which involves subjectivity and leads to loss of observations. Gabauer (2020) introduces the VIRFs concept to compute the GFEVD and create connectedness indices. This study then proceeds to extend on Gabauer (2020) by using a Full-BEKK GARCH as opposed to the DCC-GARCH in computing conditional volatilities as the Full-BEKK GARCH incorporates all types of spillovers. In addition, the selection vector is chosen in line with market practice when it comes to risk management.

3.18 Recap of Methodology

This study makes use of Multivariate GARCH models and connectedness measures to extend existing literature on the connectedness between CDS spreads and equity prices at a sectoral and regional level. In the first part DCC-GARCH and DBEKK-GARCH models are used to first determine the correlation between the two asset classes and regions across time together with any potential leverage effects and to subsequently gauge any volatility spillovers between the two asset classes and regions. The second part, which uses Diebold and Yilmaz (2012) methodology allows for more flexibility and granular detail in analysing volatility connectedness at sectoral and regional level. The rolling windows analysis and network graphical representation allows for a depiction of

the volatility connectedness and network dynamics between CDS spreads and equity prices at sectoral and regional level. The third part extends on Diebold and Yilmaz (2012) by considering the methodology of Gabauer (2020) in removing subjectivity and loss of observations by employing the VIRF technique. The Gabauer (2020) methodology binds together the two techniques used in part one and two of the methodology chapter. In addition, this study extends on Gabauer (2020) by using a Full-BEKK GARCH as opposed to the DCC-GARCH in computing conditional volatilities as the Full-BEKK GARCH incorporates all types of spillovers. The 2.33σ selection vector is chosen as a shock to contribute to a better understanding of the broader elements of risk management to guide market practitioners and policy makers on the aggregate market risk. The three techniques used shall serve as a robustness check to each other. The analysis following all three techniques used distinguishes between the crisis and the after-crisis period.

This research finds evidence of time-varying correlation between CDS spreads and equity sectoral returns and that return, and volatility dynamics are stronger during the crisis period. On average connectedness between asset classes, sectors and regions is higher during the crisis period in all the techniques used. The dynamic analysis using the methodologies in part two and three, show that across both subsets of time periods under consideration, connectedness and spillovers are higher amid periods of volatility. Finally,

when considering the 2.33σ shock in part three, connectedness remains high across both periods.

Chapter 4: Data Description & Analysis

4.0 Introduction

This chapter describes the data used to assess the hypotheses of this study. It also provides useful information about the correlation statistics on the data to form a-priori expectations.

4.1 Data Description, Data Sources and Suitability

To perform the empirical analysis, daily data[29] from 01/01/2008 to 30/06/2017 (2479 observations) from the CDS spreads and equity indices are used. Analysis is carried out within and across regions. This disaggregation into different sectors and regions is sufficient to adequately capture the unique characteristics and attributes among industries across the sectors and regions under study. All indices data for the period were obtained from Thomson Reuters Datastream as they collect CDS market quotes from industry sources and with respect to equity they capture a larger share of the market and tend to be more homogenous[30] than other indices (Baele, 2005).

[29] While daily data are subject to more noise compared to weekly and monthly data, daily data provide more observation points and, therefore enhances the estimation efficiency (Elyasiani *et al.*, 2015). In addition, daily data better captures short-lived comovements and spillover effects (Eun and Shim, 1989; Hamao *et al.*, 1990; De Santis and Gerard, 1998). Weekly data may suffer from the "*day-of-the-week*" effect which may provide different leag-leag relationships [Ehlers *et al.,* 2010]. In addition, lower-frequency data (for example monthly) apart from not capturing the momentary effects, it can also result in higher associations, with misleading results (Fender *et al.*, 2012).

[30] The term homogenous refers to the methodology of how these indices are constructed to ensure levels of consistency and representativeness across different markets, regions and asset classes.

In addition, using Thomson Reuters Datastream indices guarantees that the results are not influenced by different index construction methods and sector classifications used in different countries. The regions covered include: US, UK, EU and Japan. For the CDS data, the five-year tenor[31] denominated in the local currency is used as it is considered to be the most liquid and is often used as a reference in financial markets (Fung *et al.*, 2008; Coudert and Gex, 2010; and Arce *et al.*, 2013). Equity indices are also denominated in the local currency. The sectors examined in this study, including regional data availability per sector are shown hereunder.

CDS Dissecting Data Set			
Sectors		**Regions**	
Banks		US; UK; EU; JP	
Consumer Goods		US; UK; EU	
Electric Power		US; UK; EU; JP	
Energy		US; EU	
Manufacturing		US; UK; EU; JP	
Financials		US; UK; EU; JP	
Consumer Services		US; UK; EU; JP	
Telecommunications		US; UK; EU; JP	
Transportation		US; EU; JP	
Sub-Sectors	**Regions**	**Sub-Sectors**	**Regions**
Airlines	US	Lodging	US
Automotive Manufacturer	EU; JP	Metals & Mining	US; EU
Banking	US; UK; EU; JP	Oil & Gas	US; EU
Beverage/Bottling	US; EU; UK	Oilfield Machinery & Products	US
Building Products	US; EU	Pharmaceuticals	US
Cable Media	US; EU	Property&Casualty Insurance	US
Chemicals	US; EU; JP	Publishing	US
Conglomerate/Diversified Mfg	US; EU	Railroads	US; JP
Consumer Products	US	Real Estate	US
Containers	US	Restaurants	US
Electric Utility Mid Quality	US	Retail Stores Food & Drugs	US
Electronics	US; EU; JP	Retail Stores Other	US; UK; JP
Financial Other	US; UK; EU	Service Other	US; UK; EU; JP

[31] Tenor refers to the length of time remaining before a CDS contract expires.

Food Processors	US	Telecommunications	US; UK; JP
Healthcare Facilities	US	Textiles\Apparel\Shoes	US
Healthcare Supply	US	Tobacco	US
Home Builders	US	Transportation Other	US; JP
Industrial Other	US: JP	Utility Other	US; EU; JP
Information/Data Technology	US	Vehicles Parts	US
Life Insurance	UK		
Leisure	US; EU		

Table 2: CDS Spreads Dissecting Data Set

Equity Dissecting Data Set	
Sectors	**Regions**
Basic Materials	US; UK; EU; JP
Consumer Goods	US; UK; EU; JP
Industrials	US; UK; EU; JP
Healthcare	US; UK; EU; JP
Oil&Gas	US; UK; EU; JP
Financials	US; UK; EU; JP
Consumer Services	US; UK; EU; JP
Telecommunications	US; UK; EU; JP
Technology	US; UK; EU; JP
Utility	US; UK; EU; JP

Sub-Sectors	**Regions**	**Sub-Sectors**	**Regions**
Airlines	US	Lodging	US
Automotive Manufacturer	EU;	Metals & Mining	US; EU
Banking	US; UK; EU; JP	Oil & Gas	US; EU
Beverage/Bottling	US; EU; UK	Oilfield Machinery & Products	US
Building Products	US; EU	Pharmaceuticals	US
Cable Media	US; EU	Property & Casualty Insurance	US
Chemicals	US; EU; JP	Publishing	US
Conglomerate/Diversified Mfg	US; EU	Railroads	US; JP
Consumer Products	US	Real Estate	US
Containers	US	Restaurants	US
Electric Utility Mid Quality	US	Retail Stores Food & Drugs	US
Electronics	US; EU; JP	Retail Stores Other	US; UK; JP
Financial Other	US; UK; EU	Service Other	US; UK; EU; JP
Food Processors	US	Telecommunications	US; UK; JP
Healthcare Facilities	US	Textiles\Apparel\Shoes	US
Healthcare Supply	US	Tobacco	US
Home Builders	US	Transportation Other	US; JP
Industrial Other	US: JP	Utility Other	US; EU; JP
Information/Data Technology	US	Vehicles Parts	US
Life Insurance	UK		
Leisure	US; EU		

Table 3: Equity Dissecting Data Set

The choice of the sample allows for the investigation of the latest global financial crisis and the credit crisis in Europe. To analyse separately the time-varying correlation patterns, volatility connectedness and spillovers in the crisis and after-crisis period, the sample has been further divided, into two sub-samples, covering *crisis*[32] and *after-crisis*[33] periods. The crisis period covers the initial turmoil characterised by the inability of market's actors to correctly price risk structured credit products, namely subprime, the failure of Bear Sterns and BNP Paribas's announcement of financial crisis and credit crunch. Moreover, the crisis period covers the sharp financial market deterioration due to the Lehman Brothers bankruptcy and the macroeconomic deterioration due to drastic policy measures in decreasing pressures to the financial system and re-assessing counterparty risks. Finally, the sub-sample also covers the unravelling of the actual budget deficit that Greece had and the adoption of the EU-IMF bailout measures and permanent rescue fund following increased sovereign risks due to contagion effects. Therefore, three samples are considered: the full sample covering all data points and the two sub-samples although the analysis and commentary in Chapter 5, 6, 7, 8 and 9 is based on the crisis and after-crisis period only. The sector analysis is carried out at various levels of detail, data permitting.

[32] The *crisis period* spans from 01/01/2008 to 31/12/2012.
[33] The *after-crisis period* spans from 01/01/2013 to 30/06/2017.

4.2 Returns Data Description

Denoting P_t as value of a particular index at time t and P_{t-1} at time $t-1$, the continuous return for the period $t-1$ to t for CDS spreads and equity indices is computed as:

$$r_t = ln\left(\frac{P_t}{P_{t-1}}\right) \tag{1}$$

4.2.1 Descriptive Statistics

Tables 6 to 11 in Appendix A report descriptive statistics for the return series in relation to CDS spreads and equity sectoral indices for all the regions under study. The statistics are also distinguished between the three periods under study. The statistics show that sectoral CDS spreads and equity indices have a large difference between their maximum and minimum returns. The dissimilarity in returns is also notable across asset classes and regions.

Daily returns are in line with a-priori expectations. During the crisis period most of the CDS spreads returns are mostly positive, while equity returns show more negative returns, especially in the EU and Japan region. In turbulent times, the demand for insurance increases, pushing upward the return for CDS indices. On the other hand, equity indices have registered negative returns especially during the first years of the crisis sample. Moreover, equity statistics also shows that negative returns are more persistent in other regions rather than in the US from where the crisis has its roots. In

the after-crisis period, CDS returns are mostly negative, while almost all sectoral equity returns are into positive territory. This is expected since the effects of the 2008 crisis have eased in the after-crisis period.

The volatility of returns has been quite sporadic for CDS spreads. On the other hand, the results for equity sectoral returns are in line with expectations, being higher during the choppy times. Statistics indicate that most equity returns have negative skewness, indicating an asymmetric distribution of observed returns and the presence of higher number of extreme observations in the left tail than in the right one. On the contrary in the CDS market most sectors report positive skewness. The positive skewness indicates that the tail on the right side is longer than the left side, meaning that CDS spreads react strongly to credit deteriorations than credit improvements as suggested by Norden and Weber (2004). In addition, the excess kurtosis is well above zero, and therefore all the indices have a spread of observations around the mean well above what it should be expected in the case of a normal distribution.

4.2.2 Test Statistics

The fact that CDS spreads and equity sectoral returns do not follow a Gaussian distribution is also confirmed by the Jarque-Bera test, rejecting the null-hypothesis of each return series at the 1% significance level. This hints that return distributions of all indices exhibit lack of symmetry and excess kurtosis.

Prior to estimating the conditional variance, it is sensible to test for stationarity and heteroskedasticity in the series. Standard unit root and Autoregressive Conditional Heteroscedasticity (ARCH) effects testing procedures based on the Augmented Dickey Fuller and Engle test respectively are conducted. The results in Tables 12 to 17 show that sectoral return series of both CDS spreads and equity indices are stationary, indicating that the price series are integrated of order one and that sectoral return series across all regions do have unit roots. The Engle test which tests for volatility clustering into the series show that the null hypothesis of no ARCH effects is rejected for all indices, thereby indicating the presence of volatility clustering.

4.2.3 Correlation

In financial theory the notion of correlation is the starting point to analyse the level of dependency and connectedness. Tables from 18 to 35 report correlation between sectors, regions and the two asset classes. The correlation matrix between CDS spreads and equity returns show a general negative relationship between the two asset classes across regions. Correlation is higher amid the financial turmoil and overall the correlation surges during the crisis period. This outcome is consistent with the Merton (1974) model, wherein the decline of stock prices results in an increase of leverage, contributing to a rise of default risk and CDS spreads. In other words, crises have a negative impact on equity prices, whilst, simultaneously CDS spreads increase given a higher likelihood of a credit event. The correlation between sectors within an asset class is generally positive

across regions and generally increases during the crisis period. This shows that in period of distress, sectors tend to move in the same direction, amplifying the notion of contagion.

Correlation across regions is higher during the crisis period for CDS spreads returns. Correlation is higher for most of the sectors across regions, showing a high connectedness during the financial turmoil. Also, regional correlation is higher across the board during the crisis, showing that market participants wanted to be protected across markets increasing insurance demand globally.

For equity returns, correlations are not higher in the crisis period but varies across regions. In the US sectoral correlation seems to be higher during the crisis, while for the UK and EU regions there is no clear-cut indication that correlations between sectors increased during this period. For Japanese equity, the reverse is true: correlations are somewhat higher in the after-crisis period. In relation to equity regional correlation there seems no indication suggesting that correlation is higher during the turmoil. However, the US, UK and EU seems somewhat more connected during the crisis period than in the after-crisis period, confirming the tendency of these markets to move together in periods of distress. Japan on the other hand, seems disconnected from the rest of the regions suggesting the presence of higher idiosyncratic factors.

Overall, sectoral correlation is positive within the two asset classes and higher during the crisis, while between the two asset classes is negative and increasing during the crisis,

confirming a-priory expectations[34] and the results of previous studies (see Fung *et al.*, 2008; Dupuis *et al.*, 2009; Pereira da Silva *et al.*, 2014). Regional correlation has been higher in the CDS market during the crisis, suggesting that spreads increasing across the globe following the shocks in the financial market. As for the equity market, the US, UK and EU are the most connected, with Japan seemingly independent.

4.3 Volatility Data Description

Volatility is not directly observable and must be estimated. In this study, volatility is constructed and proxied by the rolling five-day period standard deviation and was taken in natural logarithm to approximate normality, given that volatilities have a right-skewed distribution[35].

4.3.1 Descriptive Statistics

Table 36 to 41 report descriptive statistics for the volatility series in relation to CDS spreads and equity sectoral indices for all the regions under study. The statistics are also distinguished between the three periods under study. The statistics show that sectoral CDS spreads and equity indices have a large difference between their maximum and minimum volatility. On average, volatility is highest during the crisis period for equity

[34] The a-priori expectations refer to the fact that during the crisis period the connectedness between sectors, regions and asset classes is supposedly higher than that in the after-crisis period.
[35] Right-skewed distribution implies that the distribution of volatilities has a longer right tail, meaning that extreme positive values occur less frequently compared to moderate or smaller values.

indices. For the CDS spreads indices, volatility is in general higher during crisis period, bar in the US. The standard deviation of volatility is higher during the crisis period for the equity market but is lower for the CDS market during the same period when compared to the after-crisis period. Positive skewness and excess kurtosis are present in both asset classes.

4.3.2 Test Statistics

Tables 42 to 47 show that sectoral volatility of CDS spreads and equity do not follow a normal distribution. This is confirmed by the Jarque-Bera test, wherein the null hypothesis is rejected at all significance levels.

Prior to proceed with an approximated VAR model, it is sensible to also test for stationarity. Standard unit root tests based on the Augmented-Dickey-Fuller (ADF) are carried out on volatility level data for both CDS spreads and equity. The test shows that the data is stationary at the level.

4.3.3 Correlation Analysis

This section analyses volatility correlations for CDS spreads on a sector and sub-sector basis, equity on sector and sub-sector basis, within and across the regions under consideration. Also, correlations between CDS spreads and equity volatility are assessed within and across regions on a sectoral and sub-sectoral basis. The correlation analysis is also carried out for the three sub-samples under consideration: full-sample; *crisis* period

and *after-crisis* period. Tables 48 to 65 report the correlation analysis on the second moment of statics.

Looking at the US market, correlation has increased in general during the crisis period for both the CDS and equity market volatility. An important point to note, however, is that correlations for the equity market are quite stable and only increased marginally during the crisis, signifying the close link between sectors in this region, from an equity market perspective. The volatility connectedness between the CDS and equity markets have increased during the turbulent times, although the relationship remained fairly stable.

From a cross-country perspective, the US is closely connected with the UK and EU and the most related to the Japanese markets. This may possibly be explained by the influence that the US markets have on global markets, as has been evidenced during the unprecedented financial turmoil in 2008.

CDS and equity markets in the US do exert influence on other markets in the regions under consideration, albeit the influence of equity markets is more predominant. This further exemplifies the influence US markets have on other markets across the globe.

For the UK region, as expected, correlations for both asset classes have increased substantially during the distressed period from a sectoral and sub-sectoral perspective. One important aspect is that correlations for both CDS spreads and equity have

increased more or less by the same magnitude, suggesting that the CDS market is more liquid compared to its US counterpart. It is also worth noting the industrials and financials sectors move closer to each other than other sectors as companies in these sectors are generally in the same phase of the business cycle.

From a cross-country perspective for both CDS spreads and equity volatilities, the UK sectors are closely related with those of the EU and US. However, in general, the UK market is closely related to that of the EU, possibly due to the strong economic and political ties of the two regions. When analysing the correlations between CDS spreads and equity volatilities, the UK markets (both the CDS and equity) are largely affected by the US and the EU markets. Moreover, when looking at the correlation between the two asset classes within the country, it is evident that common exposures to macroeconomic factors drive this correlation.

Like in other leading regions, in the EU, the CDS spreads volatility correlations increased substantially during the recent unprecedented crisis. On the other hand, the equity markets correlations remain somewhat constant when considering the three sub-samples under considerations, albeit correlations did increase during the turbulent period. This shows that equity markets in EU are strongly related to each other given the close links each country has with other EU member countries. This result holds also when analysing correlations at a sub-sector level, where CDS spreads and equity volatilities correlations

increased during the crisis period, but correlations remain high and increase only marginally during the volatile period for equity markets.

When analysing the correlations across countries, the EU is highly correlated with the UK and US, while least correlated with the Japanese markets. The same holds when analysing the correlations between the two assets across countries. EU CDS spreads and equities are closely connected with those of the UK and US. In addition, when assessing the correlation matrix between CDS spreads and equities it shows an important link between the two asset classes.

Overall, CDS spreads sector and sub-sector volatility correlations and equity sector and sub-sector volatilities have increased during the crisis period for the Japanese region. On a general note, equity correlations are larger than those of CDS spreads. A plausible explanation for this is that the equity market is much more liquid that the CDS market in Japan which is still immature. Another aspect that was noted is that the correlation at the sectoral level is larger than those at a sub-sector level. This suggest that both CDS spreads and equity volatilities contain a significant macro component shared by all sectors and that the variance of this specific component unique to sub-sectors is relatively large.

From a cross-country perspective for both CDS spreads and equity volatilities the correlations with EU, UK and the US are low compared to other cross-correlation between other the countries. This suggests that the Japanese CDS and equity markets

are comparatively disconnected from the major global market developments and shocks. A plausible explanation may be due to the difference in time-zones and that markets are not as liquid as other markets.

The correlation between CDS spreads and equity volatilities is large when compared to the other regions which may suggest that the Japanese market is less susceptible to external factors outside the Japanese economy.

4.4 Concluding Remark

The main implication that can be drawn from this simple correlation analyses over different samples of our data within and across regions, is that the relationship between sectoral equity and CDS spreads is very different, not only across sectors and/or regions but also across the different samples. Therefore, it is possible that the CDS and equity volatility shocks may lead to contagion effects across sectors within and across regions during the crisis period. From the analysis it is observed that the crisis significantly affected correlations, as on average associations have increased across sectors and regions. Therefore a-priori, the shock spillovers from the connectedness index may also be peculiar in the different sectors and time periods. A point to note is that correlation in the equity markets remains fairly stable across the crisis and after-crisis periods. These a-priori hypotheses are subject of subsequent analysis.

Chapter 5: Analysis and Main Findings for Multivariate GARCH Models

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5.0 Introduction

This chapter examines the patterns of conditional volatility and the dynamics of conditional correlations in sectoral returns for the two asset classes under study across all the regions considered. In addition, asymmetric dynamics will be investigated to deduce whether underlying correlation structures react differently to negative shocks from positive shocks. Finally, the possibility of volatility spillovers across sectors, asset classes and regions is also examined. Two sequential periods being the *crisis* and the *after-crisis* are considered together with the full sample period. However, the analysis shall focus on the *crisis* and *after-crisis* period only.

The first part of analysis uses a DCC-GARCH model to examine time-varying conditional correlations, while the second part applies an asymmetric DCC-GARCH [ADCC-GARCH] to also determine leverage effects. The third part makes use of a Diagonal BEKK-GARCH model to examine volatility spillovers. The E-views software is used for this analysis.

5.1 Symmetric DCC-GARCH Model

5.1.1 CDS Spreads and Equity Sectoral Returns

Tables 66 to 69 in Appendix B show the results of the bi-variate symmetric DCC-GARCH (1,1) model estimated to evaluate whether there is time-varying conditional correlation between CDS spreads and equity sectoral returns for the three samples under study. Panel A shows the Conditional Correlation estimates while Panel B reports the Conditional Variance estimates. The analysis shows 255 bi-variate DCC-GARCH (1,1) models in total for the three periods under study for the US, UK, EU and Japan. Specifically, subject to data availability, 41 sectors are considered for the US, eleven for the UK, nineteen for the EU, and fourteen for Japan.

It is evident that the coefficients of the ARCH parameters for all sectoral CDS spreads (α_0) and equity (α_s) indices are significant across all regions. The significance is consistent across the crisis and after-crisis period. This significance in parameters indicates that unexpected shocks from previous periods which affect return dynamics have an explanatory power on returns on both CDS spreads and equity indices.

Given the magnitude of the coefficients, it appears that unexpected shocks in CDS spreads returns have generally more explanatory power on current volatility than that of equity sectoral returns. This is because $\alpha_0 > \alpha_s$ for most of the CDS spreads returns across regions, meaning that in general, volatility of CDS spreads returns is more likely

to be explained by previous unexpected shocks than in the case of equity sectoral indices. This shows that CDS spreads returns are more susceptible to unexpected events in comparison to equity returns, possibly because the CDS market is less liquid and less interconnected globally.

There seems to be no indication as to when CDS spreads are more explained by previous unexpected shocks. Looking at the crisis and after-crisis periods, there is not a clear-cut indication that previous unexpected shocks are more relevant in either period. The US and the EU have higher magnitudes during the crisis period, while UK and Japan have higher magnitudes during the after-crisis period. The collapse of the US financial system and the European debt crisis can potentially explain this result wherein unexpected shocks lasted more into the respective regions, affecting insurance demand. Looking at the equity market, unexpected shocks have more power in the crisis period, bar in the Japanese region. This further shows that the Japanese market is quite disconnected from the other markets and that in general unexpected shocks are more significant in tranquil periods.

In general, across regions the highest magnitudes in ARCH parameters are reported in the US followed by Japan. During the crisis period, the US and the EU report the highest magnitudes, while during the after-crisis period, the US and Japan report the highest magnitudes. As for the equity market, generally the US and Japan regions have the higher magnitudes, showing that unexpected shocks in these regions have more

explanatory power. Contrary to the CDS market, in the crisis period the US and Japan regions report the highest magnitudes, while in the after-crisis period the US and the EU show the highest magnitudes.

Volatility clustering parameters β_0 and β_s are statistically significant for both CDS spreads and equity sectoral returns respectively. It is apparent that volatility clustering is present in the daily returns of the CDS and equity sectoral indices. The high magnitudes of β_0 and β_s show significant volatility clustering, with large shocks in absolute terms which are more likely to be followed by other absolute large shocks, while small shocks are more likely to be followed by other small shocks. It is also evident that for most sectors across regions $\beta_0 < \beta_s$, meaning that there is more clustering in equity returns volatility than in CDS spreads volatility. In general, across regions the highest volatility clustering magnitudes are reported in the US and the EU for both asset classes.

In addition, volatility clustering is persistent in both CDS and equity markets as $(\alpha_0 + \beta_0)$ and $(\alpha_s + \beta_s)$ are close to unity respectively. High volatility persistence implies that average variance will remain high, since increases in conditional variance due to shocks will decay slowly. In general, volatility clustering is more persistent in equity markets as $(\alpha_0 + \beta_0) < (\alpha_s + \beta_s)$. For the CDS market there is no clear indication that volatility clustering is more present during the crisis, with only the UK and Japan having higher volatility clustering during the crisis period. As for the equity sector, it is evident that volatility clustering is more present in periods of distress, bar in Japan. Overall, volatility

clustering is more persistent during the crisis period as both $(\alpha_0 + \beta_0)$ and $(\alpha_s + \beta_s)$ are higher during this period. This makes sense since shocks during catastrophic events are more enduring.

Panel A of the tables present estimates obtained from the DCC-GARCH(1,1) parameters. These estimates are used to examine the existence of time-varying correlation between CDS spreads and equity sectoral returns for all regions. The estimate a_{DCC1} is the DCC-ARCH parameter which represents the short-run persistence of shocks on the dynamic conditional correlation while b_{DCC2} represents the long-run persistence of shocks on the conditional correlations. This means that the effect of a shock on the correlation does not vanish immediately, but it lasts in the conditional correlation coefficient for several periods. The estimate a_{DCC1} is generally low and close to zero whereas the estimate b_{DCC2} is extremely high and close to unity. One can notice from Panel A that the DCC-ARCH parameter is either insignificant or significant but low in magnitude, for most of the sectors across regions. This result suggests that there is no dynamic conditional correlation in ARCH between the CDS spreads and the equity sectoral returns. In other words, there is no comovement in the way volatility shocks from previous periods affect current volatility in the CDS and the equity market.

The estimates of the DCC-GARCH parameter b_{DCC2} are generally significant and close to unity. Therefore, this shows that there is strong evidence of dynamic correlation in the GARCH effect between CDS spreads and equity returns. This also suggests that the

correlation between the two asset classes is not constant, but it varies across time. During the crisis period the dynamic correlation between CDS and equity markets is more significant and stronger than in the after-crisis period, indicating that in periods of distress correlations tend to move faster given the volatility into the markets.

5.1.2 CDS Spread and Equity Regional Connectedness

Tables 70 and 71 in Appendix B show the results of a DCC-GARCH (1,1) model estimated to evaluate whether there is time-varying conditional correlation between the regions for the CDS and equity markets for the two samples under study. Data permitting, a bi-variate, tri-variate and a four-variate DCC-GARCH(1,1) are used to evaluate conditional correlation dynamics. The regional connectedness between the two asset classes is not considered as part of this analysis due to its impracticality in having a six-variate or higher order DCC-GARCH models[36]. In addition, this model assumes that correlations are governed by the same dynamics, that is, scalar coefficients, which may be an oversimplification of true behaviour in higher order models.

The analysis shows 27 bi-variate DCC-GARCH (1,1) models for CDS spreads while twelve bi-variate models for the equity market. 27 tri-variate DCC-GARCH (1,1) models for CDS spreads while 21 tri-variate models for the equity market. Finally, 24 four-variate DCC-GARCH (1,1) models for CDS spreads while 39 four-variate models for the

[36] This connectedness is analysed using other methodologies in this study.

equity market. This results in 150 models in total covering both asset classes. The subscripts '*o*' refers to the US region, '*c*' to the UK region, '*s*' to the EU region and '*z*' to the Japan region.

It is evident from the conditional variance estimates in Panel B that the ARCH parameters (α_o), $(\alpha_c), (\alpha_s)$ and (α_z) are significant at all significance levels for both asset classes across all the sectors under consideration. Consequently, regional returns for CDS and equity markets seem to have been explained by unexpected shocks in previous time intervals. Looking at the α parameters, it is evident that the US and the EU are the regions which are most influenced by past unexpected shocks in the CDS market, as α_o and α_s are higher than α_c and α_z in Table 70. This could well be because these two regions are the most active in the CDS market and spreads could be well impacted by unexpected idiosyncratic and marco factors. Looking at the equity market, it seems that unexpected shocks have high explanatory power in the US and Japan region (α_o and α_z are higher than α_s and α_c in Table 71. Given that the equity market in Japan is not liquid as in the other regions, an unexpected shock may heavily influence the volatility and hence returns in the market. On the other hand, given that the US equity market is the most liquid and link millions of market participants that interact daily, unexpected shocks from various sources trigger other shocks affecting returns.

Volatility clustering parameters (β_o), $(\beta_c), (\beta_s)$ and (β_z) are significant for both asset classes. This shows that large shocks are followed by large shocks, and small shocks are

followed by small shocks in all regions. Overall, volatility clustering in the CDS market is larger in the crisis period, bar in the EU. Likewise, in the equity market volatility clustering is larger during the crisis period, except in Japan. This could possibly be due to the different macro characteristics[37] that the Japan economy had compared to the other regions in the after-crisis period. Volatility clustering is persistent across regions in the CDS market as the summation of the ARCH and GARCH coefficients is close to unity, except for a few sectors. There is no indication that volatility clustering in the CDS market is more persistent during the financial crisis, as results are inconclusive. In the equity market volatility is persistent, predominantly during the crisis period.

Panel A reports the conditional correlation estimates for both asset classes between regions for all the sectors. Overall, the short-term coefficient is significant, but low in magnitude for both asset classes. This shows that a shock in $t-1$ does influence the conditional correlation between the regions at time t, albeit to a small extent. Also, the long-run coefficient is positive and high in magnitude, showing that shocks last in the conditional correlation coefficient for several days for most sectors in the CDS and equity markets. These results indicate that correlation is not constant in the short-run nor in the long-run, signifying the interconnectedness between the regions for both asset classes.

[37] The Japanese economy in the after-crisis period was enduring a recession and was dealing with the aftermath of the earthquake in 2011. This Japanese economy in the after-crisis is discussed further in following chapters.

5.2 Asymmetric DCC-GARCH Model

5.2.1 CDS Spreads and Equity Sectoral Returns

After determining that correlations between asset classes and regions vary across time, it is important to understand whether the underlying correlation structures respond differently to negative shocks from positive shocks. Tables 72 to 75 show the results of a bi-variate asymmetric DCC-GARCH (1,1) model estimated to evaluate whether there are asymmetries in the time-varying conditional correlation between CDS spreads and equity sectoral returns and between regions.

As in the case of the symmetric DCC-GARCH model, the analysis shows 255 bi-variate ADCC-GARCH (1,1) models in total for the periods under study for the US, UK, EU and Japan. Like in the previous analysis, subject to data availability, 41 sectors are considered for the US, eleven for the UK, nineteen for the EU, and fourteen for Japan. Apart from reporting the short-run persistence of a shock in the past on time t and the long-run persistence of a shock on the correlation coefficient, Panel A shows an additional parameter λ which reports the extra impact of a negative shock on the correlation coefficient in the short-run. In other words, λ captures the asymmetric behaviour of the conditional correlation. In general, the findings of the symmetric DCC-GARCH continue to hold. The ARCH and GARCH parameters in Panel B are significant, showing that sectoral returns for CDS and equity markets seem to have been explained by unexpected

shocks in previous time intervals and that volatility clustering is present into sectoral returns. Unexpected shocks have a higher explanatory power during the crisis period for Japan (α_z), while is more significant during the after-crisis for the US, UK and EU ((α_o), (α_c) and (α_s)) in Tables 72 to 75. Volatility clustering parameters ((β_o), (β_c), (β_s) and (β_z)) in Tables 72 to 75 for CDS sectoral returns show no indication that volatility clustering is higher in either period. On the contrary, volatility clustering is higher for equity sectoral returns in the US, UK and EU during the crisis period ((β_o), (β_c) and (β_s) in Tables 72 to 75, while equity sector returns in Japan (β_z) have higher volatility clustering during the after-crisis period. Volatility persistence has been quite high for both asset classes across regions for the periods under consideration as the summation of α's and β's is close to unity.

Looking at Panel A, in general, the findings of the symmetric DCC GARCH hold. The short-run parameter (a_{DCC1}) is low and only few sectors are significant across the regions, while the long-run parameter (β_{DCC2}) is in most cases close to unity and significant for most sectors across region. This shows that correlation in the short-run is somewhat constant while it tends to vary across time in the long-run.

The leverage parameter shows that only few sectors report statistically significant asymmetry across regions. This suggests that generally, the conditional correlation between the two asset classes evolves depending on the magnitude of the shock, not on the sign. Of the few sectors that the leverage effect parameter is significant, the sign of

the parameter is either negative or positive and low in value. Positive parameters show that impact of a negative shock in fact is much bigger than the impact of a positive shock, while negative show that positive shocks have more impact than negative ones.

5.2.2 CDS Spread and Equity Regional Connectedness

Tables 76 and 77 show the results of the ADCC-GARCH (1,1) model estimated to evaluate whether there is asymmetric behaviour between the regions for the CDS and equity markets for the samples under study. Like in the DCC-GARCH model, data permitting, a four-variate, tri-variate and a bi-variate DCC-GARCH(1,1) are used to evaluate conditional correlation dynamics. As in the DCC-GARCH analysis, 150 models are estimated covering both asset classes.

Even in the case of regional correlation, the results of the symmetric DCC-GARCH hold. The ARCH and GARCH parameter are significant, showing that current volatility in all regions is explained by unexpected shocks and that there is volatility clustering into the series in both periods. The summation of α's and β's, show that persistence is also high as it is close to unity. The parameter a_{DCC1} shows that there is dynamic conditional correlation in ARCH between regional returns for both asset classes. This means that effectively there is a comovement in the way volatility shocks from previous periods affect current volatility in the regions for both asset classes. In addition, the parameter

b_{DCC2} shows that there is dynamic correlation between the respective regions and that correlation changes across time.

Unlike in the previous ADCC-GARCH between the two asset classes, there are more instances when the leverage parameter, λ, is significant. This shows that asymmetric effects are more present between regions for a particular asset class, than between the two asset classes. Parameters are mostly positive, indicating that negative news has more impact than positive news on the conditional correlations.

5.3 Diagonal BEKK-GARCH Model

5.3.1 CDS Spreads and Equity Sectoral Returns

This section presents the empirical results of the Diagonal BEKK-GARCH model for all the pairs of CDS spreads and equity sectors and regions. In addition, the extent of volatility transmission is also discussed.

Tables 78 to 81 show the transformed variance coefficients from the bi-variate Diagonal BEKK-GARCH (1,1) model estimated for all the pairs of CDS spreads and equity sectoral returns across all regions. Tables 82 to 85 show a representation of the variance-covariance equations for all sectoral pairs for the asset classes under study across the considered regions. The conditional variance-covariance tables show that Conditional variance-covariance equations effectively capture the volatility and cross volatility among asset classes and regions because most coefficients are statistically significant.

The analysis shows 255 bi-variate BEKK-GARCH (1,1) models in total for the periods under study for the US, UK, EU and Japan. Like in the DCC part, subject to data availability, 41 sectors were considered for the US, eleven for the UK, nineteen for the EU, and fourteen for Japan.

The conditional variance-covariance equations effectively capture the volatility and cross-volatility among the asset classes under study because the coefficients in the first set of tables (78 to 81) are statistically significant. These equations shall be the basis of the analysis.

From these empirical results, it seems that there is strong evidence of GARCH effect (δ_1^2, δ_2^2 and $\delta_2\delta_1$) and the presence of weaker ARCH effect (β_1^2, β_2^2 and $\beta_2\beta_1$) across all the regions and time periods considered as evidenced in Tables 80 to 83. The parameters in the variance-covariance equations show a statistically significant covariation in shocks, which depends more on its lags rather than on past errors. Market shocks are influenced by past information which is indeed common to the respective sectors within both the asset classes under study.

Own-volatility spillovers, ARCH effects (β_1^2 and β_2^2), which show the volatility persistence for each sector in terms its own past errors, are positive and significant across all regions. On average, the spillover effect is higher for the CDS market rather than that of equity ($\beta_1^2 > \beta_2^2$). This means that the CDS market is less vulnerable to outside shocks when compared to the equity market. This is line with expectations as the equity

market is more globalised than the CDS market which is more idiosyncratic. The cross-volatility spillovers are higher in most cases than own-volatility spillovers in the equity markets, bar for some sectors across the regions under study.

The lagged own-volatility persistence, GARCH effects, is higher for the equity market ($\delta_1^2 < \delta_2^2$). This suggests that the equity market derives more of its volatility persistence from within the market itself, while the CDS market derives more volatility persistence from outside the market, and hence from the equity market. In addition, as expected, the own-volatility sectoral spillover effects seem sporadic across sectors within the regions under study. This shows that each sector within a region embraces a different risk-return profile and different levels of vulnerability to outside shocks. Looking at the lagged cross-volatility persistence, it is evident that the cross-volatility is on average higher than lagged own-volatility in the CDS market but lower than that of the equity market. Hence, the equity market seems to be more influential in terms of cross-volatility persistence. It is important to note that although cross-volatility persistence is heterogeneous for the sectors within the regions under study, the results remain intact, meaning that in general the equity market is more influential. Finally, results do not change across the different time periods which further reaffirms the effects of the equity market vis-à-vis the CDS market.

5.3.2 CDS Spread and Equity Regional Connectedness

After looking at the volatility spillovers between the two asset classes, regional spillovers within the two asset classes are assessed. Tables 86 to 89 show the transformed variance coefficients and the variance-covariance equations for both asset classes.

As in the case of the DCC-GARCH, the analysis shows 27 bi-variate DBEKK-GARCH (1,1) models for CDS spreads while twelve bi-variate models for the equity market. 27 tri-variate DBEKK-GARCH (1,1) models for CDS spreads while 21 tri-variate models for the equity market. Finally, 24 four-variate DBEKK-GARCH (1,1) models for CDS spreads while 39 four-variate models for the equity market. This results in 150 DBEKK-GARCH models in total covering both asset classes for the periods under study.

In line with the previous analysis, it is safely concluded that there is strong evidence of GARCH effect ($\delta_1^2, \delta_2^2, \delta_3^2, \delta_4^2, \delta_2\delta_1, \delta_3\delta_1, \delta_4\delta_1, \delta_3\delta_2, \delta_4\delta_2$ and $\delta_4\delta_3$) and a weak ARCH effect ($\beta_1^2, \beta_2^2, \beta_3^2, \beta_4^2, \beta_2\beta_1, \beta_3\beta_1, \beta_4\beta_1, \beta_3\beta_2, \beta_4\beta_2$ and $\beta_4\beta_3$) as evidenced in Tables 87 and 89. GARCH Own-volatility spillovers ($\delta_1^2, \delta_2^2, \delta_3^2,$ and δ_4^2) are positive and significant for all regions. For the CDS market, own-volatility spillover ARCH effect is mostly higher for the US (β_1^2) and the EU (β_3^2) across sectors as evidenced in Table 87. One plausible explanation is that the US and the EU are key jurisdictions for this market, especially for clearing. In addition, given that the 2008 crisis originated in the US and that the European Debt Crisis was explicit to the EU, it further shows that both the US

and the EU are volatility transmitters rather than absorbers, and are the least vulnerable regions to outside shocks. In fact, examining cross-volatility effects, past innovations in the EU followed by US, have the greatest influence in future volatility of the other regions sectoral returns in line with Diebold and Yilmaz (2016). In the case of the US, the EU and the UK have the greatest influence on its future volatility, while in the case of the EU, the US and the UK, on average have the greatest influence. Japan seems somewhat disconnected, with the EU and UK being the greatest influence on this region. The findings hold for the periods under study.

For the equity market the US has the highest ARCH effects (β_1^2) in table 89, meaning that it is the least affected by outside shocks. This is in line with expectations being the biggest and most influential market. Another region which has high ARCH effects is Japan (β_4^2) which could possibly indicate that the equity market in Japan is somewhat disconnected from the rest of the markets and therefore most of the shocks are idiosyncratic in nature. As for cross-volatility effects, past innovations in the US equity market ($\beta_2\beta_1, \beta_3\beta_1$ and $\beta_4\beta_1$) have the greatest influence in future volatility of other markets in line with Hamao *et al.* (1990), Theodossiou and Lee (1993) and Gencer and Hurata (2017). The cross-volatility spillovers vis-à-vis the US are higher than own-volatility spillovers for the UK and the EU equity markets, indicating that these regions are vulnerable to shocks in the US equity market. The Japanese equity market is predominantly affected by the US equity market, although own-volatility spillovers are

higher than cross-volatility spillovers for this market, further reaffirming its disconnectedness with the other regions under study.

The GARCH effects, own volatility spillover, in the CDS market are higher in the US (δ_1^2) and EU (δ_3^2) markets in Table 87, predominantly during the financial crisis. This is in line with expectations that these two key markets derive more of its volatility persistence from within the domestic market, especially during the crisis since they are considered volatility transmitters. On the other hand, the UK (δ_2^2) and Japan (δ_4^2) CDS markets derive their volatility persistence from outside the domestic market. Looking at the Japanese region the banking sector is one of the few sectors that derives its persistence from within the domestic market. The banking sector in Japan seems to be disconnected from its counterparts in other regions. This shows that the Japanese economy exhibit different macro characteristics when compared to the other regions under study. In addition, it is unlikely that Japanese banks hold securities floated on the other regions. Suffice is to say that Japanese banks and financial institutions were not affected by the unprecedented financial crisis of 2008-2012 in the West, since they did not invest in securities that lost value quickly amid the crisis, thereby leaving the CDS spreads intact for the banking sector.

Also results seem to suggest that each region exhibits idiosyncratic risk-return characteristics, leading to different levels of vulnerability to outside conditions. As for cross-volatility persistence, the US and EU markets appear to be the most influential

while the UK and Japan seem to be less influential. The UK and Japan are strongly affected by volatility persistence emanating from the US and EU markets. The US is mostly influenced by the EU market, while the latter is also influenced to some extent by volatility persistence in the UK market, apart from that of the US market. The results hold for both periods under consideration.

Looking at the equity market, the results are different from that of the CDS market. In the crisis period, the UK equity market (δ_2^2) registered the highest lagged own-volatility persistence, with the US (δ_1^2) and the EU (δ_3^2) equity markets sharing evenly their own-volatility persistence in other sectors in table 89. In the after-crisis period the UK remains with the highest GARCH effects, while Japan joins the US and EU in sharing the other sectors equally. This shows that the UK derives more of its persistence from within its domestic market, while the other regions are somewhat dependent on other markets.

As for cross-volatility persistence, the UK equity market is the most influential market with the Japanese market being the least influential. Past volatility shocks in the UK equity market have greatest effect on the future volatility of the US and EU equity markets. The Japanese market is affected sporadically by the other three regions.

A point to note is that in both the CDS and equity markets, influence of lagged covariance on future covariance is found to be positive for all regional pairs across sectors. The analysis implies that the magnitude of cross-volatility persistence is not

directly related to regional or economic connection between the regions, but more likely related to the level of integration of the respective markets.

5.3.3 Concluding Remark[38]

The results of the DCC- and ADCC-GARCH models show that volatility clustering is present in both asset classes but it is larger and more persistent in the equity markets, particularly during the crisis period. Conditional correlations also show that there is evidence of time-varying correlations between CDS spreads and equity sectoral returns. From a regional perspective, volatility clustering is present across regions and the conditional correlation parameters also show that correlation is not constant in both the short- and the long-run. The leverage parameter in the ADCC-GARCH shows no clear indication that negative news has more impact than positive news. However a point to note is that asymmetric affects are more present between regions rather than between the two asset classes under consideration.

The DBEKK-GARCH results show that the CDS market is less vulnerable to outside shocks compared to the equity market, while, the equity market derives more of its persistence from within the market itself and seems to be more influential in terms of cross-volatility. From a regional perspective, cross-volatilities show that markets in the US, UK and the EU are interlinked, with Japan seemingly disconnected.

[38] A more detailed conclusion is provided in Chapter 10.

Chapter 6: Diebold-Yilmaz Static Analysis

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6.0 Introduction

In chapter 5, the DCC- and BEKK-GARCH models provide insight in the dynamic correlations and volatility spillovers between the two asset classes and regions, but they only show pairwise associations and not pairwise directional association. In addition, with respect to volatility spillovers, the DBEKK-GARCH model does not provide insight on how shocks into a sector contribute to shocks into the system nor the roots of the shocks nor does it provide information on full covolatility spillovers. This chapter addresses these considerations through the methodology of Diebold and Yilmaz (2012) wherein a unified framework is used to measure connectedness at different levels, from pairwise through system-wide.

The methodology of Diebold and Yilmaz (2012) is adopted, using a GFEVD derived from a VAR. This study extends previous research, in that sectoral and sub-sectoral volatility connectedness within and across regions for both CDS and equity are examined. In, addition two sequential periods are considered: *crisis and after-crisis* period[39]. Sectoral connectedness is not only of interest to understand contagions, but

[39] In the interest of conciseness, only commentary relative to the crisis period is reported. Nonetheless, estimations for all the three periods under consideration are reported.

also to shed light on business cycles, as sectors have important implications for real economic health. The study also extends previous empirical analysis, in that the major financial markets are considered in one study: US, EU, UK and Japan. This shall also prove useful to assess any regional spillovers across main financial markets. A VAR(2) is used as an approximating model. The Schwarz-Bayesian information criterion[40] is calculated for lag zero to twelve and is minimised to a VAR(2). The selected horizon is that of ten days. While in the Multivariate-GARCH analysis, the returns of the respective asset classes are used, in this chapter a volatility proxy of returns is used as discussed in section 4.3.

Given that in the Multivariate-GARCH analysis, time-varying volatilities are estimated and used for the analysis, the second moment of statistics had to be used in this chapter to ensure consistency in the analysis. The first part of the estimation deals with a static analysis of volatility spillovers for the periods under study. The static analysis aggregates different stages wherein sectors contributed differently to the overall market volatility and hence provides a partial understanding of the development of events. Therefore, given that the dynamics of volatility spillovers change across time periods, a rolling-window analysis will be discussed in the second part of the estimation in chapter 8 in line with Diebold and Yilmaz (2012). In essence, the static analysis shall capture an overall average, or unconditional behaviour, while the dynamic analysis shall capture

[40] The Schwarz-Bayesian information criterion is chosen to provide the most parsimonious model.

the secular and cyclical movements in the spillovers. As discussed, the analysis shall focus on the connectedness and spillovers in the crisis period, being the most period of interest. The RATS economic software is used for this analysis.

6.1 CDS Spreads Volatility Sectoral Connectedness: Within Regions Static Analysis

This section considers the volatility spreads from a sectoral CDS perspective within the US, EU, UK and Japan in a static fashion. The analysis shall also consider different time spans: *crisis* and *after-crisis* periods. As expected across all regions, connectedness is higher during the crisis period as can be evidenced in Tables 90 to 93[41], with sectors in

CRISIS PERIOD

	BK	CG	EP	EN	MF	OF	SV	TL	TR	From Others
BK	67.5	2.0	0.1	2.3	11.5	1.7	10.5	5.0	0.0	33.0
CG	4.7	55.8	1.9	7.8	9.5	6.0	9.0	4.4	0.4	44.0
EP	0.2	0.6	91.1	0.5	0.6	0.7	0.9	4.8	0.7	9.0
EN	2.7	2.7	0.9	74.2	4.7	6.5	2.5	4.6	1.1	26.0
MF	9.5	7.6	0.2	3.4	48.8	3.2	16.5	10.5	0.2	51.0
OF	0.9	8.6	0.4	2.6	2.4	76.0	2.8	6.1	0.1	24.0
SV	8.6	11.7	0.2	1.3	17.0	2.1	50.0	9.1	0.1	50.0
TL	3.1	5.8	2.5	1.1	12.2	2.6	14.8	57.2	0.8	43.0
TR	0.2	0.4	0.5	0.3	0.4	0.0	0.2	0.4	97.6	2.0
Contribution to others	30.0	39.0	7.0	19.0	58.0	23.0	57.0	45.0	3.0	282.0
Net Contribution	-3.0	-5.0	-2.0	-7.0	7.0	-1.0	7.0	2.0	1.0	31.3%

Notes: Tickers are as follows:- BK(Banks); CG(Consumer Goods); EP(Electric Power); EN(Energy); MF (Manufacturing); OF(Other Financial); SV(Service Company); TL(Telecommunications); and TR(Transportation).

[41] The connectedness tables of the US static sectoral analysis are being reproduced here to provide the reader a snapshot of the output tables which serve as the basis for the commentary of Chapter 6.

AFTER-CRISIS PERIOD

	BK	CG	EP	EN	MF	OF	SV	TL	TR	From Others
BK	95.3	0.2	0.0	0.3	2.9	0.4	0.1	0.7	0.1	5.0
CG	0.8	96.6	0.1	0.1	0.5	0.1	0.4	0.8	0.6	3.0
EP	0.1	0.3	97.9	0.0	0.1	0.5	0.0	0.0	1.0	2.0
EN	0.2	0.0	0.0	90.5	0.1	0.0	8.9	0.1	0.3	10.0
MF	0.4	0.4	0.2	0.1	82.7	0.3	0.5	15.1	0.4	17.0
OF	0.0	0.1	0.0	0.1	0.1	99.4	0.1	0.0	0.2	1.0
SV	0.1	0.3	0.0	2.7	0.2	0.1	95.5	0.1	1.0	4.0
TL	0.5	0.3	0.1	0.1	0.5	0.0	0.5	97.7	0.1	2.0
TR	0.0	5.9	2.2	0.3	0.1	0.3	1.7	0.2	89.3	11.0
Contribution to others	2.0	8.0	3.0	4.0	4.0	2.0	12.0	17.0	4.0	55.0
Net Contribution	-3.0	5.0	1.0	-6.0	-13.0	1.0	8.0	15.0	-7.0	6.1%

Notes: Tickers are as follows:- BK(Banks); CG(Consumer Goods); EP(Electric Power); EN(Energy); MF (Manufacturing); OF(Other Financial); SV(Service Company); TL(Telecommunications); and TR(Transportation).

Table 4: CDS Spreads Volatility Sectoral Connectedness: US Static Analysis (Reproduced)

The UK and Japan having the largest spike in connectedness compared to the after-crisis periods. The UK and Japan have a connectedness index of 57% and 51% respectively, while the EU and US have an index of 47% and 31%[42] respectively. In the after-crisis period, connectedness levels are almost negligible[43], with all sectors having shocks explained by the diagonal elements which represent shocks within the respective sectors themselves. In general, the diagonal elements are the largest individual elements of the table. This comes naturally because the diagonal elements not only capture the

[42] As shown in the first table above.

[43] As shown in the second table above for the US region.

own-connectedness of each sector but also connectedness of companies within the same sector. On average the diagonal elements during the crisis period are lower compared to the after-crisis period. This makes sense since shocks from other sectors increase during the crisis, supporting the notion of contagion. Table 4 above shows that in the US, connectedness is higher in the crisis period (31%) when compared to the after-crisis period (6.1%). Also, the diagonal elements in the crisis period are lower to those of the after-crisis period, evidencing greater connectedness during volatile periods as shocks come from other sectors within the economy.

Focusing on net spillovers, in the UK and Japan, the banking sector is a net transmitter, whilst in the EU and US the banking sector is a net receiver of volatility during the perturbed period which is a surprising result given the importance of this sector in these two regions in the 2009 crisis. However, from the pairwise analysis it emerges that, the banking sector receives shocks particularly from consumer goods and consumer services sectors. This shows that as these sectors became depressed during the crisis, they contaminated the banking sector, especially in the US. Therefore, the widening of spreads in consumer services and consumer goods propagated to the banking sector. Naturally for consumer services and consumer goods, the net volatility spillover is expected to be positive. This is because spending and consumption are highly correlated with economic cycles. In the crisis period, the economy endured a recession, resulting in a drop in the

demand for consumer goods and services, increasing risk-aversion and ultimately increasing spread volatility in these sectors.

In the US, the consumer services sector has most shocks coming from the manufacturing[44] and telecommunications sectors during the crisis period, circa seventeen per cent [17%] and eleven per cent [11%] respectively. This could be possibly explained by the fact that the latter sectors have a moderate association with business cycles and as a consequence, volatility spreads were affected accordingly. Indeed, the manufacturing and telecommunications sectors have strong bi-spillovers during the same period. The banking sector is another sector which transmits shocks to the consumer services sector, which is expected given that both sectors are classified as cyclical sectors. Also, a strong bi-connectedness is shown between consumer services and consumer goods sectors, being both cyclical sectors and thereby, exhibiting greater volatility patterns. The electric power sector, which falls under the capital goods category, is synonymous with low risk and therefore a low-beta sector[45], is a net receiver or negligible net transmitter. The same argument holds for the transportation sector.

In the EU, the consumer goods, manufacturing and energy sectors are heavily connected. Consumer goods are the end result of production, while manufacturing and energy sectors form part of the production process. Therefore, if the latter sectors are in distress,

[44] Forms part of the industrials segment.
[45] Low-beta sectors are sectors which typically exhibit less volatility.

negative externalities would filter in the consumer goods sectors and vice-versa, if the consumer goods sector is in distress. The energy sector is also highly connected with the banking and other financial services sectors. Possible explanations could be that these sectors are all cyclical sectors and therefore credit spreads from both sectors move in sync during agitated periods and the high use of commodity derivatives spurs contagion risk across these three sectors. In addition, these three sectors are vitally linked to the economy, where the health of each respective sector is closely linked to the state of the economy. The transportation sector is heavily affected by shocks in electric power, given the former relies on the latter in terms of engineering and electrical equipment to function. Like in the US, electric power sector is a net receiver.

Like in the EU region, the consumer goods sector has been the main transmitter of volatility during the crisis period in the UK. The banking and consumer services sectors are also net transmitters of volatility. This makes sense as the services sector dominates the UK economy, with London being one of largest financial centre across the globe. On the other hand, the manufacturing sector is the biggest net receiver. This could possibly be the fact that this sector accounts for only eleven per cent of the economy (Department for Business Innovation & Skills, 2010). Other sectors which are net receivers include electric power sectors and telecommunications which are generally insensitive to business cycles. Like in the US, from a pairwise analysis perspective, a strong bi-connectedness results between consumer services and consumer goods, which are both cyclical sectors

by definition. The banking sector has spillovers coming from the consumer goods and other financial services sectors. The financial services sector has also an association with consumer services so CDS spreads may have moved in sync. Finally, the consumer goods sector is mostly affected by shocks coming from electric power and manufacturing services. This again maybe explained by the strong ties these sectors have in the production process.

In Japan, the banking and to some extent financial services sectors have been the major transmitters of volatility. Banks in Japan relied heavily on wholesale funding in US dollars and euro to finance their overseas expansions. This made the banking sector prone to externalities elsewhere, which externalities propagated into other sectors of the economy. In addition, the Bank of Japan started cutting back rates again following the external shock from the financial crisis, heavily depressing net interest income and margins. Banks and financial services sectors have transmitted volatility mostly to electric power, manufacturing and transportation sectors. Japan's production and exports are largely in advanced manufacturing products such as machinery and other capital goods, automobiles and other durable consumer goods, for which demand is structurally vulnerable to the economic cycle. As the world economy slumped, investments and consumption for such goods were put off and demand decreased due to inventory adjustment both in and outside Japan, leading to a drastic decrease in demand for these goods and as a consequence, credit spreads were affected.

6.2 CDS Spreads Volatility Sub-Sectoral Connectedness: Within Regions Static Analysis

As in the case of the sector analysis, the sub-sector static analysis shows that volatility spillovers and hence connectedness in CDS spreads across sectors are higher during the crisis period as represented in Tables 94 to 97. A point to note is that the spike in connectedness in the sub-sector segment is higher than in the case of sectors. However, this must be treated with caution as this could be because there are more constituents in the sub-sectors and the index captures spillovers of all these companies across all sub-sectors. As opposed to the sector analysis, the US and the EU have the highest connectedness indices. This could be the case because the sub-sector segment is more detailed in terms of data and therefore, as a result more companies are included in the analysis. As in the case of sectoral connectedness, the sub-sector analysis also shows that in general own-connectedness is lower during the crisis.

In the UK and Japan, the banking sub-sector is the main transmitter of shocks to other sub-sectors. In the case of US and EU, the banking sector is also somewhat a net transmitter. The textile sub-sector is the main transmitter of volatility in the US. This can be explained by the fact that the textile sector is related to retailing and manufacturing production, with both sectors being heavily impacted during the crisis period as shown in the sector analysis. The chemicals sub-sector is the second most larger transmitter of shocks in the US and this could be potentially explained by the fact that

chemicals are associated with metals which is economically sensitive to business cycles. In the EU, the main transmitter of volatility shocks is the oil sector. The US dollar has strengthened vis-à-vis the euro and given that oil is exchanged in dollars, this may have instilled volatility in this sector in terms of CDS spreads, spilling over to other sub-sectors. Another sub-sector which is a net transmitter is the buildings products sector and this makes sense because the real estate sector experienced a downturn during the crisis-period, affecting defaults in the real estate sector and hence CDS spreads. Utility sub-sector on the other hand is a net receiver during the crisis period which is in line with a-priori expectations given that this sector is insensitive to business cycles.

In the US, the electronics sector has some connection to the information technology and vehicles sub-sectors. The spillover between these sectors may be related to the filters in the production chain. Also, food and electricity are tied through the production process and as such shocks may filter through these two sub-sectors. On the other hand, the metals and mining sector transmits volatility shocks to electronics, REITS, machinery and other consumer services sub-sectors. Metals are part of the production process in electronics, and machinery forms an integral part of the production and as such there may be some spillovers between these sub-sectors. Metals and REITS are closely connected due to the real estate market, as a drop in real estate may affect the demand for ancillary raw materials. The spillover of shocks in spreads between consumer services

and metals is akin to the cut in demand by households following insecurity amid the economic recession.

Regarding the EU, the banking and other financial services sub-sectors have a strong pairwise association. This is in line with expectations as activities in both sub-sectors may overlap and as a consequence any effects ripple into the CDS system and across sectors. Oil transmits shocks to the automobile, building products and chemical sub-sectors. The three sub-sectors are related to oil in the production chain as shocks in oil companies will spillover to companies involved in building products, chemicals and automobile production chain, resulting in spreads spillovers in these three sectors. The spread shocks between oil and beverages may be explained by higher production and transportation costs due to higher oil prices.

In the UK, retail stores and telecommunication sub-sectors are the most associated during the crisis period. Also retail stores and beverages sub-sectors are highly connected as well. On the other hand, retail stores and banking sub-sectors are both sensitive to economic cycles and this may explain the pairwise association in the system. Banking, life insurance, and other financial services are also connected during this period given that services derived from these three sectors may overlap.

In Japan, the banking sub-sector which is the biggest transmitter of shocks affects mostly metals, transportation and retail stores. Metals and banking are both sensitive to the health of the economy. The crisis in the financial segment negatively impacted the use

of raw materials and production. This also explains the close pairwise connection between metals and automobile sectors, as households would normally cut on spending, especially on Veblen goods. Finally, the other consumer services and retail stores sub-sectors also have an interesting association given that they are strongly related sectors in terms of consumer spending.

6.3 CDS Spreads Volatility Connectedness: Across Regions Static Analysis

From a sectoral point of view, regional connectedness on average is higher during the crisis period as shown in Tables 99 to 114.[46] High connectedness is registered in the manufacturing, consumer goods, banks and consumer services sectors. Overall, the US, EU and UK are largely associated, with Japan seemingly disconnected. As expected, own-connectedness for most sectors is lower during the crisis period because of shocks coming from other sectors.

The manufacturing sector with a 35.5 per cent connectedness index is the one with the highest connectedness. The US, EU and UK have the largest association, with the EU being the biggest net transmitter of volatility shocks. This makes intuitive sense since the manufacturing sector in the EU is the one which contributes the most to GDP out of the three regions. Indeed, the EU transmits around 21 per cent of the shocks to the

[46] The connectedness tables hereunder which represent the CDS spreads volatility regional connectedness for the bank sector, are being reproduced here to provide the reader a snapshot of the output tables which serve as the basis for the commentary of Chapter 6 with respect to the regional analysis.

US and UK CDS market. Japan seems a bit disconnected and only has a relevant association with the UK. This most probably relates to the automotive manufacturing segment.

The banking sector connectedness is higher during the crisis, with the connectedness index reaching 30 per cent as can be evidenced in Table 5 below. Diagonal entries are lower during the crisis period compared to the after-crisis period signifying that regions are more connected and transmit shocks to each other. However, a surprising result is that the US (-18per cent) is a net receiver rather than the main transmitter during the crisis in line with the sector analysis. This is also the case for the other periods under consideration with the UK also being a net receiver across the whole sample and during the after-crisis period. The US banking system has triggered the crisis but in subsequent months, the EU banking sector has caused more concern across the globe given the pronounced diversity of the national financial structures, oversized sector, pressure on profits, an incipient house bubble implosion and a lack of consensus of what constitute capital and non-performing loans. As a consequence, many banks were hit hard particularly in Germany and Spain and other countries have entered recovery programmes with the EU. Indeed, what was initially a financial crisis related to risky conducts and bubbles turned into a liquidity crisis and to some extent solvency crisis, and eventually turning into a sovereign-debt crisis. Credit spreads soared and this

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	62.1	12.6	19.8	5.4	38.0
EU	5.1	72.4	17.6	4.9	28.0
UK	11.0	21.0	59.5	8.6	41.0
JP	4.3	3.6	6.3	85.8	14.0
Contribution to others	20.0	37.0	44.0	19.0	120.0
Net Contribution	-18.0	9.0	3.0	5.0	30.1%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	95.0	0.2	2.3	2.6	5.0
EU	0.4	96.3	1.8	1.4	4.0
UK	1.8	8.0	88.8	1.4	11.0
JP	1.5	1.1	1.3	96.1	4.0
Contribution to others	4.0	9.0	5.0	5.0	24.0
Net Contribution	-1.0	5.0	-6.0	1.0	5.90%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 5: CDS Spreads Volatility Regional Connectedness: Bank Static Analysis (Reproduced)

sporadic volatility in the EU has transmitted shocks to both US and UK, with shocks to the latter being more profound given that the UK formed part of the EU at that time. Indeed, spreads in both the UK and US have increased as well. Japan is comparatively disconnected from the other three regions, possibly because the country had a separate agenda dealing with a below zero inflation. Consumer goods is the second sector which registered the highest association, with a connectedness index of 31.6 per cent. An interesting point to note is that the EU and the UK have a strong pairwise association, probably because of the strong economic ties between the two regions. Suffice is it to say that the UK manufacturing exports and imports to and from the EU accounted for circa 50 per cent (Ward, 2021) and that most European consumer product companies housed their operations in the UK. The US seems a bit disconnected from the other regions, with nearly 85 per cent of the shocks coming from within its domestic industry.

Lastly, the consumer services sector registered also important connectedness levels, with the US being the largest net transmitter volatility in spreads, followed by the UK. The consumer services sector in the US accounts for over 80 per cent of the GDP and is a sector which is sensitive to business cycles. From the within region analysis it emerged that the consumer services sector further contaminated the US domestic banking sector, and this is further evidenced by the fact that shocks filtered to other regions as well, mostly to the EU. A relevant association also exists between the EU and the UK for this

sector given the economic integration of the UK with other European countries, and the greater proportion of trade between the two regions at that time.

From a sub-sector perspective, other banking services sector has the largest volatility connectedness, with an index of around 29 per cent. The EU is main transmitter of volatility and is in line with the sector analysis. Beverages is the second largest sub-sector which registered a substantial increase in connectedness levels during the crisis period, with the UK being the main transmitter of shock volatility. This can be associated with higher production and transportation costs, following the depreciation of the sterling versus the US dollar being tantamount to higher export oil costs, increasing spreads. Indeed, the US is a net receiver.

Metals and mining and chemicals sub-sectors also registered important increases in the crisis period. These two sub-sectors, which fall under the material sector, are highly sensitive to the economic cycle. During the crisis period, this sector becomes more volatile as households cut on spending and as a consequence demand for raw materials curtails. A point to note however is that despite the US being the main transmitter it is evident that most shocks come within the domestic industry with negligible shocks coming from other regions. Other consumer services sector is in line with expectations, with an increment in connectedness levels during the perturbed period, with the US being the main transmitter of volatility like in the geographical sector analysis. Finally, utility is the sub-sector with the lowest increment in volatility connectedness. This make

sense since the sub-sector is insensitive on average to recessions given that the consumption of electricity or water is rarely cut back during lean times. The retail sector is the only sector which registered higher connectedness in the period following the crisis. The retail segment at that time was still suffering from the latest financial crisis due to modest economic growth and online shopping has put a toll on the traditional retail stores.

6.4 Equity Volatility Sectoral Connectedness: Within Regions Static Analysis

As opposed to the CDS spreads volatility analysis, the connectedness of equity sectors in the periods under study remained fairly stable, albeit marginally higher in most cases during the crisis period as represented in Tables 115 to 118, bar in Japan (US 84per cent versus 72 per cent, UK 75 per cent versus 60 per cent, EU 86 per cent versus 83 per cent and Japan 80 per cent versus 82 per cent). As can be evidenced from these tables the diagonal entries are low in both periods under consideration. This shows that in the equity market shocks from other sectors remain relevant also in tranquil periods, evidencing deeper connectedness than in the CDS market. This may be explained by the fact that the equity market in most developed regions is larger and more liquid than the CDS market, which makes market participants and equity returns more connected. Own-volatility connectedness have decreased during the crisis period, bar in Japan.

In addition, like in the CDS spreads analysis, the financial services sector in general has been a net receiver of volatility, which strengthens the argument that the performance in other sectors further contaminated the returns of the financial services and banking sector.

In the US, the main transmitter of volatility is the oil and gas sector. The slowdown coupled with the drying up of new credit availability created a real decline in the demand of oil which persisted for some years. This volatility in equity prices has propagated into other related sectors, particularly basic materials, industrials, utilities and consumer goods, all of which are related to oil and gas in the production sector. Another sector which is a net transmitter is the consumer goods sector. Confidence has decreased during the turmoil and as such demand for goods and services curtailed as well, spreading shocks to other related sectors. The consumer goods sector has strong pairwise association with oil and gas, industrials, consumer services and technology sectors amongst others. The association may be explained through the manufacturing and end-process production. The technology sector is a net receiver since the demand for new tech products and innovation decreases amidst a recession, absorbing shocks from other sectors. Likewise, utility, which is low-beta sector, is a net receiver, and this can be explained by the sheltered nature of the utilities business. This sector remains fairly stable given that electricity and water are in demand regardless of the state of the economy and hence equity prices are affected by externalities elsewhere.

The EU sectoral equity volatility connectedness shares many commonalities with the US. The main transmitter of volatility is the oil and gas sector during the crisis period. As in the case of the CDS spreads, the oil and gas equity sector may have been influenced by the depreciation of the Euro versus the US dollar, spreading across other sectors and affecting their volatility, particularly those which are related in the end-production process, like basic materials, industrials, consumer goods and utilities sectors. The industrials sector, which comprises of companies that distribute durable goods or provide transportation or commercial service, is the second most important transmitter in the EU. This is in line with a-priori expectations given that the sector is heavily reliant on the cycle of the economy. There is also a modest pairwise association between industrials, consumer goods and basic materials, where equity performance is related via the production chain.

The UK equity sectoral connectedness closely follow those of the EU, with the consumer goods, oil and gas and industrials sectors being the main transmitters of volatility. The consumer goods sector in lean times tends to be very volatile as it reflects the economic cycle. As the UK economy slumped, investments and household demand for such goods were negatively influenced. Another sector which is a net transmitter is oil and gas following the depreciation of the sterling versus the US dollar, negatively impacting oil importation transactions with shocks spreading to other sectors. The utility sector is the largest net receiver of volatility shocks. This can be explained by the fact that this sector

is very stable during the various economic cycles and is prone to absorb shocks from other more volatile sectors, particularly from the consumer goods and oil and gas sectors.

In Japan the results are somewhat surprising in that the healthcare sector is the one which conveyed most shocks to the market. Normally, the healthcare sector is synonymous to a hedging sector during turbulent times. This surprising result might have been fuelled by the fact that in 2008 Japan was revisiting its health plans to make them more advanced and containing costs. Indeed, the plan was to integrate health promotion, health-care provisions and health-care cost containment. The vagueness surrounding this regulatory change may have well impacted the sector during that time, making equity return volatile. Consumer services sector is also an important net transmitter of volatility in Japan which is in line with expectations being a sector which is strongly affected by the business cycle. The consumer services sector has also important pairwise association with the healthcare, industrials and consumer goods sectors, all of which are somewhat related to the former along the production and value chain. Basic materials and industrials sectors also transmit shocks considerably during the crisis period being cyclical sectors. Both sectors are strongly connected to consumer goods which makes intuitive sense given that they are linked throughout the production process. Telecommunications and utility sectors are net receivers during the crisis period in the Japanese market due to them being insensitive to the volatility in the market. Oil and gas sector as opposed to other regions is also a net receiver. This can be attributed

to the fact that the Yen appreciated against the dollar during this time and thereby positively impacted oil transaction in the Asian country.

6.5 Equity Volatility Sub-Sectoral Connectedness: Within Regions Static Analysis

Like in the sector analysis, connectedness of sub-sectors in the periods under study remained fairly stable, albeit marginally higher in most cases during the crisis period, bar Japan as seen in Tables 119 to 122. The US have the highest connectedness index which may be due to the more detailed dataset.

In the US sub-sectoral space, connectedness is higher during the crisis period, albeit marginally, with a connectedness index of 94 per cent. The sub-sectors which are net transmitters include property and casualty insurance, other financial services, industrials, other consumer services and oil and gas. During distressed periods, coverage to help protect household's own income becomes important amid losses to land, buildings and/or belongings. Rising coverage premiums may have caused instability in equity prices. The results of other financial services sector are in line with expectations given that the sector has been one of the catalysts of the crisis. The industrials sub-sector, which comprises of companies that distribute durable goods or provide transportation or commercial service, has been affected by the uproar of the markets. Given that oil and gas sector is related to the industrials sector in the production chain, it may have also been affected. The other consumer services sector, being a cyclical sector has also

transmitted shocks into the market. The airlines, retail food and drug stores and restaurants sectors are the main net receivers which makes economic sense since demand subdues for these sectors when the economy passes through a recession. As for pairwise association there is an important link between the banking, REITs and other financial services sectors. Moreover, machinery, electronics and industrials sectors are also associated, given the link in the production chain. Finally, utility and electricity sectors are also connected through power generation.

Likewise, in the EU, connectedness is slightly higher compared to the after-crisis period. The main volatility net-transmitters are the other financial services and oil and gas sectors, while the key net-receivers of volatility are the leisure and automobiles sectors. The financial services industry was severely impacted by the global crisis and subsequently by the EU debt and sovereign crisis. This made the sector volatile during this period with the consequences of creating uncertainty and havoc in other ancillary sectors. A deeper investigation shows that this sector continues to be the main transmitter of volatility even in the after-crisis period, showing that the recovery in this sector was mild. Regarding the oil and gas sector, the fact that the euro depreciated against the dollar making oil imports more expensive and supressing margins to oil-related firms, may have affected the sector in transmitting volatility shocks. A strong pairwise association exists between oil and gas and utility sectors which is understandable given the link in the electricity production chain. Likewise, the pairwise

association between banking and other financial services is expected due to the link between these two sub-sectors.

In the UK, as with the sector analysis, the connectedness is marginally higher during the crisis period, with a connectedness index of 69 per cent. The main net transmitters are other consumer services and other financial services sectors. This is in line with a-priori expectations as the services sector is an important contributor to the UK economy. On the other hand, the other telecommunications sector is a net receiver, which is in line with expectations, given that it is a low-beta sector. There is a strong pairwise relationship between banking, life insurance, and other financial services which is predictable given the three sub-sectors are linked through the financial channels. In addition, other consumer services sector is connected to the previously three mentioned sectors. This makes sense since the financial-related sectors and other consumer services sectors are by definition cyclical and are related through the services chain. The same applies to the retail sector which is connected to the consumer services sectors and respond to changes in disposable income.

Looking at Japan, the connectedness in the crisis period is marginally lower vis-à-vis the after-crisis period. Volatility is mostly transmitted by other consumer services and railroad sectors, being sectors which are strongly affected by business cycles and are important sectors to the Japanese economy. As for net receivers, other telecommunications and utility sectors are the most prominent ones. This makes

intuitive sense since both sectors are considered defensive sectors. An expected, a strong pairwise association exists between the industrials and rail transportation sectors which are related along the process chain. The industrials sector has also a strong link with electronic and chemicals sectors, being linked to an extent in the production chain. As expected, the automobiles industry, a predominant industry in Japan, has important associations with electronics and industrials sectors. Finally, other consumer services sector is connected with the banking and retail and other telecommunications sectors which makes sense given that all four sectors are considered part of the services sector in the Japanese economy.

6.6 Equity Volatility Connectedness: Across Regions Static Analysis

As opposed to the CDS market regional analysis, the equity sectors and sub-sectors across regions did not exhibit notable increments in connectedness during the crisis period, albeit in most cases connectedness is higher. In addition, own-connectedness is lower during the crisis period as can be seen in Tables 123 to 141.

Looking at the regional connectedness, the US has been the main transmitter of volatility for the financial services, the banking and other financial services sub-sectors. This makes sense since the origin of the crisis traces to the financial services sector in the US and then extended to other sectors and across the globe. The UK has also been a net transmitter of volatility which can be attributable to the fact that the UK is considered

as one of the largest world financial centres. The EU and Japan are considered to be net receivers. This contrasts with the results in the CDS market, where the financial services and the banking sectors in the US are net receivers. The reason might be that market participants used CDS contracts to insure themselves against backdrop in other sectors, which are mostly cyclical, amid the financial crisis, with the consequence of affecting spreads drastically in these sectors. In contrast from an equity perspective, the crisis originated in the banking sector, and then filtered to other sectors and regions.

As for the basic materials sector, the main transmitters of shocks during the crisis are US and Japan. The US as a transmitter of shocks in the basic materials sector is understandable since the country imports a variety of raw materials and given the subdued demand, imports were negatively hit and this negative sentiment may have filtered to other regions. Japan on the hand, exports a lot of end products, in particular automobiles, for which demand has been affected by the downturn. Given that lesser cars were seemingly being exported, the region has cut back on the demand for raw materials, which potentially triggered shocks elsewhere. The results in the chemical sub-sector, which is considered as part of the basic materials segment, is in line with those of basic materials during the crisis, with the US being the region which transmits shocks the most. The metals and mining sector also has the US as the sole transmitter of volatility.

Likewise, in the oil and gas sector, the US is the region which triggers shocks elsewhere during the crisis. This can be explained by the fact that the US is one of the largest importer of oil, and given that amid the crisis, oil demand has softened, the US sectoral market spread volatility to other regions, particularly those which currencies have depreciated against the dollar. The industrial sector which is connected to the oil sector through the production segment, is the largest net transmitter of volatility in the US. There is also strong pairwise association between the US, UK and EU.

Consumer services and consumer goods sectors from an equity perspective are in line with those of the CDS market, wherein the US and the UK are the main transmitters of volatility. As explained above, this make sense since both economies are services-based, and per-capita growth heavily depends on these two sectors. In addition, in line with expectations, the US and the UK have strong pairwise connection with the EU, given the close economic ties between the regions. Japan as in the case of CDS seems to be disconnected from global market developments. The sub-sector retail stores also registered similar results as consumer services and consumer goods sectors, in that the US and the UK are the main regions which spread volatility spillovers to Japan.

The US has also been the main transmitter of volatility in the technology sector. The technology sector in the US is almost twice as volatile as the US broad equity market and is considered international in nature. Moreover, the US is ahead of the other regions

in the technology segment. These two factors may explain why the US is the only transmitter of spillovers in this sector, while the others are net receivers.

6.7 CDS Spreads and Equity Volatility Sectors Connectedness: Within Regions Static Analysis

After analysing each asset class in isolation, this section deals with spillovers and connectedness indices between the two asset classes. Common sectors and sub-sectors in the CDS and equity markets are examined to understand whether a spillover exists and to what degree is the connectedness between sectors across the two asset classes. A general finding is that CDS spreads volatility is affected by equity volatility in almost all sectors. However, the reverse is not true and is almost completely explained by its own shocks and shocks in related sectors in the equity segment. In addition, own-volatility connectedness in general is lower during the crisis period, supporting the notion that there is a large dependency between the two asset classes during distressed periods as can be seen from Tables 142 to 168.

In the US connectedness between the two asset classes is higher during the crisis, bar for the telecommunications sector. Also, as expected in the US, equity is a net transmitter of volatility across most sectors. One of the main reasons could be that the equity market is much more developed and liquid than the CDS market and therefore more prone to market events. In the financial sector, equity is a predominant transmitter of volatility, in line with a-priori expectations given that the US financial sector was the

sector which triggered the unprecedented crisis, spreading shocks across other sectors in the economy. The CDS banking and financial services sectors as observed above, have been affected by other sectors. From a CDS perspective, consumer services and consumer goods sectors are the main transmitters of volatility. Investors caused this volatility in these sectors by demanding insurance coverage given the cyclical nature of these sectors. Also, the telecommunication sector is dominated by the CDS market. This can be possibly explained by the fact that the telecommunications sector is insensitive to the economic cycle, but investors might have requested insurance coverage to protect their returns, pushing up spreads.

In the EU, the connectedness indices between CDS and equity volatility is higher in almost all sectors during the crisis period. As in the case of the US, the equity sector has been the main transmitter of volatility compared to the CDS sector. Volatility from the banking and other financial services equity sectors dominated volatility transmission in the financial sector. This is in line with the above findings, in that the financial equity sectors were the catalyst of the crisis, creating havoc in other related sectors. This was not the case from a CDS perspective, as financials spreads were contaminated by spillovers from other sectors, mostly consumer services and consumer goods sectors. The results in the latter sectors, are also in line with the above results. As in the US, consumer services and consumer goods sectors are net transmitters of volatility from a CDS perspective. This may be explained by rising premiums following requests for insurance

versus these cyclical sectors. The utility sector shows no connection whatsoever between the two asset classes, further exhibiting the independence nature of this sector.

Volatility connectedness indices in the UK increased, across all sectors. In the UK, the results are quite mixed. In the financial sector, equity volatility is the main net transmitter in the banking segment, while, the CDS sector transmits shocks mostly to the other financials and life insurance sectors. In the consumer services and retail sectors, both the CDS and equity volatility play a role in spreading shocks into the system. For consumer goods and telecommunications sectors, albeit different characteristics, the same findings are observed in the two sectors, wherein sub-sectors from an equity volatility perspective are the main transmitters of volatility.

In Japan connectedness in all sectors is higher between equity and CDS spreads volatility, bar in the consumer services sector during the crisis period. In the financial sector, the banking equity sector was the major transmitter of volatility during the crisis. In line with US and EU, the consumer services sector has CDS spreads as the main source of volatility, while in a sub-sector environment [other consumer services and retail stores sectors] equity volatility is the main transmitter of volatility. Utility sector is the least connected out of all which is in line with a-priori hypothesis that this sector is insensitive to the economic cycle.

6.8 CDS Spreads and Equity Volatility Sectors Connectedness: Across Regions Static Analysis

Looking at the regional spillovers across regions, connectedness between the two asset classes is higher across all the regions under study in all sectors and sub-sectors, bar conglomerate diversified and retail sector during the crisis period as represented in Tables 169 to 188. In general, own-volatility shocks are lower compared to the after-crisis period.

In the financial sector, sectoral equity is the main transmitter of volatility, especially the US and UK banking sectors. This is expected for two main reasons; since US banks were at the forefront in the 2008 financial crises whilst spreading havoc in the world economy, while the UK is considered to be one of the largest world financial centres. EU sectoral equity is a net receiver of volatility, especially from the US and the UK. Japan seems to be disconnected, as this region has no association with external sectoral CDS and equity markets. The CDS market for banks is mostly explained by its own shocks in the market. Only the UK and EU markets are moderate net transmitter of volatility and this makes intuitive sense since European banks came under scrutiny during the 2012 EU debt crisis.

In the other financials sector the UK CDS market is the net transmitter of volatility, affecting the other CDS sectoral markets across all regions. When it comes to equity,

there is a mild association between UK and EU, probably due to the economic and political ties between these two regions.

In the consumer goods sector, there is a strong pairwise association between the EU and UK CDS market, while the US CDS market is mainly explained by its own shocks. However, on the equity front, all the regions seem to be fairly connected to each other, showing strong contagion effects. A point to note is also the fact that connectedness in this sector is also significant in tranquil periods. This shows that this sector is connected globally through trade ties.

The results of the consumer services sector are similar to that of the banking sector. From a CDS perspective, markets are quite independent of what happens in other regions, while there is a close association between sectoral equity in the US, EU and the UK. Japan seems to be rather disconnected from the other regions, while US and UK sectoral equity are the main net transmitters of volatility. This is in line with expectations since both economies are dependent on services and the respective equity markets are larger and more liquid than that of their counterparts.

In the metals and mining sector, the US sectoral equity takes a leading role in transmitting volatility. Indeed, shocks in the US equity market affect equity across regions and also the Japanese CDS market. Neither shocks in the EU nor in the Japanese CDS market contribute to shocks in the US CDS market.

In the telecommunications sector, sectoral equity in the US has been the one which diffused most shocks into the system. US sectoral equity mostly affects the EU and Japanese sectoral equity. In the UK, the telecommunication sector is somewhat insulated from external shocks, as volatility in the CDS and equity sectoral markets are explained by domestic shocks.

6.9 Concluding Remark[47]

The static results show that on average volatility spillovers and connectedness are higher during the crisis period for both CDS and equity markets. However, whilst in the CDS market, volatility connectedness is negligible in the after-crisis period, the volatility connectedness in the equity market remained fairly high in the after-crisis period. A surprising result is that in both asset classes, the financial sector is a net transmitter which means that this sector is vulnerable to shocks from other sectors, especially the consumer goods and consumer services sector.

Volatility spillovers across regions are higher as well during the crisis period, with regional connectedness for the equity sector being high also in the after-crisis period in line with the sectoral analysis. The volatility connectedness between the two asset classes is higher during the crisis period and that the CDS spreads volatility for most sectors is explained by the equity volatility.

[47] A more detailed conclusion is provided in Chapter 10.

Chapter 7: Diebold-Yilmaz Graphical Network Static Analysis

7.0 Introduction

Even though displaying the estimated static sectoral volatility connectedness measures in a tabular setting is quite informative, displaying them graphically is even more revealing. All the tabular settings are presented graphically in this chapter following the graphing convention of Demirer *et al.* (2018).

Throughout the analysis, Gephi, an open-source software is used for network visualisation as it helps to intuitively analyse and customise the appearance of network graphs according to quantitative variables in the data. Estimated networks are displayed using six main characteristics: node naming convention, node size, node colour, edge thickness, edge arrow size, edge colour and node locations.

The node naming convention indicates the '*sector*', '*sector and asset class'* or '*sector and region*'.

The *node size indicates volatility contribution into the system.* The node size is a linear function of the volatility contribution by each specific sector, asset classes or region. The size of the largest and smallest nodes are assigned first, and then the rest are linearly assigned.

The *node colour indicates total directional connectedness 'to others'* for all sections in Appendix D, bar D.3. A sector, asset class or region that is less influential overall will be coloured close to bright green, while a highly influential one will be coloured close to dark red. Figure 1 shows the colour range. In section D.3, the colour of the node denotes the asset class where the equity cluster is in orange while the CDS cluster is in green.

Figure 1: Network Graph Colour Spectrum

The *node location indicates strength of Average Pairwise Directional Connectedness*. Location of the nodes is determined by ForceAtlas2 algorithm of Jacomy *et al.* (2014), as implemented in Gephi. With this algorithm, the nodes repel each other but the edges attract the nodes they connect. The algorithm finds a steady state in which for every pair of nodes repelling and attracting forces exactly balance on another as determined by the average pairwise directional connectedness between the two nodes. In a steady-state, nodes that have higher pairwise directional connectedness values are expected to be closer to each other (Bostanci and Yilmaz, 2020).

The *edge thickness indicates Average Pairwise Directional Connectedness*, with the edge colour being lighter for the weakest links.

The *edge arrow size indicates Pairwise Directional Connectedness*, with the size of the edge arrow from node i to node j increases with the pairwise directional connectedness

from node i to node j. In section D.4 and D.5 the edge colour is in line with the node colour as it provides a better representation of the analysis.

The crisis and after-crisis period are considered for comparison purposes.

7.1 The Sectoral CDS network

The main result is the stronger clustering between sectors within the regions under study in the crisis period compared to the after-crisis period as illustrated in Figures 10 to 17. Figures 2 and 3 hereunder are being reproduced from Appendix D to provide the reader a snapshot of the output results which serve as the basis for the commentary to chapter 7.

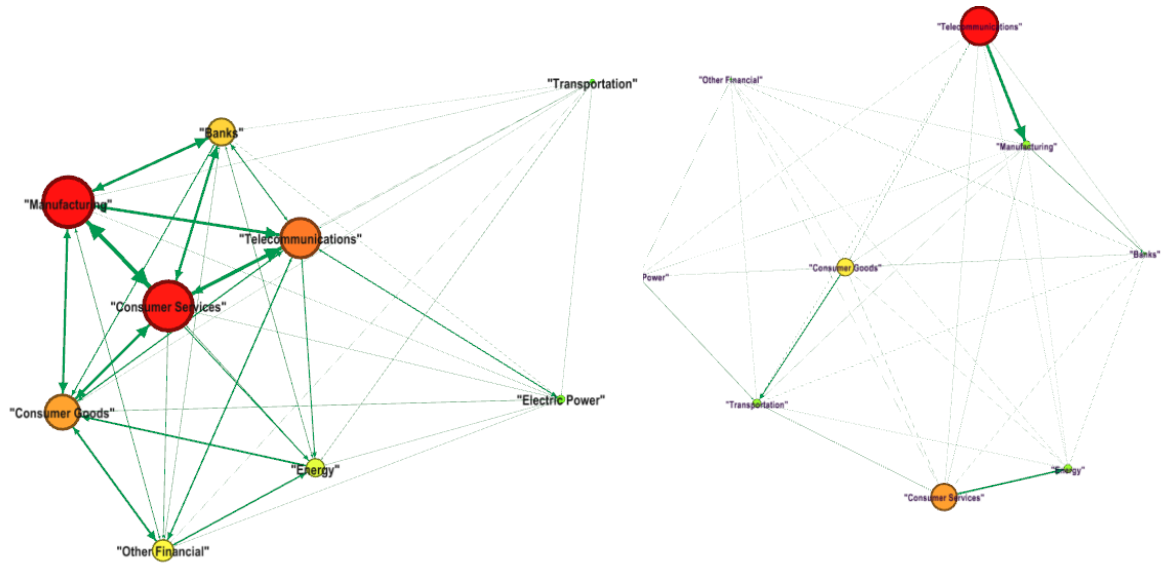

Figure 2: US Sectoral CDS Network in the Crisis and After-Crisis Period (reproduced)

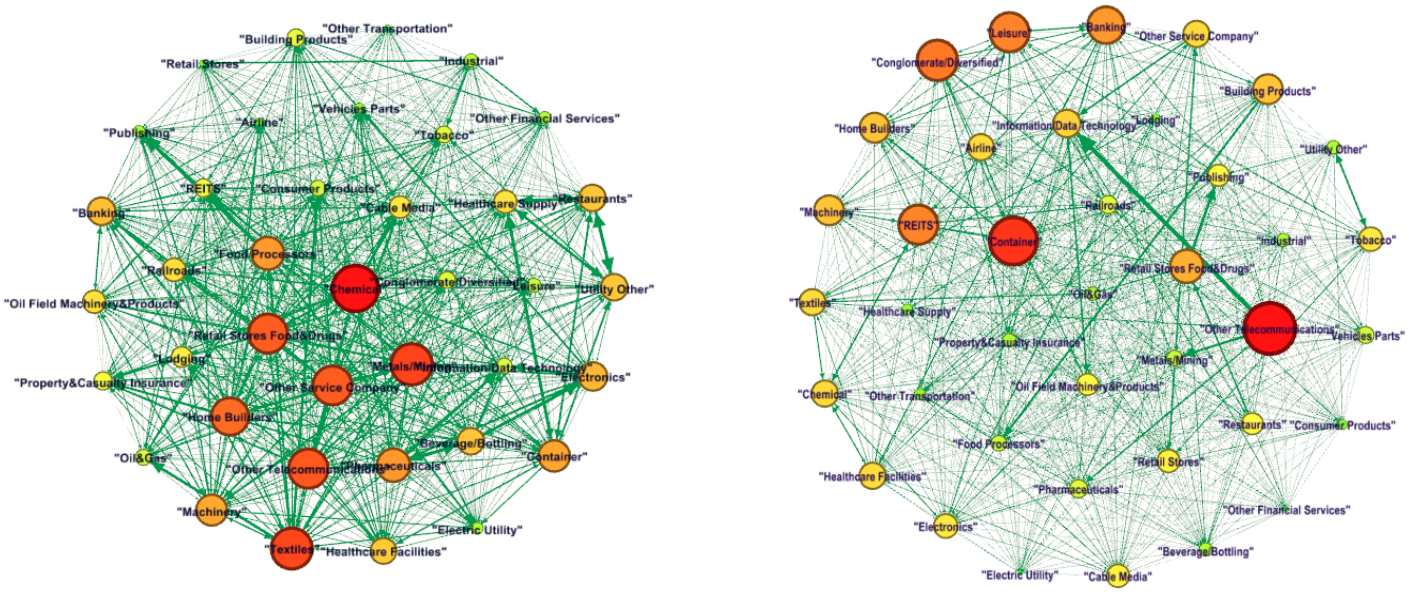

Figure 3: US Sub-Sectoral CDS Network in the Crisis and After-Crisis Period (reproduced)

The deeper clustering indicates stronger volatility connectedness during the 2008 global financial crisis and European debt crisis.

The sectors in the US region show the most dissimilarity between the crisis and the after-crisis period. With respect to the sub-sector segment, connectedness is strong in the after-crisis period, but the edge thickness and the arrow size are smaller in general showing weak pairwise directional connectedness during the after-crisis period. During the crisis period, the consumer services sector, which also happens to be one of the sectors which contributes to volatility into the system the most, is located in the middle of the cluster because spending and consumption are core to the economy. The transportation and electric power sectors, which are low-beta sectors, are located in the periphery of the network because they are on the receiving end of shocks transmitted by other sectors.

In the after-crisis period, the sectors are widely dispersed within the network, however, one important result is that the consumer goods sector is at the centre of the network, highlighting the fact that spending by consumers is a key factor in the US economy. In the sub-sector graph, consumer products and other related sectors like retail stores food and drugs, other services company and lodging sectors are mostly in the middle of the network further highlighting that spending is an important factor for the US economy. The chemicals and metals and mining sectors are net transmitters of volatility during the after-crisis period. The container and retail stores food and drugs sectors are at the centre of the cluster.

The results emanating from the UK region are in line with that of the US region. The consumer goods and consumer services sector are at the centre of the network in the crisis period and after-crisis period respectively. This shows that even in the UK, consumer spending is highly correlated with economic cycles. This result is in line with priori expectations as the consumer goods sector is the most volatile sector during the crisis period, while, consumer services sector is one of the most volatile sector during the after-crisis period. The electric power sector which is a low-volatile sector is at the periphery of the network in both periods. This shows that it is a net receiver of volatility in line with the US region. With respect to the banking sector, while in the crisis period is one of the sectors which contributes to volatility shocks the most and is somewhat close to the middle of the network, in the after-crisis period, it is at the periphery of the

network evidencing a weaker contribution to volatility into the system, possibly being a net receiver of volatility. In the sub-sector network, the banking and other financial services sectors are the ones which transmit volatility the most. On the contrary, only the other financial services sector is a prominent transmitter of volatility to the other sector. Likewise, the banking sector is a net receiver of volatility in the after-crisis period and its node is set at the border of the network. Finally, as in the case of the main sectors network, the sub-sector network is widely spread during the after-crisis period, showing a weaker connectedness.

With respect to the EU, sectors like energy, manufacturing, and consumer goods, which are all related to the production process tend to be at the centre of the network during the crisis period. The electric power and consumer services sectors are at the periphery of the network, being net receivers of volatility. In the after-crisis period, although the distribution of the network is wider, the energy and consumer goods sectors remained at the centre of the network and therefore, are net transmitters of volatility irrespective of the period under consideration. In addition, like in the US and UK, the consumer services sector is also a net transmitter being at the centre of the network. Looking at the sub-sectoral network, the connectedness is higher during the crisis period as compared to the after-crisis period and pairwise directional connectedness is stronger as evidenced by the edge thickness and size. During the crisis period the building products, oil and gas, automotive manufacturer and other financial services sectors are at the centre of the

network. Coincidentally, they have the largest nodes being the most volatility's contributors. Sectors like building products and automotive manufacturer have been hardly hit by the crisis. The oil-gas sector relates to the former sectors through the production process, so indirectly, it was also affected during the crisis period. The other financial sector is also a net transmitter of volatility because of the European debt crisis.

Looking at the Japanese network, the same results as in the other regions hold. In the crisis period for both the sectors and sub-sectors segments, the network is more clustered. For the sectoral network, the banks sector is at the centre of the network, being a net transmitter of volatility. The other financials and manufacturing sectors which both contribute to volatility into the system are also at the centre of the network. The consumer services sector seems to be at the periphery of the network. This further confirms that Japan is somewhat disconnected from the other regions. During the after-crisis period, the other financials and manufacturing sectors continued to be at the centre of the cluster, however, the banks sector is located into the periphery of the network, together with the electric power and telecommunications sectors. In the sub-sector network, the banking sector dominates again the scene by being at the centre of the cluster, with the railroads, industrials and retail stores sectors being at the periphery of the network. In the after-crisis period the network is very much dispersed with the metals and mining sector being at the centre of the cluster.

7.2 The Sectoral Equity Network

Although not to the extent of the CDS market, the core aspect of the analysis is the stronger clustering between sectors within the regions under study in the crisis period compared to the after-crisis period as depicted in Figures 18 to 25. Despite the strong connectedness between sectors across both periods under consideration, the graphical analysis shows deeper connectedness during the perturbed period, bar in Japan.

In the US region, the consumer goods sector is at the centre of the cluster which shows that it is a net transmitter of volatility to the other sectors. Coincidentally, it is also one of the sectors which has the bigger node, indicating that it is a sector which contributes the most to shocks into the system. The other sectors which are at the centre of the network are basic materials and technology sectors. The financials and the utility sectors are at the periphery of the network. The utilities sector is by definition a low beta sector and being at the periphery of the network is in line with expectations as the sector would be a net receiver of volatility. The financials sector is also a net receiver which could possibly be because the shocks of the other sectors further contaminated the performance of this sector. In the after-crisis period, the consumer services and consumer goods sectors are at the centre of the network, which also happen to be the most volatile sectors during this period. In the after-crisis period, spending and consumption started to increase as confidence grew. The utility sector is also at the periphery, further indicating that it is a net receiver of volatility in the long term. In the sub-sector analysis, the property and

casualty insurance sector is at the centre of the network. This makes sense, given how the property market in the US was hit hard. The other financial services, oil and gas, food processing and other services company sectors are also at the centre of the network. In the after-crisis period although connectedness is still high, the edges' thickness and arrow size are smaller than in that of the crisis period, signifying weaker average pairwise directional connectedness. Other services company and other financial services sectors remained at the centre of the network, as confidence started to pick up mildly in the after-crisis period.

In the UK region, the consumer services sector, together, with the oil and gas sector is at the centre of the network. As confidence slumped, the demand for consumer services was negatively influenced, heavily reducing the performance of this sector. In the addition, the oil and gas sector was affected by a depreciating sterling versus the dollar, spreading negative shocks into the system. The telecommunications and utility sectors are at the periphery of the network, being net receivers. In the after-crisis period, the consumer services sector remains at the centre of the network, together with the financials and industrials sectors. A point to note is that the financials sector has a bigger node in the after-crisis period, signifying that during this period the sector contributed to more volatility into the system. This could be well because of the improved performance of this sector as the economy started to gear upwards. The utility and telecommunications sectors remain at the periphery of the network. In the after-

crisis period the other financial services and other services company sectors are the main sectors transmitting volatility into the system, being at the centre of the network. The other financial services sectors remain at the centre of the network even in the after-crisis period. There is strong connection between the other financials, banking, other services company and life insurance sectors during both periods under consideration.

In the EU, the oil and gas sector together with the industrial sector are at the centre of the network. Both sectors are net transmitters of volatility into the system. The performance of the oil and gas sector was negatively affected by the depreciation of the euro vis-à-vis the US dollar, and the industrials sector performance was affected by the financial crisis because it is heavily reliant on the economic cycle for distribution and transportation of durable goods. Also, the link and shock spillovers across the production chain is evident with strong flows between the industrials, consumer goods and the basic materials sectors. Healthcare and telecommunications are at the periphery of the network, being low-beta sectors. The technology sector in the EU is not as developed as in the US, with little influence on the shocks to the system and therefore located at the periphery of the network. In the after-crisis period, industrials sector remains located at the centre of the network. This could well be because of the increasing confidence into the economy. This sector is quite connected with the consumer goods and the consumer services sectors. Connectedness in the EU remains high even in the after-crisis period as can be evidenced by the edges' thickness and arrow size. Looking at the sub-sectoral

part, other financial services, other services company and oil and gas sectors are at the centre of the cluster, being the main transmitters of volatility into the system. Other financial and other consumer services sectors remain net transmitters in the after-crisis period. The automotive manufacturer sector is a net receiver of volatility in both periods under consideration as demand slowed down.

The Japanese region is the only region where connectedness is higher, albeit marginally, during the after-crisis period from both sectoral and sub-sectoral perspective. The technology and the healthcare sectors are at the forefront of the network and are the main transmitters of volatility. While for the technology sector it can be expected due to less demand and investments into research and development, it is quite surprising that a low-beta sector like healthcare is a net transmitter. As already discussed, during this period the healthcare sector in Japan was undergoing a regulatory revamp with a lot of uncertainty surrounding healthcare costs. This could have well contributed to volatility into this sector, which, in turn was transmitted to other sectors of the economy. The utility sector is at the periphery of the network being a low-beta sector. In the after-crisis period, the healthcare sector remains located at the centre of the cluster. However, the industrial and consumer goods sectors have bigger nodes and are the main transmitters of volatility during this period. These sectors are positively related to the economic cycle, with increasing demand as confidence grew. In the sub-sector graph, the railroads and consumer services sectors are the main sectors which spread shocks to the

other sectors into the network. Other telecommunications and other utility sectors are located at the border of the network. In the after-crisis period, the railroads sector remains located at the centre of the cluster. Coincidentally, it is also the sub-sector with the biggest node, signifying a sector which is highly volatile during the period.

7.3 The Sectoral Volatility Connectedness between CDS Spreads and Equity

After analysing the CDS and equity markets in isolation, the two asset classes are analysed collectively in Figures 26 to 49. The equity market is represented by the orange colour, while, the CDS market by the green colour. Data permitting, sectors in the four regions under consideration are analysed for both the crisis period and the after-crisis period. As a general finding during both periods, the equity and the CDS market seem to be disconnected across all regions. The connectedness or spillovers is larger within the respective asset classes rather than between them, bar for some sectors. In addition, the equity market has bigger nodes, signifying that the equity market contributes more to shocks into the system.

In the US market, own-volatility spillovers are larger than cross-volatility spillovers in both the equity and CDS markets. In fact, the edges' thickness and arrow size are bigger within the respective markets than between markets. In addition, as evidenced by the edge thickness and size of the arrows, connectedness has in general been higher in the crisis period. Volatility connectedness in the UK is higher across all sectors in the crisis

period. In the financials sector, the banking sector in the equity market is the main net transmitter of volatility, while, the CDS sector transmits shocks mostly to the other financials and life insurance sub-sectors. In the consumer services and retail sectors, both the CDS and equity volatility play a role in spreading shocks into the system. In the EU, the connectedness between CDS and equity volatility is higher in almost all sectors during the crisis period. As in the case of the US region, the equity sector has been the main transmitter of volatility. Volatility from the banking and other financial services equity sectors dominates volatility transmission in the financial sector. The CDS market is located at the periphery of the networks in the case of the consumer services, industrials and telecommunications services sectors. In Japan, all sectors experienced an increase in connectedness between equity and CDS spreads volatility, bar the consumer services sector. In the financial sector, the banking equity sector is the major transmitter of volatility during the crisis. In line with the results for the US and EU, the consumer services sector in Japan has CDS spreads as the main source of volatility, while in a sub-sector environment equity volatility is the main transmitter of volatility.

A general finding across the four regions under study, is that despite own-volatility connectedness is lower during the crisis, both markets seem not to be clustered at the centre in a graphical network framework. Indeed, there are two mutually exclusive clusters, that of the CDS market and the equity market where the number of edges within the clusters are larger than the number of edges between the clusters. Volatility

in the equity sector affects the volatility of the CDS market. In general, volatility in the equity market is explained by its own sectoral shocks.

7.4 The Regional CDS Network

The graphical analysis in Figures 50 to 66 shows that regional connectedness in CDS spreads is on average higher during the crisis period. This result can be further evidenced by looking at the edge thickness and arrows sizes which are larger during the crisis period, signifying higher average pairwise directional connectedness. Overall, the US, EU and UK are largely associated, with Japan being rather disconnected in most cases at the periphery of the network.

The manufacturing, consumer goods, banks, beverage and bottling, consumer services and financials are the sectors which have the strongest cluster at the centre during the crisis period and as such having the highest connectedness during this period.

For the manufacturing sector, the US, EU and UK have the largest association, with the EU being the biggest net transmitter. Japan seems a bit disconnected and only has a relevant association with the UK as evidence by the edge thickness and arrow size. In the after-crisis period, the EU is located at the periphery of the network, with the UK being the main transmitter of volatility. During the same period, UK and US are closely connected.

For the consumer goods sector, the EU and the UK have a strong pairwise association in both periods under consideration, probably because of the strong economic ties between the two regions. Suffice is it to say that the UK manufacturing exports and imports to and from the EU, accounts for circa 50 per cent and that most European consumer product companies housed their operations in the UK in the pre-Brexit era. The US seems a bit disconnected from the other regions, with most of the shocks coming from within its own-volatility.

Looking at the banking sector, the US is a net receiver in both periods under consideration. The EU and the UK are the main transmitters of volatility during the crisis period. In the after-crisis volatility into the system is mainly driven by the EU region. The US and Japan are located at the periphery of the network in both periods under consideration, being net receivers of volatility shocks. This might be case that although the US banking system may have triggered the crisis, in subsequent months, the EU banking sector has caused more concern across the globe given the pronounced diversity of the national financial structures, oversized sector and a lack of consensus of what constitute capital and non-performing loans. As a consequence, many banks were hit hard particularly in Germany and Spain and other countries have entered recovery programmes. These events have transmitted shocks to both the US and UK, with shocks to the latter being more profound given that the UK formed part of the EU. Indeed, credit spreads in both the UK and US have surged during both periods. Japan is

comparatively detached from the other three regions, possibly because the country had already a separate agenda dealing with a below zero inflation. The same result is registered in the other financials sector and the banking sub-sector, with the EU and UK having the bigger nodes and being transmitters of volatility into the system in both periods.

In the consumer services sector, the US is the main net transmitter volatility in spreads, followed by the UK. A relevant association also exists between the EU and the UK for this sector given the economic integration of the UK with other European countries, and the greater proportion of trade between the two regions. This strong connectedness between the two regions can also be evidenced in the sub-sector of the consumer services sector. In the after-crisis period, the UK and EU are the main transmitters of volatility with the US and Japan being located at the periphery.

The beverages sub-sector has a higher connectedness in the crisis period when compared to the after-crisis period. The EU and UK regions which are intricately connected are the main transmitters of volatility. The US is located at the border of the network, being a net receiver of volatility shocks.

7.5 The Regional Equity Network

Equity regional connectedness is higher during the perturbed period as depicted in Figures 67 to 85. In addition, own-connectedness is lower during the crisis period. This comes to no surprise given that the global equity sector is very large and liquid.

The US has been the main transmitter of volatility for the financial services sector, the banking and other financial services sub-sectors during the crisis period. This is in line with a-priori expectations since the origin of the crisis traces back to the financial services sector in the US and then extended to other sectors and across the globe. The UK has also been a net transmitter in the period under consideration. The EU and Japan are considered as net receivers being located at the periphery of the network. This contrasts with the results in the CDS market, where the US financial services and the banking sectors in the US are net receivers. The reason might be that market participants used CDS contracts to insure themselves against backdrop in other sectors (mostly cyclical) amid the financial crisis, with the consequence of affecting spreads drastically. In contrast from an equity perspective, since the crisis originated in the banking sector the first sector to be negatively affected was the banking and financial services sectors and then filtering shocks to other sectors and regions. In the after-crisis period, the UK is the main transmitter of volatility in the financial services and banking sectors.

In the oil and gas sector, the US is the region which triggers shocks elsewhere during the crisis. This can be explained by the fact that the US is one of the largest importer of oil

and given that amid the crisis, oil demand has softened, the US sectoral market spread volatility to other regions, particularly to those which currencies have depreciated across the dollar. In the after-crisis period, the UK is the main transmitter of volatility, followed by the EU. Japan is located at the border of the network in both periods. In the industrial sector, which is connected to the oil sector through the production segment, the US is also the main transmitter of volatility during the crisis period. There is also strong pairwise association between the US, UK and EU. The association remains strong in the after-crisis period with the UK being the main transmitter of volatility.

The consumer services and consumer goods sectors from an equity perspective are in line with those of the CDS market, wherein the US and the UK are the main transmitters of volatility. As explained above, this make sense since both economies are services-based, and per-capita growth in the respective regions heavily depends on these two sectors. In addition, in line with expectations, the US and the UK have strong pairwise connection with the EU, given the close economic ties between the regions. The equity market in Japan, as in the case of CDS market, seems to be disconnected from global market developments, being located at the periphery of the network. The results hold in the after-crisis period. The sub-sector retail stores sector also registers similar results as the consumer services and consumer goods sectors, in that the US and the UK are the main regions which spread volatility spillovers to Japan.

The US has also been the main transmitter of volatility in the technology sector in the crisis period. An important point to note, is that the technology sector in the US is almost twice as volatile as the US broad equity market and is considered international in nature.

7.6 The Regional Network between CDS Spreads and Equity Volatility

Figures 86 to 105 show that there are two clusters in both periods under consideration. The regional connectedness is dependent on the asset class and there are very limited spillovers between the asset classes across regions. On average the equity market contributes most to volatility into the system as it is represented by bigger nodes. The average pairwise directional connectedness is stronger within the asset classes rather than between asset classes, bar in the telecommunications and oil and gas sectors where there is some connection between the CDS and equity markets across regions. Moreover, connectedness is higher during the crisis period as it can be noted from the edge thickens and arrow sizes. The consumer goods, consumer services and banking sectors are the ones which exhibit a higher connectedness, in line with the results above. Mostly, the US region is the main transmitter of volatility followed by the UK and the EU. Also, the US, UK and EU are heavily connected in both periods, albeit more during the crisis period. Japan seems somewhat disconnected in both the CDS and equity markets and located at the periphery of the network. Finally, the connection between regions is within

the respective asset class itself. This result holds for both the crisis and the after-crisis period.

7.7 Concluding Remark

The network graphical analysis shows that both asset classes exhibit strong clustering between sectors within the regions in the crisis period, which indicates stronger volatility connectedness during the crisis period. On the other hand, the sectors are widely dispersed in the network in the after-crisis period. In line with results of the static analysis in Chapter 6, the equity sector in the after-crisis still shows strong clustering around the data in the after-crisis period. Although the static analysis in chapter 6 shows that there is strong connectedness between the two asset classes, the network graphical analysis shows that the two asset classes have separate clusters signifying that own-volatility spillovers are larger than cross-volatility spillovers between the two asset classes. Equity sectors across regions have bigger nodes signifying that the equity market contributes to more shocks to the network.

With respect to the regional analysis, in the crisis period, the edge thickness and arrow sizes are larger, displaying higher connectedness in both the CDS and equity markets during the same period. The regional connectedness reinforces the conclusion on the connectedness between the CDS spreads and equity volatility, as regional connectedness depends on the asset class, with very limited spillovers between the two asset classes

across regions. On average the equity market has bigger nodes, showing that it is the main contributor to volatility shocks into the system.

Chapter 8: Diebold-Yilmaz Dynamic Analysis

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8.0 Introduction

This chapter presents the dynamic connectedness analysis which relies on rolling windows estimation, using the same variables as in the static analysis. The connectedness indices in the static part provide important signs of how the connectedness index is calculated and interpreted. However, of more interest are the dynamics of volatility connectedness over time. Events in financial markets make it unlikely that a single fixed-parameter model shall apply over the entire sub-samples considered. Therefore, the connectedness indices analysed in chapter 6 and 7 provide a suitable summary of 'average behaviour', but which could potentially miss notable secular and cyclical variations in spillovers. To cater for variations in spillovers, a 200-day rolling samples are considered to assess the degree and nature of spillover variation over time. The RATS economic software is used for this analysis.

8.1 CDS Spreads Volatility Sectoral and Sub-Sectoral Connectedness: Within Regions Dynamic Analysis

Figures 106 to 121 show an illustration of the CDS spreads sectoral and sub-sectoral volatility connectedness within regions. The figures hereunder which illustrate the sector and sub-sectoral dynamic connectedness in the US together with net sector spillovers, are being reproduced from Appendix E to provide the reader a snapshot of the output results which serve as the basis for the commentary of the sectoral section in chapter 8.

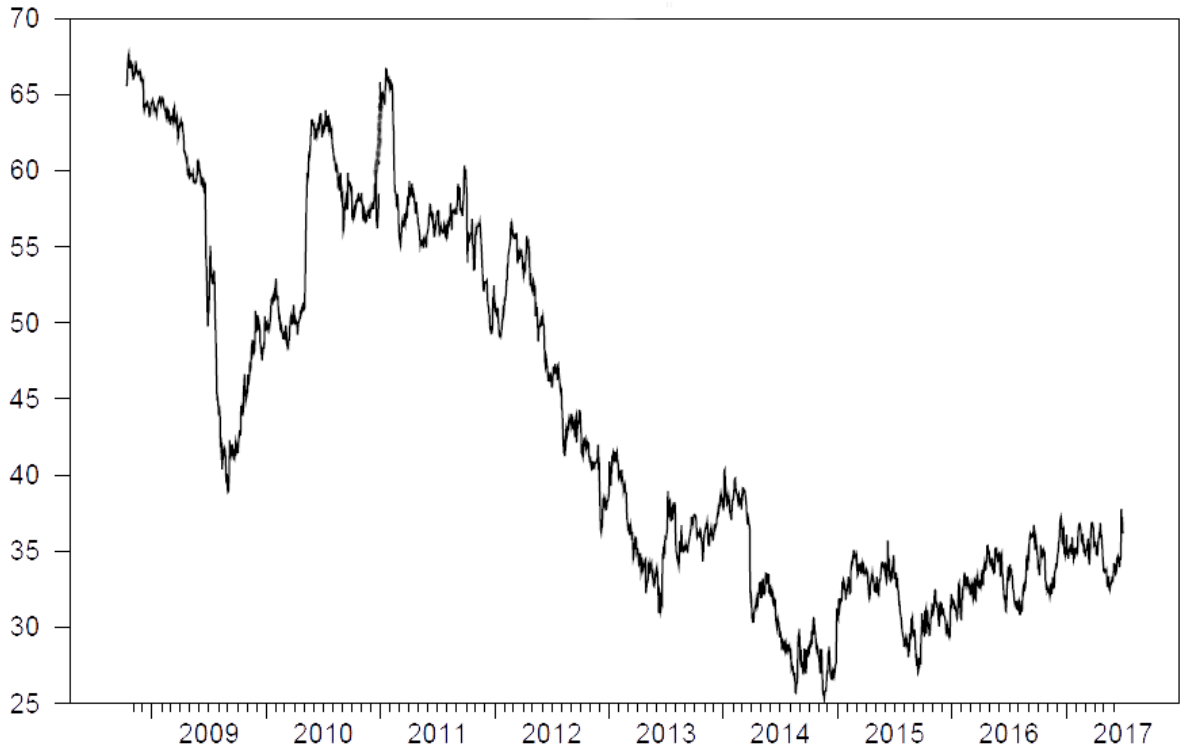

Figure 4: Total Sectoral CDS spreads Volatility Spillovers for the US Region (Reproduced)

Figure 5: Total Sub-Sectoral CDS spreads Volatility Spillovers for the US region (Reproduced)

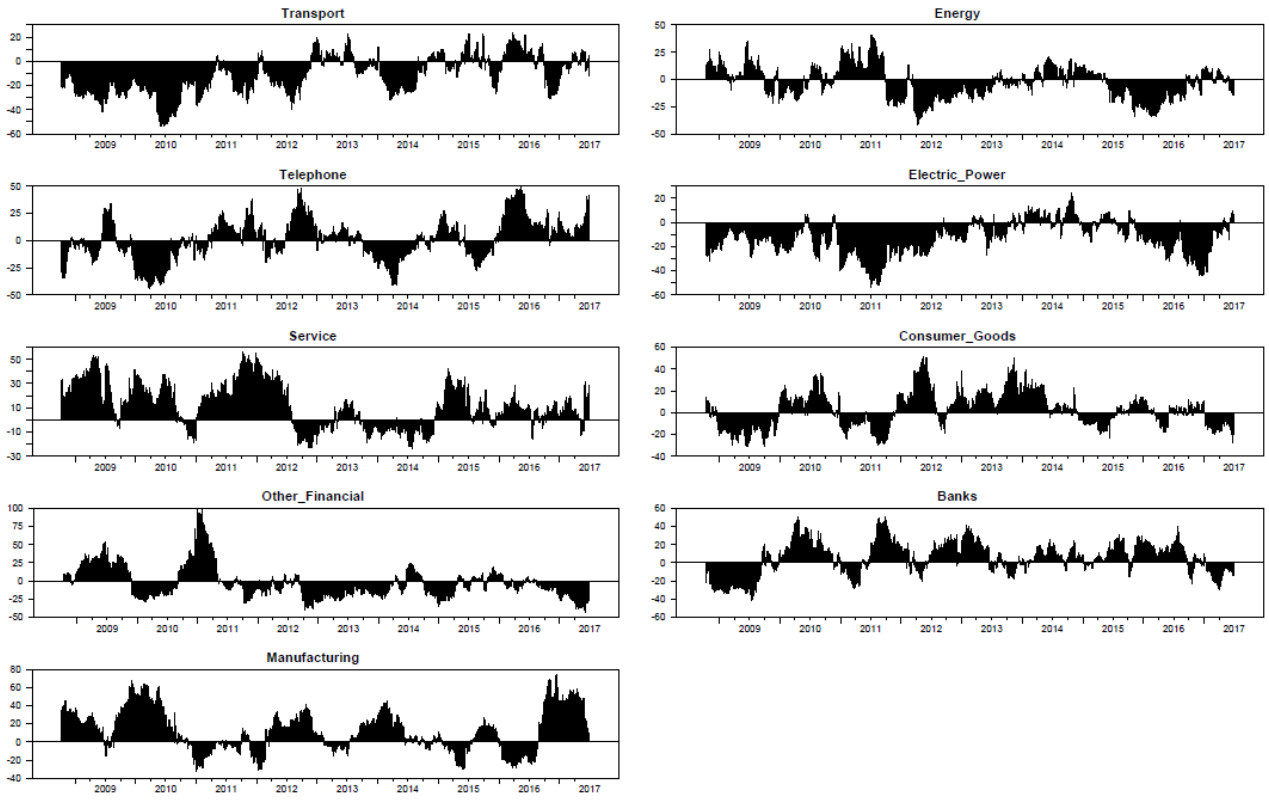

Figure 6: Net Sectoral CDS spreads Volatility Spillovers for the US region (Reproduced)

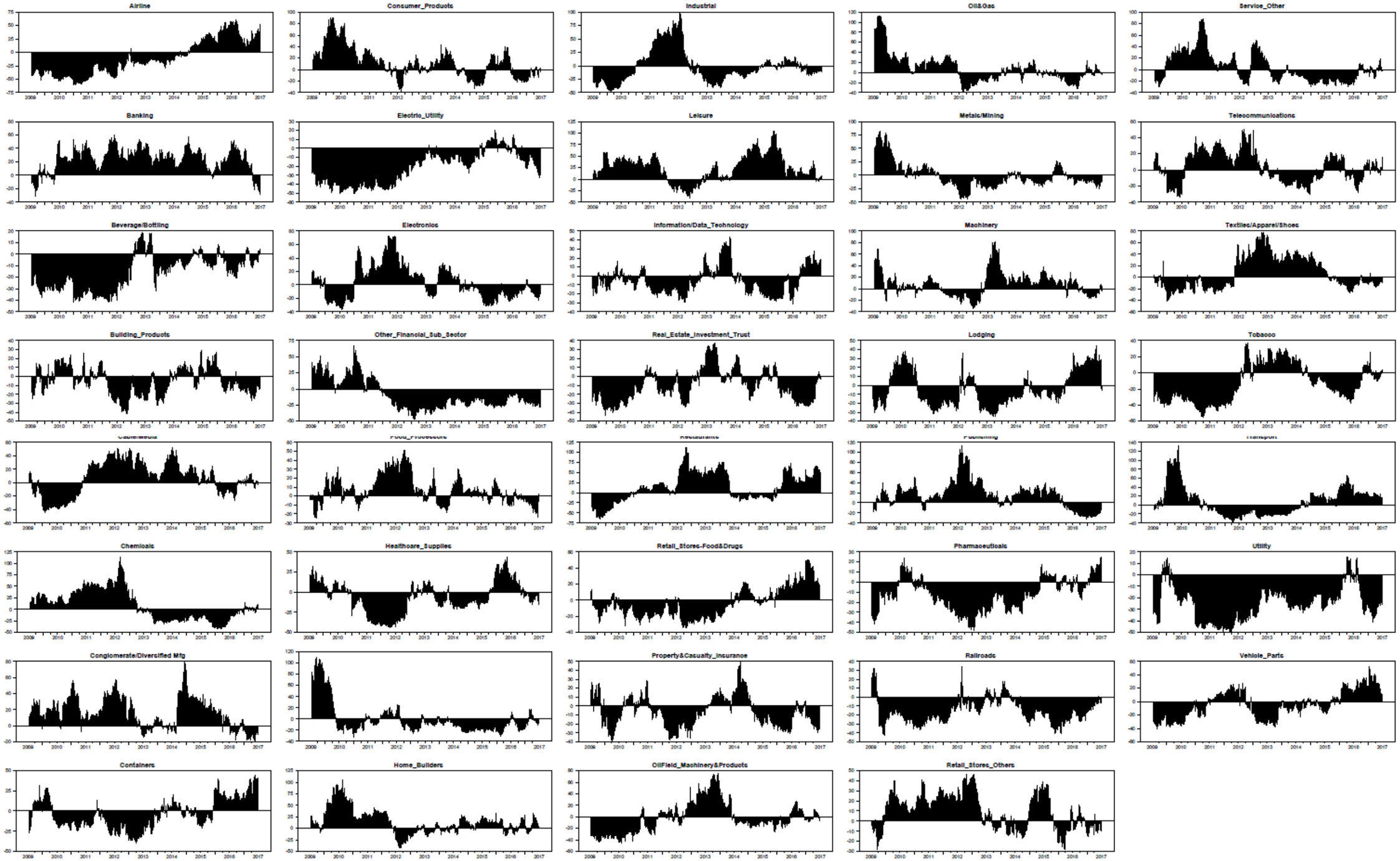

Figure 7: Net Sub-Sectoral CDS spreads Volatility Spillovers for the US region (Reproduced)

From a US perspective, volatility connectedness between the main sectors have been high during the crisis period, hovering between 68 per cent in the peak and 38 per cent in the following months as the first figure above can evidence. Looking at the sub-sectoral estimation, a similar result is recorded, whereby connectedness hovers between 80 per cent in the peak of the crisis and 70 per cent in the following months as the second figure above can evidence. Like in the static analysis, connectedness remains high in the sub-sectors estimation. After the spark of the crisis in 2008, connectedness gradually decreases to increase again in the period between 2010 and 2011. This period was surrounded by a number of episodes which led to contagion effects across the globe. Episodes include the Eurozone Debt crisis, the prospect of a slowing US economy following concerns of a double-dip recession and finally in August 2011 Standard and Poor's announced a formal downgrade of the US Treasury bonds from a AAA status to a AA+.

With its political uncertainty and countries' indebtedness, the eurozone sovereign debt crisis has put the global economic recovery at risk and the US was not immune to this as it was experiencing slow growth during that time period. This, coupled with the US credit rating downgraded to AA+, affected CDS premiums across sectors, creating spillovers inducing a re-pricing of risk.

Between 2012 and 2014 connectedness started to converge downward, with the connectedness index oscillating between 25 per cent and 30 per cent. This period was

characterised by less uncertainty and market participants had become more confident in economic recovery. In addition, stabilisation in monetary policy has eased volatility. In 2015, there has been a slight increase in connectedness due to the fall in oil prices, creating some unrest in certain sectors. Indeed, oil and gas and other sectors associated to this sector production process like the energy, electric power and manufacturing sectors have all been a net transmitter of volatility during the period between 2015 and 2016.

Contrary to the static analysis, the dynamic analysis shows that banks are net transmitters of volatility along the period of the crisis. This makes intuitive sense since the origin of this crisis traces back to this sector. On a related note, the REITS sub-sector also was a main net transmitter of shocks during the peak of the crisis. The other financials sector has been a net receiver of volatility during the turbulent period of 2009 and the wobbly period of 2011. This might be the case that in 2008 volatility first filtered through the banking and real estate sectors and then transmitted to the other financials sector which encompasses investment banking, investment firms and insurance companies amongst others, resulting in the re-pricing of risk in the latter sector. Likewise, in 2011 during the EU debt crisis the contagion effects between EU and US banks have spread to other financials, widening CDS spreads in this sector.

Looking at the EU, a similar pattern to that of the US region can be seen. Total volatility spillovers between sectors hovered around 80 per cent during the crisis, decreasing to

around 40 per cent later on that year. An almost analogous pattern applies to the CDS sub-sector analysis. However, in 2010 volatility connectedness has increased again following the EU debt crisis. The European sovereign debt crisis started in 2008 with the collapse of Iceland's banking system and spread primarily to Portugal, Italy, Ireland, Greece and Spain in the end of 2009, peaking between 2010 and 2012 with a number of European countries experiencing the collapse of financial institutions, high government debt and rapidly rising yield spreads. Indeed, looking at the net spillovers, CDS spreads in the banking sector have widened amid the havoc during this period, spreading volatility across other sectors. The acuteness of EU banks in transmitting volatility has indeed been the largest across the whole period under consideration even when compared to the spark of the global financial crisis.

Volatility has since then eased with a mild economic growth following a number of austerity measures and re-structuring. However, in mid-2016 there has been an increase in connectedness due to Brexit, when the British took a plunge into the political unknown and voted to leave the European Union after a historic referendum. Uncertainty surrounding EU banks and other financials companies based in London have led the latter to re-assess their position following the outcome. Indeed, these two sectors show as net transmitters of volatility. In addition, there has been a rise in connectedness following Trump victory in the US presidential elections albeit contained, easing in subsequent weeks as Trump took the oath of office.

Looking at the UK CDS market, a similar pattern to that of the EU can be observed. During the crisis period, total volatility connectedness stood at 70 per cent and 65 per cent between 2008 and 2009 respectively for the sectoral and sub-sectoral CDS markets and decreasing steadily in late 2009. In a similar fashion, volatility connectedness increases in 2010 till 2011 amid the Eurozone debt crisis, threatening for the first time the stability of the union since its formation. 2013 is an interesting period, when there is an increase in connectedness which the US and EU did not experience. One plausible explanation might be the fact that 2013 has been a highly succesful year for the UK market and with eased uncertainty, CDS spreads narrowed across the board creating positive spillovers amongst other sectors. A reasonable explanation as to why it happened only in the UK is due to the fact that the US is a larger market than the UK, hence for spillovers to spread across all sectors and sub-sectors will take time and consequently, fade away across time, while sectoral performance in EU market is quite diverse and very dependent on the economic situation of the particular member state, which during that period EU countries were recovering from the union worst crisis ever and countries were addressing problems differently, having less contagion effects. Finally, there has been some increase in connectedness in the period surrounding the Brexit referendum.

As in the case of the EU, the CDS banking sector in the UK is a net transmitter of volatility into the system during the EU debt crisis rather than in the 2008-2009 global crisis, reinforcing the argument that the crisis originated from US banks and shocks

propagated into other economies. In addition, this also shows that the UK banking system has clear connotations with that of the EU, given the close economic ties between the regions. Furthermore, an interesting result is that in the aftermath of Brexit, the banks and financials sectors are net receivers of volatility. This may imply that the CDS market was re-pricing sectors that heavily depended on trade with the EU, like consumer services and consumer goods sectors, and a consequence shocks propagated to the banks sectors. Indeed, a deeper analysis involving net pairwise volatility spillovers shows that consumer services and consumer goods sectors transmitted volatility to the banking and financials sectors during this period.

In the Japanese sectoral and sub-sectoral CDS market, the results are relatively in line with the US, EU and the UK, bar that volatility connectedness is larger in 2010. Japan did suffer in 2008 and 2009 but it was one of the first and fastest economy to recover and therefore volatility spillovers between sectors have eased due to more stabilised CDS spreads. However, in late 2009 the economy experienced a deflation for the first time in three years coupled by high public debt, weak domestic demand, and a strong yen. This might explain why connectedness levels are higher in 2010 rather than in 2009. Following this, in 2011 an earthquake followed by a tsunami battered Japan's North-eastern shoreline and wrecked the economy. In the immediate aftermath, the Japanese sovereign CDS spreads jumped by 30 basis points, probably reflecting concerns about the extra fiscal burden implied by the reconstruction. This caused market participants to also

insure themselves on specific sectors like banks, electric power and consumer services with the consequence of creating contagion effects that spread across the entire economy. Since then, connectedness somewhat eased to only increasing again in 2014 as the Japanese fell into an economic recession following a sales tax in April that year. Following various stimulus steps, moderate recovery was registered in the last quarter of 2014 enabling Japan to crawl out of recession. In the period between 2015 and 2017 volatility connectedness is quite stable with some spikes and troughs in the period around Brexit and the US presidential elections.

8.2 CDS Spreads Volatility Sectoral and Sub-Sectoral Connectedness: Across Regions Dynamic Analysis

Figures 122 to 155[48] show an illustration of the CDS spreads sectoral and sub-sectoral volatility connectedness across regions. As it was expected, geographical volatility connectedness is high for all sectors and sub-sectors, bar in the chemical sector. A common result across all sectors and sub-sectors is that the EU region has been the major CDS volatility transmitter during the 2009 crisis. One plausible reason might be that CDS spreads were more volatile for the EU rather than the US, given that the former economy is more prone to negative externalities. In addition, in almost all sectors there has been a spike in CDS volatility connectedness across the European debt crisis

[48] The dynamic connectedness figures for the banking sector are being reproduced here to provide the reader with a snapshot of the regional output results which serve as the basis to the commentary of the regional section in Chapter 8.

period and in this period as expected, the EU region has been the net transmitter of volatility when compared to the US and the UK. Japan on the other hand have exhibited some positive shocks towards other regions in 2011 and 2014, when the economy has experienced a natural disaster and a recession respectively.

Figure 8: Total Regional CDS Spreads Volatility Spillovers for the Banking Sector (Reproduced)

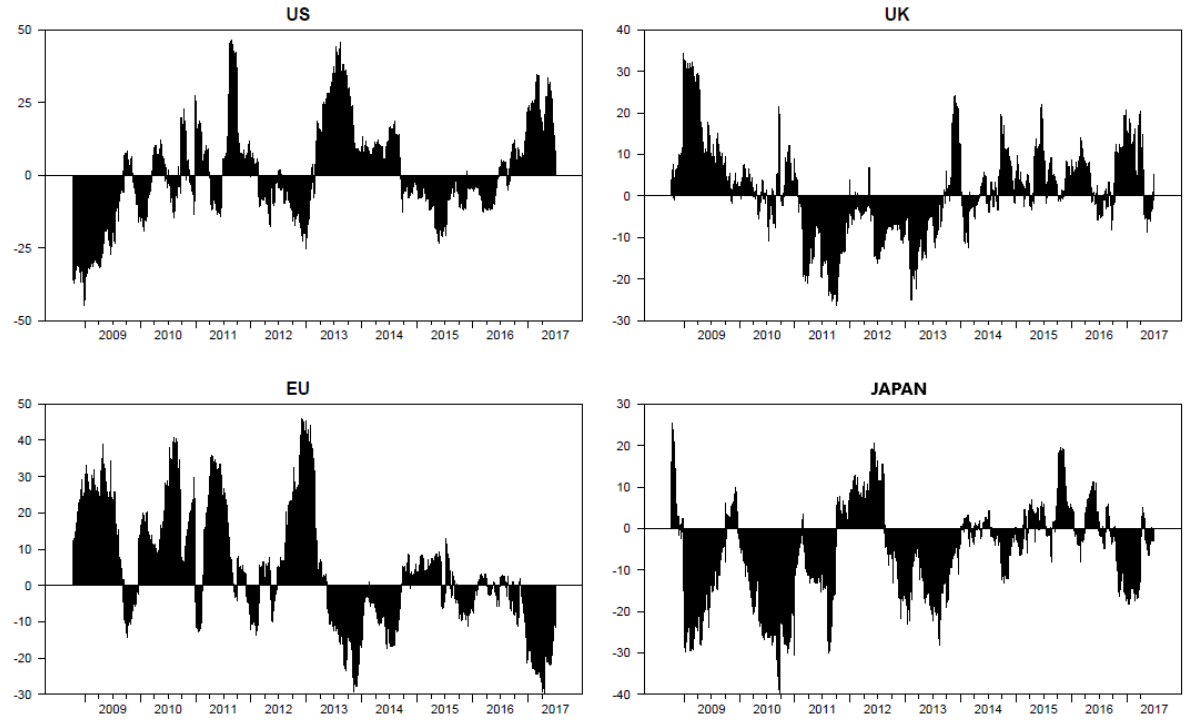

Figure 9: Net Regional CDS Spreads Volatility Spillovers for the Banking Sector (Reproduced)

Looking at the banking sector and the related sub-sectors the largest connectedness is experienced in the 2008-2009, 2010-2011, 2013 and 2016-2017 periods. The periods concerning the global financial crisis, the European debt crisis, the Cypriot crisis and Brexit implications respectively. Although, the global financial crisis originated in the US, it did not stop at the water's edge and have indeed spread across the other regions, mostly to the EU and the UK, where governments have also played a role in safeguarding domestic banks. The UK government provided $88 billion to completely or partially buy banks and promised to guarantee $438 billion in bank loans, while the governments of the three Benelux countries (Belgium, The Netherlands, and Luxembourg) initially bought a 49 per cent share in Fortis NV within their respective countries for $16.6 billion. Also, Germany's federal government rescued a series of state-owned banks and approved a $10.9 billion recapitalization of Commerzbank. This shows that contagion effects

extended across regions, all of which have allowed CDS spreads to widen and shocks to binge elsewhere. The subdued economic growth following the unprecedented financial crisis, exposed the unsustainable fiscal policies of countries in Europe, which sparked the European debt crisis. The downgrades that have been experienced in Europe did not go unnoticed as in August 2011, the US have been stripped from the AAA rating, again shown strong contagion effects amongst regions. There has also been a spike in connectedness in 2013 following the Cypriot crisis which was a combination of over exposure of Cypriot banks to overleveraged local property companies, the Greek government-debt crisis, the downgrading of the Cypriot sovereign bond credit rating to junk status by international credit rating agencies, and a reluctance by the government to restructure the troubled local financial sector. Finally, in 2016 the Brexit scenario has created shocks between regions in that the US, EU, and Japanese banks based in London had to re-assess their position.

The EU has been the major net transmitter of volatility during the perturbed period across all regions but more predominantly to the UK given the close ties between the two regions. In the aftermath of the Brexit referendum, the UK has been an overall net transmitter of volatility. Japan has been a net transmitter in the banking segment following the natural disaster, widening CDS spreads elsewhere. In addition, the other financials sector shares a common pattern with the banking sector in the EU as the US and the UK have been a net absorber of volatility during the 2008-2009 and 2010-2011

crisis. In addition, the effect of Brexit on the US and the EU is more acute given that this includes brokerage houses, asset managers and fund houses amongst others, all of which had to re-assess their position.

Looking at the consumer services sector, the major market which transmitted volatility is the UK CDS market, wherein this sector constitutes 80 per cent of the economy. The UK is the main net transmitter both in the global financial crisis and during the Brexit period. The EU spreads shocks during the EU crisis while the US is a net transmitter during its presidential elections, given the uncertainty in the polls. Japan transmits volatility in 2011 when the economy was severely hit, affecting both imports and exports. Contrary to other sectors, the connectedness levels remain very strong across the period under consideration showing the strong ties these regions have in the trade of consumer services. A sub-sector of the consumer services sector, the retail sector, shows different pattern wherein connectedness remained pretty stable across the regions under considerations with some intermittent spikes. This shows that connectedness in this sector is independent of any financial and economic events, hovering between 20 per cent and 23 per cent. The US and UK have been the main net transmitters, with the former being the largest transmitter of shocks, while Japan absorbs most shocks from these two retail giants. The consumer goods CDS sector has the same volatility spillover pattern as consumer services sector, showing again that these two sectors are related. The volatility connectedness is high during the 2009 crisis and increased quickly again during

the EU crisis. The EU has been the main transmitter of volatility mostly to the UK. Beverages and bottling, a sub-sector within the consumer goods sector, follows closely the main reference sector, with the EU being the main net transmitter.

The chemical and the utility sectors provide an interesting result, where in 2011 the volatility connectedness is more than that of during the crisis. This is perhaps due to the damage sustained by Fukushima Daiichi nuclear power plant in Japan, following the earthquake and tsunami, disabling power supply and cooling reactors. This might have affected CDS spreads in this sector with Japan being the main net transmitter of volatility during 2011 for both utility and chemical sectors.

Finally, CDS volatility connectedness in the manufacturing sector has been the largest during the 2009 turmoil, the EU sovereign crisis and the Japan natural crisis. In this sector, the EU and Japan are the predominant net transmitters of volatility. This is in line with expectations as both economies have the manufacturing sector as an important contributor to GDP, with Japan being the leading country in exporting automobiles, consumer electronics, computers, and semiconductors amongst others.

8.3 Equity Volatility Sectoral and Sub-Sectoral Connectedness: Within Regions Dynamic Analysis

Figures 156 to 171 show an illustration of equity sectoral and sub-sectoral volatility connectedness within regions. As opposed to CDS spreads, wherein volatility connectedness increases in distressed periods and decreases as soon as the turmoil has

eased, the equity volatility connectedness does not follow this pattern for two regions under consideration: the US and the EU. In the UK and Japan, equity volatility connectedness has the same pattern as that of CDS spreads. In general, the equity volatility connectedness index starts to fall in 2012 when the EU sovereign problems have eased, bar Japan as the economy has endured a recession in 2014.

In the US, volatility connectedness hoves between 80 per cent and 87 per cent during the period between 2008 and 2012 from a sectoral perspective. On other hand, from a sub-sectoral perspective volatility connectedness oscillates between 91 per cent and 93 per cent. During this period, volatility was still high in the market coupled with the fact that the credit rating of the US Treasury was downgraded. As soon the economy gained momentum, connectedness eased. The high connectedness between this period could also be driven by the positive rally the US equity market has registered, wherein each sector spread positive externalities to the other sectors. From a volatility spillover perspective, one can also note that there has been a spike in the run up to the US presidential election until Donald Trump has been elected, thereafter volatility has eased.

Looking at the net spillovers, the financials, consumer goods, consumer services and industrials sectors have been the main net transmitters of volatility, while the telecommunications and utility sectors are the predominant net absorbers of volatility. This is in line with expectations as the former sectors are cyclical, while the others, are defensive sectors. A point to note however, is that during the crisis the financials sector

is a net receiver of volatility in line with the above results. A deeper analysis also shows that in line with the static analysis the consumer services, industrials and consumer goods sectors are the sectors which spread most of the volatility to the financial sector. From a sub-sector perspective, the other industrials, other consumer services and other financials sectors have been the main net transmitters of volatility, while, tobacco, airlines, beverage, retail stores [food and drug] and home builders amongst others are the sectors which absorbed volatility the most.

In the EU, the volatility spillover patterns share commonalities with that of the US, in that volatility connectedness remained strong until 2012, after which connectedness has eased. Volatility connectedness vacillates between 78 per cent and 87 per cent from a sectoral perspective, while from a sub-sector view, connectedness ranges between 83 per cent and 90 per cent. An interesting point is that connectedness is larger during the EU debt crisis rather than during the 2009 global financial crisis which makes sense given the difficult times the EU was experiencing during that time period. Connectedness have increased again during the Brexit referendum which is in line with expectations given the close ties between the two regions, allowing shocks to spill over.

The main net transmitters of volatility includes the consumer services, consumer goods, industrials and to some extent the financials sectors. On the other hand, the healthcare and technology sectors are the key net receivers of equity volatility. EU financials were more troubled during the 2010 period rather than at the spark of the financial crisis.

Looking at the net pairwise volatility spillovers, the industrials and consumer goods sectors are the main source of volatility. A plausible explanation is that the EU was still heavily dependent on the manufacturing segment of the economy. From a sub-sectoral perspective, the other financials, consumer services and conglomerate/diversified sectors are transmitters, while, the automotive and leisure sectors are receivers of volatility.

In the UK, like the EU, connectedness levels are larger during the European debt crisis, while in the aftermath of Brexit connectedness levels between UK sectors and sub-sectors increase to almost the crisis levels. The highest registered levels are circa 76 per cent around the EU debt crisis, and 73 per cent in the 2009 crisis and following the outcome of the Brexit referendum from a sectoral perspective. The sub-sectors spillovers reaches the 70 per cent mark in 2012 and just below the 70 per cent mark during the financial turmoil and following the UK referendum. The financials, industrials and consumer goods sectors are the main transmitters, while, healthcare, telecommunications, utilities and technology sectors are absorbers of volatility. This makes institutive sense since the former are all cyclical sectors, while, the latter are defensive sectors, bar technology. As opposed to the US and EU, the UK financials have transmitted volatility during the financial crisis. A plausible explanation can be that the UK is the most powerful financial centre in the world.

In Japan, volatility connectedness reaches the peak in 2014 and 2016 as opposed to the US, EU and UK. In 2014, the Japanese economy was enduring a recession, while in 2016

the BOJ continued with its stimulus in purchasing equity shares which led to price distortions as the economy continued to grease. In addition, in 2016 Brexit referendum and the US presidential election may have also contributed to the increase in spillovers to the Japanese market. Connectedness levels reach 82 per cent from a sectoral perspective, while 84 per cent from a sub-sectoral viewpoint. Other than these periods, connectedness levels are moderately high in 2009 following the US crisis and in 2011 in the aftermath of the natural disaster.

Looking at the net spillovers, the consumer goods, industrials and basic materials sectors are the sectors which transmitted volatility the most, while, utilities, telecommunications and oil and gas are net receivers. This makes intuitive sense since Japan is still dependent on the manufacturing sector, especially that of automobiles and electronics. In addition, utilities and telecommunications sectors are defensive sectors. Looking at the oil & gas sector, in 2011 this sector is a net transmitter following the natural disaster as the recovery of the economy depended on restoring energy. From as sub-sectoral perspective the other industrials, electronics and machinery sectors are the sectors which spread shocks the most as expected. The automotive sector is initially a net receiver of volatility given the slow economic growth across the globe, but as the economy started to regain track, the sector becomes a net transmitter. Chemicals is also a key sector in spreading volatility, however, spillovers reach its peak in 2011 and 2012 in the aftermath of the

tsunami. Other utility and other telecommunications sectors are net receivers of volatility as expected.

8.4 Equity Volatility Sectoral and Sub-Sectoral Connectedness: Across Regions Dynamic Analysis

Figures 172 to 209 show an illustration of equity sectoral and sub-sectoral volatility connectedness across regions. On average regional connectedness between equity sectors or sub-sectors is highest during the crisis period. The US has been the major transmitter of volatility followed by the UK, bar for certain sectors associated with the manufacturing process.

Looking at the banking sector, the total volatility spillovers show that the highest connectedness levels are registered in 2016 during the Brexit referendum. Other notable connectedness levels include the 2009 crisis and the 2011 EU debt crisis. Contrary to the regional spillovers in the CDS spreads, the US and UK banking equity volatility are the main net volatility spillovers. This makes sense, as the two regions have the largest equity markets around the globe. The EU is the main net receiver and only a net transmitter to Japan during the EU crisis. The Japanese banking sector is a net transmitter during the period of its natural disaster.

Looking at the other financials sector, regional connectedness index is highest during the EU debt crisis and the UK referendum, hovering around circa 48 per cent. As in the case of the banking sector, the US and the UK have spread shocks the most, with the EU

being on average a net transmitter of volatility to Japan. A point to note is that during the EU crisis, the UK is a transmitter of volatility rather than the reverse. This could be potentially explained by the fact that the crisis was putting pressure on the UK financial companies based in the EU with the consequence of spreading more shocks. Other financials have more or less the same pattern, bar for total volatility spillovers. However, it shows the US and UK as being the leading transmitters of volatility compared to the EU.

The chemical equity sector registeres the largest connectedness levels in 2012 rather than in 2009. The cyclical nature of this sector and the concerns on the risk of recession in Europe, the delayed recovery of the US property market and the potential of a slowdown in Asia may all have influenced this volatility. In addition, the natural disaster in Japan may also have contributed to higher connectedness. The US has spread most of the shocks, while the EU and Japan take alternative roles in transmitting and absorbing volatility.

For the consumer services, the connectedness index has somewhat remained high during major events, albeit is at its highest during the 2009 crisis. As expected, the US is the major transmitter of volatility, followed by the UK. A similar pattern is registered for other consumer services sector in respect of total volatility spillovers. However, the US and the UK are evidently more of a net transmitter of volatility, while the EU is more of a net absorber of volatility. The consumer goods sector volatility connectedness

remained somewhat stable between the 2009 and 2011 period, hovering around 42 per cent. The US and UK are the key transmitters of volatility shocks to the other regions.

For the basic materials sector, connectedness is largest during the crises. From a net pairwise volatility spillovers perspective, the EU is main volatility transmitter, followed by Japan. This makes intuitive sense since both economies still have the manufacturing sector as a pivotal contributor to the gross domestic product.

The oil and gas sector have registered the largest connectedness during the period between 2014 and 2015. During 2014 oil prices fell dramatically and this can be attributed to a lower demand for oil in Europe and Asia, coupled with a steady oil supply from OPEC. The excess supply of oil caused oil prices to fall sharply. Indeed, as can be evidenced in the net pairwise volatility spillovers, during this period the UK, EU and Japan have been net transmitters of volatility, particularly the UK being the largest economy out of the three. Regarding the utility sector, connectedness levels are the highest during the crisis. The US and the EU have been the main transmitters of volatilities, while the Japanese utility sector has spread shocks in the aftermath of the natural disaster. The same pattern and results apply for the sub-sector other utilities.

8.5 CDS Spreads and Equity Volatility Sectors Connectedness: Within Regions Dynamic Analysis

Figures 210 to 265 show an illustration of the CDS spreads and equity sectoral and sub-sectoral volatility connectedness within regions. As with the case of the static analysis,

sectors and sub-sectors are grouped under one sector classification. On average, the equity volatility is the asset class which transmits volatility the most.

In the US, the sectors included in the analysis are the basic materials, consumer goods, consumer services, financials, healthcare, industrials, information technology, oil and gas, telecommunications, and utility sectors. As expected, the connectedness between the two asset classes is predominantly large during disturbed periods, particularly the 2009 crisis and the EU sovereign crisis. Regarding the oil and gas sector, the connectedness index is higher during the oil price crisis in 2015. Finally, the connectedness in the utility sector is somewhat stable after the crisis, in line with expectations, given that the volatility in this sector is independent of events. In general, the equity sectoral volatility has been the main transmitter of shocks across sectors, which is in line with a-priori expectations, as the US equity market is larger and more liquid than the CDS market.

For the EU region, the sector classification includes basic materials, consumer goods, consumer services, financials, industrials, oil and gas, telecommunications and utility sectors. The connectedness between the two asset classes in the EU shares some commonalities with the US, in that the association is higher during perturbed periods. However, as opposed to the US region, connectedness is at its largest during the EU debt crisis, the Cypriot banking crisis and the Brexit referendum. In general, equity volatility is the asset class which spread shocks the most.

In the UK, the sector classification includes consumer goods, consumer services, financials and telecommunications sectors. In line with the US and EU regions, the connectedness is larger during the main crisis described above together with Brexit. Likewise in the UK, the equity market transmits volatility the most, bar for the consumer goods sector where the net pairwise volatility spillovers are equal between the two asset classes.

In Japan, the sector classification includes basic materials, consumer services, financials, industrials, telecommunications and utility sectors. The highest connectedness index levels are registered in the financial crisis 2009 and in the aftermath of the natural disasters. Contrary to the other regions, in Japan both equity and CDS spreads volatility are transmitters of volatility. For basic materials and industrials sectors, both associated to the manufacturing sector, the equity volatility is the main source of shocks. The same argument holds for the consumer services sector. For telecommunications and financials, CDS spreads are key in spreading shocks. Finally, in the utility sector the transmitting of shocks is equal between the two asset classes.

8.6 CDS Spreads and Equity Volatility Sectors Connectedness: Across Regions Dynamic Analysis

Figures 266 to 305 show an illustration of the CDS spreads and equity sectoral and sub-sectoral volatility connectedness within regions. Looking at the banking sector, connectedness seems high during the crisis period between 2009 and 2011 to ease in the

following years, with mild increase in 2016 due to the uncertainty surrounding Brexit and the US presidential election. During the 2009 crisis, the US and UK equity volatility are the main transmitter of shocks into the system in line with the above results. The volatility of EU banks sectoral equity is clearly affected by that of US and UK. During the EU debt crisis both EU banks sectoral equity and CDS spreads volatility are the main transmitters of volatility, and it stands to reason given that CDS spreads of banks in the EU have widened and volatility increases in the equity returns. During Brexit, as expected equity banks sectoral returns are the most volatile and as such UK equity volatility has been the main transmitter of volatility. CDS spreads for the UK banking sector have not instigated any volatility shocks into the system. A plausible explanation could be that the shocks originated from regions most of the banks are domiciled in, like in the US and/or EU.

The other financials sector has the same pattern for total volatility spillovers for the time period under consideration. The connectedness index is highest during crises and in the uncertain period for the UK and US. The volatility in the UK CDS market is the main source of shocks into the system. The UK equity volatility has also been at times a net transmitter of volatility. This could have been because the UK is considered the world financial hub and as such each shock is triggered from this market. A point to note is that CDS volatility contributed to more volatility connectedness in this sector when compared to its equity counterparts.

In the consumer services sector and sub-sector, volatility connectedness is the highest in the aftermath of the EU debt crisis. In addition, the index never really decreased both from a sectoral and sub-sectoral perspective. This may be because consumer services sector is a cyclical sector and moves in accordance with the health of the economy. For the consumer services sector, US and UK equity volatility are the main transmitters of volatility, followed by the EU. The Japanese assets classes are somewhat disconnected and absorb shocks the most.

The consumer goods sector shares some commonalities with the banking and other financials sector. Indeed, connectedness levels are highest during the US and EU crisis and during the political uncertainty in the UK and US. As expected, and in line with the above results, the equity asset class has been the main transmitter of volatility particularly during the high levels of connectedness. During tranquil periods, CDS spreads volatility seems to spread shocks across the system, due to perhaps widening and/or narrowing of spreads in re-assessing risk. The beverages sub-sector has somewhat the same total volatility spillovers pattern, showing that the sub-sector closely follows the main sector, that is, consumer goods. Looking at the net pairwise volatility spillovers the US and UK CDS spreads and equity volatility generated shocks which were predominantly absorbed by the EU asset classes. In addition, in the equity segment, the spreading of shocks is more evident than in the CDS market, being more liquid and larger.

The industrials sector has high levels of connectedness during the financial crisis of 2009. This makes intuitive sense as the industrials sector is one of the hardest-hit sectors during the recession. The US equity is the principal source of volatility into the sector followed by US CDS spreads. Japanese equity transmits most of the volatility during the US crisis which is in line with expectations given that the domestic economy heavily depends on this sector. Volatility in the main sectors produced a domino effect which negatively affected sub-sectors like electronics. Again, the equity asset class is dominant over the CDS market, with the US and Japanese equity markets being the focal transmitters of volatility shocks.

In line with the above results, connectedness levels in the chemical sector are highest during 2011 and 2012. A plausible explanation can be that the nuclear disaster in Japan has affected CDS spreads and equity volatility across other regions. Indeed, Japanese equity and CDS spreads are net transmitters of volatility in this period to their US and EU counterparts. For the period under consideration, equity volatility in the US chemical sector has been on average the key transmitter of volatility.

Looking at the commodity sector, metals and mining sub-sector registeres the highest level between the two asset classes during the 2009 crisis. US and Japanese equity markets are the main transmitters of volatility shocks. The oil and gas sub-sector connectedness is high during the financial events described above. In addition, during the year 2016, the connectedness between the two asset classes have risen to more than

25 per cent, following the oil price crisis. In this sub-sector, CDS is the asset class which spread volatility shocks the most, particularly the EU market. During the oil price crisis, CDS spreads are the main transmitter of volatility. A plausible reason may be that market participants wanted to hedge against a fall in oil price through CDS contracts with the consequence of affect spreads. Another sector where CDS market is the main transmitter of volatility is the telecommunications sector and its sub-sector other telecommunications.

The retail sector has a volatile connectedness index, which is in line with expectations as it is a cyclical sector. In addition, this also shows that for this particular sector both asset classes tend to move together, that is, negative equity returns are synonymous with spread widening. Regarding net pairwise volatility spillovers, equity is the main source of shocks, particularly from the US and the UK, wherein this sector is a major contributor to the economy.

Finally, total volatility spillovers for the utility sector seem to be erratic as it does not have any commonalities with the other sectors, which makes the sector independent of the economic cycle. Shocks are mostly transmitted by the equity sector, particularly that of the US.

8.7 Concluding Remark[49]

The dynamic analysis displays higher volatility spillovers and more sectoral connectedness during the crisis period for both the CDS and equity markets. For the US, UK and EU CDS markets volatility connectedness has its peak during the 2009 crisis, with some notable connectedness in the EU and the UK during the after-crisis period around the Brexit referendum. Japan seems a bit disconnected with the highest volatility connectedness registered in 2010 and 2011 when the economy was experiencing a deflation and in the aftermath of the 2011 earthquake respectively. For the equity sector the connectedness levels start to ease in 2012 when the European debt crisis have alleviated. From a regional perspective, the EU is the main transmitter of volatility shocks in the CDS markets, while the US is the lead transmitter of volatility shocks in the equity market.

Lastly, when considering the connectedness between the two asset classes, equity is the asset class which transmits volatility the most, bar in Japan. The connectedness between the CDS and equity markets has its peak during the 2009 crisis, European debt crisis and the period surrounding Brexit.

[49] A more detailed conclusion is provided in Chapter 10.

Chapter 9: Volatility Impulse Response Functions for Multivariate GARCH Models

9.0 Introduction

This chapter considers an alternative method to Diebold and Yilmaz (2012) methodology to measure connectedness between sectors within and across regions for the CDS and equity markets. The major financial markets considered are the US, EU, UK and Japan. In this chapter, the methodology of Gabauer (2020) is used, using VIRFs and GARCH time-varying volatilities. Two sequential periods are considered: crisis and after-crisis period. This analysis shall also serve as a check to confirm or otherwise the results of the previous two methodologies used to analyses spillovers and connectedness.

The methodology of Gabauer (2020) extends on that of Diebold and Yilmaz (2012) by eliminating the curse of dimensionality and subjectivity in choosing window sizes through VIRFs. This study also extends on Gabauer (2020) by also considering a Full BEKK-GARCH model in addition to the DCC-GARCH model to also receive time-varying volatilities, as volatility spillovers cannot be tested statistically using the associated conditional covariances and conditional correlations (Chang and McAleer, 2019). The analysis considers both the static, which shows an overall average of the total connectedness, and dynamic part, which captures the secular movements in the total connectedness, for the two periods under study. The methodology employed in this

chapter binds together the previous two methodologies used in chapter 5 and 6. The R software is used for the VIRF DCC-GARCH analysis, while the Python software is used for the VIRF Full-BEKK GARCH analysis.

9.1 DCC GARCH Models

9.1.1 CDS Spreads Connectedness Across Regions

This section considers regional connectedness within the sectors under consideration for the CDS market. Both periods under study are considered for the static part which are represented in Tables 189 to 217 and the dynamic average total connectedness and net directional connectedness are illustrated in Figures 306 to 363.

In line with a priori expectations, the total connectedness index (TCI) is higher during the crisis period when compared to the after-crisis period. The most notable differences are in the banks, consumer goods, other financials and manufacturing sectors and in the banking, automotive manufacturer and other telecommunications sub-sectors. Only the conglomerate diversified manufacturing sector registers a decrease in the TCI during the crisis period compared to the more tranquil period. This is on average in line with the previous findings when using the methodology of Diebold and Yilmaz (2012) and hence connectedness and shocks spillovers do increase in periods of high volatility or economic distress.

Looking at the static TCI, the EU and UK are the most dominant net transmitters across sectors and sub-sectors during the crisis period. The US is also at times a net transmitter but it is clearly less dominant than its counterparts. Japan is on average a net receiver during the crisis period in line with the findings in previous chapters. The most noteworthy difference from the previous results is that the banking sector in the US is a net transmitter rather than a net receiver of shocks like in the results when using the Diebold-Yilmaz (2012) methodology. In the after-crisis period, the EU still remains the dominant net transmitter, however, the net transmission within sectors is distributed between all regions, including Japan. The EU region is a net transmitter of shocks plausibly due to the European Debt crisis which started in 2010, which effects and repercussion were still felt in what this study considers to be the after-crisis period.

Analysing the dynamic total connectedness part, connectedness is high during the crisis period but then it quickly dissipates to the mean levels for most of the sectors, bar for the consumer services, telecommunications and transportation sectors which remain fairly stable across the whole period under consideration. Connectedness between regions in the other financial sector surprisingly do not increase during the 2008 crisis but spikes during the period of Brexit in 2016. Spreads in this sector may have increased across regions due to increased risk and uncertainty surrounding the event, thereby registering an increase in TCI. In contrast, the sub-sectoral regional connectedness remains on average stable across the regions under consideration, bar for some spikes in the crisis

period for the banking, beverages/bottling, automotive manufacturer, metals and mining and utility sectors.

Looking at the net directional connectedness measures, the US and EU regions are the dominant net transmitters across the whole period under consideration for most sectors and sub-sectors within the CDS market in line with the findings of Diebold and Yilmaz (2012) methodology. This implies that total and net directional connectedness varies with time, an issue which is often masked by the static analysis. For the banking sector, the US is the most influential transmitter of shocks which is in line with expectations given the leading stance of US banking sector worldwide. An important observation is that in 2016 period, during Brexit, the EU is a net transmitter of volatility which ties into the argument set earlier. The EU CDS market reacted strongly to the UK leaving the Union, affecting CDS spreads volatility in this sector. A related sector to banking is the other financial sector wherein the US region is the dominant net transmitter of shocks, with the EU being a net transmitter in the Brexit period, which further reinforces the conclusions above. In the consumer goods and consumer services sectors, the EU on the other hand is the leading transmitter of shocks across the period under consideration, with the US being an apparent net receiver. This is in line with the findings from the previous analysis. Japan has been a prominent transmitter of volatility across the period under consideration in the manufacturing and machinery sectors, two sectors which are

somewhat related. This result is consistent with economic data which shows that the manufacturing industry is the driving force of the Japanese economy.

9.1.2 Equity Connectedness Across Regions

Regional connectedness in the equity market during the crisis period is marginally higher than in the after-crisis period. The static TCI for most sectors, bar telecommunications sector, is higher during the crisis period as shown in Tables 218 to 246. As can be evidenced from the tables at a sub-sectoral level, the spike in the TCI in the crisis period is less evident, although most sectors have a higher TCI during the volatile period. This finding is in line with the volatility connectedness analysis conducted in previous chapters. A possible reason for a high TCI on average across regions during the periods under consideration is that the equity market is more liquid and market participants are more connected than in the CDS market.

As in the CDS market, from a static perspective, the EU region is the main transmitter of volatility during the crisis period, followed by the US and UK regions. The most notable sectors where the EU is a dominant net transmitter include the financial and the production (like industrials and consumer goods) sectors. This further underlines the effects of the EU sovereign debt crisis during this period. In the sub-sector segment, US and Japan are mostly the main net transmitters of volatility. In the after-crisis period, there is no single dominant region which transmits volatility in the main sector segments.

However, at a more fragmented data (sub-sector segment), the US and Japan are the key transmitters of shocks, with the EU and UK being mostly net receivers.

The dynamic part (Figures 364 to 421) of the analysis shows a complete snapshot of the TCI across the whole period under consideration. In all sectors, the TCI spikes during the crisis period, especially in 2009. After the spark of the crisis, then the TCI returns to the average levels which is in line with a-priori expectations. Two sectors, notably, the financials and consumer services sectors register a spike also in 2016, specifically the Brexit period. In the sub-sector segment, the TCI across the period remains fairly constant, bar for some sectors which registered a spike during the crisis period. Looking at the net directional connectedness measures, there is no single dominant region as a net transmitter both in the sector and sub-sector segment.

9.1.3 CDS Spreads and Equity Connectedness Across Regions

After looking at the regional connectedness for CDS and equity markets separately, this section covers the total connectedness between the two asset classes. In line with expectations, the total connectedness between CDS and equity is higher in the crisis period, bar for the conglomerate diversified Mfg sector as shown in Tables 247 to 266. In particular, the banking, other financials, consumer goods and consumer services sectors experienced the most increase. This could be explained by the fact that the 2008 crisis was triggered by the banking and the associated financials sector which then rapidly extended to other affluent sectors of the economy. The equity performance was

then reflected in the increase in spreads in the CDS market as the probability of default of the various companies operating in these sectors shot up.

A contrasting finding to the results attained with the Diebold and Yilmaz (2012) methodology, is that the dominance of the equity market as a net transmitter in both periods under consideration is not as clear as much as in the previous analysis. In fact, the CDS and equity markets have been equally influential in transmitting shocks to the system, especially the EU and UK region, in a static scenario.

Looking at the dynamic scenarios as depicted in Figures 422 to 461, the total connectedness between the two asset classes is quite consistent across the whole period under consideration. Notable spikes during the crisis period are apparent in the banking and other financials sector. This is in line with the structural model of Merton (1974) which is based on the notion that credit information is already reflecting in equity prices, making the two asset classes closely integrated. When it comes to net directional connectedness, the CDS sector is on average dominant over the equity sector as a net transmitter of shocks which contrasts with the results obtained with the Diebold and Yilmaz (2012) methodology. The EU, followed by the US, is the most influential region in transmitting shocks. The fact that the EU region is an affluent region is in conformity with the fact that the CDS market is dominant over the equity sector in terms of shocks transmission. CDS spreads have soared during the EU debt crisis sparking havoc across bloc nations and economic sectors.

9.1.4 CDS Spreads and Equity Connectedness Within Regions

Looking at the connectedness between the two asset classes within the respective regions, the results are quite contrasting compared to the connectedness across regions as illustrated in Figures 615 to 699. Where data permits, the returns of the CDS spreads and equity for a particular sector or sub-sector within a specific region under consideration are examined. An aggregate total connectedness at sector level, including all sectors or sub-sectors, is unfeasible to estimate in a Multivariate-GARCH model, therefore, the analysis is limited only to the connectedness between the asset classes which is also the main hypothesis of this study. 42 sectors in the US, eleven (11) sectors in the UK, eighteen (18) sectors in the EU and fourteen (14) sectors in Japan are analysed.

As a general finding total connectedness is low but constant across the period under consideration, therefore there is no evidence that total connectedness is higher during the crisis period. This is a common finding across all the regions under consideration which is in line with the across-region analysis. The total connectedness index ranges between 1 and 37, with the highest connectedness being registered in the banking sector in the US during the EU Debt crisis.

In the US, only the other financial sector registers a spike in the total connectedness index during the 2008 crisis. However, during the EU debt crisis of 2012, the other financials, banking and consumer services sectors also register a spike in total

connectedness. This was expected as these sectors are the most exposed during the volatile period. All the other sectors registered consistent connectedness during the whole period. In the EU and UK, the other financial sector registers a spike in total connectedness in 2016 during the Brexit period. This is the only notable spike in the two regions, showing that CDS spreads and equity performance moved in tandem during this volatile period in both the EU and UK. In Japan the sectors which register a spike during the crisis period are the transportation and the other financial sectors. This is also in line with expectations given that the Japanese economy is heavily dependent on the manufacturing sector especially on the automotive industry. The negative equity performance coupled with the increase in CDS spreads for the sector have increased the total connectedness for this sector during the crisis period. In addition, the other financial sector registers also a spike in total connectedness between the two asset classes in line with expectations.

9.2 Full-BEKK GARCH Model

After analysing the TCI and pairwise connectedness using the DCC-GARCH model, this section extends on the methodology employed by Gabauer (2020) by considering a Full-BEKK to receive time-varying volatilities which are then used to develop the VIRFs. The idea to use the Full-BEKK is to incorporate all types of volatility spillovers mentioned in chapter three and the shock to be 2.33σ to represent the VaR at 99 per cent confidence level. Therefore, we shall analyse how a shock in one variable would

affect other variables into the system if the VaR scenario materialises. Various Full-BEKK models are used depending on the analysis under consideration. The study employs a two-variate, three-variate, four-variate, six-variate and eight-variate GARCH to receive time-varying volatilities, estimating 164 elements at the most.

9.2.1 CDS Spreads Connectedness Across Regions

The static analysis, represented in Tables 267 to 294 shows that TCI is higher on average during the crisis period, albeit marginally. However, there is no clear-cut evidence that the TCI is drastically higher during the volatile periods as it remained very much consistent across the whole period under consideration. One notable difference is that on average the indices are higher when compared to the results in chapter 6 and when using the DCC-GARCH methodology of Gabauer (2020). This is possibly because of the shock applied through the selection vector is 2.33σ, equivalent to the 99 per cent confidence level, which translates into a more conservative measure. The dynamic analysis shows a consistent TCI across the whole period under consideration, with only the banking sector registering a notable spike during the crisis period as shown in Figures 462 to 516.

With respect to the pairwise analysis, in line with the DCC-GARCH results, the US and the EU are the most dominant regions in transmitting volatilities, in both the crisis and after-crisis period. In the banking sector, in line with a priori expectations, the US is the main net transmitter of volatility in both periods. This ties in with the fact that the crisis was triggered by the US region and that US banks were amongst the severely hit

sectors across the globe. With respect to the after-crisis period, one could argue that the US CDS market for banks is one of the most developed and liquid, thereby having the most market participants who would in turn affect spreads through transacting. Moreover, the consumer services sector has the US region as the main net transmitter of volatility in both periods. This could be attributed to the fact that the US is still considered to be the largest exporter of services across the globe, thereby dictating the transmission of shocks to the other regions. The EU region is the leading net transmitter of volatility in the manufacturing, beverages and bottling, oil and gas and in the electronics sectors in both periods under consideration. This can be tied to the fact that the EU region, including all member countries, is still regarded as one of the main contributors to the total global manufacturing output across the globe. The UK is only a net transmitter of volatility in the other financials sector (in both periods) and in the consumer goods sector (in the crisis period), whilst Japan is a dominant net transmitter in the automobiles and chemical sectors (in both periods). The dynamic pairwise analysis shares the same results of the static one as illustrated in Figures 454 to 507.

9.2.2 Equity Connectedness Across Regions

The equity sector shares the same characteristic results as that of the CDS market wherein TCI, on average, is marginally higher during the crisis bar for industrials, consumer services, utility and other transportation sectors. In addition, the indices are quite high in both periods as shown in Tables 295 to 323. The dynamic TCI is consistent

across the whole period under consideration exhibiting strong connectedness as depicted in Figures 517 to 574.

Looking at the pairwise connectedness between regions, the US is clearly the dominant region in transmitting shocks in both the periods under study, followed by the EU and the UK. Japan is in most cases a net receiver of shocks. This is in line with a-priori expectation in that the US equity market is considered to be the most liquid and voluminous across the world, and Japan to be somewhat disconnected from the rest of the regions. The US is the main transmitter in the financials and other financials, consumer goods, utilities, oil and gas and the retail sectors amongst others. The financials sector in the US, which also include the sub-set of banks, is the one which transacts the most in the world and is where the 2008 crisis has commenced, making the US a dominant transmitter of shocks. With respect to consumer goods and retail sector, the US is considered one of the leaders in consuming and exporting goods, making the region susceptible to transmitting shocks to other regions. The EU is net transmitter in the basic materials, consumer goods, telecommunications, and chemicals sectors, amongst others, while the UK is a dominant transmitter in the consumer services and banking services sectors amongst others. In line with previous results, the EU is mostly dominant in the production sector, while the UK spreads shocks from the services sector.

9.2.3 CDS Spreads and Equity Connectedness Across Regions

When considering the two asset classes together, the results do not change from the individual class analysis. TCI, is on average, higher during the crisis period but marginally as shown in Tables 324 to 343. The dynamic TCI is also high and consistent across the whole period under study as shown in Figures 575 to 614.

The dynamic pairwise analysis exhibits mixed results with no evidence that an asset class dominates the other. This contrasts with the results of the previous chapters wherein the equity sector, especially in the US, is clearly the main net transmitter of volatility. In the equity market, the US region is the most dominant while in the CDS market, the EU is the dominant region in line with the previous results.

9.2.4 CDS Spreads and Equity Connectedness Within Regions

Like in the DCC-GARCH model, the total connectedness within-regions analysis is carried out only at the asset class level given that the large number of parameters would make it unfeasible to estimate with a Multivariate-GARCH model. Looking at the connectedness between the two asset classes within the respective regions, the results are quite contrasting compared to the connectedness across regions.

Overall, there is no evidence that the total connectedness is higher during the crisis period. For the US, UK and the EU the results are mixed with TCI being higher during the crisis period for some sectors, while, for others is the contrary as shown in Figures

700 to 769. In Japan, it is evident that the TCI is higher during the after-crisis period. Moreover, contrary to the regional analysis, the TCI is not consistent across the period with some notable spikes during the 2008 crisis and Brexit period.

As regards the pairwise connectedness, the results are again quite mixed. In certain sectors, there is an alteration between the two asset classes during the whole period. In the US, in over 70 per cent of the sectors, the equity market is the dominant net transmitter of shocks. For the EU, in over 60 per cent of the sectors, the CDS market is the dominant asset class in spreading shocks into the system. In the UK region, there is no clear dominance from either sector. Finally, in Japan in over 55 per cent of the sectors, the equity market is dominant.

9.2.5 Concluding Remark[50]

The VIRF methodology shows also that the TCI is on average higher in the crisis period for both the CDS and equity markets. This result holds for both the DCC- and BEKK-GARCH time-varying volatilities, albeit in the BEKK-GARCH analysis the TCI remains fairly consistent across the samples under study.

The DCC-GARCH VIRF analysis shows that the connectedness between the two asset classes is higher during the crisis across regions but not within regions. This is in line with the results of previous chapters. The US, EU and UK are closely interlinked, with

[50] A more detailed conclusion is provided in Chapter 10.

Japan seemingly disconnected. This holds for both the CDS and equity markets and is line with the results of previous. The dynamic part shows that the TCI sparks during the crisis period and reverts to its mean in the after-crisis period. The dynamic part does not show a dominant region as the net transmitter of volatility which is in line with the results of the rolling windows analysis in the previous chapter. The TCI in the BEKK-GARCH model is notably higher than the TCI obtained with the methodology of Diebold and Yilmaz (2012) and Gabauer (2020) possibly because a $2.33\,\sigma$ shock is being consider. The dynamic part results of the BEKK-GARCH model are coherent with that of the DCC-GARCH. Both analyses show that no asset class is dominant over the other in transmitting volatility shocks.

Chapter 10: Conclusions, Policy Implications & Avenues For Future Research

10.0 Summary of Methodology

The first part of this study examined the dynamics of conditional volatility and conditional correlations in sectoral returns and across regions. In addition, leverage effects and volatility spillovers across sectors and regions were examined. The models used included DCC-GARCH, ADCC-GARCH and the DBEKK-GARCH which examined conditional correlations, asymmetric effects and volatility spillovers respectively.

Subsequently, connectedness between sectoral and sub-sectoral CDS Spreads and between equity volatilities in the US, EU, UK and Japan was analysed using the methodology of Diebold and Yilmaz (2012). In addition, connectedness between the two asset classes was examined using the methodology of Diebold and Yilmaz (2012) and Gabauer (2020).. The analyses were also extended to regional spillovers, examining shocks spillovers between the regions under consideration. The study employed a static and a dynamic approach to investigate volatility connectedness.

The three methodologies used in this study provide useful information to make an inference and derive practical implications. However, the methodology of Diebold and Yilmaz (2012) provides the most flexible methodology to address the research question as it allows the CDS and equity markets to be analysed in isolation at a sectoral level,

thereby providing useful information on both markets. The Multivariate GARCH analysis and the methodology of Gabauer (2020) which makes use of Multivariate GARCH models could not be used to analyse the two markets in isolation as the models would not have converged with such amount of data. However, the methodology of Gabauer (2020) does eliminate the subjectivity and the loss of observations with the methodology of Diebold and Yilmaz (2012).

10.1 Summary of DCC-GARCH and ADCC-GARCH Results

The DCC-GARCH model was used to analyse conditional correlations dynamics between CDS spreads and equity sectoral returns. The results show that unexpected shocks from previous periods have a significant power on the returns of both CDS spreads and equity indices. Unexpected shocks in CDS spreads have more explanatory power on current volatility than that of equity, showing that the CDS market is more influenced by unexpected events. Volatility clustering is present in both the CDS and equity market, however the latter market exhibit larger clustering. In addition, volatility clustering is more persistent in equity markets and more present in the crisis period. Looking at conditional correlations, there is evidence of time-varying correlation between CDS spreads and equity sectoral returns. The short-run persistence parameters show that there is no comovement in the way volatility shocks from previous periods affect current volatility in the CDS and equity market. On the other hand, the long run parameter

shows strong evidence that correlation is time-varying. In addition, return and volatility dynamics are stronger during the crisis period showing that correlations vary significantly amid high volatility and tend to move faster.

Looking at the DCC-GARCH results for regional analysis, it was found that both asset classes' returns seem to have been explained by unexpected shocks. The US and EU are the mostly influenced by past unexpected shocks in CDS market. This could be possibly because the US and EU are the key jurisdictions for CDS markets. As for the equity market, the US and Japanese markets are the most affected by unexpected shocks. This could well be explained by the liquidity and illiquidity in the markets respectively. Regional volatility clustering in both asset classes among sectors and across regions is larger during the crisis period, while persistence is only evident in the equity market. The conditional correlation parameters show that correlation is not constant in both the short-run and long-run, showing that sectoral returns in both markets are connected across regions, but which connectedness varies across time.

Looking at leverage effects, there are instances when the leverage parameter, λ, is significant. This shows that asymmetric effects are present between regions for a particular asset class. However, there is no clear indication that negative news has more impact than positive news.

10.2 Summary of DBEKK-GARCH Results

From the DBEKK-GARCH results for the CDS spreads and equity sectoral returns, there is evidence of strong GARCH and weak ARCH effects. On average, the spillover effect is higher for the CDS market rather than that of equity. This means that the CDS market is less vulnerable to outside shocks when compared to the equity market, showing that the CDS market is more idiosyncratic. The cross-volatility spillovers are higher in most cases than own-volatility spillovers in the equity markets. The lagged own-volatility persistence is higher for the equity market, showing that the equity market derives more of its volatility persistence from within the market itself when compared to the CDS market. The equity market seems to be more influential in terms of cross-volatility persistence.

The DBEKK-GARCH model for regional analysis shows that own-volatility spillovers are positive and significant for all regions. For the CDS market, own-volatility spillover effect is mostly higher for the US and the EU across sectors, while for the equity market the US region, followed by Japan, has the highest ARCH effect. Cross-volatilities show that the US, UK and the EU CDS markets are somewhat interlinked. Likewise in the equity markets, the Western markets are closely connected, with Japan being mostly affected by the US market. Own-volatility persistence in CDS market is higher for the US and EU, being the key clearing regions for this sector. As for cross-volatility persistence the US and EU markets appear to be the most influential, while the UK and

Japan seem to be less influential. The UK and Japan are strongly affected by volatility persistence emanating from the US and EU markets. On the contrary for the equity market, only the UK market derives more of its persistence from within its domestic market, while the other regions are somewhat dependent on other markets.

10.3 Summary of Diebold-Yilmaz Static and Network Graphical Analysis Results

The methodology of Diebold and Yilmaz (2012) unravelled the nature of cross-sectors volatility transmission, highlighting the dynamics of risk spillovers between sectors during the 2009 crisis both from a CDS spreads and equity perspective. On average volatility spillovers are higher during the perturbed periods, conforming to previous studies in which it was found that sectors become more connected in troubled times (Narayan, 2015 and Mateev, 2019).

Sectoral volatility connectedness within the CDS market is higher during the crisis period, with almost negligible connectedness in the after-crisis period. A surprising result is that the banking sector in the US is a net receiver of volatility rather than a net transmitter. This can be explained by the fact that the US banking sector was more affected by cyclical sectors like consumer services and consumer goods rather than the reverse. Indeed, from the pairwise analysis clearly shows that the US banking sector is mostly affected by these two sectors.

Volatility spillovers across regions are as well higher during the crisis period, with sectors like the banking, manufacturing, consumer goods, consumer services sectors registering higher connectedness. Overall, the US, EU and UK are largely associated, while Japan seemingly disconnected.

As opposed to the CDS spreads volatility analysis, the connectedness of equity sectors remained fairly stable during the periods under consideration, albeit marginally higher during the crisis period. A reason could be that the equity market in most developed regions is larger and more liquid than the CDS market, resulting into stronger connectedness even in stable periods. In line with the connectedness in the CDS sectors, in general the financial services sector has been a net receiver of volatility, emphasising the point that financials sector was contaminated by other economic sectors.

From a regional spillover perspective, equity sectors and sub-sectors do not exhibit notable increments in connectedness during the crisis period, although in most cases it is higher. This is because the global equity sector is much bigger and more liquid than the global CDS market. For this reason, one expects that connectedness is high even during tranquil periods when volatility is low. The US has been the main transmitter of volatility for the financial services, the banking and other financial services sub-sectors. The UK has also been a net transmitter possibly because of its prominence as a financial centre. The EU and Japan are considered as net receivers. This contrasts with the results in the CDS market. The reason might be that market participants entered into CDS

contracts to insure themselves against backdrop in other sectors (mostly cyclical) amid the financial crisis, affecting spreads drastically. In contrast from an equity perspective, since the crisis originated in the banking sector, the first sector to be negatively affected was the banking and financial services sectors themselves, and then shocks filtered to other sectors and regions.

After analysing each asset class in isolation, the connectedness indices between the two asset classes are examined. The volatility connectedness between CDS spreads and equity is higher in the crisis period. A general finding is that CDS spreads volatility is affected by equity volatility in almost all sectors. However, the reverse is not true and equity volatility is almost completely explained by its own shocks and shocks in related sub-sectors.

In the US, equity sectors are net transmitters of volatility across most sectors. One of the main reasons could be that the equity market is much more developed and liquid than the CDS market and more prone to market events. In the financial sectors, equity is a predominant transmitter of volatility. As in the case of the US, the EU equity sector has been the main transmitter of volatility compared to the CDS sector. In the UK, the results are quite mixed, with equity and CDS spreads alternating in spread volatility. In the Japanese financial sector, the banking equity sector is the major transmitter of volatility during the crisis.

The network graphical analysis further shows that both asset classes exhibit strong clustering between sectors within the regions in the crisis period, which indicates stronger volatility connectedness during the crisis period. On the other hand, the sectors are widely dispersed in the network in the after-crisis period, with the equity sector still showing strong clustering around the data in the after-crisis period. Although the tabular static analysis shows that there is strong connectedness between the two asset classes, the network graphical analysis shows that the two asset classes have separate clusters signifying that own-volatility spillovers are larger than cross-volatility spillovers between the two asset classes. Equity sectors across regions have bigger nodes signifying that the equity market contributes to more shocks to the network.

With respect to the regional analysis, in the crisis period, the edge thickness and arrow sizes are larger, displaying higher connectedness in both markets during the same period. The regional connectedness reaffirms the conclusion on the connectedness between the two asset classes volatility, as regional connectedness depends on the asset class, with very limited spillovers between the two asset classes across regions. On average the equity market has bigger nodes, showing that it is the main contributor to volatility shocks into the system.

10.4 Summary of Diebold-Yilmaz Dynamic Results

For the dynamic part, a 200-day rolling window estimation is employed. On average, CDS and equity volatility sectoral spillovers are high during the 2009 global crisis and the EU debt crisis. For the US, EU and UK, volatility connectedness in the CDS sector had its peak during the 2009 financial crisis and subsequently during the EU debt crisis. In the EU and UK, connectedness is also notable in the period of the Brexit referendum with rising CDS premiums. Also, in these three main jurisdictions the banking sector was the main transmitter of volatility into the CDS market. In Japan, volatility connectedness is high during 2010 when the economy was experiencing a deflation. Connectedness gained momentum again following the 2011 earthquake with rising insurance premiums via CDS contracts. As it was expected, regional volatility connectedness for the CDS market is high for all sectors and sub-sectors. A common result across all sectors and sub-sectors is that the EU region has been the major CDS volatility transmitter during the 2009 crisis.

As opposed to CDS spreads, wherein volatility connectedness is higher in distressed periods and decreases as soon as the perturbed periods have eased, the equity volatility connectedness does not follow this pattern, particularly in the US and the EU region. In the UK and Japan, equity volatility connectedness has the same pattern as that of CDS spreads. In general, the equity volatility connectedness index started to fall in 2012 when the EU sovereign problems have eased, bar Japan as the economy has endured a recession

in 2014. On average equity regional connectedness between equity sectors or sub-sectors is highest during the above-mentioned troubled events. The US have been the major transmitter of volatility followed by the UK, bar for certain sectors associated to the manufacturing process.

When considering the dynamic connectedness between the two asset classes, equity volatility is the asset class which transmitted volatility the most. In the US and EU connectedness between the two asset classes is predominantly large during disturbed periods, particularly the 2009 crisis and the EU sovereign crisis. The connectedness between the two asset classes is also high during the global financial crisis and the EU debt crisis but also in the aftermath of Brexit. In Japan, the highest connectedness index levels between the two asset classes are registered in the financial crisis 2009 and in the aftermath of the natural disasters. Contrary to the other regions wherein equity volatility is the main transmitter of shocks, in Japan both equity and CDS spreads volatility are transmitters of shocks.

10.5 Summary of DCC-GARCH VIRFs Results

The VIRFs methodology of Gabaeur (2020) derived from time-varying volatilities using the DCC-GARCH model shows that the TCI is on average higher in the crisis period for both the CDS and equity market across regions. In addition, the total connectedness between the two asset classes is also higher during the crisis across regions but not in

the 'within regions' analysis where the TCI is consistently low across the periods under consideration. These results are in line with the results of the Diebold-Yilmaz (2012) methodology. For the CDS market, the US, UK and EU are highly connected with Japan being mostly disconnected in line with the results of other methodologies employed in this study. In addition, the EU and UK seem to be the most predominant net transmitters, possibly because of the European Debt Crisis wherein spreads soared sporadically. The equity market shares the same results of the CDS market, with the Western regions being closely connected and the EU being the main volatility transmitter. The dynamic analysis part, however, does not derive a dominant region as the net transmitter of volatility for both the CDS and equity market. The Dynamic TCI results are in consonance with the results of the rolling windows analsyis, wherein TCI spiked during the crisis and reverted to its mean in the after-crisis period. A notable difference is that the dominance of the equity market over the CDS market is not evident in the static TCI analysis compared to the equivalent static results when using Diebold and Yilmaz (2012) methodology. Moreover, the dynamic analysis shows that the CDS market is on average dominant over the equity market, with the EU being the most affluential region in transmitting shocks.

10.6 Summary of Full-BEKK VIRFs Results

After analysing the TCI and pairwise connectedness using the DCC-GARCH model, this study considers a Full-BEKK to receive time-varying volatilities to incorporate all types

of volatilities. In addition, the shock applied through the selection vector is considered to be 2.33σ, to represent the VaR at 99 per cent confidence level. The TCI in the CDS and equity market across regions remains fairly consistent across the samples under study, albeit is higher during the crisis period. A notable difference is that the static TCI is higher than in the Diebold-Yilmaz (2012) and Gabauer DCC-GARCH (2020) methodology, possibly because of the 2.33σ selection vector. The dynamic analysis results are coherent with the static TCI results wherein TCI is consistently high across the whole period. The US is the dominant region in transmitting shocks followed by the EU in both asset classes. The TCI between the CDS spreads and equity is marginally higher on average during the crisis period but it is high and consistent across and within regions during both periods under consideration. In line with the DCC-GARCH analysis no asset class is dominant over the other as illustrated in the net pairwise connectedness analysis.

10.7 Policy Implications and Recommendations

In the context of financial distress, measuring connectedness and spillover effects across and within regions is imperative for market participants or professionals and policy makers alike to understand their linkages and possible contagion effects. Overall, this study shows that sectoral connectedness and spillovers intensify during the crisis period across and within regions for both asset classes. Moreover, the interlinkages between the CDS spreads and equity volatility increase during distress periods in line with Merton's

theory (1974). In addition, the US, EU and UK are closely associated with Japan seemingly disconnected.

These results have important implications in terms of investment diversification and downside risk. Portfolio managers and speculators can use the information transmission (net transmitters and net receivers) to design asset allocation and optimal diversified portfolio composition. Portfolio managers often switch allocation between regions and dynamically rebalance their credit or equity portfolio. The findings of this study purport that for the US, UK and EU are somewhat linked and therefore would not provide any diversification benefits in neither crisis nor tranquil periods. Japan seems to provide diversification benefits as it is somewhat disconnected from the other regions for both asset classes. Moreover, the within region analysis showed that there is a strong connectedness between sectors in both the CDS and equity markets in the crisis period. In the equity market this high connectedness is even present in the after-crisis period. This is also important for portfolio and risk managers as sectoral rotation or diversification would not prove useful in terms of downside risk as sectoral volatility is highly connected within both asset classes especially during the crisis period. Only the utility, transportation and telecommunications sectors seem to be independent and net receivers in both periods under consideration which makes sense given that these sectors are a low-beta sectors. Portfolio managers can allocate a portion of these sectors in their portfolio to mitigate downside risk and allow for some diversification benefits.

Moreover, in the first study using Multivariate-GARCH models it was found that correlation within and across regions for both asset classes is not constant neither in the short-run nor long-run. This finding bodes well for portfolio and risk managers in the asset management field. Portfolio managers shall consider a time-varying correlation coefficient when devising strategic and tactical asset allocation models to their global portfolios, while, risk managers cannot consider a constant correlation and must move away from Gaussian distributions in their risk metrics methodology, like the Value-at Risk.

In addition, this study provides important information on shock dynamics and characteristics. The consumer goods and consumer services sectors play a crucial role in the transmission of uncertainty to the rest of the sectors in both asset classes, especially during the crisis period. Therefore, portfolio and risk managers should closely monitor these sectors, which are indeed the backbone of the economy, and possibly use these sectors as an early warning indicator for contagion risk and effects. Moreover, the Multivariate-GARCH and the Diebold Yilmaz analysis showed that the equity market is to some extent dominant over the CDS market in transmitting volatility shocks. Therefore, the equity market volatility can also be used as an early warning indicator for contagion effects.

The main result from the methodologies employed is that the CDS market is integrated with the equity market, especially in the crisis period. This has important implications

for diversification and hedging purposes. The credit and the equity asset classes used to be included into portfolio allocations for diversification purposes as the two were considered useful for hedging purposes. However, this study shows that in crisis periods and to some-extent tranquil periods the credit market does not provide or provide little diversification or hedging benefits to an equity portfolio as the two asset classes are integrated. What can be useful though is the spillover and connectedness information among the two asset classes to develop a profitable portfolio hedging strategy. Specifically, using the shock transmission of asset sectoral pairs like receiver-transmitter, receiver-receiver, transmitter-transmitter and transmitter-receiver alternating between the crisis and after-crisis periods can be useful for hedging purposes, with a cautionary approach during the perturbed periods.

A point to note also for risk mangers is the fact that when considering the 2.33σ shock as a selection vector in the Full-BEKK model to extract time-varying volatilities as part of the Gabauer (2020) methodology, it is evident that connectedness between asset classes and regions is very high in both the crisis period and after-crisis periods. This shows that when using the 99 per cent confidence interval, the connectedness is very high and this finding should serve as a measurement for cumulative risk and to monitor high correlated positions in a portfolio, especially in distressed period as the potential for losses could be enormously high.

The results are also important for policy makers to understand the proliferation of spillover effects between regions to minimise systemic risk to the global financial system and formulate their economic policies and financial reforms. In addition, policymakers can use these findings to determine short- and long-term strategies to shield sectoral, markets and regions against contagion risks. Policymakers need to incorporate into their assessment that regions, assets classes and sectors are highly integrated and thus, shocks to one region, asset class or sector will potentially trigger spillovers to other regions, asset classes and sectors. Thus, policymakers, need to devise a plan to deal with crisis shock and ensure stabilisation in sectors, markets and regions and lessening the impact of financial instabilities in an adequate timeframe, not to endure financial distress for a long period of time as happened in the crisis of 2008 and the European debt crisis. This is vital for the preservation of the stability of the financial system which in turn guarantees the smooth funding of the real economy. In addition, it is important to incorporate forward-looking market correlations deriving from the Multivariate-GARCH analysis when making changes in monetary, fiscal and other types of economic policy to stabilise economies after periods of distress. Therefore, these findings bode well also for policymakers as comovement and connectedness between sectors, asset classes and regions call for surveillance and timely policies to minimise contagions, thereby systematic risks.

10.8 Comparison to Existing Literature, Limitations and Avenues for Future Research

The findings of this study are in line with a number of studies in existing literature. The results of this study are in line with that of Narayan (2015), Mateev and Marinova (2019) and Kajurova (2015). Narayan (2015) finds that CDS return shocks are key in explaining the forecast error variance of sectoral equity returns for the US region. In addition, CDS return shocks are most relevant during the global financial crisis, with their role maximised in the post-Lehman crisis period. Mateev and Marinova (2019) find a long-run relation between CDS and equity prices of European companies, showing possible evidence of transmission of shocks between the two asset classes. Kajurova (2015) finds that equity volatility explains CDS spreads for financial institutions the UK, wherein results are more significant during the crisis period. However, there are also a number of studies which contradict the findings of this study. Ratner and Chiu (2013) find that the CDS market provides diversification to an equity portfolio for several sectors for the period between 2004 and 2011. King and Wadhwani (1990) find no evidence of contagion effects during crisis periods, like the 1987 crash, 1994 Mexican crisis and the 1997 Asian crisis. Moreover, Corsetti *et al.* (2001) find that the correlations statistic is not necessarily larger in volatile periods. It is important to note that these studies are carried out for different periods that the study under consideration which could have an effect on the results.

This study has some limitations with respect to the level of data and methodology used. The data is not evenly provided by the source and as highlighted in the Methodology chapter the US region has more granular data than the UK, EU and Japan, specifically at the sub-sectoral level. This has therefore provided less insight on the cross-sectoral connectedness within the UK, EU and Japan both within the CDS and equity markets.

The multivariate-GARCH models are very commonly used in empirical literature to capture interdependence and spillover effects which is fundamental to analyse connectedness and transmission of shocks. However, results from Multivariate-GARCH models are dependent on model selection and specification and they may suffer from computational problems especially when considering a large number of variables. In fact, sectoral connectedness and spillovers within regions could not be modelled via the Multivariate-GARCH models used in chapter 5 as it was practically impossible to use higher order Multivariate GARCH models. However, these limitations are addressed in chapters 6 to 10 when using the methodologies by Diebold and Yilmaz (2012) and Gabauer (2020). When compared to Multivariate-GARCH models, the Diebold and Yilmaz (2012) and Gabauer (2020) methodologies allow for simplicity and flexibility without requiring estimations of complex models which may suffer also from convergence issues. The Diebold and Yilmaz (2012) provides a robust and intuitive approach to measuring spillovers and connectedness. The methodology allows for a better understanding to which shocks in one variable affect other variables and the degree to

which the variables into the system are connected. However, this methodology assumes that volatility and correlations are constant across time and requires subjectivity with respect to window sizes and leads to loss of observations. Gabauer (2020) methodology addresses these drawbacks by developing VIRFs for DCC-GARCH models. The DCC-GARCH allows for time-varying volatility and corelations and the VIRF methodology addresses the issues of the rolling window choice in Diebold and Yilmaz (2012). The DCC-GARCH, however, does not capture full volatility or full covolatility spillovers but only partial covolatility spillovers. Given that all types of spillovers are useful for this study's hypothesis the DCC-model in Gabauer (2020) is replaced with a Full BEKK-GARCH model to capture all these types of spillovers, making it more suitable to capture more complex dynamics in the correlation structure. The Full BEKK-GARCH has it owns limitations as described in chapter 3 following Chang and McAleer (2019) but as explained the Full-BEKK GARCH parameters are used only as a tool to extract time-varying volatilities.

This study can be extended in several ways. A possible extension could be conducted within the framework of Greenwood-Nimmo *et al.* (2021) by considering a Global VAR model, which is a flexible generalisation to the Diebold and Yilmaz model (2012) between the regions and sectors under consideration and possibly others to derive important macroeconomic connectedness between regions and sectors by assuming that

macroeconomic connectedness is an intrinsically multi-dimensional concept. This model, referred to as the GNS model, is well suited to use in relatively large VAR systems.

This study can also be extended by considering the empirical network model by Greenwood-Nimmo *et al.* (2023) to determine the density of bilateral spillovers. This model fully exploits information on both the location and shape of the density of bilateral spillovers. This model could provide additional insights on the bilateral spillovers between regions, sectors and the two assets classes under consideration in this study.

This study can also be further incorporated in the technique developed by *Ando et al.* (2022) by including a VAR with a common factor error structure by quantile regression. This technique can model the tail behaviour of financial networks and as such one can assess the behaviour of sectoral or regional networks in extreme events. This technique allows the researcher to determine the vital nodes and edges in the network which, in turn, helps to establish the network's structure and resilience.

Finally, the CoVaR by Adrian and Brunnermeier (2011) can be used to assess the spillovers from one region, sector, or asset class to another. For example, the increase in volatility of region, sector, or asset class j when an adverse shock occurs for region, sector, or asset class i can be computed. This captures how much a region, sector, or asset class j absorbs volatility from a region, sector, or asset class i. Of course, the reverse effects, that is, the spillovers from a region, sector, or asset class j to a region, sector, or

asset class i can be examined. $CoVaR^{i|j}$ may not be equal to $CoVaR^{j|i}$, as the extent of volatility absorbed differs across regions, sectors, or asset class. In addition, how much a particular region, sector, or asset class contributes to systematic risk into the industry can also be assessed.

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Appendix A

A.1 Descriptive Statistics – Return Data

		Mean	Std. Dev.	Med.	Max.	Min.	Skew.	Exc. Kurt.
US	Banks	-0.0003	0.0366	0.0000	0.3794	-0.5111	-0.9509	35.2276
	Beverages/Bottling	-0.0001	0.0187	0.0000	0.1720	-0.1913	0.1052	25.9842
	Building Products	0.0004	0.0164	0.0006	0.0827	-0.1071	-0.2739	7.1699
	Banking	-0.0003	0.0366	0.0000	0.3794	-0.5111	-0.9509	35.2276
	Cable Media	0.0001	0.0342	0.0000	0.3929	-0.4425	0.5142	38.7823
	Consumer Goods	0.0000	0.0207	0.0000	0.2230	-0.1603	0.8871	22.1688
	Chemicals	-0.0001	0.0234	0.0000	0.2723	-0.2827	-0.2731	32.8972
	Conglomerate/Diversified Mfg	-0.0002	0.0233	-0.0002	0.1885	-0.1874	0.3314	26.7083
	Electric Power	0.0000	0.0275	0.0000	0.1948	-0.1328	0.4449	9.4882
	Electronics	0.0009	0.0209	0.0000	0.2250	-0.1171	0.9671	15.9431
	Energy	0.0004	0.0555	0.0000	0.5717	-0.6118	0.1718	67.9840
	Industrial Other	-0.0005	0.0478	0.0000	0.5667	-0.8676	-1.6212	69.6867
	Leisure	0.0001	0.0265	0.0000	0.1707	-0.2431	-0.6431	18.1922
	Manufacturing	0.0000	0.0173	-0.0003	0.2259	-0.1149	1.3626	20.9800
	Metals&Mining	0.0003	0.0227	0.0000	0.1996	-0.1101	0.9380	11.9929
	Financial Services	0.0001	0.0588	0.0000	0.5243	-0.5576	-0.1637	19.5083
	Other Financial Services	0.0001	0.0588	0.0000	0.5243	-0.5576	-0.1637	19.5083
	Oil&Gas	0.0007	0.0244	0.0000	0.2435	-0.1717	1.2018	16.1767
	Other Services	0.0000	0.0216	0.0000	0.1554	-0.1462	0.7556	11.2282
	Other Telecommunications	0.0000	0.0275	0.0000	0.5008	-0.3702	1.6169	71.5965
	Retail Stores	-0.0001	0.0710	0.0000	1.0203	-1.0343	-0.0997	118.0046
	Railroads	-0.0001	0.0220	0.0000	0.2004	-0.2878	-0.0836	26.0399
	Consumer Services	0.0003	0.0182	0.0000	0.1520	-0.1317	0.8431	12.9707
	Telecommunications	0.0000	0.0261	0.0000	0.5008	-0.3702	2.1443	80.3831
	Transportation	-0.0002	0.0676	0.0000	0.7653	-0.7662	-0.0350	53.7405
	Transportation Other	-0.0002	0.1080	0.0000	1.2423	-1.1879	-0.3352	75.2534
	Utility Other	0.0010	0.0210	0.0000	0.1966	-0.1312	0.8855	14.4131

UK	Banks	0.0000	0.0347	0.0000	0.4809	-0.3607	-0.0746	30.3194
	Beverages	-0.0002	0.0150	0.0000	0.1251	-0.0922	0.6414	12.7017
	Banking	-0.0001	0.0350	0.0000	0.4809	-0.3607	-0.1675	29.8132
	Consumer Goods	0.0001	0.0222	0.0000	0.1601	-0.1374	0.4558	12.9767
	Electric Power	-0.0004	0.0243	0.0000	0.1950	-0.5069	-3.8103	92.7678
	Manufacturing	0.0002	0.0189	-0.0002	0.1805	-0.1096	1.1131	16.0982
	Financial Services	-0.0001	0.0202	-0.0003	0.1980	-0.1583	1.1279	20.9724
	Other Financial Services	-0.0002	0.0195	-0.0003	0.1643	-0.1223	0.6462	11.9857
	Other Services	0.0003	0.0299	0.0000	0.3364	-0.2746	0.4419	35.8167
	Other Telecommunications	-0.0003	0.0223	-0.0001	0.2629	-0.2257	0.8033	20.1047
	Retail Stores Other	0.0001	0.0305	0.0000	0.1663	-0.2433	-0.1776	11.2407
	Consumer Services	0.0001	0.0197	-0.0002	0.1566	-0.1567	0.2222	17.1683
	Telecommunications	-0.0003	0.0216	-0.0001	0.1502	-0.2257	0.3104	13.4954
EU	Banks	-0.0002	0.0282	0.0000	0.1737	-0.1997	-0.1358	10.7599
	Beverages	-0.0004	0.0208	0.0000	0.1599	-0.1064	0.5144	11.5471
	Building Products	0.0001	0.0112	0.0007	0.0676	-0.0752	-0.3309	7.2992
	Banking	0.0000	0.0282	-0.0002	0.2718	-0.2652	0.0447	15.0977
	Cable Media	-0.0004	0.0324	0.0000	0.5689	-0.5623	0.0045	142.4782
	Consumer Goods	0.0000	0.0207	0.0000	0.2163	-0.2170	0.3831	20.0981
	Chemicals	0.0001	0.0232	-0.0001	0.2559	-0.1418	1.3337	19.1984
	Conglomerate/Diversified Mfg	-0.0004	0.0269	-0.0003	0.2404	-0.2796	-0.2487	24.0776
	Electric Power	-0.0002	0.0270	-0.0002	0.3341	-0.1752	0.9374	19.6569
	Electronics	0.0005	0.0269	0.0000	0.3299	-0.2839	0.9182	26.1276
	Energy	0.0003	0.0300	0.0000	0.2904	-0.2846	0.4027	16.2722
	Leisure	-0.0003	0.0274	0.0000	0.2126	-0.5266	-3.0083	69.6186
	Manufacturing	0.0002	0.0240	0.0000	0.2009	-0.1631	0.4461	12.3256
	Metals&Mining	0.0004	0.0248	0.0000	0.2223	-0.2000	0.8641	18.0395
	Financial Services	-0.0002	0.0306	-0.0002	0.2909	-0.3816	-0.4554	28.1144
	Other Financial Services	0.0000	0.0255	-0.0002	0.2025	-0.1597	0.2848	10.7919
	Oil&Gas	-0.0001	0.0245	0.0000	0.1296	-0.2135	-0.0626	8.9675
	Other Services	-0.0003	0.0291	-0.0002	0.3755	-0.8365	-8.6055	298.8170
	Consumer Services	-0.0001	0.0243	-0.0003	0.3619	-0.2704	0.8286	42.8851
	Telecommunications	0.0000	0.0333	-0.0002	0.3229	-0.3088	0.3044	28.2591
	Transportation	0.0000	0.0254	0.0000	0.3002	-0.2205	0.6927	23.1230
	Utility Other	0.0003	0.0687	0.0000	0.8318	-1.0411	-1.3368	108.5088
JAPAN	Banks	0.0000	0.0283	0.0000	0.2610	-0.1729	0.8162	12.7613
	Banking	-0.0002	0.0282	0.0000	0.2610	-0.1729	0.4931	11.4316
	Chemicals	0.0002	0.0315	0.0000	0.3584	-0.2727	1.4885	30.7647
	Electric Power	-0.0002	0.0330	0.0000	0.3190	-0.4244	-1.0918	34.0041
	Electronics	0.0004	0.0400	0.0000	0.3673	-0.3264	1.0880	21.1584
	Industrial Other	0.0001	0.0485	0.0000	0.5696	-0.5063	-0.0289	35.7082
	Manufacturing	-0.0002	0.0246	0.0000	0.2194	-0.2607	0.1461	19.1174
	Financial Services	0.0000	0.0287	0.0000	0.2804	-0.2440	0.8498	21.8992
	Other Services	-0.0004	0.0384	0.0000	0.3562	-0.7909	-6.6566	134.3699
	Other Telecommunications	0.0001	0.0603	0.0000	0.6210	-0.4746	0.1877	26.7978
	Retail Stores	0.0006	0.2035	0.0000	2.2951	-2.4613	-1.0001	81.9108

	Rail Roads	0.0010	0.0279	0.0000	0.3448	-0.2231	2.3000	35.1129
	Consumer Services	0.0008	0.0472	0.0000	0.6207	-0.6251	-0.0217	72.6572
	Telecommunications	0.0001	0.0603	0.0000	0.6210	-0.4746	0.1877	26.7837
	Other Transportation	0.0000	0.0366	0.0000	0.2585	-0.3497	-0.3069	14.6758
	Transportation	0.0000	0.0361	0.0000	0.2585	-0.3497	-0.2051	15.1624
	Utility Other	0.0001	0.0449	0.0000	0.5623	-0.4243	1.6044	35.3179

Table 6: CDS Spreads Indices Full Sample Descriptive Statistics

		Mean	Std. Dev.	Med.	Max.	Min.	Skew.	Exc. Kurt.
US	Banks	0.0001	0.0454	0.0000	0.3794	-0.5111	-0.8383	26.4720
	Beverages/Bottling	-0.0001	0.0146	0.0000	0.1159	-0.0844	0.6945	13.8897
	Building Products	0.0001	0.0200	0.0006	0.0827	-0.1071	-0.2117	5.6914
	Banking	0.0001	0.0454	0.0000	0.3794	-0.5111	-0.8383	26.4720
	Cable Media	0.0006	0.0273	0.0000	0.3929	-0.1542	2.3520	40.6134
	Consumer Goods	0.0003	0.0200	0.0000	0.2230	-0.1216	1.9684	27.6984
	Chemicals	0.0005	0.0211	0.0000	0.1749	-0.1434	0.9965	16.7598
	Conglomerate/Diversified Mfg	0.0002	0.0286	0.0000	0.1885	-0.1874	0.1881	19.0536
	Electric Power	0.0006	0.0247	0.0000	0.1948	-0.1107	1.0181	11.4667
	Electronics	0.0012	0.0209	0.0000	0.2250	-0.0831	1.4751	19.0483
	Energy	0.0005	0.0197	0.0000	0.1881	-0.1132	1.4313	16.8838
	Industrial Other	-0.0007	0.0431	0.0000	0.5667	-0.8676	-4.4244	156.8181
	Leisure	0.0001	0.0284	0.0000	0.1459	-0.2431	-1.1464	16.5156
	Manufacturing	0.0003	0.0197	0.0000	0.2259	-0.1149	1.6235	21.3311
	Metals&Mining	0.0009	0.0214	0.0000	0.1996	-0.1101	2.0442	20.4855
	Financial Services	0.0006	0.0510	0.0000	0.2603	-0.2411	0.0671	13.3697
	Other Financial Services	0.0006	0.0510	0.0000	0.2603	-0.2411	0.0671	13.3697
	Oil&Gas	0.0006	0.0213	0.0000	0.1625	-0.0961	1.1780	13.2749
	Other Services	-0.0002	0.0191	0.0000	0.1277	-0.0800	1.0696	11.7232
	Other Telecommunications	-0.0001	0.0272	0.0000	0.2042	-0.2640	0.1399	20.2188
	Retail Stores	0.0001	0.0393	0.0000	0.3856	-0.2362	1.0174	21.6211
	Railroads	0.0001	0.0247	0.0000	0.2004	-0.1418	0.6527	13.5616
	Consumer Services	0.0003	0.0185	0.0000	0.1520	-0.1317	1.1382	16.3639
	Telecommunications	-0.0001	0.0245	0.0000	0.1939	-0.1337	0.7968	12.4833
	Transportation	0.0004	0.0514	0.0000	0.4573	-0.5009	-1.3647	44.0275
	Transportation Other	0.0012	0.0609	0.0000	0.7722	-0.7267	0.3018	91.4698
	Utility Other	0.0009	0.0215	0.0000	0.1240	-0.1130	0.1736	8.3569
UK	Banks	0.0009	0.0430	0.0000	0.4809	-0.3607	-0.1024	23.9855
	Beverages	-0.0002	0.0184	0.0000	0.1251	-0.0922	0.4356	9.2645
	Banking	0.0009	0.0429	0.0000	0.4809	-0.3607	-0.0971	24.1848
	Consumer Goods	0.0002	0.0234	0.0000	0.1601	-0.1374	0.3090	10.3592
	Electric Power	-0.0004	0.0271	0.0000	0.1816	-0.1899	-0.2255	13.9707
	Manufacturing	0.0007	0.0237	0.0000	0.1805	-0.1096	0.9929	11.4899
	Financial Services	0.0000	0.0235	-0.0001	0.1980	-0.1583	1.2495	18.7203
	Other Financial Services	-0.0002	0.0228	-0.0001	0.1643	-0.1223	0.6666	10.6504
	Other Services	0.0008	0.0313	0.0000	0.3364	-0.2746	0.4777	27.7552
	Other Telecommunications	-0.0002	0.0239	0.0000	0.1502	-0.2257	0.1999	14.2568

	Retail Stores Other	0.0002	0.0344	0.0000	0.1663	-0.2433	-0.1572	9.2005
	Consumer Services	0.0001	0.0239	0.0000	0.1566	-0.1567	-0.0396	12.3147
	Telecommunications	-0.0002	0.0239	0.0000	0.1502	-0.2257	0.2126	14.2297
EU	Banks	0.0012	0.0290	0.0000	0.1737	-0.1997	0.1804	10.4184
	Beverages	-0.0003	0.0222	0.0000	0.1599	-0.1064	0.4032	9.8457
	Building Products	0.0001	0.0133	0.0006	0.0676	-0.0752	-0.2753	6.2760
	Banking	0.0013	0.0293	0.0000	0.2718	-0.1488	0.7054	13.6939
	Cable Media	0.0001	0.0232	0.0000	0.2797	-0.1422	1.7682	24.2252
	Consumer Goods	0.0002	0.0213	0.0000	0.1781	-0.1149	0.6436	11.0456
	Chemicals	0.0005	0.0286	0.0000	0.2559	-0.1418	1.2430	14.8298
	Conglomerate/Diversified							
	Mfg	-0.0003	0.0313	0.0000	0.2404	-0.2796	-0.4542	20.7097
	Electric Power	0.0003	0.0317	0.0000	0.3341	-0.1752	0.9486	18.0294
	Electronics	0.0012	0.0345	0.0000	0.3299	-0.2839	0.7472	17.9606
	Energy	0.0008	0.0360	0.0000	0.2904	-0.2846	0.2470	13.8750
	Leisure	-0.0001	0.0294	0.0000	0.1385	-0.5266	-4.9429	90.2745
	Manufacturing	0.0005	0.0259	0.0000	0.2009	-0.1631	0.6634	10.3704
	Metals&Mining	0.0007	0.0279	0.0000	0.2223	-0.2000	0.8906	18.6639
	Financial Services	0.0005	0.0315	0.0000	0.2285	-0.2476	0.0289	19.2665
	Other Financial Services	0.0006	0.0237	0.0000	0.2025	-0.1024	0.6842	9.0983
	Oil&Gas	0.0002	0.0286	0.0000	0.1296	-0.2135	-0.2879	8.0386
	Other Services	0.0002	0.0360	0.0000	0.3755	-0.8365	-8.6014	239.2086
	Consumer Services	0.0003	0.0262	0.0000	0.1841	-0.2704	-0.5359	20.3996
	Telecommunications	0.0005	0.0363	0.0000	0.2778	-0.2685	0.0970	22.8735
	Transportation	0.0005	0.0261	0.0000	0.1395	-0.2205	-0.3271	12.1897
	Utility Other	0.0014	0.0361	0.0000	0.4054	-0.3167	0.9809	22.7601
JAPAN	Banks	0.0004	0.0300	0.0000	0.2610	-0.1452	1.2073	15.1942
	Banking	0.0001	0.0291	0.0000	0.2610	-0.1452	0.8400	13.4484
	Chemicals	0.0015	0.0310	0.0000	0.3584	-0.2132	3.6428	42.8368
	Electric Power	-0.0002	0.0345	0.0000	0.3190	-0.4244	-1.9463	43.2128
	Electronics	0.0011	0.0428	0.0000	0.3673	-0.3264	1.4310	19.8882
	Industrial Other	0.0015	0.0289	0.0000	0.2158	-0.1709	1.0787	13.3810
	Manufacturing	0.0001	0.0259	0.0000	0.2194	-0.2607	0.5366	21.7126
	Financial Services	0.0004	0.0326	0.0000	0.2804	-0.2440	1.0757	21.4616
	Other Services	0.0007	0.0247	0.0000	0.1882	-0.1133	0.2814	9.7883
	Other Telecommunications	0.0005	0.0483	0.0000	0.6210	-0.3414	1.7160	36.8770
	Retail Stores	0.0020	0.0776	0.0000	0.9052	-0.8485	1.5247	95.5034
	Rail Roads	0.0022	0.0318	0.0000	0.3448	-0.2231	2.8440	36.6884
	Consumer Services	0.0012	0.0268	0.0000	0.3125	-0.1842	2.4739	32.6861
	Telecommunications	0.0005	0.0483	0.0000	0.6210	-0.3414	1.7143	36.8189
	Other Transportation	0.0005	0.0303	0.0000	0.1727	-0.2005	-0.0186	8.3554
	Transportation	0.0006	0.0292	0.0000	0.2043	-0.1248	0.4037	8.1753
	Utility Other	0.0010	0.0496	0.0000	0.4309	-0.4243	1.6277	26.3645

Table 7: CDS Spreads Indices Crisis Sample Descriptive Statistics

		Mean	Std. Dev.	Med.	Max.	Min.	Skew.	Exc. Kurt.
US	Banks	-0.0007	0.0231	-0.0001	0.1698	-0.2632	-1.0629	28.8324
	Beverages/Bottling	-0.0002	0.0223	0.0000	0.1720	-0.1913	-0.0824	24.0395
	Building Products	0.0006	0.0109	0.0006	0.0429	-0.0493	-0.3174	4.6646
	Banking	-0.0007	0.0231	-0.0001	0.1698	-0.2632	-1.0629	28.8324
	Cable Media	-0.0004	0.0405	-0.0001	0.3408	-0.4425	-0.1304	32.2923
	Consumer Goods	-0.0004	0.0215	-0.0003	0.1507	-0.1603	-0.0670	17.2978
	Chemicals	-0.0008	0.0257	-0.0001	0.2723	-0.2827	-1.0238	39.1223
	Conglomerate/Diversified Mfg	-0.0006	0.0154	-0.0005	0.1882	-0.1738	0.8902	43.7438
	Electric Power	-0.0008	0.0304	-0.0002	0.1460	-0.1328	0.1165	7.9234
	Electronics	0.0007	0.0208	0.0001	0.1669	-0.1171	0.3984	12.4080
	Energy	0.0004	0.0779	0.0000	0.5717	-0.6118	0.1071	36.8388
	Industrial Other	-0.0002	0.0525	0.0000	0.3355	-0.3814	0.1261	22.0060
	Leisure	0.0001	0.0242	-0.0001	0.1707	-0.1483	0.2704	20.3825
	Manufacturing	-0.0004	0.0142	-0.0004	0.0864	-0.0836	0.3194	9.6299
	Metals&Mining	-0.0004	0.0241	-0.0001	0.0933	-0.0877	0.0876	5.7075
	Financial Services	-0.0004	0.0665	-0.0004	0.5243	-0.5576	-0.2642	20.1485
	Other Financial Services	-0.0004	0.0665	-0.0004	0.5243	-0.5576	-0.2642	20.1485
	Oil&Gas	0.0009	0.0275	0.0000	0.2435	-0.1717	1.1634	15.9450
	Other Services	0.0002	0.0240	-0.0001	0.1554	-0.1462	0.5490	10.2149
	Other Telecommunications	0.0001	0.0278	-0.0001	0.5008	-0.3702	3.1535	123.8185
	Retail Stores	-0.0004	0.0945	0.0000	1.0203	-1.0343	-0.1635	78.7142
	Railroads	-0.0003	0.0185	0.0000	0.1547	-0.2878	-2.0574	61.7457
	Consumer Services	0.0003	0.0179	-0.0001	0.1018	-0.0839	0.4757	8.5575
	Telecommunications	0.0001	0.0279	-0.0001	0.5008	-0.3702	3.1325	122.9900
	Transportation	-0.0008	0.0820	-0.0003	0.7653	-0.7662	0.3463	45.0092
	Transportation Other	-0.0017	0.1433	0.0000	1.2423	-1.1879	-0.3035	48.0888
	Utility Other	0.0011	0.0205	0.0001	0.1966	-0.1312	1.7956	22.4186
UK	Banks	-0.0010	0.0220	-0.0004	0.0948	-0.1229	-0.1380	6.5213
	Beverages	-0.0002	0.0099	-0.0001	0.0879	-0.0493	1.6000	18.0826
	Banking	-0.0012	0.0232	-0.0004	0.0948	-0.1860	-0.8803	11.5214
	Consumer Goods	0.0000	0.0208	0.0000	0.1519	-0.1291	0.6804	17.1637
	Electric Power	-0.0004	0.0207	0.0000	0.1950	-0.5069	-12.4710	326.9481
	Manufacturing	-0.0003	0.0113	-0.0004	0.0724	-0.0806	0.3108	15.8114
	Financial Services	-0.0003	0.0158	-0.0004	0.1247	-0.1253	0.3855	16.8428
	Other Financial Services	-0.0002	0.0149	-0.0005	0.0813	-0.0712	0.3880	8.9400
	Other Services	-0.0003	0.0283	-0.0001	0.2688	-0.2692	0.3706	48.3355
	Other Telecommunications	-0.0005	0.0203	-0.0005	0.2629	-0.1350	1.8686	31.0798
	Retail Stores Other	-0.0001	0.0256	0.0000	0.1604	-0.1840	-0.2283	14.8118
	Consumer Services	0.0000	0.0136	-0.0003	0.1470	-0.1075	1.6463	29.1549
	Telecommunications	-0.0005	0.0187	-0.0005	0.1089	-0.0968	0.5004	8.3283
EU	Banks	-0.0018	0.0271	-0.0009	0.1331	-0.1547	-0.5917	11.0566
	Beverages	-0.0005	0.0192	-0.0002	0.1439	-0.0941	0.6905	14.2454
	Building Products	0.0002	0.0084	0.0007	0.0354	-0.0509	-0.4562	5.7086

	Banking	-0.0015	0.0268	-0.0009	0.1331	-0.2652	-0.9439	16.7666
	Cable Media	-0.0010	0.0402	-0.0001	0.5689	-0.5623	-0.3433	123.6971
	Consumer Goods	-0.0003	0.0201	-0.0002	0.2163	-0.2170	0.0338	32.5560
	Chemicals	-0.0004	0.0151	-0.0002	0.1051	-0.1080	0.6182	13.4763
	Conglomerate/Diversified Mfg	-0.0006	0.0210	-0.0012	0.1970	-0.1980	0.5458	23.6867
	Electric Power	-0.0009	0.0206	-0.0008	0.1275	-0.0986	0.5042	10.3818
	Electronics	-0.0004	0.0143	-0.0002	0.0973	-0.0848	0.3641	11.2569
	Energy	-0.0003	0.0213	-0.0001	0.1088	-0.0954	0.8932	8.5493
	Leisure	-0.0005	0.0249	-0.0001	0.2126	-0.2111	0.5936	19.8839
	Manufacturing	-0.0001	0.0217	0.0000	0.1550	-0.1595	0.0037	15.5106
	Metals&Mining	0.0001	0.0209	-0.0001	0.1270	-0.0896	0.6720	9.9946
	Financial Services	-0.0010	0.0296	-0.0007	0.2909	-0.3816	-1.1097	40.3315
	Other Financial Services	-0.0008	0.0274	-0.0008	0.1522	-0.1597	0.0132	11.4641
	Oil&Gas	-0.0004	0.0190	0.0000	0.0946	-0.0708	0.7406	6.9200
	Other Services	-0.0007	0.0186	-0.0005	0.1917	-0.1911	-0.3493	46.1041
	Consumer Services	-0.0006	0.0220	-0.0009	0.3619	-0.2306	3.3291	89.3690
	Telecommunications	-0.0006	0.0295	-0.0008	0.3229	-0.3088	0.6906	38.1388
	Transportation	-0.0005	0.0245	-0.0003	0.3002	-0.1824	2.0433	38.6645
	Utility Other	-0.0009	0.0923	-0.0001	0.8318	-1.0411	-1.1981	69.7655
JAPAN	Banks	-0.0005	0.0263	-0.0006	0.1199	-0.1729	0.1477	7.5341
	Banking	-0.0006	0.0273	-0.0006	0.1264	-0.1729	0.0212	8.3977
	Chemicals	-0.0014	0.0320	-0.0001	0.1900	-0.2727	-0.6704	18.3648
	Electric Power	-0.0001	0.0313	0.0000	0.2923	-0.2134	0.1822	18.2160
	Electronics	-0.0004	0.0367	-0.0001	0.2724	-0.2551	0.4319	22.1860
	Industrial Other	-0.0014	0.0636	0.0000	0.5696	-0.5063	-0.0825	24.9680
	Manufacturing	-0.0006	0.0230	-0.0003	0.1342	-0.1688	-0.4927	13.6347
	Financial Services	-0.0005	0.0236	0.0000	0.1726	-0.1521	0.0113	13.8516
	Other Services	-0.0017	0.0493	0.0000	0.3562	-0.7909	-6.6246	103.0691
	Other Telecommunications	-0.0005	0.0713	-0.0001	0.4856	-0.4746	-0.3423	20.2893
	Retail Stores	-0.0009	0.2842	0.0000	2.2951	-2.4613	-0.7949	44.8781
	Rail Roads	-0.0004	0.0228	-0.0001	0.1434	-0.1324	0.1953	11.0314
	Consumer Services	0.0005	0.0625	0.0000	0.6207	-0.6251	-0.2237	48.7444
	Telecommunications	-0.0005	0.0713	-0.0001	0.4856	-0.4746	-0.3423	20.2895
	Other Transportation	-0.0006	0.0425	-0.0001	0.2585	-0.3497	-0.3868	14.6251
	Transportation	-0.0006	0.0425	-0.0001	0.2585	-0.3497	-0.3868	14.6251
	Utility Other	-0.0009	0.0392	0.0000	0.5623	-0.4039	1.4083	54.0368

Table 8: CDS Spreads Indices After-Crisis Sample Descriptive Statistics

		Mean	Std. Dev.	Med.	Max.	Min.	Skew.	Exc. Kurt.
US	Banks	0.0000	0.0259	0.0000	0.1934	-0.2168	0.1010	16.9016
	Beverages	0.0003	0.0101	0.0001	0.0986	-0.0752	0.1650	12.8108
	Building Products	0.0004	0.0164	0.0006	0.0827	-0.1071	-0.2739	7.1699
	Basic Materials	0.0001	0.0189	0.0002	0.1449	-0.1446	-0.5694	11.6194

	Cable Media	0.0004	0.0152	0.0005	0.1328	-0.1161	-0.1716	13.9360
	Consumer Goods	0.0003	0.0100	0.0003	0.0902	-0.0748	-0.1740	12.8608
	Conglomerate/Diversified Mfg	0.0001	0.0163	0.0001	0.1293	-0.0998	-0.3133	11.2566
	Chemicals	0.0003	0.0169	0.0005	0.1203	-0.1214	-0.6460	10.4189
	Electronics	0.0002	0.0158	0.0003	0.1258	-0.1153	-0.2428	10.0848
	Healthcare	0.0004	0.0111	0.0005	0.1144	-0.0707	-0.1560	12.1621
	Industrials	0.0002	0.0141	0.0003	0.0929	-0.0961	-0.4500	9.4001
	Leisure	0.0003	0.0151	0.0003	0.0828	-0.0930	-0.3589	7.2372
	Metals&Mining	0.0003	0.0152	0.0004	0.0825	-0.0970	-0.2717	7.7424
	Financials	0.0001	0.0199	0.0001	0.1351	-0.1628	-0.1795	14.9832
	Other Financial Services	0.0001	0.0199	0.0001	0.1351	-0.1628	-0.1795	14.9832
	Oil&Gas	-0.0001	0.0178	0.0000	0.1733	-0.1659	-0.3738	15.9196
	Other Services	0.0002	0.0155	0.0003	0.0910	-0.1112	-0.1926	7.6113
	Other Telecommunication	0.0000	0.0130	0.0001	0.1326	-0.0880	0.3159	16.5465
	Other Transportation	0.0003	0.0152	0.0004	0.0825	-0.0970	-0.2717	7.7424
	Retail Stores	0.0004	0.0124	0.0004	0.1129	-0.0894	-0.0234	11.0209
	Consumer Services	0.0004	0.0124	0.0006	0.1097	-0.0945	-0.1569	11.7527
	Technology	0.0003	0.0139	0.0004	0.1161	-0.0984	-0.0937	10.1631
	Telecommunications	0.0000	0.0130	0.0001	0.1326	-0.0880	0.3159	16.5465
	Utility Other	0.0001	0.0117	0.0002	0.1339	-0.0865	0.3074	18.0534
UK	Banks	-0.0003	0.0214	0.0000	0.1880	-0.1947	-0.1597	14.9693
	Beverages	0.0004	0.0126	0.0001	0.1005	-0.0914	0.3583	9.8138
	Basic Materials	-0.0001	0.0252	0.0000	0.1856	-0.1897	-0.1367	9.5421
	Consumer Goods	0.0003	0.0100	0.0003	0.0902	-0.0748	-0.1747	12.8805
	Healthcare Facilities	0.0002	0.0118	0.0002	0.0766	-0.0789	-0.1033	8.2935
	Industrials	0.0003	0.0117	0.0003	0.0639	-0.0639	-0.3591	6.8004
	Financials	0.0001	0.0167	0.0001	0.1205	-0.1282	-0.4557	11.1533
	Other Financials	-0.0001	0.0171	0.0000	0.1553	-0.1098	-0.0522	12.4342
	Oil&Gas	-0.0001	0.0158	0.0000	0.1103	-0.0895	0.1092	8.2538
	Other Services	0.0001	0.0116	0.0002	0.0644	-0.0726	-0.3186	7.8667
	Other Telecommunication	0.0000	0.0145	0.0000	0.0901	-0.1175	-0.3054	9.4580
	Retail Stores	-0.0001	0.0124	0.0000	0.0637	-0.0892	-0.5217	9.0869
	Consumer Services	0.0001	0.0116	0.0002	0.0644	-0.0726	-0.3190	7.8694
	Technology	0.0006	0.0142	0.0003	0.1846	-0.0703	0.8460	17.5470
	Telecommunications	0.0000	0.0145	0.0000	0.0901	-0.1175	-0.3057	9.4614
	Utility Other	0.0000	0.0111	0.0001	0.1067	-0.0784	-0.1481	11.8627
EU	Banks	-0.0004	0.0209	-0.0001	0.1568	-0.1545	-0.0656	10.0622
	Beverages	0.0003	0.0148	0.0004	0.0914	-0.0983	-0.1479	8.0066
	Building Products	0.0001	0.0112	0.0007	0.0676	-0.0752	-0.3309	7.2992
	Basic Materials	-0.0001	0.0196	0.0002	0.1399	-0.1399	-0.2612	9.8102

	Cable Media	-0.0001	0.0140	0.0002	0.0931	-0.0985	-0.3797	8.7985
	Consumer Goods	0.0002	0.0134	0.0004	0.1674	-0.0786	0.5524	16.0081
	Conglomerate Diversified/Mfg	0.0000	0.0187	0.0001	0.1235	-0.1101	-0.2019	8.1145
	Chemicals	0.0001	0.0160	0.0005	0.1220	-0.0930	-0.2053	8.5383
	Electric Power	0.0001	0.0191	0.0002	0.1434	-0.1295	-0.1952	9.8251
	Healthcare Facilities	0.0002	0.0114	0.0005	0.0881	-0.0751	-0.0788	8.9945
	Industrials	0.0000	0.0160	0.0002	0.1015	-0.0993	-0.2141	8.5694
	Leisure	0.0001	0.0189	0.0004	0.1287	-0.1152	-0.0798	8.2876
	Metals&Mining	-0.0004	0.0221	0.0003	0.1258	-0.1760	-0.4630	8.7360
	Financials	0.0000	0.0151	0.0004	0.1013	-0.1070	-0.3705	10.2334
	Other Financials	-0.0003	0.0183	0.0001	0.1299	-0.1315	-0.1197	10.1168
	Oil&Gas	-0.0002	0.0176	0.0001	0.1466	-0.1144	0.0515	10.3384
	Other Services	0.0003	0.0147	0.0004	0.0706	-0.1440	-0.5273	9.7018
	Other Telecommunications	-0.0002	0.0137	0.0000	0.0973	-0.1017	-0.1933	9.4570
	Consumer Services	0.0000	0.0136	0.0001	0.0854	-0.0990	-0.2994	9.0290
	Technology	0.0001	0.0159	0.0005	0.1028	-0.1197	-0.3139	9.0513
	Telecommunications	-0.0002	0.0137	0.0000	0.0973	-0.1017	-0.1931	9.4561
	Utility	-0.0004	0.0148	0.0002	0.1371	-0.0959	-0.0934	11.7958
JAPAN	Banks	-0.0002	0.0194	0.0000	0.1411	-0.1284	0.0215	8.5670
	Basic Materials	0.0000	0.0180	0.0000	0.1559	-0.1289	-0.2673	10.7818
	Consumer Goods	0.0001	0.0157	0.0000	0.1200	-0.1037	-0.2562	9.5320
	Chemicals	0.0001	0.0174	0.0000	0.1366	-0.1192	-0.3047	10.3255
	Electric Power	0.0001	0.0177	0.0000	0.1184	-0.1208	-0.4316	8.6583
	Healthcare Facilities	0.0002	0.0131	0.0000	0.0954	-0.1102	-0.6615	12.5689
	Industrial	0.0001	0.0169	0.0000	0.1398	-0.1293	-0.3064	10.1538
	Metals&Mining	-0.0001	0.0170	0.0000	0.1189	-0.1191	-0.2468	9.1069
	Financials	-0.0001	0.0182	0.0000	0.1408	-0.1181	-0.1240	9.4836
	Oil&Gas	-0.0002	0.0193	0.0000	0.1233	-0.1402	-0.2399	7.6870
	Other Services	0.0002	0.0161	0.0000	0.0972	-0.1094	-0.1950	6.5337
	Other Telecommunication	0.0003	0.0147	0.0000	0.0983	-0.1185	-0.2815	9.7502
	Other Transportation	-0.0001	0.0170	0.0000	0.1189	-0.1191	-0.2468	9.1069
	Retail Stores	0.0002	0.0132	0.0000	0.0973	-0.1218	-0.5230	11.0421
	Consumer Services	0.0002	0.0118	0.0000	0.1015	-0.1133	-0.6135	13.6711
	Technology	0.0000	0.0158	0.0000	0.1255	-0.1128	-0.4826	9.5286
	Telecommunication	0.0003	0.0147	0.0000	0.0983	-0.1185	-0.2813	9.7498
	Utility Other	-0.0002	0.0160	0.0000	0.0919	-0.1596	-0.4263	11.2757

Table 9: Equity Indices Full Sample Descriptive Statistics

		Mean	Std. Dev.	Med.	Max.	Min.	Skew.	Exc. Kurt.
US	Banks	-0.0004	0.0339	-0.0003	0.1934	-0.2168	0.1296	10.9213
	Beverages	0.0001	0.0117	0.0000	0.0986	-0.0752	0.2873	12.2838
	Building Products	0.0001	0.0200	0.0006	0.0827	-0.1071	-0.2117	5.6914
	Basic Materials	-0.0001	0.0241	0.0002	0.1449	-0.1446	-0.4791	8.1790
	Cable Media	0.0003	0.0191	0.0003	0.1328	-0.1161	-0.0954	10.4130
	Consumer Goods	0.0001	0.0120	0.0004	0.0902	-0.0748	-0.0874	11.3102
	Conglomerate/Diversified Mfg	-0.0002	0.0207	0.0000	0.1293	-0.0998	-0.2549	7.9532
	Chemicals	0.0002	0.0212	0.0005	0.1203	-0.1214	-0.5627	7.7334
	Electronics	0.0000	0.0196	0.0001	0.1258	-0.1153	-0.1574	7.7048
	Healthcare	0.0001	0.0125	0.0003	0.1144	-0.0707	-0.0731	12.9166
	Industrials	0.0000	0.0178	0.0002	0.0929	-0.0961	-0.3671	6.9552
	Leisure	0.0001	0.0186	0.0000	0.0828	-0.0930	-0.2575	5.5492
	Metals&Mining	0.0002	0.0187	0.0003	0.0825	-0.0970	-0.2251	6.1354
	Financials	-0.0003	0.0261	0.0000	0.1351	-0.1628	-0.0999	9.6102
	Other Financial Services	-0.0003	0.0261	0.0000	0.1351	-0.1628	-0.0999	9.6102
	Oil&Gas	-0.0001	0.0215	0.0000	0.1733	-0.1659	-0.3686	13.6749
	Other Services	0.0001	0.0188	0.0000	0.0910	-0.1112	-0.1405	6.2647
	Other Telecommunication	-0.0001	0.0159	0.0001	0.1326	-0.0880	0.3755	13.5955
	Other Transportation	0.0002	0.0187	0.0003	0.0825	-0.0970	-0.2251	6.1354
	Retail Stores	0.0003	0.0151	0.0000	0.1129	-0.0894	0.0553	9.0343
	Consumer Services	0.0002	0.0153	0.0005	0.1097	-0.0945	-0.0735	9.2095
	Technology	0.0001	0.0170	0.0004	0.1161	-0.0984	-0.0113	8.2669
	Telecommunications	-0.0001	0.0159	0.0001	0.1326	-0.0880	0.3755	13.5955
	Utility Other	-0.0001	0.0139	0.0000	0.1339	-0.0865	0.5059	16.7573
UK	Banks	-0.0005	0.0268	0.0000	0.1880	-0.1947	-0.0695	11.0883
	Beverages	0.0005	0.0145	0.0001	0.0908	-0.0914	0.1657	7.9014
	Basic Materials	-0.0001	0.0300	0.0000	0.1856	-0.1897	-0.1456	8.2119
	Consumer Goods	0.0001	0.0120	0.0004	0.0902	-0.0748	-0.0869	11.2762
	Healthcare Facilities	0.0001	0.0131	0.0000	0.0766	-0.0789	-0.0449	8.3787
	Industrials	0.0002	0.0137	0.0004	0.0639	-0.0639	-0.3363	5.7929
	Financials	-0.0002	0.0199	0.0000	0.1205	-0.1282	-0.2257	8.6574
	Other Financials	-0.0003	0.0214	0.0000	0.1553	-0.1098	0.1035	8.9124
	Oil&Gas	-0.0001	0.0177	0.0000	0.1103	-0.0895	0.1517	8.2584
	Other Services	0.0000	0.0136	0.0001	0.0644	-0.0726	-0.1582	6.3608
	Other Telecommunication	-0.0001	0.0166	0.0000	0.0901	-0.1175	-0.2338	8.5749
	Retail Stores	-0.0001	0.0141	0.0000	0.0637	-0.0841	-0.3385	7.2936
	Consumer Services	0.0000	0.0136	0.0002	0.0644	-0.0726	-0.1607	6.3541
	Technology	0.0006	0.0158	0.0005	0.1039	-0.0703	0.0001	6.5450
	Telecommunications	-0.0001	0.0166	0.0000	0.0901	-0.1175	-0.2361	8.5632
	Utility Other	0.0000	0.0126	0.0000	0.1067	-0.0784	-0.0914	11.9474
EU	Banks	-0.0007	0.0257	-0.0006	0.1568	-0.1178	0.1493	7.0320

	Beverages	0.0003	0.0173	0.0009	0.0914	-0.0983	-0.2287	6.8006
	Building Products	0.0001	0.0133	0.0006	0.0676	-0.0752	-0.2753	6.2760
	Basic Materials	-0.0002	0.0247	0.0007	0.1399	-0.1399	-0.2129	7.1464
	Cable Media	-0.0003	0.0169	0.0001	0.0931	-0.0963	-0.1949	6.4525
	Consumer Goods	0.0001	0.0162	0.0005	0.1674	-0.0786	0.6912	13.5088
	Conglomerate Diversified/Mfg	-0.0003	0.0232	0.0002	0.1235	-0.1101	-0.1164	5.9918
	Chemicals	0.0001	0.0199	0.0007	0.1220	-0.0930	-0.1496	6.4676
	Electric Power	0.0000	0.0237	0.0006	0.1434	-0.1295	-0.1045	7.2235
	Healthcare Facilities	0.0001	0.0131	0.0004	0.0881	-0.0751	0.0035	8.7243
	Industrials	-0.0002	0.0201	0.0002	0.1015	-0.0993	-0.0960	6.1140
	Leisure	-0.0004	0.0237	0.0000	0.1287	-0.1152	-0.0106	6.1609
	Metals&Mining	-0.0007	0.0272	0.0007	0.1258	-0.1760	-0.4455	6.9150
	Financials	-0.0003	0.0186	0.0003	0.1013	-0.1070	-0.1653	7.4771
	Other Financials	-0.0006	0.0228	0.0001	0.1299	-0.1123	0.0936	6.8725
	Oil&Gas	-0.0003	0.0209	0.0001	0.1466	-0.1144	0.1169	9.0378
	Other Services	0.0001	0.0155	0.0003	0.0706	-0.0941	-0.1030	5.9908
	Other Telecommunications	-0.0005	0.0159	-0.0002	0.0973	-0.0904	-0.0102	7.7942
	Consumer Services	-0.0002	0.0164	0.0001	0.0854	-0.0876	-0.0813	6.5123
	Technology	-0.0002	0.0197	0.0001	0.1028	-0.1197	-0.2225	6.9851
	Telecommunications	-0.0004	0.0159	-0.0001	0.0973	-0.0904	-0.0119	7.7757
	Utility	-0.0007	0.0179	0.0001	0.1371	-0.0943	0.0776	9.4362
JAPAN	Banks	-0.0008	0.0211	0.0000	0.1411	-0.1284	0.0824	8.8953
	Basic Materials	-0.0006	0.0202	0.0000	0.1559	-0.1289	-0.2252	10.9098
	Consumer Goods	-0.0004	0.0172	0.0000	0.1200	-0.1037	-0.2330	9.5927
	Chemicals	-0.0004	0.0192	0.0000	0.1366	-0.1192	-0.2704	10.5389
	Electric Power	-0.0004	0.0194	0.0000	0.1184	-0.1208	-0.4079	8.7788
	Healthcare Facilities	-0.0002	0.0130	0.0000	0.0954	-0.1102	-1.0133	17.5969
	Industrial	-0.0003	0.0192	0.0000	0.1398	-0.1293	-0.2576	9.7613
	Metals&Mining	-0.0007	0.0187	0.0000	0.1189	-0.1191	-0.2702	9.6033
	Financials	-0.0005	0.0204	0.0000	0.1408	-0.1181	-0.0898	9.1696
	Oil&Gas	-0.0006	0.0218	0.0000	0.1233	-0.1402	-0.3540	7.3685
	Other Services	0.0002	0.0159	0.0000	0.0972	-0.1094	-0.1774	8.3858
	Other Telecommunication	-0.0002	0.0148	0.0000	0.0983	-0.1185	-0.4213	12.1304
	Other Transportation	-0.0007	0.0187	0.0000	0.1189	-0.1191	-0.2702	9.6033
	Retail Stores	-0.0001	0.0137	0.0000	0.0973	-0.1218	-0.6485	14.3070
	Consumer Services	-0.0002	0.0116	0.0000	0.1015	-0.1133	-0.9358	20.5778
	Technology	-0.0005	0.0181	0.0000	0.1255	-0.1128	-0.4094	8.8515
	Telecommunication	-0.0002	0.0148	0.0000	0.0983	-0.1185	-0.4213	12.1304
	Utility Other	-0.0007	0.0160	0.0000	0.0919	-0.1596	-0.7564	15.5294

Table 10: Equity Indices Crisis Sample Descriptive Statistics

		Mean	Std. Dev.	Med.	Max.	Min.	Skew.	Exc. Kurt.
US	Banks	0.0005	0.0119	0.0001	0.0585	-0.0695	-0.2100	5.9270
	Beverages	0.0004	0.0078	0.0004	0.0347	-0.0357	-0.2824	4.8200
	Building Products	0.0006	0.0109	0.0006	0.0429	-0.0493	-0.3174	4.6646
	Basic Materials	0.0002	0.0104	0.0002	0.0415	-0.0501	-0.3884	4.8660
	Cable Media	0.0005	0.0091	0.0008	0.0313	-0.0481	-0.5584	5.0250
	Consumer Goods	0.0004	0.0072	0.0003	0.0304	-0.0368	-0.4202	5.1611
	Conglomerate/Diversified Mfg	0.0004	0.0091	0.0002	0.0486	-0.0410	0.0501	5.3450
	Chemicals	0.0004	0.0101	0.0005	0.0386	-0.0509	-0.4622	4.8555
	Electronics	0.0005	0.0099	0.0005	0.0308	-0.0554	-0.5222	5.0137
	Healthcare	0.0006	0.0092	0.0007	0.0412	-0.0426	-0.3010	4.8266
	Industrials	0.0005	0.0085	0.0004	0.0298	-0.0410	-0.3437	4.7834
	Leisure	0.0006	0.0097	0.0006	0.0352	-0.0552	-0.5854	5.2704
	Metals&Mining	0.0005	0.0100	0.0005	0.0364	-0.0417	-0.2799	4.4114
	Financials	0.0005	0.0090	0.0007	0.0358	-0.0505	-0.3561	5.4416
	Other Financial Services	0.0005	0.0090	0.0007	0.0358	-0.0505	-0.3561	5.4416
	Oil&Gas	-0.0001	0.0125	0.0000	0.0501	-0.0671	-0.2087	5.7153
	Other Services	0.0005	0.0109	0.0005	0.0465	-0.0469	-0.2659	5.1084
	Other Telecommunication	0.0001	0.0086	0.0001	0.0313	-0.0381	-0.2327	4.4636
	Other Transportation	0.0005	0.0100	0.0005	0.0364	-0.0417	-0.2799	4.4114
	Retail Stores	0.0005	0.0084	0.0005	0.0410	-0.0405	-0.4268	5.0509
	Consumer Services	0.0005	0.0079	0.0007	0.0360	-0.0378	-0.5089	5.0379
	Technology	0.0006	0.0094	0.0006	0.0506	-0.0437	-0.3768	5.6256
	Telecommunications	0.0001	0.0086	0.0001	0.0313	-0.0381	-0.2327	4.4636
	Utility Other	0.0003	0.0087	0.0007	0.0279	-0.0400	-0.5711	4.6977
UK	Banks	0.0000	0.0131	0.0000	0.0593	-0.1142	-0.6171	10.4587
	Beverages	0.0003	0.0102	0.0001	0.1005	-0.0480	0.8947	13.0982
	Basic Materials	-0.0002	0.0183	0.0000	0.0875	-0.0960	-0.0509	5.7624
	Consumer Goods	0.0004	0.0072	0.0003	0.0304	-0.0368	-0.4483	5.1498
	Healthcare Facilities	0.0004	0.0103	0.0005	0.0485	-0.0651	-0.2100	6.3460
	Industrials	0.0003	0.0089	0.0002	0.0358	-0.0588	-0.3182	6.3629
	Financials	0.0005	0.0123	0.0003	0.0477	-0.1170	-1.2272	14.8761
	Other Financials	0.0002	0.0105	0.0000	0.0409	-0.1041	-1.2106	15.1960
	Oil&Gas	0.0000	0.0134	0.0000	0.0572	-0.0704	-0.0061	5.8432
	Other Services	0.0003	0.0088	0.0003	0.0360	-0.0671	-0.8048	9.5434
	Other Telecommunication	0.0002	0.0118	0.0001	0.0629	-0.0962	-0.4325	8.5231
	Retail Stores	0.0000	0.0100	0.0000	0.0417	-0.0892	-0.9959	12.3074
	Consumer Services	0.0003	0.0088	0.0003	0.0360	-0.0671	-0.8065	9.5736
	Technology	0.0006	0.0122	0.0002	0.1846	-0.0616	2.8029	47.3944
	Telecommunications	0.0002	0.0118	0.0000	0.0629	-0.0962	-0.4327	8.5527
	Utility Other	0.0000	0.0091	0.0002	0.0490	-0.0516	-0.2953	6.3103

EU	Banks	0.0000	0.0137	0.0001	0.0572	-0.1545	-1.3883	18.4204
	Beverages	0.0002	0.0114	0.0002	0.0874	-0.0629	0.1859	7.9306
	Building Products	0.0002	0.0084	0.0007	0.0354	-0.0509	-0.4562	5.7086
	Basic Materials	-0.0001	0.0115	0.0000	0.0379	-0.0685	-0.3060	5.1452
	Cable Media	0.0002	0.0098	0.0003	0.0438	-0.0985	-1.0682	13.8908
	Consumer Goods	0.0002	0.0094	0.0003	0.0408	-0.0693	-0.5145	7.3980
	Conglomerate							
	Diversified/Mfg	0.0003	0.0117	0.0001	0.0580	-0.0968	-0.5188	7.9058
	Chemicals	0.0001	0.0101	0.0004	0.0415	-0.0687	-0.4406	6.2136
	Electric Power	0.0003	0.0119	0.0000	0.0496	-0.1041	-0.6627	9.7528
	Healthcare Facilities	0.0003	0.0092	0.0006	0.0337	-0.0454	-0.2985	4.9707
	Industrials	0.0003	0.0098	0.0002	0.0412	-0.0833	-0.8444	10.3892
	Leisure	0.0007	0.0115	0.0009	0.0491	-0.0610	-0.1370	5.2280
	Metals&Mining	-0.0001	0.0145	0.0000	0.0574	-0.0643	-0.0483	4.2785
	Financials	0.0003	0.0100	0.0005	0.0428	-0.0928	-1.2955	14.3469
	Other Financials	0.0001	0.0114	0.0001	0.0460	-0.1315	-1.6107	20.2755
	Oil&Gas	-0.0002	0.0130	0.0001	0.0512	-0.0833	-0.2458	6.2252
	Other Services	0.0006	0.0139	0.0007	0.0643	-0.1440	-1.1629	15.8589
	Other Telecommunications	0.0000	0.0107	0.0001	0.0431	-0.1017	-0.7293	11.2844
	Consumer Services	0.0001	0.0097	0.0002	0.0465	-0.0990	-1.2270	15.5323
	Technology	0.0004	0.0103	0.0007	0.0382	-0.0630	-0.5015	6.0035
	Telecommunications	0.0000	0.0107	0.0001	0.0431	-0.1017	-0.7327	11.3335
	Utility	-0.0001	0.0103	0.0003	0.0405	-0.0959	-0.8444	10.3911
JAPAN	Banks	0.0004	0.0173	0.0000	0.0848	-0.1003	-0.0463	6.7955
	Basic Materials	0.0005	0.0151	0.0000	0.0779	-0.0788	-0.2618	6.7296
	Consumer Goods	0.0006	0.0137	0.0001	0.0792	-0.0779	-0.2265	7.6111
	Chemicals	0.0007	0.0151	0.0002	0.0857	-0.0797	-0.2938	7.5431
	Electric Power	0.0008	0.0154	0.0003	0.0737	-0.0869	-0.3885	6.7214
	Healthcare Facilities	0.0006	0.0133	0.0001	0.0783	-0.0725	-0.2948	7.2864
	Industrial	0.0006	0.0139	0.0004	0.0815	-0.0784	-0.3140	7.2026
	Metals&Mining	0.0005	0.0147	0.0000	0.0770	-0.0781	-0.1048	5.8865
	Financials	0.0003	0.0153	0.0000	0.0844	-0.0970	-0.1314	7.5335
	Oil&Gas	0.0001	0.0160	0.0000	0.0790	-0.0753	0.1695	5.8436
	Other Services	0.0003	0.0162	0.0000	0.0597	-0.0675	-0.2142	4.5991
	Other Telecommunication	0.0008	0.0145	0.0000	0.0804	-0.0787	-0.1135	6.8721
	Other Transportation	0.0005	0.0147	0.0000	0.0770	-0.0781	-0.1048	5.8865
	Retail Stores	0.0006	0.0127	0.0000	0.0621	-0.0661	-0.3314	5.9090
	Consumer Services	0.0006	0.0121	0.0000	0.0639	-0.0628	-0.3046	7.0633
	Technology	0.0006	0.0128	0.0003	0.0742	-0.0723	-0.5037	7.4046
	Telecommunication	0.0008	0.0145	0.0000	0.0804	-0.0787	-0.1131	6.8713
	Utility Other	0.0003	0.0160	0.0000	0.0776	-0.0905	-0.0585	6.4525

Table 11: Equity Indices After-Crisis Sample Descriptive Statistics

A.2 Test Statistics – Return Data

CDS Spreads	Jarque Bera	ADF Returns	Engle Test
US Region			
Airlines	65511.53***	-21.16***	122.07***
Beverages	32551.90***	-20.51***	5.23**
Building Products	58911.40***	-40.41***	67.09***
Banking	107654.00***	-26.88***	53.04***
Cable Media	132361.40***	-55.46***	10.13***
Consumer Goods	38279.09***	-54.18***	98.55***
Chemicals	288197.00***	-9.32***	123.42***
Conglomerate/Diversified Mfg	58103.83***	-49.72***	68.15***
Containers	145738.00***	-47.59***	29.35***
Consumer Services	16897.02***	-21.16***	16.83***
Electric Utility	652669.60***	-65.63***	25.85***
Electronics	101749.40***	-53.80***	5.03*
Financials	28160.62***	-38.07***	102.40***
Food Processors	73597.06***	-56.93***	103.65***
Oilfield Machinery and Products	309388.30***	-9.11***	259.71***
Healthcare Facilities	168845.60***	-40.38***	149.06***
Home	51921.28***	-29.42***	11.85***
Industrials	460436.50***	-25.06***	8.57***
Information/Data Technology	32634.28***	-47.80***	461.51***
Leisure	143195.60***	-21.74***	69.53***
Lodging	12505.01***	-26.51***	117.56***
Machinery	382686.70***	-39.98***	153.65***
Healthcare Supplies	263949.00***	-54.69***	154.26***
Home Builders	51921.28***	-29.42***	11.85***
Metals&Mining	716461.10***	-18.15***	244.07***
Other Consumer Goods	38399.38***	-23.97***	91.30***
Other Financials	28160.62***	-38.07***	102.40***
Oil& Gas	306470.50***	-26.25***	174.48***
Other Retail Stores	356885.00***	-30.26***	21.26***

Other Services	98412.34***	-14.34***	222.08***
Other Telecommunications	487116.90***	-57.69***	353.10***
Pharmaceutical	321192.40***	-40.07***	22.33***
Property&Casualty Insurance	36588.12***	-46.59***	25.63***
Publishing	19122.59***	-31.63***	201.54***
Railroads	12548.88***	-29.45***	20.97***
Real Estate	47047.02***	-22.93***	15.26***
Retail Stores Food and Drug	136145.00***	-28.28***	268.46***
Restaurants	57157.38***	-11.72***	77.48***
Telecommunications	620425.70***	-58.72***	455.40***
Tobacco	21438.89***	-29.85***	82.93***
Transportation	317704.00***	-35.88***	88.13***
Textiles\Apparel\Shoes	67407.22***	-34.56***	150.30***
Utilities	475012.71***	-21.75***	153.56***
Vehicles Parts	258258.40***	-55.26***	20.26***
UK Region			
Beverages	86980.48***	-52.43***	202.06***
Banking	74272.61***	-42.71***	251.47***
Consumer Goods	10139.64***	-39.33***	446.90***
Consumer Services	20755.11***	-47.22***	138.19***
Financials	33889.33***	-36.49***	47.21***
Life Insurance	60662.85***	-42.13***	178.84***
Other Financials	7011.26***	-31.54***	106.42***
Other Services	166906.90***	-55.21***	111.28***
Other Telecommunications	30496.66***	-45.90***	147.64***
Other Retail	7027.50***	-31.87***	144.11***
Telecommunications	11417.76***	-43.93***	139.03***
EU Region			
Automotive Manufacturer	221077.50***	-43.95***	6.13**
Beverages	7662.19***	-45.21***	34.64***
Building	16517.93***	-31.11***	155.76***
Banking	6264.46***	-50.80***	102.65***
Cable Media	20071.70***	-40.87***	148.39***
Consumer Goods	45854.77***	-25.39***	129.91***
Chemical	27800.30***	-43.56***	85.24***

Conglomerate	45854.77***	-25.39***	129.91***
Consumer Services	65138.97***	-49.80***	353.72***
Electronics	28988.91***	-25.56***	163.34***
Financials	182677.00***	-20.97***	242.83***
Leisure	461576.10***	-47.18***	6.10***
Metals&Mining	20421.83***	-59.48***	35.29***
Other Services	164397.00***	-49.18***	172.54***
Other Financials	6295.28***	-48.31***	192.13***
Other Consumer Goods	30230.34***	-48.34***	223.79***
Other Telecommunications	280073.80***	-47.79***	216.91***
Telecommunications	27918.00***	-47.77***	215.85***
Utility	529612.70***	-30.53***	6.30**
Japan Region			
Automotive Manufacturer	163087.70***	-18.80***	168.28***
Banking	3265.26***	-47.97***	47.86***
Chemical	80540.79***	-18.22***	3.92**
Consumer Services	11900.57***	-49.85***	148.01***
Electronics	154453.40***	-41.94***	24.08***
Industrial	110504.30***	-60.69***	322.17***
Metals&Mining	23671.66***	-31.41***	12.91***
Other Financials	37192.15***	-52.12***	89.08***
Other Retail	64360.19***	-36.15***	34.51***
Other Services	18009.20***	-52.20***	9.75***
Other Telecommunications	58512.32***	-44.05***	109.26***
Other Transport	15296.71***	-39.23***	16.91***
Telecommunications	58442.90***	-44.05***	109.25***
Utility	108946.10***	-53.94***	125.13***

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively.

Table 12: CDS Spreads Indices Full Sample Test Statistics

CDS	Jarque Bera	ADF Returns	Engle Test
US Region			
Airlines	14514.63***	-19.16***	21.63***
Beverages	64377.10***	-32.76***	0.51***
Building Products	25011.70***	-39.45***	22.83***
Banking	30109.78***	-29.77***	24.76***
Cable Media	78131.00***	-20.98***	0.36***
Consumer Goods	38279.09***	-54.18***	98.55***
Chemicals	10510.96***	-20.74***	20.47***
Conglomerate/Diversified Mfg	14021.19***	-35.34***	42.70***
Containers	44670.88***	-35.17***	2.98*
Consumer Services	9992.77***	-17.94***	18.17***
Electric Utility	29003.40***	-35.87***	74.12***
Electronics	32179.60***	-32.72***	54.18***
Financials	58747.96***	-32.38***	112.88***
Food Processors	67724.87***	-36.48***	38.56***
Oilfield Machinery and Products	120627.00***	-20.02***	75.03***
Healthcare Facilities	102625.80***	-21.97***	13.55***
Home	12107.07***	-20.79***	12.51***
Industrials	129077.00***	-16.03***	36.57***
Information/Data Technology	13063.10***	-22.27***	41.45***
Leisure	58702.88***	-33.04***	28.85***
Lodging	26571.96***	-31.35***	29.08***
Machinery	6603.13***	-22.18***	65.72***
Healthcare Supplies	21491.13***	-37.11***	10.42***
Home Builders	12107.07***	-20.79***	12.51***
Metals&Mining	17533.69***	-20.43***	4.63***
Other Consumer Goods	63888.91***	-32.84***	55.25***
Other Financials	5847.96***	-32.38***	112.88***
Oil& Gas	43608.69***	-16.40***	17.81***
Other Retail Stores	5623.95***	-19.01***	13.88***
Other Services	4386.44***	-18.75***	17.39***
Other Telecommunications	16125.73***	-23.06***	11.24***

Pharmaceutical	491479.20***	-34.90***	132.62***
Property&Casualty Insurance	82435.23***	-33.14***	40.25***
Publishing	50176.36***	-22.79***	103.93***
Railroads	15974.13***	-20.26***	11.46***
Real Estate	13651.01***	-15.72***	6.84***
Retail Stores Food and Drug	19079.34***	-36.75***	10.33***
Restaurants	62928.63***	-21.97***	44.12***
Telecommunications	5028.18***	-17.46***	4.56**
Tobacco	1238089.90***	-23.99***	26.31***
Transportation	33917.58***	-16.92***	81.33***
Textiles\Apparel\Shoes	47313.56***	-30.86***	27.16***
Utilities	97755.96***	-22.02***	31.25***
Vehicles Parts	193481.30***	-33.50***	7.69***
UK Region			
Beverages	21600.43***	-38.41***	99.28***
Banking	24405.39***	-30.45***	139.75***
Consumer Goods	8336.98***	-34.09***	150.08***
Consumer Services	4718.07***	-34.30***	91.84***
Financials	13777.05***	-35.09***	25.24***
Life Insurance	12986.71***	-35.68***	21.55***
Other Financials	3279.15***	-17.13***	66.42***
Other Services	33371.60***	-38.05***	33.09***
Other Telecommunications	6898.79***	-32.22***	54.23***
Other Retail	2095.89***	-32.46***	29.98***
Telecommunications	6866.79***	-32.27***	83.73***
EU Region			
Automotive Manufacturer	2883.975***	-28.78***	14.44***
Beverages	2583.61***	-31.06***	22.09***
Building	3482.08***	-20.89***	29.98***
Banking	2999.49***	-34.66***	72.93***
Cable Media	25176.46***	-33.71***	4.87**
Consumer Goods	17098.59***	-34.38***	84.59***
Chemical	7945.56***	-30.88***	42.86***
Conglomerate	17098.69***	-34.38***	84.59***
Consumer Services	26464.22***	-33.11***	214.42***

Electronics	12478.13***	-17.95***	105.14***
Financials	14387.79***	-37.36***	10.21***
Leisure	419479.60***	-33.39***	59.62***
Metals&Mining	13513.83***	-21.68***	4.68**
Other Services	16524.24***	-32.37***	8.98***
Other Financials	2124.01***	-29.49***	146.44***
Other Consumer Goods	3609.83***	-30.84***	15.00***
Other Telecommunications	83381.36***	-14.18***	102.90***
Telecommunications	82990.59***	-14.20***	101.46***
Utility	296592.00***	-39.14***	4.02**
Japan Region			
Automotive Manufacturer	9756.21***	-33.60***	18.85***
Banking	6089.53***	-16.98***	39.00***
Chemical	89177.69***	-12.47***	81.56***
Consumer Services	49249.87***	-12.29***	80.92***
Electronics	88752.08***	-37.46***	10.52***
Industrial	6112.80***	-21.80***	3.41***
Metals&Mining	13513.83***	-21.68***	4.68**
Other Financials	18784.35***	-22.62***	44.99***
Other Retail	46578.59***	-8.62***	32.87***
Other Services	2522.87***	-9.87***	21.56***
Other Telecommunications	630444.09***`	-36.85***	6.92***
Other Transport	1491.80***	-17.89***	15.46***
Telecommunications	62829.02***	-38.87***	6.91***
Utility	30259.53***	-35.21***	14.99***

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively.

Table 13: CDS Spreads Indices Crisis Sample Test Statistics

CDS	Jarque Bera	ADF Returns	Engle Test
US Region			
Airlines	62200.78***	-25.79***	59.57***

Beverages	62517.69***	-20.38***	5.75**
Building Products	32378.55***	-25.05***	62.58***
Banking	32863.68***	-37.34***	76.70***
Cable Media	41975.62***	-43.06***	7.81***
Consumer Goods	10000.77***	-44.26***	63.36***
Chemicals	66418.69***	-23.83***	70.82***
Conglomerate/Diversified Mfg	81359.44***	-36.99***	22.14***
Containers	44670.88***	-35.17***	2.98*
Consumer Services	26255.70***	-20.76***	8.88***
Electric Utility	21452.80***	-54.65***	71.43***
Electronics	2735.03***	-28.94***	30.53***
Financials	14398.58***	-25.03***	74.81***
Food Processors	16501.23***	-29.64***	81.07***
Oilfield Machinery and Products	60815.97***	-23.90***	122.58***
Healthcare Facilities	39340.29***	-25.85***	95.67***
Home	88871.81***	-31.68***	19.47***
Industrials	17673.09***	-25.61***	51.52***
Information/Data Technology	613919.40***	-24.19***	198.01***
Leisure	14794.60***	-29.19***	107.46***
Lodging	16343.65***	-18.70***	55.23***
Machinery	44344.89***	-28.83***	67.17***
Healthcare Supplies	11065.57***	-42.50***	80.02***
Home Builders	88871.81***	-31.68***	19.47***
Metals&Mining	95565.65***	-13.33***	103.24***
Other Consumer Goods	80121.74***	-18.52***	98.82***
Other Financials	14398.58***	-25.03***	41.76***
Oil& Gas	102435.90***	-39.77***	82.40***
Other Retail Stores	416066.70***	-22.09***	9.67***
Other Services	11952.01***	-10.30***	87.68***
Other Telecommunications	715987.30***	-31.06***	342.92***
Pharmaceutical	34211.59***	-25.78***	80.58***
Property&Casualty Insurance	99562.64***	-37.93***	265.53***
Publishing	146179.70***	-33.34***	21.96***
Railroads	152871.90***	-22.34***	24.25***
Real Estate	22157.13***	-39.47***	8.04***

Retail Stores Food and Drug	280426.50***	-33.41***	89.79***
Restaurants	142962.80***	-7.59***	57.82***
Telecommunications	706202.90***	-31.10***	343.48***
Tobacco	63219.24***	-24.40***	49.84***
Transportation	63736.08***	-24.82***	34.13***
Textiles\Apparel\Shoes	13053.92***	-21.15***	55.04***
Utilities	62295.18***	-23.66***	47.96***
Vehicles Parts	27127.23***	-20.17***	88.49***
UK Region			
Beverages	43871.41***	-34.35***	67.73***
Banking	3703.63***	-34.44***	36.50***
Consumer Goods	18540.50***	-44.15***	214.75***
Consumer Services	33993.20***	-32.32***	3.14*
Financials	7540.37***	-39.42***	18.58***
Life Insurance	47338.39***	-27.36***	54.91***
Other Financials	1755.39***	-37.40***	10.29***
Other Services	49887.90***	-44.86***	127.08***
Other Telecommunications	39252.88***	-33.19***	62.04***
Other Retail	6834.98***	-22.83***	148.73***
Telecommunications	1437.77***	-29.52***	10.26***
EU Region			
Automotive Manufacturer	652117.10***	-34.88***	174.85***
Beverages	6296.11***	-26.15***	10.72***
Building Products	17487.40***	-37.53***	103.76***
Banking	3287.24**	-38.04***	31.12***
Cable Media	710881.70***	-31.12***	67.84***
Consumer Goods	20935.55	-32.70***	7.42***
Chemical	5427.94***	-32.85***	26.11***
Conglomerate/Diversified Mfg	20935.55***	-32.70***	7.42***
Consumer Services	42654.70***	-29.37***	150.47***
Electronics	2708.71***	-37.85***	35.98***
Financials	239603.90***	-21.59***	107.83***
Leisure	13974.41***	-33.70***	157.74***
Metals&Mining	361023.10***	-43.92***	17.96***

Other Services	366142.70***	-39.43***	204.61***
Other Financials	3493.51***	-38.34***	79.24***
Other Consumer Goods	42654.70***	-29.37***	150.47***
Other Telecommunications	245510.50***	-32.69***	35.73***
Telecommunications	245175.30***	-32.69***	87.27***
Utility	217759.30***	-14.65***	267.85***
Japan Region			
Automotive Manufacturer	22515.07***	-14.86***	70.60***
Banking	1425.31***	-25.87***	22.07***
Chemical	1036.53***	-37.06***	37.71***
Consumer Services	102370.30***	-17.20***	0.63***
Electronics	55693.55***	-19.37***	26.49***
Industrial	23608.09***	-30.59***	145.17***
Metals&Mining	2481.58***	-34.80***	28.19***
Other Financials	5760.26***	-21.29***	21.59***
Other Retail	85912.41***	-25.15***	13.80***
Other Services	49843.01***	-41.82***	6.27**
Other Telecommunications	14645.02***	-33.80***	76.17***
Other Transport	6639.99***	-30.51***	9.14***
Telecommunications	14645.35***	-33.80***	76.17***
Utility	127803.70***	-30.79***	263.17***

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively.

Table 14: CDS Spreads Indices After-Crisis Sample Test Statistics

Equity	**Jarque Bera**	**ADF Returns**	**Engle Test**
US Region			
Airlines	1410.68***	-50.16***	63.97***
Beverages	10026.59***	-38.58***	414.42***
Building Products	1836.97***	-48.26***	143.57***
Banking	19944.50***	-25.82***	163.95***

Cable Media	12382.46***	-52.82***	156.32***
Consumer Goods	10052.84***	-39.35***	90.94***
Chemicals	5809.48***	-51.85***	151.62***
Conglomerate/Diversified Mfg	7069.83***	-51.65***	167.81***
Containers	2208.12***	-52.47***	118.52***
Consumer Services	7944.82***	-52.43***	101.10***
Electric Utility	19651.74***	-39.57***	115.45***
Electronics	5243.12***	-51.55***	91.41***
Financials	14825.02***	-56.96***	162.18***
Food Processors	9173.49***	-39.99***	66.84***
Oilfield Machinery and Products	17241.25***	-39.77***	159.27***
Healthcare Facilities	12337.59***	-50.67***	105.15***
Home	1932.85***	-31.37***	28.96***
Industrials	4342.05***	-51.92***	95.23***
Information/Data Technology	5397.82***	-53.38***	104.44***
Leisure	1943.26***	-49.36***	165.34***
Lodging	4477.81***	-50.27***	110.50***
Machinery	4298.88***	-50.89***	94.96***
Healthcare Supplies	3449.36***	-38.19***	229.44***
Home Builders	1932.85***	-31.37***	132.30***
Metals&Mining	3468.51***	-44.93***	35.25***
Other Consumer Goods	8894.81***	-39.71***	78.95***
Other Financials	14901.99***	-56.93***	162.04***
Oil& Gas	18515.88***	-40.69***	202.82***
Other Retail Stores	6761.82***	-52.31***	82.87***
Other Services	2244.42***	-53.16***	95.82***
Other Telecommunications	19231.72***	-39.67***	59.92***
Pharmaceutical	8687.26***	-40.11***	156.61***
Property&Casualty Insurance	26628.45***	-40.51***	249.10***
Publishing	5594.88***	-50.09***	118.31***
Railroads	2370.69***	-50.90***	66.49***
Real Estate	22399.42***	-62.41***	162.84***
Retail Stores Food and Drug	4602.34***	-55.58***	241.37***
Restaurants	3525.53***	-32.79***	112.29***
Telecommunications	18982.95***	-39.68***	58.60***

Tobacco	10580.45***	-39.80***	31.96***
Transportation	2380.13***	-51.69***	39.11***
Textiles\Apparel\Shoes	4614.88***	-51.52***	77.71***
Utilities	23399.84***	-39.49***	121.08***
Vehicles Parts	2697.99***	-47.50***	80.78***
UK Region			
Beverages	4833.14***	-38.03***	119.83***
Banking	14735.76***	-48.03***	91.61***
Consumer Goods	13903.90***	-54.56***	91.22***
Consumer Services	2505.21***	-30.71**	223.72***
Financials	9182.57***	-47.34***	83.49***
Life Insurance	22464.54***	-25.41***	116.34***
Other Financials	8512.65***	-36.49***	126.20***
Other Services	2526.31***	-32.14***	228.72***
Other Telecommunications	4341.50***	-33.08***	95.28***
Other Retail	3799.58***	-32.41***	213.89***
Telecommunications	4344.22***	-33.13***	95.56***
EU Region			
Automotive Manufacturer	123709.10***	-27.26***	1149.3***
Beverages	2574.59***	-50.68***	85.96***
Building	1946.70***	-45.19***	198.38***
Banking	5112.63***	-46.49***	46.53***
Cable Media	3541.57***	-47.41***	82.98***
Consumer Goods	17596.76***	-50.03***	94.57***
Chemical	3151.08***	-48.48***	42.27***
Conglomerate	2729.13***	-48.30***	61.95***
Consumer Services	3802.33***	-47.94***	98.26***
Electronics	4903.97***	-48.38***	62.64***
Financials	5230.87***	-46.69***	55.57***
Leisure	2885.714***	-37.24***	22.35***
Metals&Mining	3470.98***	-44.94***	35.82***
Other Services	4734.85***	-38.78***	160.90***
Other Financials	5510.77***	-46.97***	80.46***
Other Consumer Goods	5567.59***	-49.45***	97.85***
Other Telecommunications	4301.15***	-38.06***	105.20***

Telecommunications	4316.14***	-38.12***	105.54***
Utility	7998.75***	-36.93***	121.56***
Japan Region			
Automotive Manufacturer	3520.98***	-48.74***	302.25***
Banking	7443.73***	-53.04***	71.08***
Chemical	5589.23***	-50.46***	194.91***
Consumer Services	501183.70***	-38.35***	293.62***
Electronics	3397.62***	-49.77***	173.91***
Industrial	6518.70***	-47.94***	243.80***
Metals&Mining	5589.23***	-50.46***	194.91***
Other Financials	4341.61***	-47.90***	96.84***
Other Retail	6637.50***	-49.76***	327.78***
Other Services	1315.89***	-48.92***	81.98***
Other Telecommunications	4823.27***	-52.44***	127.89***
Other Transport	3928.30***	-49.45***	159.87***
Telecommunications	4316.14***	-38.12***	105.54***
Utility	7185.72***	-48.78***	152.70***

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively.

Table 15: Equity Indices Full Sample Test Statistics

Equity	Jarque Bera	ADF Returns	Engle Test
US Region			
Airlines	362.4619***	-36.66***	21.50***
Beverages	4747.45***	-28.65***	223.28***
Building Products	411.36***	-35.00***	57.24***
Banking	3439.79***	-40.92***	68.12***
Cable Media	30005.60***	-38.85***	68.51***
Consumer Goods	10052.84***	-39.35***	90.94***
Chemicals	1280.96***	-38.14***	46.27***
Conglomerate/Diversified Mfg	1357.99***	-37.80***	67.87***
Containers	381.10***	-34.81***	29.74***
Consumer Services	2100.17***	-38.58***	39.31***
Electric Utility	9218.17***	-29.59***	59.31***
Electronics	1228.74***	-37.80***	31.70***

Financials	2375.58***	-41.85***	64.90***
Food Processors	4598.81***	-30.05***	31.30***
Oilfield Machinery and Products	6254.77***	-30.06***	77.76***
Healthcare Facilities	4414.91***	-36.54***	45.42***
Home	365.38***	-35.76***	49.95***
Industrials	901.84***	-38.07***	31.90***
Information/Data Technology	1554.65***	-39.69***	37.76***
Leisure	383.19***	-36.18***	63.76***
Lodging	754.70***	-36.64***	37.85***
Machinery	964.72***	-37.50***	32.57***
Healthcare Supplies	1509.33***	-28.43***	119.51***
Home Builders	365.38***	-35.76***	49.95***
Metals&Mining	880.77***	-32.54***	9.31***
Other Consumer Goods	3232.78***	-29.42***	32.69***
Other Financials	2409.40***	-41.86***	65.10***
Oil& Gas	6919.13***	-30.80***	103.19***
Other Retail Stores	2054.35***	-38.61***	32.04***
Other Services	596.35***	-39.08***	36.68***
Other Telecommunications	6181.86***	-29.64***	24.90***
Pharmaceutical	4932.55***	-30.44***	86.62***
Property&Casualty Insurance	5138.25***	-43.33***	117.54***
Publishing	1697.62***	-36.84***	50.59***
Railroads	688.10***	-37.41***	4.01**
Real Estate	-3394.40***	-46.37***	66.00***
Retail Stores Food and Drug	2006.64***	-41.31***	122.36***
Restaurants	1031.11***	-28.81***	44.42***
Telecommunications	6080.52***	-29.59***	24.67***
Tobacco	5243.82***	-30.15***	12.66***
Transportation	560.06***	-38.11***	8.90***
Textiles\Apparel\Shoes	1669.015***	-37.65***	30.51***
Utilities	10373.83***	-29.45***	62.24***
Vehicles Parts	469.49***	-34.58***	2.65***
UK Region			
Beverages	1321.35***	-18.45***	98.26***
Banking	3551.82***	-34.82***	34.12***
Consumer Goods	3735.68***	-29.17***	38.78***
Consumer Services	624.25***	-23.81***	77.14***
Financials	1903.65***	-31.76***	22.08***
Life Insurance	5839.32***	-17.57***	46.98***
Other Financials	1788.61***	-35.84***	25.45***
Other Services	649.09***	-24.34***	80.52***
Other Telecommunications	1702.88***	25.75***	84.87***
Other Retail	990.45***	-24.69***	58.05***

Telecommunications	1695.00***	-25.81***	54.19***
EU Region			
Automotive Manufacturer	327670.40***	-20.29***	637.55***
Beverages	7887.69***	-36.71***	49.89***
Building	606.56***	-33.27***	108.23***
Banking	880.14***	-33.91***	9.03***
Cable Media	664.20***	-34.75***	21.67***
Consumer Goods	6112.57***	-36.51***	41.67***
Chemical	656.20***	-34.90***	10.68***
Conglomerate	496.86***	-34.94***	17.13***
Consumer Services	676.10***	-34.93***	21.20***
Electronics	1004.09***	-35.15***	16.34***
Financials	817.34***	-34.05***	10.15***
Leisure	546.66***	-27.27***	213.58***
Metals&Mining	879.87***	-32.54***	9.31***
Other Services	490.87***	-29.46***	11.03***
Other Financials	1119.07***	-34.31***	17.47***
Other Consumer Goods	1991.87***	-36.72***	43.70***
Other Telecommunications	1240.40***	-24.07***	45.95***
Telecommunications	1240.25***	-24.12***	45.91***
Utility	2258.79***	-27.10***	60.92***
Japan Region			
Automotive Manufacturer	9756.21***	-33.60***	18.85***
Banking	6089.53***	-16.98***	39.00***
Chemical	89177.69***	-12.47***	81.56***
Consumer Services	49249.87***	-12.29***	80.92***
Electronics	88752.08***	-37.46***	10.52***
Industrial	6112.80***	-21.80***	3.41***
Metals&Mining	13513.83***	-21.68***	4.68**
Other Financials	18784.35***	-22.62***	44.99***
Other Retail	46578.59***	-8.62***	32.87***
Other Services	2522.87***	-9.87***	21.56***
Other Telecommunications	630444.09***`	-36.85***	6.92***
Other Transport	1491.80***	-17.89***	15.46***
Telecommunications	62829.02***	-38.87***	6.91***
Utility	30259.53***	-35.21***	14.99***

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively.

Table 16: Equity Indices Crisis Sample Test Statistics

Equity	Jarque Bera	ADF Returns	Engle Test
US Region			
Airlines	102.72***	33.85***	8.31***
Beverages	171.47***	-35.26***	48.83***
Building Products	154.11***	-33.37***	27.83***
Banking	432.23***	-34.06***	66.93***
Cable Media	259.35***	-34.44***	28.51***
Consumer Goods	262.20***	-35.03***	67.65***
Chemicals	213.30***	-33.49***	36.06***
Conglomerate/Diversified Mfg	271.42***	34.04***	38.18***
Containers	381.10***	-34.81***	29.74***
Consumer Services	255.80***	-34.04***	57.58***
Electric Utility	213.11***	-34.94***	24.67***
Electronics	251.32***	-34.00***	57.83***
Financials	317.79***	-35.15***	41.76***
Food Processors	172.41***	-35.52***	31.52***
Oilfield Machinery and Products	365.29***	-34.17***	34.32***
Healthcare Facilities	232.59***	-35.75***	74.25***
Home	195.86***	34.12****	6.52***
Industrials	184.55***	-34.11***	45.29***
Information/Data Technology	362.64***	-33.75***	48.64***
Leisure	316.75***	-32.69***	40.55***
Lodging	233.71***	-33.87***	13.01***
Machinery	167.53***	-32.75***	30.47***
Healthcare Supplies	349.47***	-33.91***	60.51***
Home Builders	195.86***	-34.42***	6.52**
Metals&Mining	79.30***	-31.27***	9.12***
Other Consumer Goods	226.50***	-35.32***	57.39***
Other Financials	316.06***	-35.08***	74.37***
Oil& Gas	318.13***	-35.31***	31.47***
Other Retail Stores	237.74***	-33.92***	43.60***

Other Services	218.58***	-35.10***	16.93***
Other Telecommunications	107.06***	-34.08***	25.54***
Pharmaceutical	253.03***	-34.33***	49.96***
Property&Casualty Insurance	178.85***	-35.19***	31.55***
Publishing	767.48***	-33.04***	50.93***
Railroads	210.41***	-33.70***	17.22***
Real Estate	306.22***	-32.76***	38.85***
Retail Stores Food and Drug	328.00***	-36.08***	31.93***
Restaurants	318.90***	-26.40***	43.28***
Telecommunications	110.32***	-34.17***	22.87***
Tobacco	258.81***	-34.09***	13.38***
Transportation	112.77***	-33.53***	22.70***
Textiles\Apparel\Shoes	120.05***	-34.73***	68.09***
Utilities	205.04***	-35.19***	24.17***
Vehicles Parts	166.56***	-32.26***	14.53***
UK Region			
Beverages	5098.84***	-34.63***	2.82*
Banking	2826.26***	-33.33***	152.02***
Consumer Goods	259.47***	-34.99***	67.28***
Consumer Services	2236.75***	-19.69***	234.62***
Financials	9402.58***	-20.20***	217.56***
Life Insurance	5900.19***	-18.34***	187.70***
Other Financials	7168.85***	-19.47***	273.14***
Other Services	2200.3***	-19.60***	232.94***
Other Telecommunications	1538.44***	-34.33***	10.37***
Other Retail	4370.00***	-20.14***	219.56***
Telecommunications	1539.52***	-34.40***	10.44***
EU Region			
Automotive Manufacturer	75.70***	-32.40***	4.19**
Beverages	1203.49***	-35.04***	16.54***
Building Products	390.44***	-29.90***	24.56***
Banking	12110.04***	-34.43***	52.37***
Cable Media	6035.26***	-18.68***	84.26***

Consumer Goods	998.48***	-33.74***	37.35***
Chemical	538.30***	-34.61***	26.21***
Conglomerate/Diversified Mfg	1234.79***	-33.81***	28.46***
Consumer Services	7978.74***	-18.90***	139.36***
Electronics	2323.67***	-33.20***	113.41***
Financials	15087.67***	-19.27***	76.00***
Leisure	247.08***	-32.52***	71.90***
Metals&Mining	79.38***	-31.27***	9.14***
Other Services	8261.30***	-32.36***	102.30***
Other Financials	6632.84***	-18.14***	222.60***
Other Consumer Goods	518.78***	-31.81***	25.50***
Other Telecommunications	3488.77***	-32.57***	87.27***
Telecommunications	3497.58***	-32.59***	35.52***
Utility	2814.24***	-33.06***	7.08***
Japan Region			
Automotive Manufacturer	650.68***	-34.81***	47.73***
Banking	688.54***	-32.36***	45.76***
Chemical	11636.06***	-38.97***	15.05***
Consumer Services	822.71***	-35.95***	73.09***
Electronics	709.86***	-35.80***	12.08***
Industrial	303.57***	-35.15***	28.36***
Metals&Mining	1036.53***	-37.06***	37.71***
Other Financials	1005.05***	-32.94***	32.92***
Other Retail	428.77***	-35.75***	51.19***
Other Services	133.48***	-33.34***	14.99***
Other Telecommunications	718.35***	-34.47***	35.60***
Other Transport	405.90***	-36.13***	29.02***
Telecommunications	3497.58***	-32.59***	35.52***
Utility	582.34***	-35.821***	85.60***

Notes: *, **. *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively.

Table 17: Equity Indices After-Crisis Sample Test Statistics

A.3 Correlation Statistics – Return Data

Correlation Matrix CDS Spreads - Equity in US Region			Full Crisis Sample																																							
			US																																							
			CDS Spreads																				Equity																			
			BNK	BEV	BLDG	CAB	CG	CGM	CH	ELEC	IND	LEI	MT	FIN	OF	OG	OS	OT	RET	CS	TEL	UT	BNK	BEV	BLDG	CAB	CG	CGM	CH	ELEC	IND	LEI	MT	FIN	OF	OG	OS	OT	RET	CS	TEL	UT
US	CDS Spreads	BNK	1																																							
		BEV	0.185	1																																						
		BLDG	-0.338	-0.140	1																																					
		CAB	0.233	0.136	-0.140	1																																				
		CG	0.287	0.203	-0.145	0.160	1																																			
		CGM	0.334	0.185	-0.203	0.173	0.204	1																																		
		CH	0.300	0.126	-0.157	0.176	0.251	0.208	1																																	
		ELEC	0.333	0.170	-0.154	0.208	0.267	0.286	0.221	1																																
		IND	0.153	0.054	-0.088	0.111	0.109	0.090	0.131	0.110	1																															
		LEI	0.270	0.146	-0.197	0.173	0.223	0.297	0.219	0.255	0.110	1																														
		MT	0.314	0.177	-0.212	0.181	0.259	0.301	0.257	0.268	0.096	0.277	1																													
		FIN	0.176	0.080	-0.113	0.092	0.106	0.130	0.139	0.143	0.067	0.114	0.129	1																												
		OF	0.176	0.080	-0.113	0.092	0.106	0.130	0.139	0.143	0.067	0.114	0.129	1.000	1																											
		OG	0.289	0.173	-0.180	0.178	0.225	0.245	0.211	0.206	0.104	0.236	0.306	0.099	0.099	1																										
		OS	0.311	0.174	-0.182	0.207	0.285	0.291	0.216	0.284	0.147	0.271	0.304	0.127	0.127	0.256	1																									
		OT	0.304	0.139	-0.191	0.198	0.184	0.223	0.235	0.229	0.134	0.190	0.189	0.079	0.079	0.206	0.209	1																								
		RET	0.144	0.031	-0.085	0.074	0.096	0.106	0.008	0.061	-0.010	0.098	0.129	0.046	0.046	0.152	0.129	0.093	1																							
		CS	0.434	0.251	-0.266	0.476	0.319	0.344	0.273	0.358	0.162	0.395	0.367	0.155	0.155	0.323	0.560	0.319	0.212	1																						
		TEL	0.308	0.143	-0.201	0.202	0.170	0.252	0.208	0.231	0.120	0.218	0.215	0.082	0.082	0.216	0.224	0.949	0.096	0.333	1																					
		UT	0.255	0.161	-0.131	0.155	0.158	0.237	0.181	0.184	0.095	0.193	0.219	0.126	0.126	0.208	0.208	0.133	0.030	0.253	0.160	1																				
	Equity	BNK	-0.337	-0.102	0.725	-0.087	-0.109	-0.148	-0.130	-0.107	-0.060	-0.154	-0.180	-0.077	-0.077	-0.148	-0.124	-0.146	-0.048	-0.191	-0.151	-0.127	1																			
		BEV	-0.192	-0.090	0.589	-0.129	-0.076	-0.130	-0.116	-0.107	-0.053	-0.096	-0.147	-0.066	-0.066	-0.109	-0.118	-0.095	-0.051	-0.175	-0.106	-0.098	0.474	1																		
		BLDG	-0.338	-0.140	1.000	-0.140	-0.145	-0.203	-0.157	-0.154	-0.088	-0.197	-0.212	-0.113	-0.113	-0.180	-0.182	-0.191	-0.085	-0.266	-0.201	-0.131	0.725	0.589	1																	
		CAB	-0.335	-0.144	0.819	-0.142	-0.142	-0.211	-0.165	-0.168	-0.090	-0.163	-0.210	-0.110	-0.110	-0.172	-0.203	-0.193	-0.072	-0.266	-0.201	-0.149	0.707	0.675	0.819	1																
		CG	-0.305	-0.130	0.803	-0.147	-0.142	-0.193	-0.158	-0.161	-0.076	-0.160	-0.211	-0.095	-0.095	-0.173	-0.178	-0.158	-0.071	-0.255	-0.168	-0.137	0.656	0.867	0.803	0.850	1															
		CGM	-0.371	-0.119	0.795	-0.151	-0.148	-0.213	-0.169	-0.177	-0.111	-0.178	-0.215	-0.114	-0.114	-0.194	-0.199	-0.179	-0.063	-0.270	-0.185	-0.171	0.752	0.587	0.795	0.783	0.775	1														
		CH	0.021	0.002	0.022	-0.027	0.000	-0.019	-0.010	-0.029	-0.073	-0.003	-0.011	-0.011	-0.011	0.001	-0.048	-0.047	-0.026	-0.060	-0.045	-0.044	0.009	0.043	0.022	0.023	0.028	0.004	1													
		ELEC	-0.359	-0.136	0.860	-0.151	-0.154	-0.218	-0.162	-0.177	-0.092	-0.184	-0.248	-0.118	-0.118	-0.202	-0.198	-0.203	-0.076	-0.281	-0.211	-0.153	0.705	0.646	0.860	0.858	0.844	0.831	0.022	1												
		IND	-0.385	-0.140	0.895	-0.162	-0.158	-0.226	-0.174	-0.184	-0.097	-0.194	-0.242	-0.126	-0.126	-0.211	-0.211	-0.203	-0.078	-0.296	-0.211	-0.168	0.759	0.665	0.895	0.884	0.874	0.920	0.014	0.954	1											
		LEI	-0.329	-0.129	0.834	-0.137	-0.147	-0.210	-0.158	-0.153	-0.081	-0.183	-0.217	-0.113	-0.113	-0.160	-0.186	-0.161	-0.056	-0.263	-0.167	-0.151	0.724	0.626	0.834	0.826	0.823	0.782	0.029	0.836	0.872	1										
		MT	-0.331	-0.122	0.812	-0.142	-0.133	-0.192	-0.139	-0.158	-0.078	-0.153	-0.229	-0.109	-0.109	-0.202	-0.187	-0.177	-0.068	-0.265	-0.186	-0.144	0.689	0.581	0.812	0.798	0.781	0.786	0.017	0.851	0.908	0.811	1									
		FIN	-0.348	-0.123	0.812	-0.113	-0.131	-0.174	-0.147	-0.128	-0.066	-0.170	-0.198	-0.090	-0.090	-0.157	-0.145	-0.164	-0.058	-0.221	-0.170	-0.141	0.964	0.579	0.812	0.810	0.770	0.818	0.015	0.804	0.856	0.812	0.773	1								
		OF	-0.348	-0.123	0.812	-0.113	-0.131	-0.174	-0.147	-0.128	-0.066	-0.170	-0.198	-0.090	-0.090	-0.157	-0.145	-0.164	-0.058	-0.221	-0.170	-0.141	0.964	0.579	0.812	0.810	0.770	0.818	0.015	0.804	0.856	0.812	0.773	1.000	1							
		OG	-0.305	-0.122	0.713	-0.125	-0.147	-0.177	-0.151	-0.152	-0.093	-0.142	-0.222	-0.093	-0.093	-0.233	-0.173	-0.154	-0.057	-0.246	-0.162	-0.135	0.582	0.565	0.713	0.746	0.730	0.694	0.041	0.789	0.798	0.647	0.708	0.672	0.672	1						
		OS	-0.274	-0.122	0.692	-0.132	-0.140	-0.172	-0.148	-0.143	-0.067	-0.129	-0.168	-0.101	-0.101	-0.160	-0.162	-0.150	-0.075	-0.224	-0.161	-0.142	0.569	0.547	0.692	0.705	0.710	0.660	0.028	0.732	0.747	0.728	0.668	0.662	0.662	0.589	1					
		OT	-0.273	-0.129	0.680	-0.115	-0.124	-0.148	-0.133	-0.132	-0.047	-0.119	-0.188	-0.082	-0.082	-0.141	-0.137	-0.131	-0.038	-0.199	-0.139	-0.132	0.614	0.638	0.680	0.762	0.770	0.670	-0.017	0.714	0.744	0.677	0.664	0.706	0.706	0.649	0.591	1				
		RET	-0.275	-0.111	0.792	-0.122	-0.129	-0.158	-0.127	-0.133	-0.064	-0.132	-0.167	-0.091	-0.091	-0.138	-0.152	-0.143	-0.064	-0.213	-0.149	-0.127	0.655	0.642	0.792	0.801	0.834	0.730	0.046	0.786	0.823	0.849	0.756	0.761	0.761	0.618	0.758	0.696	1			
		CS	-0.325	-0.133	0.860	-0.142	-0.147	-0.199	-0.156	-0.159	-0.079	-0.163	-0.206	-0.107	-0.107	-0.166	-0.189	-0.175	-0.072	-0.260	-0.183	-0.150	0.723	0.699	0.860	0.922	0.897	0.805	0.038	0.873	0.908	0.927	0.829	0.832	0.832	0.711	0.780	0.758	0.956	1		
		TEL	-0.273	-0.129	0.680	-0.115	-0.124	-0.148	-0.133	-0.132	-0.047	-0.119	-0.188	-0.082	-0.082	-0.141	-0.137	-0.131	-0.038	-0.199	-0.139	-0.132	0.614	0.638	0.680	0.762	0.770	0.670	-0.017	0.714	0.744	0.677	0.664	0.706	0.706	0.649	0.591	1.000	0.696	0.758	1	
		UT	-0.244	-0.128	0.623	-0.138	-0.128	-0.153	-0.136	-0.116	-0.069	-0.110	-0.167	-0.078	-0.078	-0.107	-0.149	-0.124	-0.052	-0.220	-0.127	-0.123	0.478	0.681	0.623	0.698	0.765	0.613	0.032	0.672	0.701	0.601	0.620	0.601	0.601	0.703	0.537	0.698	0.620	0.688	0.698	1

Table 18: US CDS Spreads and Equity Returns Sectoral Correlation - Full Sample

Correlation Matrix CDS Spreads - Equity in US Region			Crisis Sample																																							
			US																																							
			CDS Spreads																				Equity																			
			BNK	BEV	BLDG	CAB	CG	CGM	CH	ELEC	IND	LEI	MT	FIN	OF	OG	OS	OT	RET	CS	TEL	UT	BNK	BEV	BLDG	CAB	CG	CGM	CH	ELEC	IND	LEI	MT	FIN	OF	OG	OS	OT	RET	CS	TEL	UT
US	CDS Spreads	BNK	1																																							
		BEV	0.346	1																																				
		BLDG	-0.343	-0.239	1																																			
		CAB	0.410	0.291	-0.220	1																																		
		CG	0.357	0.386	-0.169	0.341	1																																	
		CGM	0.336	0.298	-0.204	0.281	0.232	1																																
		CH	0.438	0.385	-0.230	0.470	0.469	0.318	1																															
		ELEC	0.480	0.401	-0.202	0.462	0.453	0.397	0.527	1																														
		IND	0.270	0.200	-0.157	0.253	0.212	0.160	0.309	0.274	1																													
		LEI	0.279	0.290	-0.206	0.303	0.291	0.321	0.327	0.388	0.193	1																												
		MT	0.348	0.397	-0.180	0.344	0.425	0.382	0.459	0.451	0.212	0.309	1																											
		FIN	0.264	0.198	-0.158	0.229	0.224	0.169	0.297	0.265	0.118	0.157	0.203	1																										
		OF	0.264	0.198	-0.158	0.229	0.224	0.169	0.297	0.265	0.118	0.157	0.203	1.000	1																									
		OG	0.371	0.349	-0.174	0.290	0.302	0.284	0.397	0.375	0.223	0.250	0.337	0.173	0.173	1																								
		OS	0.449	0.391	-0.260	0.455	0.465	0.439	0.523	0.555	0.293	0.433	0.551	0.279	0.279	0.448	1																							
		OT	0.384	0.263	-0.230	0.397	0.310	0.278	0.478	0.422	0.258	0.256	0.229	0.152	0.152	0.297	0.394	1																						
		RET	0.276	0.200	-0.161	0.258	0.156	0.220	0.273	0.248	0.152	0.184	0.235	0.121	0.121	0.221	0.302	0.199	1																					
		CS	0.542	0.443	-0.315	0.705	0.473	0.435	0.585	0.602	0.315	0.529	0.522	0.279	0.279	0.446	0.730	0.486	0.419	1																				
		TEL	0.404	0.285	-0.256	0.425	0.291	0.336	0.444	0.446	0.239	0.318	0.290	0.171	0.171	0.329	0.446	0.900	0.217	0.537	1																			
		UT	0.341	0.272	-0.179	0.329	0.268	0.302	0.339	0.362	0.163	0.286	0.380	0.193	0.193	0.331	0.382	0.213	0.159	0.408	0.275	1																				
	Equity	BNK	-0.335	-0.154	0.750	-0.140	-0.109	-0.138	-0.184	-0.128	-0.102	-0.158	-0.156	-0.105	-0.105	-0.135	-0.181	-0.165	-0.078	-0.219	-0.180	-0.162	1																			
		BEV	-0.186	-0.145	0.632	-0.179	-0.086	-0.137	-0.182	-0.151	-0.092	-0.098	-0.145	-0.093	-0.093	-0.112	-0.160	-0.124	-0.116	-0.208	-0.149	-0.155	0.508	1																		
		BLDG	-0.343	-0.239	1.000	-0.220	-0.169	-0.204	-0.230	-0.202	-0.157	-0.206	-0.180	-0.158	-0.158	-0.174	-0.260	-0.230	-0.161	-0.315	-0.256	-0.179	0.750	0.632	1																	
		CAB	-0.348	-0.225	0.854	-0.237	-0.179	-0.209	-0.248	-0.226	-0.147	-0.171	-0.209	-0.161	-0.161	-0.172	-0.275	-0.241	-0.158	-0.314	-0.265	-0.210	0.721	0.727	0.854	1																
		CG	-0.306	-0.205	0.835	-0.226	-0.154	-0.193	-0.227	-0.209	-0.140	-0.159	-0.175	-0.136	-0.136	-0.174	-0.242	-0.202	-0.149	-0.297	-0.229	-0.195	0.681	0.876	0.835	0.886	1															
		CGM	-0.385	-0.206	0.815	-0.239	-0.179	-0.216	-0.246	-0.226	-0.182	-0.193	-0.198	-0.159	-0.159	-0.191	-0.270	-0.223	-0.136	-0.319	-0.243	-0.231	0.763	0.608	0.815	0.801	0.788	1														
		CH	0.020	-0.019	0.019	-0.042	-0.017	-0.040	-0.014	-0.024	-0.091	0.001	-0.042	-0.009	-0.009	0.001	-0.059	-0.069	-0.060	-0.077	-0.071	-0.061	0.004	0.054	0.019	0.022	0.030	0.002	1													
		ELEC	-0.361	-0.234	0.877	-0.243	-0.177	-0.214	-0.235	-0.235	-0.158	-0.183	-0.210	-0.185	-0.185	-0.185	-0.273	-0.239	-0.177	-0.334	-0.261	-0.209	0.704	0.694	0.877	0.885	0.871	0.835	0.026	1												
		IND	-0.391	-0.234	0.912	-0.258	-0.185	-0.225	-0.254	-0.239	-0.167	-0.205	-0.207	-0.180	-0.180	-0.199	-0.287	-0.247	-0.171	-0.346	-0.271	-0.227	0.762	0.701	0.912	0.905	0.894	0.922	0.014	0.959	1											
		LEI	-0.327	-0.204	0.861	-0.214	-0.160	-0.204	-0.228	-0.194	-0.140	-0.185	-0.178	-0.152	-0.152	-0.156	-0.245	-0.198	-0.136	-0.298	-0.217	-0.204	0.741	0.661	0.861	0.845	0.842	0.800	0.027	0.850	0.887	1										
		MT	-0.340	-0.209	0.840	-0.233	-0.152	-0.194	-0.211	-0.213	-0.138	-0.169	-0.189	-0.159	-0.159	-0.191	-0.254	-0.216	-0.150	-0.309	-0.240	-0.203	0.695	0.621	0.840	0.826	0.810	0.796	0.020	0.864	0.915	0.839	1									
		FIN	-0.346	-0.191	0.834	-0.175	-0.137	-0.163	-0.211	-0.157	-0.113	-0.174	-0.180	-0.123	-0.123	-0.151	-0.205	-0.193	-0.099	-0.253	-0.210	-0.183	0.967	0.605	0.834	0.823	0.787	0.825	0.012	0.804	0.857	0.826	0.782	1								
		OF	-0.346	-0.191	0.834	-0.175	-0.137	-0.163	-0.211	-0.157	-0.113	-0.174	-0.180	-0.123	-0.123	-0.151	-0.205	-0.193	-0.099	-0.253	-0.210	-0.183	0.967	0.605	0.834	0.823	0.787	0.825	0.012	0.804	0.857	0.826	0.782	1.000	1							
		OG	-0.320	-0.207	0.747	-0.201	-0.178	-0.182	-0.218	-0.192	-0.135	-0.144	-0.182	-0.140	-0.140	-0.177	-0.245	-0.207	-0.139	-0.283	-0.230	-0.190	0.594	0.636	0.747	0.795	0.787	0.717	0.039	0.824	0.830	0.687	0.730	0.694	0.694	1						
		OS	-0.281	-0.208	0.714	-0.202	-0.166	-0.163	-0.225	-0.181	-0.117	-0.136	-0.141	-0.149	-0.149	-0.155	-0.209	-0.175	-0.140	-0.268	-0.201	-0.188	0.583	0.586	0.714	0.725	0.736	0.681	0.031	0.750	0.767	0.743	0.695	0.676	0.676	0.640	1					
		OT	-0.289	-0.208	0.729	-0.169	-0.142	-0.156	-0.198	-0.166	-0.080	-0.122	-0.177	-0.128	-0.128	-0.147	-0.210	-0.171	-0.092	-0.235	-0.192	-0.186	0.654	0.680	0.729	0.812	0.811	0.699	-0.017	0.759	0.782	0.720	0.709	0.742	0.742	0.710	0.630	1				
		RET	-0.275	-0.184	0.825	-0.198	-0.127	-0.148	-0.194	-0.159	-0.125	-0.117	-0.129	-0.129	-0.129	-0.125	-0.205	-0.186	-0.106	-0.239	-0.205	-0.163	0.675	0.667	0.825	0.826	0.851	0.752	0.053	0.810	0.845	0.870	0.792	0.778	0.778	0.666	0.781	0.742	1			
		CS	-0.325	-0.212	0.886	-0.226	-0.161	-0.190	-0.233	-0.200	-0.141	-0.157	-0.174	-0.152	-0.152	-0.158	-0.251	-0.220	-0.139	-0.292	-0.242	-0.199	0.735	0.733	0.886	0.934	0.914	0.819	0.040	0.890	0.921	0.933	0.854	0.841	0.841	0.757	0.794	0.802	0.963	1		
		TEL	-0.289	-0.208	0.729	-0.169	-0.142	-0.156	-0.198	-0.166	-0.080	-0.122	-0.177	-0.128	-0.128	-0.147	-0.210	-0.171	-0.092	-0.235	-0.192	-0.186	0.654	0.680	0.729	0.812	0.811	0.699	-0.017	0.759	0.782	0.720	0.709	0.742	0.742	0.710	0.630	1.000	0.742	0.802	1	
		UT	-0.280	-0.191	0.702	-0.186	-0.166	-0.178	-0.230	-0.176	-0.141	-0.122	-0.192	-0.132	-0.132	-0.158	-0.229	-0.184	-0.142	-0.266	-0.200	-0.196	0.549	0.718	0.702	0.789	0.821	0.669	0.046	0.757	0.777	0.673	0.696	0.661	0.661	0.818	0.625	0.765	0.690	0.767	0.765	1

Table 19: US CDS Spreads and Equity Returns Sectoral Correlation - Crisis Sample

Correlation Matrix CDS Spreads - Equity in US Region			After-Crisis Sample																																						
			US																																						
			CDS Spreads																				Equity																			
			BNK	BEV	BLDG	CAB	CG	CGM	CH	ELEC	IND	LEI	MT	FIN	OF	OG	OS	OT	RET	CS	TEL	UT	BNK	BEV	BLDG	CAB	CG	CGM	CH	ELEC	IND	LEI	MT	FIN	OF	OG	OS	OT	RET	CS	TEL	UT
US	CDS Spreads	BNK	1																																						
		BEV	0.022	1																																				
		BLDG	-0.320	-0.052	1																																			
		CAB	0.054	0.059	-0.070	1																																		
		CG	0.200	0.084	-0.122	0.036	1																																	
		CGM	0.325	0.089	-0.199	0.074	0.182	1																																
		CH	0.128	-0.029	-0.068	-0.004	0.066	0.064	1																															
		ELEC	0.157	0.035	-0.105	0.054	0.111	0.160	-0.007	1																														
		IND	-0.016	-0.033	0.010	0.024	0.023	-0.010	-0.001	-0.011	1																													
		LEI	0.272	0.035	-0.188	0.070	0.144	0.262	0.110	0.124	0.024	1																												
		MT	0.314	0.037	-0.305	0.075	0.106	0.205	0.093	0.121	0.003	0.245	1																											
		FIN	0.079	0.014	-0.070	0.013	0.014	0.099	0.028	0.059	0.031	0.075	0.073	1																										
		OF	0.079	0.014	-0.070	0.013	0.014	0.099	0.028	0.059	0.031	0.075	0.073	1.000	1																									
		OG	0.230	0.075	-0.231	0.113	0.165	0.243	0.081	0.089	0.021	0.233	0.284	0.050	0.050	1																								
		OS	0.155	0.050	-0.097	0.060	0.139	0.115	-0.006	0.089	0.041	0.113	0.112	0.024	0.024	0.125	1																							
		OT	0.186	0.055	-0.139	0.057	0.058	0.144	0.020	0.060	0.023	0.106	0.151	0.018	0.018	0.133	0.052	1																						
		RET	0.110	-0.019	-0.064	0.018	0.079	0.064	-0.092	-0.006	-0.071	0.071	0.096	0.021	0.021	0.135	0.073	0.056	1																					
		CS	0.251	0.116	-0.190	0.317	0.156	0.188	-0.018	0.134	0.020	0.217	0.212	0.048	0.048	0.219	0.414	0.130	0.142	1																				
		TEL	0.189	0.054	-0.138	0.057	0.060	0.146	0.020	0.060	0.025	0.109	0.150	0.016	0.016	0.130	0.051	0.999	0.055	0.130	1																					
		UT	0.093	0.084	-0.044	0.025	0.041	0.124	0.033	0.018	0.031	0.066	0.054	0.068	0.068	0.102	0.050	0.042	-0.029	0.066	0.044	1																				
	Equity	BNK	-0.365	-0.070	0.640	-0.039	-0.162	-0.219	-0.066	-0.114	0.012	-0.191	-0.338	-0.058	-0.058	-0.273	-0.054	-0.153	-0.064	-0.174	-0.153	-0.063	1																			
		BEV	-0.217	-0.045	0.464	-0.094	-0.066	-0.108	-0.037	-0.059	-0.005	-0.093	-0.162	-0.039	-0.039	-0.120	-0.077	-0.053	-0.023	-0.126	-0.052	-0.002	0.393	1																		
		BLDG	-0.320	-0.052	1.000	-0.070	-0.122	-0.199	-0.068	-0.105	0.010	-0.188	-0.305	-0.070	-0.070	-0.231	-0.097	-0.139	-0.064	-0.190	-0.138	-0.044	0.640	0.464	1																	
		CAB	-0.275	-0.081	0.674	-0.050	-0.094	-0.220	-0.053	-0.108	-0.009	-0.161	-0.265	-0.056	-0.056	-0.228	-0.133	-0.122	-0.039	-0.198	-0.121	-0.029	0.638	0.520	0.674	1																
		CG	-0.304	-0.071	0.698	-0.080	-0.136	-0.192	-0.076	-0.114	0.010	-0.169	-0.295	-0.054	-0.054	-0.202	-0.113	-0.092	-0.042	-0.193	-0.091	-0.036	0.602	0.845	0.698	0.729	1															
		CGM	-0.305	-0.033	0.715	-0.073	-0.118	-0.204	-0.069	-0.141	-0.005	-0.162	-0.321	-0.071	-0.071	-0.279	-0.132	-0.119	-0.037	-0.205	-0.118	-0.051	0.685	0.546	0.715	0.685	0.752	1														
		CH	0.028	0.034	0.036	-0.015	0.036	0.071	-0.003	-0.047	-0.061	-0.015	0.051	-0.018	-0.018	0.001	-0.043	-0.006	-0.011	-0.028	-0.003	-0.011	0.047	0.007	0.036	0.032	0.018	0.016	1													
		ELEC	-0.347	-0.045	0.793	-0.066	-0.137	-0.234	-0.070	-0.118	0.003	-0.206	-0.375	-0.037	-0.037	-0.289	-0.121	-0.162	-0.031	-0.202	-0.161	-0.046	0.747	0.505	0.793	0.730	0.757	0.819	0.007	1												
		IND	-0.358	-0.053	0.832	-0.076	-0.136	-0.229	-0.071	-0.135	0.006	-0.191	-0.373	-0.071	-0.071	-0.301	-0.137	-0.144	-0.041	-0.227	-0.143	-0.053	0.772	0.567	0.832	0.781	0.814	0.915	0.013	0.934	1											
		LEI	-0.336	-0.069	0.728	-0.070	-0.148	-0.230	-0.070	-0.118	0.001	-0.193	-0.333	-0.078	-0.078	-0.210	-0.132	-0.108	-0.019	-0.221	-0.108	-0.054	0.669	0.525	0.728	0.746	0.761	0.701	0.037	0.779	0.809	1										
		MT	-0.295	-0.043	0.704	-0.060	-0.117	-0.181	-0.045	-0.101	0.006	-0.127	-0.344	-0.055	-0.055	-0.268	-0.119	-0.123	-0.035	-0.203	-0.123	-0.032	0.704	0.467	0.704	0.683	0.687	0.753	0.004	0.797	0.880	0.703	1									
		FIN	-0.380	-0.078	0.756	-0.063	-0.177	-0.250	-0.066	-0.126	0.016	-0.209	-0.357	-0.066	-0.066	-0.275	-0.085	-0.151	-0.070	-0.208	-0.150	-0.059	0.937	0.554	0.756	0.759	0.778	0.787	0.032	0.848	0.886	0.787	0.785	1								
		OF	-0.380	-0.078	0.756	-0.063	-0.177	-0.250	-0.066	-0.126	0.016	-0.209	-0.357	-0.066	-0.066	-0.275	-0.085	-0.151	-0.070	-0.208	-0.150	-0.059	0.937	0.554	0.756	0.759	0.778	0.787	0.032	0.848	0.886	0.787	0.785	1.000	1							
		OG	-0.249	-0.047	0.598	-0.059	-0.109	-0.161	-0.070	-0.117	-0.043	-0.144	-0.320	-0.041	-0.041	-0.361	-0.095	-0.072	-0.020	-0.192	-0.070	-0.035	0.579	0.364	0.598	0.561	0.551	0.619	0.048	0.663	0.684	0.506	0.631	0.632	0.632	1						
		OS	-0.247	-0.045	0.616	-0.075	-0.112	-0.204	-0.049	-0.108	0.000	-0.120	-0.238	-0.050	-0.050	-0.200	-0.120	-0.118	-0.057	-0.157	-0.117	-0.064	0.555	0.435	0.616	0.633	0.628	0.586	0.017	0.671	0.679	0.675	0.569	0.656	0.656	0.423	1					
		OT	-0.210	-0.062	0.492	-0.076	-0.111	-0.117	-0.049	-0.103	-0.003	-0.121	-0.240	-0.029	-0.029	-0.166	-0.049	-0.070	-0.012	-0.146	-0.070	-0.033	0.426	0.520	0.492	0.552	0.634	0.546	-0.019	0.531	0.585	0.507	0.492	0.557	0.557	0.437	0.453	1				
		RET	-0.275	-0.047	0.671	-0.052	-0.150	-0.192	-0.040	-0.116	0.023	-0.175	-0.261	-0.052	-0.052	-0.188	-0.099	-0.076	-0.062	-0.183	-0.075	-0.066	0.604	0.572	0.671	0.702	0.783	0.650	0.019	0.695	0.738	0.769	0.624	0.733	0.733	0.454	0.681	0.523	1			
		CS	-0.323	-0.069	0.760	-0.068	-0.146	-0.231	-0.058	-0.125	0.012	-0.194	-0.307	-0.062	-0.062	-0.223	-0.131	-0.111	-0.054	-0.224	-0.110	-0.059	0.696	0.605	0.760	0.873	0.842	0.746	0.028	0.801	0.850	0.901	0.730	0.833	0.833	0.547	0.729	0.583	0.933	1		
		TEL	-0.210	-0.062	0.492	-0.076	-0.111	-0.117	-0.049	-0.103	-0.003	-0.121	-0.240	-0.029	-0.029	-0.166	-0.049	-0.070	-0.012	-0.146	-0.070	-0.033	0.426	0.520	0.492	0.552	0.634	0.546	-0.019	0.531	0.585	0.507	0.492	0.557	0.557	0.437	0.453	1.000	0.523	0.583	1	
		UT	-0.118	-0.082	0.369	-0.109	-0.077	-0.073	-0.014	-0.043	0.025	-0.087	-0.144	-0.017	-0.017	-0.054	-0.058	-0.030	-0.007	-0.148	-0.029	0.005	0.186	0.579	0.369	0.378	0.599	0.416	-0.019	0.383	0.437	0.360	0.374	0.385	0.385	0.353	0.269	0.483	0.397	0.429	0.483	1

Table 20: US CDS Spreads and Equity Returns Sectoral Correlation - After-Crisis Sample

Full Crisis Sample																					
Correlation Matrix CDS Spreads - Equity in UK Region			UK																		
			CDS Spreads										Equity								
			BNK	BEV	CG	FIN	OF	OS	OT	RET	CS	TEL	BNK	BEV	CG	FIN	OF	OS	OT	RET	CS	TEL
UK	CDS Spreads	BNK	1																			
		BEV	0.452	1																		
		CG	0.441	0.676	1																	
		FIN	0.535	0.468	0.459	1																
		OF	0.546	0.500	0.498	0.884	1															
		OS	0.279	0.273	0.303	0.211	0.239	1														
		OT	0.567	0.506	0.552	0.511	0.557	0.273	1													
		RET	0.547	0.548	0.538	0.510	0.547	0.327	0.542	1												
		CS	0.536	0.504	0.379	0.486	0.492	0.435	0.558	0.680	1											
		TEL	0.589	0.523	0.547	0.536	0.573	0.279	0.966	0.589	0.577	1										
	Equity	BNK	-0.387	-0.286	-0.317	-0.314	-0.329	-0.135	-0.336	-0.355	-0.306	-0.345	1									
		BEV	-0.248	-0.218	-0.245	-0.236	-0.242	-0.096	-0.270	-0.253	-0.226	-0.270	0.470	1								
		CG	0.045	0.016	0.045	0.007	0.001	0.007	0.012	0.007	0.019	0.009	-0.051	-0.036	1							
		FIN	0.049	0.007	0.032	-0.009	-0.006	-0.003	-0.007	-0.014	0.000	-0.006	-0.048	-0.008	0.478	1						
		OF	-0.416	-0.335	-0.367	-0.385	-0.392	-0.165	-0.390	-0.417	-0.375	-0.402	0.754	0.580	-0.043	-0.054	1					
		OS	-0.377	-0.307	-0.344	-0.328	-0.350	-0.146	-0.358	-0.406	-0.354	-0.368	0.688	0.658	-0.057	-0.029	0.800	1				
		OT	-0.255	-0.166	-0.187	-0.218	-0.218	-0.074	-0.245	-0.231	-0.223	-0.252	0.503	0.520	-0.038	-0.040	0.549	0.636	1			
		RET	-0.309	-0.258	-0.296	-0.283	-0.300	-0.127	-0.299	-0.346	-0.306	-0.309	0.572	0.548	-0.048	-0.005	0.669	0.910	0.564	1		
		CS	0.097	0.026	0.074	0.026	0.024	0.012	0.040	0.015	0.024	0.037	-0.056	-0.040	0.490	0.779	-0.069	-0.067	-0.050	-0.052	1	
		TEL	0.053	0.019	0.056	0.008	0.012	0.002	0.012	0.021	0.034	0.006	-0.064	-0.031	0.388	0.561	-0.078	-0.059	-0.088	-0.032	0.636	1

Table 21: UK CDS Spreads and Equity Returns Sectoral Correlation - Full Sample

Crisis Sample																					
Correlation Matrix CDS Spreads - Equity in UK Region			UK																		
			CDS Spreads										Equity								
			BNK	BEV	CG	FIN	OF	OS	OT	RET	CS	TEL	BNK	BEV	CG	FIN	OF	OS	OT	RET	CS	TEL
UK	CDS Spreads	BNK	1																			
		BEV	0.476	1																		
		CG	0.525	0.762	1																	
		FIN	0.602	0.499	0.569	1																
		OF	0.602	0.537	0.602	0.902	1															
		OS	0.367	0.335	0.363	0.375	0.360	1														
		OT	0.623	0.527	0.609	0.593	0.623	0.362	1													
		RET	0.618	0.597	0.677	0.607	0.639	0.436	0.653	1												
		CS	0.559	0.513	0.446	0.528	0.541	0.559	0.594	0.724	1											
		TEL	0.622	0.526	0.610	0.593	0.622	0.361	0.999	0.654	0.593	1										
	Equity	BNK	-0.383	-0.284	-0.341	-0.326	-0.328	-0.185	-0.326	-0.375	-0.301	-0.325	1									
		BEV	-0.261	-0.217	-0.279	-0.272	-0.266	-0.146	-0.254	-0.300	-0.231	-0.254	0.504	1								
		CG	0.045	0.009	0.071	0.012	-0.002	0.039	-0.001	0.022	0.021	0.000	-0.054	-0.045	1							
		FIN	0.063	0.013	0.043	-0.009	-0.004	0.024	-0.016	-0.014	-0.007	-0.016	-0.043	-0.004	0.489	1						
		OF	-0.421	-0.338	-0.401	-0.412	-0.399	-0.242	-0.371	-0.445	-0.370	-0.370	0.759	0.629	-0.057	-0.055	1					
		OS	-0.381	-0.308	-0.389	-0.358	-0.370	-0.221	-0.340	-0.439	-0.350	-0.340	0.696	0.705	-0.072	-0.025	0.790	1				
		OT	-0.260	-0.151	-0.188	-0.235	-0.222	-0.115	-0.207	-0.233	-0.207	-0.207	0.504	0.557	-0.053	-0.041	0.542	0.627	1			
		RET	-0.303	-0.250	-0.318	-0.296	-0.309	-0.199	-0.276	-0.361	-0.290	-0.275	0.563	0.595	-0.060	0.004	0.641	0.918	0.557	1		
		CS	0.123	0.027	0.087	0.032	0.025	0.056	0.036	0.017	0.016	0.036	-0.051	-0.053	0.501	0.777	-0.066	-0.068	-0.065	-0.049	1	
		TEL	0.060	0.019	0.070	0.005	0.005	0.042	-0.003	0.009	0.027	-0.003	-0.056	-0.041	0.391	0.558	-0.087	-0.068	-0.118	-0.029	0.628	1

Table 22: UK CDS Spreads and Equity Returns Sectoral Correlation - Crisis Sample

After-Crisis Sample																					
Correlation Matrix CDS Spreads - Equity in UK Region			UK																		
			CDS Spreads										Equity								
			BNK	BEV	CG	FIN	OF	OS	OT	RET	CS	TEL	BNK	BEV	CG	FIN	OF	OS	OT	RET	CS	TEL
UK	CDS Spreads	BNK	1																			
		BEV	0.357	1																		
		CG	0.283	0.534	1																	
		FIN	0.334	0.381	0.266	1																
		OF	0.373	0.389	0.315	0.839	1															
		OS	0.099	0.160	0.222	-0.083	0.019	1														
		OT	0.476	0.494	0.469	0.361	0.439	0.145	1													
		RET	0.368	0.437	0.311	0.295	0.343	0.151	0.351	1												
		CS	0.451	0.473	0.257	0.369	0.347	0.199	0.508	0.585	1											
		TEL	0.535	0.540	0.447	0.417	0.473	0.152	0.913	0.467	0.560	1										
	Equity	BNK	-0.402	-0.293	-0.297	-0.287	-0.342	-0.028	-0.403	-0.318	-0.329	-0.431	1									
		BEV	-0.217	-0.227	-0.189	-0.153	-0.185	-0.010	-0.305	-0.153	-0.216	-0.304	0.381	1								
		CG	0.046	0.038	-0.009	-0.008	0.011	-0.056	0.040	-0.031	0.014	0.031	-0.038	-0.013	1							
		FIN	-0.014	-0.016	0.011	-0.008	-0.011	-0.071	0.017	-0.016	0.027	0.024	-0.069	-0.023	0.441	1						
		OF	-0.404	-0.330	-0.313	-0.314	-0.371	-0.020	-0.445	-0.354	-0.394	-0.484	0.749	0.460	-0.004	-0.052	1					
		OS	-0.372	-0.307	-0.270	-0.254	-0.297	-0.009	-0.401	-0.332	-0.370	-0.433	0.682	0.543	-0.017	-0.043	0.828	1				
		OT	-0.247	-0.215	-0.188	-0.179	-0.208	-0.004	-0.318	-0.228	-0.270	-0.343	0.526	0.439	-0.002	-0.039	0.570	0.658	1			
		RET	-0.338	-0.290	-0.262	-0.253	-0.280	-0.005	-0.345	-0.316	-0.356	-0.376	0.634	0.444	-0.019	-0.037	0.746	0.895	0.581	1		
		CS	0.015	0.021	0.051	0.010	0.023	-0.071	0.049	0.012	0.051	0.038	-0.077	-0.008	0.459	0.810	-0.079	-0.064	-0.015	-0.059	1	
		TEL	0.034	0.019	0.032	0.017	0.029	-0.068	0.039	0.046	0.057	0.025	-0.093	-0.010	0.384	0.600	-0.059	-0.036	-0.024	-0.038	0.657	1

Table 23: UK CDS Spreads and Equity Returns Sectoral Correlation - After-Crisis Sample

Correlation Matrix CDS Spreads - Equity in EU Region			Full Crisis Sample																																	
			EU																																	
			CDS Spreads																	Equity																
			BNK	BEV	BLDG	CAB	CG	CGM	CH	ELEC	LEI	MT	FIN	OF	OG	OS	CS	TEL	UT	BNK	BEV	BLDG	CAB	CG	CGM	CH	ELEC	LEI	MT	FIN	OF	OG	OS	CS	TEL	UT
EU	CDS Spreads	BNK	1																																	
		BEV	0.330	1																																
		BLDG	-0.248	-0.343	1																															
		CAB	0.261	0.328	-0.243	1																														
		CG	0.341	0.828	-0.337	0.460	1																													
		CGM	0.325	0.457	-0.322	0.327	0.462	1																												
		CH	0.411	0.568	-0.390	0.434	0.595	0.556	1																											
		ELEC	0.309	0.377	-0.275	0.320	0.384	0.444	0.529	1																										
		LEI	0.326	0.386	-0.276	0.410	0.441	0.416	0.491	0.373	1																									
		MT	0.298	0.410	-0.347	0.281	0.398	0.397	0.498	0.387	0.349	1																								
		FIN	0.396	0.384	-0.319	0.346	0.422	0.436	0.510	0.405	0.410	0.373	1																							
		OF	-0.307	-0.384	0.488	-0.276	-0.406	-0.383	-0.452	-0.302	-0.319	-0.397	-0.372	1																						
		OG	0.390	0.535	-0.332	0.292	0.496	0.458	0.560	0.388	0.404	0.434	0.466	-0.409	1																					
		OS	0.219	0.369	-0.252	0.295	0.410	0.323	0.429	0.346	0.334	0.335	0.320	-0.278	0.353	1																				
		CS	0.349	0.483	-0.342	0.517	0.541	0.483	0.582	0.452	0.633	0.432	0.429	-0.395	0.474	0.649	1																			
		TEL	0.284	0.334	-0.247	0.148	0.277	0.355	0.370	0.345	0.293	0.267	0.333	-0.299	0.407	0.234	0.351	1																		
		UT	0.161	0.210	-0.112	0.177	0.244	0.198	0.232	0.174	0.172	0.205	0.206	-0.173	0.237	0.198	0.240	0.146	1																	
	Equity	BNK	-0.308	-0.373	0.430	-0.282	-0.404	-0.362	-0.440	-0.300	-0.306	-0.393	-0.355	0.919	-0.413	-0.280	-0.398	-0.294	-0.175	1																
		BEV	-0.216	-0.289	0.390	-0.239	-0.328	-0.322	-0.333	-0.238	-0.239	-0.301	-0.286	0.751	-0.300	-0.206	-0.325	-0.232	-0.126	0.687	1															
		BLDG	-0.248	-0.343	1.000	-0.243	-0.337	-0.322	-0.390	-0.275	-0.276	-0.347	-0.319	0.488	-0.332	-0.252	-0.342	-0.247	-0.112	0.430	0.390	1														
		CAB	-0.282	-0.361	0.435	-0.245	-0.372	-0.353	-0.417	-0.286	-0.296	-0.375	-0.349	0.915	-0.379	-0.254	-0.370	-0.283	-0.166	0.853	0.741	0.435	1													
		CG	0.015	0.014	-0.037	0.024	0.004	0.021	0.044	0.023	-0.007	-0.005	-0.011	-0.039	0.033	0.012	0.019	0.025	0.011	-0.035	-0.016	-0.037	-0.035	1												
		CGM	-0.266	-0.323	0.400	-0.222	-0.342	-0.309	-0.378	-0.246	-0.249	-0.357	-0.319	0.868	-0.348	-0.230	-0.329	-0.255	-0.156	0.825	0.688	0.400	0.835	-0.025	1											
		CH	-0.255	-0.329	0.420	-0.227	-0.350	-0.324	-0.377	-0.246	-0.254	-0.350	-0.320	0.886	-0.337	-0.227	-0.336	-0.252	-0.146	0.823	0.743	0.420	0.850	-0.003	0.875	1										
		ELEC	-0.273	-0.349	0.432	-0.250	-0.365	-0.344	-0.418	-0.264	-0.271	-0.374	-0.333	0.911	-0.370	-0.244	-0.357	-0.269	-0.158	0.856	0.721	0.432	0.877	-0.019	0.883	0.887	1									
		LEI	-0.231	-0.310	0.372	-0.207	-0.316	-0.289	-0.374	-0.233	-0.243	-0.318	-0.293	0.813	-0.336	-0.217	-0.316	-0.254	-0.148	0.779	0.658	0.372	0.795	-0.028	0.769	0.775	0.800	1								
		MT	-0.106	-0.180	0.346	-0.129	-0.170	-0.178	-0.201	-0.184	-0.182	-0.194	-0.161	0.053	-0.180	-0.131	-0.188	-0.189	-0.072	0.036	0.005	0.346	0.036	-0.024	0.032	0.033	0.029	0.019	1							
		FIN	0.012	0.003	-0.001	0.017	-0.005	0.015	0.054	-0.007	-0.009	-0.021	-0.020	-0.027	0.023	-0.012	-0.004	0.015	0.005	-0.021	0.004	-0.001	-0.017	0.794	-0.014	-0.013	-0.012	-0.017	-0.028	1						
		OF	0.416	0.433	-0.353	0.383	0.484	0.475	0.561	0.437	0.437	0.418	0.802	-0.392	0.502	0.357	0.490	0.382	0.216	-0.380	-0.306	-0.353	-0.367	0.000	-0.323	-0.333	-0.346	-0.301	-0.206	-0.007	1					
		OG	0.022	-0.004	-0.036	0.022	-0.002	0.026	0.076	0.012	-0.008	0.000	0.000	-0.042	0.035	0.003	0.018	0.042	0.016	-0.025	-0.021	-0.036	-0.035	0.760	-0.024	-0.025	-0.035	-0.028	-0.042	0.820	0.011	1				
		OS	-0.176	-0.258	0.303	-0.180	-0.252	-0.246	-0.288	-0.202	-0.209	-0.241	-0.232	0.590	-0.263	-0.174	-0.259	-0.198	-0.097	0.537	0.455	0.303	0.584	-0.065	0.491	0.530	0.536	0.484	0.036	-0.046	-0.244	-0.059	1			
		CS	0.019	0.016	-0.024	0.026	0.013	0.027	0.070	0.022	0.001	-0.011	-0.005	-0.053	0.031	0.001	0.011	0.024	0.014	-0.047	-0.021	-0.024	-0.043	0.867	-0.032	-0.032	-0.040	-0.042	-0.039	0.913	0.012	0.822	-0.072	1		
		TEL	0.028	0.017	-0.032	0.031	0.015	0.017	0.078	0.011	0.009	0.007	-0.014	-0.064	0.038	0.009	0.017	0.027	0.016	-0.052	-0.032	-0.032	-0.057	0.800	-0.038	-0.037	-0.046	-0.050	-0.048	0.851	0.001	0.807	-0.071	0.884	1	
		UT	0.020	0.001	-0.005	0.020	0.002	0.013	0.064	0.006	-0.001	-0.001	-0.019	-0.031	0.032	-0.001	-0.001	0.014	0.001	-0.015	-0.016	-0.005	-0.026	0.788	-0.011	-0.012	-0.016	-0.017	-0.012	0.833	-0.003	0.849	-0.062	0.858	0.867	1

Table 24: EU CDS Spreads and Equity Returns Sectoral Correlation - Full Sample

Correlation Matrix CDS Spreads - Equity in EU Region			Crisis Sample																																	
			EU																																	
			CDS Spreads																	Equity																
			BNK	BEV	BLDG	CAB	CG	CGM	CH	ELEC	LEI	MT	FIN	OF	OG	OS	CS	TEL	UT	BNK	BEV	BLDG	CAB	CG	CGM	CH	ELEC	LEI	MT	FIN	OF	OG	OS	CS	TEL	UT
EU	CDS Spreads	BNK	1																																	
		BEV	0.436	1																																
		BLDG	-0.313	-0.374	1																															
		CAB	0.424	0.524	-0.395	1																														
		CG	0.454	0.900	-0.409	0.548	1																													
		CGM	0.359	0.481	-0.324	0.431	0.493	1																												
		CH	0.501	0.632	-0.426	0.626	0.656	0.539	1																											
		ELEC	0.355	0.456	-0.304	0.475	0.483	0.469	0.571	1																										
		LEI	0.369	0.434	-0.261	0.449	0.432	0.370	0.513	0.417	1																									
		MT	0.382	0.504	-0.395	0.437	0.506	0.428	0.555	0.448	0.357	1																								
		FIN	0.510	0.514	-0.379	0.545	0.536	0.501	0.611	0.513	0.465	0.468	1																							
		OF	-0.337	-0.431	0.516	-0.389	-0.474	-0.359	-0.458	-0.323	-0.292	-0.424	-0.415	1																						
		OG	0.490	0.602	-0.342	0.504	0.625	0.450	0.604	0.420	0.425	0.461	0.550	-0.414	1																					
		OS	0.249	0.411	-0.274	0.386	0.437	0.302	0.430	0.386	0.334	0.359	0.366	-0.279	0.363	1																				
		CS	0.412	0.577	-0.368	0.622	0.585	0.481	0.630	0.522	0.540	0.491	0.524	-0.414	0.535	0.710	1																			
		TEL	0.320	0.384	-0.277	0.351	0.395	0.353	0.425	0.374	0.323	0.323	0.403	-0.292	0.415	0.293	0.454	1																		
		UT	0.476	0.535	-0.314	0.507	0.577	0.459	0.558	0.456	0.419	0.486	0.557	-0.423	0.638	0.438	0.590	0.465	1																	
	Equity	BNK	-0.336	-0.423	0.459	-0.389	-0.463	-0.340	-0.441	-0.314	-0.279	-0.414	-0.395	0.933	-0.414	-0.276	-0.416	-0.298	-0.428	1																
		BEV	-0.234	-0.329	0.419	-0.316	-0.388	-0.315	-0.336	-0.245	-0.195	-0.341	-0.310	0.780	-0.304	-0.211	-0.330	-0.237	-0.342	0.729	1															
		BLDG	-0.313	-0.374	1.000	-0.395	-0.409	-0.324	-0.426	-0.304	-0.261	-0.395	-0.379	0.516	-0.342	-0.274	-0.368	-0.277	-0.314	0.459	0.419	1														
		CAB	-0.311	-0.415	0.468	-0.362	-0.444	-0.336	-0.430	-0.310	-0.279	-0.416	-0.395	0.930	-0.395	-0.261	-0.398	-0.287	-0.410	0.882	0.770	0.468	1													
		CG	0.015	0.025	-0.056	0.044	-0.003	0.022	0.053	0.044	-0.016	-0.009	0.004	-0.037	0.042	0.015	0.021	0.027	0.026	-0.029	-0.026	-0.056	-0.038	1												
		CGM	-0.283	-0.371	0.434	-0.347	-0.406	-0.293	-0.387	-0.255	-0.241	-0.388	-0.356	0.888	-0.358	-0.233	-0.356	-0.254	-0.369	0.842	0.723	0.434	0.865	-0.024	1											
		CH	-0.276	-0.376	0.449	-0.344	-0.420	-0.311	-0.385	-0.252	-0.229	-0.379	-0.358	0.899	-0.346	-0.230	-0.352	-0.248	-0.348	0.839	0.766	0.449	0.870	0.005	0.886	1										
		ELEC	-0.300	-0.400	0.468	-0.372	-0.438	-0.327	-0.428	-0.279	-0.252	-0.400	-0.381	0.924	-0.373	-0.249	-0.381	-0.265	-0.378	0.870	0.752	0.468	0.899	-0.014	0.893	0.899	1									
		LEI	-0.264	-0.363	0.384	-0.321	-0.395	-0.279	-0.393	-0.253	-0.237	-0.357	-0.340	0.838	-0.358	-0.231	-0.351	-0.260	-0.362	0.822	0.706	0.384	0.832	-0.024	0.810	0.810	0.834	1								
		MT	-0.138	-0.196	0.373	-0.243	-0.204	-0.181	-0.206	-0.206	-0.175	-0.211	-0.202	0.052	-0.168	-0.142	-0.204	-0.197	-0.155	0.035	0.012	0.373	0.033	-0.034	0.037	0.043	0.031	0.006	1							
		FIN	0.011	0.009	-0.014	0.032	-0.011	0.018	0.068	0.004	-0.007	-0.025	-0.006	-0.025	0.026	-0.015	-0.006	0.020	-0.001	-0.014	0.004	-0.014	-0.016	0.790	-0.009	-0.006	-0.005	-0.017	-0.042	1						
		OF	0.552	0.598	-0.467	0.595	0.632	0.570	0.710	0.589	0.494	0.586	0.773	-0.471	0.642	0.446	0.637	0.483	0.627	-0.455	-0.359	-0.467	-0.442	0.022	-0.384	-0.397	-0.424	-0.384	-0.285	0.010	1					
		OG	0.026	0.009	-0.063	0.048	0.001	0.035	0.098	0.032	-0.018	-0.001	0.007	-0.049	0.033	0.011	0.019	0.040	0.029	-0.021	-0.037	-0.063	-0.045	0.789	-0.030	-0.029	-0.038	-0.038	-0.057	0.846	0.026	1				
		OS	-0.207	-0.301	0.343	-0.265	-0.311	-0.252	-0.305	-0.229	-0.200	-0.286	-0.288	0.603	-0.283	-0.203	-0.300	-0.201	-0.309	0.562	0.497	0.343	0.595	-0.061	0.528	0.571	0.555	0.515	0.040	-0.044	-0.329	-0.065	1			
		CS	0.018	0.020	-0.036	0.045	0.003	0.026	0.083	0.039	-0.005	-0.016	0.007	-0.047	0.036	0.001	0.009	0.024	0.017	-0.038	-0.029	-0.036	-0.044	0.856	-0.026	-0.024	-0.033	-0.040	-0.058	0.924	0.033	0.869	-0.072	1		
		TEL	0.034	0.024	-0.043	0.058	0.004	0.024	0.100	0.034	0.004	0.000	0.013	-0.065	0.048	0.011	0.016	0.027	0.030	-0.044	-0.046	-0.043	-0.063	0.792	-0.036	-0.033	-0.044	-0.055	-0.063	0.863	0.034	0.853	-0.067	0.894	1	
		UT	0.018	0.004	-0.015	0.038	-0.002	0.012	0.077	0.028	-0.001	-0.016	-0.018	-0.029	0.036	-0.004	-0.004	0.007	0.010	-0.001	-0.031	-0.015	-0.029	0.783	-0.010	-0.006	-0.010	-0.016	-0.023	0.844	0.009	0.890	-0.061	0.871	0.887	1

Table 25: EU CDS Spreads and Equity Returns Sectoral Correlation - Crisis Sample

After-Crisis Sample																																										
Correlation Matrix CDS Spreads - Equity in EU Region			EU																																							
			CDS Spreads																		Equity																						
			BNK	BEV	BLDG	CAB	CG	CGM	CH	ELEC	LEI	MT	FIN	OF	OG	OS	CS	TEL	UT	BNK	BEV	BLDG	CAB	CG	CGM	CH	ELEC	LEI	MT	FIN	OF	OG	OS	CS	TEL	UT						
EU	CDS Spreads	BNK	1																																							
		BEV	0.183	1																																						
		BLDG	-0.138	-0.290	1																																					
		CAB	0.169	0.218	-0.151	1																																				
		CG	0.198	0.731	-0.222	0.435	1																																			
		CGM	0.277	0.420	-0.319	0.300	0.424	1																																		
		CH	0.254	0.460	-0.273	0.374	0.527	0.623	1																																	
		ELEC	0.236	0.232	-0.194	0.245	0.223	0.381	0.399	1																																	
		LEI	0.267	0.312	-0.315	0.426	0.454	0.516	0.473	0.293	1																																
		MT	0.168	0.250	-0.240	0.193	0.236	0.330	0.362	0.249	0.336	1																															
		FIN	0.251	0.207	-0.225	0.236	0.278	0.339	0.342	0.227	0.335	0.230	1																														
		OF	-0.272	-0.302	0.401	-0.247	-0.303	-0.464	-0.425	-0.239	-0.409	-0.340	-0.316	1																													
		OG	0.227	0.417	-0.309	0.154	0.287	0.480	0.434	0.308	0.368	0.375	0.336	-0.403	1																												
		OS	0.174	0.300	-0.180	0.305	0.400	0.399	0.422	0.220	0.362	0.286	0.253	-0.274	0.327	1																											
		CS	0.261	0.339	-0.298	0.496	0.480	0.496	0.507	0.320	0.778	0.329	0.298	-0.373	0.363	0.548	1																										
		TEL	0.231	0.255	-0.187	0.006	0.107	0.365	0.252	0.289	0.245	0.166	0.232	-0.334	0.396	0.092	0.183	1																									
		UT	0.040	0.090	-0.018	0.097	0.129	0.102	0.100	0.052	0.081	0.101	0.076	-0.068	0.063	0.119	0.112	0.010	1																								
	Equity	BNK	-0.280	-0.284	0.339	-0.264	-0.317	-0.437	-0.436	-0.260	-0.396	-0.351	-0.305	0.867	-0.419	-0.293	-0.385	-0.303	-0.069	1																							
		BEV	-0.192	-0.217	0.313	-0.220	-0.235	-0.342	-0.329	-0.219	-0.331	-0.214	-0.254	0.672	-0.288	-0.194	-0.321	-0.224	-0.032	0.567	1																						
		BLDG	-0.138	-0.290	1.000	-0.151	-0.222	-0.319	-0.273	-0.194	-0.315	-0.240	-0.225	0.401	-0.309	-0.180	-0.298	-0.187	-0.018	0.339	0.313	1																				
		CAB	-0.242	-0.262	0.336	-0.195	-0.256	-0.405	-0.369	-0.215	-0.348	-0.279	-0.282	0.864	-0.336	-0.227	-0.323	-0.285	-0.066	0.753	0.665	0.336	1																			
		CG	0.016	-0.008	0.024	0.009	0.017	0.021	0.010	-0.037	0.013	0.006	-0.043	-0.046	0.008	0.001	0.015	0.019	0.006	-0.060	0.014	0.024	-0.029	1																		
		CGM	-0.259	-0.237	0.291	-0.161	-0.242	-0.371	-0.341	-0.218	-0.295	-0.288	-0.274	0.789	-0.326	-0.217	-0.290	-0.278	-0.071	0.756	0.589	0.291	0.728	-0.027	1																	
		CH	-0.241	-0.241	0.327	-0.177	-0.234	-0.378	-0.346	-0.232	-0.342	-0.284	-0.274	0.832	-0.318	-0.212	-0.326	-0.285	-0.066	0.757	0.683	0.327	0.783	-0.032	0.826	1																
		ELEC	-0.247	-0.257	0.317	-0.205	-0.246	-0.410	-0.379	-0.219	-0.347	-0.317	-0.266	0.860	-0.370	-0.220	-0.330	-0.304	-0.069	0.797	0.634	0.317	0.798	-0.039	0.840	0.837	1															
		LEI	-0.181	-0.206	0.340	-0.153	-0.174	-0.333	-0.287	-0.167	-0.287	-0.219	-0.222	0.711	-0.272	-0.151	-0.255	-0.260	-0.059	0.600	0.513	0.340	0.662	-0.044	0.587	0.622	0.649	1														
		MT	-0.045	-0.156	0.259	-0.043	-0.112	-0.171	-0.177	-0.115	-0.216	-0.155	-0.087	0.058	-0.219	-0.088	-0.161	-0.180	-0.047	0.036	-0.020	0.259	0.043	0.013	0.010	-0.010	0.019	0.074	1												
		FIN	0.017	-0.014	0.046	0.006	0.009	0.009	-0.003	-0.042	-0.015	-0.008	-0.054	-0.040	0.013	0.005	0.002	0.004	0.014	-0.050	0.004	0.046	-0.025	0.816	-0.035	-0.047	-0.044	-0.020	0.032	1										
		OF	0.278	0.258	-0.219	0.276	0.338	0.381	0.400	0.254	0.384	0.224	0.839	-0.325	0.345	0.267	0.334	0.274	0.079	-0.319	-0.259	-0.219	-0.296	-0.037	-0.280	-0.287	-0.275	-0.211	-0.104	-0.040	1									
		OG	0.017	-0.030	0.041	0.000	-0.006	0.000	0.003	-0.042	0.015	0.003	-0.014	-0.018	0.040	-0.026	0.016	0.047	0.015	-0.038	0.025	0.041	-0.006	0.671	-0.005	-0.010	-0.025	0.008	0.009	0.739	-0.011	1								
		OS	-0.133	-0.195	0.237	-0.136	-0.174	-0.244	-0.276	-0.157	-0.222	-0.170	-0.158	0.614	-0.234	-0.121	-0.198	-0.194	-0.011	0.531	0.390	0.237	0.599	-0.080	0.460	0.492	0.555	0.471	0.031	-0.059	-0.156	-0.049	1							
		CS	0.025	0.006	0.012	0.013	0.035	0.030	0.024	-0.026	0.014	0.003	-0.029	-0.073	0.016	0.003	0.016	0.026	0.018	-0.083	0.004	0.012	-0.040	0.903	-0.055	-0.061	-0.066	-0.053	0.030	0.882	-0.021	0.678	-0.078	1						
		TEL	0.022	0.005	-0.004	0.011	0.037	-0.001	0.014	-0.046	0.021	0.022	-0.061	-0.064	0.015	0.004	0.021	0.027	0.013	-0.079	0.002	-0.004	-0.040	0.827	-0.048	-0.050	-0.058	-0.037	-0.003	0.838	-0.043	0.688	-0.082	0.861	1					
		UT	0.027	-0.006	0.028	0.008	0.012	0.018	0.020	-0.056	0.000	0.038	-0.019	-0.043	0.024	0.014	0.008	0.031	-0.004	-0.068	0.027	0.028	-0.015	0.808	-0.019	-0.034	-0.041	-0.023	0.026	0.800	-0.024	0.721	-0.069	0.816	0.818	1				

Table 26: EU CDS Spreads and Equity Returns Sectoral Correlation - After-Crisis Sample

Full Sample Period																					
Correlation Matrix CDS Spreads - Equity in JAPAN Region			JAPAN																		
			CDS Spreads										Equity								
			BNK	CH	ELEC	IND	FIN	OT	RET	CS	TEL	UT	BNK	CH	ELEC	IND	FIN	OT	RET	CS	TEL	UT
JAPAN	CDS Spreads	BNK	1																			
		CH	0.123	1																		
		ELEC	0.176	0.167	1																	
		IND	0.110	0.082	0.022	1																
		FIN	0.424	0.150	0.255	0.075	1															
		OT	0.223	0.114	0.123	0.016	0.260	1														
		RET	-0.011	-0.079	-0.057	0.059	-0.014	-0.016	1													
		CS	0.045	0.060	0.111	0.027	0.131	0.033	0.536	1												
		TEL	0.223	0.114	0.122	0.016	0.262	1.000	-0.016	0.033	1											
		UT	0.333	0.194	0.209	0.090	0.320	0.227	-0.044	0.016	0.227	1										
	Equity	BNK	0.032	-0.006	0.013	0.022	0.013	0.014	0.016	0.007	0.015	0.007	1									
		CH	-0.318	-0.125	-0.159	-0.096	-0.328	-0.211	0.046	-0.061	-0.211	-0.234	-0.029	1								
		ELEC	-0.321	-0.115	-0.157	-0.094	-0.313	-0.192	0.041	-0.060	-0.192	-0.230	-0.040	0.913	1							
		IND	0.014	-0.005	-0.013	0.019	-0.006	0.002	0.001	0.020	0.002	-0.012	0.020	-0.021	-0.043	1						
		FIN	0.009	0.009	-0.020	0.006	-0.023	0.004	-0.004	0.021	0.004	-0.045	0.017	0.005	-0.005	0.870	1					
		OT	-0.195	-0.110	-0.103	-0.109	-0.204	-0.118	0.056	-0.028	-0.118	-0.129	-0.001	0.599	0.585	-0.053	-0.047	1				
		RET	-0.243	-0.114	-0.128	-0.091	-0.268	-0.165	0.025	-0.051	-0.165	-0.185	-0.015	0.748	0.730	-0.026	0.000	0.684	1			
		CS	-0.007	-0.009	-0.001	0.000	-0.014	0.010	-0.003	0.011	0.010	-0.036	-0.003	0.005	-0.011	0.779	0.773	-0.045	-0.009	1		
		TEL	-0.008	-0.036	0.013	-0.006	-0.010	-0.012	-0.008	-0.007	-0.013	-0.082	0.019	0.019	0.016	0.608	0.617	-0.025	0.013	0.722	1	
		UT	0.017	0.021	-0.014	0.025	-0.006	0.029	0.011	0.006	0.029	-0.011	0.013	0.029	0.030	0.486	0.502	-0.012	0.018	0.649	0.521	1

Table 27: Japan CDS Spreads and Equity Returns Sectoral Correlation - Full Sample

Crisis Sample Period																					
Correlation Matrix CDS Spreads - Equity in JAPAN Region			JAPAN																		
			CDS Spreads										Equity								
			BNK	CH	ELEC	IND	FIN	OT	RET	CS	TEL	UT	BNK	CH	ELEC	IND	FIN	OT	RET	CS	TEL	UT
JAPAN	CDS Spreads	BNK	1																			
		CH	0.168	1																		
		ELEC	0.302	0.163	1																	
		IND	0.267	0.307	0.135	1																
		FIN	0.614	0.166	0.298	0.173	1															
		OT	0.462	0.174	0.187	0.121	0.482	1														
		RET	0.076	0.105	0.063	0.115	0.058	0.075	1													
		CS	0.246	0.191	0.207	0.264	0.274	0.109	0.339	1												
		TEL	0.461	0.173	0.185	0.120	0.484	0.999	0.075	0.109	1											
		UT	0.487	0.193	0.285	0.194	0.403	0.417	0.006	0.094	0.417	1										
	Equity	BNK	0.031	0.011	0.028	0.033	0.007	0.009	-0.006	0.001	0.010	0.003	1									
		CH	-0.448	-0.120	-0.201	-0.194	-0.414	-0.326	-0.055	-0.207	-0.326	-0.303	-0.057	1								
		ELEC	-0.440	-0.111	-0.206	-0.178	-0.385	-0.321	-0.066	-0.212	-0.321	-0.307	-0.070	0.928	1							
		IND	0.009	0.011	-0.017	0.043	0.002	-0.008	0.001	0.044	-0.008	-0.012	0.056	-0.057	-0.085	1						
		FIN	-0.011	0.027	-0.028	0.032	-0.031	-0.031	-0.010	0.037	-0.031	-0.072	0.044	-0.012	-0.024	0.867	1					
		OT	-0.273	-0.111	-0.131	-0.162	-0.253	-0.185	-0.052	-0.176	-0.184	-0.162	-0.024	0.552	0.532	-0.089	-0.073	1				
		RET	-0.348	-0.101	-0.157	-0.171	-0.345	-0.282	-0.075	-0.192	-0.282	-0.241	-0.025	0.734	0.706	-0.077	-0.030	0.671	1			
		CS	-0.025	0.001	-0.009	0.019	-0.027	-0.019	0.010	0.024	-0.019	-0.060	0.026	-0.027	-0.045	0.753	0.755	-0.098	-0.055	1		
		TEL	-0.021	-0.019	0.015	0.000	-0.024	-0.031	-0.035	-0.007	-0.031	-0.123	0.064	0.011	0.004	0.551	0.596	-0.067	0.002	0.711	1	
		UT	0.005	0.040	0.001	0.001	-0.012	0.013	0.047	-0.011	0.013	-0.009	0.055	0.018	0.013	0.366	0.414	-0.046	0.001	0.600	0.485	1

Table 28: Japan CDS Spreads and Equity Returns Sectoral Correlation - Crisis Sample

After-Crisis Sample Period																					
Correlation Matrix CDS Spreads - Equity in JAPAN Region			JAPAN																		
			CDS Spreads										Equity								
			BNK	CH	ELEC	IND	FIN	OT	RET	CS	TEL	UT	BNK	CH	ELEC	IND	FIN	OT	RET	CS	TEL	UT
JAPAN	CDS Spreads	BNK	1																			
		CH	0.067	1																		
		ELEC	0.001	0.172	1																	
		IND	0.037	-0.023	-0.037	1																
		FIN	0.095	0.131	0.187	0.025	1															
		OT	0.033	0.073	0.077	-0.020	0.063	1														
		RET	-0.044	-0.148	-0.112	0.052	-0.050	-0.036	1													
		CS	-0.057	0.006	0.077	-0.024	0.072	0.009	0.568	1												
		TEL	0.033	0.073	0.077	-0.020	0.064	1.000	-0.036	0.009	1											
		UT	0.086	0.199	0.094	0.042	0.160	0.067	-0.079	-0.028	0.067	1										
	Equity	BNK	0.035	-0.024	-0.009	0.020	0.026	0.020	0.030	0.013	0.021	0.014	1									
		CH	-0.108	-0.132	-0.096	-0.051	-0.159	-0.121	0.103	0.015	-0.121	-0.109	0.018	1								
		ELEC	-0.130	-0.121	-0.083	-0.058	-0.172	-0.086	0.097	0.019	-0.086	-0.093	0.008	0.887	1							
		IND	0.023	-0.028	-0.009	0.009	-0.021	0.013	0.003	0.009	0.014	-0.011	-0.052	0.047	0.035	1						
		FIN	0.044	-0.014	-0.009	-0.009	-0.006	0.039	-0.002	0.017	0.040	0.006	-0.033	0.036	0.028	0.878	1					
		OT	-0.094	-0.105	-0.068	-0.093	-0.133	-0.070	0.103	0.041	-0.070	-0.082	0.029	0.676	0.667	-0.002	-0.012	1				
		RET	-0.099	-0.127	-0.088	-0.059	-0.145	-0.078	0.064	0.015	-0.078	-0.101	-0.002	0.776	0.773	0.057	0.047	0.699	1			
		CS	0.015	-0.017	0.010	-0.007	0.006	0.032	-0.007	0.007	0.032	-0.003	-0.044	0.047	0.031	0.850	0.823	0.010	0.041	1		
		TEL	0.010	-0.051	0.010	-0.008	0.012	0.002	-0.001	-0.008	0.002	-0.021	-0.046	0.028	0.029	0.714	0.661	0.020	0.025	0.733	1	
		UT	0.033	0.005	-0.033	0.043	0.003	0.043	0.002	0.015	0.044	-0.012	-0.047	0.042	0.052	0.684	0.645	0.024	0.036	0.701	0.560	1

Table 29: Japan CDS Spreads and Equity Returns Sectoral Correlation - After-Crisis Sample

Correlation Matrix CDS Spreads Returns		US																										
		BNK	BEV	BLDG	BNKING	CAB	CG	CH	CGM	ELEC	ELTN	EN	IND	LEI	MNFG	MT	FIN	OF	OG	OS	OT	RET	RL	CS	TEL	TRSP	OTRSP	UT
	BNK	1																										
	BEV	0.185	1																									
	BLDG	-0.338	-0.140	1																								
	BNKING	1.000	0.185	-0.338	1																							
	CAB	0.233	0.136	-0.140	0.233	1																						
	CG	0.287	0.203	-0.145	0.287	0.160	1																					
	CH	0.300	0.126	-0.157	0.300	0.176	0.251	1																				
	CGM	0.334	0.185	-0.203	0.334	0.173	0.204	0.208	1																			
	ELEC	0.333	0.170	-0.154	0.333	0.208	0.267	0.221	0.286	1																		
	ELTN	0.258	0.160	-0.123	0.258	0.155	0.163	0.157	0.234	0.180	1																	
	EN	0.139	0.085	-0.084	0.139	0.092	0.131	0.082	0.123	0.167	0.148	1																
	IND	0.153	0.054	-0.088	0.153	0.111	0.109	0.131	0.090	0.110	0.117	0.152	1															
	LEI	0.270	0.146	-0.197	0.270	0.173	0.223	0.219	0.297	0.255	0.181	0.113	0.110	1														
US	MNFG	0.484	0.243	-0.319	0.484	0.282	0.350	0.473	0.520	0.488	0.307	0.225	0.209	0.373	1													
	MT	0.314	0.177	-0.212	0.314	0.181	0.259	0.257	0.301	0.268	0.222	0.160	0.096	0.277	0.604	1												
	FIN	0.176	0.080	-0.113	0.176	0.092	0.106	0.139	0.130	0.143	0.108	0.063	0.067	0.114	0.199	0.129	1											
	OF	0.176	0.080	-0.113	0.176	0.092	0.106	0.139	0.130	0.143	0.108	0.063	0.067	0.114	0.199	0.129	0.998	1										
	OG	0.289	0.173	-0.180	0.289	0.178	0.225	0.211	0.245	0.206	0.237	0.213	0.104	0.236	0.368	0.306	0.099	0.099	1									
	OS	0.311	0.174	-0.182	0.311	0.207	0.285	0.216	0.291	0.284	0.175	0.152	0.147	0.271	0.425	0.304	0.127	0.127	0.256	1								
	OT	0.304	0.139	-0.191	0.304	0.198	0.184	0.235	0.223	0.229	0.169	0.097	0.134	0.190	0.302	0.189	0.079	0.079	0.206	0.209	1							
	RET	0.144	0.031	-0.085	0.144	0.074	0.096	0.008	0.106	0.061	0.051	-0.031	-0.010	0.098	0.140	0.129	0.046	0.046	0.152	0.129	0.093	1						
	RL	0.420	0.220	-0.243	0.420	0.237	0.291	0.319	0.329	0.312	0.225	0.143	0.194	0.289	0.464	0.321	0.157	0.157	0.281	0.324	0.289	0.121	1					
	CS	0.434	0.251	-0.266	0.434	0.476	0.319	0.273	0.344	0.358	0.270	0.162	0.162	0.395	0.503	0.367	0.155	0.155	0.323	0.560	0.319	0.212	0.413	1				
	TEL	0.308	0.143	-0.201	0.308	0.202	0.170	0.208	0.252	0.231	0.194	0.105	0.120	0.218	0.301	0.215	0.082	0.082	0.216	0.224	0.949	0.096	0.293	0.333	1			
	TRSP	0.063	0.028	-0.053	0.063	0.103	0.048	0.052	0.103	0.074	0.082	0.040	0.040	0.084	0.098	0.069	0.042	0.042	0.126	0.100	0.018	0.022	0.126	0.086	0.019	1		
	OTRSP	0.027	0.053	-0.039	0.027	0.082	0.010	-0.001	0.088	0.039	0.070	0.033	0.024	0.067	0.048	0.051	0.046	0.046	0.114	0.052	-0.041	-0.001	0.104	0.036	-0.021	0.650	1	
	UT	0.255	0.161	-0.131	0.255	0.155	0.158	0.181	0.237	0.184	0.734	0.119	0.095	0.193	0.316	0.219	0.126	0.126	0.208	0.208	0.133	0.030	0.233	0.253	0.160	0.074	0.071	1
	BNK	0.527	0.163	-0.217	0.527	0.196	0.224	0.276	0.297	0.256	0.251	0.113	0.126	0.242	0.395	0.283	0.146	0.146	0.229	0.239	0.241	0.078	0.364	0.343	0.255	0.049	0.009	0.207
	BEV	0.389	0.210	-0.212	0.389	0.206	0.226	0.230	0.309	0.261	0.183	0.113	0.102	0.252	0.386	0.276	0.120	0.120	0.231	0.294	0.206	0.113	0.348	0.374	0.208	0.055	0.025	0.206
	BNKING	0.514	0.176	-0.219	0.514	0.187	0.216	0.257	0.306	0.251	0.245	0.109	0.129	0.235	0.388	0.285	0.134	0.134	0.225	0.236	0.231	0.076	0.360	0.339	0.251	0.045	0.012	0.199
	CG	0.382	0.173	-0.234	0.382	0.175	0.190	0.227	0.297	0.282	0.200	0.140	0.092	0.251	0.409	0.293	0.111	0.111	0.237	0.263	0.250	0.193	0.321	0.363	0.252	0.035	0.005	0.178
	ELEC	0.306	0.124	-0.150	0.306	0.180	0.170	0.212	0.226	0.230	0.183	0.050	0.081	0.182	0.292	0.209	0.096	0.096	0.183	0.227	0.214	0.063	0.269	0.253	0.228	0.065	0.044	0.171
	MNFG	0.381	0.237	-0.206	0.381	0.234	0.250	0.290	0.329	0.299	0.242	0.134	0.144	0.277	0.440	0.323	0.148	0.148	0.295	0.325	0.290	0.170	0.392	0.429	0.294	0.072	0.032	0.231
UK	FIN	0.403	0.186	-0.206	0.403	0.233	0.257	0.308	0.321	0.336	0.283	0.164	0.131	0.283	0.474	0.298	0.132	0.132	0.234	0.298	0.247	0.127	0.408	0.421	0.255	0.056	0.029	0.233
	OF	0.418	0.203	-0.199	0.418	0.210	0.301	0.311	0.338	0.336	0.292	0.192	0.145	0.301	0.503	0.356	0.151	0.151	0.255	0.308	0.270	0.128	0.405	0.438	0.268	0.055	0.037	0.262
	OS	0.213	0.128	-0.120	0.213	0.134	0.113	0.162	0.142	0.151	0.117	0.050	0.081	0.140	0.224	0.174	0.052	0.052	0.125	0.168	0.277	0.050	0.221	0.225	0.295	0.053	0.031	0.114
	OT	0.473	0.198	-0.242	0.473	0.227	0.290	0.285	0.321	0.296	0.254	0.153	0.117	0.310	0.471	0.375	0.120	0.120	0.320	0.358	0.298	0.199	0.409	0.435	0.304	0.074	0.033	0.234
	RET	0.441	0.205	-0.271	0.441	0.207	0.252	0.305	0.316	0.296	0.230	0.145	0.132	0.266	0.416	0.277	0.137	0.137	0.237	0.278	0.261	-0.197	0.366	0.379	0.270	0.081	0.058	0.223
	CS	0.440	0.183	-0.236	0.440	0.238	0.318	0.294	0.307	0.287	0.225	0.135	0.124	0.259	0.422	0.311	0.193	0.193	0.265	0.317	0.260	0.044	0.367	0.408	0.288	0.101	0.065	0.232
	TEL	0.474	0.203	-0.246	0.474	0.230	0.287	0.291	0.326	0.307	0.258	0.151	0.119	0.304	0.479	0.372	0.118	0.118	0.331	0.351	0.309	0.141	0.420	0.433	0.315	0.076	0.038	0.245
	BNK	0.326	0.152	-0.167	0.326	0.146	0.170	0.204	0.219	0.170	0.176	0.058	0.079	0.158	0.305	0.188	0.132	0.132	0.165	0.191	0.188	0.095	0.272	0.261	0.207	0.023	0.001	0.167
	BEV	0.391	0.176	-0.217	0.391	0.186	0.225	0.264	0.300	0.259	0.200	0.137	0.116	0.275	0.405	0.310	0.174	0.174	0.254	0.286	0.246	0.114	0.351	0.371	0.249	0.062	0.031	0.216
	BLDG	-0.279	-0.139	0.197	-0.279	-0.148	-0.170	-0.193	-0.228	-0.194	-0.164	-0.104	-0.082	-0.197	-0.330	-0.249	-0.123	-0.123	-0.184	-0.231	-0.194	-0.081	-0.272	-0.283	-0.193	-0.036	-0.029	-0.136
	BNKING	0.359	0.147	-0.164	0.359	0.135	0.192	0.247	0.237	0.187	0.196	0.081	0.097	0.178	0.306	0.195	0.153	0.153	0.164	0.193	0.189	0.108	0.295	0.254	0.198	0.017	-0.007	0.163
	CAB	0.268	0.135	-0.131	0.268	0.127	0.170	0.237	0.200	0.160	0.135	0.098	0.039	0.192	0.251	0.223	0.081	0.081	0.166	0.184	0.169	0.086	0.229	0.262	0.171	0.008	-0.054	0.129
	CG	0.387	0.193	-0.215	0.387	0.179	0.236	0.245	0.301	0.246	0.205	0.123	0.096	0.268	0.381	0.300	0.135	0.135	0.249	0.295	0.245	0.112	0.353	0.374	0.249	0.071	0.043	0.213
	CH	0.450	0.236	-0.229	0.450	0.248	0.295	0.346	0.372	0.336	0.281	0.166	0.122	0.290	0.539	0.395	0.178	0.178	0.274	0.337	0.324	0.128	0.419	0.465	0.328	0.100	0.053	0.270
	CGM	0.377	0.144	-0.207	0.377	0.157	0.227	0.240	0.293	0.260	0.203	0.113	0.114	0.271	0.359	0.283	0.121	0.121	0.238	0.300	0.261	0.107	0.361	0.345	0.270	0.081	0.040	0.197
	ELEC	0.362	0.152	-0.153	0.362	0.195	0.225	0.287	0.299	0.277	0.197	0.123	0.118	0.237	0.394	0.290	0.139	0.139	0.206	0.260	0.287	0.118	0.354	0.340	0.284	0.042	0.027	0.181
	ELTN	0.451	0.180	-0.226	0.451	0.231	0.243	0.294	0.278	0.292	0.258	0.122	0.137	0.253	0.393	0.289	0.151	0.151	0.234	0.275	0.277	0.093	0.378	0.377	0.290	0.085	0.061	0.223
EU	EN	0.464	0.201	-0.242	0.464	0.210	0.271	0.259	0.316	0.324	0.261	0.142	0.123	0.273	0.454	0.344	0.154	0.154	0.297	0.309	0.263	0.091	0.375	0.394	0.274	0.091	0.066	0.230
	LEI	0.306	0.128	-0.145	0.306	0.153	0.208	0.230	0.259	0.216	0.191	0.116	0.093	0.232	0.358	0.271	0.117	0.117	0.216	0.289	0.192	0.085	0.283	0.331	0.198	0.045	-0.002	0.194
	MNFG	0.442	0.214	-0.234	0.442	0.223	0.282	0.319	0.308	0.345	0.243	0.172	0.123	0.296	0.455	0.339	0.161	0.161	0.274	0.311	0.285	0.113	0.408	0.430	0.291	0.084	0.035	0.228
	MT	0.335	0.170	-0.213	0.335	0.187	0.202	0.233	0.244	0.252	0.215	0.116	0.096	0.235	0.362	0.320	0.135	0.135	0.271	0.289	0.245	0.091	0.290	0.353	0.251	0.069	0.051	0.211
	FIN	0.380	0.156	-0.193	0.380	0.202	0.224	0.206	0.217	0.257	0.226	0.121	0.107	0.189	0.355	0.280	0.117	0.117	0.206	0.268	0.246	0.085	0.360	0.335	0.248	0.065	0.033	0.209
	OF	0.396	0.172	-0.197	0.396	0.199	0.195	0.231	0.263	0.255	0.229	0.135	0.103	0.231	0.382	0.290	0.112	0.112	0.219	0.269	0.268	0.097	0.388	0.348	0.268	0.060	0.025	0.190
	OG	0.414	0.170	-0.212	0.414	0.194	0.241	0.230	0.280	0.294	0.219	0.130	0.110	0.254	0.401	0.299	0.154	0.154	0.328	0.276	0.224	0.082	0.353	0.370	0.229	0.093	0.057	0.225
	OS	0.316	0.148	-0.161	0.316	0.173	0.230	0.293	0.147	0.197	0.159	0.100	0.108	0.247	0.287	0.161	0.102	0.102	0.222	0.226	0.293	0.081	0.299	0.290	0.206	0.090	-0.011	0.096
	CS	0.399	0.171	-0.215	0.399	0.187	0.269	0.303	0.262	0.268	0.204	0.136	0.110	0.286	0.385	0.268	0.154	0.154	0.256	0.288	0.291	0.108	0.358	0.349	0.265	0.078	0.022	0.186
	TEL	0.333	0.110	-0.158	0.333	0.133	0.136	0.177	0.222	0.210	0.169	0.108	0.070	0.157	0.271	0.255	0.086	0.086	0.170	0.159	0.182	0.048	0.237	0.252	0.220	0.045	0.022	0.150
	TRSP	0.358	0.161	-0.129	0.358	0.178	0.249	0.278	0.272	0.260	0.226	0.183	0.096	0.248	0.402	0.313	0.126	0.126	0.266	0.279	0.248	0.132	0.337	0.350	0.248	0.020	-0.019	0.205
	UT	0.172	0.069	-0.083	0.172	0.106	0.113	0.130	0.093	0.114	0.113	0.039	0.100	0.121	0.145	0.121	0.081	0.081	0.104	0.100	0.100	0.030	0.163	0.171	0.098	0.066	0.067	0.104
	BNK	0.256	0.123	-0.083	0.256	0.124	0.160	0.150	0.250	0.169	0.179	0.117	0.066	0.159	0.276	0.206	0.114	0.114	0.212	0.225	0.132	0.070	0.202	0.225	0.150	0.049	0.069	0.181
	BNKING	0.255	0.104	-0.075	0.255	0.125	0.152	0.142	0.242	0.165	0.188	0.118	0.061	0.153	0.270	0.191	0.105	0.105	0.220	0.210	0.125	0.075	0.199	0.222	0.145	0.050	0.063	0.181
	CH	0.112	0.025	-0.036	0.112	0.040	0.068	0.074	0.090	0.079	0.088	0.038	0.043	0.055	0.122	0.089	0.038	0.038	0.047	0.081	0.108	0.050	0.122	0.131	0.109	-0.063	-0.084	0.068
	ELEC	0.094	0.067	-0.043	0.094	-0.003	0.052	0.104	0.101	0.095	0.087	0.043	0.060	0.084	0.143	0.069	0.016	0.016	0.035	0.101	0.146	0.047	0.098	0.073	0.116	-0.063	-0.091	0.068
	ELTN	0.202	0.046	-0.069	0.202	0.124	0.084	0.143	0.121	0.141	0.099	0.061	0.096	0.105	0.149	0.072	0.051	0.051	0.127	0.167	0.130	0.111	0.158	0.200	0.111	0.043	-0.008	0.054
	IND	0.066	0.055	0.003	0.066	0.016	0.008	0.096	0.068	0.053	0.017	0.042	0.006	0.083	0.097	0.054	0.013	0.013	0.102	0.052	0.054	-0.083	0.047	0.062	0.053	0.096	0.016	0.025
	MNFG	0.183	0.106	-0.073	0.183	0.046	0.098	0.191	0.170	0.121	0.125	0.108	0.077	0.153	0.244	0.151	0.030	0.030	0.149	0.169	0.193	0.086	0.185	0.175	0.173	-0.031	-0.063	0.095
	FIN	0.252	0.130	-0.086	0.252	0.083	0.104	0.182	0.238	0.123	0.179	0.096	0.063	0.161	0.273	0.201	0.094	0.094	0.176	0.217	0.107	0.102	0.214	0.223	0.142	0.021	0.035	0.151
JAPAN	OS	0.070	0.049	-0.077	0.070	0.059	0.070	0.055	0.097	0.099	0.079	0.004	0.039	0.108	0.116	0.087	0.059	0.059	0.026	0.024	0.094	0.063	0.100	0.041	0.092	-0.013	0.005	0.042
	OT	0.158	0.091	-0.081	0.158	0.099	0.040	0.091	0.101	0.116	0.112	0.041	0.045	0.074	0.140	0.098	0.029	0.029	0.089	0.111	0.083	0.023	0.141	0.145	0.103	-0.001	-0.012	0.102
	RET	-0.016	-0.038	0.009	-0.016	0.067	0.017	-0.007	0.012	0.002	0.002	-0.008	-0.012	0.052	0.027	0.025	0.021	0.021	0.023	0.038	-0.007	-0.051	0.016	0.001	0.000	0.043	0.069	0.021
	RL	0.100	0.124	-0.043	0.100	0.040	0.050	0.081	0.186	0.090	0.113	0.057	0.015	0.061	0.180	0.145	0.057	0.057	0.067	0.123	0.090	0.034	0.105	0.119	0.133	-0.019	0.006	0.113
	CS	0.052	-0.004	-0.028	0.052	0.039	0.054	0.101	0.083	0.037	0.018	0.016	0.016	0.088	0.120	0.092	0.025	0.025	0.028	0.038	0.052	0.000	0.079	0.032	0.053	-0.035	-0.011	0.034
	TEL	0.158	0.092	-0.081	0.158	0.099	0.040	0.091	0.100	0.116	0.113	0.041	0.044	0.074	0.142	0.097	0.025	0.025	0.090	0.111	0.084	0.024	0.140	0.145	0.103	-0.001	-0.013	0.101
	OTRSP	0.180	0.116	-0.038	0.180	0.108	0.093	0.162	0.175	0.123	0.117	0.064	0.068	0.118	0.196	0.156	0.053	0.053	0.132	0.107	0.107	0.051	0.174	0.163	0.118	0.045	0.070	0.125
	TRSP	0.166	0.116	-0.021	0.166	0.111	0.090	0.168	0.164	0.121	0.105	0.061	0.067	0.128	0.192	0.151	0.051	0.051	0.139	0.112	0.091	0.051	0.161	0.163	0.102	0.051	0.071	0.128
	UT	0.203	0.032	-0.077	0.203	0.105	0.080	0.161	0.111	0.118	0.075	0.053	0.088	0.102	0.154	0.087	0.073	0.073	0.117	0.140	0.211	0.131	0.157	0.191	0.185	0.020	-0.039	0.035

Correlation Matrix CDS Spreads Returns		UK												
		BNK	BEV	BNKING	CG	ELEC	MNFG	FIN	OF	OS	OT	RET	CS	TEL
	BNK	1												
	BEV	0.452	1											
	BNKING	0.980	0.450	1										
	CG	0.441	0.676	0.439	1									
	ELEC	0.400	0.350	0.396	0.389	1								
	MNFG	0.475	0.506	0.470	0.520	0.442	1							
UK	FIN	0.535	0.468	0.532	0.459	0.370	0.495	1						
	OF	0.546	0.500	0.540	0.498	0.388	0.543	0.884	1					
	OS	0.279	0.273	0.289	0.303	0.244	0.300	0.211	0.239	1				
	OT	0.567	0.506	0.558	0.552	0.439	0.546	0.511	0.557	0.273	1			
	RET	0.547	0.548	0.541	0.538	0.423	0.532	0.510	0.547	0.327	0.542	1		
	CS	0.536	0.504	0.532	0.379	0.414	0.524	0.486	0.492	0.435	0.558	0.680	1	
	TEL	0.589	0.523	0.580	0.547	0.457	0.555	0.536	0.573	0.279	0.966	0.589	0.577	1
	BNK	0.483	0.321	0.473	0.366	0.288	0.370	0.365	0.366	0.207	0.413	0.359	0.323	0.424
	BEV	0.453	0.574	0.444	0.536	0.376	0.505	0.446	0.500	0.274	0.530	0.546	0.514	0.540
	BLDG	-0.345	-0.284	-0.345	-0.334	-0.234	-0.353	-0.347	-0.379	-0.149	-0.384	-0.337	-0.306	-0.396
	BNKING	0.527	0.341	0.535	0.372	0.308	0.381	0.413	0.409	0.212	0.425	0.383	0.349	0.436
	CAB	0.344	0.281	0.338	0.360	0.342	0.370	0.260	0.348	0.222	0.475	0.366	0.291	0.470
	CG	0.443	0.559	0.441	0.560	0.432	0.544	0.428	0.503	0.322	0.523	0.570	0.495	0.536
	CH	0.569	0.554	0.557	0.555	0.399	0.630	0.579	0.632	0.332	0.626	0.595	0.581	0.635
	CGM	0.452	0.459	0.438	0.466	0.321	0.486	0.442	0.492	0.229	0.580	0.492	0.464	0.590
	ELEC	0.447	0.383	0.440	0.402	0.337	0.437	0.465	0.499	0.244	0.523	0.402	0.418	0.526
	ELTN	0.610	0.489	0.597	0.504	0.503	0.551	0.536	0.541	0.286	0.587	0.595	0.554	0.607
EU	EN	0.625	0.527	0.613	0.529	0.476	0.573	0.560	0.582	0.272	0.637	0.625	0.597	0.666
	LEI	0.384	0.372	0.376	0.392	0.288	0.423	0.400	0.445	0.184	0.477	0.420	0.384	0.512
	MNFG	0.547	0.498	0.530	0.506	0.388	0.571	0.546	0.587	0.274	0.593	0.555	0.532	0.613
	MT	0.402	0.377	0.405	0.406	0.308	0.474	0.411	0.467	0.183	0.456	0.435	0.385	0.453
	FIN	0.466	0.406	0.455	0.395	0.317	0.436	0.459	0.470	0.246	0.514	0.446	0.460	0.536
	OF	0.518	0.429	0.515	0.453	0.365	0.508	0.483	0.499	0.266	0.542	0.472	0.439	0.567
	OG	0.548	0.524	0.537	0.484	0.375	0.534	0.508	0.525	0.242	0.556	0.592	0.558	0.585
	OS	0.374	0.330	0.370	0.287	0.308	0.390	0.377	0.416	0.227	0.397	0.416	0.367	0.412
	CS	0.500	0.438	0.486	0.460	0.393	0.499	0.471	0.534	0.288	0.559	0.540	0.465	0.579
	TEL	0.406	0.301	0.409	0.292	0.237	0.326	0.376	0.368	0.128	0.442	0.361	0.422	0.472
	TRSP	0.446	0.408	0.438	0.394	0.317	0.455	0.417	0.456	0.223	0.493	0.441	0.457	0.500
	UT	0.228	0.174	0.224	0.183	0.205	0.227	0.216	0.213	0.126	0.233	0.226	0.199	0.240
	BNK	0.257	0.257	0.252	0.222	0.222	0.311	0.254	0.280	0.145	0.321	0.259	0.335	0.327
	BNKING	0.249	0.243	0.244	0.208	0.195	0.292	0.256	0.274	0.143	0.305	0.254	0.326	0.311
	CH	0.117	0.123	0.117	0.171	0.104	0.177	0.121	0.139	0.080	0.125	0.099	0.097	0.127
	ELEC	0.120	0.113	0.124	0.154	0.125	0.176	0.172	0.183	0.070	0.150	0.098	0.086	0.154
	ELTN	0.206	0.174	0.198	0.217	0.163	0.240	0.212	0.198	0.085	0.248	0.159	0.166	0.237
	IND	0.057	0.096	0.058	0.048	0.062	0.096	0.083	0.078	0.065	0.084	0.100	0.106	0.103
	MNFG	0.230	0.220	0.232	0.271	0.237	0.305	0.287	0.291	0.133	0.305	0.192	0.191	0.300
	FIN	0.273	0.209	0.275	0.271	0.226	0.314	0.294	0.309	0.128	0.319	0.242	0.234	0.317
JAPAN	OS	0.090	0.091	0.086	0.098	0.096	0.148	0.096	0.104	0.057	0.115	0.069	0.092	0.106
	OT	0.174	0.127	0.172	0.128	0.132	0.169	0.121	0.140	0.073	0.212	0.145	0.153	0.208
	RET	0.012	-0.009	0.011	-0.035	0.010	-0.011	-0.024	-0.021	0.021	0.002	-0.009	0.030	0.004
	RL	0.151	0.129	0.153	0.174	0.166	0.200	0.197	0.201	0.106	0.223	0.165	0.154	0.218
	CS	0.071	0.096	0.069	0.097	0.090	0.104	0.089	0.099	0.056	0.074	0.066	0.080	0.077
	TEL	0.174	0.127	0.172	0.129	0.132	0.169	0.123	0.139	0.074	0.212	0.145	0.152	0.208
	OTRSP	0.227	0.170	0.226	0.155	0.170	0.217	0.192	0.199	0.109	0.223	0.201	0.219	0.239
	TRSP	0.209	0.185	0.208	0.158	0.156	0.213	0.170	0.180	0.106	0.208	0.197	0.210	0.224
	UT	0.207	0.148	0.196	0.228	0.163	0.252	0.154	0.180	0.201	0.256	0.152	0.183	0.240

Correlation Matrix CDS Spreads Returns		EU																					
		BNK	BEV	BLDG	BNKING	CAB	CG	CH	CGM	ELEC	ELTN	EN	LEI	MNFG	MT	FIN	OF	OG	OS	CS	TEL	TRSP	UT
	BNK	1																					
	BEV	0.330	1																				
	BLDG	-0.248	-0.343	1																			
	BNKING	0.801	0.347	-0.272	1																		
	CAB	0.261	0.328	-0.243	0.259	1																	
	CG	0.341	0.828	-0.337	0.353	0.460	1																
	CH	0.411	0.568	-0.390	0.435	0.434	0.595	1															
	CGM	0.325	0.457	-0.322	0.347	0.327	0.462	0.556	1														
	ELEC	0.309	0.377	-0.275	0.349	0.320	0.384	0.529	0.444	1													
	ELTN	0.411	0.499	-0.323	0.458	0.339	0.511	0.576	0.472	0.439	1												
EU	EN	0.433	0.555	-0.371	0.475	0.332	0.536	0.607	0.504	0.454	0.753	1											
	LEI	0.326	0.386	-0.276	0.329	0.410	0.441	0.491	0.416	0.373	0.405	0.445	1										
	MNFG	0.395	0.501	-0.374	0.422	0.365	0.494	0.665	0.595	0.576	0.565	0.612	0.452	1									
	MT	0.298	0.410	-0.347	0.331	0.281	0.398	0.498	0.397	0.387	0.455	0.490	0.349	0.507	1								
	FIN	0.396	0.384	-0.319	0.375	0.346	0.422	0.510	0.436	0.405	0.481	0.521	0.410	0.486	0.373	1							
	OF	0.416	0.433	-0.353	0.419	0.383	0.484	0.561	0.475	0.437	0.512	0.549	0.437	0.521	0.418	0.802	1						
	OG	0.390	0.535	-0.332	0.413	0.292	0.496	0.560	0.458	0.388	0.650	0.862	0.404	0.540	0.434	0.466	0.502	1					
	OS	0.219	0.369	-0.252	0.293	0.295	0.410	0.429	0.323	0.346	0.409	0.412	0.334	0.406	0.335	0.320	0.357	0.353	1				
	CS	0.349	0.483	-0.342	0.396	0.517	0.541	0.582	0.483	0.452	0.533	0.534	0.633	0.544	0.432	0.429	0.490	0.474	0.649	1			
	TEL	0.284	0.334	-0.247	0.310	0.148	0.277	0.370	0.355	0.345	0.425	0.460	0.293	0.412	0.267	0.333	0.382	0.407	0.234	0.351	1		
	TRSP	0.327	0.435	-0.296	0.354	0.298	0.406	0.489	0.397	0.364	0.454	0.487	0.368	0.472	0.346	0.394	0.423	0.475	0.325	0.437	0.315	1	
	UT	0.161	0.210	-0.112	0.178	0.177	0.244	0.232	0.198	0.174	0.557	0.286	0.172	0.223	0.205	0.206	0.216	0.237	0.198	0.240	0.146	0.196	1
	BNK	0.194	0.253	-0.348	0.209	0.191	0.269	0.315	0.292	0.252	0.280	0.292	0.223	0.297	0.260	0.244	0.236	0.250	0.153	0.242	0.194	0.232	0.107
	BNKING	0.181	0.239	-0.336	0.197	0.181	0.257	0.296	0.271	0.233	0.263	0.268	0.214	0.275	0.238	0.234	0.226	0.250	0.147	0.230	0.184	0.234	0.096
	CH	0.104	0.115	-0.100	0.137	0.057	0.138	0.141	0.141	0.102	0.108	0.112	0.144	0.141	0.094	0.072	0.098	0.097	0.045	0.103	0.099	0.070	0.021
	ELEC	0.135	0.114	-0.159	0.148	0.058	0.123	0.185	0.145	0.167	0.103	0.133	0.118	0.168	0.103	0.140	0.145	0.105	0.205	0.175	0.129	0.102	0.020
	ELTN	0.180	0.153	-0.257	0.203	0.108	0.201	0.212	0.189	0.178	0.219	0.195	0.168	0.210	0.183	0.179	0.205	0.173	0.237	0.220	0.162	0.137	0.056
	IND	0.047	0.106	-0.098	0.053	0.052	0.092	0.088	0.067	0.062	0.059	0.097	0.042	0.094	0.078	0.038	0.044	0.086	0.081	0.067	0.071	0.039	0.009
	MNFG	0.223	0.216	-0.281	0.243	0.143	0.221	0.303	0.238	0.263	0.235	0.261	0.190	0.285	0.223	0.213	0.245	0.205	0.291	0.266	0.207	0.203	0.055
	FIN	0.220	0.229	-0.326	0.239	0.173	0.262	0.308	0.280	0.256	0.274	0.316	0.220	0.321	0.237	0.254	0.263	0.239	0.129	0.227	0.204	0.237	0.095
JAPAN	OS	0.088	0.098	-0.088	0.152	0.060	0.104	0.107	0.100	0.094	0.095	0.097	0.069	0.097	0.053	0.081	0.077	0.088	0.098	0.104	0.063	0.101	0.019
	OT	0.139	0.128	-0.209	0.127	0.065	0.129	0.158	0.146	0.124	0.187	0.204	0.101	0.170	0.154	0.126	0.112	0.160	0.054	0.108	0.106	0.155	0.062
	RET	0.014	0.025	-0.003	-0.011	-0.014	-0.006	-0.004	-0.002	0.014	0.006	0.019	0.000	0.024	0.029	0.005	0.026	0.019	0.032	0.012	0.016	0.004	-0.012
	RL	0.161	0.127	-0.162	0.158	0.100	0.164	0.206	0.178	0.191	0.187	0.197	0.171	0.180	0.150	0.145	0.151	0.132	-0.005	0.110	0.136	0.125	0.064
	CS	0.090	0.094	-0.079	0.091	0.034	0.082	0.084	0.072	0.105	0.064	0.077	0.065	0.082	0.053	0.080	0.072	0.062	0.062	0.056	0.068	0.098	-0.007
	TEL	0.139	0.128	-0.208	0.127	0.065	0.129	0.157	0.146	0.123	0.187	0.204	0.101	0.169	0.153	0.125	0.112	0.160	0.054	0.108	0.106	0.156	0.061
	OTRSP	0.152	0.154	-0.224	0.168	0.132	0.182	0.241	0.226	0.171	0.184	0.205	0.176	0.188	0.152	0.206	0.211	0.174	0.145	0.202	0.145	0.185	0.058
	TRSP	0.153	0.152	-0.219	0.160	0.125	0.175	0.211	0.208	0.147	0.171	0.197	0.173	0.166	0.142	0.191	0.193	0.179	0.127	0.189	0.130	0.187	0.053
	UT	0.188	0.163	-0.263	0.211	0.108	0.193	0.208	0.176	0.177	0.219	0.182	0.092	0.220	0.159	0.139	0.191	0.161	0.248	0.215	0.145	0.144	0.066

Correlation Matrix CDS Spreads Returns		JAPAN																
		BNK	BNKING	CH	ELEC	ELTN	IND	MNFG	FIN	OS	OT	RET	RL	CS	TEL	OTRSP	TRSP	UT
	BNK	1																
	BNKING	0.969	1															
	CH	0.123	0.121	1														
	ELEC	0.176	0.148	0.167	1													
	ELTN	0.334	0.317	0.164	0.214	1												
	IND	0.110	0.098	0.082	0.022	0.094	1											
	MNFG	0.363	0.333	0.256	0.650	0.376	0.296	1										
	FIN	0.424	0.400	0.150	0.255	0.342	0.075	0.462	1									
JAPAN	OS	0.122	0.109	0.138	0.094	0.064	-0.021	0.136	0.070	1								
	OT	0.223	0.204	0.114	0.123	0.218	0.016	0.210	0.260	0.080	1							
	RET	-0.011	-0.014	-0.079	-0.057	-0.030	0.059	-0.021	-0.014	0.142	-0.016	1						
	RL	0.215	0.191	0.140	0.139	0.177	0.084	0.250	0.328	0.085	0.181	-0.029	1					
	CS	0.045	0.036	0.060	0.111	0.038	0.027	0.169	0.131	0.347	0.033	0.536	0.067	1				
	TEL	0.223	0.205	0.114	0.122	0.219	0.016	0.211	0.262	0.080	1.000	-0.016	0.181	0.033	1			
	OTRSP	0.276	0.268	0.084	0.165	0.248	0.096	0.236	0.298	0.051	0.140	0.051	0.326	0.097	0.140	1		
	TRSP	0.268	0.260	0.100	0.151	0.244	0.100	0.226	0.279	0.047	0.133	0.052	0.307	0.095	0.133	0.964	1	
	UT	0.333	0.314	0.194	0.209	0.764	0.090	0.351	0.320	0.068	0.227	-0.044	0.157	0.016	0.227	0.245	0.241	1

Table 30: CDS Spreads Regional Correlation - Full Sample

Correlation Matrix CDS Spreads Returns		US																										
		BNK	BEV	BLDG	BNKING	CAB	CG	CH	CGM	ELEC	ELTN	EN	IND	LEI	MNFG	MT	FIN	OF	OG	OS	OT	RET	RL	CS	TEL	TRSP	OTRSP	UT
US	BNK	1																										
	BEV	0.346	1																									
	BLDG	-0.343	-0.239	1																								
	BNKING	1.000	0.346	-0.343	1																							
	CAB	0.410	0.291	-0.220	0.410	1																						
	CG	0.357	0.386	-0.169	0.357	0.341	1																					
	CH	0.438	0.385	-0.230	0.438	0.470	0.469	1																				
	CGM	0.336	0.298	-0.204	0.336	0.281	0.232	0.318	1																			
	ELEC	0.480	0.401	-0.202	0.480	0.462	0.453	0.527	0.397	1																		
	ELTN	0.374	0.264	-0.167	0.374	0.325	0.250	0.355	0.302	0.375	1																	
	EN	0.453	0.415	-0.193	0.453	0.396	0.480	0.540	0.370	0.515	0.469	1																
	IND	0.270	0.200	-0.157	0.270	0.253	0.212	0.309	0.160	0.274	0.179	0.299	1															
	LEI	0.279	0.290	-0.206	0.279	0.303	0.291	0.327	0.321	0.388	0.279	0.348	0.193	1														
	MNFG	0.526	0.478	-0.313	0.526	0.495	0.491	0.681	0.572	0.666	0.446	0.658	0.351	0.432	1													
	MT	0.348	0.397	-0.180	0.348	0.344	0.425	0.459	0.382	0.451	0.372	0.500	0.212	0.309	0.666	1												
	FIN	0.264	0.198	-0.158	0.264	0.229	0.224	0.297	0.169	0.265	0.173	0.259	0.118	0.157	0.293	0.203	1											
	OF	0.264	0.198	-0.158	0.264	0.229	0.224	0.297	0.169	0.265	0.173	0.259	0.118	0.157	0.293	0.203	1.000	1										
	OG	0.371	0.349	-0.174	0.371	0.290	0.302	0.397	0.284	0.375	0.314	0.583	0.223	0.250	0.415	0.337	0.173	0.173	1									
	OS	0.449	0.391	-0.260	0.449	0.455	0.465	0.523	0.439	0.555	0.332	0.506	0.293	0.433	0.651	0.551	0.279	0.279	0.448	1								
	OT	0.384	0.263	-0.230	0.384	0.397	0.310	0.478	0.278	0.422	0.270	0.352	0.258	0.256	0.405	0.229	0.152	0.152	0.297	0.394	1							
	RET	0.276	0.200	-0.161	0.276	0.258	0.156	0.273	0.220	0.248	0.149	0.239	0.152	0.184	0.311	0.235	0.121	0.121	0.221	0.302	0.199	1						
	RL	0.483	0.423	-0.277	0.483	0.431	0.390	0.546	0.368	0.490	0.326	0.485	0.291	0.352	0.575	0.453	0.229	0.229	0.379	0.477	0.409	0.280	1					
	CS	0.542	0.443	-0.315	0.542	0.705	0.473	0.585	0.435	0.602	0.423	0.528	0.315	0.529	0.692	0.522	0.279	0.279	0.446	0.730	0.486	0.419	0.551	1				
	TEL	0.404	0.285	-0.256	0.404	0.425	0.291	0.444	0.336	0.446	0.332	0.383	0.239	0.318	0.421	0.290	0.171	0.171	0.329	0.446	0.900	0.217	0.433	0.537	1			
	TRSP	0.131	0.086	-0.094	0.131	0.136	0.154	0.184	0.127	0.147	0.066	0.161	0.077	0.089	0.171	0.150	0.106	0.106	0.109	0.172	0.122	0.090	0.196	0.164	0.136	1		
	OTRSP	0.085	0.129	-0.064	0.085	0.062	0.084	0.042	0.139	0.071	0.093	0.126	0.019	0.045	0.121	0.179	0.080	0.080	0.075	0.113	0.002	0.025	0.130	0.093	0.079	0.574	1	
	UT	0.341	0.272	-0.179	0.341	0.329	0.268	0.339	0.302	0.362	0.822	0.491	0.163	0.286	0.468	0.380	0.193	0.193	0.331	0.382	0.213	0.159	0.310	0.408	0.275	0.108	0.116	1
UK	BNK	0.565	0.304	-0.212	0.565	0.339	0.292	0.400	0.301	0.395	0.363	0.366	0.209	0.272	0.431	0.322	0.230	0.230	0.279	0.380	0.304	0.170	0.418	0.440	0.340	0.098	0.060	0.286
	BEV	0.397	0.356	-0.219	0.397	0.315	0.270	0.326	0.306	0.369	0.254	0.332	0.178	0.277	0.406	0.346	0.188	0.188	0.289	0.427	0.267	0.244	0.367	0.466	0.283	0.112	0.074	0.271
	BNKING	0.554	0.306	-0.217	0.554	0.323	0.281	0.383	0.309	0.386	0.359	0.358	0.201	0.265	0.422	0.324	0.220	0.220	0.273	0.376	0.291	0.168	0.412	0.431	0.336	0.090	0.069	0.274
	CG	0.426	0.390	-0.273	0.426	0.325	0.228	0.381	0.339	0.442	0.323	0.409	0.201	0.327	0.475	0.357	0.139	0.139	0.337	0.449	0.352	0.233	0.400	0.501	0.370	0.137	0.117	0.298
	ELEC	0.374	0.259	-0.190	0.374	0.315	0.286	0.370	0.281	0.388	0.308	0.342	0.171	0.232	0.380	0.302	0.170	0.170	0.267	0.414	0.333	0.162	0.382	0.404	0.376	0.144	0.131	0.236
	MNFG	0.412	0.412	-0.221	0.412	0.378	0.344	0.456	0.351	0.453	0.311	0.421	0.246	0.321	0.499	0.401	0.204	0.204	0.367	0.501	0.382	0.242	0.450	0.556	0.407	0.149	0.118	0.310
	FIN	0.444	0.362	-0.229	0.444	0.423	0.369	0.516	0.356	0.473	0.398	0.492	0.218	0.359	0.536	0.389	0.202	0.202	0.314	0.446	0.368	0.263	0.514	0.554	0.403	0.133	0.074	0.328
	OF	0.447	0.396	-0.208	0.447	0.365	0.400	0.507	0.361	0.476	0.405	0.530	0.225	0.360	0.570	0.448	0.217	0.217	0.341	0.458	0.368	0.276	0.483	0.552	0.381	0.130	0.078	0.358
	OS	0.263	0.216	-0.161	0.263	0.292	0.196	0.298	0.191	0.305	0.215	0.246	0.149	0.207	0.310	0.261	0.123	0.123	0.200	0.306	0.226	0.141	0.326	0.377	0.261	0.105	0.063	0.183
	OT	0.477	0.405	-0.248	0.477	0.404	0.374	0.433	0.330	0.464	0.371	0.445	0.241	0.320	0.513	0.419	0.205	0.205	0.366	0.514	0.403	0.251	0.468	0.549	0.428	0.156	0.125	0.326
	RET	0.502	0.366	-0.309	0.502	0.361	0.381	0.439	0.340	0.458	0.309	0.431	0.234	0.328	0.487	0.388	0.214	0.214	0.317	0.459	0.361	0.202	0.447	0.535	0.392	0.147	0.126	0.292
	CS	0.450	0.320	-0.239	0.450	0.400	0.468	0.416	0.293	0.428	0.287	0.445	0.206	0.283	0.447	0.390	0.289	0.289	0.298	0.491	0.311	0.234	0.426	0.540	0.370	0.176	0.142	0.297
	TEL	0.475	0.404	-0.247	0.475	0.402	0.373	0.432	0.327	0.462	0.372	0.444	0.240	0.319	0.512	0.417	0.200	0.200	0.365	0.513	0.402	0.247	0.467	0.549	0.427	0.155	0.135	0.324
EU	BNK	0.402	0.292	-0.185	0.402	0.317	0.241	0.342	0.267	0.337	0.280	0.306	0.174	0.222	0.385	0.264	0.208	0.208	0.256	0.355	0.291	0.171	0.371	0.410	0.342	0.069	0.082	0.271
	BEV	0.451	0.388	-0.257	0.451	0.330	0.354	0.438	0.336	0.421	0.294	0.419	0.215	0.289	0.482	0.415	0.229	0.229	0.313	0.464	0.328	0.269	0.431	0.515	0.347	0.110	0.066	0.298
	BLDG	-0.300	-0.254	0.205	-0.300	-0.262	-0.228	-0.293	-0.249	-0.280	-0.229	-0.336	-0.153	-0.219	-0.375	-0.299	-0.161	-0.161	-0.245	-0.328	-0.252	-0.194	-0.299	-0.362	-0.260	-0.085	-0.072	-0.193
	BNKING	0.458	0.299	-0.183	0.458	0.325	0.274	0.374	0.285	0.362	0.309	0.357	0.193	0.260	0.397	0.291	0.251	0.251	0.235	0.358	0.289	0.186	0.407	0.421	0.320	0.056	0.054	0.245
	CAB	0.379	0.330	-0.203	0.379	0.309	0.330	0.395	0.301	0.387	0.283	0.398	0.190	0.272	0.437	0.337	0.159	0.159	0.286	0.397	0.338	0.168	0.401	0.452	0.358	0.120	0.104	0.268
	CG	0.462	0.412	-0.272	0.462	0.358	0.379	0.445	0.349	0.433	0.312	0.440	0.216	0.315	0.486	0.414	0.223	0.223	0.352	0.503	0.365	0.271	0.447	0.545	0.389	0.134	0.105	0.315
	CH	0.462	0.416	-0.231	0.462	0.410	0.405	0.493	0.376	0.513	0.389	0.540	0.226	0.316	0.606	0.495	0.262	0.262	0.324	0.490	0.382	0.260	0.476	0.579	0.405	0.151	0.085	0.375
	CGM	0.348	0.298	-0.216	0.348	0.265	0.290	0.306	0.275	0.396	0.267	0.320	0.172	0.278	0.365	0.318	0.157	0.157	0.269	0.401	0.325	0.199	0.376	0.419	0.352	0.131	0.070	0.253
	ELEC	0.382	0.298	-0.146	0.382	0.359	0.314	0.438	0.330	0.441	0.356	0.447	0.221	0.267	0.456	0.379	0.180	0.180	0.321	0.401	0.387	0.202	0.432	0.466	0.398	0.131	0.112	0.288
	ELTN	0.476	0.329	-0.239	0.476	0.379	0.327	0.428	0.287	0.449	0.343	0.424	0.220	0.285	0.440	0.363	0.204	0.204	0.290	0.412	0.373	0.204	0.438	0.481	0.411	0.141	0.133	0.286
	EN	0.481	0.381	-0.244	0.481	0.355	0.369	0.426	0.319	0.455	0.345	0.440	0.214	0.294	0.493	0.420	0.225	0.225	0.315	0.473	0.361	0.207	0.424	0.506	0.397	0.141	0.131	0.293
	LEI	0.324	0.257	-0.148	0.324	0.294	0.281	0.353	0.255	0.343	0.263	0.383	0.161	0.283	0.406	0.336	0.189	0.189	0.254	0.393	0.275	0.215	0.316	0.438	0.297	0.093	0.035	0.257
	MNFG	0.525	0.448	-0.280	0.525	0.473	0.435	0.535	0.386	0.570	0.429	0.555	0.266	0.378	0.609	0.506	0.280	0.280	0.406	0.569	0.449	0.282	0.534	0.646	0.482	0.165	0.115	0.396
	MT	0.374	0.334	-0.233	0.374	0.326	0.267	0.376	0.259	0.390	0.295	0.396	0.173	0.246	0.415	0.379	0.175	0.175	0.275	0.418	0.340	0.240	0.346	0.443	0.365	0.103	0.097	0.276
	FIN	0.462	0.320	-0.214	0.462	0.392	0.392	0.390	0.238	0.432	0.361	0.424	0.219	0.285	0.431	0.389	0.202	0.202	0.330	0.441	0.368	0.246	0.445	0.507	0.387	0.150	0.098	0.316
	OF	0.504	0.380	-0.223	0.504	0.417	0.356	0.497	0.337	0.485	0.404	0.498	0.248	0.332	0.502	0.427	0.202	0.202	0.371	0.482	0.421	0.290	0.511	0.560	0.437	0.155	0.089	0.336
	OG	0.437	0.336	-0.224	0.437	0.328	0.330	0.365	0.284	0.420	0.273	0.419	0.204	0.280	0.434	0.355	0.229	0.229	0.350	0.422	0.314	0.211	0.411	0.477	0.337	0.149	0.105	0.284
	OS	0.330	0.218	-0.166	0.330	0.295	0.301	0.448	0.119	0.289	0.193	0.289	0.202	0.253	0.310	0.179	0.162	0.162	0.227	0.318	0.412	0.197	0.327	0.376	0.291	0.066	-0.178	0.088
	CS	0.447	0.339	-0.246	0.447	0.361	0.369	0.498	0.262	0.441	0.300	0.450	0.224	0.335	0.468	0.335	0.259	0.259	0.307	0.412	0.408	0.256	0.430	0.475	0.376	0.118	-0.005	0.259
	TEL	0.324	0.231	-0.157	0.324	0.259	0.210	0.252	0.234	0.319	0.262	0.323	0.147	0.197	0.280	0.305	0.111	0.111	0.248	0.268	0.232	0.136	0.285	0.345	0.310	0.152	0.154	0.213
	TRSP	0.406	0.345	-0.136	0.406	0.327	0.386	0.438	0.303	0.440	0.326	0.418	0.220	0.298	0.469	0.413	0.241	0.241	0.318	0.463	0.348	0.219	0.443	0.495	0.365	0.065	0.092	0.297
	UT	0.440	0.299	-0.223	0.440	0.363	0.307	0.414	0.251	0.429	0.307	0.390	0.218	0.265	0.399	0.326	0.188	0.188	0.276	0.384	0.390	0.199	0.405	0.452	0.401	0.136	0.100	0.259
JAPAN	BNK	0.311	0.250	-0.077	0.311	0.247	0.260	0.269	0.278	0.280	0.260	0.362	0.153	0.173	0.342	0.307	0.174	0.174	0.288	0.362	0.210	0.150	0.254	0.337	0.254	0.086	0.140	0.255
	BNKING	0.318	0.214	-0.065	0.318	0.249	0.257	0.262	0.274	0.275	0.270	0.376	0.154	0.173	0.336	0.284	0.172	0.172	0.304	0.342	0.203	0.158	0.258	0.338	0.250	0.087	0.126	0.263
	CH	0.153	0.111	-0.051	0.153	0.120	0.073	0.152	0.106	0.141	0.130	0.145	0.054	0.110	0.174	0.131	0.041	0.041	0.082	0.165	0.120	0.050	0.137	0.160	0.123	0.070	0.012	0.093
	ELEC	0.127	0.157	-0.058	0.127	0.098	0.125	0.162	0.133	0.178	0.172	0.203	0.125	0.184	0.184	0.118	-0.002	-0.002	0.138	0.155	0.256	0.105	0.140	0.133	0.210	0.016	-0.067	0.106
	ELTN	0.243	0.150	-0.090	0.243	0.225	0.127	0.292	0.150	0.213	0.189	0.206	0.133	0.125	0.191	0.133	0.095	0.095	0.229	0.227	0.236	0.134	0.216	0.281	0.210	0.046	-0.042	0.132
	IND	0.111	0.126	-0.027	0.111	0.135	0.112	0.159	0.116	0.142	0.095	0.181	0.131	0.099	0.180	0.129	0.087	0.087	0.192	0.169	0.143	0.065	0.117	0.183	0.150	0.051	0.000	0.081
	MNFG	0.228	0.244	-0.082	0.228	0.188	0.164	0.303	0.209	0.267	0.232	0.282	0.162	0.211	0.291	0.198	0.046	0.046	0.253	0.283	0.322	0.146	0.239	0.284	0.300	0.041	-0.045	0.138
	FIN	0.297	0.272	-0.095	0.297	0.147	0.159	0.240	0.287	0.242	0.240	0.276	0.107	0.185	0.306	0.284	0.094	0.094	0.249	0.306	0.190	0.112	0.258	0.292	0.265	0.067	0.120	0.195
	OS	0.168	0.170	-0.125	0.168	0.217	0.124	0.203	0.140	0.163	0.148	0.142	0.133	0.178	0.202	0.164	0.054	0.054	0.163	0.180	0.211	0.102	0.200	0.232	0.213	0.048	0.025	0.098
	OT	0.257	0.244	-0.138	0.257	0.204	0.114	0.261	0.158	0.202	0.197	0.230	0.125	0.095	0.273	0.230	0.076	0.076	0.218	0.284	0.157	0.117	0.235	0.281	0.212	0.107	0.116	0.172
	RET	-0.047	0.024	0.008	-0.047	0.054	0.082	0.075	0.072	0.048	0.040	0.077	-0.002	0.116	0.086	0.115	0.025	0.025	0.023	0.124	0.020	-0.096	0.081	0.061	0.055	0.037	0.012	0.052
	RL	0.111	0.186	-0.058	0.111	0.106	0.064	0.102	0.226	0.151	0.174	0.126	0.048	0.112	0.231	0.242	0.038	0.038	0.093	0.201	0.110	0.054	0.117	0.179	0.192	0.039	0.108	0.147
	CS	0.127	0.188	-0.081	0.127	0.210	0.216	0.240	0.197	0.209	0.142	0.185	0.140	0.217	0.265	0.298	0.035	0.035	0.180	0.256	0.194	0.063	0.255	0.257	0.207	0.094	0.053	0.106
	TEL	0.257	0.244	-0.138	0.257	0.203	0.114	0.260	0.158	0.201	0.198	0.230	0.125	0.096	0.274	0.229	0.069	0.069	0.217	0.283	0.158	0.118	0.236	0.280	0.213	0.106	0.114	0.173
	OTRSP	0.270	0.256	-0.058	0.270	0.202	0.194	0.247	0.257	0.247	0.225	0.269	0.137	0.165	0.297	0.275	0.109	0.109	0.238	0.252	0.221	0.194	0.278	0.292	0.261	0.073	0.096	0.165
	TRSP	0.248	0.264	-0.027	0.248	0.215	0.191	0.266	0.242	0.248	0.203	0.257	0.137	0.188	0.295	0.268	0.107	0.107	0.260	0.270	0.189	0.201	0.258	0.296	0.225	0.092	0.097	0.176
	UT	0.237	0.136	-0.089	0.237	0.218	0.126	0.310	0.145	0.198	0.167	0.192	0.120	0.114	0.183	0.115	0.124	0.124	0.221	0.225	0.244	0.147	0.203	0.268	0.204	0.050	-0.046	0.117

Correlation Matrix CDS Spreads Returns		UK												
		BNK	BEV	BNKING	CG	ELEC	MNFG	FIN	OF	OS	OT	RET	CS	TEL
UK	BNK	1												
	BEV	0.476	1											
	BNKING	0.986	0.473	1										
	CG	0.525	0.762	0.523	1									
	ELEC	0.502	0.439	0.496	0.538	1								
	MNFG	0.513	0.536	0.504	0.594	0.541	1							
	FIN	0.602	0.499	0.598	0.569	0.499	0.577	1						
	OF	0.602	0.537	0.594	0.602	0.495	0.607	0.902	1					
	OS	0.367	0.335	0.363	0.363	0.323	0.376	0.375	0.360	1				
	OT	0.623	0.527	0.611	0.609	0.613	0.615	0.593	0.623	0.362	1			
	RET	0.618	0.597	0.613	0.677	0.565	0.623	0.607	0.639	0.436	0.653	1		
	CS	0.559	0.513	0.554	0.446	0.540	0.585	0.528	0.541	0.559	0.594	0.724	1	
	TEL	0.622	0.526	0.611	0.610	0.615	0.615	0.593	0.622	0.361	0.999	0.654	0.593	1
EU	BNK	0.607	0.374	0.591	0.461	0.432	0.477	0.476	0.461	0.320	0.506	0.469	0.395	0.505
	BEV	0.525	0.648	0.516	0.685	0.506	0.597	0.554	0.606	0.385	0.591	0.659	0.581	0.590
	BLDG	-0.379	-0.294	-0.382	-0.379	-0.311	-0.387	-0.399	-0.423	-0.193	-0.414	-0.379	-0.330	-0.414
	BNKING	0.668	0.405	0.679	0.476	0.461	0.468	0.555	0.532	0.322	0.529	0.511	0.432	0.528
	CAB	0.504	0.467	0.497	0.537	0.526	0.545	0.547	0.581	0.325	0.667	0.593	0.529	0.667
	CG	0.538	0.656	0.532	0.703	0.556	0.645	0.592	0.644	0.402	0.628	0.707	0.634	0.628
	CH	0.604	0.565	0.595	0.621	0.483	0.668	0.676	0.715	0.397	0.666	0.656	0.611	0.664
	CGM	0.467	0.451	0.459	0.497	0.415	0.515	0.488	0.526	0.278	0.561	0.517	0.450	0.560
	ELEC	0.498	0.396	0.489	0.460	0.436	0.482	0.547	0.569	0.323	0.563	0.480	0.458	0.562
	ELTN	0.658	0.517	0.650	0.608	0.633	0.584	0.601	0.606	0.362	0.661	0.685	0.592	0.661
	EN	0.675	0.547	0.667	0.640	0.636	0.616	0.612	0.631	0.377	0.703	0.707	0.626	0.703
	LEI	0.409	0.375	0.398	0.428	0.358	0.453	0.475	0.503	0.251	0.515	0.446	0.424	0.514
	MNFG	0.667	0.602	0.655	0.694	0.577	0.728	0.711	0.753	0.426	0.757	0.722	0.653	0.757
	MT	0.452	0.434	0.457	0.513	0.427	0.542	0.488	0.524	0.253	0.506	0.506	0.424	0.506
	FIN	0.557	0.464	0.541	0.495	0.501	0.522	0.576	0.583	0.339	0.630	0.555	0.570	0.628
	OF	0.665	0.526	0.661	0.615	0.575	0.662	0.670	0.673	0.365	0.691	0.623	0.577	0.690
	OG	0.592	0.559	0.581	0.597	0.515	0.578	0.545	0.563	0.367	0.592	0.668	0.579	0.590
	OS	0.395	0.330	0.390	0.354	0.366	0.402	0.445	0.473	0.264	0.428	0.452	0.388	0.427
	CS	0.571	0.476	0.550	0.545	0.504	0.551	0.610	0.644	0.334	0.615	0.627	0.535	0.613
	TEL	0.421	0.296	0.423	0.354	0.368	0.398	0.389	0.393	0.228	0.462	0.409	0.402	0.463
	TRSP	0.534	0.453	0.525	0.490	0.457	0.563	0.527	0.567	0.317	0.532	0.573	0.529	0.531
	UT	0.604	0.479	0.594	0.568	0.600	0.557	0.562	0.570	0.334	0.623	0.634	0.545	0.621
JAPAN	BNK	0.319	0.308	0.318	0.292	0.340	0.381	0.305	0.332	0.223	0.401	0.326	0.413	0.400
	BNKING	0.313	0.296	0.312	0.277	0.328	0.364	0.302	0.326	0.224	0.378	0.325	0.405	0.378
	CH	0.139	0.120	0.139	0.166	0.162	0.197	0.148	0.152	0.108	0.140	0.123	0.127	0.139
	ELEC	0.187	0.140	0.185	0.195	0.176	0.236	0.264	0.270	0.123	0.220	0.156	0.127	0.220
	ELTN	0.274	0.212	0.266	0.282	0.257	0.302	0.279	0.269	0.185	0.334	0.248	0.212	0.333
	IND	0.130	0.147	0.132	0.142	0.139	0.198	0.127	0.123	0.155	0.175	0.110	0.181	0.174
	MNFG	0.309	0.248	0.312	0.348	0.306	0.382	0.378	0.374	0.217	0.374	0.275	0.233	0.375
	FIN	0.334	0.236	0.341	0.310	0.320	0.355	0.362	0.379	0.190	0.391	0.321	0.279	0.391
	OS	0.197	0.169	0.189	0.200	0.211	0.257	0.243	0.243	0.166	0.234	0.192	0.179	0.233
	OT	0.283	0.183	0.284	0.260	0.288	0.293	0.210	0.218	0.166	0.321	0.284	0.222	0.321
	RET	0.044	0.094	0.042	0.051	0.061	0.072	0.054	0.041	0.088	0.056	0.052	0.062	0.055
	RL	0.185	0.137	0.189	0.201	0.229	0.220	0.231	0.239	0.150	0.285	0.205	0.168	0.286
	CS	0.192	0.223	0.187	0.221	0.228	0.288	0.294	0.303	0.200	0.243	0.235	0.212	0.243
	TEL	0.283	0.183	0.283	0.263	0.287	0.293	0.211	0.218	0.166	0.321	0.284	0.217	0.321
	OTRSP	0.332	0.217	0.334	0.226	0.289	0.333	0.347	0.353	0.221	0.365	0.295	0.301	0.364
	TRSP	0.305	0.251	0.307	0.239	0.266	0.332	0.311	0.325	0.219	0.340	0.293	0.290	0.338
	UT	0.255	0.191	0.242	0.242	0.245	0.294	0.244	0.239	0.169	0.312	0.229	0.213	0.309

Correlation Matrix CDS Spreads Returns		EU																					
		BNK	BEV	BLDG	BNKING	CAB	CG	CH	CGM	ELEC	ELTN	EN	LEI	MNFG	MT	FIN	OF	OG	OS	CS	TEL	TRSP	UT
EU	BNK	1																					
	BEV	0.436	1																				
	BLDG	-0.313	-0.374	1																			
	BNKING	0.724	0.465	-0.357	1																		
	CAB	0.424	0.524	-0.395	0.432	1																	
	CG	0.454	0.900	-0.409	0.472	0.548	1																
	CH	0.501	0.632	-0.426	0.532	0.626	0.656	1															
	CGM	0.359	0.481	-0.324	0.394	0.431	0.493	0.539	1														
	ELEC	0.355	0.456	-0.304	0.422	0.475	0.483	0.571	0.469	1													
	ELTN	0.512	0.570	-0.343	0.577	0.545	0.616	0.602	0.482	0.480	1												
	EN	0.533	0.625	-0.394	0.602	0.558	0.654	0.649	0.514	0.505	0.809	1											
	LEI	0.369	0.434	-0.261	0.375	0.449	0.432	0.513	0.370	0.417	0.443	0.478	1										
	MNFG	0.536	0.674	-0.447	0.585	0.646	0.703	0.835	0.726	0.730	0.697	0.738	0.558	1									
	MT	0.382	0.504	-0.395	0.437	0.437	0.506	0.555	0.428	0.448	0.515	0.542	0.357	0.663	1								
	FIN	0.510	0.514	-0.379	0.501	0.545	0.536	0.611	0.501	0.513	0.579	0.615	0.465	0.688	0.468	1							
	OF	0.552	0.598	-0.467	0.615	0.595	0.632	0.710	0.570	0.589	0.664	0.692	0.494	0.787	0.586	0.773	1						
	OG	0.490	0.602	-0.342	0.526	0.504	0.625	0.604	0.450	0.420	0.690	0.852	0.425	0.650	0.461	0.550	0.642	1					
	OS	0.249	0.411	-0.274	0.356	0.386	0.437	0.430	0.302	0.386	0.426	0.428	0.334	0.492	0.359	0.366	0.446	0.363	1				
	CS	0.412	0.577	-0.368	0.493	0.622	0.585	0.630	0.481	0.522	0.612	0.606	0.540	0.709	0.491	0.524	0.637	0.535	0.710	1			
	TEL	0.320	0.384	-0.277	0.371	0.351	0.395	0.425	0.353	0.374	0.486	0.488	0.323	0.494	0.323	0.403	0.483	0.415	0.293	0.454	1		
	TRSP	0.417	0.548	-0.340	0.461	0.506	0.558	0.583	0.424	0.437	0.543	0.563	0.414	0.622	0.429	0.516	0.585	0.560	0.350	0.521	0.338	1	
	UT	0.476	0.535	-0.314	0.535	0.507	0.577	0.558	0.459	0.456	0.981	0.757	0.419	0.654	0.486	0.557	0.627	0.638	0.438	0.590	0.465	0.508	1
JAPAN	BNK	0.286	0.334	-0.434	0.301	0.331	0.401	0.379	0.337	0.319	0.336	0.359	0.265	0.427	0.328	0.367	0.407	0.297	0.153	0.291	0.262	0.307	0.308
	BNKING	0.271	0.320	-0.426	0.291	0.306	0.389	0.360	0.314	0.300	0.316	0.325	0.250	0.404	0.301	0.355	0.392	0.299	0.148	0.274	0.248	0.312	0.290
	CH	0.141	0.163	-0.098	0.148	0.068	0.172	0.168	0.146	0.108	0.134	0.145	0.132	0.176	0.134	0.087	0.144	0.123	0.100	0.111	0.134	0.092	0.120
	ELEC	0.175	0.177	-0.208	0.166	0.183	0.200	0.266	0.211	0.232	0.159	0.194	0.172	0.275	0.187	0.216	0.254	0.157	0.338	0.304	0.168	0.132	0.168
	ELTN	0.276	0.227	-0.349	0.305	0.267	0.313	0.274	0.235	0.238	0.299	0.257	0.203	0.330	0.246	0.270	0.353	0.233	0.343	0.333	0.243	0.230	0.293
	IND	0.132	0.154	-0.181	0.120	0.122	0.169	0.162	0.115	0.134	0.112	0.131	0.094	0.178	0.168	0.149	0.168	0.106	0.123	0.105	0.125	0.129	0.108
	MNFG	0.290	0.286	-0.371	0.285	0.315	0.341	0.388	0.311	0.323	0.313	0.327	0.274	0.427	0.335	0.312	0.399	0.251	0.415	0.404	0.280	0.270	0.310
	FIN	0.297	0.281	-0.401	0.315	0.330	0.360	0.371	0.323	0.329	0.322	0.377	0.261	0.429	0.308	0.330	0.385	0.279	0.157	0.284	0.274	0.288	0.294
	OS	0.206	0.202	-0.205	0.213	0.175	0.231	0.219	0.175	0.170	0.194	0.190	0.155	0.249	0.193	0.206	0.231	0.173	0.193	0.206	0.169	0.243	0.190
	OT	0.286	0.234	-0.342	0.250	0.260	0.315	0.287	0.255	0.207	0.301	0.300	0.195	0.341	0.300	0.282	0.293	0.208	0.113	0.231	0.139	0.258	0.269
	RET	0.095	0.058	-0.046	0.106	0.070	0.051	0.074	0.070	0.038	0.061	0.043	0.064	0.073	0.069	0.066	0.065	0.025	0.081	0.065	0.018	0.060	0.050
	RL	0.206	0.165	-0.201	0.183	0.199	0.242	0.241	0.211	0.223	0.221	0.246	0.216	0.254	0.195	0.173	0.219	0.161	-0.017	0.128	0.163	0.140	0.199
	CS	0.210	0.240	-0.238	0.231	0.235	0.257	0.263	0.231	0.213	0.199	0.212	0.198	0.287	0.184	0.272	0.255	0.190	0.198	0.193	0.145	0.275	0.196
	TEL	0.286	0.234	-0.341	0.248	0.261	0.314	0.286	0.254	0.207	0.301	0.299	0.195	0.340	0.299	0.279	0.293	0.207	0.113	0.231	0.138	0.259	0.269
	OTRSP	0.256	0.261	-0.371	0.283	0.303	0.330	0.344	0.298	0.287	0.289	0.316	0.209	0.375	0.248	0.297	0.371	0.265	0.206	0.287	0.226	0.271	0.263
	TRSP	0.263	0.263	-0.371	0.269	0.287	0.321	0.294	0.268	0.244	0.270	0.307	0.207	0.335	0.232	0.268	0.332	0.281	0.176	0.263	0.200	0.281	0.246
	UT	0.267	0.213	-0.326	0.286	0.230	0.303	0.247	0.197	0.213	0.277	0.235	0.178	0.294	0.231	0.216	0.327	0.217	0.354	0.317	0.203	0.215	0.274

Correlation Matrix CDS Spreads Returns		JAPAN																
		BNK	BNKING	CH	ELEC	ELTN	IND	MNFG	FIN	OS	OT	RET	RL	CS	TEL	OTRSP	TRSP	UT
JAPAN	BNK	1																
	BNKING	0.969	1															
	CH	0.168	0.156	1														
	ELEC	0.302	0.268	0.163	1													
	ELTN	0.535	0.518	0.186	0.314	1												
	IND	0.267	0.251	0.307	0.135	0.199	1											
	MNFG	0.550	0.518	0.251	0.815	0.565	0.275	1										
	FIN	0.614	0.578	0.166	0.298	0.461	0.173	0.549	1									
	OS	0.240	0.230	0.291	0.277	0.220	0.336	0.344	0.233	1								
	OT	0.462	0.429	0.174	0.187	0.423	0.121	0.360	0.482	0.173	1							
	RET	0.076	0.066	0.105	0.063	0.019	0.115	0.078	0.058	0.094	0.075	1						
	RL	0.300	0.274	0.126	0.167	0.229	0.149	0.288	0.405	0.185	0.309	0.025	1					
	CS	0.246	0.237	0.191	0.207	0.136	0.264	0.303	0.274	0.727	0.109	0.339	0.164	1				
	TEL	0.461	0.430	0.173	0.185	0.426	0.120	0.363	0.484	0.171	0.999	0.075	0.309	0.109	1			
	OTRSP	0.590	0.583	0.102	0.291	0.483	0.193	0.486	0.577	0.259	0.428	0.045	0.451	0.270	0.426	1		
	TRSP	0.588	0.580	0.143	0.267	0.486	0.210	0.476	0.553	0.253	0.418	0.050	0.421	0.268	0.416	0.899	1	
	UT	0.487	0.470	0.193	0.285	0.960	0.194	0.510	0.403	0.210	0.417	0.006	0.195	0.094	0.417	0.463	0.466	1

Table 31: CDS Spreads Regional Correlation - Crisis Sample

Correlation Matrix CDS Spreads Returns		US																										
		BNK	BEV	BLDG	BNKING	CAB	CG	CH	CGM	ELEC	ELTN	EN	IND	LEI	MNFG	MT	FIN	OF	OG	OS	OT	RET	RL	CS	TEL	TRSP	OTRSP	UT
	BNK	1																										
	BEV	0.022	1																									
	BLDG	-0.320	-0.052	1																								
	BNKING	1.000	0.022	-0.320	1																							
	CAB	0.054	0.059	-0.070	0.054	1																						
	CG	0.200	0.084	-0.122	0.200	0.036	1																					
	CH	0.128	-0.029	-0.068	0.128	-0.004	0.066	1																				
	CGM	0.325	0.089	-0.199	0.325	0.074	0.182	0.064	1																			
	ELEC	0.157	0.035	-0.105	0.157	0.054	0.111	-0.007	0.160	1																		
	ELTN	0.043	0.090	-0.049	0.043	0.032	0.073	-0.023	0.123	0.005	1																	
	EN	0.082	0.031	-0.090	0.082	0.042	0.065	-0.012	0.088	0.110	0.090	1																
	IND	-0.016	-0.033	0.010	-0.016	0.024	0.023	-0.001	-0.010	-0.011	0.063	0.139	1															
	LEI	0.272	0.035	-0.188	0.272	0.070	0.144	0.110	0.262	0.124	0.053	0.072	0.024	1														
US	MNFG	0.379	0.039	-0.344	0.379	0.097	0.165	0.245	0.387	0.304	0.100	0.157	0.046	0.269	1													
	MT	0.314	0.037	-0.305	0.314	0.075	0.106	0.093	0.205	0.121	0.074	0.103	0.003	0.245	0.552	1												
	FIN	0.079	0.014	-0.070	0.079	0.013	0.014	0.028	0.099	0.059	0.053	0.029	0.031	0.075	0.106	0.073	1											
	OF	0.079	0.014	-0.070	0.079	0.013	0.014	0.028	0.099	0.059	0.053	0.029	0.031	0.075	0.106	0.073	1.000	1										
	OG	0.230	0.075	-0.231	0.230	0.113	0.165	0.081	0.243	0.089	0.174	0.158	0.021	0.233	0.346	0.284	0.050	0.050	1									
	OS	0.155	0.050	-0.097	0.155	0.060	0.139	-0.006	0.115	0.089	0.038	0.092	0.041	0.113	0.185	0.112	0.024	0.024	0.125	1								
	OT	0.186	0.055	-0.139	0.186	0.057	0.058	0.020	0.144	0.060	0.059	0.048	0.023	0.106	0.158	0.151	0.018	0.018	0.133	0.052	1							
	RET	0.110	-0.019	-0.064	0.110	0.018	0.079	-0.092	0.064	-0.006	0.012	-0.062	-0.071	0.071	0.071	0.096	0.021	0.021	0.135	0.073	0.056	1						
	RL	0.259	0.049	-0.156	0.259	0.071	0.166	0.062	0.236	0.117	0.080	0.073	0.089	0.182	0.234	0.161	0.087	0.087	0.191	0.166	0.122	0.054	1					
	CS	0.251	0.116	-0.190	0.251	0.317	0.156	-0.018	0.188	0.134	0.093	0.095	0.020	0.217	0.214	0.212	0.048	0.048	0.219	0.414	0.130	0.142	0.210	1				
	TEL	0.189	0.054	-0.138	0.189	0.057	0.060	0.020	0.146	0.060	0.059	0.054	0.025	0.109	0.157	0.150	0.016	0.016	0.130	0.051	0.999	0.055	0.125	0.130	1			
	TRSP	-0.008	0.002	-0.020	-0.008	0.087	-0.019	-0.024	0.106	0.033	0.097	0.022	0.018	0.088	0.041	0.020	0.008	0.008	0.137	0.061	-0.053	0.003	0.078	0.035	-0.053	1		
	OTRSP	-0.010	0.031	-0.036	-0.010	0.091	-0.021	-0.018	0.090	0.028	0.067	0.022	0.028	0.093	0.013	0.001	0.035	0.035	0.134	0.032	-0.066	-0.006	0.114	0.013	-0.065	0.684	1	
	UT	0.093	0.084	-0.044	0.093	0.025	0.041	0.033	0.124	0.018	0.633	0.039	0.031	0.066	0.079	0.054	0.068	0.068	0.102	0.050	0.042	-0.029	0.116	0.066	0.044	0.054	0.058	1
	BNK	0.362	0.021	-0.233	0.362	0.053	0.129	0.121	0.281	0.074	0.043	0.067	0.011	0.190	0.301	0.263	0.045	0.045	0.207	0.058	0.148	0.041	0.227	0.173	0.149	-0.001	-0.033	0.055
	BEV	0.356	0.080	-0.185	0.356	0.117	0.179	0.117	0.320	0.137	0.062	0.085	-0.003	0.210	0.342	0.197	0.043	0.043	0.193	0.142	0.110	0.063	0.309	0.221	0.110	0.001	-0.004	0.087
	BNKING	0.354	0.056	-0.228	0.354	0.054	0.126	0.096	0.293	0.079	0.039	0.061	0.036	0.180	0.301	0.262	0.031	0.031	0.202	0.060	0.144	0.038	0.230	0.183	0.144	0.000	-0.032	0.059
	CG	0.318	0.007	-0.165	0.318	0.058	0.148	0.075	0.226	0.127	0.047	0.096	-0.018	0.141	0.299	0.228	0.088	0.088	0.149	0.085	0.125	0.206	0.192	0.185	0.126	-0.043	-0.053	0.020
	ELEC	0.128	0.009	-0.048	0.128	0.067	0.018	0.036	0.087	0.058	0.004	-0.037	-0.022	0.098	0.113	0.099	0.021	0.021	0.103	0.025	0.051	0.019	0.048	0.027	0.049	0.002	0.000	0.075
	MNFG	0.243	0.068	-0.143	0.243	0.101	0.104	0.054	0.235	0.097	0.126	0.089	-0.008	0.194	0.278	0.242	0.095	0.095	0.264	0.102	0.140	0.215	0.239	0.200	0.141	-0.007	-0.032	0.079
UK	FIN	0.284	0.029	-0.141	0.284	0.061	0.103	0.057	0.222	0.187	0.107	0.109	0.027	0.140	0.330	0.188	0.059	0.059	0.162	0.137	0.066	0.078	0.173	0.211	0.062	-0.013	0.006	0.077
	OF	0.331	0.027	-0.177	0.331	0.069	0.168	0.073	0.273	0.183	0.116	0.149	0.051	0.192	0.350	0.250	0.085	0.085	0.176	0.143	0.125	0.071	0.230	0.259	0.126	-0.015	0.021	0.105
	OS	0.117	0.065	-0.036	0.117	0.009	0.019	0.026	0.041	0.000	-0.005	0.003	0.014	0.046	0.080	0.081	-0.013	-0.013	0.058	0.039	0.339	0.011	0.050	0.032	0.337	0.017	0.019	0.026
	OT	0.508	0.037	-0.246	0.508	0.088	0.193	0.134	0.323	0.127	0.102	0.105	-0.011	0.295	0.398	0.331	0.040	0.040	0.288	0.210	0.166	0.210	0.308	0.283	0.168	0.014	-0.011	0.109
	RET	0.286	0.074	-0.175	0.286	0.077	0.083	0.160	0.263	0.121	0.118	0.097	0.017	0.159	0.268	0.143	0.060	0.060	0.165	0.086	0.124	-0.498	0.204	0.146	0.123	0.030	0.030	0.119
	CS	0.402	0.059	-0.224	0.402	0.086	0.089	0.153	0.358	0.115	0.128	0.075	0.014	0.220	0.361	0.220	0.089	0.089	0.270	0.108	0.194	-0.090	0.223	0.179	0.192	0.040	0.031	0.121
	TEL	0.502	0.036	-0.254	0.502	0.087	0.181	0.140	0.339	0.145	0.100	0.103	-0.015	0.281	0.413	0.329	0.035	0.035	0.317	0.189	0.185	0.112	0.330	0.269	0.187	0.015	-0.013	0.129
	BNK	0.192	0.050	-0.141	0.192	0.014	0.091	0.071	0.136	0.010	0.053	-0.002	-0.011	0.070	0.178	0.107	0.065	0.065	0.086	0.042	0.069	0.073	0.120	0.078	0.069	-0.011	-0.041	0.040
	BEV	0.278	0.009	-0.139	0.278	0.072	0.074	0.088	0.237	0.098	0.079	0.088	0.017	0.254	0.273	0.195	0.126	0.126	0.206	0.114	0.143	0.053	0.216	0.179	0.143	0.029	0.018	0.105
	BLDG	-0.210	-0.035	0.171	-0.210	-0.042	-0.091	-0.073	-0.164	-0.096	-0.059	-0.059	0.011	-0.159	-0.222	-0.197	-0.091	-0.091	-0.130	-0.128	-0.110	-0.030	-0.211	-0.157	-0.111	0.009	-0.008	-0.040
	BNKING	0.167	0.035	-0.135	0.167	-0.015	0.099	0.123	0.150	0.016	0.058	0.019	0.004	0.063	0.158	0.092	0.067	0.067	0.103	0.041	0.071	0.086	0.117	0.046	0.071	-0.012	-0.041	0.060
	CAB	0.245	0.054	-0.095	0.245	0.048	0.081	0.159	0.156	0.044	0.048	0.055	-0.039	0.154	0.131	0.164	0.043	0.043	0.108	0.078	0.071	0.065	0.119	0.154	0.072	-0.037	-0.098	0.045
	CG	0.265	0.034	-0.114	0.265	0.045	0.081	0.054	0.228	0.071	0.080	0.059	-0.019	0.203	0.216	0.182	0.058	0.058	0.160	0.107	0.106	0.050	0.211	0.166	0.106	0.028	0.019	0.087
	CH	0.403	0.066	-0.221	0.403	0.097	0.131	0.169	0.353	0.110	0.092	0.096	-0.030	0.247	0.362	0.283	0.089	0.089	0.263	0.162	0.251	0.085	0.278	0.276	0.250	0.068	0.054	0.074
	CGM	0.483	0.001	-0.184	0.483	0.062	0.145	0.176	0.351	0.106	0.108	0.085	0.048	0.262	0.347	0.254	0.089	0.089	0.228	0.201	0.172	0.081	0.330	0.231	0.174	0.045	0.031	0.108
	ELEC	0.304	0.016	-0.177	0.304	0.042	0.101	0.108	0.203	0.080	-0.064	0.050	-0.013	0.184	0.249	0.182	0.104	0.104	0.083	0.100	0.138	0.102	0.180	0.133	0.142	-0.044	-0.026	-0.002
	ELTN	0.324	0.019	-0.164	0.324	0.086	0.113	0.120	0.236	0.070	0.103	0.057	0.011	0.204	0.263	0.218	0.110	0.110	0.224	0.103	0.112	0.049	0.217	0.190	0.112	0.041	0.030	0.103
EU	EN	0.406	0.028	-0.234	0.406	0.075	0.133	0.042	0.308	0.177	0.124	0.091	0.003	0.238	0.356	0.262	0.080	0.080	0.326	0.117	0.108	0.041	0.258	0.209	0.108	0.056	0.042	0.123
	LEI	0.288	0.027	-0.147	0.288	0.039	0.123	0.106	0.287	0.088	0.097	0.065	0.024	0.154	0.272	0.201	0.050	0.050	0.188	0.193	0.087	0.032	0.227	0.187	0.088	0.009	-0.024	0.107
	MNFG	0.264	0.028	-0.137	0.264	0.016	0.098	0.096	0.138	0.114	-0.002	0.100	-0.028	0.169	0.176	0.149	0.048	0.048	0.151	0.052	0.076	0.043	0.188	0.135	0.075	0.025	-0.003	-0.004
	MT	0.237	0.032	-0.166	0.237	0.069	0.121	0.073	0.211	0.103	0.100	0.059	0.009	0.219	0.254	0.258	0.101	0.101	0.287	0.157	0.113	0.024	0.181	0.222	0.115	0.047	0.034	0.114
	FIN	0.239	0.036	-0.167	0.239	0.060	0.040	0.029	0.195	0.094	0.065	0.062	0.000	0.058	0.237	0.167	0.043	0.043	0.098	0.112	0.106	0.019	0.232	0.126	0.106	0.005	0.004	0.076
	OF	0.281	0.043	-0.185	0.281	0.060	0.050	0.020	0.179	0.076	0.060	0.068	-0.011	0.122	0.247	0.172	0.046	0.046	0.106	0.106	0.126	0.028	0.250	0.140	0.125	0.004	0.000	0.045
	OG	0.350	0.018	-0.179	0.350	0.074	0.121	0.068	0.274	0.154	0.141	0.076	-0.006	0.208	0.325	0.240	0.077	0.077	0.342	0.115	0.091	0.021	0.225	0.201	0.091	0.052	0.043	0.133
	OS	0.256	0.103	-0.140	0.256	0.054	0.129	0.089	0.259	0.084	0.109	0.079	-0.032	0.254	0.230	0.159	0.030	0.030	0.274	0.128	0.089	0.023	0.233	0.140	0.089	0.157	0.136	0.126
	CS	0.310	0.039	-0.153	0.310	0.045	0.151	0.101	0.280	0.091	0.077	0.076	-0.009	0.210	0.234	0.194	0.054	0.054	0.216	0.170	0.142	0.048	0.231	0.179	0.143	0.052	0.041	0.088
	TEL	0.385	0.011	-0.167	0.385	0.029	0.045	0.100	0.205	0.097	0.044	0.072	-0.013	0.093	0.253	0.202	0.065	0.065	0.096	0.048	0.118	0.009	0.151	0.124	0.119	-0.043	-0.050	0.061
	TRSP	0.292	0.027	-0.126	0.292	0.067	0.100	0.126	0.232	0.091	0.107	0.160	-0.023	0.179	0.301	0.210	0.025	0.025	0.225	0.113	0.132	0.108	0.174	0.173	0.129	-0.012	-0.078	0.091
	UT	0.050	0.006	-0.017	0.050	0.034	0.046	0.037	0.019	0.010	0.043	0.001	0.065	0.072	0.036	0.052	0.049	0.049	0.053	0.009	-0.010	-0.001	0.068	0.069	-0.008	0.048	0.061	0.049
	BNK	0.148	0.026	-0.103	0.148	0.026	0.044	0.031	0.205	0.059	0.076	0.073	-0.022	0.138	0.162	0.095	0.060	0.060	0.145	0.095	0.037	0.040	0.115	0.077	0.037	0.024	0.042	0.085
	BNKING	0.142	0.024	-0.104	0.142	0.033	0.037	0.027	0.198	0.062	0.091	0.071	-0.029	0.127	0.169	0.094	0.047	0.047	0.149	0.090	0.036	0.045	0.107	0.080	0.037	0.026	0.039	0.081
	CH	0.042	-0.036	-0.009	0.042	-0.019	0.061	0.003	0.069	0.022	0.041	0.016	0.034	-0.014	0.046	0.048	0.035	0.035	0.018	0.012	0.096	0.056	0.104	0.099	0.096	-0.156	-0.138	0.040
	ELEC	0.027	-0.002	-0.013	0.027	-0.087	-0.031	0.049	0.038	0.015	-0.016	0.005	-0.003	-0.060	0.075	0.017	0.033	0.033	-0.062	0.051	0.016	0.025	0.032	-0.004	0.016	-0.129	-0.118	0.019
	ELTN	0.118	-0.038	-0.022	0.118	0.045	0.034	-0.013	0.060	0.069	-0.017	0.032	0.060	0.075	0.074	0.001	0.009	0.009	0.030	0.112	-0.004	0.120	0.059	0.092	0.001	0.044	0.009	-0.051
	IND	0.057	0.032	0.033	0.057	-0.025	-0.041	0.074	0.056	0.018	-0.021	0.025	-0.045	0.087	0.064	0.024	-0.015	-0.015	0.071	0.007	0.015	-0.114	0.010	0.006	0.014	0.111	0.019	-0.001
	MNFG	0.091	-0.001	-0.057	0.091	-0.072	0.021	0.080	0.094	-0.025	-0.010	0.084	-0.007	0.066	0.165	0.101	0.015	0.015	0.053	0.062	0.036	0.070	0.096	0.033	0.037	-0.090	-0.084	0.038
	FIN	0.128	0.004	-0.062	0.128	0.027	0.031	0.123	0.103	-0.016	0.090	0.069	0.013	0.121	0.203	0.098	0.103	0.103	0.106	0.126	-0.015	0.125	0.123	0.120	-0.016	-0.021	-0.012	0.084
JAPAN	OS	-0.002	0.006	-0.060	-0.002	0.000	0.046	-0.011	0.094	0.072	0.046	-0.015	-0.002	0.078	0.075	0.052	0.062	0.062	-0.032	-0.044	0.038	0.054	0.046	-0.065	0.038	-0.034	-0.001	0.015
	OT	0.067	0.016	-0.025	0.067	0.046	-0.011	-0.014	0.050	0.064	0.052	0.009	-0.004	0.061	0.020	0.010	0.002	0.002	0.014	0.007	0.031	-0.005	0.062	0.046	0.031	-0.052	-0.054	0.050
	RET	-0.010	-0.053	0.017	-0.010	0.074	0.001	-0.028	-0.013	-0.009	-0.009	-0.015	-0.015	0.044	0.013	0.005	0.022	0.022	0.026	0.022	-0.016	-0.046	-0.004	-0.017	-0.015	0.046	0.078	0.016
	RL	0.071	0.080	0.002	0.071	-0.025	0.030	0.058	0.076	0.017	0.021	0.056	-0.025	-0.029	0.068	0.017	0.084	0.084	0.044	0.038	0.063	0.030	0.081	0.027	0.063	-0.080	-0.060	0.061
	CS	0.012	-0.065	0.004	0.012	-0.015	-0.013	0.052	0.025	-0.028	-0.039	-0.004	-0.031	0.032	0.057	0.011	0.022	0.022	-0.027	-0.043	-0.008	-0.013	-0.013	-0.076	-0.008	-0.074	-0.024	0.002
	TEL	0.066	0.016	-0.026	0.066	0.046	-0.012	-0.014	0.050	0.064	0.052	0.008	-0.006	0.059	0.022	0.010	0.000	0.000	0.016	0.008	0.032	-0.004	0.061	0.045	0.031	-0.051	-0.054	0.049
	OTRSP	0.099	0.042	-0.018	0.099	0.058	0.020	0.107	0.101	0.043	0.033	0.029	0.024	0.082	0.107	0.073	0.018	0.018	0.068	0.017	0.021	0.005	0.080	0.063	0.020	0.031	0.064	0.096
	TRSP	0.099	0.042	-0.018	0.099	0.058	0.020	0.107	0.101	0.043	0.033	0.029	0.024	0.082	0.107	0.073	0.018	0.018	0.068	0.017	0.021	0.005	0.080	0.063	0.020	0.031	0.064	0.096
	UT	0.121	-0.061	-0.049	0.121	0.008	0.021	-0.004	0.028	0.031	-0.055	0.024	0.055	0.084	0.095	0.053	0.023	0.023	0.011	0.053	0.170	0.153	0.071	0.079	0.170	-0.005	-0.045	-0.085

Correlation Matrix CDS Spreads Returns		UK												
		BNK	BEV	BNKING	CG	ELEC	MNFG	FIN	OF	OS	OT	RET	CS	TEL
	BNK	1												
	BEV	0.357	1											
	BNKING	0.956	0.364	1										
	CG	0.283	0.534	0.283	1									
	ELEC	0.132	0.123	0.142	0.147	1								
	MNFG	0.298	0.379	0.324	0.400	0.177	1							
UK	FIN	0.334	0.381	0.340	0.266	0.091	0.233	1						
	OF	0.373	0.389	0.380	0.315	0.154	0.335	0.839	1					
	OS	0.099	0.160	0.148	0.222	0.119	0.146	-0.083	0.019	1				
	OT	0.476	0.494	0.470	0.469	0.143	0.424	0.361	0.439	0.145	1			
	RET	0.368	0.437	0.366	0.311	0.146	0.288	0.295	0.343	0.151	0.351	1		
	CS	0.451	0.473	0.456	0.257	0.104	0.282	0.369	0.347	0.199	0.508	0.585	1	
	TEL	0.535	0.540	0.527	0.447	0.160	0.427	0.417	0.473	0.152	0.913	0.467	0.560	1
	BNK	0.254	0.240	0.260	0.239	0.068	0.163	0.181	0.211	0.058	0.284	0.189	0.200	0.305
	BEV	0.319	0.444	0.307	0.321	0.159	0.324	0.249	0.305	0.115	0.436	0.356	0.393	0.459
	BLDG	-0.236	-0.255	-0.230	-0.256	-0.057	-0.236	-0.211	-0.260	-0.070	-0.333	-0.241	-0.232	-0.362
	BNKING	0.254	0.230	0.261	0.231	0.070	0.216	0.171	0.197	0.062	0.277	0.180	0.199	0.297
	CAB	0.289	0.168	0.278	0.266	0.241	0.319	0.044	0.203	0.168	0.382	0.233	0.121	0.377
	CG	0.283	0.407	0.290	0.371	0.246	0.386	0.157	0.272	0.217	0.378	0.363	0.251	0.403
	CH	0.425	0.513	0.407	0.453	0.188	0.466	0.289	0.378	0.215	0.578	0.452	0.473	0.592
	CGM	0.418	0.493	0.381	0.419	0.117	0.406	0.329	0.405	0.144	0.626	0.439	0.509	0.660
	ELEC	0.287	0.347	0.292	0.302	0.117	0.289	0.259	0.320	0.103	0.456	0.226	0.299	0.451
	ELTN	0.365	0.364	0.349	0.303	0.118	0.367	0.329	0.324	0.128	0.469	0.354	0.399	0.517
EU	EN	0.443	0.459	0.427	0.323	0.094	0.416	0.417	0.445	0.068	0.519	0.430	0.499	0.593
	LEI	0.354	0.392	0.349	0.338	0.167	0.391	0.262	0.339	0.086	0.417	0.377	0.311	0.508
	MNFG	0.284	0.275	0.258	0.225	0.061	0.202	0.229	0.263	0.052	0.336	0.261	0.276	0.370
	MT	0.278	0.234	0.275	0.231	0.077	0.302	0.244	0.342	0.069	0.372	0.295	0.295	0.354
	FIN	0.319	0.322	0.315	0.261	0.038	0.296	0.271	0.288	0.123	0.356	0.281	0.271	0.403
	OF	0.356	0.337	0.350	0.285	0.117	0.331	0.257	0.290	0.164	0.387	0.302	0.277	0.441
	OG	0.419	0.425	0.407	0.284	0.070	0.401	0.417	0.428	0.019	0.496	0.425	0.502	0.577
	OS	0.283	0.329	0.291	0.155	0.162	0.334	0.168	0.238	0.164	0.356	0.334	0.292	0.396
	CS	0.360	0.377	0.363	0.333	0.204	0.415	0.206	0.325	0.221	0.472	0.389	0.328	0.522
	TEL	0.399	0.332	0.397	0.197	0.001	0.153	0.352	0.321	-0.023	0.411	0.275	0.488	0.489
	TRSP	0.303	0.353	0.293	0.268	0.105	0.262	0.238	0.274	0.100	0.440	0.240	0.346	0.457
	UT	0.051	0.027	0.053	0.029	0.035	0.087	0.070	0.058	0.048	0.082	0.053	0.037	0.090
	BNK	0.128	0.159	0.119	0.121	0.028	0.166	0.163	0.190	0.034	0.202	0.147	0.183	0.210
	BNKING	0.131	0.153	0.120	0.116	-0.009	0.161	0.184	0.192	0.036	0.202	0.146	0.189	0.212
	CH	0.087	0.147	0.085	0.178	0.025	0.165	0.084	0.127	0.045	0.108	0.067	0.053	0.113
	ELEC	-0.026	0.063	-0.001	0.099	0.044	0.049	0.009	0.028	-0.001	0.050	0.004	0.005	0.052
	ELTN	0.052	0.097	0.047	0.122	0.002	0.099	0.087	0.061	-0.060	0.116	0.004	0.070	0.078
	IND	0.016	0.095	0.015	0.001	0.025	0.046	0.075	0.070	0.024	0.045	0.117	0.086	0.078
	MNFG	0.058	0.176	0.064	0.162	0.125	0.145	0.124	0.141	0.016	0.203	0.054	0.112	0.181
	FIN	0.102	0.141	0.096	0.206	0.036	0.202	0.139	0.147	0.024	0.191	0.080	0.115	0.170
JAPAN	OS	0.017	0.051	0.016	0.046	0.030	0.104	0.000	0.015	-0.005	0.054	-0.009	0.043	0.036
	OT	0.072	0.087	0.067	0.024	-0.008	0.041	0.042	0.075	0.000	0.130	0.021	0.102	0.120
	RET	0.002	-0.073	0.002	-0.074	-0.006	-0.074	-0.071	-0.060	0.003	-0.016	-0.038	0.034	-0.014
	RL	0.050	0.110	0.052	0.128	0.036	0.144	0.118	0.112	0.031	0.110	0.081	0.117	0.084
	CS	-0.001	0.034	-0.001	0.046	0.025	-0.012	-0.027	-0.015	-0.012	-0.007	-0.025	0.006	-0.007
	TEL	0.073	0.087	0.068	0.023	-0.007	0.041	0.044	0.074	0.000	0.130	0.021	0.104	0.120
	OTRSP	0.136	0.148	0.128	0.098	0.063	0.106	0.036	0.044	0.015	0.103	0.122	0.157	0.133
	TRSP	0.136	0.148	0.128	0.098	0.063	0.106	0.036	0.044	0.015	0.103	0.122	0.157	0.133
	UT	0.090	0.046	0.086	0.207	0.012	0.152	-0.032	0.056	0.251	0.165	0.006	0.116	0.115

Correlation Matrix CDS Spreads Returns		EU																					
		BNK	BEV	BLDG	BNKING	CAB	CG	CH	CGM	ELEC	ELTN	EN	LEI	MNFG	MT	FIN	OF	OG	OS	CS	TEL	TRSP	UT
	BNK	1																					
	BEV	0.183	1																				
	BLDG	-0.138	-0.290	1																			
	BNKING	0.900	0.182	-0.121	1																		
	CAB	0.169	0.218	-0.151	0.159	1																	
	CG	0.198	0.731	-0.222	0.199	0.435	1																
	CH	0.254	0.460	-0.273	0.258	0.374	0.527	1															
	CGM	0.277	0.420	-0.319	0.275	0.300	0.424	0.623	1														
	ELEC	0.236	0.232	-0.194	0.224	0.245	0.223	0.399	0.381	1													
	ELTN	0.220	0.383	-0.264	0.216	0.242	0.344	0.454	0.480	0.305	1												
EU	EN	0.263	0.431	-0.304	0.244	0.189	0.341	0.459	0.479	0.308	0.537	1											
	LEI	0.267	0.312	-0.315	0.265	0.426	0.454	0.473	0.516	0.293	0.367	0.390	1										
	MNFG	0.197	0.236	-0.231	0.186	0.193	0.202	0.289	0.346	0.275	0.250	0.357	0.286	1									
	MT	0.168	0.250	-0.240	0.163	0.193	0.236	0.362	0.330	0.249	0.303	0.370	0.336	0.234	1								
	FIN	0.251	0.207	-0.225	0.211	0.236	0.278	0.342	0.339	0.227	0.321	0.372	0.335	0.203	0.230	1							
	OF	0.278	0.258	-0.219	0.218	0.276	0.338	0.400	0.381	0.254	0.351	0.394	0.384	0.230	0.224	0.839	1						
	OG	0.227	0.417	-0.309	0.220	0.154	0.287	0.434	0.480	0.308	0.545	0.896	0.368	0.330	0.375	0.336	0.345	1					
	OS	0.174	0.300	-0.180	0.176	0.305	0.400	0.422	0.399	0.220	0.325	0.358	0.362	0.220	0.286	0.253	0.267	0.327	1				
	CS	0.261	0.339	-0.298	0.256	0.496	0.480	0.507	0.496	0.320	0.383	0.397	0.778	0.283	0.329	0.298	0.334	0.363	0.548	1			
	TEL	0.231	0.255	-0.187	0.220	0.006	0.107	0.252	0.365	0.289	0.299	0.412	0.245	0.279	0.166	0.232	0.274	0.396	0.092	0.183	1		
	TRSP	0.212	0.281	-0.229	0.215	0.178	0.215	0.335	0.362	0.246	0.316	0.370	0.304	0.261	0.220	0.240	0.262	0.343	0.306	0.321	0.283	1	
	UT	0.040	0.090	-0.018	0.038	0.097	0.129	0.100	0.102	0.052	0.619	0.074	0.081	0.047	0.101	0.076	0.079	0.063	0.119	0.112	0.010	0.083	1
	BNK	0.069	0.133	-0.187	0.081	0.108	0.092	0.190	0.213	0.127	0.168	0.166	0.161	0.100	0.147	0.079	0.053	0.167	0.167	0.169	0.086	0.131	0.027
	BNKING	0.065	0.127	-0.184	0.076	0.110	0.090	0.186	0.206	0.121	0.178	0.172	0.164	0.094	0.142	0.081	0.059	0.172	0.163	0.168	0.090	0.136	0.022
	CH	0.058	0.056	-0.112	0.120	0.051	0.097	0.106	0.141	0.095	0.067	0.062	0.159	0.097	0.038	0.054	0.053	0.060	-0.064	0.092	0.053	0.044	-0.019
	ELEC	0.083	0.025	-0.069	0.125	-0.024	0.025	0.015	0.029	0.051	-0.040	0.015	0.041	0.012	-0.034	0.041	0.031	0.013	-0.089	-0.012	0.072	0.064	-0.047
	ELTN	0.045	0.043	-0.075	0.058	0.000	0.048	0.077	0.105	0.061	0.012	0.068	0.114	0.023	0.074	0.054	0.043	0.061	-0.010	0.046	0.034	0.008	-0.054
	IND	0.006	0.095	-0.067	0.021	0.032	0.062	0.063	0.052	0.026	0.041	0.107	0.019	0.059	0.035	-0.018	-0.008	0.097	0.083	0.056	0.050	-0.005	-0.011
	MNFG	0.132	0.114	-0.113	0.186	0.031	0.063	0.128	0.107	0.154	0.051	0.134	0.066	0.073	0.038	0.080	0.081	0.125	0.018	0.060	0.094	0.114	-0.061
	FIN	0.096	0.139	-0.147	0.114	0.065	0.109	0.134	0.181	0.084	0.128	0.163	0.146	0.125	0.089	0.135	0.116	0.147	0.052	0.124	0.070	0.159	0.005
JAPAN	OS	0.024	0.045	-0.012	0.130	0.023	0.039	0.038	0.065	0.055	0.030	0.044	0.022	0.011	-0.041	0.014	0.006	0.041	0.044	0.050	0.000	0.026	-0.019
	OT	0.027	0.043	-0.092	0.032	-0.020	-0.014	0.023	0.048	0.051	0.080	0.131	0.024	0.028	0.026	0.006	-0.005	0.133	-0.015	0.005	0.084	0.080	0.002
	RET	-0.010	0.021	0.016	-0.052	-0.030	-0.026	-0.052	-0.036	0.010	-0.029	0.017	-0.023	0.014	0.024	-0.013	0.020	0.026	0.029	-0.003	0.020	-0.013	-0.020
	RL	0.085	0.059	-0.069	0.113	0.030	0.039	0.109	0.103	0.111	0.074	0.068	0.089	0.043	0.057	0.098	0.068	0.064	0.029	0.076	0.085	0.103	0.000
	CS	0.040	0.030	0.012	0.031	-0.021	0.005	-0.032	-0.016	0.064	-0.038	0.001	0.002	-0.019	-0.016	-0.007	0.002	-0.009	-0.029	-0.012	0.037	0.022	-0.045
	TEL	0.027	0.043	-0.091	0.032	-0.020	-0.013	0.024	0.048	0.049	0.081	0.131	0.025	0.028	0.024	0.006	-0.005	0.133	-0.015	0.005	0.085	0.081	0.001
	OTRSP	0.069	0.064	-0.078	0.075	0.055	0.064	0.157	0.173	0.058	0.077	0.101	0.155	0.024	0.066	0.136	0.103	0.092	0.095	0.134	0.075	0.119	-0.004
	TRSP	0.069	0.064	-0.078	0.075	0.055	0.064	0.157	0.173	0.058	0.077	0.101	0.155	0.024	0.066	0.136	0.103	0.092	0.095	0.134	0.075	0.119	-0.004
	UT	0.067	0.082	-0.127	0.096	0.024	0.031	0.115	0.134	0.100	0.057	0.059	-0.052	0.094	0.024	0.024	0.031	0.042	-0.028	0.044	0.042	0.038	-0.032

Correlation Matrix CDS Spreads Returns		JAPAN																
		BNK	BNKING	CH	ELEC	ELTN	IND	MNFG	FIN	OS	OT	RET	RL	CS	TEL	OTRSP	TRSP	UT
	BNK	1																
	BNKING	0.970	1															
	CH	0.067	0.080	1														
	ELEC	0.001	-0.009	0.172	1													
	ELTN	0.036	0.040	0.136	0.072	1												
	IND	0.037	0.028	-0.023	-0.037	0.047	1											
	MNFG	0.096	0.086	0.264	0.423	0.099	0.352	1										
	FIN	0.095	0.117	0.131	0.187	0.130	0.025	0.317	1									
JAPAN	OS	0.062	0.049	0.064	-0.007	-0.030	-0.113	0.023	-0.041	1								
	OT	0.033	0.032	0.073	0.077	0.051	-0.020	0.094	0.063	0.046	1							
	RET	-0.044	-0.044	-0.148	-0.112	-0.056	0.052	-0.061	-0.050	0.153	-0.036	1						
	RL	0.065	0.058	0.162	0.096	0.082	0.059	0.185	0.161	0.024	0.072	-0.064	1					
	CS	-0.057	-0.061	0.006	0.077	-0.010	-0.024	0.125	0.072	0.257	0.009	0.568	0.021	1				
	TEL	0.033	0.034	0.073	0.077	0.052	-0.020	0.095	0.064	0.046	1.000	-0.036	0.071	0.009	1			
	OTRSP	0.007	0.012	0.070	0.061	0.045	0.063	0.023	0.025	-0.032	-0.015	0.057	0.226	0.041	-0.014	1		
	TRSP	0.007	0.012	0.070	0.061	0.045	0.063	0.023	0.025	-0.032	-0.015	0.057	0.226	0.041	-0.014	1.000	1	
	UT	0.086	0.083	0.199	0.094	0.443	0.042	0.098	0.160	-0.020	0.067	-0.079	0.081	-0.028	0.067	0.045	0.045	1

Table 32: CDS Spreads Regional Correlation - After-Crisis Sample

Correlation Matrix Equity Returns		US																							
		BNK	BEV	BLDG	BMAT	CAB	CG	CGM	CH	ELEC	HT	IND	LEI	MT	FIN	OF	OG	OS	OT	OTRSP	RET	CS	TEC	TEL	UT
US	BNK	1																							
	BEV	0.474	1																						
	BLDG	0.725	0.589	1																					
	BMAT	0.634	0.580	0.795	1																				
	CAB	0.707	0.675	0.819	0.785	1																			
	CG	0.656	0.867	0.803	0.762	0.850	1																		
	CGM	0.752	0.587	0.795	0.759	0.783	0.775	1																	
	CH	0.009	0.043	0.022	0.029	0.023	0.028	0.004	1																
	ELEC	0.705	0.646	0.860	0.864	0.858	0.844	0.831	0.022	1															
	HT	0.600	0.682	0.713	0.684	0.779	0.824	0.690	0.031	0.773	1														
	IND	0.759	0.665	0.895	0.874	0.884	0.874	0.920	0.014	0.954	0.786	1													
	LEI	0.724	0.626	0.834	0.743	0.826	0.823	0.782	0.029	0.836	0.737	0.872	1												
	MT	0.689	0.581	0.812	0.787	0.798	0.781	0.786	0.017	0.851	0.689	0.908	0.811	1											
	FIN	0.964	0.579	0.812	0.735	0.810	0.770	0.818	0.015	0.804	0.700	0.856	0.812	0.773	1										
	OF	0.964	0.579	0.812	0.735	0.810	0.770	0.818	0.015	0.804	0.700	0.856	0.812	0.773	1.000	1									
	OG	0.582	0.565	0.713	0.872	0.746	0.730	0.694	0.041	0.789	0.677	0.798	0.647	0.708	0.672	0.672	1								
	OS	0.569	0.547	0.692	0.651	0.705	0.710	0.660	0.028	0.732	0.682	0.747	0.728	0.668	0.662	0.662	0.589	1							
	OT	0.614	0.638	0.680	0.658	0.762	0.770	0.670	-0.017	0.714	0.675	0.744	0.677	0.664	0.706	0.706	0.649	0.591	1						
	OTRSP	0.689	0.581	0.812	0.787	0.798	0.781	0.786	0.017	0.851	0.689	0.908	0.811	1.000	0.773	0.773	0.708	0.668	0.664	1					
	RET	0.655	0.642	0.792	0.682	0.801	0.834	0.730	0.046	0.786	0.738	0.823	0.849	0.756	0.761	0.761	0.618	0.758	0.696	0.756	1				
	CS	0.723	0.699	0.860	0.775	0.922	0.897	0.805	0.038	0.873	0.815	0.908	0.927	0.829	0.832	0.832	0.711	0.780	0.758	0.829	0.956	1			
	TEC	0.678	0.643	0.793	0.798	0.838	0.825	0.765	0.009	0.885	0.756	0.879	0.824	0.775	0.777	0.777	0.732	0.754	0.719	0.775	0.802	0.871	1		
	TEL	0.614	0.638	0.680	0.658	0.762	0.770	0.670	-0.017	0.714	0.675	0.744	0.677	0.664	0.706	0.706	0.649	0.591	1.000	0.664	0.696	0.758	0.719	1	
	UT	0.478	0.681	0.623	0.665	0.698	0.765	0.613	0.032	0.672	0.672	0.701	0.601	0.620	0.601	0.601	0.703	0.537	0.698	0.620	0.620	0.688	0.643	0.698	1
UK	BNK	0.489	0.315	0.477	0.461	0.491	0.440	0.501	-0.032	0.508	0.401	0.528	0.479	0.466	0.501	0.501	0.432	0.364	0.403	0.466	0.390	0.468	0.461	0.403	0.335
	BEV	0.277	0.375	0.365	0.351	0.417	0.441	0.357	-0.016	0.402	0.387	0.409	0.379	0.346	0.329	0.329	0.337	0.293	0.374	0.346	0.336	0.399	0.373	0.374	0.343
	BMAT	-0.064	-0.078	-0.068	-0.081	-0.082	-0.087	-0.084	-0.006	-0.084	-0.098	-0.079	-0.053	-0.063	-0.078	-0.078	-0.109	-0.076	-0.091	-0.063	-0.042	-0.062	-0.071	-0.091	-0.100
	CG	-0.028	-0.064	-0.035	-0.022	-0.047	-0.076	-0.040	0.051	-0.048	-0.073	-0.041	-0.040	-0.040	-0.037	-0.037	-0.033	-0.053	-0.060	-0.040	-0.044	-0.048	-0.046	-0.060	-0.078
	HT	0.000	-0.026	-0.008	-0.026	-0.022	-0.024	-0.002	-0.014	-0.023	-0.031	-0.012	0.013	-0.016	-0.006	-0.006	-0.053	-0.021	-0.012	-0.016	-0.005	-0.009	-0.020	-0.012	-0.028
	IND	-0.040	-0.029	-0.014	-0.022	-0.024	-0.040	-0.031	0.010	-0.037	-0.072	-0.029	-0.017	-0.030	-0.038	-0.038	-0.057	-0.050	-0.061	-0.030	-0.018	-0.024	-0.039	-0.061	-0.060
	FIN	0.417	0.347	0.478	0.504	0.505	0.467	0.473	-0.051	0.548	0.438	0.536	0.499	0.461	0.457	0.457	0.468	0.391	0.410	0.461	0.395	0.482	0.487	0.410	0.351
	OF	-0.031	-0.014	-0.025	-0.026	-0.017	-0.033	-0.023	-0.002	-0.034	-0.058	-0.027	-0.023	-0.027	-0.033	-0.033	-0.043	-0.064	-0.024	-0.027	-0.027	-0.026	-0.039	-0.024	-0.049
	OG	-0.051	-0.055	-0.033	-0.050	-0.043	-0.059	-0.030	-0.011	-0.048	-0.069	-0.040	-0.013	-0.037	-0.052	-0.052	-0.092	-0.055	-0.063	-0.037	-0.019	-0.030	-0.045	-0.063	-0.077
	OS	0.422	0.363	0.491	0.451	0.517	0.490	0.465	-0.041	0.534	0.451	0.534	0.514	0.460	0.469	0.469	0.408	0.385	0.437	0.460	0.433	0.508	0.490	0.437	0.345
	OT	0.284	0.293	0.351	0.332	0.397	0.388	0.332	-0.025	0.387	0.372	0.390	0.352	0.333	0.331	0.331	0.333	0.279	0.412	0.333	0.317	0.375	0.374	0.412	0.326
	RET	0.352	0.298	0.400	0.367	0.424	0.410	0.380	-0.022	0.442	0.385	0.439	0.421	0.381	0.390	0.390	0.349	0.317	0.369	0.381	0.366	0.421	0.409	0.369	0.274
	CS	-0.046	-0.043	-0.041	-0.045	-0.047	-0.059	-0.048	0.000	-0.052	-0.087	-0.047	-0.037	-0.047	-0.047	-0.047	-0.076	-0.072	-0.071	-0.047	-0.043	-0.048	-0.056	-0.071	-0.082
	TEC	-0.032	-0.031	-0.023	-0.027	-0.036	-0.042	-0.038	-0.004	-0.034	-0.058	-0.033	-0.014	-0.034	-0.033	-0.033	-0.056	-0.041	-0.048	-0.034	-0.024	-0.029	-0.040	-0.048	-0.065
	TEL	-0.025	-0.059	-0.058	-0.077	-0.057	-0.083	-0.044	0.006	-0.072	-0.068	-0.064	-0.053	-0.058	-0.038	-0.038	-0.099	-0.061	-0.059	-0.058	-0.054	-0.059	-0.069	-0.059	-0.080
	UT	0.003	-0.035	-0.044	-0.057	-0.031	-0.063	-0.026	0.018	-0.044	-0.057	-0.042	-0.019	-0.045	-0.008	-0.008	-0.082	-0.044	-0.032	-0.045	-0.033	-0.036	-0.044	-0.032	-0.056
EU	BNK	0.488	0.368	0.523	0.540	0.535	0.497	0.536	-0.021	0.575	0.446	0.582	0.510	0.506	0.518	0.518	0.499	0.394	0.432	0.506	0.410	0.502	0.507	0.432	0.385
	BEV	0.289	0.378	0.396	0.422	0.428	0.460	0.395	-0.019	0.444	0.389	0.451	0.407	0.389	0.342	0.342	0.398	0.302	0.375	0.389	0.350	0.416	0.395	0.375	0.358
	BLDG	0.126	0.162	0.197	0.250	0.219	0.211	0.189	0.006	0.235	0.170	0.231	0.210	0.200	0.153	0.153	0.228	0.155	0.171	0.200	0.131	0.189	0.203	0.171	0.185
	BMAT	-0.035	-0.041	-0.028	-0.030	-0.038	-0.055	-0.035	0.024	-0.046	-0.069	-0.036	-0.023	-0.023	-0.038	-0.038	-0.072	-0.052	-0.062	-0.023	-0.014	-0.027	-0.040	-0.062	-0.059
	CAB	0.389	0.396	0.499	0.525	0.532	0.511	0.480	-0.039	0.564	0.458	0.554	0.498	0.469	0.445	0.445	0.483	0.384	0.440	0.469	0.404	0.497	0.493	0.440	0.405
	CG	-0.026	-0.065	-0.041	-0.033	-0.051	-0.074	-0.040	0.016	-0.061	-0.074	-0.045	-0.041	-0.033	-0.032	-0.032	-0.059	-0.071	-0.069	-0.033	-0.043	-0.049	-0.053	-0.069	-0.064
	CGM	0.474	0.405	0.567	0.621	0.582	0.542	0.567	-0.002	0.645	0.490	0.641	0.542	0.563	0.528	0.528	0.561	0.439	0.469	0.563	0.452	0.546	0.559	0.469	0.439
	CH	0.406	0.390	0.524	0.601	0.523	0.516	0.514	-0.011	0.597	0.469	0.593	0.495	0.514	0.466	0.466	0.537	0.416	0.433	0.514	0.408	0.496	0.518	0.433	0.416
	ELEC	0.417	0.383	0.535	0.580	0.542	0.517	0.520	-0.012	0.608	0.465	0.600	0.521	0.520	0.479	0.479	0.526	0.432	0.437	0.520	0.435	0.520	0.522	0.437	0.408
	HT	-0.024	-0.035	-0.027	-0.043	-0.049	-0.054	-0.019	0.018	-0.052	-0.059	-0.035	-0.021	-0.028	-0.032	-0.032	-0.077	-0.056	-0.066	-0.028	-0.031	-0.040	-0.057	-0.066	-0.056
	IND	-0.039	-0.028	-0.020	-0.024	-0.031	-0.047	-0.029	0.012	-0.043	-0.068	-0.031	-0.024	-0.023	-0.041	-0.041	-0.065	-0.055	-0.055	-0.023	-0.019	-0.028	-0.038	-0.055	-0.060
	LEI	0.390	0.339	0.481	0.491	0.481	0.452	0.473	-0.023	0.520	0.399	0.522	0.460	0.445	0.435	0.435	0.442	0.355	0.388	0.445	0.371	0.452	0.461	0.388	0.367
	MT	-0.007	-0.030	0.014	0.001	-0.012	-0.017	0.021	-0.036	-0.001	-0.012	0.010	0.010	0.004	-0.014	-0.014	-0.009	0.002	-0.030	0.004	-0.023	-0.012	-0.007	-0.030	-0.028
	FIN	0.421	0.380	0.513	0.563	0.532	0.506	0.504	-0.029	0.582	0.457	0.574	0.507	0.492	0.471	0.471	0.520	0.392	0.438	0.492	0.403	0.498	0.506	0.438	0.408
	OF	-0.019	-0.026	-0.020	-0.024	-0.028	-0.043	-0.019	0.009	-0.039	-0.063	-0.027	-0.024	-0.026	-0.026	-0.026	-0.052	-0.062	-0.044	-0.026	-0.024	-0.030	-0.041	-0.044	-0.056
	OG	-0.052	-0.056	-0.043	-0.057	-0.051	-0.072	-0.041	0.010	-0.061	-0.080	-0.052	-0.034	-0.044	-0.057	-0.057	-0.099	-0.066	-0.072	-0.044	-0.029	-0.043	-0.051	-0.072	-0.082
	OS	0.203	0.229	0.270	0.327	0.280	0.283	0.256	-0.010	0.318	0.252	0.308	0.269	0.267	0.236	0.236	0.287	0.203	0.232	0.267	0.214	0.264	0.277	0.232	0.218
	OT	0.167	0.192	0.194	0.181	0.190	0.221	0.178	0.010	0.180	0.188	0.192	0.199	0.172	0.193	0.193	0.174	0.186	0.208	0.172	0.216	0.216	0.198	0.208	0.181
	CS	-0.041	-0.039	-0.033	-0.040	-0.043	-0.061	-0.035	0.012	-0.051	-0.080	-0.041	-0.036	-0.037	-0.046	-0.046	-0.076	-0.069	-0.065	-0.037	-0.036	-0.043	-0.052	-0.065	-0.070
	TEC	-0.019	-0.043	-0.026	-0.037	-0.041	-0.055	-0.022	0.017	-0.046	-0.070	-0.032	-0.025	-0.030	-0.030	-0.030	-0.080	-0.059	-0.061	-0.030	-0.022	-0.032	-0.049	-0.061	-0.077
	TEL	-0.037	-0.048	-0.048	-0.060	-0.060	-0.079	-0.050	0.015	-0.068	-0.082	-0.059	-0.053	-0.053	-0.045	-0.045	-0.094	-0.074	-0.066	-0.053	-0.051	-0.060	-0.065	-0.066	-0.076
	UT	-0.030	-0.042	-0.030	-0.040	-0.038	-0.067	-0.035	0.038	-0.049	-0.073	-0.041	-0.029	-0.035	-0.036	-0.036	-0.078	-0.061	-0.050	-0.035	-0.031	-0.038	-0.044	-0.050	-0.065
JAPAN	BNK	-0.052	-0.062	-0.039	-0.044	-0.060	-0.060	-0.077	-0.020	-0.055	-0.051	-0.065	-0.046	-0.065	-0.054	-0.054	-0.055	-0.048	-0.061	-0.065	-0.038	-0.048	-0.044	-0.061	-0.059
	BMAT	0.020	0.017	0.031	0.013	0.008	0.014	0.012	0.043	0.013	-0.009	0.015	0.031	0.007	0.020	0.020	-0.026	0.002	0.007	0.007	0.041	0.029	0.021	0.007	-0.020
	CG	0.019	0.035	0.031	0.002	0.011	0.024	0.008	0.030	0.021	0.005	0.015	0.035	-0.004	0.018	0.018	-0.028	0.005	0.031	-0.004	0.042	0.032	0.035	0.031	-0.004
	CH	0.090	0.087	0.116	0.144	0.148	0.137	0.128	-0.028	0.159	0.103	0.155	0.137	0.132	0.102	0.102	0.148	0.095	0.118	0.132	0.084	0.124	0.132	0.118	0.143
	ELEC	0.090	0.087	0.120	0.142	0.149	0.137	0.133	-0.013	0.164	0.106	0.159	0.150	0.138	0.103	0.103	0.141	0.108	0.110	0.138	0.081	0.126	0.132	0.110	0.128
	HT	0.017	0.044	0.014	-0.013	0.008	0.025	0.000	0.059	-0.001	0.020	-0.002	0.026	-0.018	0.016	0.016	-0.029	0.003	0.029	-0.018	0.035	0.026	0.019	0.029	0.006
	IND	0.014	0.028	0.037	0.018	0.016	0.024	0.015	0.034	0.023	-0.002	0.022	0.037	0.011	0.015	0.015	-0.015	0.013	0.024	0.011	0.048	0.036	0.032	0.024	-0.004
	MT	0.082	0.091	0.110	0.137	0.137	0.126	0.113	-0.011	0.136	0.092	0.137	0.124	0.130	0.089	0.089	0.143	0.078	0.103	0.130	0.071	0.113	0.106	0.103	0.141
	FIN	0.038	0.039	0.040	0.004	0.017	0.027	0.019	0.034	0.017	0.009	0.019	0.034	0.005	0.036	0.036	-0.021	0.004	0.019	0.005	0.046	0.035	0.021	0.019	-0.013
	OG	-0.013	0.004	0.022	0.011	-0.001	0.003	-0.005	0.051	0.005	-0.008	0.001	0.016	-0.004	-0.009	-0.009	-0.011	0.018	-0.002	-0.004	0.036	0.021	0.012	-0.002	-0.031
	OS	0.035	0.066	0.056	0.074	0.072	0.081	0.043	-0.001	0.089	0.066	0.076	0.073	0.066	0.049	0.049	0.087	0.039	0.074	0.066	0.040	0.064	0.074	0.074	0.075
	OT	0.011	0.035	0.031	0.050	0.061	0.056	0.010	-0.008	0.044	0.051	0.042	0.051	0.044	0.017	0.017	0.073	0.013	0.052	0.044	0.014	0.039	0.040	0.052	0.058
	OTRSP	0.082	0.091	0.110	0.137	0.137	0.126	0.113	-0.011	0.136	0.092	0.137	0.124	0.130	0.089	0.089	0.143	0.078	0.103	0.130	0.071	0.113	0.106	0.103	0.141
	RET	0.064	0.111	0.093	0.101	0.125	0.137	0.076	-0.009	0.120	0.098	0.118	0.109	0.119	0.080	0.080	0.119	0.066	0.126	0.119	0.088	0.111	0.098	0.126	0.134
	CS	0.028	0.020	0.014	-0.008	0.006	0.016	0.012	0.033	0.004	0.004	0.006	0.020	-0.005	0.023	0.023	-0.021	-0.006	0.028	-0.005	0.024	0.018	0.012	0.028	0.005
	TEC	0.018	0.029	0.034	-0.007	0.009	0.018	0.010	0.032	0.014	-0.003	0.013	0.039	0.002	0.017	0.017	-0.036	-0.001	0.021	0.002	0.036	0.028	0.021	0.021	-0.004
	TEL	0.032	0.055	0.027	-0.007	0.018	0.031	0.024	0.028	0.009	0.010	0.010	0.027	-0.003	0.027	0.027	-0.024	0.009	0.047	-0.003	0.036	0.026	0.023	0.047	-0.009
	UT	0.013	0.012	0.002	-0.026	-0.016	0.001	0.005	0.023	0.001	-0.002	-0.002	0.018	-0.008	0.008	0.008	-0.048	-0.015	-0.007	-0.008	-0.003	-0.001	0.010	-0.007	-0.012

Correlation Matrix Equity Returns		UK															
		BNK	BEV	BMAT	CG	HT	IND	FIN	OF	OG	OS	OT	RET	CS	TEC	TEL	UT
UK	BNK	1															
	BEV	0.470	1														
	BMAT	-0.066	-0.035	1													
	CG	-0.051	-0.036	0.423	1												
	HT	0.043	-0.015	0.339	0.354	1											
	IND	-0.055	-0.018	0.687	0.510	0.545	1										
	FIN	0.754	0.580	-0.075	-0.043	0.000	-0.061	1									
	OF	-0.048	-0.008	0.653	0.478	0.450	0.792	-0.054	1								
	OG	-0.018	-0.021	0.710	0.410	0.474	0.659	-0.037	0.600	1							
	OS	0.688	0.658	-0.049	-0.057	-0.001	-0.047	0.800	-0.029	-0.011	1						
	OT	0.503	0.520	-0.043	-0.038	0.002	-0.044	0.549	-0.040	-0.046	0.636	1					
	RET	0.572	0.548	-0.016	-0.048	-0.013	-0.035	0.669	-0.005	0.007	0.910	0.564	1				
	CS	-0.056	-0.040	0.573	0.490	0.555	0.863	-0.069	0.779	0.572	-0.067	-0.050	-0.052	1			
	TEC	-0.063	-0.001	0.572	0.418	0.442	0.741	-0.051	0.654	0.522	-0.035	-0.037	-0.018	0.715	1		
	TEL	-0.064	-0.031	0.412	0.388	0.534	0.582	-0.078	0.561	0.488	-0.059	-0.088	-0.032	0.636	0.501	1	
	UT	-0.010	-0.018	0.416	0.413	0.553	0.558	-0.045	0.471	0.550	-0.045	-0.022	-0.045	0.590	0.458	0.545	1
EU	BNK	0.858	0.504	-0.060	-0.043	0.025	-0.058	0.799	-0.042	-0.020	0.728	0.509	0.613	-0.075	-0.059	-0.079	-0.043
	BEV	0.515	0.720	-0.036	-0.041	0.002	-0.022	0.605	-0.002	-0.023	0.621	0.473	0.524	-0.045	-0.013	-0.062	-0.039
	BLDG	0.351	0.276	-0.046	-0.036	0.023	-0.019	0.418	-0.007	-0.036	0.328	0.202	0.249	-0.041	-0.044	-0.060	-0.007
	BMAT	-0.034	0.002	0.904	0.493	0.372	0.758	-0.047	0.725	0.706	-0.025	-0.028	-0.003	0.662	0.623	0.465	0.470
	CAB	0.653	0.571	-0.058	-0.026	0.014	-0.041	0.757	-0.019	-0.027	0.805	0.565	0.654	-0.057	-0.030	-0.075	-0.042
	CG	-0.037	0.003	0.612	0.575	0.455	0.725	-0.045	0.649	0.579	-0.044	-0.042	-0.040	0.704	0.579	0.516	0.519
	CGM	0.642	0.521	-0.070	-0.037	0.015	-0.043	0.721	-0.030	-0.023	0.689	0.473	0.572	-0.054	-0.039	-0.066	-0.049
	CH	0.613	0.542	-0.052	-0.023	0.041	-0.027	0.698	-0.033	-0.020	0.669	0.472	0.557	-0.048	-0.025	-0.056	-0.027
	ELEC	0.671	0.564	-0.060	-0.018	0.020	-0.040	0.762	-0.022	-0.031	0.733	0.506	0.611	-0.061	-0.029	-0.074	-0.042
	HT	0.022	0.010	0.533	0.464	0.714	0.659	-0.012	0.584	0.576	-0.022	-0.032	-0.025	0.648	0.531	0.548	0.575
	IND	-0.036	0.005	0.755	0.530	0.416	0.840	-0.050	0.781	0.651	-0.032	-0.033	-0.017	0.767	0.672	0.522	0.503
	LEI	0.608	0.503	-0.045	-0.027	-0.002	-0.034	0.667	-0.022	-0.019	0.659	0.448	0.541	-0.052	-0.025	-0.066	-0.038
	MT	0.014	-0.030	-0.070	-0.001	-0.002	-0.053	0.048	-0.040	-0.046	0.016	-0.047	-0.015	-0.045	-0.059	-0.073	-0.011
	FIN	0.722	0.560	-0.070	-0.037	0.022	-0.050	0.855	-0.035	-0.030	0.761	0.531	0.640	-0.067	-0.043	-0.079	-0.047
	OF	-0.016	0.009	0.704	0.511	0.402	0.777	-0.036	0.885	0.615	-0.020	-0.035	-0.003	0.749	0.627	0.524	0.473
	OG	-0.019	-0.003	0.768	0.470	0.418	0.708	-0.043	0.681	0.894	-0.020	-0.043	-0.002	0.635	0.560	0.507	0.553
	OS	0.393	0.301	-0.054	-0.041	0.005	-0.052	0.484	-0.030	-0.037	0.483	0.331	0.437	-0.066	-0.035	-0.052	-0.049
	OT	-0.014	-0.013	-0.017	-0.066	-0.058	0.035	-0.028	0.012	-0.022	-0.028	-0.032	-0.032	0.004	0.008	-0.049	-0.013
	CS	-0.031	-0.001	0.663	0.518	0.456	0.808	-0.050	0.764	0.606	-0.043	-0.046	-0.028	0.850	0.660	0.570	0.548
	TEC	-0.031	0.004	0.671	0.509	0.434	0.755	-0.050	0.720	0.603	-0.037	-0.048	-0.024	0.735	0.723	0.535	0.505
	TEL	-0.040	-0.004	0.615	0.507	0.484	0.700	-0.057	0.689	0.613	-0.044	-0.058	-0.025	0.704	0.568	0.738	0.571
	UT	-0.003	0.008	0.642	0.509	0.434	0.658	-0.027	0.638	0.648	-0.023	-0.027	-0.021	0.631	0.530	0.513	0.662
JAPAN	BNK	-0.041	-0.037	-0.004	-0.003	0.009	0.004	-0.066	-0.002	-0.026	-0.048	-0.036	-0.052	0.017	0.014	-0.002	-0.014
	BMAT	-0.058	0.032	0.285	0.135	0.123	0.334	-0.057	0.323	0.265	-0.050	-0.092	-0.040	0.277	0.285	0.189	0.195
	CG	-0.060	0.036	0.244	0.143	0.121	0.318	-0.039	0.314	0.237	-0.041	-0.060	-0.033	0.283	0.281	0.176	0.186
	CH	0.286	0.223	-0.052	-0.039	0.030	-0.028	0.337	-0.019	-0.043	0.277	0.182	0.213	-0.031	-0.045	-0.062	-0.015
	ELEC	0.294	0.223	-0.043	-0.031	0.031	-0.025	0.345	-0.012	-0.032	0.295	0.178	0.228	-0.028	-0.046	-0.058	-0.012
	HT	-0.054	0.033	0.159	0.087	0.145	0.232	-0.046	0.237	0.185	-0.029	-0.062	-0.023	0.221	0.198	0.169	0.180
	IND	-0.059	0.028	0.301	0.139	0.118	0.349	-0.049	0.338	0.265	-0.053	-0.084	-0.046	0.297	0.301	0.182	0.196
	MT	0.262	0.206	-0.056	-0.043	0.030	-0.035	0.310	-0.034	-0.054	0.251	0.171	0.187	-0.050	-0.048	-0.061	-0.016
	FIN	-0.039	0.020	0.256	0.116	0.118	0.309	-0.029	0.339	0.231	-0.032	-0.079	-0.022	0.288	0.264	0.179	0.198
	OG	-0.060	0.012	0.296	0.102	0.067	0.299	-0.062	0.270	0.292	-0.053	-0.078	-0.042	0.229	0.242	0.135	0.183
	OS	0.139	0.122	0.020	0.002	0.025	-0.004	0.199	0.005	0.000	0.172	0.112	0.157	0.002	0.001	-0.007	0.001
	OT	0.174	0.153	-0.052	-0.031	-0.002	-0.039	0.219	-0.041	-0.067	0.187	0.183	0.159	-0.055	-0.029	-0.038	-0.048
	OTRSP	0.262	0.206	-0.056	-0.043	0.030	-0.035	0.310	-0.034	-0.054	0.251	0.171	0.187	-0.050	-0.048	-0.061	-0.016
	RET	0.204	0.186	-0.041	-0.034	0.028	-0.026	0.266	-0.015	-0.039	0.229	0.174	0.189	-0.030	-0.024	-0.038	-0.020
	CS	-0.046	0.020	0.163	0.122	0.159	0.244	-0.025	0.237	0.202	-0.036	-0.062	-0.036	0.239	0.220	0.180	0.210
	TEC	-0.045	0.042	0.274	0.139	0.140	0.339	-0.034	0.339	0.259	-0.031	-0.067	-0.025	0.308	0.306	0.192	0.209
	TEL	-0.048	0.026	0.153	0.056	0.136	0.181	-0.016	0.194	0.187	-0.009	-0.066	-0.006	0.187	0.172	0.183	0.168
	UT	-0.025	-0.011	0.049	0.070	0.110	0.127	-0.025	0.114	0.127	-0.023	-0.060	-0.015	0.132	0.108	0.130	0.159

Correlation Matrix Equity Returns		EU																					
		BNK	BEV	BLDG	BMAT	CAB	CG	CGM	CH	ELEC	HT	IND	LEI	MT	FIN	OF	OG	OS	OT	CS	TEC	TEL	UT
EU	BNK	1																					
	BEV	0.687	1																				
	BLDG	0.430	0.390	1																			
	BMAT	-0.031	-0.009	-0.028	1																		
	CAB	0.853	0.741	0.435	-0.032	1																	
	CG	-0.035	-0.016	-0.037	0.788	-0.035	1																
	CGM	0.825	0.688	0.400	-0.029	0.835	-0.025	1															
	CH	0.823	0.743	0.420	-0.019	0.850	-0.003	0.875	1														
	ELEC	0.856	0.721	0.432	-0.029	0.877	-0.019	0.883	0.887	1													
	HT	0.006	-0.002	0.012	0.710	-0.015	0.774	-0.001	0.011	-0.005	1												
	IND	-0.041	-0.014	-0.018	0.923	-0.037	0.855	-0.032	-0.025	-0.031	0.768	1											
	LEI	0.779	0.658	0.372	-0.025	0.795	-0.028	0.769	0.775	0.800	-0.025	-0.031	1										
	MT	0.036	0.005	0.346	-0.048	0.036	-0.024	0.032	0.033	0.029	-0.003	-0.042	0.019	1									
	FIN	0.919	0.751	0.488	-0.043	0.915	-0.039	0.868	0.886	0.911	-0.008	-0.047	0.813	0.053	1								
	OF	-0.021	0.004	-0.001	0.867	-0.017	0.794	-0.014	-0.013	-0.012	0.731	0.931	-0.017	-0.028	-0.027	1							
	OG	-0.025	-0.021	-0.036	0.875	-0.035	0.760	-0.024	-0.025	-0.035	0.733	0.850	-0.028	-0.042	-0.042	0.820	1						
	OS	0.537	0.455	0.303	-0.049	0.584	-0.065	0.491	0.530	0.536	-0.040	-0.060	0.484	0.036	0.590	-0.046	-0.059	1					
	OT	-0.014	-0.012	0.002	0.008	-0.005	-0.047	0.000	-0.016	-0.015	-0.030	0.028	-0.023	-0.039	-0.021	0.035	-0.015	-0.046	1				
	CS	-0.047	-0.021	-0.024	0.853	-0.043	0.867	-0.032	-0.032	-0.040	0.804	0.943	-0.042	-0.039	-0.053	0.913	0.822	-0.072	0.023	1			
	TEC	-0.042	-0.019	-0.037	0.839	-0.043	0.805	-0.035	-0.034	-0.034	0.756	0.907	-0.039	-0.038	-0.051	0.855	0.784	-0.061	-0.008	0.891	1		
	TEL	-0.052	-0.032	-0.032	0.791	-0.057	0.800	-0.038	-0.037	-0.046	0.801	0.853	-0.050	-0.048	-0.064	0.851	0.807	-0.071	-0.011	0.884	0.821	1	
	UT	-0.015	-0.016	-0.005	0.819	-0.026	0.788	-0.011	-0.012	-0.016	0.783	0.858	-0.017	-0.012	-0.031	0.833	0.849	-0.062	0.001	0.858	0.807	0.867	1
JAPAN	BNK	-0.048	-0.047	-0.035	-0.005	-0.025	-0.009	-0.035	-0.051	-0.033	0.001	-0.006	-0.018	0.008	-0.041	-0.006	-0.020	-0.001	-0.001	-0.001	0.007	-0.012	-0.013
	BMAT	-0.024	0.029	-0.017	0.328	-0.001	0.279	-0.006	0.002	-0.028	0.237	0.335	-0.023	-0.015	-0.031	0.332	0.312	-0.029	0.328	0.315	0.292	0.283	0.287
	CG	-0.030	0.036	-0.005	0.290	0.007	0.255	-0.004	0.001	-0.029	0.222	0.312	-0.021	-0.023	-0.023	0.318	0.281	-0.019	0.333	0.309	0.275	0.268	0.267
	CH	0.315	0.282	0.683	-0.042	0.320	-0.047	0.273	0.281	0.305	0.000	-0.036	0.269	0.321	0.358	-0.021	-0.050	0.240	-0.009	-0.034	-0.040	-0.049	-0.023
	ELEC	0.318	0.272	0.679	-0.032	0.319	-0.049	0.271	0.268	0.308	0.015	-0.026	0.262	0.321	0.355	-0.010	-0.035	0.245	-0.010	-0.021	-0.032	-0.031	-0.010
	HT	-0.031	0.037	0.000	0.203	-0.005	0.184	-0.012	-0.013	-0.027	0.230	0.222	-0.042	-0.020	-0.028	0.243	0.222	-0.031	0.276	0.244	0.203	0.241	0.227
	IND	-0.026	0.028	-0.011	0.341	0.000	0.276	-0.006	0.002	-0.028	0.237	0.348	-0.022	-0.019	-0.026	0.348	0.316	-0.033	0.349	0.330	0.296	0.283	0.292
	MT	0.284	0.261	0.644	-0.041	0.295	-0.050	0.246	0.255	0.269	0.007	-0.031	0.241	0.318	0.325	-0.027	-0.052	0.226	-0.008	-0.033	-0.034	-0.040	-0.009
	FIN	-0.012	0.024	0.007	0.301	0.004	0.229	0.000	0.006	-0.019	0.233	0.316	-0.023	-0.010	-0.013	0.351	0.284	-0.022	0.329	0.318	0.276	0.281	0.280
	OG	-0.042	0.012	0.002	0.323	-0.021	0.234	-0.035	-0.025	-0.044	0.190	0.314	-0.031	-0.015	-0.046	0.298	0.328	-0.058	0.340	0.282	0.256	0.252	0.277
	OS	0.158	0.145	0.405	0.002	0.193	-0.015	0.140	0.164	0.165	0.017	-0.007	0.147	0.123	0.208	-0.003	-0.010	0.134	-0.003	-0.008	-0.025	-0.015	-0.011
	OT	0.182	0.175	0.452	-0.068	0.206	-0.079	0.125	0.150	0.168	-0.049	-0.067	0.157	0.171	0.221	-0.059	-0.084	0.164	-0.032	-0.072	-0.076	-0.070	-0.073
	OTRSP	0.284	0.261	0.644	-0.041	0.295	-0.050	0.246	0.255	0.269	0.007	-0.031	0.241	0.318	0.325	-0.027	-0.052	0.226	-0.008	-0.033	-0.034	-0.040	-0.009
	RET	0.221	0.230	0.568	-0.053	0.256	-0.066	0.188	0.207	0.222	-0.013	-0.049	0.206	0.191	0.273	-0.030	-0.056	0.199	0.002	-0.044	-0.054	-0.045	-0.036
	CS	-0.021	0.025	0.008	0.209	0.009	0.222	-0.002	0.006	-0.021	0.234	0.231	-0.025	0.008	-0.011	0.240	0.228	-0.029	0.247	0.254	0.215	0.245	0.237
	TEC	-0.013	0.049	0.007	0.320	0.019	0.275	0.007	0.015	-0.013	0.248	0.339	-0.004	-0.013	-0.010	0.347	0.307	-0.024	0.344	0.335	0.299	0.289	0.289
	TEL	-0.016	0.025	0.050	0.171	0.021	0.138	0.005	0.000	-0.013	0.194	0.177	-0.018	0.001	-0.005	0.192	0.198	-0.009	0.253	0.206	0.175	0.218	0.202
	UT	-0.022	-0.010	0.010	0.081	-0.015	0.123	-0.017	-0.025	-0.040	0.153	0.109	-0.038	-0.010	-0.035	0.112	0.129	-0.048	0.147	0.141	0.112	0.158	0.145

Correlation Matrix Equity Returns		JAPAN																	
		BNK	BMAT	CG	CH	ELEC	HT	IND	MT	FIN	OG	OS	OT	OTRSP	RET	CS	TEC	TEL	UT
JAPAN	BNK	1																	
	BMAT	0.021	1																
	CG	0.027	0.907	1															
	CH	-0.029	-0.027	-0.016	1														
	ELEC	-0.040	-0.045	-0.038	0.913	1													
	HT	0.005	0.717	0.774	-0.013	-0.018	1												
	IND	0.020	0.949	0.938	-0.021	-0.043	0.743	1											
	MT	-0.035	-0.036	-0.026	0.839	0.820	-0.023	-0.037	1										
	FIN	0.017	0.841	0.856	0.005	-0.005	0.716	0.870	-0.015	1									
	OG	0.015	0.765	0.709	-0.011	-0.019	0.576	0.781	-0.022	0.681	1								
	OS	-0.020	-0.030	-0.025	0.517	0.512	-0.001	-0.034	0.495	-0.024	-0.030	1							
	OT	-0.001	-0.064	-0.051	0.599	0.585	-0.055	-0.053	0.597	-0.047	-0.031	0.478	1						
	OTRSP	-0.035	-0.036	-0.026	0.839	0.820	-0.023	-0.037	0.998	-0.015	-0.022	0.495	0.597	1					
	RET	-0.015	-0.031	-0.023	0.748	0.730	-0.015	-0.026	0.737	0.000	-0.021	0.682	0.684	0.737	1				
	CS	-0.003	0.762	0.807	0.005	-0.011	0.854	0.779	-0.013	0.773	0.592	-0.008	-0.045	-0.013	-0.009	1			
	TEC	0.026	0.892	0.916	0.003	-0.016	0.758	0.928	-0.017	0.841	0.717	-0.010	-0.031	-0.017	0.005	0.788	1		
	TEL	0.019	0.592	0.639	0.019	0.016	0.688	0.608	-0.009	0.617	0.483	0.011	-0.025	-0.009	0.013	0.722	0.621	1	
	UT	0.013	0.504	0.521	0.029	0.030	0.592	0.486	0.015	0.502	0.403	0.017	-0.012	0.015	0.018	0.649	0.502	0.521	1

Table 33: Equity Regional Correlation - Full Sample

Correlation Matrix		US																							
Equity Returns		BNK	BEV	BLDG	BMAT	CAB	CG	CGM	CH	ELEC	HT	IND	LEI	MT	FIN	OF	OG	OS	OT	OTRSP	RET	CS	TEC	TEL	UT
US	BNK	1																							
	BEV	0.508	1																						
	BLDG	0.750	0.632	1																					
	BMAT	0.629	0.621	0.809	1																				
	CAB	0.721	0.727	0.854	0.807	1																			
	CG	0.681	0.876	0.835	0.789	0.886	1																		
	CGM	0.763	0.608	0.815	0.761	0.801	0.788	1																	
	CH	0.004	0.054	0.019	0.028	0.022	0.030	0.002	1																
	ELEC	0.704	0.694	0.877	0.875	0.885	0.871	0.835	0.026	1															
	HT	0.627	0.766	0.740	0.730	0.831	0.883	0.724	0.035	0.809	1														
	IND	0.762	0.701	0.912	0.882	0.905	0.894	0.922	0.014	0.959	0.823	1													
	LEI	0.741	0.661	0.861	0.761	0.845	0.842	0.800	0.027	0.850	0.757	0.887	1												
	MT	0.695	0.621	0.840	0.799	0.826	0.810	0.796	0.020	0.864	0.728	0.915	0.839	1											
	FIN	0.967	0.605	0.834	0.733	0.823	0.787	0.825	0.012	0.804	0.732	0.857	0.826	0.782	1										
	OF	0.967	0.605	0.834	0.733	0.823	0.787	0.825	0.012	0.804	0.732	0.857	0.826	0.782	1.000	1									
	OG	0.594	0.636	0.747	0.902	0.795	0.787	0.717	0.039	0.824	0.755	0.830	0.687	0.730	0.694	0.694	1								
	OS	0.583	0.586	0.714	0.678	0.725	0.736	0.681	0.031	0.750	0.713	0.767	0.743	0.695	0.676	0.676	0.640	1							
	OT	0.654	0.680	0.729	0.691	0.812	0.811	0.699	-0.017	0.759	0.755	0.782	0.720	0.709	0.742	0.742	0.710	0.630	1						
	OTRSP	0.695	0.621	0.840	0.799	0.826	0.810	0.796	0.020	0.864	0.728	0.915	0.839	1.000	0.782	0.782	0.730	0.695	0.709	1					
	RET	0.675	0.667	0.825	0.709	0.826	0.851	0.752	0.053	0.810	0.769	0.845	0.870	0.792	0.778	0.778	0.666	0.781	0.742	0.792	1				
	CS	0.735	0.733	0.886	0.794	0.934	0.914	0.819	0.040	0.890	0.842	0.921	0.933	0.854	0.841	0.841	0.757	0.794	0.802	0.854	0.963	1			
	TEC	0.694	0.684	0.827	0.828	0.872	0.851	0.781	0.007	0.905	0.790	0.899	0.835	0.802	0.794	0.794	0.788	0.772	0.770	0.802	0.822	0.887	1		
	TEL	0.654	0.680	0.729	0.691	0.812	0.811	0.699	-0.017	0.759	0.755	0.782	0.720	0.709	0.742	0.742	0.710	0.630	1.000	0.709	0.742	0.802	0.770	1	
	UT	0.549	0.718	0.702	0.744	0.789	0.821	0.669	0.046	0.757	0.800	0.777	0.673	0.696	0.661	0.661	0.818	0.625	0.765	0.696	0.690	0.767	0.734	0.765	1
UK	BNK	0.480	0.348	0.501	0.463	0.508	0.458	0.514	-0.035	0.510	0.421	0.535	0.483	0.470	0.497	0.497	0.450	0.353	0.437	0.470	0.400	0.475	0.470	0.437	0.409
	BEV	0.300	0.394	0.409	0.390	0.466	0.468	0.380	-0.033	0.438	0.447	0.445	0.411	0.384	0.351	0.351	0.396	0.308	0.420	0.384	0.358	0.432	0.408	0.420	0.390
	BMAT	-0.075	-0.114	-0.097	-0.098	-0.102	-0.127	-0.103	0.005	-0.114	-0.134	-0.104	-0.073	-0.087	-0.096	-0.096	-0.147	-0.099	-0.125	-0.087	-0.062	-0.083	-0.096	-0.125	-0.153
	CG	-0.030	-0.078	-0.049	-0.017	-0.058	-0.092	-0.042	0.060	-0.054	-0.084	-0.045	-0.035	-0.046	-0.039	-0.039	-0.047	-0.053	-0.072	-0.046	-0.048	-0.054	-0.044	-0.072	-0.091
	HT	0.016	-0.044	-0.011	-0.020	-0.027	-0.038	0.017	-0.007	-0.024	-0.046	-0.002	0.027	-0.008	0.003	0.003	-0.074	-0.031	-0.007	-0.008	-0.009	-0.011	-0.019	-0.007	-0.053
	IND	-0.035	-0.045	-0.017	-0.008	-0.025	-0.056	-0.020	0.017	-0.036	-0.086	-0.022	-0.009	-0.026	-0.036	-0.036	-0.062	-0.052	-0.069	-0.026	-0.025	-0.025	-0.033	-0.069	-0.084
	FIN	0.410	0.368	0.499	0.525	0.526	0.476	0.484	-0.063	0.559	0.455	0.547	0.499	0.469	0.454	0.454	0.508	0.379	0.445	0.469	0.396	0.485	0.499	0.445	0.432
	OF	-0.024	-0.007	-0.026	-0.016	-0.012	-0.031	-0.008	0.000	-0.026	-0.061	-0.015	-0.015	-0.019	-0.028	-0.028	-0.043	-0.063	-0.013	-0.019	-0.025	-0.022	-0.032	-0.013	-0.055
	OG	-0.055	-0.097	-0.053	-0.062	-0.062	-0.105	-0.036	-0.003	-0.070	-0.120	-0.056	-0.030	-0.052	-0.063	-0.063	-0.129	-0.073	-0.100	-0.052	-0.040	-0.053	-0.071	-0.100	-0.129
	OS	0.430	0.374	0.523	0.472	0.544	0.500	0.485	-0.047	0.550	0.475	0.553	0.512	0.480	0.479	0.479	0.448	0.373	0.480	0.480	0.444	0.517	0.501	0.480	0.415
	OT	0.285	0.288	0.373	0.351	0.413	0.390	0.341	-0.036	0.401	0.393	0.403	0.346	0.353	0.334	0.334	0.371	0.258	0.441	0.353	0.319	0.378	0.386	0.441	0.382
	RET	0.355	0.308	0.424	0.373	0.445	0.416	0.391	-0.024	0.446	0.410	0.450	0.417	0.391	0.398	0.398	0.364	0.301	0.406	0.391	0.378	0.429	0.411	0.406	0.341
	CS	-0.040	-0.053	-0.048	-0.034	-0.050	-0.071	-0.038	0.000	-0.047	-0.096	-0.040	-0.026	-0.043	-0.044	-0.044	-0.086	-0.073	-0.080	-0.043	-0.044	-0.048	-0.046	-0.080	-0.109
	TEC	-0.024	-0.045	-0.020	-0.013	-0.043	-0.059	-0.024	-0.007	-0.026	-0.076	-0.021	-0.004	-0.023	-0.030	-0.030	-0.066	-0.046	-0.053	-0.023	-0.032	-0.033	-0.029	-0.053	-0.084
	TEL	-0.017	-0.077	-0.073	-0.080	-0.066	-0.098	-0.038	0.007	-0.078	-0.091	-0.064	-0.051	-0.051	-0.036	-0.036	-0.118	-0.064	-0.067	-0.051	-0.065	-0.069	-0.074	-0.067	-0.111
	UT	0.026	-0.052	-0.041	-0.045	-0.027	-0.076	-0.008	0.022	-0.033	-0.056	-0.026	0.001	-0.026	0.009	0.009	-0.104	-0.048	-0.033	-0.026	-0.027	-0.028	-0.036	-0.033	-0.080
EU	BNK	0.483	0.398	0.553	0.547	0.556	0.516	0.551	-0.029	0.584	0.478	0.594	0.515	0.517	0.516	0.516	0.524	0.390	0.464	0.517	0.422	0.512	0.520	0.464	0.459
	BEV	0.302	0.371	0.426	0.450	0.461	0.465	0.414	-0.035	0.467	0.428	0.477	0.423	0.421	0.351	0.351	0.450	0.300	0.402	0.421	0.361	0.433	0.412	0.402	0.402
	BLDG	0.117	0.153	0.205	0.263	0.231	0.209	0.189	0.015	0.239	0.178	0.236	0.205	0.204	0.144	0.144	0.264	0.149	0.177	0.204	0.118	0.185	0.198	0.177	0.211
	BMAT	-0.035	-0.062	-0.041	-0.032	-0.044	-0.077	-0.036	0.031	-0.056	-0.085	-0.042	-0.025	-0.029	-0.042	-0.042	-0.091	-0.058	-0.075	-0.029	-0.020	-0.033	-0.046	-0.075	-0.085
	CAB	0.396	0.420	0.532	0.551	0.561	0.532	0.501	-0.047	0.590	0.506	0.580	0.504	0.497	0.452	0.452	0.533	0.393	0.482	0.497	0.418	0.511	0.513	0.482	0.476
	CG	-0.021	-0.091	-0.053	-0.029	-0.060	-0.097	-0.036	0.020	-0.067	-0.083	-0.046	-0.037	-0.031	-0.030	-0.030	-0.072	-0.076	-0.085	-0.031	-0.049	-0.054	-0.054	-0.085	-0.086
	CGM	0.476	0.436	0.598	0.644	0.610	0.567	0.580	-0.007	0.667	0.534	0.660	0.556	0.589	0.534	0.534	0.607	0.446	0.508	0.589	0.467	0.563	0.579	0.508	0.516
	CH	0.403	0.411	0.547	0.624	0.542	0.530	0.520	-0.021	0.614	0.506	0.606	0.502	0.529	0.463	0.463	0.576	0.420	0.461	0.529	0.417	0.505	0.533	0.461	0.479
	ELEC	0.417	0.416	0.564	0.599	0.569	0.542	0.532	-0.017	0.626	0.515	0.617	0.534	0.541	0.482	0.482	0.570	0.442	0.474	0.541	0.457	0.539	0.544	0.474	0.476
	HT	-0.015	-0.058	-0.042	-0.046	-0.060	-0.078	-0.010	0.028	-0.060	-0.075	-0.035	-0.015	-0.025	-0.030	-0.030	-0.107	-0.061	-0.077	-0.025	-0.037	-0.046	-0.061	-0.077	-0.092
	IND	-0.037	-0.044	-0.031	-0.020	-0.036	-0.064	-0.024	0.014	-0.045	-0.081	-0.030	-0.021	-0.021	-0.042	-0.042	-0.079	-0.057	-0.064	-0.021	-0.026	-0.032	-0.037	-0.064	-0.081
	LEI	0.407	0.376	0.523	0.523	0.515	0.491	0.506	-0.030	0.555	0.452	0.557	0.480	0.487	0.452	0.452	0.504	0.372	0.424	0.487	0.395	0.478	0.490	0.424	0.430
	MT	-0.017	-0.031	0.019	-0.002	-0.014	-0.014	0.025	-0.037	-0.007	-0.011	0.011	0.010	0.003	-0.019	-0.019	-0.013	0.001	-0.033	0.003	-0.029	-0.015	-0.012	-0.033	-0.014
	FIN	0.419	0.402	0.540	0.582	0.555	0.523	0.518	-0.040	0.599	0.496	0.591	0.512	0.511	0.471	0.471	0.563	0.391	0.472	0.511	0.412	0.508	0.522	0.472	0.480
	OF	-0.012	-0.027	-0.027	-0.018	-0.027	-0.048	-0.005	0.008	-0.034	-0.068	-0.020	-0.017	-0.018	-0.022	-0.022	-0.060	-0.057	-0.040	-0.018	-0.022	-0.027	-0.038	-0.040	-0.067
	OG	-0.052	-0.089	-0.065	-0.066	-0.066	-0.110	-0.045	0.016	-0.077	-0.117	-0.065	-0.046	-0.053	-0.063	-0.063	-0.129	-0.078	-0.099	-0.053	-0.048	-0.061	-0.071	-0.099	-0.121
	OS	0.215	0.258	0.310	0.379	0.323	0.314	0.292	-0.023	0.356	0.302	0.348	0.286	0.303	0.254	0.254	0.361	0.216	0.283	0.303	0.239	0.293	0.304	0.283	0.297
	OT	0.193	0.209	0.213	0.187	0.203	0.232	0.187	0.011	0.192	0.203	0.199	0.209	0.180	0.215	0.215	0.175	0.219	0.236	0.180	0.239	0.232	0.211	0.236	0.201
	CS	-0.036	-0.053	-0.045	-0.035	-0.048	-0.078	-0.028	0.013	-0.050	-0.090	-0.038	-0.028	-0.033	-0.044	-0.044	-0.091	-0.069	-0.077	-0.033	-0.040	-0.045	-0.049	-0.077	-0.094
	TEC	-0.009	-0.053	-0.031	-0.029	-0.044	-0.067	-0.008	0.022	-0.042	-0.078	-0.024	-0.017	-0.020	-0.024	-0.024	-0.091	-0.059	-0.066	-0.020	-0.024	-0.033	-0.045	-0.066	-0.100
	TEL	-0.029	-0.074	-0.065	-0.062	-0.067	-0.103	-0.046	0.017	-0.072	-0.101	-0.060	-0.048	-0.046	-0.043	-0.043	-0.115	-0.074	-0.080	-0.046	-0.055	-0.065	-0.068	-0.080	-0.108
	UT	-0.024	-0.064	-0.041	-0.037	-0.041	-0.090	-0.031	0.043	-0.051	-0.088	-0.040	-0.022	-0.025	-0.035	-0.035	-0.102	-0.062	-0.065	-0.025	-0.034	-0.040	-0.047	-0.065	-0.091
JAPAN	BNK	-0.058	-0.078	-0.039	-0.055	-0.071	-0.078	-0.086	-0.013	-0.063	-0.073	-0.074	-0.062	-0.072	-0.062	-0.062	-0.061	-0.045	-0.079	-0.072	-0.046	-0.059	-0.045	-0.079	-0.080
	BMAT	0.014	0.011	0.024	0.005	0.004	0.007	0.003	0.054	0.007	-0.011	0.007	0.025	0.001	0.016	0.016	-0.042	0.010	0.013	0.001	0.042	0.027	0.015	0.013	-0.013
	CG	0.012	0.036	0.023	-0.007	0.003	0.019	0.000	0.039	0.015	0.007	0.008	0.027	-0.012	0.013	0.013	-0.049	0.012	0.038	-0.012	0.038	0.027	0.027	0.038	0.004
	CH	0.076	0.090	0.133	0.157	0.168	0.152	0.136	-0.030	0.164	0.124	0.167	0.139	0.140	0.094	0.094	0.174	0.093	0.136	0.140	0.081	0.130	0.137	0.136	0.178
	ELEC	0.074	0.090	0.140	0.150	0.165	0.151	0.145	-0.007	0.171	0.113	0.171	0.149	0.147	0.092	0.092	0.162	0.098	0.118	0.147	0.076	0.128	0.132	0.118	0.162
	HT	0.008	0.058	-0.012	-0.030	-0.010	0.024	-0.009	0.070	-0.017	0.013	-0.017	0.012	-0.033	0.006	0.006	-0.062	0.003	0.037	-0.033	0.032	0.017	0.004	0.037	0.012
	IND	0.005	0.030	0.030	0.011	0.012	0.020	0.007	0.041	0.016	-0.001	0.015	0.029	0.005	0.008	0.008	-0.030	0.022	0.030	0.005	0.048	0.034	0.024	0.030	0.005
	MT	0.072	0.090	0.134	0.157	0.159	0.141	0.124	-0.008	0.148	0.117	0.154	0.129	0.147	0.083	0.083	0.183	0.074	0.111	0.147	0.072	0.123	0.113	0.111	0.177
	FIN	0.030	0.046	0.031	-0.009	0.007	0.025	0.012	0.034	0.007	0.005	0.009	0.024	-0.002	0.030	0.030	-0.043	0.006	0.021	-0.002	0.044	0.028	0.003	0.021	0.000
	OG	-0.028	0.007	0.012	0.003	-0.010	-0.001	-0.019	0.063	-0.006	-0.015	-0.011	0.008	-0.019	-0.020	-0.020	-0.028	0.025	-0.003	-0.019	0.037	0.018	0.011	-0.003	-0.019
	OS	0.019	0.058	0.057	0.070	0.067	0.076	0.025	-0.013	0.083	0.062	0.068	0.049	0.055	0.036	0.036	0.095	0.032	0.078	0.055	0.014	0.044	0.063	0.078	0.087
	OT	-0.019	0.005	0.014	0.029	0.039	0.032	-0.022	0.005	0.013	0.035	0.013	0.018	0.023	-0.013	-0.013	0.069	-0.033	0.030	0.023	-0.030	0.003	0.004	0.030	0.061
	OTRSP	0.072	0.090	0.134	0.157	0.159	0.141	0.124	-0.008	0.148	0.117	0.154	0.129	0.147	0.083	0.083	0.183	0.074	0.111	0.147	0.072	0.123	0.113	0.111	0.177
	RET	0.053	0.111	0.108	0.110	0.135	0.151	0.071	-0.002	0.126	0.116	0.127	0.105	0.132	0.073	0.073	0.148	0.056	0.144	0.132	0.080	0.110	0.095	0.144	0.163
	CS	0.026	0.027	0.001	-0.018	-0.004	0.017	0.007	0.040	-0.005	0.015	-0.002	0.008	-0.014	0.020	0.020	-0.045	-0.003	0.032	-0.014	0.017	0.009	0.000	0.032	0.013
	TEC	0.009	0.027	0.026	-0.019	-0.004	0.009	0.001	0.035	0.002	-0.007	0.002	0.027	-0.008	0.008	0.008	-0.056	-0.001	0.020	-0.008	0.029	0.018	0.006	0.020	0.000
	TEL	0.033	0.061	0.020	-0.024	0.018	0.024	0.023	0.025	0.007	0.015	0.004	0.020	-0.013	0.027	0.027	-0.056	0.028	0.053	-0.013	0.029	0.021	0.021	0.053	-0.014
	UT	0.008	-0.002	-0.032	-0.052	-0.041	-0.025	-0.016	0.029	-0.026	-0.030	-0.028	-0.005	-0.028	-0.004	-0.004	-0.081	-0.056	-0.041	-0.028	-0.033	-0.031	-0.024	-0.041	-0.033

Correlation Matrix		UK															
Equity Returns		BNK	BEV	BMAT	CG	HT	IND	FIN	OF	OG	OS	OT	RET	CS	TEC	TEL	UT
UK	BNK	1															
	BEV	0.504	1														
	BMAT	-0.088	-0.052	1													
	CG	-0.054	-0.045	0.465	1												
	HT	0.078	-0.022	0.366	0.372	1											
	IND	-0.048	-0.020	0.750	0.541	0.535	1										
	FIN	0.759	0.629	-0.103	-0.057	0.006	-0.060	1									
	OF	-0.043	-0.004	0.697	0.489	0.443	0.790	-0.055	1								
	OG	-0.016	-0.032	0.746	0.452	0.509	0.710	-0.048	0.636	1							
	OS	0.696	0.705	-0.073	-0.072	0.004	-0.047	0.790	-0.025	-0.028	1						
	OT	0.504	0.557	-0.062	-0.053	0.000	-0.053	0.542	-0.041	-0.064	0.627	1					
	RET	0.563	0.595	-0.028	-0.060	-0.006	-0.031	0.641	0.004	-0.003	0.918	0.557	1				
	CS	-0.051	-0.053	0.650	0.501	0.556	0.868	-0.066	0.777	0.643	-0.068	-0.065	-0.049	1			
	TEC	-0.065	-0.008	0.697	0.474	0.457	0.801	-0.058	0.709	0.632	-0.039	-0.049	-0.009	0.764	1		
	TEL	-0.056	-0.041	0.464	0.391	0.547	0.580	-0.087	0.558	0.534	-0.068	-0.118	-0.029	0.628	0.542	1	
	UT	0.015	-0.036	0.457	0.428	0.580	0.570	-0.038	0.471	0.597	-0.050	-0.034	-0.043	0.597	0.494	0.565	1
EU	BNK	0.869	0.569	-0.082	-0.049	0.057	-0.048	0.819	-0.038	-0.021	0.758	0.527	0.618	-0.070	-0.057	-0.073	-0.024
	BEV	0.548	0.720	-0.053	-0.051	0.007	-0.022	0.633	0.004	-0.036	0.643	0.481	0.541	-0.051	-0.017	-0.067	-0.055
	BLDG	0.368	0.282	-0.084	-0.032	0.017	-0.033	0.441	-0.016	-0.067	0.337	0.197	0.238	-0.047	-0.069	-0.061	-0.010
	BMAT	-0.035	-0.008	0.935	0.510	0.387	0.789	-0.056	0.738	0.765	-0.030	-0.036	-0.002	0.694	0.712	0.489	0.499
	CAB	0.678	0.634	-0.078	-0.031	0.031	-0.038	0.773	-0.012	-0.038	0.810	0.576	0.649	-0.055	-0.028	-0.075	-0.039
	CG	-0.033	-0.006	0.668	0.595	0.458	0.735	-0.046	0.647	0.649	-0.049	-0.060	-0.045	0.699	0.628	0.514	0.516
	CGM	0.661	0.584	-0.090	-0.046	0.032	-0.037	0.754	-0.025	-0.029	0.725	0.500	0.586	-0.044	-0.030	-0.058	-0.037
	CH	0.626	0.580	-0.065	-0.027	0.067	-0.014	0.715	-0.024	-0.027	0.679	0.480	0.549	-0.037	-0.015	-0.046	-0.017
	ELEC	0.685	0.626	-0.081	-0.024	0.035	-0.031	0.781	-0.016	-0.037	0.753	0.523	0.612	-0.054	-0.022	-0.074	-0.032
	HT	0.047	-0.011	0.608	0.494	0.720	0.667	-0.003	0.590	0.675	-0.020	-0.037	-0.015	0.648	0.572	0.562	0.609
	IND	-0.030	-0.004	0.822	0.552	0.431	0.858	-0.054	0.790	0.726	-0.036	-0.043	-0.017	0.785	0.748	0.537	0.530
	LEI	0.650	0.572	-0.062	-0.032	0.002	-0.030	0.702	-0.021	-0.033	0.701	0.487	0.574	-0.051	-0.024	-0.073	-0.038
	MT	0.009	-0.044	-0.086	0.002	0.000	-0.066	0.048	-0.055	-0.060	0.006	-0.061	-0.044	-0.064	-0.089	-0.084	-0.025
	FIN	0.737	0.617	-0.095	-0.047	0.037	-0.044	0.862	-0.033	-0.043	0.772	0.545	0.632	-0.061	-0.046	-0.079	-0.041
	OF	-0.006	0.008	0.766	0.525	0.428	0.801	-0.035	0.894	0.680	-0.018	-0.037	0.005	0.770	0.708	0.539	0.501
	OG	-0.011	-0.021	0.808	0.493	0.458	0.745	-0.049	0.701	0.912	-0.033	-0.059	-0.009	0.682	0.662	0.544	0.588
	OS	0.413	0.363	-0.080	-0.039	0.028	-0.040	0.481	-0.027	-0.046	0.478	0.334	0.407	-0.067	-0.038	-0.039	-0.046
	OT	-0.022	-0.018	-0.034	-0.078	-0.082	0.020	-0.044	-0.003	-0.048	-0.037	-0.055	-0.036	-0.026	-0.026	-0.070	-0.023
	CS	-0.020	-0.014	0.745	0.531	0.477	0.831	-0.046	0.775	0.701	-0.044	-0.059	-0.026	0.858	0.733	0.576	0.569
	TEC	-0.021	-0.006	0.751	0.530	0.447	0.777	-0.052	0.737	0.701	-0.038	-0.061	-0.020	0.753	0.770	0.561	0.533
	TEL	-0.027	-0.017	0.686	0.521	0.506	0.717	-0.058	0.697	0.692	-0.050	-0.071	-0.021	0.713	0.639	0.740	0.596
	UT	0.015	-0.005	0.710	0.528	0.472	0.691	-0.022	0.653	0.737	-0.026	-0.037	-0.021	0.654	0.609	0.533	0.675
JAPAN	BNK	-0.048	-0.038	0.013	0.002	0.016	0.012	-0.076	0.014	-0.015	-0.059	-0.058	-0.056	0.020	0.026	0.003	0.005
	BMAT	-0.069	0.034	0.343	0.147	0.113	0.358	-0.076	0.328	0.311	-0.065	-0.112	-0.055	0.280	0.337	0.186	0.213
	CG	-0.078	0.031	0.304	0.144	0.087	0.338	-0.064	0.321	0.276	-0.069	-0.083	-0.060	0.285	0.330	0.159	0.190
	CH	0.295	0.259	-0.081	-0.040	0.030	-0.042	0.359	-0.036	-0.063	0.288	0.182	0.201	-0.043	-0.074	-0.090	-0.018
	ELEC	0.297	0.252	-0.080	-0.031	0.012	-0.052	0.358	-0.033	-0.062	0.301	0.172	0.213	-0.050	-0.083	-0.087	-0.022
	HT	-0.082	0.007	0.218	0.087	0.129	0.255	-0.084	0.256	0.249	-0.066	-0.114	-0.054	0.222	0.239	0.170	0.206
	IND	-0.072	0.025	0.363	0.148	0.098	0.373	-0.070	0.343	0.311	-0.071	-0.104	-0.063	0.302	0.352	0.174	0.211
	MT	0.275	0.235	-0.084	-0.052	0.019	-0.058	0.328	-0.059	-0.079	0.263	0.175	0.178	-0.084	-0.086	-0.098	-0.029
	FIN	-0.056	0.007	0.317	0.103	0.103	0.331	-0.055	0.352	0.273	-0.058	-0.114	-0.046	0.298	0.317	0.163	0.209
	OG	-0.075	0.004	0.353	0.107	0.058	0.318	-0.081	0.272	0.322	-0.076	-0.109	-0.068	0.231	0.286	0.123	0.198
	OS	0.140	0.120	-0.004	0.030	0.032	0.007	0.190	0.004	0.002	0.155	0.094	0.128	0.007	0.010	-0.003	0.019
	OT	0.178	0.169	-0.085	-0.038	-0.017	-0.063	0.230	-0.062	-0.100	0.182	0.185	0.147	-0.085	-0.079	-0.067	-0.074
	OTRSP	0.275	0.235	-0.084	-0.052	0.019	-0.058	0.328	-0.059	-0.079	0.263	0.175	0.178	-0.084	-0.086	-0.098	-0.029
	RET	0.212	0.199	-0.082	-0.035	0.023	-0.054	0.271	-0.036	-0.086	0.230	0.179	0.179	-0.052	-0.064	-0.071	-0.027
	CS	-0.069	0.003	0.227	0.127	0.147	0.269	-0.054	0.251	0.264	-0.072	-0.100	-0.069	0.249	0.273	0.187	0.244
	TEC	-0.059	0.038	0.342	0.151	0.131	0.370	-0.051	0.355	0.309	-0.050	-0.094	-0.040	0.321	0.365	0.194	0.231
	TEL	-0.069	-0.006	0.176	0.032	0.116	0.178	-0.029	0.198	0.201	-0.032	-0.111	-0.022	0.182	0.201	0.185	0.181
	UT	-0.043	-0.049	0.042	0.054	0.084	0.090	-0.052	0.079	0.129	-0.058	-0.113	-0.042	0.095	0.101	0.109	0.141

Correlation Matrix		EU																					
Equity Returns		BNK	BEV	BLDG	BMAT	CAB	CG	CGM	CH	ELEC	HT	IND	LEI	MT	FIN	OF	OG	OS	OT	CS	TEC	TEL	UT
EU	BNK	1																					
	BEV	0.729	1																				
	BLDG	0.459	0.419	1																			
	BMAT	-0.031	-0.018	-0.050	1																		
	CAB	0.882	0.770	0.468	-0.038	1																	
	CG	-0.029	-0.026	-0.056	0.792	-0.038	1																
	CGM	0.842	0.723	0.434	-0.035	0.865	-0.024	1															
	CH	0.839	0.766	0.449	-0.019	0.870	0.005	0.886	1														
	ELEC	0.870	0.752	0.468	-0.034	0.899	-0.014	0.893	0.899	1													
	HT	0.032	-0.012	0.005	0.740	-0.010	0.770	0.013	0.025	0.007	1												
	IND	-0.037	-0.024	-0.034	0.937	-0.041	0.850	-0.032	-0.022	-0.029	0.780	1											
	LEI	0.822	0.706	0.384	-0.029	0.832	-0.024	0.810	0.810	0.834	-0.026	-0.032	1										
	MT	0.035	0.012	0.373	-0.060	0.033	-0.034	0.037	0.043	0.031	-0.008	-0.057	0.006	1									
	FIN	0.933	0.780	0.516	-0.049	0.930	-0.037	0.888	0.899	0.924	0.002	-0.049	0.838	0.052	1								
	OF	-0.014	0.004	-0.014	0.880	-0.016	0.790	-0.009	-0.006	-0.005	0.749	0.937	-0.017	-0.042	-0.025	1							
	OG	-0.021	-0.037	-0.063	0.903	-0.045	0.789	-0.030	-0.029	-0.038	0.801	0.885	-0.038	-0.057	-0.049	0.846	1						
	OS	0.562	0.497	0.343	-0.055	0.595	-0.061	0.528	0.571	0.555	-0.026	-0.059	0.515	0.040	0.603	-0.044	-0.065	1					
	OT	-0.035	-0.025	0.000	-0.001	-0.024	-0.077	-0.010	-0.027	-0.023	-0.055	0.016	-0.026	-0.030	-0.030	0.026	-0.029	-0.082	1				
	CS	-0.038	-0.029	-0.036	0.877	-0.044	0.856	-0.026	-0.024	-0.033	0.815	0.952	-0.040	-0.058	-0.047	0.924	0.869	-0.072	0.004	1			
	TEC	-0.034	-0.028	-0.050	0.862	-0.045	0.801	-0.030	-0.028	-0.027	0.768	0.916	-0.040	-0.049	-0.051	0.872	0.841	-0.062	-0.029	0.906	1		
	TEL	-0.044	-0.046	-0.043	0.816	-0.063	0.792	-0.036	-0.033	-0.044	0.827	0.868	-0.055	-0.063	-0.065	0.863	0.853	-0.067	-0.035	0.894	0.845	1	
	UT	-0.001	-0.031	-0.015	0.844	-0.029	0.783	-0.010	-0.006	-0.010	0.824	0.872	-0.016	-0.023	-0.029	0.844	0.890	-0.061	-0.003	0.871	0.830	0.887	1
JAPAN	BNK	-0.061	-0.061	-0.039	0.004	-0.041	-0.011	-0.041	-0.049	-0.035	0.008	-0.002	-0.028	0.022	-0.047	0.003	-0.005	-0.017	0.007	0.000	0.009	-0.007	0.001
	BMAT	-0.028	0.020	-0.039	0.376	-0.008	0.308	-0.019	0.000	-0.035	0.263	0.372	-0.018	-0.032	-0.040	0.359	0.363	-0.053	0.359	0.346	0.330	0.300	0.329
	CG	-0.042	0.022	-0.029	0.336	-0.009	0.268	-0.025	-0.008	-0.045	0.228	0.347	-0.024	-0.042	-0.039	0.345	0.327	-0.048	0.375	0.336	0.310	0.274	0.301
	CH	0.347	0.349	0.754	-0.056	0.363	-0.064	0.312	0.327	0.344	-0.009	-0.048	0.302	0.350	0.400	-0.036	-0.069	0.279	-0.013	-0.045	-0.044	-0.069	-0.031
	ELEC	0.343	0.332	0.758	-0.049	0.356	-0.074	0.311	0.310	0.344	0.001	-0.041	0.286	0.358	0.390	-0.024	-0.056	0.271	-0.015	-0.033	-0.040	-0.049	-0.017
	HT	-0.053	0.015	-0.012	0.251	-0.034	0.192	-0.034	-0.031	-0.044	0.249	0.261	-0.054	-0.044	-0.052	0.281	0.288	-0.083	0.348	0.274	0.244	0.264	0.276
	IND	-0.035	0.017	-0.033	0.389	-0.008	0.296	-0.022	-0.004	-0.038	0.253	0.383	-0.018	-0.036	-0.037	0.373	0.366	-0.059	0.385	0.359	0.331	0.294	0.331
	MT	0.318	0.318	0.709	-0.051	0.336	-0.074	0.293	0.300	0.311	-0.001	-0.044	0.270	0.361	0.365	-0.040	-0.067	0.263	-0.017	-0.049	-0.042	-0.062	-0.013
	FIN	-0.026	0.005	-0.001	0.346	-0.010	0.234	-0.022	-0.007	-0.033	0.249	0.350	-0.029	-0.020	-0.029	0.382	0.330	-0.056	0.375	0.349	0.311	0.291	0.318
	OG	-0.055	-0.004	-0.016	0.369	-0.032	0.254	-0.052	-0.035	-0.052	0.217	0.345	-0.028	-0.026	-0.059	0.320	0.362	-0.080	0.385	0.310	0.293	0.263	0.312
	OS	0.162	0.155	0.411	-0.012	0.194	-0.020	0.154	0.183	0.182	0.020	-0.011	0.141	0.117	0.215	-0.009	-0.017	0.119	-0.018	-0.012	-0.025	-0.019	-0.019
	OT	0.196	0.205	0.475	-0.101	0.222	-0.116	0.135	0.169	0.182	-0.084	-0.104	0.162	0.186	0.241	-0.090	-0.124	0.186	-0.061	-0.107	-0.114	-0.115	-0.112
	OTRSP	0.318	0.318	0.709	-0.051	0.336	-0.074	0.293	0.300	0.311	-0.001	-0.044	0.270	0.361	0.365	-0.040	-0.067	0.263	-0.017	-0.049	-0.042	-0.062	-0.013
	RET	0.243	0.272	0.614	-0.085	0.285	-0.102	0.220	0.238	0.257	-0.029	-0.081	0.228	0.221	0.303	-0.058	-0.102	0.224	-0.009	-0.071	-0.076	-0.079	-0.062
	CS	-0.033	0.006	-0.006	0.259	-0.010	0.242	-0.019	-0.003	-0.034	0.262	0.271	-0.027	-0.001	-0.025	0.272	0.295	-0.068	0.288	0.287	0.259	0.268	0.290
	TEC	-0.023	0.040	-0.010	0.369	0.007	0.296	-0.004	0.012	-0.019	0.268	0.377	0.000	-0.028	-0.020	0.380	0.361	-0.050	0.381	0.366	0.337	0.308	0.328
	TEL	-0.029	-0.006	0.059	0.193	0.002	0.121	-0.012	-0.014	-0.028	0.202	0.191	-0.033	-0.012	-0.016	0.208	0.224	-0.039	0.288	0.221	0.204	0.223	0.225
	UT	-0.043	-0.054	-0.004	0.073	-0.042	0.097	-0.035	-0.044	-0.059	0.140	0.097	-0.057	-0.029	-0.057	0.093	0.137	-0.082	0.135	0.128	0.115	0.141	0.149

Correlation Matrix		JAPAN																	
Equity Returns		BNK	BMAT	CG	CH	ELEC	HT	IND	MT	FIN	OG	OS	OT	OTRSP	RET	CS	TEC	TEL	UT
JAPAN	BNK	1																	
	BMAT	0.060	1																
	CG	0.064	0.904	1															
	CH	-0.057	-0.056	-0.055	1														
	ELEC	-0.070	-0.082	-0.083	0.928	1													
	HT	0.043	0.705	0.737	-0.036	-0.048	1												
	IND	0.056	0.951	0.935	-0.057	-0.085	0.714	1											
	MT	-0.061	-0.073	-0.067	0.839	0.826	-0.063	-0.078	1										
	FIN	0.044	0.833	0.845	-0.012	-0.024	0.706	0.867	-0.041	1									
	OG	0.040	0.789	0.736	-0.040	-0.059	0.615	0.815	-0.051	0.700	1								
	OS	-0.041	-0.078	-0.077	0.476	0.454	-0.049	-0.089	0.412	-0.060	-0.081	1							
	OT	-0.024	-0.094	-0.099	0.552	0.532	-0.116	-0.089	0.558	-0.073	-0.057	0.414	1						
	OTRSP	-0.061	-0.073	-0.067	0.839	0.826	-0.063	-0.078	1.000	-0.041	-0.051	0.412	0.558	1					
	RET	-0.025	-0.074	-0.076	0.734	0.706	-0.060	-0.077	0.699	-0.030	-0.064	0.630	0.671	0.699	1				
	CS	0.026	0.755	0.764	-0.027	-0.045	0.831	0.753	-0.058	0.755	0.627	-0.060	-0.098	-0.058	-0.055	1			
	TEC	0.054	0.898	0.920	-0.030	-0.053	0.737	0.928	-0.059	0.847	0.751	-0.057	-0.071	-0.059	-0.035	0.772	1		
	TEL	0.064	0.543	0.577	0.011	0.004	0.673	0.551	-0.029	0.596	0.481	-0.014	-0.067	-0.029	0.002	0.711	0.583	1	
	UT	0.055	0.401	0.403	0.018	0.013	0.533	0.366	-0.004	0.414	0.347	-0.007	-0.046	-0.004	0.001	0.600	0.405	0.485	1

Table 34: Equity Regional Correlation - Crisis Sample

Correlation Matrix		US																							
Equity Returns		BNK	BEV	BLDG	BMAT	CAB	CG	CGM	CH	ELEC	HT	IND	LEI	MT	FIN	OF	OG	OS	OT	OTRSP	RET	CS	TEC	TEL	UT
US	BNK	1
	BEV	0.393	1
	BLDG	0.640	0.464	1
	BMAT	0.684	0.462	0.747	1
	CAB	0.638	0.520	0.674	0.668	1
	CG	0.602	0.845	0.698	0.683	0.729	1
	CGM	0.685	0.546	0.715	0.747	0.685	0.752	1
	CH	0.047	0.007	0.036	0.034	0.032	0.018	0.016	1
	ELEC	0.747	0.505	0.793	0.818	0.730	0.757	0.819	0.007	1
	HT	0.618	0.492	0.661	0.602	0.672	0.688	0.647	0.018	0.706	1
	IND	0.772	0.567	0.832	0.840	0.781	0.814	0.915	0.013	0.934	0.728	1
	LEI	0.669	0.525	0.728	0.670	0.746	0.761	0.701	0.037	0.779	0.713	0.809	1
	MT	0.704	0.467	0.704	0.748	0.683	0.687	0.753	0.004	0.797	0.605	0.880	0.703	1
	FIN	0.937	0.554	0.756	0.769	0.759	0.778	0.787	0.032	0.848	0.729	0.886	0.787	0.785	1
	OF	0.937	0.554	0.756	0.769	0.759	0.778	0.787	0.032	0.848	0.729	0.886	0.787	0.785	1.000	1
	OG	0.579	0.364	0.598	0.772	0.561	0.551	0.619	0.048	0.663	0.488	0.684	0.506	0.631	0.632	0.632	1
	OS	0.555	0.435	0.616	0.553	0.633	0.628	0.586	0.017	0.671	0.615	0.679	0.675	0.569	0.656	0.656	0.423	1
	OT	0.426	0.520	0.492	0.518	0.552	0.634	0.546	-0.019	0.531	0.476	0.585	0.507	0.492	0.557	0.557	0.437	0.453	1
	OTRSP	0.704	0.467	0.704	0.748	0.683	0.687	0.753	0.004	0.797	0.605	0.880	0.703	1.000	0.785	0.785	0.631	0.569	0.492	1
	RET	0.604	0.572	0.671	0.575	0.702	0.783	0.650	0.019	0.695	0.675	0.738	0.769	0.624	0.733	0.733	0.454	0.681	0.523	0.624	1
	CS	0.696	0.605	0.760	0.688	0.873	0.842	0.746	0.028	0.801	0.772	0.850	0.901	0.730	0.833	0.833	0.547	0.729	0.583	0.730	0.933	1
	TEC	0.648	0.526	0.667	0.678	0.706	0.740	0.708	0.021	0.806	0.685	0.804	0.783	0.677	0.757	0.757	0.540	0.694	0.530	0.677	0.732	0.810	1
	TEL	0.426	0.520	0.492	0.518	0.552	0.634	0.546	-0.019	0.531	0.476	0.585	0.507	0.492	0.557	0.557	0.437	0.453	1.000	0.492	0.523	0.583	0.530	1
	UT	0.186	0.579	0.369	0.375	0.378	0.599	0.416	-0.019	0.383	0.370	0.437	0.360	0.374	0.385	0.385	0.353	0.269	0.483	0.374	0.397	0.429	0.354	0.483	1
UK	BNK	0.571	0.213	0.377	0.454	0.412	0.377	0.432	-0.016	0.497	0.364	0.494	0.461	0.448	0.553	0.553	0.365	0.410	0.263	0.448	0.350	0.435	0.428	0.263	0.073
	BEV	0.231	0.329	0.245	0.242	0.277	0.373	0.304	0.037	0.306	0.257	0.312	0.294	0.246	0.296	0.296	0.181	0.256	0.248	0.246	0.280	0.312	0.284	0.248	0.225
	BMAT	-0.017	0.022	0.026	-0.012	-0.008	0.034	-0.011	-0.046	0.024	-0.010	0.013	0.015	0.019	0.007	0.007	0.009	-0.006	0.026	0.019	0.024	0.013	0.010	0.026	0.052
	CG	-0.027	-0.026	0.011	-0.049	-0.007	-0.030	-0.035	0.017	-0.025	-0.049	-0.030	-0.059	-0.023	-0.032	-0.032	0.010	-0.054	-0.021	-0.023	-0.028	-0.030	-0.053	-0.021	-0.043
	HT	-0.068	0.013	-0.001	-0.048	-0.010	0.009	-0.064	-0.036	-0.023	-0.003	-0.044	-0.024	-0.036	-0.047	-0.047	-0.002	0.004	-0.026	-0.036	0.004	-0.003	-0.022	-0.026	0.026
	IND	-0.073	0.010	-0.006	-0.079	-0.022	0.007	-0.077	-0.013	-0.043	-0.040	-0.054	-0.047	-0.042	-0.054	-0.054	-0.043	-0.042	-0.037	-0.042	0.002	-0.018	-0.061	-0.037	0.007
	FIN	0.512	0.291	0.410	0.444	0.440	0.438	0.447	-0.006	0.520	0.401	0.511	0.505	0.437	0.540	0.540	0.344	0.425	0.299	0.437	0.394	0.477	0.450	0.299	0.117
	OF	-0.076	-0.040	-0.023	-0.084	-0.044	-0.044	-0.106	-0.011	-0.069	-0.054	-0.082	-0.059	-0.061	-0.067	-0.067	-0.046	-0.069	-0.070	-0.061	-0.037	-0.049	-0.069	-0.070	-0.028
	OG	-0.049	0.038	0.018	-0.014	0.013	0.052	-0.014	-0.037	0.014	0.032	0.005	0.034	0.003	-0.019	-0.019	-0.001	-0.009	0.036	0.003	0.035	0.033	0.022	0.036	0.042
	OS	0.449	0.334	0.394	0.398	0.438	0.461	0.417	-0.018	0.490	0.398	0.484	0.529	0.402	0.499	0.499	0.292	0.422	0.307	0.402	0.403	0.487	0.461	0.307	0.152
	OT	0.338	0.307	0.295	0.296	0.368	0.387	0.333	0.010	0.360	0.325	0.369	0.382	0.287	0.392	0.392	0.236	0.340	0.337	0.287	0.318	0.382	0.349	0.337	0.186
	RET	0.412	0.275	0.344	0.382	0.382	0.397	0.377	-0.017	0.450	0.332	0.433	0.446	0.363	0.440	0.440	0.314	0.365	0.271	0.363	0.341	0.414	0.412	0.271	0.109
	CS	-0.082	-0.017	-0.021	-0.095	-0.037	-0.025	-0.090	-0.001	-0.071	-0.068	-0.078	-0.077	-0.061	-0.070	-0.070	-0.049	-0.068	-0.042	-0.061	-0.039	-0.048	-0.086	-0.042	-0.010
	TEC	-0.069	0.000	-0.034	-0.077	-0.019	-0.003	-0.088	0.005	-0.060	-0.023	-0.073	-0.043	-0.063	-0.055	-0.055	-0.034	-0.032	-0.037	-0.063	-0.002	-0.018	-0.071	-0.037	-0.022
	TEL	-0.065	-0.018	-0.018	-0.074	-0.033	-0.044	-0.070	-0.001	-0.056	-0.018	-0.067	-0.063	-0.078	-0.059	-0.059	-0.049	-0.053	-0.038	-0.078	-0.023	-0.033	-0.057	-0.038	-0.004
	UT	-0.098	0.007	-0.052	-0.108	-0.047	-0.031	-0.094	0.009	-0.081	-0.059	-0.095	-0.081	-0.101	-0.085	-0.085	-0.025	-0.033	-0.029	-0.101	-0.050	-0.059	-0.068	-0.029	0.002
EU	BNK	0.556	0.279	0.410	0.516	0.445	0.436	0.468	0.014	0.540	0.373	0.528	0.491	0.465	0.569	0.569	0.409	0.409	0.305	0.465	0.363	0.459	0.460	0.305	0.140
	BEV	0.273	0.396	0.308	0.340	0.327	0.447	0.349	0.035	0.380	0.302	0.377	0.363	0.295	0.355	0.355	0.252	0.308	0.296	0.295	0.321	0.370	0.350	0.296	0.241
	BLDG	0.189	0.185	0.171	0.212	0.182	0.220	0.200	-0.024	0.225	0.152	0.218	0.228	0.189	0.224	0.224	0.121	0.176	0.150	0.189	0.170	0.206	0.220	0.150	0.109
	BMAT	-0.040	0.031	0.030	-0.018	-0.008	0.031	-0.030	-0.012	0.001	-0.023	-0.002	-0.014	-0.001	-0.015	-0.015	0.003	-0.029	-0.005	-0.001	0.013	0.001	-0.013	-0.005	0.038
	CAB	0.395	0.330	0.381	0.429	0.427	0.444	0.406	-0.008	0.466	0.342	0.458	0.477	0.371	0.460	0.460	0.319	0.356	0.293	0.371	0.359	0.448	0.424	0.293	0.190
	CG	-0.059	0.010	0.002	-0.055	-0.017	-0.001	-0.059	0.000	-0.039	-0.053	-0.040	-0.055	-0.041	-0.045	-0.045	-0.018	-0.051	-0.016	-0.041	-0.021	-0.027	-0.051	-0.016	0.005
	CGM	0.481	0.312	0.442	0.513	0.453	0.457	0.505	0.020	0.549	0.383	0.551	0.483	0.459	0.526	0.526	0.393	0.415	0.310	0.459	0.395	0.476	0.484	0.310	0.176
	CH	0.451	0.333	0.434	0.494	0.439	0.468	0.491	0.036	0.525	0.384	0.534	0.467	0.452	0.511	0.511	0.394	0.402	0.322	0.452	0.373	0.458	0.464	0.322	0.204
	ELEC	0.442	0.282	0.420	0.484	0.416	0.429	0.465	0.010	0.527	0.340	0.522	0.462	0.435	0.492	0.492	0.363	0.396	0.286	0.435	0.348	0.435	0.438	0.286	0.176
	HT	-0.070	0.020	0.015	-0.038	-0.017	0.011	-0.054	-0.016	-0.031	-0.025	-0.037	-0.044	-0.036	-0.047	-0.047	0.005	-0.043	-0.035	-0.036	-0.017	-0.023	-0.049	-0.035	0.035
	IND	-0.056	0.022	0.026	-0.045	-0.009	0.019	-0.057	0.002	-0.034	-0.034	-0.034	-0.040	-0.035	-0.038	-0.038	-0.013	-0.049	-0.021	-0.035	0.007	-0.010	-0.042	-0.021	0.013
	LEI	0.296	0.221	0.307	0.325	0.314	0.313	0.303	0.010	0.362	0.257	0.353	0.372	0.268	0.343	0.343	0.206	0.288	0.237	0.268	0.278	0.339	0.344	0.237	0.144
	MT	0.048	-0.026	-0.006	0.015	-0.004	-0.025	0.002	-0.035	0.024	-0.019	0.005	0.008	0.006	0.016	0.016	0.007	0.005	-0.020	0.006	-0.001	-0.001	0.013	-0.020	-0.076
	FIN	0.463	0.315	0.408	0.480	0.433	0.449	0.444	0.018	0.512	0.363	0.501	0.486	0.420	0.509	0.509	0.369	0.394	0.308	0.420	0.371	0.458	0.444	0.308	0.170
	OF	-0.066	-0.027	0.007	-0.056	-0.035	-0.026	-0.090	0.010	-0.058	-0.054	-0.062	-0.058	-0.056	-0.056	-0.056	-0.024	-0.084	-0.059	-0.056	-0.033	-0.044	-0.056	-0.059	-0.021
	OG	-0.057	0.032	0.028	-0.024	0.002	0.042	-0.028	-0.011	-0.003	0.008	-0.007	0.007	-0.017	-0.031	-0.031	-0.005	-0.030	0.018	-0.017	0.031	0.019	0.011	0.018	0.032
	OS	0.232	0.182	0.202	0.244	0.209	0.234	0.202	0.023	0.261	0.171	0.251	0.255	0.210	0.260	0.260	0.147	0.188	0.134	0.210	0.173	0.222	0.238	0.134	0.072
	OT	0.069	0.149	0.139	0.171	0.153	0.190	0.158	0.005	0.147	0.153	0.172	0.171	0.151	0.119	0.119	0.173	0.093	0.126	0.151	0.150	0.171	0.159	0.126	0.127
	CS	-0.077	0.001	0.007	-0.068	-0.025	-0.008	-0.068	0.008	-0.056	-0.056	-0.054	-0.067	-0.055	-0.060	-0.060	-0.030	-0.067	-0.025	-0.055	-0.026	-0.037	-0.063	-0.025	0.001
	TEC	-0.085	-0.011	-0.008	-0.079	-0.026	-0.016	-0.093	-0.006	-0.063	-0.052	-0.072	-0.060	-0.069	-0.073	-0.073	-0.041	-0.061	-0.042	-0.069	-0.013	-0.030	-0.068	-0.042	-0.002
	TEL	-0.081	0.016	0.001	-0.060	-0.041	-0.012	-0.067	0.006	-0.058	-0.041	-0.058	-0.071	-0.075	-0.065	-0.065	-0.037	-0.073	-0.028	-0.075	-0.039	-0.047	-0.060	-0.028	0.008
	UT	-0.069	0.020	0.009	-0.053	-0.026	0.005	-0.056	0.017	-0.046	-0.037	-0.047	-0.060	-0.069	-0.051	-0.051	0.002	-0.058	0.000	-0.069	-0.022	-0.033	-0.038	0.000	0.013
JAPAN	BNK	-0.047	-0.030	-0.043	-0.019	-0.039	-0.025	-0.064	-0.044	-0.040	-0.012	-0.051	-0.009	-0.053	-0.046	-0.046	-0.043	-0.056	-0.020	-0.053	-0.022	-0.024	-0.045	-0.020	-0.019
	BMAT	0.043	0.029	0.050	0.041	0.020	0.031	0.040	0.012	0.031	-0.007	0.035	0.047	0.023	0.036	0.036	0.012	-0.020	-0.010	0.023	0.040	0.035	0.036	-0.010	-0.039
	CG	0.048	0.032	0.052	0.030	0.033	0.037	0.034	0.008	0.038	-0.001	0.034	0.056	0.016	0.045	0.045	0.023	-0.015	0.014	0.016	0.053	0.047	0.054	0.014	-0.025
	CH	0.167	0.079	0.076	0.121	0.104	0.102	0.117	-0.022	0.156	0.061	0.133	0.137	0.117	0.158	0.158	0.089	0.102	0.077	0.117	0.093	0.113	0.122	0.077	0.063
	ELEC	0.177	0.082	0.074	0.134	0.117	0.107	0.112	-0.031	0.157	0.090	0.135	0.162	0.123	0.173	0.173	0.094	0.135	0.092	0.123	0.096	0.126	0.136	0.092	0.052
	HT	0.052	0.024	0.068	0.027	0.047	0.029	0.021	0.044	0.031	0.031	0.029	0.057	0.008	0.053	0.053	0.032	0.003	0.014	0.008	0.045	0.049	0.050	0.014	-0.007
	IND	0.051	0.021	0.059	0.044	0.028	0.032	0.043	0.010	0.042	-0.005	0.044	0.057	0.028	0.046	0.046	0.026	-0.011	0.009	0.028	0.048	0.043	0.054	0.009	-0.030
	MT	0.142	0.092	0.053	0.088	0.084	0.092	0.092	-0.021	0.110	0.042	0.099	0.114	0.089	0.136	0.136	0.052	0.088	0.084	0.089	0.072	0.092	0.092	0.084	0.060
	FIN	0.077	0.024	0.062	0.049	0.048	0.031	0.045	0.037	0.046	0.016	0.047	0.063	0.025	0.067	0.067	0.036	0.000	0.013	0.025	0.051	0.054	0.069	0.013	-0.045
	OG	0.045	-0.003	0.047	0.036	0.026	0.013	0.040	0.018	0.037	0.005	0.037	0.039	0.040	0.034	0.034	0.033	-0.003	0.000	0.040	0.033	0.032	0.015	0.000	-0.062
	OS	0.101	0.083	0.061	0.105	0.096	0.098	0.100	0.024	0.116	0.074	0.109	0.136	0.096	0.114	0.114	0.082	0.056	0.074	0.096	0.096	0.115	0.103	0.074	0.058
	OT	0.108	0.086	0.068	0.115	0.124	0.103	0.092	-0.039	0.120	0.075	0.114	0.128	0.093	0.118	0.118	0.087	0.101	0.103	0.093	0.104	0.123	0.117	0.103	0.055
	OTRSP	0.142	0.092	0.053	0.088	0.084	0.092	0.092	-0.021	0.110	0.042	0.099	0.114	0.089	0.136	0.136	0.052	0.088	0.084	0.089	0.072	0.092	0.092	0.084	0.060
	RET	0.122	0.114	0.067	0.098	0.119	0.117	0.105	-0.027	0.121	0.069	0.113	0.127	0.100	0.131	0.131	0.066	0.092	0.099	0.100	0.113	0.126	0.112	0.099	0.083
	CS	0.046	0.010	0.042	0.016	0.028	0.015	0.024	0.025	0.024	-0.014	0.022	0.046	0.010	0.038	0.038	0.020	-0.014	0.023	0.010	0.040	0.037	0.036	0.023	-0.011
	TEC	0.056	0.033	0.056	0.036	0.050	0.039	0.039	0.023	0.049	0.005	0.046	0.071	0.031	0.054	0.054	0.018	-0.002	0.022	0.031	0.055	0.059	0.060	0.022	-0.017
	TEL	0.038	0.047	0.043	0.033	0.018	0.044	0.031	0.040	0.014	-0.001	0.024	0.043	0.016	0.035	0.035	0.036	-0.028	0.037	0.016	0.053	0.040	0.028	0.037	-0.002
	UT	0.030	0.036	0.069	0.034	0.038	0.049	0.057	0.013	0.058	0.039	0.055	0.069	0.031	0.047	0.047	0.010	0.061	0.060	0.031	0.055	0.060	0.078	0.060	0.023

Correlation Matrix		UK															
Equity Returns		BNK	BEV	BMAT	CG	HT	IND	FIN	OF	OG	OS	OT	RET	CS	TEC	TEL	UT
UK	BNK	1
	BEV	0.381	1
	BMAT	0.016	0.007	1
	CG	-0.038	-0.013	0.296	1
	HT	-0.053	-0.001	0.284	0.320	1
	IND	-0.080	-0.012	0.511	0.423	0.573	1
	FIN	0.749	0.460	0.010	-0.004	-0.014	-0.066	1
	OF	-0.069	-0.023	0.501	0.441	0.505	0.822	-0.052	1
	OG	-0.027	0.003	0.635	0.315	0.409	0.549	-0.010	0.537	1
	OS	0.682	0.543	0.016	-0.017	-0.014	-0.048	0.828	-0.043	0.028	1
	OT	0.526	0.439	0.008	-0.002	0.006	-0.024	0.570	-0.039	-0.010	0.658	1
	RET	0.634	0.444	0.015	-0.019	-0.029	-0.046	0.746	-0.037	0.026	0.895	0.581	1
	CS	-0.077	-0.008	0.355	0.459	0.559	0.849	-0.079	0.810	0.415	-0.064	-0.015	-0.059	1
	TEC	-0.064	0.014	0.291	0.293	0.414	0.617	-0.035	0.544	0.313	-0.026	-0.014	-0.035	0.613	1
	TEL	-0.093	-0.010	0.282	0.384	0.512	0.586	-0.059	0.600	0.392	-0.036	-0.024	-0.038	0.657	0.420	1
	UT	-0.088	0.020	0.315	0.381	0.501	0.534	-0.063	0.497	0.455	-0.034	0.005	-0.050	0.575	0.388	0.503	1
EU	BNK	0.815	0.324	0.012	-0.025	-0.059	-0.088	0.736	-0.061	-0.017	0.646	0.472	0.619	-0.094	-0.067	-0.101	-0.100
	BEV	0.417	0.720	0.011	-0.010	-0.008	-0.022	0.530	-0.026	0.006	0.565	0.456	0.485	-0.031	-0.003	-0.050	0.000
	BLDG	0.296	0.261	0.062	-0.048	0.037	0.018	0.354	0.027	0.034	0.303	0.216	0.276	-0.023	0.013	-0.058	0.001
	BMAT	-0.032	0.039	0.811	0.434	0.364	0.677	-0.017	0.663	0.585	-0.005	-0.004	-0.007	0.575	0.410	0.415	0.411
	CAB	0.564	0.405	0.005	-0.012	-0.026	-0.052	0.707	-0.046	0.001	0.792	0.541	0.677	-0.064	-0.037	-0.076	-0.050
	CG	-0.053	0.030	0.436	0.509	0.462	0.697	-0.041	0.666	0.415	-0.029	0.006	-0.026	0.722	0.476	0.528	0.535
	CGM	0.560	0.345	0.000	-0.002	-0.031	-0.065	0.614	-0.053	-0.006	0.585	0.411	0.553	-0.092	-0.068	-0.092	-0.087
	CH	0.558	0.446	-0.006	-0.012	-0.028	-0.074	0.651	-0.069	-0.003	0.649	0.469	0.602	-0.086	-0.054	-0.091	-0.061
	ELEC	0.607	0.391	0.013	0.002	-0.023	-0.072	0.706	-0.052	-0.017	0.684	0.473	0.637	-0.090	-0.054	-0.078	-0.075
	HT	-0.061	0.058	0.337	0.387	0.705	0.641	-0.038	0.593	0.368	-0.029	-0.023	-0.047	0.648	0.448	0.518	0.501
	IND	-0.065	0.037	0.518	0.456	0.407	0.807	-0.040	0.736	0.470	-0.020	-0.004	-0.016	0.728	0.505	0.501	0.451
	LEI	0.409	0.303	0.018	-0.009	-0.014	-0.049	0.554	-0.030	0.023	0.536	0.347	0.463	-0.059	-0.030	-0.045	-0.040
	MT	0.034	0.011	-0.016	-0.014	-0.007	-0.012	0.047	0.022	-0.010	0.050	-0.008	0.069	0.014	0.020	-0.043	0.030
	FIN	0.662	0.410	0.015	0.000	-0.019	-0.069	0.838	-0.048	0.004	0.737	0.506	0.681	-0.090	-0.037	-0.079	-0.065
	OF	-0.061	0.013	0.490	0.463	0.360	0.718	-0.043	0.844	0.464	-0.030	-0.030	-0.027	0.697	0.441	0.503	0.411
	OG	-0.046	0.041	0.649	0.399	0.335	0.608	-0.027	0.622	0.864	0.015	-0.005	0.016	0.505	0.334	0.417	0.471
	OS	0.395	0.198	-0.005	-0.047	-0.031	-0.077	0.514	-0.043	-0.022	0.509	0.331	0.497	-0.068	-0.031	-0.076	-0.054
	OT	0.013	-0.001	0.029	-0.035	-0.011	0.072	0.013	0.064	0.033	-0.006	0.021	-0.024	0.081	0.079	-0.002	0.010
	CS	-0.075	0.034	0.411	0.477	0.419	0.745	-0.062	0.731	0.382	-0.040	-0.014	-0.035	0.827	0.500	0.559	0.502
	TEC	-0.073	0.034	0.398	0.439	0.426	0.694	-0.048	0.646	0.358	-0.035	-0.010	-0.039	0.688	0.636	0.474	0.441
	TEL	-0.086	0.029	0.423	0.472	0.441	0.658	-0.056	0.685	0.442	-0.032	-0.026	-0.034	0.683	0.421	0.737	0.517
	UT	-0.074	0.044	0.428	0.448	0.355	0.565	-0.043	0.586	0.439	-0.014	-0.002	-0.025	0.566	0.349	0.466	0.641
JAPAN	BNK	-0.027	-0.036	-0.041	-0.015	-0.004	-0.014	-0.047	-0.048	-0.046	-0.028	0.002	-0.046	0.012	-0.006	-0.012	-0.051
	BMAT	-0.031	0.029	0.148	0.107	0.142	0.280	-0.015	0.327	0.177	-0.017	-0.053	-0.009	0.272	0.187	0.195	0.160
	CG	-0.014	0.046	0.113	0.146	0.181	0.278	0.014	0.320	0.166	0.019	-0.016	0.019	0.282	0.191	0.210	0.180
	CH	0.284	0.150	0.014	-0.040	0.028	0.001	0.290	0.028	-0.007	0.254	0.183	0.240	-0.004	0.007	-0.009	-0.009
	ELEC	0.311	0.168	0.042	-0.031	0.066	0.033	0.323	0.048	0.023	0.284	0.190	0.259	0.017	0.022	-0.001	0.007
	HT	-0.002	0.076	0.068	0.096	0.170	0.207	0.017	0.238	0.098	0.031	0.013	0.022	0.231	0.144	0.174	0.148
	IND	-0.023	0.035	0.148	0.117	0.157	0.295	0.000	0.339	0.174	-0.012	-0.040	-0.009	0.284	0.200	0.198	0.162
	MT	0.244	0.150	0.009	-0.025	0.048	0.015	0.274	0.031	-0.008	0.227	0.162	0.205	0.021	0.020	0.010	0.010
	FIN	0.007	0.050	0.112	0.148	0.146	0.260	0.032	0.322	0.147	0.026	-0.008	0.026	0.265	0.164	0.212	0.178
	OG	-0.020	0.031	0.160	0.090	0.083	0.256	-0.017	0.279	0.232	-0.002	-0.012	0.011	0.223	0.156	0.160	0.154
	OS	0.163	0.131	0.064	-0.049	0.017	-0.023	0.230	0.007	-0.003	0.210	0.145	0.209	-0.007	-0.012	-0.014	-0.027
	OT	0.194	0.134	0.007	-0.022	0.020	-0.001	0.212	-0.002	-0.021	0.206	0.187	0.184	-0.009	0.043	0.007	-0.007
	OTRSP	0.244	0.150	0.009	-0.025	0.048	0.015	0.274	0.031	-0.008	0.227	0.162	0.205	0.021	0.020	0.010	0.010
	RET	0.213	0.168	0.040	-0.034	0.035	0.022	0.271	0.034	0.035	0.236	0.169	0.211	0.010	0.038	0.016	-0.009
	CS	-0.007	0.048	0.065	0.124	0.177	0.221	0.021	0.254	0.120	0.019	-0.009	0.012	0.238	0.153	0.178	0.169
	TEC	-0.004	0.051	0.102	0.107	0.158	0.264	0.008	0.305	0.158	0.013	-0.010	0.008	0.276	0.187	0.188	0.162
	TEL	-0.009	0.078	0.122	0.103	0.166	0.195	0.005	0.215	0.170	0.028	0.003	0.018	0.206	0.134	0.187	0.152
	UT	0.010	0.049	0.065	0.105	0.148	0.197	0.021	0.215	0.126	0.033	0.021	0.027	0.203	0.121	0.168	0.193

Correlation Matrix		EU																					
Equity Returns		BNK	BEV	BLDG	BMAT	CAB	CG	CGM	CH	ELEC	HT	IND	LEI	MT	FIN	OF	OG	OS	OT	CS	TEC	TEL	UT
EU	BNK	1
	BEV	0.567	1
	BLDG	0.339	0.313	1
	BMAT	-0.031	0.026	0.053	1
	CAB	0.753	0.665	0.336	-0.009	1
	CG	-0.060	0.014	0.024	0.783	-0.029	1
	CGM	0.756	0.589	0.291	-0.004	0.728	-0.027	1
	CH	0.757	0.683	0.327	-0.018	0.783	-0.032	0.826	1
	ELEC	0.797	0.634	0.317	-0.008	0.798	-0.039	0.840	0.837	1
	HT	-0.070	0.022	0.030	0.654	-0.030	0.794	-0.045	-0.034	-0.043	1
	IND	-0.061	0.021	0.040	0.858	-0.019	0.885	-0.030	-0.040	-0.042	0.766	1
	LEI	0.600	0.513	0.340	-0.004	0.662	-0.044	0.587	0.622	0.649	-0.025	-0.032	1
	MT	0.036	-0.020	0.259	0.004	0.043	0.013	0.010	-0.010	0.019	0.015	0.022	0.074	1
	FIN	0.867	0.672	0.401	-0.016	0.864	-0.046	0.789	0.832	0.860	-0.042	-0.041	0.711	0.058	1
	OF	-0.050	0.004	0.046	0.811	-0.025	0.816	-0.035	-0.047	-0.044	0.702	0.904	-0.020	0.032	-0.040	1
	OG	-0.038	0.025	0.041	0.799	-0.006	0.671	-0.005	-0.010	-0.025	0.561	0.744	0.008	0.009	-0.018	0.739	1
	OS	0.531	0.390	0.237	-0.042	0.599	-0.080	0.460	0.492	0.555	-0.065	-0.070	0.471	0.031	0.614	-0.059	-0.049	1
	OT	0.047	0.021	0.006	0.038	0.046	0.038	0.035	0.019	0.012	0.028	0.072	-0.016	-0.067	0.005	0.064	0.022	0.017	1
	CS	-0.083	0.004	0.012	0.777	-0.040	0.903	-0.055	-0.061	-0.066	0.782	0.921	-0.053	0.030	-0.073	0.882	0.678	-0.078	0.079	1
	TEC	-0.076	0.010	0.004	0.736	-0.040	0.823	-0.057	-0.059	-0.062	0.743	0.867	-0.041	0.005	-0.053	0.787	0.599	-0.066	0.055	0.842	1
	TEL	-0.079	0.002	-0.004	0.747	-0.040	0.827	-0.048	-0.050	-0.058	0.739	0.836	-0.037	-0.003	-0.064	0.838	0.688	-0.082	0.048	0.861	0.763	1
	UT	-0.068	0.027	0.028	0.734	-0.015	0.808	-0.019	-0.034	-0.041	0.683	0.814	-0.023	0.026	-0.043	0.800	0.721	-0.069	0.009	0.816	0.721	0.818	1
JAPAN	BNK	-0.021	-0.020	-0.027	-0.032	0.009	-0.006	-0.026	-0.062	-0.032	-0.012	-0.021	0.004	-0.029	-0.030	-0.036	-0.054	0.022	-0.020	-0.004	0.001	-0.023	-0.049
	BMAT	-0.014	0.051	0.036	0.201	0.016	0.213	0.033	0.008	-0.009	0.182	0.246	-0.044	0.032	-0.009	0.270	0.194	0.008	0.259	0.243	0.195	0.244	0.185
	CG	0.000	0.066	0.049	0.181	0.044	0.231	0.050	0.026	0.010	0.211	0.238	-0.018	0.022	0.014	0.266	0.182	0.025	0.245	0.255	0.196	0.256	0.191
	CH	0.245	0.140	0.535	-0.002	0.224	-0.006	0.183	0.173	0.217	0.016	-0.005	0.195	0.261	0.262	0.020	-0.009	0.179	-0.004	-0.009	-0.035	-0.009	-0.007
	ELEC	0.272	0.150	0.516	0.015	0.240	0.010	0.180	0.173	0.233	0.044	0.015	0.215	0.242	0.283	0.028	0.013	0.205	-0.001	0.005	-0.014	0.004	0.002
	HT	0.007	0.076	0.019	0.133	0.047	0.188	0.030	0.025	0.005	0.211	0.176	-0.027	0.024	0.015	0.202	0.122	0.031	0.172	0.212	0.146	0.215	0.157
	IND	-0.004	0.055	0.044	0.208	0.019	0.227	0.039	0.018	0.000	0.203	0.258	-0.038	0.029	0.004	0.286	0.195	0.009	0.267	0.260	0.202	0.258	0.193
	MT	0.209	0.144	0.509	-0.015	0.205	0.005	0.132	0.148	0.172	0.022	0.001	0.173	0.220	0.236	0.005	-0.019	0.166	0.007	0.000	-0.016	0.003	-0.002
	FIN	0.026	0.068	0.027	0.184	0.040	0.220	0.066	0.044	0.019	0.198	0.231	-0.011	0.015	0.029	0.279	0.177	0.033	0.230	0.246	0.188	0.260	0.189
	OG	-0.009	0.048	0.045	0.199	0.005	0.187	0.014	0.006	-0.024	0.130	0.236	-0.045	0.017	-0.011	0.249	0.247	-0.023	0.239	0.215	0.158	0.228	0.192
	OS	0.172	0.138	0.422	0.035	0.211	-0.007	0.135	0.151	0.155	0.013	0.002	0.187	0.152	0.224	0.009	0.002	0.154	0.022	-0.002	-0.029	-0.008	0.002
	OT	0.172	0.133	0.440	-0.004	0.191	-0.013	0.122	0.130	0.162	0.005	0.003	0.169	0.159	0.203	0.000	-0.018	0.135	0.014	-0.011	-0.006	0.003	-0.007
	OTRSP	0.209	0.144	0.509	-0.015	0.205	0.005	0.132	0.148	0.172	0.022	0.001	0.173	0.220	0.236	0.005	-0.019	0.166	0.007	0.000	-0.016	0.003	-0.002
	RET	0.194	0.161	0.509	0.021	0.212	0.003	0.136	0.160	0.168	0.013	0.022	0.180	0.144	0.235	0.031	0.031	0.165	0.020	0.005	-0.013	0.013	0.013
	CS	0.000	0.057	0.032	0.141	0.041	0.210	0.034	0.028	0.003	0.203	0.188	-0.030	0.026	0.015	0.216	0.133	0.016	0.196	0.219	0.160	0.222	0.166
	TEC	0.012	0.070	0.047	0.173	0.048	0.220	0.040	0.026	0.007	0.203	0.234	-0.022	0.029	0.017	0.259	0.174	0.019	0.258	0.255	0.192	0.244	0.185
	TEL	0.007	0.081	0.036	0.151	0.057	0.184	0.042	0.030	0.018	0.187	0.175	0.009	0.027	0.018	0.185	0.164	0.028	0.203	0.193	0.135	0.218	0.172
	UT	0.018	0.066	0.037	0.116	0.034	0.184	0.018	0.014	-0.005	0.179	0.155	-0.002	0.025	0.006	0.170	0.125	-0.007	0.174	0.176	0.119	0.194	0.151

Correlation Matrix		JAPAN																	
Equity Returns		BNK	BMAT	CG	CH	ELEC	HT	IND	MT	FIN	OG	OS	OT	OTRSP	RET	CS	TEC	TEL	UT
JAPAN	BNK	1
	BMAT	-0.052	1
	CG	-0.040	0.913	1
	CH	0.018	0.027	0.050	1
	ELEC	0.008	0.021	0.040	0.887	1
	HT	-0.047	0.755	0.839	0.016	0.021	1
	IND	-0.052	0.945	0.946	0.047	0.035	0.814	1
	MT	0.006	0.029	0.044	0.837	0.808	0.030	0.040	1
	FIN	-0.033	0.855	0.876	0.036	0.028	0.750	0.878	0.029	1
	OG	-0.032	0.716	0.656	0.043	0.055	0.537	0.709	0.032	0.642	1
	OS	0.007	0.038	0.046	0.586	0.600	0.050	0.049	0.620	0.028	0.045	1
	OT	0.029	-0.022	0.013	0.676	0.667	0.011	-0.002	0.661	-0.012	0.007	0.550	1
	OTRSP	0.006	0.029	0.044	0.837	0.808	0.030	0.040	1.000	0.029	0.032	0.620	0.661	1
	RET	-0.002	0.035	0.055	0.776	0.773	0.037	0.057	0.800	0.047	0.048	0.745	0.699	0.800	1
	CS	-0.044	0.798	0.881	0.047	0.031	0.878	0.850	0.045	0.823	0.563	0.045	0.010	0.045	0.041	1
	TEC	-0.030	0.881	0.913	0.066	0.055	0.822	0.928	0.065	0.828	0.643	0.062	0.030	0.065	0.073	0.848	1
	TEL	-0.046	0.680	0.736	0.028	0.029	0.705	0.714	0.018	0.661	0.499	0.039	0.020	0.018	0.025	0.733	0.700	1
	UT	-0.047	0.669	0.693	0.042	0.052	0.657	0.684	0.039	0.645	0.498	0.042	0.024	0.039	0.036	0.701	0.673	0.560	1

Table 35: Equity Regional Correlation - After-Crisis Sample

A.4 Descriptive Statistics – Volatility Data

		Mean	Std. Dev.	Med.	Max.	Min.	Skew.	Exc. Kurt.
US	Bank	0.026	0.025	0.020	0.277	0.000	3.763	27.061
	Consumer Goods	0.015	0.015	0.010	0.149	0.000	3.068	18.393
	Electric Power	0.025	0.074	0.011	1.276	0.000	9.229	104.319
	Energy	0.027	0.057	0.012	0.584	0.000	5.228	34.759
	Manufacturing	0.016	0.029	0.010	0.308	0.000	6.247	49.205
	Financials	0.038	0.050	0.017	0.439	0.000	2.366	10.168
	Consumer Services	0.019	0.040	0.010	0.457	0.000	6.365	49.102
	Telecommunications	0.018	0.020	0.013	0.313	0.000	6.979	89.067
	Transportation	0.033	0.075	0.009	0.753	0.000	4.260	25.356
	Airlines	0.014	0.019	0.007	0.149	0.000	3.210	15.540
	Banking	0.026	0.025	0.020	0.277	0.000	3.810	27.566
	Beverages/Bottling	0.018	0.027	0.009	0.229	0.000	3.789	20.973
	Building Products	0.016	0.021	0.009	0.161	0.000	2.992	14.547
	Cable Media	0.022	0.027	0.013	0.230	0.000	3.118	16.219
	Conglomerate/Diversified Mfg	0.015	0.018	0.009	0.154	0.000	3.381	16.798
	Chemicals	0.019	0.031	0.010	0.296	0.000	4.733	30.312
	Containers	0.012	0.016	0.008	0.154	0.000	3.651	21.961
	Other Consumer Goods	0.018	0.030	0.009	0.323	0.000	4.697	33.257
	Electric Utility	0.020	0.042	0.005	0.364	0.000	3.967	21.816
	Electronics	0.025	0.027	0.016	0.247	0.000	2.733	14.605
	Food Processors	0.018	0.022	0.010	0.213	0.000	3.270	18.525
	Oilfield Machinery and Products	0.030	0.067	0.012	0.709	0.000	5.229	35.206
	Healthcare Facilities	0.025	0.035	0.013	0.324	0.000	3.848	24.137
	Home Builders	0.017	0.018	0.012	0.160	0.000	3.001	15.366
	Other Industrials	0.025	0.043	0.010	0.441	0.000	3.782	23.576
	Information/Data Technology	0.023	0.054	0.011	0.712	0.000	8.318	87.069
	Leisure	0.019	0.026	0.011	0.205	0.000	3.444	17.807
	Lodging	0.030	0.081	0.010	1.066	0.000	7.505	73.870
	Machinery	0.027	0.073	0.007	0.580	0.000	4.381	22.535
	Metals&Mining	0.025	0.057	0.012	0.543	0.000	6.064	42.843
	Other Financials	0.038	0.050	0.017	0.439	0.000	2.366	10.168
	Other Oil&Gas	0.020	0.028	0.013	0.317	0.000	5.231	41.732
	Pharmaceutical	0.017	0.026	0.007	0.220	0.000	3.544	18.893

	Property&Casualty Insurance	0.024	0.043	0.014	0.796	0.000	11.781	198.628
	Publishing	0.019	0.029	0.012	0.449	0.000	7.826	94.068
	Railroads	0.016	0.019	0.011	0.201	0.000	3.833	23.726
	Real Estate	0.012	0.013	0.008	0.085	0.000	2.345	10.002
	Other Retail	0.030	0.070	0.013	0.815	0.000	7.251	66.381
	Restaurants	0.015	0.027	0.009	0.290	0.000	6.155	47.683
	Retail Stores Food and Drug	0.030	0.096	0.012	1.148	0.000	7.453	62.846
	Healthcare Supplies	0.012	0.018	0.006	0.235	0.000	5.505	51.646
	Other Consumer Services	0.023	0.073	0.011	1.130	0.000	11.435	151.754
	Other Telecommunications	0.018	0.021	0.013	0.313	0.000	6.201	70.929
	Textiles\Apparel\Shoes	0.027	0.047	0.011	0.328	0.000	3.300	14.418
	Utilities	0.022	0.078	0.011	1.564	0.000	12.795	180.390
	Tobacco	0.015	0.030	0.006	0.216	0.000	3.853	19.090
	Other Transportation	0.056	0.157	0.007	1.118	0.000	3.928	19.536
	Vehicles Parts	0.018	0.031	0.007	0.273	0.000	3.380	17.339
UK	Banks	0.034	0.056	0.020	0.467	0.000	4.757	28.264
	Consumer Goods	0.017	0.019	0.011	0.239	0.000	4.601	41.782
	Electric Power	0.015	0.031	0.007	0.423	0.000	7.654	80.930
	Manufacturing	0.015	0.023	0.008	0.319	0.000	6.155	55.715
	Financials	0.015	0.021	0.011	0.386	0.000	10.335	164.494
	Consumer Services	0.014	0.014	0.009	0.138	0.000	3.038	16.812
	Telecommunications	0.018	0.024	0.013	0.411	0.000	9.749	139.881
	Banking	0.034	0.056	0.020	0.467	0.000	4.745	28.190
	Beverages/Bottling	0.013	0.015	0.008	0.156	0.000	3.999	26.870
	Life Insurance	0.023	0.038	0.010	0.381	0.000	4.455	30.432
	Other Financials	0.016	0.020	0.012	0.331	0.000	7.651	102.133
	Other Retail	0.023	0.020	0.018	0.148	0.000	2.015	8.837
	Other Consumer Services	0.017	0.025	0.009	0.192	0.000	3.338	16.002
	Other Telecommunications	0.018	0.024	0.014	0.411	0.000	9.762	140.136
EU	Banks	0.031	0.046	0.016	0.543	0.001	4.602	33.291
	Consumer Goods	0.015	0.016	0.010	0.169	0.000	3.717	27.618
	Electric Power	0.032	0.064	0.013	0.493	0.000	4.224	21.935
	Energy	0.023	0.024	0.017	0.315	0.000	5.008	48.110
	Manufacturing	0.032	0.093	0.015	1.294	0.000	7.643	74.775
	Financials	0.034	0.093	0.014	0.966	0.000	6.628	53.075
	Consumer Services	0.017	0.027	0.011	0.364	0.000	8.143	89.693

	Telecommunications	0.022	0.029	0.013	0.225	0.000	3.689	18.532
	Transportation	0.027	0.047	0.015	0.450	0.000	5.205	34.008
	Automotive Manufacturer	0.025	0.028	0.019	0.408	0.000	7.294	82.869
	Banking	0.032	0.047	0.016	0.543	0.000	4.436	31.572
	Beverages/Bottling	0.018	0.021	0.011	0.180	0.000	3.299	17.682
	Building Products	0.020	0.019	0.015	0.155	0.000	2.723	13.218
	Cable Media	0.019	0.028	0.013	0.400	0.000	8.687	103.546
	Chemicals	0.017	0.017	0.013	0.171	0.000	3.551	22.396
	Conglomerate/Diversified Mfg	0.018	0.019	0.013	0.182	0.000	3.332	19.161
	Other Telecommunications	0.027	0.047	0.015	0.450	0.000	5.209	34.024
	Electronics	0.021	0.022	0.014	0.189	0.000	2.799	14.653
	Leisure	0.022	0.047	0.014	0.958	0.000	14.433	264.953
	Metals&Mining	0.026	0.052	0.014	0.646	0.000	6.241	50.808
	Other Financials	0.037	0.101	0.015	1.045	0.000	6.630	52.844
	Oil&Gas	0.022	0.029	0.015	0.457	0.000	7.397	92.344
	Consumer Services	0.015	0.024	0.009	0.376	0.000	8.274	105.165
	Utility Other	0.036	0.080	0.013	0.598	0.000	4.278	22.247
JP	Banks	0.023	0.018	0.018	0.133	0.000	1.862	7.875
	Electric Power	0.028	0.029	0.019	0.196	0.000	2.402	10.314
	Manufacturing	0.018	0.017	0.012	0.119	0.000	2.370	10.466
	Other Financials	0.020	0.021	0.014	0.188	0.000	2.755	13.978
	Consumer Services	0.046	0.121	0.015	1.253	0.000	5.611	41.020
	Telecommunications	0.036	0.052	0.019	0.338	0.000	2.753	10.998
	Transportation	0.030	0.027	0.023	0.214	0.000	1.938	8.470
	Automotive Manufacturer	0.036	0.071	0.011	0.609	0.000	3.963	20.705
	Banking	0.023	0.018	0.018	0.133	0.000	1.871	7.948
	Chemicals	0.027	0.043	0.013	0.594	0.000	5.906	61.259
	Electronics	0.025	0.034	0.014	0.335	0.000	3.486	20.449
	Industrials	0.046	0.080	0.019	0.695	0.000	3.910	21.797
	Metals&Mining	0.028	0.033	0.016	0.343	0.000	3.161	19.664
	Railroads	0.019	0.026	0.011	0.210	0.000	3.036	16.114
	Other Retail	0.072	0.227	0.006	1.684	0.000	4.356	22.565
	Other Consumer Services	0.034	0.070	0.015	0.630	0.000	4.553	26.724
	Other Telecommunications	0.036	0.052	0.018	0.338	0.000	2.752	10.995
	Other Transportation	0.034	0.034	0.023	0.223	0.000	1.797	6.874
	Utility Other	0.030	0.034	0.021	0.355	0.000	3.484	22.446

Table 36: CDS Spreads Volatility Full Sample Descriptive Statistics

		Mean	Std. Dev.	Med.	Max.	Min.	Skew.	Exc. Kurt.
US	Bank	0.034	0.028	0.028	0.277	0.002	3.740	24.884
	Consumer Goods	0.013	0.014	0.009	0.125	0.000	3.199	17.971
	Electric Power	0.023	0.052	0.011	0.501	0.000	5.751	40.105
	Energy	0.018	0.029	0.010	0.283	0.000	4.787	29.510
	Manufacturing	0.013	0.012	0.010	0.102	0.000	2.967	16.556
	Financials	0.032	0.043	0.014	0.222	0.000	2.243	7.185
	Consumer Services	0.012	0.010	0.010	0.080	0.000	2.763	13.938
	Telecommunications	0.018	0.015	0.013	0.093	0.000	1.974	7.771
	Transportation	0.031	0.066	0.012	0.753	0.000	5.689	46.041
	Airlines	0.016	0.016	0.011	0.095	0.000	2.030	7.757
	Banking	0.034	0.028	0.028	0.277	0.000	3.747	24.997
	Beverages/Bottling	0.013	0.019	0.008	0.205	0.000	5.326	45.825
	Building Products	0.017	0.022	0.009	0.161	0.000	2.929	13.746
	Cable Media	0.019	0.018	0.014	0.178	0.000	3.474	24.946
	Conglomerate/Diversified Mfg	0.019	0.021	0.012	0.154	0.000	2.924	12.450
	Chemicals	0.014	0.013	0.010	0.089	0.000	2.177	8.827
	Containers	0.014	0.018	0.008	0.154	0.000	3.442	18.644
	Other Consumer Goods	0.015	0.019	0.010	0.211	0.000	5.160	44.314
	Electric Utility	0.018	0.033	0.010	0.364	0.000	6.984	65.218
	Electronics	0.020	0.023	0.015	0.247	0.000	5.062	39.739
	Food Processors	0.016	0.022	0.009	0.185	0.000	3.550	19.009
	Oilfield Machinery and Products	0.020	0.036	0.010	0.336	0.000	4.598	26.786
	Healthcare Facilities	0.018	0.020	0.013	0.165	0.000	3.935	24.773
	Home Builders	0.020	0.019	0.014	0.160	0.000	2.638	12.519
	Other Industrials	0.023	0.037	0.013	0.441	0.000	6.548	62.427
	Information/Data Technology	0.017	0.023	0.011	0.275	0.000	6.252	58.507
	Leisure	0.023	0.030	0.013	0.205	0.000	3.385	16.223
	Lodging	0.014	0.020	0.009	0.177	0.000	4.197	27.169
	Machinery	0.014	0.015	0.008	0.093	0.000	2.211	8.460
	Metals&Mining	0.015	0.013	0.011	0.112	0.000	2.675	13.011
	Other Financials	0.032	0.043	0.014	0.222	0.000	2.243	7.185
	Other Oil&Gas	0.016	0.017	0.012	0.130	0.000	3.164	16.843
	Pharmaceutical	0.015	0.024	0.007	0.220	0.000	4.472	29.770
	Property&Casualty Insurance	0.032	0.055	0.019	0.796	0.000	9.923	130.039

	Publishing	0.026	0.036	0.018	0.449	0.000	7.105	70.528
	Railroads	0.017	0.017	0.012	0.120	0.000	2.556	12.184
	Real Estate	0.015	0.014	0.011	0.085	0.000	2.125	8.285
	Other Retail	0.026	0.029	0.016	0.172	0.000	2.431	9.612
	Restaurants	0.014	0.017	0.010	0.200	0.000	5.745	50.778
	Retail Stores Food and Drug	0.016	0.013	0.012	0.099	0.000	2.165	9.585
	Healthcare Supplies	0.012	0.021	0.007	0.235	0.000	6.418	56.726
	Other Consumer Services	0.013	0.011	0.010	0.070	0.000	2.055	8.346
	Other Telecommunications	0.019	0.018	0.014	0.123	0.000	2.431	10.639
	Textiles\Apparel\Shoes	0.020	0.023	0.013	0.172	0.000	3.353	17.042
	Utilities	0.017	0.017	0.014	0.160	0.000	3.786	26.413
	Tobacco	0.014	0.020	0.008	0.175	0.000	4.135	24.675
	Other Transportation	0.038	0.098	0.012	1.014	0.000	5.307	37.416
	Vehicles Parts	0.022	0.030	0.013	0.273	0.000	4.188	26.293
UK	Banks	0.031	0.028	0.025	0.285	0.000	3.815	25.302
	Consumer Goods	0.018	0.016	0.014	0.143	0.000	2.996	17.255
	Electric Power	0.019	0.019	0.012	0.127	0.000	2.142	8.636
	Manufacturing	0.018	0.017	0.013	0.125	0.000	2.693	13.364
	Financials	0.017	0.015	0.012	0.118	0.000	2.811	13.298
	Consumer Services	0.017	0.016	0.013	0.138	0.000	2.709	13.825
	Telecommunications	0.018	0.014	0.015	0.145	0.000	3.298	22.610
	Banking	0.031	0.028	0.025	0.285	0.000	3.739	24.705
	Beverages/Bottling	0.017	0.018	0.012	0.156	0.000	3.569	20.737
	Life Insurance	0.027	0.033	0.015	0.238	0.000	2.575	11.441
	Other Financials	0.018	0.016	0.014	0.113	0.000	2.688	11.953
	Other Retail	0.027	0.019	0.023	0.148	0.000	1.750	8.316
	Other Consumer Services	0.021	0.024	0.014	0.166	0.000	3.009	14.222
	Other Telecommunications	0.018	0.014	0.015	0.145	0.000	3.317	22.838
EU	Banks	0.021	0.019	0.016	0.162	0.001	2.507	12.102
	Consumer Goods	0.016	0.015	0.013	0.169	0.000	4.185	33.963
	Electric Power	0.035	0.056	0.020	0.493	0.000	4.369	24.435
	Energy	0.027	0.022	0.022	0.176	0.000	2.839	15.613
	Manufacturing	0.020	0.014	0.017	0.121	0.000	2.844	16.125
	Financials	0.021	0.023	0.015	0.165	0.000	3.402	16.972
	Consumer Services	0.021	0.033	0.014	0.364	0.000	7.508	71.692
	Telecommunications	0.021	0.022	0.015	0.160	0.000	2.952	13.952

	Transportation	0.029	0.048	0.016	0.388	0.000	4.725	27.779
	Automotive Manufacturer	0.027	0.018	0.024	0.148	0.000	2.434	13.186
	Banking	0.023	0.022	0.016	0.164	0.000	2.467	10.726
	Beverages/Bottling	0.018	0.018	0.013	0.175	0.000	3.632	24.154
	Building Products	0.022	0.017	0.017	0.136	0.000	2.357	11.556
	Cable Media	0.017	0.015	0.013	0.132	0.000	3.039	18.508
	Chemicals	0.022	0.019	0.018	0.171	0.000	3.202	17.946
	Conglomerate/Diversified Mfg	0.022	0.021	0.016	0.182	0.000	3.244	17.551
	Other Telecommunications	0.029	0.048	0.016	0.388	0.000	4.730	27.802
	Electronics	0.024	0.023	0.017	0.189	0.000	3.074	17.383
	Leisure	0.019	0.021	0.015	0.244	0.000	5.520	49.947
	Metals&Mining	0.020	0.017	0.015	0.103	0.000	2.091	8.230
	Other Financials	0.022	0.025	0.015	0.183	0.000	3.728	19.960
	Oil&Gas	0.025	0.024	0.018	0.188	0.000	3.187	16.785
	Consumer Services	0.019	0.030	0.013	0.376	0.000	7.906	85.729
	Utility Other	0.038	0.069	0.020	0.598	0.000	4.577	25.929
JP	Banks	0.022	0.019	0.017	0.133	0.000	2.161	8.966
	Electric Power	0.030	0.029	0.022	0.175	0.000	2.244	9.311
	Manufacturing	0.018	0.017	0.012	0.119	0.000	2.572	11.825
	Other Financials	0.022	0.023	0.016	0.188	0.000	2.928	14.202
	Consumer Services	0.020	0.030	0.011	0.241	0.000	4.194	24.531
	Telecommunications	0.031	0.037	0.021	0.282	0.000	3.175	15.608
	Transportation	0.026	0.024	0.021	0.202	0.000	2.313	11.529
	Automotive Manufacturer	0.021	0.022	0.012	0.135	0.000	2.029	7.661
	Banking	0.022	0.019	0.017	0.133	0.000	2.169	9.014
	Chemicals	0.018	0.023	0.011	0.195	0.000	3.458	20.424
	Electronics	0.021	0.027	0.013	0.190	0.000	2.950	13.984
	Industrials	0.029	0.045	0.017	0.441	0.000	4.916	34.898
	Metals&Mining	0.034	0.035	0.024	0.343	0.000	3.145	21.700
	Railroads	0.020	0.033	0.007	0.210	0.000	2.824	12.506
	Other Retail	0.027	0.076	0.009	0.801	0.000	6.273	46.988
	Other Consumer Services	0.022	0.024	0.014	0.199	0.000	3.068	16.524
	Other Telecommunications	0.031	0.037	0.021	0.282	0.000	3.173	15.587
	Other Transportation	0.032	0.030	0.025	0.223	0.000	2.076	9.484
	Utility Other	0.034	0.036	0.024	0.255	0.000	2.719	12.263

Table 37: CDS Spreads Volatility Crisis Sample Descriptive Statistics

		Mean	Std. Dev.	Med.	Max.	Min.	Skew.	Exc. Kurt.
US	Bank	0.017	0.016	0.012	0.164	0.000	3.857	27.423
	Consumer Goods	0.017	0.015	0.013	0.149	0.000	3.014	19.115
	Electric Power	0.027	0.092	0.011	1.276	0.000	8.819	85.417
	Energy	0.037	0.075	0.013	0.584	0.001	4.081	20.819
	Manufacturing	0.020	0.040	0.009	0.308	0.001	4.722	27.043
	Financials	0.046	0.056	0.020	0.439	0.001	2.296	10.268
	Consumer Services	0.027	0.056	0.011	0.457	0.001	4.453	24.212
	Telecommunications	0.017	0.024	0.012	0.313	0.001	7.806	86.957
	Transportation	0.035	0.083	0.004	0.541	0.000	3.301	14.150
	Airlines	0.012	0.023	0.004	0.149	0.000	3.592	16.223
	Banking	0.017	0.016	0.012	0.164	0.000	3.852	27.362
	Beverages/Bottling	0.022	0.034	0.012	0.229	0.000	2.922	12.815
	Building Products	0.014	0.018	0.008	0.139	0.000	2.928	14.173
	Cable Media	0.025	0.034	0.010	0.230	0.000	2.490	10.463
	Conglomerate/Diversified Mfg	0.010	0.012	0.006	0.086	0.000	3.379	17.559
	Chemicals	0.023	0.043	0.009	0.296	0.000	3.545	16.657
	Containers	0.011	0.012	0.006	0.118	0.000	3.237	19.542
	Other Consumer Goods	0.021	0.038	0.007	0.323	0.000	3.862	22.328
	Electric Utility	0.022	0.051	0.002	0.250	0.000	2.665	9.142
	Electronics	0.030	0.030	0.018	0.167	0.000	1.402	4.661
	Food Processors	0.020	0.023	0.013	0.213	0.000	3.039	18.541
	Oilfield Machinery and Products	0.042	0.089	0.015	0.709	0.001	4.151	21.680
	Healthcare Facilities	0.033	0.045	0.014	0.324	0.000	2.992	15.290
	Home Builders	0.014	0.015	0.010	0.119	0.000	3.648	21.582
	Other Industrials	0.028	0.048	0.006	0.275	0.000	2.256	7.483
	Information/Data Technology	0.030	0.074	0.011	0.712	0.000	6.373	49.301
	Leisure	0.015	0.020	0.008	0.111	0.000	2.667	9.983
	Lodging	0.047	0.113	0.013	1.066	0.000	5.313	37.264
	Machinery	0.043	0.102	0.006	0.580	0.000	2.874	10.286
	Metals&Mining	0.037	0.080	0.014	0.543	0.001	4.188	20.714
	Other Financials	0.046	0.056	0.020	0.439	0.001	2.296	10.268
	Other Oil&Gas	0.025	0.037	0.014	0.317	0.000	4.529	29.049
	Pharmaceutical	0.019	0.028	0.007	0.186	0.000	2.847	12.151
	Property&Casualty Insurance	0.015	0.018	0.009	0.155	0.000	3.273	18.432
	Publishing	0.012	0.016	0.007	0.137	0.000	4.359	27.135

	Railroads	0.014	0.022	0.009	0.201	0.000	4.550	28.314
	Real Estate	0.009	0.009	0.005	0.059	0.000	2.164	8.207
	Other Retail	0.035	0.097	0.009	0.815	0.000	5.574	37.056
	Restaurants	0.016	0.035	0.007	0.290	0.000	5.265	32.897
	Retail Stores Food and Drug	0.047	0.137	0.013	1.148	0.001	5.060	29.514
	Healthcare Supplies	0.012	0.015	0.006	0.093	0.000	2.054	8.110
	Other Consumer Services	0.035	0.104	0.015	1.130	0.000	7.959	73.432
	Other Telecommunications	0.017	0.024	0.012	0.313	0.001	7.837	87.411
	Textiles\Apparel\Shoes	0.035	0.063	0.009	0.328	0.000	2.405	7.963
	Utilities	0.027	0.111	0.010	1.564	0.000	9.058	88.986
	Tobacco	0.016	0.038	0.002	0.216	0.000	3.234	13.058
	Other Transportation	0.076	0.202	0.003	1.118	0.000	3.016	11.845
	Vehicles Parts	0.013	0.032	0.002	0.162	0.000	2.866	10.133
UK	Banks	0.038	0.077	0.015	0.467	0.002	3.710	16.517
	Consumer Goods	0.015	0.021	0.009	0.239	0.000	5.420	49.942
	Electric Power	0.011	0.040	0.004	0.423	0.000	7.558	64.733
	Manufacturing	0.011	0.029	0.005	0.319	0.000	6.784	54.364
	Financials	0.013	0.026	0.008	0.386	0.000	11.009	148.413
	Consumer Services	0.010	0.009	0.007	0.074	0.000	3.280	17.503
	Telecommunications	0.018	0.031	0.012	0.411	0.000	8.838	99.714
	Banking	0.038	0.076	0.015	0.467	0.002	3.711	16.527
	Beverages/Bottling	0.008	0.009	0.005	0.077	0.000	3.634	22.214
	Life Insurance	0.018	0.042	0.007	0.381	0.000	5.653	39.810
	Other Financials	0.014	0.024	0.008	0.331	0.000	9.268	115.255
	Other Retail	0.018	0.019	0.011	0.126	0.000	2.706	11.981
	Other Consumer Services	0.013	0.026	0.005	0.192	0.000	3.875	19.010
	Other Telecommunications	0.018	0.031	0.012	0.411	0.000	8.836	99.692
EU	Banks	0.042	0.063	0.016	0.543	0.001	3.410	18.608
	Consumer Goods	0.013	0.016	0.007	0.153	0.000	3.433	22.922
	Electric Power	0.028	0.072	0.007	0.461	0.000	4.094	19.713
	Energy	0.018	0.025	0.012	0.315	0.000	7.289	79.630
	Manufacturing	0.045	0.133	0.011	1.294	0.000	5.210	35.538
	Financials	0.049	0.131	0.013	0.966	0.001	4.620	25.995
	Consumer Services	0.013	0.018	0.009	0.217	0.000	6.822	65.287
	Telecommunications	0.023	0.036	0.012	0.225	0.000	3.493	15.225
	Transportation	0.025	0.046	0.014	0.450	0.001	5.821	42.376

	Automotive Manufacturer	0.023	0.036	0.015	0.408	0.000	7.074	65.050
	Banking	0.042	0.063	0.016	0.543	0.001	3.410	18.608
	Beverages/Bottling	0.018	0.025	0.008	0.180	0.000	3.025	13.756
	Building Products	0.019	0.021	0.012	0.155	0.001	2.978	13.755
	Cable Media	0.020	0.037	0.013	0.400	0.000	7.348	66.616
	Chemicals	0.012	0.014	0.009	0.152	0.000	4.910	41.820
	Conglomerate/Diversified Mfg	0.014	0.015	0.010	0.123	0.001	3.079	16.151
	Other Telecommunications	0.025	0.046	0.014	0.450	0.001	5.822	42.381
	Electronics	0.018	0.021	0.011	0.135	0.000	2.404	9.488
	Leisure	0.025	0.065	0.014	0.958	0.000	11.447	154.798
	Metals&Mining	0.034	0.073	0.012	0.646	0.000	4.522	26.304
	Other Financials	0.053	0.142	0.015	1.045	0.001	4.610	25.809
	Oil&Gas	0.019	0.034	0.011	0.457	0.000	8.963	107.250
	Consumer Services	0.011	0.015	0.007	0.136	0.000	4.323	26.608
	Utility Other	0.033	0.091	0.006	0.579	0.000	3.998	18.996
JP	**Banks**	0.023	0.017	0.019	0.113	0.001	1.409	5.978
	Electic Power	0.025	0.029	0.016	0.196	0.000	2.644	11.856
	Manufacturing	0.018	0.016	0.013	0.100	0.001	2.088	8.383
	Other Financials	0.018	0.017	0.012	0.109	0.000	1.912	7.550
	Consumer Services	0.075	0.168	0.019	1.253	0.000	3.876	20.274
	Telecommunications	0.042	0.063	0.015	0.338	0.000	2.243	7.493
	Transportation	0.034	0.029	0.025	0.214	0.000	1.617	6.589
	Automotive Manufacturer	0.052	0.098	0.009	0.609	0.000	2.684	10.095
	Banking	0.023	0.017	0.019	0.113	0.001	1.411	6.033
	Chemicals	0.035	0.056	0.016	0.594	0.000	4.867	39.860
	Electronics	0.029	0.040	0.017	0.335	0.000	3.333	18.094
	Industrials	0.064	0.103	0.030	0.695	0.000	2.973	13.248
	Metals&Mining	0.021	0.031	0.011	0.235	0.000	3.430	17.761
	Railroads	0.019	0.017	0.014	0.094	0.000	1.419	5.010
	Other Retail	0.123	0.313	0.001	1.684	0.000	2.975	11.092
	Other Consumer Services	0.049	0.097	0.017	0.630	0.000	3.194	13.512
	Other Telecommunications	0.042	0.063	0.015	0.338	0.000	2.243	7.493
	Other Transportation	0.035	0.037	0.021	0.223	0.000	1.548	5.156
	Utility Other	0.026	0.031	0.016	0.355	0.000	4.760	42.231

Table 38: CDS Spreads Volatility After-Crisis Sample Descriptive Statistics

		Mean	Std. Dev.	Med.	Max.	Min.	Skew.	Exc. Kurt.
US	Basic Materials	0.015	0.012	0.012	0.108	0.002	2.834	14.997
	Consumer Goods	0.008	0.006	0.007	0.066	0.001	3.326	21.345
	Consumer Services	0.010	0.008	0.008	0.072	0.001	2.879	15.970
	Financials	0.014	0.014	0.010	0.105	0.001	2.789	12.289
	Healthcare	0.009	0.007	0.008	0.075	0.001	3.383	23.472
	Industrials	0.011	0.009	0.009	0.068	0.001	2.392	10.978
	Oil&Gas	0.014	0.012	0.011	0.133	0.001	3.929	28.199
	Technology	0.011	0.008	0.009	0.077	0.001	2.629	13.808
	Telecommunications	0.010	0.008	0.008	0.089	0.001	3.709	23.459
	Utility	0.009	0.007	0.008	0.088	0.001	4.368	32.493
	Airlines	0.022	0.014	0.018	0.093	0.002	1.768	6.780
	Vehicles Parts	0.016	0.011	0.012	0.085	0.001	2.085	8.967
	Banking	0.019	0.019	0.013	0.138	0.001	2.996	13.694
	Beverages/Bottling	0.008	0.006	0.007	0.071	0.001	3.731	28.181
	Building Products	0.014	0.009	0.011	0.076	0.001	2.132	9.481
	Chemicals	0.014	0.010	0.011	0.089	0.001	2.598	12.926
	Other Consumer Services	0.010	0.008	0.008	0.072	0.001	2.879	15.969
	Containers	0.012	0.008	0.010	0.066	0.001	2.250	10.403
	Conglomerate/Diversified Mfg	0.013	0.010	0.009	0.084	0.001	2.434	10.763
	Electric Utility	0.010	0.007	0.008	0.085	0.000	4.237	30.865
	Electronics	0.013	0.010	0.010	0.088	0.001	2.744	14.503
	Retail Stores Food and Drug	0.010	0.007	0.008	0.073	0.001	3.022	18.664
	Other Financials	0.015	0.015	0.011	0.125	0.001	2.903	13.559
	Food Processors	0.009	0.006	0.007	0.067	0.000	3.304	21.125
	Other Retail Stores	0.010	0.007	0.008	0.067	0.001	2.773	15.075
	Healthcare Facilities	0.010	0.007	0.008	0.086	0.001	3.596	25.861
	Home Builders	0.021	0.015	0.017	0.117	0.001	1.868	7.605
	Lodging	0.017	0.014	0.013	0.116	0.001	2.207	9.682
	Machinery	0.014	0.010	0.011	0.091	0.000	2.605	13.257
	Other Industrials	0.011	0.009	0.009	0.067	0.001	2.377	10.913
	Metals&Mining	0.021	0.016	0.017	0.158	0.002	2.973	17.073
	Other Transportation	0.013	0.009	0.010	0.068	0.001	1.927	7.934
	Cable Media	0.012	0.010	0.009	0.096	0.000	3.253	18.674
	Healthcare Supplies	0.009	0.006	0.008	0.060	0.001	2.578	14.750
	Oilfield Machinery and Products	0.014	0.012	0.011	0.135	0.001	4.144	31.090
	Other Oil&Gas	0.014	0.012	0.011	0.133	0.001	3.929	28.194
	Property&Casualty Insurance	0.011	0.011	0.008	0.105	0.001	3.495	19.330
	Textiles\Apparel\Shoes	0.008	0.006	0.007	0.065	0.000	3.315	20.687
	Other Consumer Goods	0.010	0.007	0.009	0.069	0.001	2.778	15.468
	Pharmaceutical	0.009	0.007	0.008	0.074	0.001	3.436	22.974

	Publishing	0.011	0.008	0.009	0.080	0.001	2.987	16.843
	Railroads	0.015	0.010	0.012	0.076	0.001	1.753	7.176
	Real Estate	0.015	0.018	0.010	0.133	0.001	3.048	13.993
	Restaurants	0.010	0.007	0.008	0.062	0.001	2.420	12.578
	Information/Data Technology	0.011	0.008	0.009	0.077	0.001	2.628	13.806
	Other Telecommunications	0.010	0.008	0.008	0.089	0.001	3.709	23.457
	Tobacco	0.010	0.007	0.008	0.081	0.001	3.698	28.289
	Leisure	0.012	0.009	0.010	0.068	0.001	2.026	8.702
	Other Utility	0.009	0.007	0.008	0.088	0.001	4.365	32.466
UK	Basic Materials	0.021	0.015	0.017	0.128	0.001	2.654	14.031
	Consumer Goods	0.009	0.006	0.008	0.063	0.001	3.040	20.819
	Consumer Services	0.010	0.007	0.008	0.060	0.001	2.221	10.725
	Financials	0.013	0.011	0.010	0.088	0.001	2.525	11.794
	Healthcare	0.010	0.006	0.008	0.066	0.001	2.850	18.579
	Industrials	0.010	0.006	0.009	0.050	0.001	2.036	9.245
	Oil&Gas	0.013	0.009	0.011	0.083	0.001	2.744	15.318
	Technology	0.012	0.008	0.011	0.082	0.000	3.138	21.603
	Telecommunications	0.012	0.008	0.010	0.071	0.001	2.550	12.896
	Utility	0.009	0.006	0.008	0.077	0.001	3.805	30.091
	Banking	0.017	0.013	0.013	0.107	0.001	2.765	13.695
	Beverages/Bottling	0.011	0.007	0.009	0.068	0.001	2.624	14.900
	Other Consumer Services	0.010	0.007	0.008	0.060	0.001	2.221	10.721
	Other Financials	0.010	0.007	0.008	0.064	0.001	2.739	14.059
	Life Insurance	0.017	0.015	0.013	0.157	0.001	3.199	18.381
	Other Retail	0.010	0.007	0.009	0.061	0.001	2.358	11.720
	Other Telecommunications	0.012	0.008	0.010	0.071	0.001	2.550	12.892
EU	Basic Materials	0.016	0.011	0.013	0.092	0.001	2.356	11.564
	Consumer Goods	0.011	0.008	0.009	0.094	0.001	3.434	27.185
	Consumer Services	0.011	0.008	0.010	0.067	0.001	2.419	12.394
	Financials	0.015	0.011	0.012	0.082	0.001	2.315	10.464
	Healthcare	0.010	0.006	0.008	0.067	0.001	3.109	20.941
	Industrials	0.013	0.009	0.011	0.078	0.001	2.173	10.083
	Oil&Gas	0.015	0.010	0.012	0.093	0.001	2.901	16.180
	Technology	0.013	0.009	0.011	0.070	0.001	2.229	10.133
	Telecommunications	0.012	0.008	0.010	0.071	0.001	2.717	15.376
	Utility	0.012	0.009	0.010	0.095	0.001	3.362	22.398
	Automotive Manufacturer	0.018	0.018	0.015	0.363	0.001	11.496	193.391
	Banking	0.017	0.012	0.014	0.090	0.001	2.305	10.386
	Beverages/Bottling	0.012	0.007	0.010	0.069	0.001	2.445	12.491
	Building Products	0.015	0.010	0.013	0.091	0.002	2.239	10.617
	Chemicals	0.013	0.009	0.011	0.076	0.001	2.154	10.310

	Other Consumer Services	0.011	0.008	0.010	0.067	0.001	2.419	12.394
	Conglomerate/Diversified Mfg	0.011	0.008	0.009	0.094	0.001	3.434	27.196
	Electronics	0.016	0.011	0.013	0.103	0.001	2.556	13.781
	Other Financials	0.012	0.009	0.010	0.077	0.001	2.534	12.964
	Metals&Mining	0.018	0.012	0.015	0.093	0.002	2.290	11.129
	Leisure	0.016	0.011	0.013	0.076	0.001	1.913	8.071
	Cable Media	0.012	0.008	0.010	0.069	0.001	2.376	11.904
	Other Oil&Gas	0.015	0.010	0.012	0.093	0.001	2.902	16.184
	Other Telecommunications	0.012	0.008	0.010	0.071	0.001	2.717	15.377
	Other Utility	0.012	0.009	0.010	0.095	0.001	3.362	22.398
JP	Basic Materials	0.015	0.010	0.013	0.103	0.001	3.251	20.904
	Consumer Goods	0.013	0.009	0.011	0.089	0.001	3.040	17.770
	Consumer Services	0.010	0.007	0.008	0.073	0.001	3.421	22.897
	Financials	0.015	0.010	0.012	0.099	0.001	2.615	13.803
	Healthcare	0.011	0.008	0.009	0.087	0.001	3.309	20.217
	Industrials	0.014	0.010	0.011	0.098	0.001	3.045	18.564
	Oil&Gas	0.016	0.011	0.014	0.098	0.001	2.694	15.272
	Technology	0.013	0.009	0.011	0.091	0.001	2.935	18.002
	Telecommunications	0.012	0.008	0.010	0.074	0.000	2.575	13.538
	Utility	0.013	0.009	0.011	0.085	0.001	2.416	13.254
	Automotive Manufacturer	0.016	0.011	0.014	0.101	0.001	2.975	17.371
	Banking	0.016	0.011	0.013	0.099	0.001	2.387	12.099
	Chemicals	0.014	0.010	0.012	0.098	0.001	3.184	19.768
	Other Consumer Services	0.010	0.007	0.008	0.073	0.001	3.420	22.893
	Electronics	0.015	0.010	0.013	0.095	0.002	2.834	16.254
	Machinery	0.016	0.011	0.013	0.105	0.002	3.005	18.311
	Metals&Mining	0.018	0.012	0.015	0.118	0.000	2.914	18.309
	Other Transportation	0.014	0.010	0.012	0.090	0.001	2.902	16.800
	Other Industrials	0.014	0.010	0.011	0.098	0.001	3.045	18.560
	Other Retail	0.011	0.008	0.009	0.077	0.001	3.037	18.570
	Other Telecommunications	0.012	0.008	0.010	0.074	0.000	2.575	13.538
	Other Utility	0.013	0.009	0.011	0.085	0.001	2.418	13.266

Table 39: Equity Volatility Full Sample Descriptive Statistics

		Mean	Std. Dev.	Med.	Max.	Min.	Skew.	Exc. Kurt.
US	Basic Materials	0.020	0.014	0.016	0.108	0.002	2.327	10.681
	Consumer Goods	0.010	0.007	0.008	0.066	0.001	2.955	16.048
	Consumer Services	0.013	0.009	0.010	0.072	0.001	2.396	11.402
	Financials	0.020	0.018	0.014	0.105	0.001	2.025	7.380
	Healthcare	0.010	0.008	0.008	0.075	0.001	3.295	19.716
	Industrials	0.015	0.010	0.012	0.068	0.001	1.877	7.555
	Oil&Gas	0.017	0.014	0.013	0.133	0.002	3.487	20.839
	Technology	0.014	0.010	0.012	0.077	0.001	2.242	10.267
	Telecommunications	0.013	0.011	0.010	0.089	0.001	2.966	15.130

	Utility	0.011	0.009	0.008	0.088	0.001	3.649	21.613
	Airlines	0.027	0.016	0.022	0.093	0.002	1.273	4.462
	Vehicles Parts	0.020	0.013	0.017	0.085	0.003	1.580	6.226
	Banking	0.026	0.023	0.018	0.138	0.001	2.215	8.215
	Beverages/Bottling	0.010	0.007	0.008	0.071	0.001	3.396	21.502
	Building Products	0.017	0.011	0.014	0.076	0.002	1.708	6.764
	Chemicals	0.018	0.012	0.015	0.089	0.002	2.112	9.166
	Other Consumer Services	0.013	0.009	0.010	0.072	0.001	2.396	11.406
	Containers	0.015	0.010	0.013	0.066	0.001	1.852	7.629
	Conglomerate/Diversified Mfg	0.017	0.012	0.013	0.084	0.002	1.868	7.122
	Electric Utility	0.011	0.009	0.009	0.085	0.001	3.566	20.770
	Electronics	0.016	0.011	0.014	0.088	0.001	2.244	10.295
	Retail Stores Food and Drug	0.011	0.008	0.009	0.073	0.001	2.737	14.598
	Other Financials	0.021	0.018	0.015	0.125	0.001	2.144	8.264
	Food Processors	0.010	0.008	0.008	0.067	0.001	3.005	16.172
	Other Retail Stores	0.013	0.009	0.010	0.067	0.001	2.293	10.750
	Healthcare Facilities	0.012	0.009	0.010	0.086	0.001	3.251	19.828
	Home Builders	0.027	0.017	0.023	0.117	0.003	1.428	5.337
	Lodging	0.024	0.016	0.019	0.116	0.002	1.671	6.674
	Machinery	0.018	0.012	0.015	0.091	0.001	2.085	9.306
	Other Industrials	0.015	0.010	0.012	0.067	0.001	1.867	7.541
	Metals&Mining	0.027	0.019	0.021	0.158	0.003	2.490	12.239
	Other Transportation	0.016	0.010	0.013	0.068	0.001	1.431	5.400
	Cable Media	0.015	0.012	0.012	0.096	0.000	2.666	12.720
	Healthcare Supplies	0.011	0.007	0.009	0.060	0.001	2.373	12.119
	Oilfield Machinery and Products	0.017	0.014	0.013	0.135	0.002	3.660	22.662
	Other Oil&Gas	0.017	0.014	0.013	0.133	0.002	3.487	20.848
	Property&Casualty Insurance	0.015	0.014	0.011	0.105	0.001	2.637	11.800
	Textiles\Apparel\Shoes	0.010	0.008	0.008	0.065	0.001	2.883	15.122
	Other Consumer Goods	0.012	0.008	0.010	0.069	0.001	2.417	11.601
	Pharmaceutical	0.010	0.008	0.008	0.074	0.001	3.224	18.492
	Publishing	0.014	0.010	0.011	0.080	0.002	2.571	12.435
	Railroads	0.018	0.011	0.015	0.076	0.002	1.375	5.234
	Real Estate	0.022	0.022	0.015	0.133	0.001	2.166	8.074
	Restaurants	0.012	0.008	0.010	0.062	0.001	2.093	9.699
	Information/Data Technology	0.014	0.010	0.012	0.077	0.001	2.239	10.261
	Other Telecommunications	0.013	0.011	0.010	0.089	0.001	2.963	15.116
	Tobacco	0.011	0.008	0.009	0.081	0.002	3.494	22.651
	Leisure	0.016	0.010	0.013	0.068	0.001	1.546	6.154

	Other Utility	0.011	0.009	0.008	0.088	0.001	3.648	21.614
UK	Basic Materials	0.025	0.017	0.021	0.128	0.004	2.358	10.897
	Consumer Goods	0.010	0.007	0.009	0.063	0.001	2.920	17.488
	Consumer Services	0.011	0.008	0.009	0.060	0.001	1.743	7.617
	Financials	0.018	0.012	0.014	0.088	0.001	2.035	8.543
	Healthcare	0.011	0.007	0.009	0.066	0.001	2.972	17.822
	Industrials	0.012	0.007	0.010	0.050	0.001	1.719	7.116
	Oil&Gas	0.015	0.010	0.013	0.083	0.002	2.832	14.493
	Technology	0.014	0.008	0.012	0.063	0.000	2.155	10.790
	Telecommunications	0.014	0.010	0.011	0.071	0.001	2.319	10.446
	Utility	0.011	0.007	0.009	0.077	0.001	3.685	25.235
	Banking	0.022	0.016	0.017	0.107	0.001	2.281	9.852
	Beverages/Bottling	0.012	0.008	0.010	0.068	0.001	2.469	13.072
	Other Consumer Services	0.011	0.008	0.009	0.060	0.001	1.743	7.619
	Other Financials	0.012	0.008	0.010	0.064	0.001	2.330	10.706
	Life Insurance	0.022	0.018	0.017	0.157	0.002	2.662	13.383
	Other Retail	0.012	0.008	0.010	0.059	0.001	1.783	7.249
	Other Telecommunications	0.014	0.010	0.011	0.071	0.001	2.320	10.457
EU	Basic Materials	0.021	0.013	0.018	0.092	0.002	2.019	8.988
	Consumer Goods	0.014	0.009	0.012	0.094	0.002	3.255	23.485
	Consumer Services	0.014	0.008	0.012	0.067	0.002	1.977	9.118
	Financials	0.019	0.012	0.016	0.082	0.001	1.836	7.473
	Healthcare	0.011	0.007	0.010	0.067	0.002	2.996	17.691
	Industrials	0.017	0.010	0.015	0.078	0.002	1.813	8.049
	Oil&Gas	0.018	0.012	0.015	0.093	0.003	2.775	13.550
	Technology	0.017	0.010	0.015	0.070	0.001	1.800	7.476
	Telecommunications	0.014	0.008	0.012	0.071	0.001	2.428	12.382
	Utility	0.015	0.010	0.012	0.095	0.001	2.967	17.472
	Automotive Manufacturer	0.022	0.024	0.019	0.363	0.001	9.843	129.176
	Banking	0.022	0.013	0.018	0.090	0.002	1.801	7.254
	Beverages/Bottling	0.014	0.009	0.011	0.069	0.001	2.175	9.932
	Building Products	0.020	0.012	0.017	0.091	0.002	1.828	8.109
	Chemicals	0.017	0.010	0.015	0.076	0.002	1.831	8.127
	Other Consumer Services	0.014	0.008	0.012	0.067	0.002	1.978	9.124
	Conglomerate/Diversified Mfg	0.014	0.009	0.012	0.094	0.002	3.252	23.466
	Electronics	0.020	0.012	0.018	0.103	0.001	2.219	11.234
	Other Financials	0.016	0.010	0.013	0.077	0.002	2.150	10.121
	Other Industrials	0.023	0.014	0.019	0.093	0.002	1.906	8.333
	Leisure	0.021	0.012	0.018	0.076	0.001	1.545	6.161
	Cable Media	0.015	0.009	0.012	0.069	0.001	1.947	8.889
	Other Oil&Gas	0.018	0.012	0.015	0.093	0.003	2.774	13.546
	Other Telecommunications	0.014	0.008	0.012	0.071	0.001	2.429	12.388
	Other Utility	0.015	0.010	0.012	0.095	0.001	2.965	17.462

JP	Basic Materials	0.017	0.012	0.014	0.103	0.001	3.436	20.344
	Consumer Goods	0.014	0.010	0.012	0.089	0.001	3.375	18.967
	Consumer Services	0.009	0.007	0.008	0.073	0.001	4.482	32.783
	Financials	0.017	0.012	0.013	0.099	0.001	2.600	12.638
	Healthcare	0.010	0.009	0.008	0.087	0.001	4.013	25.336
	Industrials	0.016	0.011	0.013	0.098	0.002	3.146	17.551
	Oil&Gas	0.018	0.012	0.016	0.098	0.001	2.705	13.901
	Technology	0.015	0.010	0.013	0.091	0.002	2.953	16.740
	Telecommunications	0.012	0.009	0.010	0.074	0.001	2.836	15.037
	Utility	0.013	0.009	0.011	0.085	0.001	2.712	16.169
	Automotive Manufacturer	0.018	0.012	0.016	0.101	0.002	3.188	17.226
	Banking	0.017	0.012	0.014	0.099	0.002	2.489	11.981
	Chemicals	0.016	0.011	0.013	0.098	0.002	3.418	20.074
	Other Consumer Services	0.009	0.007	0.008	0.073	0.001	4.476	32.728
	Electronics	0.016	0.011	0.014	0.095	0.003	3.053	16.510
	Machinery	0.018	0.012	0.015	0.105	0.002	3.040	16.623
	Metals&Mining	0.020	0.014	0.017	0.118	0.000	3.028	17.353
	Other Transportation	0.015	0.011	0.012	0.090	0.001	2.991	15.686
	Other Industrials	0.016	0.011	0.013	0.098	0.002	3.142	17.523
	Other Retail	0.011	0.009	0.009	0.077	0.001	3.437	20.454
	Other Telecommunications	0.012	0.009	0.010	0.074	0.000	2.826	14.984
	Other Utility	0.013	0.009	0.011	0.085	0.001	2.715	16.203

Table 40: Equity Volatility Crisis Sample Descriptive Statistics

		Mean	Std. Dev.	Med.	Max.	Min.	Skew.	Exc. Kurt.
US	Basic Materials	0.009	0.005	0.008	0.035	0.002	1.325	5.573
	Consumer Goods	0.006	0.004	0.006	0.029	0.001	1.472	6.556
	Consumer Services	0.007	0.004	0.006	0.032	0.001	1.449	6.720
	Financials	0.008	0.004	0.007	0.035	0.001	1.680	8.278
	Healthcare	0.008	0.005	0.007	0.035	0.001	1.371	6.239
	Industrials	0.008	0.004	0.007	0.030	0.001	1.377	6.033
	Oil&Gas	0.011	0.006	0.009	0.044	0.001	1.550	6.130
	Technology	0.008	0.005	0.007	0.039	0.001	1.591	7.645
	Telecommunications	0.008	0.004	0.007	0.029	0.001	1.218	5.596
	Utility	0.008	0.004	0.007	0.025	0.001	1.208	4.987
	Airlines	0.017	0.007	0.016	0.050	0.003	0.980	4.495
	Vehicles Parts	0.010	0.005	0.009	0.038	0.001	1.121	5.272
	Banking	0.010	0.006	0.009	0.047	0.001	1.787	9.086
	Beverages/Bottling	0.007	0.004	0.006	0.025	0.001	1.178	4.880
	Building Products	0.010	0.005	0.009	0.031	0.001	1.161	4.694
	Chemicals	0.009	0.005	0.008	0.032	0.001	1.368	5.698

	Other Consumer Services	0.007	0.004	0.006	0.032	0.001	1.464	6.803
	Containers	0.009	0.005	0.009	0.041	0.001	1.749	9.127
	Conglomerate/Diversified Mfg	0.008	0.004	0.007	0.031	0.001	1.346	5.728
	Electric Utility	0.008	0.004	0.007	0.026	0.000	1.221	5.140
	Electronics	0.009	0.004	0.008	0.034	0.001	1.472	7.051
	Retail Stores Food and Drug	0.008	0.004	0.007	0.032	0.001	1.559	7.314
	Other Financials	0.009	0.005	0.008	0.042	0.001	1.639	8.221
	Food Processors	0.007	0.004	0.007	0.028	0.000	1.316	5.655
	Other Retail Stores	0.007	0.004	0.007	0.036	0.001	1.606	8.652
	Healthcare Facilities	0.008	0.004	0.007	0.031	0.001	1.327	5.604
	Home Builders	0.014	0.007	0.013	0.046	0.001	0.970	4.018
	Lodging	0.011	0.006	0.010	0.042	0.001	1.287	5.715
	Machinery	0.009	0.005	0.009	0.038	0.000	1.354	6.733
	Other Industrials	0.007	0.004	0.007	0.030	0.001	1.403	6.218
	Metals&Mining	0.015	0.008	0.014	0.058	0.002	1.361	5.971
	Other Transportation	0.009	0.004	0.008	0.034	0.001	1.136	5.105
	Cable Media	0.008	0.004	0.007	0.028	0.001	1.214	4.653
	Healthcare Supplies	0.008	0.004	0.007	0.029	0.001	1.457	5.882
	Oilfield Machinery and Products	0.011	0.006	0.010	0.045	0.001	1.456	5.966
	Other Oil&Gas	0.011	0.006	0.009	0.044	0.001	1.558	6.155
	Property&Casualty Insurance	0.007	0.004	0.006	0.026	0.001	1.261	5.589
	Textiles\Apparel\Shoes	0.007	0.004	0.006	0.030	0.000	1.511	7.181
	Other Consumer Goods	0.008	0.004	0.007	0.035	0.001	1.481	7.130
	Pharmaceutical	0.008	0.004	0.007	0.035	0.001	1.643	7.635
	Publishing	0.009	0.005	0.008	0.034	0.001	1.804	8.424
	Railroads	0.011	0.006	0.010	0.040	0.001	1.174	4.886
	Real Estate	0.008	0.004	0.007	0.032	0.001	1.311	5.793
	Restaurants	0.007	0.004	0.007	0.036	0.001	1.536	7.696
	Information/Data Technology	0.008	0.005	0.007	0.039	0.001	1.599	7.727
	Other Telecommunications	0.008	0.004	0.007	0.029	0.001	1.226	5.665
	Tobacco	0.008	0.004	0.007	0.025	0.001	1.133	4.419
	Leisure	0.009	0.005	0.008	0.036	0.001	1.603	7.338
	Other Utility	0.008	0.004	0.007	0.025	0.001	1.214	4.998
UK	Basic Materials	0.016	0.009	0.014	0.064	0.001	1.628	6.926
	Consumer Goods	0.008	0.004	0.007	0.031	0.001	1.299	6.041
	Consumer Services	0.008	0.005	0.007	0.050	0.001	3.179	23.517
	Financials	0.009	0.006	0.007	0.067	0.001	4.072	32.104
	Healthcare	0.009	0.005	0.008	0.034	0.001	1.435	5.485
	Industrials	0.008	0.005	0.007	0.046	0.001	2.572	16.424

	Oil&Gas	0.011	0.007	0.009	0.048	0.001	1.635	6.402
	Technology	0.010	0.007	0.009	0.082	0.000	5.254	51.103
	Telecommunications	0.010	0.006	0.009	0.044	0.001	1.966	9.478
	Utility	0.008	0.004	0.007	0.034	0.001	1.595	7.633
	Banking	0.011	0.007	0.010	0.068	0.002	3.022	19.765
	Beverages/Bottling	0.009	0.005	0.008	0.051	0.001	2.458	14.273
	Other Consumer Services	0.008	0.005	0.007	0.050	0.001	3.180	23.507
	Other Financials	0.007	0.005	0.006	0.049	0.001	3.570	25.889
	Life Insurance	0.012	0.008	0.010	0.091	0.001	3.946	31.333
	Other Retail	0.009	0.005	0.007	0.061	0.001	3.718	30.670
	Other Telecommunications	0.010	0.006	0.009	0.044	0.001	1.966	9.469
EU	Basic Materials	0.010	0.005	0.009	0.046	0.001	1.550	8.356
	Consumer Goods	0.008	0.005	0.007	0.044	0.001	2.342	14.751
	Consumer Services	0.008	0.005	0.007	0.062	0.001	4.365	38.495
	Financials	0.010	0.006	0.008	0.076	0.001	4.823	44.397
	Healthcare	0.008	0.004	0.007	0.034	0.001	1.435	6.720
	Industrials	0.008	0.005	0.008	0.057	0.001	3.710	29.906
	Oil&Gas	0.011	0.007	0.009	0.054	0.001	1.851	8.558
	Technology	0.009	0.005	0.008	0.048	0.001	2.442	16.244
	Telecommunications	0.009	0.006	0.008	0.063	0.001	3.465	27.302
	Utility	0.009	0.005	0.008	0.057	0.001	3.224	26.210
	Automotive Manufacturer	0.013	0.007	0.011	0.061	0.001	2.272	13.266
	Banking	0.011	0.007	0.010	0.085	0.001	4.508	40.002
	Beverages/Bottling	0.009	0.005	0.008	0.040	0.001	1.851	9.294
	Building Products	0.010	0.005	0.009	0.055	0.002	2.701	19.994
	Chemicals	0.009	0.005	0.008	0.042	0.001	1.759	10.222
	Other Consumer Services	0.008	0.005	0.007	0.062	0.001	4.369	38.522
	Conglomerate/Diversified Mfg	0.008	0.005	0.007	0.044	0.001	2.348	14.792
	Electronics	0.010	0.006	0.010	0.064	0.001	3.487	28.012
	Other Financials	0.008	0.005	0.007	0.064	0.001	4.276	36.509
	Other Industrials	0.013	0.006	0.012	0.046	0.002	1.321	5.889
	Leisure	0.010	0.005	0.009	0.045	0.001	1.691	8.623
	Cable Media	0.008	0.005	0.008	0.061	0.001	4.184	36.096
	Other Oil&Gas	0.011	0.007	0.009	0.054	0.001	1.853	8.568
	Other Telecommunications	0.009	0.006	0.008	0.063	0.001	3.468	27.319
	Other Utility	0.009	0.005	0.008	0.057	0.001	3.230	26.267
JP	Basic Materials	0.013	0.008	0.011	0.060	0.001	1.834	7.743
	Consumer Goods	0.011	0.008	0.010	0.057	0.001	1.925	7.844
	Consumer Services	0.010	0.007	0.009	0.047	0.001	1.938	8.032
	Financials	0.013	0.008	0.011	0.058	0.002	1.785	7.263
	Healthcare	0.011	0.007	0.010	0.050	0.001	2.070	9.112
	Industrials	0.012	0.008	0.010	0.057	0.001	1.818	7.651
	Oil&Gas	0.014	0.008	0.012	0.062	0.001	1.647	7.288

	Technology	0.011	0.007	0.009	0.056	0.001	1.979	8.916
	Telecommunications	0.013	0.008	0.011	0.054	0.000	1.995	8.666
	Utility	0.014	0.008	0.012	0.068	0.001	2.033	8.823
	Automotive Manufacturer	0.014	0.009	0.012	0.065	0.001	1.782	7.259
	Banking	0.015	0.009	0.012	0.062	0.001	1.597	6.082
	Chemicals	0.013	0.008	0.011	0.065	0.001	2.024	9.079
	Other Consumer Services	0.010	0.007	0.009	0.047	0.001	1.942	8.047
	Electronics	0.013	0.008	0.011	0.058	0.002	1.704	6.655
	Machinery	0.013	0.008	0.012	0.058	0.002	1.655	7.033
	Metals&Mining	0.016	0.009	0.013	0.054	0.002	1.505	5.959
	Other Transportation	0.013	0.007	0.011	0.058	0.001	1.618	7.034
	Other Industrials	0.012	0.007	0.010	0.057	0.001	1.820	7.661
	Other Retail	0.011	0.006	0.010	0.041	0.001	1.734	6.733
	Other Telecommunications	0.013	0.008	0.011	0.054	0.001	2.010	8.711
	Other Utility	0.014	0.008	0.012	0.068	0.001	2.032	8.815

Table 41: Equity Volatility After-Crisis Sample Descriptive Statistics

A.5 Test Statistics – Volatility Data

CDS	Jarque Bera	ADF Volatility
US Region		
Airlines	20501.190***	-10.46***
Beverages	39296.670***	-6.884***
Building Products	17470.180***	-9.592***
Banks	65650.190***	-6.614***
Banking	68329.970***	-6.746***
Cable Media	22066.000***	-9.136***
Consumer Goods	28362.280***	-8.383***
Chemicals	86302.990***	-6.035***
Conglomerate/Diversified Mfg	103678.100***	-6.412***
Containers	42645.400***	-10.479***
Consumer Services	236276.900***	-6.992***
Electric Utility	43071.450***	-8.515***
Electronics	16997.300***	-7.556***
Financials	7620.937***	-8.134***
Food Processors	29313.200***	-8.338***
Oilfield Machinery and Products	166259.400***	-7.173***
Healthcare Facilities	52266.300***	-8.056***
Industrials	49638.490***	-9.680***
Information/Data Technology	758612.600***	-9.126***
Leisure	27545.300***	-7.891***
Lodging	542058.900***	-7.344***
Machinery	47346.620***	-7.327***
Healthcare Supplies	256959.500***	-7.985***
Home Builders	19516.010***	-9.451***
Metals&Mining	179167.000***	-6.814***
Other Consumer Goods	24387.490***	-7.979***
Other Financials	7620.937***	-8.134***
Oil& Gas	118435.600***	-6.248***
Other Retail Stores	436656.800***	-9.784***
Other Services	2339640.000***	-11.359***
Other Telecommunications	492515.800***	-10.453***
Pharmaceutical	31278.620***	-9.614****

Property&Casualty Insurance	4010329.000***	-9.127***
Publishing	881936.900***	-9.195***
Railroads	50441.380***	-8.766***
Real Estate	7336.134***	-8.850***
Retail Stores Food and Drug	392891.600***	-6.773***
Restaurants	221877.100***	-8.839***
Telecommunications	785262.700***	-10.271***
Tobacco	32873.590***	-7.332***
Transportation	59119.820***	-9.939***
Other Transportation	34620.580***	-9.366***
Textiles\Apparel\Shoes	17967.540***	-6.805***
Utilities	3317940.000***	-8.965***
Vechiles Parts	25957.200***	-8.255***
Manufacturing	236645.000***	-8.296***
Energy	115477.900***	-6.136***
Electric Power	1095532.000***	-10.052***

UK Region		
Beverages	65459.610***	-8.409***
Banks	75277.580***	-7.431***
Banking	74843.180***	-7.444***
Consumer Goods	164103.500***	-9.482***
Consumer Services	23518.100***	-9.478***
Financials	2737991.000***	-8.325***
Life Insurance	85930.270***	-6.841***
Other Financials	1039274.000***	-8.189***
Other Services	22064.790***	-7.672***
Other Telecommunications	1981902.000***	-11.311***
Other Retail	5197.658***	-10.876***
Telecommunications	1974590.000***	-11.309***
Manufacturing	302689.100***	-9.233***
Electric Power	651500.800***	-6.869***

EU Region		
Automotive Manufacturer	680883.000***	-10.086***
Beverages	26763.270***	-7.652***
Building Products	13847.890***	-8.609***

Banks	103525.300***	-5.445***
Banking	92453.600***	-5.468***
Cable Media	1075408.000***	-11.346***
Consumer Goods	68310.090***	-8.848***
Chemical	44065.520***	-10.681***
Conglomerate/Diversified Mfg	31567.030***	-9.662***
Consumer Services	803711.700***	-9.199***
Electric Power	44406.430***	-5.812***
Electronics	17263.220***	-8.661***
Financials	277159.600***	-4.438***
Leisure	7173885.000***	-9.440***
Metals&Mining	252174.500***	-8.803***
Other Services	1106401.000***	-9.090***
Oil&Gas	847118.500***	-9.145***
Other Financials	274781.200***	-4.416***
Other Telecommunications	110628.100***	-8.809***
Transportation	110510.100***	-8.777***
Telecommunications	30540.190***	-7.965***
Utility	45827.960***	-5.809***
Manufacturing	556252.500***	-6.952***
Energy	220554.800***	-9.098***

Japan Region		
Automotive Manufacturer	38869.420***	-7.653***
Banks	3886.457***	-7.292***
Banking	3973.753***	-7.279***
Chemical	365000.400***	-6.473***
Consumer Services	162322.200***	-8.963***
Electronics	36472.810***	-7.709***
Industrials	42812.640***	-8.901***
Metals&Mining	32808.740***	-8.408***
Financials	15583.710***	-8.963***
Other Retail	47378.280***	-8.881***
Other Services	66700.940***	-8.865***
Other Telecommunications	9731.155***	-6.370***
Other Transport	2883.670***	-7.704***
Telecommunications	9738.358***	-6.373***
Utility	44076.990***	-7.475***

Transport	4642.223***	-8.062***
Railroads	21573.480***	-8.708***
Manufacturing	8078.177***	-8.571***
Electric Power	7909.248***	-8.728***

Notes: *, **. *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively.

Table 42: CDS Spreads Volatility Test Statistics Full Sample Period

CDS	Jarque Bera	ADF Volatility
US Region		
Airlines	2126.901***	-8.595***
Beverages	105894.300***	-6.221***
Building Products	8144.860***	-7.041***
Banks	29083.600***	-5.820***
Banking	29363.700***	-6.009***
Cable Media	28811.900***	-6.746***
Consumer Goods	14412.430***	-7.755***
Chemicals	2877.277***	-7.361***
Conglomerate/Diversified Mfg	6714.546***	-6.845***
Containers	15885.270***	-8.291***
Consumer Services	8165.696***	-8.251***
Electric Utility	221099.600***	-7.608***
Electronics	78967.780***	-7.175***
Financials	2046.664***	-4.467***
Food Processors	16676.220***	-7.709***
Oilfield Machinery and Products	12597.710***	-6.713***
Healthcare Facilities	29145.890***	-7.155***
Industrials	201356.200***	-6.836***
Information/Data Technology	176032.200***	-8.225***
Leisure	11999.610***	-5.531***
Lodging	35593.780***	-6.339***
Machinery	2683.910***	-7.234***
Healthcare Supplies	165911.800***	-6.091***
Home Builders	6441.241***	-8.939***
Metals&Mining	7005.998***	-7.824***
Other Consumer Goods	98600.610***	-6.086***

Other Financials	2046.664***	-4.467***
Oil& Gas	35363.500***	-7.274***
Other Retail Stores	3662.745***	-5.259***
Other Services	2472.940***	-7.455***
Other Telecommunications	4457.970***	-7.142***
Pharmaceutical	43316.070***	-7.481***
Property&Casualty Insurance	898971.400***	-7.014***
Publishing	258928.900**	-8.147***
Railroads	6006.693***	-7.109***
Real Estate	2500.386***	-8.738***
Retail Stores Food and Drug	3377.801***	-9.029***
Restaurants	131303.200***	-7.822***
Telecommunications	2085.138***	-8.033***
Tobacco	29265.460***	-3.371**
Transportation	107770.700***	-6.412***
Other Transportation	70532.020***	-6.536***
Textiles\Apparel\Shoes	13167.900***	-6.736***
Utilities	32926.030***	-7.018***
Vehicles Parts	33318.220***	-5.995***
Manufacturing	11906.610***	-7.991***
Energy	43196.440***	-7.571***
Electric Power	82058.110***	-3.062**

UK Region		
Beverages	19877.480***	-8.407***
Banks	30211.150***	-7.171***
Banking	28655.590***	-7.199***
Consumer Goods	13001.180***	-7.362***
Consumer Services	7967.297***	-6.929***
Financials	7484.881***	-5.630***
Life Insurance	5316.324***	-5.489***
Other Financials	5930.038***	-5.961***
Other Services	8817.122***	-6.123***
Other Telecommunications	23793.120***	-8.733***
Other Retail	2202.901***	-7.996***
Telecommunications	23276.220***	-8.749***
Manufacturing	7418.470***	-6.869***

Electric Power	2725.138***	-6.034***

EU Region		
Automotive Manufacturer	6929.891***	-8.536***
Beverages	27202.870***	-5.540***
Building	5189.073***	-7.499***
Banks	5871.716***	-6.516***
Banking	4569.538***	-6.336***
Cable Media	15085.990***	-8.151***
Consumer Goods	55938.530***	-5.817***
Chemical	14376.390***	-8.393***
Conglomerate	13801.880***	-8.587***
Consumer Services	268834.100***	-6.789***
Electronics	13303.950***	-6.832***
Financials	13131.200***	-4.416***
Leisure	126471.200***	-7.329***
Metals&Mining	2438.570***	-8.803***
Other Services	385746.300***	-7.042***
Other Financials	18663.95***	-4.498***
Oil&Gas	12541.270***	-7.422***
Other Telecommunications	38316.500***	-5.884***
Telecommunications	8418.471***	-6.899***
Utility	33144.310***	-4.777***
Transportation	38240.610***	-5.862***
Manufacturing	11126.150***	-6.580***
Energy	10404.330***	-7.028***
Electric Power	29133.230***	-4.818***

Japan Region		
Automotive Manufacturer	2077.144***	-5.415***
Banking	822.386***	-6.125***
Banks	2989.800***	-7.292***
Chemical	19109.200***	-6.501***
Consumer Services	29034.920***	-8.963***
Electronics	8453.874***	-7.648***
Industrials	60583.940***	-7.956***
Metals&Mining	21166.110***	-5.909***
Financials	8687.613***	-6.638***

Other Retail	113771.700***	-6.356***
Other Services	11992.020***	-5.767***
Other Telecommunications	10804.340***	-6.845***
Transportation	5118.399***	-8.062***
Other Transportation	3223.786***	-6.612***
Telecommunications	10835.490***	-6.373***
Utility	6273.000***	-6.900***
Railroad	6647.942***	-6.356***
Electric Power	2950.732***	-8.728***
Manufacturing	5673.368***	-8.571***

Notes: *, **. *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively.

Table 43: CDS Spreads Volatility Test Statistics Crisis Period

CDS Spreads	Jarque Bera	ADF Volatility
	US Region	
Airlines	11077.890***	-7.704***
Beverages	6383.648***	-5.965***
Building Products	7783.853***	-6.297***
Banks	32090.210***	-6.945***
Banking	31934.470***	-6.929***
Cable Media	3937.803***	-6.686***
Consumer Goods	14480.690***	-7.162***
Chemicals	11582.750***	-4.203***
Conglomerate/Diversified Mfg	12602.430***	-5.824***
Containers	15436.450***	-6.899***
Consumer Services	25890.690***	-6.059***
Electric Utility	3235.510***	-6.763***
Electronics	519.509***	-4.570***
Financials	3615.378***	-6.928***
Food Processors	13621.000***	-6.555***
Oilfield Machinery and Products	37205.100***	-5.129***
Healthcare Facilities	9140.112***	-5.671***
Industrials	1978.907***	-6.429***
Information/Data Technology	112813.200***	-6.523***
Leisure	3777.258***	-6.191***

Lodging	62951.820***	-6.053***
Machinery	4213.011***	-5.421***
Healthcare Supplies	2102.956***	-6.476***
Home Builders	19495.410***	-7.534***
Metals&Mining	18782.010***	-6.302***
Other Consumer Goods	15436.450***	-5.761***
Other Financials	3615.378***	-6.928***
Oil& Gas	20440.030***	-4.735***
Other Retail Stores	62812.990***	-7.617***
Other Services	255050.700***	-11.360***
Other Telecommunications	360557.600***	-7.956***
Pharmaceutical	5682.266***	-6.332***
Property&Casualty Insurance	13745.92***	-6.997***
Publishing	32212.070***	-7.893***
Railroads	35398.220***	-6.273***
Real Estate	2242.234***	-6.596***
Retail Stores Food and Drug	39397.670***	-6.457***
Restaurants	49146.590***	-6.253***
Telecommunications	356726.300***	-7.925***
Tobacco	6995.079***	-5.664***
Other Transportation	5607.589***	-7.307***
Textiles\Apparel\Shoes	2336.331***	-4.614***
Utilities	377725.500***	-7.425***
Transport	8213.817***	-7.561***
Vehicles Parts	4095.599***	-5.904***
Energy	18789.670***	-4.817***
Manufacturing	32638.660***	-5.732***
Electric Power	347491.000***	-7.500***

UK Region		
Beverages	20643.010***	-8.409***
Banks	11631.000***	-5.177***
Banking	11645.330***	-7.444***
Consumer Goods	113538.400***	-6.216***
Consumer Services	12394.970***	-7.769***
Financials	105048.000***	-6.943***
Life Insurance	72534.450***	-6.841***
Other Financials	633214.800***	-8.189***

Other Services	15476.760***	-7.672***
Other Telecommunications	472617.600***	-11.311***
Other Retail	5378.174***	-10.875***
Telecommunications	472827.400***	-7.916***
Manufacturing	138059.200***	-6.353***
Electric Power	197594.800***	-5.072***

EU Region		
Automotive Manufacturer	198129.000***	-7.457***
Beverages	7449.346***	-5.589***
Building	7394.424***	-5.714***
Banks	14191.200***	-5.140***
Banking	14190.840***	-5.139***
Cable Media	208531.400***	-8.044***
Consumer Goods	21720.060***	-6.613***
Chemical	78432.090***	-6.572***
Conglomerate	10315.790***	-7.009****
Consumer Services	198888.700***	-5.489***
Electronics	3190.188***	-6.224***
Financials	30041.600***	-4.221***
Leisure	115802.000***	-6.630***
Metals&Mining	30568.210***	-6.287***
Other Services	30919.730***	-7.529***
Other Financials	29607.020***	-4.126***
Oil&Gas	547347.500***	-6.749***
Other Telecommunications	82495.240***	-6.837***
Telecommunications	9697.432***	-5.077***
Transportation	82475.550***	-6.836***
Utility	15644.360***	-4.069***
Manufacturing	57100.910***	-4.907***
Energy	297642.700***	-7.311***
Electric Power	16942.850***	-4.063***

Japan Region		
Automotive Manufacturer	3871.499***	-7.653***
Banks	822.386***	-7.292***
Banking	839.269***	-7.279***
Chemical	71095.580***	-6.474***

Consumer Services	17536.370***	-8.963***
Electronics	13318.720***	-7.708***
Industrials	6867.296***	-8.908***
Metals&Mining	12960.890***	-8.408***
Financials	1728.322***	-6.637***
Other Retail	4935.674***	-8.881***
Other Services	7402.278***	-8.865***
Other Telecommunications	1971.668***	-6.370***
Transportation	1141.901***	-8.061***
Other Transport	695.922***	-7.704***
Telecommunications	1971.684***	-6.373***
Utility	79720.920***	-7.745***
Railroads	591.622***	-8.708***
Manufacturing	2270.294***	-8.571***
Electric Power	5204.170***	-8.728***

Notes: *, **. *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively.

Table 44: CDS Spreads Volatility Test Statistics After-Crisis Period

Equity	Jarque Bera	ADF Volatility
US Region		
Airlines	2767.448***	-6.524***
Beverages	71248.300***	-6.851***
Building Products	6215.999***	-4.604***
Healthcare	48019.810***	-5.350***
Banking	15519.760***	-4.980***
Cable Media	29749.950***	-3.706***
Consumer Goods	39334.150***	-5.076***
Chemicals	12965.920***	-4.763***
Conglomerate/Diversified Mfg	8671.627***	-4.101***
Containers	7752.076***	-5.684***
Consumer Services	20802.030***	-4.564***
Electric Utility	87619.610***	-4.663***
Electronics	16776.380***	-4.356***
Financials	12126.630***	-4.093***

Food Processors	38443.720***	-5.634***
Oilfield Machinery and Products	88597.110***	-6.432***
Healthcare Facilities	59323.170***	-5.814***
Industrials	8937.831***	-4.214***
Information/Data Technology	14915.210***	-5.502***
Leisure	5054.031***	-4.558***
Lodging	6624.336***	-3.81***
Machinery	13670.190***	-4.344***
Healthcare Supplies	17006.220***	-8.388***
Home Builders	3631.398***	-5.349***
Metals&Mining	24109.140***	-4.342***
Other Consumer Goods	19244.250***	-5.100***
Other Financials	14997.960***	-4.173***
Oil& Gas	71969.350***	-6.410***
Other Retail Stores	18236.450***	-4.875***
Other Services	20798.780***	-4.552***
Other Telecommunications	48912.740***	-4.151***
Pharmaceutical	46085.560***	-4.418***
Property&Casualty Insurance	32593.910***	-4.188***
Publishing	23481.230***	-4.418***
Real Estate	16321.600***	-3.116***
Retail Stores Food and Drug	29116.270***	-6.323***
Restaurants	11895.380***	-5.062***
Telecommunications	48921.260***	-4.148***
Tobacco	71707.500***	-7.945***
Transportation	4047.852***	-4.314***
Railroads	3070.424***	-6.085***
Other Industrials	8802.681***	-4.214***
Textiles\Apparel\Shoes	36851.030***	-5.032***
Utilities	97728.990***	-4.759***
Basic Materials	18184.120***	-3.315**
Technology	14920.880***	-5.491***
Other Utility	97557.130***	-4.736***
Vehicle Parts	5472.755***	-4.294***
Other Oil & Gas	71940.880***	-4.877***

UK Region		
Beverages	17449.120***	-7.111***

Healthcare	28426.050***	-7.645***
Banking	14954.820***	-6.063***
Consumer Goods	36615.330***	-7.083***
Consumer Services	8202.388***	-8.067***
Financials	10621.370***	-5.893***
Life Insurance	28628.040***	-5.874***
Other Financials	15712.890***	-7.002***
Other Services	8185.800***	-8.029***
Other Telecommunications	12779.100***	-6.305***
Other Retail	10140.240***	-8.406***
Telecommunications	12802.380***	-6.347***
Basic Materials	15478.680***	-7.065***
Oil&Gas	18783.560***	-7.841***
Technology	39814.700***	-7.822***
Utility	81786.690***	-9.436***
Industrials	5741.682***	-8.431***

EU Region		
Automotive Manufacturer	3798783.000***	-8.713***
Beverages	11774.750***	-5.494***
Building Products	8063.479***	-4.338***
Banking	7830.137***	-7.589***
Cable Media	10520.860***	-8.100***
Consumer Goods	65288.140***	-5.352***
Chemical	7436.448***	-5.902***
Conglomerate	65343.230***	-5.338***
Consumer Services	11533.480***	-5.333***
Electronics	14705.740***	-4.744***
Financials	7968.133***	-7.331***
Leisure	4168.435***	-7.290***
Metals&Mining	8993.498***	-7.151***
Other Services	11531.930***	-5.326***
Other Financials	12906.220***	-7.374***
Oil&Gas	21419.630***	-7.235***
Other Telecommunications	18874.080***	-6.381***
Telecommunications	18870.310***	-5.540***
Utility	43538.210***	-4.867***
Basic Materials	9869.828***	-6.805***

Technology	7307.167***	-4.754***
Healthcare	37241.030***	-6.830***
Utility Other	43538.730***	-4.873***
Oil&Gas Other	21432.060***	-7.230***
Industrials	7133.722***	-4.530***
Japan Region		
Automotive Manufacturer	38869.420***	-6.718***
Oil&Gas	18556.130***	-6.869***
Banking	3973.975***	-7.297***
Chemical	365000.400***	-8.343***
Consumer Services	45727.250***	-9.457***
Electronics	36472.810***	-8.024***
Industrials	28853.190***	-6.713***
Metals&Mining	32808.740***	-7.913***
Other Utility	42812.640***	-9.965***
Other Retail	47378.280***	-8.892***
Other Services	66700.940***	-9.454***
Other Telecommunications	9731.155***	-6.718***
Other Transport	2883.670***	-6.973***
Telecommunications	14210.270***	-6.724***
Basic Materials	37477.580***	-7.797***
Consumer Goods	26351.870***	-7.978***
Financials	14880.330***	-8.745***
Railroad	21573.480***	-6.716***
Technology	26805.580***	-7.865***
Healthcare	35142.670***	-8.002***
Utility	13273.850***	-9.975***
Utility Other	44076.990***	-9.965***

Notes: *, **. *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively.

Table 45: Equity Volatility Test Statistics Full-Sample Period

Equity	Jarque Bera	ADF Volatility
US Region		
Airlines	468.541***	-6.289***
Beverages	21121.850***	-4.636***
Building Products	1404.629***	-4.831***
Healthcare	17555.920***	-5.596***
Banking	2545.742***	-4.456***
Cable Media	6683.724***	-2.946**
Consumer Goods	11155.500***	-3.443***
Chemicals	3038.135***	-4.871***
Conglomerate/Diversified Mfg	1683.075***	-3.141***
Containers	1911.069***	-5.316***
Consumer Services	5087.636***	-3.236***
Electric Utility	19936.180***	-4.374***
Electronics	3988.682***	-3.189***
Financials	1934.721***	-4.096***
Food Processors	11398.230***	-3.957***
Oilfield Machinery and Products	23935.470***	-4.603***
Healthcare Facilities	17696.780***	-5.103***
Industrials	1894.370***	-3.084***
Information/Data Technology	3956.671***	-3.824***
Leisure	1060.562***	-3.365***
Lodging	1341.251***	-5.029***
Machinery	3107.625***	-3.138**
Healthcare Supplies	5746.445***	-5.740***
Home Builders	740.544***	-5.029***
Metals&Mining	5990.323***	-4.566***
Other Consumer Goods	5293.718***	-3.546***
Other Financials	2505.950***	-3.213***
Oil& Gas	19948.920***	-4.527***
Other Retail Stores	4408.800***	-4.102***
Other Services	5090.843***	-3.236***
Other Telecommunications	9891.088***	-3.518***
Pharmaceutical	15311.050***	-4.331***
Property&Casualty Insurance	5722.909***	-4.089***
Publishing	6277.792***	-2.994**

Railroads	682.544***	-4.442***
Real Estate	2420.698***	-3.569**
Retail Stores Food and Drug	8943.810***	-4.157***
Restaurants	3393.178***	-4.379***
Telecommunications	9913.642***	-3.483***
Tobacco	23653.070***	-4.641***
Other Industrials	1878.875***	-3.113**
Other Transportation	758.920***	-3.086***
Textiles\Apparel\Shoes	9797.656***	-3.474***
Utilities	21734.350***	-4.449***
Basic Materials	4386.215***	-4.517***
Technology	3964.946***	-3.829***
Other Utility	21733.530***	-4.446***
Other Oil&Gas	19966.640***	-4.539***
Vehicles Parts	1108.383***	-4.893***

UK Region		
Beverages	6840.908***	-6.139***
Healthcare	13866.420***	-6.736***
Banking	3684.960***	-5.452***
Consumer Goods	13268.020***	-6.140***
Consumer Services	1819.396***	-5.602***
Financials	2571.026***	-5.384***
Life Insurance	7402.867***	-5.475***
Other Financials	4409.328***	-5.084***
Other Services	1821.238***	-5.602***
Other Telecommunications	4194.149***	-5.522***
Other Retail	1672.845***	-5.689***
Telecommunications	4183.971***	-5.465***
Basic Materials	4599.573***	-5.192***
Oil&Gas	8927.042***	-5.316***
Technology	4309.675***	-6.849***
Utility	29835.900***	-6.537***
Industrials	1563.989***	-5.935***

EU Region		
Automative Manufacturer	886745.500***	-8.713***

Beverages	3641.815***	-5.673***
Building	2146.215***	-5.945***
Banking	1689.143***	-5.809***
Cable Media	2710.875***	-5.865***
Consumer Goods	25120.450***	-5.922***
Chemical	2158.839***	-5.697***
Conglomerate	25076.100***	-5.981***
Consumer Services	2885.500***	-5.985***
Electronics	4756.969***	-5.933***
Financials	1820.744***	-5.652***
Leisure	1062.661***	-5.911***
Metals&Mining	2336.364***	-5.394***
Other Services	2889.810***	-6.026***
Other Financials	3763.009***	-5.445***
Oil&Gas	7727.240***	-4.989***
Other Telecommunications	6074.786***	-3.701***
Telecommunications	6068.987***	-3.618***
Utility	13302.220***	-3.430***
Basic Materials	2836.469***	-5.324***
Technology	1794.176***	-5.887***
Healthcare	13687.130***	-6.215***
Utility Other	13284.890***	-3.475***
Oil&Gas Other	7721.528***	-5.024***
Industrials	2100.817***	-5.752***

Japan Region		
Automotive Manufacturer	2077.144***	-5.975***
Oil&Gas	8053.020***	-5.762***
Banking	2989.800***	-6.018***
Chemical	19109.200***	-5.609***
Consumer Services	52600.840***	-6.823***
Electronics	8453.874***	-5.567***
Industrials	13665.670***	-5.362***
Metals&Mining	21166.110***	-5.559***
Other Industrials	60583.940***	-7.188***
Other Retail	113771.700***	-6.281***
Other Services	11992.020***	-6.808***
Other Telecommunications	10804.340***	-5.651***

Other Transport	3223.786***	-6.105***
Telecommunications	9627.853***	-5.649***
Basic Materials	18924.100***	-5.492***
Consumer Goods	16339.860***	-5.447***
Financials	6521.267***	-5.859***
Railroad	6647.942***	-5.392***
Technology	12162.460***	-5.239***
Healthcare	30631.540***	-4.989***
Utility	11029.770***	-7.187***
Utility Other	6273.000***	-7.188***

Notes: *, **. *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively.

Table 46: Equity Volatility Test Statistics Crisis Period

Equity	Jarque Bera	ADF Volatility
US Region		
Airlines	297.270***	-8.716***
Beverages	444.455***	-8.818***
Building Products	403.972***	-8.598***
Healthcare	881.146***	-7.849***
Banking	2436.687***	-7.893***
Cable Media	422.240***	-7.941***
Consumer Goods	1042.711***	-8.176***
Chemicals	722.381***	-7.819***
Conglomerate/Diversified Mfg	718.811***	-7.767***
Containers	2435.188***	-8.335***
Consumer Services	1087.921***	-7.818***
Electric Utility	515.897***	-8.332***
Electronics	1226.794***	-8.537***
Financials	1914.941***	-7.793***
Food Processors	683.560***	-8.321***
Oilfield Machinery and Products	844.854***	-6.434***
Healthcare Facilities	676.119***	-7.195***
Industrials	821.060***	-8.267***
Information/Data Technology	1593.256***	-7.996***

Leisure	1423.445***	-8.112***
Lodging	684.452***	-8.105***
Machinery	1040.298***	-8.931***
Healthcare Supplies	821.782***	-7.929***
Home Builders	234.629***	-8.399***
Metals&Mining	794.188***	-7.179***
Other Consumer Goods	1263.863***	-8.527***
Other Financials	1858.905***	-8.400***
Oil& Gas	949.493***	-6.264***
Other Retail Stores	2066.854***	-8.251***
Other Services	1126.855***	-6.827***
Other Telecommunications	641.416***	-8.971***
Pharmaceutical	1579.178***	-7.326***
Property&Casualty Insurance	638.807***	-8.080***
Publishing	2075.895***	-8.952***
Railroads	443.583***	-8.746***
Real Estate	717.975***	-8.098***
Retail Stores Food and Drug	1386.274***	-7.960***
Restaurants	1540.346***	-7.942***
Telecommunications	620.117***	-8.921***
Tobacco	349.634***	-9.275***
Trasportation	469.277**	-8.711***
Other Industrials	891.399***	-8.189***
Textiles\Apparel\Shoes	1301.977***	-8.134***
Utilities	478.403***	-8.440***
Basic Materials	667.197***	-7.596***
Technology	1550.953***	-7.990***
Other Oil&Gas	961.787***	-6.296***
Other Utility	483.645***	-8.378***
Vehicles Parts	498.624***	-9.835***

UK Region		
Beverages	7379.620***	-5.767***
Healthcare	704.914***	-8.567***
Banking	15495.940***	-6.892***
Consumer Goods	782.703***	-7.810***
Consumer Services	22568.480***	-7.504***
Financials	44679.230***	-6.827***

Life Insurance	42206.030***	-7.144***
Other Financials	28049.140***	-6.961***
Other Services	22492.120***	-7.436***
Other Telecommunications	2796.488***	-8.189***
Other Retail	40053.810***	-7.534***
Telecommunications	2809.056***	-8.269***
Basic Materials	1272.436***	-6.261***
Oil&Gas	1089.108***	-6.669***
Technology	118592.300***	-6.614***
Utility	1548.135***	-8.602***
Industrials	10109.390***	-7.785***

EU Region		
Automotive Manufacturer	6165.340***	-8.556***
Beverages	2607.948***	-7.137***
Building	15553.730***	-9.015***
Banking	70948.500***	-7.593***
Cable Media	57003.920***	-8.2777***
Consumer Goods	7827.988***	-6.952***
Chemical	3156.991***	-5.902***
Conglomerate	7880.493***	-5.338***
Consumer Services	65358.140***	-7.906***
Electronics	32981.790***	-8.035***
Financials	88380.600***	-7.582***
Leisure	2106.218***	-8.704***
Metals&Mining	749.820***	-8.208***
Other Services	65457.410***	-7.893***
Other Financials	58504.300***	-7.879****
Oil&Gas	2181.922***	-7.254***
Other Telecommunications	31282.970***	-5.547***
Telecommunications	31239.750***	-6.306***
Utility	28385.500***	-9.025***
Basic Materials	1873.076***	-7.653***
Technology	9746.831***	-8.672***
Healthcare	1080.013***	-6.487***
Utility Other	28523.310***	-8.947***
Oil&Gas Other	2188.288***	-7.204****
Industrials	38105.400***	-8.085***

Japan Region		
Automotive Manufacturer	3871.499***	-6.811***
Oil&Gas	1430.111***	-7.720***
Banking	839.269***	-7.453***
Chemical	71095.580***	-6.933***
Consumer Services	1973.764***	-6.781***
Electronics	13318.720***	-6.363***
Industrials	6867.296***	-6.629***
Metals&Mining	12960.890***	-6.279***
Other Industrials	42812.640***	-6.942***
Other Retail	4935.674***	-6.562***
Other Services	7402.278***	-6.798***
Other Telecommunications	9731.155***	-6.969***
Other Transport	695.922***	-7.235***
Telecommunications	1971.668***	-6.629***
Basic Materials	1758.436***	-6.573***
Consumer Goods	1873.150***	-6.413***
Financials	1512.684***	-7.600***
Railroad	591.622***	-6.642***
Technology	2478.112***	-7.184***
Healthcare	2666.246***	-6.858***
Utility	2467.207***	-6.957***
Utility Other	79720.92***	-6.942***

Notes: *, **. *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively.

Table 47: Equity Volatility Test Statistics After-Crisis Period

A.6 Correlation Statistics – Volatility Data

CDS Spread and Equity Volatility Correlation		CDS																																															
for US Region		Airlines	Bank	Banking	Beverages/Bottling	Building Products	Cable Media	Conglomerate/Diversified Mfg	Chemicals	Containers	Consumer Goods	Other Consumer Goods	Electric Power	Electric Utility	Electronics	Energy	Food Processors	Oil&Gas	Healthcare	Home Builders	Industrials	Information/Data Technology	Leisure	Lodging	Machinery	Manufacturing	Metals&Mining	Financials	Other Financials	Oilfield Machinery and Products	Pharmaceuticals	Property&Casualty	Publishing	Railroads	Real Estate	Other Retail	Restaurants	Consumer Services	Retail Stores Food and Drug	Healthcare Supplies	Other Consumer Services	Telecommunications	Other Telecommunications	Textiles\Apparel\Shoes	Utility	Tobacco	Transportation	Other Transportation	Vehicle Parts
	Airlines	1.000
	Bank	0.163	1.000
	Banking	0.166	0.984	1.000
	Beverages/Bottling	0.046	0.110	0.112	1.000
	Building Products	0.098	0.257	0.267	0.107	1.000
	Cable Media	0.015	0.095	0.108	0.035	0.112	1.000
	Conglomerate/Diversified Mfg	0.098	0.269	0.277	0.062	0.188	0.059	1.000
	Chemicals	0.006	0.106	0.116	0.169	0.190	0.212	0.072	1.000
	Containers	0.151	0.206	0.215	0.165	0.124	0.160	0.227	0.102	1.000
	Consumer Goods	0.069	0.130	0.129	0.213	0.224	0.054	0.139	0.053	0.220	1.000
	Other Consumer Goods	0.079	0.128	0.132	0.159	0.116	0.061	0.067	0.078	0.132	0.303	1.000
	Electric Power	-0.019	-0.015	-0.013	0.086	-0.020	-0.012	0.005	0.000	0.149	0.086	0.011	1.000
	Electric Utility	0.049	0.071	0.071	0.129	0.040	0.024	0.004	0.079	0.141	0.168	0.044	0.049	1.000
	Electronics	-0.039	0.098	0.107	0.219	0.184	0.185	0.116	0.311	0.107	0.125	0.216	-0.048	0.008	1.000
	Energy	-0.003	0.029	0.033	0.209	0.082	0.059	0.016	0.088	0.109	0.108	0.136	-0.005	0.087	0.154	1.000
	Food Processors	0.083	0.086	0.086	0.077	0.215	0.048	0.123	0.036	0.180	0.908	0.112	0.048	0.163	0.104	0.078	1.000
	Oil&Gas	0.000	0.022	0.020	0.208	0.088	0.055	0.022	0.082	0.104	0.129	0.137	-0.004	0.089	0.148	0.988	0.102	1.000
	Healthcare	0.016	0.086	0.095	0.111	0.167	0.201	0.044	0.386	0.090	0.037	0.107	-0.029	0.113	0.216	0.071	0.039	0.067	1.000
	Home Builders	0.204	0.385	0.377	0.182	0.221	0.105	0.286	0.145	0.325	0.226	0.141	0.021	0.068	0.205	0.101	0.204	0.133	0.095	1.000
	Industrials	0.001	0.056	0.065	0.010	0.001	0.021	0.044	0.008	0.093	0.041	0.020	0.046	0.106	0.109	0.126	0.045	0.129	0.007	0.061	1.000
	Information/Data Technology	0.096	-0.021	-0.015	0.151	0.103	0.016	0.056	0.038	0.081	0.099	0.039	-0.020	-0.008	0.187	0.066	0.115	0.055	0.027	0.081	0.028	1.000
	Leisure	0.126	0.254	0.248	0.128	0.146	0.064	0.124	0.013	0.173	0.164	0.087	-0.001	0.115	0.084	0.064	0.170	0.061	-0.013	0.254	0.096	0.048	1.000
	Lodging	-0.053	-0.027	-0.024	0.009	0.020	0.071	0.044	0.067	0.042	-0.003	-0.012	-0.010	-0.041	0.099	0.190	0.019	0.194	0.095	0.029	0.086	0.004	-0.017	1.000
CDS	Machinery	0.102	0.032	0.037	0.106	0.036	0.125	0.010	0.020	0.110	0.067	0.129	-0.017	0.058	0.194	0.157	0.022	0.153	0.114	0.079	-0.020	0.155	0.095	-0.014	1.000
	Manufacturing	0.039	0.129	0.132	0.102	0.147	0.195	0.139	0.112	0.104	0.158	0.139	-0.027	-0.027	0.351	0.075	0.152	0.069	0.037	0.204	0.024	0.244	0.099	0.065	0.094	1.000
	Metals&Mining	0.044	0.015	0.014	0.051	0.086	0.136	0.046	0.072	0.031	0.135	0.089	-0.025	-0.037	0.245	0.049	0.166	0.047	0.026	0.094	0.001	0.216	0.022	0.069	0.066	0.914	1.000
	Financials	-0.076	0.019	0.021	0.046	0.158	-0.053	0.032	0.044	-0.029	0.162	0.117	0.012	-0.008	0.138	0.112	0.130	0.108	0.047	0.042	0.142	0.053	0.077	-0.030	-0.002	0.000	-0.001	1.000
	Other Financials	-0.076	0.019	0.021	0.046	0.158	-0.053	0.032	0.044	-0.029	0.162	0.117	0.012	-0.008	0.138	0.112	0.130	0.108	0.047	0.042	0.142	0.053	0.077	-0.030	-0.002	0.000	-0.001	1.000	1.000
	Oilfield Machinery and Products	0.035	0.152	0.154	0.109	0.082	0.048	0.132	0.109	0.137	0.136	0.129	-0.023	0.045	0.287	0.163	0.095	0.143	0.051	0.160	0.081	0.297	0.037	0.056	0.234	0.217	0.167	0.057	0.057	1.000
	Pharmaceuticals	0.037	0.139	0.144	0.192	0.193	0.048	0.123	0.176	0.125	0.171	0.184	0.038	0.091	0.312	0.091	0.129	0.094	0.100	0.187	0.054	0.130	0.156	0.048	0.083	0.222	0.133	0.164	0.164	0.102	1.000
	Property&Casualty	0.134	0.179	0.187	0.088	0.041	0.035	0.250	0.084	0.234	0.106	0.076	-0.028	0.058	0.043	-0.018	0.162	-0.014	0.031	0.368	0.075	0.103	0.069	0.060	0.019	0.038	0.022	-0.028	-0.028	0.043	0.230	1.000
	Publishing	0.155	0.240	0.246	0.073	0.162	0.095	0.119	0.058	0.213	0.243	0.021	0.009	0.005	0.003	-0.024	0.219	-0.016	0.016	0.198	0.070	-0.022	0.156	-0.027	0.026	0.055	0.005	0.052	0.052	0.046	0.088	0.091	1.000
	Railroads	0.162	0.322	0.328	0.178	0.142	0.135	0.164	0.174	0.194	0.133	0.253	-0.013	0.079	0.258	0.041	0.050	0.036	0.144	0.296	0.117	0.027	0.129	0.002	0.124	0.127	0.032	0.036	0.036	0.178	0.134	0.142	0.188	1.000
	Real Estate	0.151	0.309	0.309	0.104	0.352	0.114	0.274	0.239	0.209	0.171	0.106	-0.023	0.094	0.150	0.071	0.184	0.089	0.124	0.334	0.064	0.007	0.244	-0.001	0.154	0.076	-0.007	0.054	0.054	0.140	0.192	0.230	0.194	0.258	1.000
	Other Retail	-0.027	0.130	0.134	0.032	0.038	0.067	0.019	0.077	0.149	0.090	0.129	0.051	-0.046	0.118	0.210	0.107	0.207	0.093	0.099	0.050	-0.031	0.093	0.082	0.041	0.193	0.225	0.042	0.042	0.074	0.014	0.011	0.038	0.000	0.035	1.000
	Restaurants	0.045	0.049	0.055	0.296	0.057	0.016	0.100	0.071	0.278	0.103	0.093	-0.005	0.016	0.092	0.224	0.047	0.226	0.056	0.164	0.064	0.150	0.087	-0.017	0.120	0.055	0.014	0.052	0.052	0.135	0.097	0.097	0.066	0.092	0.087	-0.006	1.000
	Consumer Services	0.070	-0.010	-0.001	0.087	0.056	0.126	0.005	0.113	0.133	0.082	0.088	-0.004	0.075	0.047	0.347	0.070	0.345	0.154	0.093	-0.011	0.048	0.067	-0.015	0.150	0.053	0.033	0.035	0.035	0.116	0.091	-0.013	0.098	0.048	0.042	0.095	0.380	1.000
	Retail Stores Food and Drug	0.096	-0.031	-0.023	0.068	0.023	0.040	-0.028	0.035	0.044	0.038	0.091	-0.001	0.089	-0.014	0.345	0.014	0.343	0.091	0.043	0.003	0.031	0.055	-0.025	0.169	-0.003	-0.010	0.037	0.037	0.089	0.070	-0.012	0.061	-0.002	0.012	-0.005	0.400	0.880	1.000
	Healthcare Supplies	0.165	0.095	0.100	0.165	0.065	0.164	0.157	0.126	0.445	0.143	0.080	0.007	0.108	0.079	0.067	0.133	0.071	0.165	0.193	0.039	0.053	0.063	0.008	0.120	0.083	0.038	-0.033	-0.033	0.049	0.197	0.176	0.124	0.128	0.149	0.008	0.263	0.171	0.120	1.000
	Other Consumer Services	-0.014	-0.040	-0.038	0.036	0.048	0.093	0.020	0.093	0.173	0.074	0.034	0.000	-0.016	0.094	0.017	0.002	0.014	0.052	0.058	-0.022	0.046	-0.024	0.024	0.014	0.087	0.078	-0.032	-0.032	0.109	0.045	-0.035	-0.006	0.061	-0.008	0.184	-0.031	0.407	-0.022	0.072	1.000
	Telecommunications	0.118	0.178	0.186	0.166	0.234	0.150	0.153	0.216	0.169	0.148	0.065	0.060	0.078	0.187	0.095	0.123	0.082	0.130	0.199	0.070	0.308	0.163	0.034	-0.014	0.274	0.197	0.081	0.081	0.157	0.157	0.066	0.119	0.132	0.205	0.035	0.083	0.045	0.019	0.163	-0.007	1.000
	Other Telecommunications	0.133	0.175	0.183	0.178	0.208	0.131	0.242	0.221	0.193	0.151	0.081	0.054	0.087	0.183	0.080	0.138	0.068	0.124	0.249	0.075	0.307	0.164	0.058	-0.014	0.255	0.185	0.062	0.062	0.140	0.211	0.246	0.105	0.125	0.217	0.027	0.102	0.029	0.005	0.183	-0.008	0.934	1.000
	Textiles\Apparel\Shoes	0.037	0.035	0.039	0.100	0.077	0.081	0.041	0.219	0.107	0.064	0.038	-0.022	0.140	0.197	0.318	0.076	0.324	0.188	0.115	0.193	-0.006	0.042	0.289	-0.017	0.026	0.016	0.096	0.096	0.053	0.006	0.059	-0.026	0.092	0.028	0.084	0.051	0.159	0.089	0.083	0.127	0.098	0.100	1.000
	Utility	0.015	-0.005	-0.002	0.115	-0.023	-0.002	0.012	0.008	0.061	0.085	0.026	0.866	-0.012	-0.041	-0.019	0.032	-0.018	-0.024	0.020	0.036	-0.006	0.009	-0.026	-0.003	-0.010	-0.016	-0.003	-0.003	-0.018	0.049	0.002	0.030	0.008	-0.012	0.023	0.022	0.003	0.000	0.038	0.013	0.007	0.010	-0.027	1.000
	Tobacco	0.044	0.142	0.147	0.173	0.047	-0.015	0.092	0.018	0.105	0.196	0.043	0.305	0.002	0.072	-0.029	0.115	-0.033	0.010	0.093	0.101	-0.025	0.089	-0.005	0.046	0.139	0.135	0.030	0.030	0.069	0.102	0.050	0.097	0.175	0.094	0.218	0.024	-0.006	-0.001	0.047	-0.001	0.091	0.087	0.066	0.375	1.000
	Transportation	0.122	-0.046	-0.041	0.092	0.109	0.055	-0.009	-0.052	0.000	0.134	0.007	0.066	0.057	-0.014	0.090	0.115	0.086	-0.003	-0.024	-0.073	0.008	0.015	-0.030	0.070	-0.012	-0.015	0.045	0.045	0.039	0.008	-0.001	0.033	0.062	0.012	-0.019	0.067	0.109	0.137	0.019	-0.046	0.058	0.049	-0.045	0.048	0.123	1.000
	Other Transportation	-0.003	-0.078	-0.076	0.141	0.072	0.094	-0.009	-0.032	0.008	0.181	0.037	0.068	0.044	0.004	0.114	0.154	0.109	0.019	-0.031	-0.070	0.024	-0.002	0.033	0.068	0.032	0.034	0.035	0.035	0.038	0.053	0.048	0.011	0.038	-0.019	0.000	0.092	0.124	0.154	0.044	-0.039	0.036	0.043	-0.017	0.056	0.095	0.908	1.000
	Vehicle Parts	0.137	0.228	0.233	0.064	0.177	0.091	0.098	0.101	0.107	0.040	0.068	-0.017	0.016	0.210	-0.033	0.022	-0.032	0.056	0.194	0.013	-0.024	0.186	0.026	-0.033	0.111	0.012	-0.053	-0.053	0.020	0.165	0.064	0.169	0.194	0.175	-0.002	0.053	0.024	-0.026	0.050	0.086	0.062	0.060	0.086	-0.020	0.049	-0.067	-0.090	1.000
	Utility	0.156	0.444	0.444	0.136	0.213	0.089	0.168	0.105	0.189	0.088	0.061	-0.021	0.087	0.137	0.016	0.017	0.010	0.063	0.304	0.084	0.015	0.218	0.045	0.020	0.165	0.065	-0.021	-0.021	0.188	0.131	0.133	0.150	0.198	0.335	0.016	0.065	0.018	0.012	0.121	-0.015	0.235	0.216	0.117	0.005	0.131	-0.038	-0.041	0.201
	Other Utility	0.118	0.382	0.377	0.087	0.200	0.065	0.149	0.110	0.160	0.050	0.035	-0.027	0.077	0.097	0.007	-0.006	0.003	0.094	0.259	0.067	-0.010	0.177	0.040	0.003	0.125	0.049	-0.018	-0.018	0.164	0.118	0.123	0.140	0.146	0.332	0.005	0.059	0.033	0.029	0.139	-0.017	0.204	0.190	0.098	0.001	0.121	-0.061	-0.058	0.174
	Airlines	0.182	0.345	0.341	0.036	0.144	0.033	0.118	-0.016	0.179	0.013	0.028	-0.062	0.006	-0.025	0.005	-0.006	0.013	-0.048	0.280	0.019	-0.032	0.300	-0.033	-0.010	0.073	-0.006	-0.088	-0.088	0.054	0.041	0.091	0.207	0.181	0.277	0.072	0.091	-0.001	-0.002	0.100	-0.041	0.095	0.086	0.018	-0.035	0.027	-0.047	-0.071	0.157
	Vehicle Parts	0.169	0.433	0.425	0.029	0.212	0.054	0.180	0.017	0.140	0.041	0.015	-0.031	0.002	0.011	-0.032	0.012	-0.028	-0.048	0.319	0.019	-0.016	0.304	-0.013	-0.034	0.072	-0.020	-0.077	-0.077	0.090	0.052	0.127	0.238	0.211	0.357	0.029	0.029	-0.023	-0.032	0.049	-0.036	0.151	0.144	-0.004	-0.001	0.077	-0.050	-0.091	0.215
	Banks	0.158	0.454	0.451	0.014	0.159	0.046	0.152	0.007	0.133	0.013	-0.007	-0.047	-0.004	-0.015	-0.044	-0.010	-0.042	-0.057	0.293	0.048	-0.010	0.349	-0.009	-0.043	0.073	-0.016	-0.084	-0.084	0.079	0.077	0.129	0.218	0.200	0.313	0.055	0.015	-0.026	-0.044	0.044	-0.018	0.125	0.116	0.002	-0.019	0.079	-0.066	-0.096	0.183
	Beverages/Bottling	0.102	0.345	0.337	0.055	0.202	0.012	0.151	0.050	0.140	0.069	0.051	-0.012	0.044	0.027	0.023	0.014	0.024	0.041	0.273	0.036	0.001	0.198	0.045	0.026	0.123	0.054	-0.003	-0.003	0.181	0.084	0.079	0.139	0.130	0.340	0.036	0.065	0.034	0.037	0.091	-0.015	0.176	0.161	0.071	-0.003	0.081	-0.021	-0.011	0.130
	Building Products	0.181	0.546	0.541	0.064	0.238	0.075	0.231	0.029	0.199	0.075	0.049	-0.032	0.026	0.054	0.004	0.020	0.005	-0.055	0.352	0.049	0.005	0.369	0.011	-0.018	0.142	0.021	-0.053	-0.053	0.177	0.082	0.151	0.217	0.235	0.391	0.040	0.050	-0.001	-0.021	0.078	-0.016	0.185	0.176	0.037	-0.012	0.095	-0.045	-0.080	0.243
	Basic Materials	0.147	0.466	0.461	0.026	0.224	0.060	0.197	0.026	0.169	0.076	0.015	-0.010	0.029	0.018	-0.032	0.046	-0.029	-0.047	0.303	0.053	0.007	0.334	-0.004	-0.028	0.149	0.050	-0.044	-0.044	0.109	0.102	0.113	0.232	0.174	0.359	0.059	0.058	0.000	-0.015	0.070	-0.022	0.194	0.179	0.019	0.004	0.115	-0.034	-0.064	0.206
	Chemicals	0.160	0.500	0.491	0.058	0.236	0.068	0.200	0.003	0.173	0.083	0.049	-0.042	0.023	0.056	0.003	0.036	0.008	-0.020	0.324	0.046	0.005	0.255	0.020	-0.010	0.134	0.030	-0.044	-0.044	0.144	0.093	0.129	0.218	0.195	0.376	0.031	0.076	0.011	-0.012	0.090	-0.013	0.199	0.192	0.030	-0.022	0.086	-0.049	-0.072	0.206
	Consumer Goods	0.136	0.495	0.488	0.092	0.258	0.051	0.211	0.051	0.161	0.106	0.066	0.000	0.033	0.083	0.028	0.045	0.028	0.010	0.342	0.051	0.021	0.271	0.069	0.020	0.184	0.086	-0.002	-0.002	0.175	0.132	0.109	0.185	0.200	0.353	0.051	0.052	0.009	-0.006	0.072	-0.013	0.217	0.201	0.075	0.021	0.115	-0.020	-0.038	0.188
	Consumer Services	0.166	0.521	0.516	0.093	0.244	0.065	0.231	0.026	0.188	0.096	0.051	-0.017	0.030	0.062	0.016	0.041	0.015	-0.014	0.345	0.051	0.011	0.294	0.032	0.000	0.167	0.059	-0.036	-0.036	0.150	0.115	0.127	0.211	0.218	0.355	0.060	0.061	0.015	-0.004	0.092	-0.003	0.200	0.187	0.054	0.013	0.107	-0.029	-0.053	0.194
	Other Consumer Services	0.153	0.457	0.451	0.058	0.226	0.045	0.211	-0.002	0.167	0.065	0.033	-0.035	0.033	0.033	0.004	0.017	0.004	0.010	0.311	0.030	-0.002	0.264	0.027	-0.005	0.134	0.040	-0.045	-0.045	0.125	0.097	0.123	0.200	0.173	0.357	0.054	0.054	0.015	-0.001	0.101	-0.003	0.186	0.174	0.035	-0.005	0.102	-0.043	-0.061	0.167
	Containers	0.136	0.448	0.447	0.037	0.242	0.087	0.197	0.030	0.162	0.080	0.046	-0.036	0.014	0.062	-0.005	0.040	-0.004	-0.005	0.327	0.042	0.040	0.264	0.015	0.006	0.174	0.082	-0.041	-0.041	0.160	0.092	0.110	0.217	0.176	0.365	0.067	0.040	-0.009	-0.025	0.098	-0.010	0.246	0.226	0.024	-0.012	0.079	-0.068	-0.087	0.176
	Conglomerate/Diversified Mfg	0.157	0.453	0.446	0.041	0.197	0.036	0.176	-0.006	0.150	0.070	0.025	-0.047	0.023	0.001	-0.039	0.030	-0.038	-0.043	0.316	0.058	-0.004	0.321	-0.003	-0.031	0.095	0.004	-0.049	-0.049	0.085	0.075	0.128	0.258	0.171	0.331	0.031	0.046	-0.019	-0.031	0.060	-0.031	0.164	0.155	-0.001	-0.017	0.081	-0.043	-0.069	0.199
	Electric Utility	0.124	0.369	0.365	0.096	0.188	0.069	0.145	0.110	0.167	0.047	0.033	-0.029	0.083	0.100	0.007	-0.011	0.002	0.093	0.257	0.068	-0.008	0.173	0.038	0.007	0.124	0.047	-0.018	-0.018	0.164	0.124	0.123	0.139	0.147	0.329	0.002	0.066	0.032	0.032	0.149	-0.023	0.200	0.184	0.093	-0.001	0.118	-0.067	-0.062	0.172
	Electronics	0.118	0.464	0.456	0.042	0.264	0.040	0.198	0.008	0.131	0.084	0.031	-0.037	0.015	0.037	0.000	0.049	0.004	0.004	0.319	0.040	0.031	0.307	0.010	-0.007	0.111	0.020	-0.005	-0.005	0.125	0.098	0.114	0.229	0.155	0.384	0.040	0.056	0.012	-0.009	0.063	-0.014	0.200	0.193	0.027	-0.013	0.069	-0.049	-0.071	0.194
	Retail Stores Food and Drug	0.104	0.393	0.391	0.043	0.218	0.054	0.159	0.107	0.145	0.058	0.044	-0.051	0.028	0.060	-0.012	0.025	-0.017	0.058	0.301	0.027	0.034	0.226	0.046	0.026	0.163	0.086	-0.032	-0.032	0.137	0.087	0.091	0.173	0.122	0.325	0.059	0.050	0.058	0.029	0.076	0.043	0.209	0.195	0.024	-0.014	0.117	-0.051	-0.058	0.121
	Financials	0.180	0.538	0.536	0.044	0.192	0.063	0.200	0.018	0.158	0.051	0.012	-0.036	0.011	0.005	-0.031	0.012	-0.033	-0.056	0.349	0.045	0.003	0.327	-0.013	-0.020	0.109	0.004	-0.071	-0.071	0.122	0.077	0.137	0.234	0.237	0.352	0.060	0.019	-0.026	-0.042	0.043	-0.024	0.135	0.127	0.010	-0.004	0.093	-0.052	-0.087	0.210
	Other Financials	0.172	0.495	0.492	0.044	0.191	0.047	0.166	0.012	0.151	0.042	0.024	-0.044	0.008	0.011	-0.034	-0.003	-0.037	-0.013	0.307	0.036	0.006	0.307	-0.009	-0.016	0.108	0.007	-0.073	-0.073	0.107	0.110	0.138	0.213	0.216	0.353	0.036	0.022	-0.011	-0.026	0.083	-0.019	0.149	0.140	0.007	-0.012	0.105	-0.059	-0.083	0.188
	Food Processors	0.074	0.367	0.364	0.083	0.226	0.069	0.169	0.088	0.139	0.082	0.059	-0.006	0.052	0.106	0.032	0.025	0.030	0.084	0.305	0.027	0.066	0.235	0.092	0.024	0.172	0.092	0.006	0.006	0.185	0.132	0.095	0.157	0.148	0.335	0.048	0.055	0.031	0.010	0.096	0.009	0.244	0.228	0.090	0.021	0.108	-0.050	-0.043	0.180
	Other Retail	0.146	0.423	0.420	0.061	0.212	0.044	0.200	0.001	0.168	0.057	0.023	-0.040	0.038	0.040	0.003	0.008	0.001	0.010	0.295	0.017	-0.006	0.231	0.037	-0.011	0.115	0.025	-0.041	-0.041	0.125	0.091	0.119	0.186	0.186	0.337	0.049	0.063	0.008	-0.002	0.115	-0.013	0.169	0.153	0.033	-0.007	0.091	-0.044	-0.058	0.146
	Healthcare Facilities	0.084	0.412	0.405	0.004	0.271	0.058	0.185	0.049	0.120	0.079	0.030	-0.042	0.025	0.046	0.028	0.054	0.032	0.068	0.286	0.063	0.043	0.203	0.058	0.005	0.175	0.105	0.002	0.002	0.152	0.085	0.092	0.161	0.136	0.348	0.076	0.043	0.030	0.013	0.060	-0.005	0.230	0.191	0.070	-0.022	0.082	-0.025	-0.030	0.123
	Healthcare	0.113	0.452	0.448	0.111	0.270	0.069	0.199	0.080	0.156	0.128	0.103	-0.019	0.063	0.129	0.080	0.072	0.078	0.054	0.316	0.069	0.059	0.228	0.086	0.037	0.224	0.138	0.004	0.004	0.232	0.153	0.103	0.153	0.185	0.323	0.104	0.068	0.028	0.009	0.077	0.009	0.213	0.192	0.086	-0.001	0.130	-0.009	-0.012	0.137
	Home Builders	0.170	0.431	0.432	0.008	0.115	0.027	0.157	-0.007	0.201	0.044	-0.003	-0.002	0.015	-0.039	-0.052	0.006	-0.051	-0.078	0.284	0.055	-0.027	0.307	-0.023	-0.028	0.068	-0.027	-0.062	-0.062	0.059	0.064	0.170	0.263	0.244	0.333	0.043	0.045	-0.047	-0.050	0.096	-0.055	0.131	0.127	0.005	0.026	0.109	-0.023	-0.056	0.171
EQ	Lodging	0.173	0.417	0.412	0.009	0.206	0.044	0.200	-0.009	0.179	0.040	0.010	-0.065	-0.011	0.032	-0.054	0.023	-0.055	-0.037	0.320	0.042	0.017	0.295	-0.008	-0.023	0.107	0.011	-0.074	-0.074	0.122	0.055	0.145	0.248	0.183	0.369	0.061	0.042	-0.031	-0.051	0.080	-0.009	0.183	0.177	0.002	-0.038	0.068	-0.072	-0.097	0.236
	Machinery	0.134	0.481	0.469	0.027	0.263	0.036	0.200	0.017	0.156	0.073	0.044	-0.047	0.027	0.029	-0.013	0.041	-0.007	0.000	0.341	0.054	0.029	0.312	-0.014	-0.019	0.119	0.024	-0.007	-0.007	0.134	0.078	0.121	0.234	0.168	0.389	0.050	0.063	0.007	-0.017	0.069	-0.006	0.205	0.200	0.025	-0.025	0.068	-0.063	-0.089	0.199
	Other Industrials	0.149	0.478	0.468	0.046	0.250	0.047	0.212	0.000	0.155	0.075	0.033	-0.045	0.021	0.036	-0.003	0.036	0.000	-0.015	0.336	0.049	0.022	0.305	0.009	-0.013	0.125	0.027	-0.025	-0.025	0.125	0.095	0.133	0.238	0.177	0.372	0.038	0.058	0.006	-0.011	0.076	-0.019	0.201	0.195	0.025	-0.019	0.081	-0.040	-0.069	0.194
	Metals&Mining	0.147	0.447	0.441	0.046	0.197	0.082	0.181	0.051	0.154	0.042	0.051	-0.059	-0.001	0.092	-0.006	0.010	-0.004	-0.002	0.302	0.046	0.029	0.247	0.035	-0.005	0.145	0.045	-0.049	-0.049	0.210	0.095	0.113	0.180	0.202	0.353	0.026	0.037	-0.022	-0.044	0.071	-0.004	0.173	0.163	0.055	-0.036	0.066	-0.071	-0.087	0.222
	Other Transportation	0.154	0.436	0.427	0.041	0.192	0.052	0.179	0.000	0.153	0.052	0.009	-0.055	-0.003	0.050	0.013	0.026	0.015	-0.034	0.306	0.056	0.028	0.305	0.031	-0.001	0.115	0.021	-0.051	-0.051	0.160	0.081	0.129	0.248	0.189	0.330	0.061	0.052	0.004	-0.012	0.037	-0.011	0.147	0.141	0.015	-0.029	0.065	-0.046	-0.074	0.197
	Industrials	0.171	0.547	0.539	0.062	0.259	0.057	0.240	0.018	0.170	0.093	0.039	-0.031	0.023	0.037	0.007	0.047	0.007	-0.042	0.375	0.061	0.010	0.320	0.005	-0.014	0.147	0.008	-0.023	-0.023	0.145	0.096	0.143	0.252	0.226	0.378	0.046	0.050	0.004	-0.013	0.054	-0.022	0.195	0.185	0.030	-0.005	0.089	-0.030	-0.073	0.225
	Cable Meida	0.151	0.436	0.430	0.056	0.211	0.041	0.195	-0.006	0.170	0.066	0.042	-0.026	0.018	0.034	-0.012	0.022	-0.011	-0.008	0.322	0.049	0.011	0.291	0.009	-0.013	0.131	0.033	-0.064	-0.064	0.120	0.087	0.127	0.204	0.148	0.339	0.046	0.032	-0.006	-0.027	0.084	0.007	0.191	0.179	0.022	0.003	0.100	-0.054	-0.070	0.190
	Healthcare Supplies	0.074	0.383	0.376	0.009	0.311	0.067	0.177	0.088	0.119	0.074	0.045	-0.042	0.028	0.086	0.013	0.045	0.017	0.068	0.293	0.064	0.048	0.188	0.068	-0.010	0.203	0.137	0.027	0.027	0.169	0.117	0.100	0.180	0.152	0.335	0.078	0.048	0.019	-0.009	0.079	0.013	0.230	0.211	0.076	-0.026	0.079	-0.031	-0.038	0.141
	Oil&Gas	0.116	0.416	0.413	0.101	0.225	0.043	0.183	0.041	0.156	0.081	0.065	-0.042	0.016	0.104	0.061	0.029	0.060	0.040	0.292	0.030	0.046	0.204	0.068	0.024	0.187	0.093	-0.019	-0.019	0.200	0.115	0.094	0.123	0.164	0.315	0.042	0.102	0.045	0.017	0.095	0.035	0.231	0.211	0.090	-0.024	0.070	-0.042	-0.045	0.162
	Oilfield Machinery and Products	0.138	0.490	0.490	0.105	0.237	0.080	0.205	0.080	0.183	0.097	0.076	-0.028	0.019	0.129	0.077	0.042	0.074	-0.002	0.343	0.051	0.073	0.236	0.079	0.028	0.239	0.122	-0.016	-0.016	0.244	0.112	0.113	0.143	0.215	0.330	0.056	0.094	0.061	0.027	0.093	0.046	0.253	0.230	0.115	-0.007	0.102	-0.040	-0.049	0.196
	Other Oil&Gas	0.114	0.425	0.422	0.097	0.231	0.051	0.185	0.048	0.157	0.075	0.062	-0.044	0.014	0.112	0.057	0.025	0.056	0.037	0.299	0.034	0.049	0.211	0.070	0.022	0.194	0.096	-0.026	-0.026	0.205	0.121	0.099	0.131	0.179	0.322	0.049	0.100	0.044	0.015	0.091	0.037	0.231	0.211	0.083	-0.023	0.081	-0.047	-0.048	0.176
	Property&Casualty	0.141	0.471	0.466	0.035	0.197	0.042	0.169	0.022	0.145	0.059	0.006	-0.031	0.015	0.027	-0.020	0.019	-0.020	-0.004	0.297	0.048	-0.005	0.295	-0.002	-0.021	0.091	0.008	-0.053	-0.053	0.124	0.080	0.122	0.200	0.193	0.386	0.055	0.018	-0.020	-0.035	0.066	-0.025	0.152	0.143	0.019	-0.001	0.102	-0.064	-0.080	0.193
	Textiles\Apparel\Shoes	0.122	0.429	0.420	0.047	0.238	0.016	0.194	0.045	0.132	0.091	0.042	-0.026	0.041	0.042	0.015	0.034	0.017	0.026	0.288	0.046	0.015	0.254	0.061	0.005	0.140	0.062	-0.015	-0.015	0.146	0.093	0.116	0.158	0.147	0.335	0.047	0.043	0.002	-0.004	0.093	-0.022	0.203	0.193	0.077	-0.006	0.113	-0.035	-0.039	0.148
	Other Consumer Goods	0.122	0.402	0.393	0.032	0.272	0.041	0.201	0.028	0.123	0.109	0.059	-0.029	0.006	0.066	0.032	0.061	0.037	0.010	0.303	0.046	0.051	0.258	0.084	0.002	0.173	0.089	0.001	0.001	0.165	0.085	0.089	0.188	0.135	0.341	0.053	0.051	0.000	-0.019	0.091	0.004	0.221	0.209	0.078	-0.005	0.085	-0.023	-0.030	0.134
	Pharmaceuticals	0.093	0.354	0.353	0.078	0.224	0.055	0.155	0.095	0.129	0.079	0.046	-0.042	0.057	0.106	0.052	0.040	0.048	0.087	0.269	0.050	0.055	0.213	0.098	0.038	0.185	0.112	-0.010	-0.010	0.192	0.124	0.095	0.141	0.143	0.304	0.070	0.060	0.039	0.026	0.086	-0.001	0.198	0.184	0.086	-0.025	0.100	-0.030	-0.021	0.124
	Publishing	0.152	0.405	0.398	0.040	0.246	0.050	0.199	0.016	0.151	0.082	0.023	-0.041	0.003	0.050	0.001	0.049	0.001	0.008	0.290	0.047	0.035	0.241	0.063	0.019	0.147	0.058	-0.042	-0.042	0.161	0.070	0.106	0.186	0.139	0.331	0.045	0.039	0.010	-0.005	0.071	0.004	0.167	0.160	0.042	-0.025	0.081	-0.051	-0.067	0.159
	Railroad	0.122	0.415	0.403	0.045	0.164	0.044	0.159	0.027	0.130	0.046	-0.011	-0.069	0.021	0.068	0.010	0.032	0.012	-0.033	0.286	0.044	0.038	0.280	0.025	-0.002	0.112	0.028	-0.056	-0.056	0.171	0.076	0.103	0.236	0.179	0.309	0.046	0.086	0.005	-0.009	0.018	-0.014	0.135	0.126	0.009	-0.053	0.029	-0.044	-0.064	0.171
	Real Estate	0.178	0.386	0.384	0.051	0.149	0.053	0.161	0.028	0.146	0.030	-0.029	-0.060	0.020	0.002	-0.068	0.005	-0.071	-0.037	0.286	0.040	-0.012	0.349	-0.040	-0.030	0.071	-0.017	-0.093	-0.093	0.103	0.048	0.141	0.227	0.178	0.359	0.023	0.019	-0.040	-0.047	0.058	-0.035	0.156	0.137	0.003	-0.021	0.087	-0.082	-0.103	0.237
	Restaurants	0.156	0.435	0.430	0.047	0.196	0.036	0.184	0.024	0.151	0.080	0.042	-0.047	0.038	0.049	0.020	0.041	0.019	0.024	0.303	0.027	-0.004	0.262	0.036	0.013	0.144	0.055	-0.024	-0.024	0.136	0.096	0.124	0.240	0.180	0.349	0.065	0.071	0.019	0.006	0.086	-0.014	0.180	0.170	0.067	-0.031	0.091	-0.027	-0.045	0.147
	Technology	0.168	0.516	0.513	0.084	0.244	0.064	0.217	0.027	0.173	0.107	0.041	-0.025	0.031	0.057	0.035	0.063	0.029	-0.012	0.340	0.055	0.045	0.267	0.036	-0.003	0.168	0.065	-0.019	-0.019	0.151	0.131	0.147	0.217	0.223	0.355	0.045	0.047	0.009	-0.015	0.074	0.005	0.214	0.202	0.040	-0.001	0.080	-0.014	-0.040	0.186
	Information/Data Technology	0.141	0.463	0.458	0.063	0.234	0.025	0.208	0.004	0.148	0.092	0.022	-0.031	0.023	0.036	0.023	0.050	0.020	0.020	0.317	0.017	0.047	0.245	0.036	-0.002	0.136	0.041	-0.017	-0.017	0.128	0.125	0.120	0.214	0.183	0.358	0.034	0.048	0.024	-0.002	0.080	0.012	0.215	0.200	0.028	-0.013	0.084	-0.021	-0.041	0.165
	Telecommunications	0.163	0.452	0.454	0.132	0.205	0.055	0.156	0.054	0.179	0.096	0.054	-0.018	0.038	0.092	-0.011	0.031	-0.017	-0.016	0.321	0.035	0.024	0.274	0.013	0.005	0.159	0.049	-0.049	-0.049	0.157	0.126	0.121	0.192	0.211	0.337	0.027	0.077	0.014	0.004	0.090	-0.013	0.213	0.189	0.039	0.002	0.093	-0.041	-0.063	0.212
	Other Telecommunications	0.125	0.399	0.398	0.111	0.192	0.032	0.133	0.057	0.158	0.079	0.032	-0.038	0.055	0.067	-0.022	0.011	-0.029	0.008	0.277	0.011	0.018	0.250	0.005	-0.006	0.121	0.026	-0.050	-0.050	0.151	0.117	0.108	0.181	0.162	0.328	0.019	0.076	0.004	-0.001	0.103	-0.019	0.193	0.172	0.014	-0.014	0.106	-0.047	-0.057	0.186
	Tobacco	0.120	0.415	0.412	0.056	0.189	0.004	0.132	0.054	0.145	0.060	0.022	-0.004	0.065	0.033	-0.016	0.005	-0.020	0.042	0.235	0.024	-0.002	0.189	0.008	0.017	0.090	0.034	-0.021	-0.021	0.130	0.101	0.110	0.125	0.128	0.298	0.030	0.016	0.000	0.001	0.105	-0.035	0.169	0.158	0.032	-0.009	0.093	-0.016	-0.017	0.125
	Leisure	0.181	0.477	0.471	0.051	0.221	0.053	0.200	0.005	0.168	0.058	0.032	-0.065	0.025	0.032	-0.007	0.021	-0.007	0.005	0.317	0.024	0.004	0.290	0.013	0.002	0.142	0.042	-0.062	-0.062	0.120	0.110	0.135	0.244	0.208	0.359	0.053	0.072	0.020	0.000	0.113	-0.006	0.169	0.161	0.030	-0.029	0.086	-0.048	-0.068	0.188

CDS Spread and Equity Volatility Correlation		EQ																																															
for US Region		Utility	Other Utility	Airlines	Vehicle Parts	Banks	Beverages/Bottling	Building Products	Basic Materials	Chemicals	Consumer Goods	Consumer Services	Other Consumer Services	Containers	Conglomerate/Diversified Mfg	Electric Utility	Electronics	Retail Stores Food and Drug	Financials	Other Financials	Food Processors	Other Retail	Healthcare Facilities	Healthcare	Home Builders	Lodging	Machinery	Other Industrials	Metals&Mining	Other Transportation	Industrials	Cable Meida	Healthcare Supplies	Oil&Gas	Oilfield Machinery and Products	Other Oil&Gas	Property&Casualty	Textiles\Apparel\Shoes	Other Consumer Goods	Pharmaceuticals	Publishing	Railroad	Real Estate	Restaurants	Technology	Information/Data Technology	Telecommunications	Other Telecommunications	Tobacco	Leisure
	Utility	1.000
	Other Utility	0.771	1.000
	Airlines	0.434	0.467	1.000
	Vehicle Parts	0.578	0.674	0.669	1.000
	Banks	0.505	0.592	0.645	0.808	1.000
	Beverages/Bottling	0.657	0.820	0.521	0.692	0.609	1.000
	Building Products	0.799	0.689	0.579	0.729	0.669	0.647	1.000
	Basic Materials	0.613	0.716	0.646	0.861	0.809	0.712	0.718	1.000
	Chemicals	0.659	0.777	0.630	0.844	0.755	0.749	0.791	0.847	1.000
	Consumer Goods	0.857	0.695	0.498	0.665	0.585	0.701	0.855	0.680	0.717	1.000
	Consumer Services	0.808	0.669	0.560	0.690	0.656	0.651	0.874	0.705	0.729	0.926	1.000
	Other Consumer Services	0.675	0.808	0.662	0.857	0.776	0.814	0.744	0.869	0.876	0.733	0.769	1.000
	Containers	0.620	0.747	0.642	0.842	0.786	0.718	0.721	0.864	0.866	0.680	0.700	0.876	1.000
	Conglomerate/Diversified Mfg	0.608	0.719	0.641	0.843	0.843	0.731	0.727	0.857	0.849	0.690	0.722	0.866	0.839	1.000
	Electric Utility	0.771	0.996	0.463	0.658	0.581	0.808	0.680	0.700	0.760	0.684	0.663	0.793	0.732	0.704	1.000
	Electronics	0.631	0.767	0.620	0.877	0.770	0.773	0.744	0.885	0.904	0.720	0.727	0.904	0.884	0.882	0.745	1.000
	Retail Stores Food and Drug	0.667	0.773	0.518	0.718	0.639	0.757	0.664	0.761	0.751	0.692	0.685	0.854	0.761	0.755	0.761	0.786	1.000
	Financials	0.686	0.586	0.606	0.741	0.795	0.584	0.807	0.734	0.715	0.789	0.861	0.712	0.707	0.758	0.580	0.717	0.598	1.000
	Other Financials	0.612	0.726	0.674	0.860	0.930	0.722	0.743	0.858	0.856	0.673	0.725	0.888	0.855	0.884	0.713	0.865	0.735	0.807	1.000
	Food Processors	0.682	0.846	0.529	0.734	0.656	0.857	0.680	0.778	0.814	0.724	0.690	0.867	0.800	0.780	0.832	0.843	0.817	0.613	0.780	1.000
	Other Retail	0.658	0.779	0.639	0.809	0.732	0.780	0.713	0.804	0.824	0.701	0.743	0.964	0.831	0.805	0.768	0.834	0.801	0.676	0.849	0.829	1.000
	Healthcare Facilities	0.627	0.799	0.548	0.758	0.681	0.813	0.680	0.777	0.824	0.665	0.674	0.875	0.809	0.795	0.779	0.861	0.802	0.618	0.796	0.857	0.820	1.000
	Healthcare	0.806	0.671	0.432	0.569	0.507	0.640	0.779	0.600	0.649	0.889	0.859	0.673	0.614	0.618	0.660	0.660	0.647	0.707	0.605	0.686	0.642	0.603	1.000
	Home Builders	0.534	0.591	0.658	0.739	0.782	0.584	0.643	0.788	0.709	0.573	0.635	0.751	0.722	0.752	0.587	0.694	0.594	0.703	0.807	0.627	0.744	0.612	0.482	1.000
EQ	Lodging	0.584	0.660	0.692	0.857	0.796	0.692	0.731	0.849	0.812	0.657	0.706	0.849	0.825	0.836	0.646	0.842	0.703	0.744	0.840	0.731	0.796	0.746	0.579	0.765	1.000
	Machinery	0.640	0.764	0.640	0.877	0.778	0.767	0.755	0.890	0.902	0.721	0.731	0.894	0.878	0.887	0.745	0.956	0.787	0.725	0.857	0.825	0.822	0.845	0.652	0.707	0.845	1.000
	Other Industrials	0.654	0.778	0.657	0.894	0.814	0.783	0.765	0.904	0.917	0.740	0.760	0.933	0.898	0.940	0.759	0.964	0.811	0.746	0.896	0.849	0.866	0.863	0.668	0.741	0.865	0.963	1.000
	Metals&Mining	0.686	0.789	0.593	0.816	0.747	0.745	0.780	0.801	0.897	0.702	0.704	0.829	0.821	0.820	0.777	0.859	0.744	0.720	0.835	0.800	0.785	0.790	0.647	0.684	0.790	0.860	0.866	1.000
	Other Transportation	0.609	0.711	0.688	0.858	0.796	0.713	0.738	0.851	0.864	0.690	0.725	0.868	0.839	0.853	0.697	0.881	0.744	0.737	0.856	0.772	0.820	0.782	0.616	0.737	0.840	0.882	0.922	0.835	1.000
	Industrials	0.780	0.652	0.583	0.738	0.683	0.635	0.919	0.739	0.755	0.903	0.933	0.745	0.720	0.757	0.642	0.769	0.671	0.891	0.738	0.679	0.700	0.681	0.824	0.636	0.740	0.777	0.793	0.731	0.732	1.000
	Cable Meida	0.675	0.808	0.687	0.845	0.785	0.801	0.752	0.863	0.870	0.725	0.749	0.945	0.853	0.874	0.792	0.904	0.827	0.724	0.880	0.850	0.863	0.867	0.669	0.715	0.843	0.898	0.922	0.842	0.854	0.751	1.000
	Healthcare Supplies	0.573	0.732	0.519	0.700	0.620	0.742	0.630	0.730	0.766	0.644	0.627	0.806	0.755	0.732	0.714	0.806	0.731	0.566	0.728	0.803	0.768	0.900	0.648	0.573	0.706	0.791	0.801	0.719	0.711	0.646	0.786	1.000
	Oil&Gas	0.709	0.848	0.528	0.749	0.670	0.781	0.739	0.760	0.862	0.714	0.706	0.841	0.798	0.708	0.833	0.829	0.736	0.647	0.792	0.835	0.802	0.827	0.688	0.626	0.730	0.825	0.833	0.875	0.780	0.693	0.843	0.759	1.000
	Oilfield Machinery and Products	0.846	0.726	0.500	0.651	0.600	0.665	0.898	0.674	0.740	0.854	0.847	0.728	0.692	0.668	0.717	0.705	0.678	0.765	0.691	0.702	0.698	0.680	0.819	0.579	0.662	0.712	0.721	0.746	0.686	0.846	0.733	0.629	0.801	1.000
	Other Oil&Gas	0.708	0.846	0.542	0.764	0.689	0.781	0.748	0.775	0.875	0.718	0.713	0.847	0.812	0.782	0.829	0.839	0.760	0.664	0.806	0.837	0.806	0.829	0.689	0.641	0.747	0.836	0.844	0.887	0.793	0.702	0.853	0.762	0.994	0.804	1.000
	Property&Casualty	0.643	0.780	0.641	0.835	0.875	0.769	0.745	0.852	0.850	0.665	0.721	0.880	0.849	0.877	0.764	0.871	0.746	0.789	0.936	0.804	0.834	0.813	0.619	0.773	0.831	0.866	0.888	0.836	0.826	0.741	0.888	0.740	0.806	0.702	0.818	1.000
	Textiles\Apparel\Shoes	0.607	0.847	0.576	0.795	0.690	0.866	0.717	0.819	0.837	0.752	0.732	0.917	0.826	0.819	0.831	0.863	0.832	0.663	0.811	0.895	0.879	0.864	0.688	0.680	0.765	0.859	0.884	0.809	0.809	0.716	0.882	0.801	0.848	0.723	0.847	0.840	1.000
	Other Consumer Goods	0.648	0.768	0.577	0.792	0.671	0.798	0.699	0.802	0.822	0.724	0.713	0.898	0.813	0.781	0.751	0.852	0.808	0.630	0.775	0.850	0.859	0.833	0.652	0.659	0.767	0.851	0.863	0.772	0.795	0.699	0.860	0.783	0.806	0.701	0.807	0.799	0.922	1.000
	Pharmaceuticals	0.657	0.820	0.514	0.704	0.612	0.807	0.651	0.722	0.767	0.690	0.666	0.842	0.754	0.753	0.807	0.800	0.805	0.583	0.747	0.863	0.812	0.882	0.710	0.588	0.686	0.774	0.805	0.755	0.731	0.643	0.817	0.840	0.815	0.675	0.813	0.777	0.864	0.809	1.000
	Publishing	0.649	0.774	0.597	0.817	0.745	0.758	0.730	0.838	0.841	0.702	0.722	0.896	0.839	0.887	0.760	0.883	0.782	0.703	0.846	0.820	0.841	0.834	0.654	0.691	0.808	0.874	0.895	0.823	0.822	0.730	0.897	0.773	0.824	0.723	0.832	0.855	0.855	0.840	0.793	1.000
	Railroad	0.549	0.639	0.623	0.785	0.744	0.644	0.681	0.778	0.802	0.635	0.668	0.782	0.772	0.780	0.626	0.805	0.680	0.695	0.786	0.697	0.738	0.707	0.568	0.673	0.774	0.813	0.841	0.780	0.949	0.693	0.771	0.638	0.723	0.633	0.737	0.751	0.725	0.711	0.653	0.744	1.000
	Real Estate	0.629	0.716	0.681	0.836	0.870	0.673	0.728	0.834	0.782	0.650	0.696	0.818	0.805	0.854	0.710	0.800	0.702	0.791	0.889	0.734	0.778	0.706	0.556	0.788	0.854	0.808	0.837	0.792	0.810	0.727	0.835	0.643	0.710	0.660	0.727	0.887	0.755	0.723	0.681	0.796	0.745	1.000
	Restaurants	0.647	0.753	0.630	0.770	0.715	0.755	0.698	0.796	0.809	0.699	0.733	0.892	0.789	0.788	0.743	0.813	0.763	0.681	0.806	0.807	0.857	0.812	0.660	0.712	0.780	0.808	0.846	0.762	0.805	0.705	0.836	0.758	0.783	0.703	0.787	0.800	0.842	0.841	0.777	0.811	0.740	0.761	1.000
	Technology	0.775	0.634	0.553	0.669	0.633	0.628	0.872	0.676	0.726	0.888	0.915	0.720	0.675	0.711	0.626	0.715	0.646	0.844	0.708	0.675	0.688	0.658	0.840	0.611	0.682	0.713	0.737	0.696	0.697	0.917	0.719	0.622	0.667	0.843	0.695	0.709	0.698	0.679	0.649	0.687	0.644	0.673	0.707	1.000
	Information/Data Technology	0.658	0.775	0.624	0.830	0.769	0.786	0.738	0.831	0.874	0.727	0.741	0.915	0.848	0.864	0.758	0.907	0.788	0.711	0.876	0.845	0.869	0.853	0.676	0.708	0.808	0.876	0.917	0.834	0.839	0.748	0.898	0.793	0.835	0.723	0.843	0.863	0.869	0.840	0.816	0.855	0.764	0.787	0.845	0.761	1.000
	Telecommunications	0.847	0.713	0.531	0.650	0.602	0.655	0.825	0.670	0.705	0.866	0.862	0.728	0.673	0.695	0.712	0.687	0.679	0.778	0.699	0.700	0.715	0.637	0.787	0.622	0.658	0.693	0.716	0.712	0.681	0.831	0.722	0.592	0.721	0.836	0.722	0.717	0.722	0.687	0.669	0.700	0.621	0.707	0.702	0.840	0.715	1.000
	Other Telecommunications	0.721	0.847	0.581	0.751	0.692	0.802	0.720	0.765	0.805	0.718	0.719	0.862	0.780	0.796	0.840	0.809	0.777	0.669	0.814	0.840	0.839	0.791	0.652	0.698	0.740	0.806	0.830	0.810	0.768	0.692	0.856	0.723	0.833	0.729	0.835	0.834	0.868	0.809	0.810	0.816	0.690	0.786	0.803	0.702	0.840	0.795	1.000
	Tobacco	0.613	0.779	0.422	0.631	0.561	0.769	0.604	0.638	0.697	0.630	0.601	0.748	0.660	0.670	0.767	0.700	0.704	0.553	0.688	0.771	0.725	0.736	0.591	0.534	0.602	0.689	0.713	0.695	0.645	0.587	0.725	0.674	0.749	0.620	0.745	0.726	0.853	0.703	0.744	0.690	0.592	0.617	0.692	0.587	0.732	0.622	0.764	1.000
	Leisure	0.604	0.717	0.732	0.868	0.805	0.733	0.722	0.869	0.854	0.675	0.735	0.937	0.858	0.846	0.704	0.870	0.767	0.731	0.880	0.784	0.882	0.804	0.611	0.771	0.889	0.868	0.904	0.803	0.674	0.726	0.877	0.747	0.780	0.687	0.793	0.847	0.839	0.832	0.755	0.843	0.803	0.825	0.894	0.692	0.870	0.676	0.790	0.671	1.000

Table 48: Correlation Between CDS Spreads and Equity Volatility for the US Region [Full Sample Period]

CDS Spread and Equity Volatility Correlation for US Region		CDS																																															
		Airlines	Bank	Banking	Beverages/	Building P	Cable Med	Conglomer	Chemicals	Containers	Consumer	Other Cons	Electric Pov	Electric Uti	Electronics	Energy	Food Proce	Oil&Gas	Healthcare	Home Buil	Industrials	Information	Leisure	Lodging	Machinery	Manufactu	Metals&Mir	Financials	Other Finar	Oilfield Ma	Pharmaceu	Property&(	Publishing	Railroads	Real Estat	Other Reta	Restaurant	Consumer S	Retail Stor	Healthcare	Other Cons	Telecomm	Other Tele	Textiles\Ap	Utility	Tobacco	Transportat	Other Tran	Vehicle Parts
CDS	Airlines	1.000
	Bank	0.258	1.000
	Banking	0.264	0.977	1.000
	Beverages/Bottling	0.119	0.327	0.324	1.000
	Building Products	0.061	0.260	0.274	0.209	1.000
	Cable Media	0.156	0.315	0.341	0.191	0.200	1.000
	Conglomerate/Diversified Mfg	0.104	0.190	0.203	0.211	0.228	0.137	1.000
	Chemicals	0.232	0.416	0.445	0.371	0.297	0.507	0.320	1.000
	Containers	0.160	0.195	0.209	0.311	0.121	0.313	0.189	0.436	1.000
	Consumer Goods	0.128	0.280	0.277	0.320	0.262	0.177	0.264	0.395	0.336	1.000
	Other Consumer Goods	0.108	0.317	0.321	0.228	0.232	0.138	0.189	0.371	0.273	0.495	1.000
	Electric Power	-0.119	0.017	0.021	0.029	0.046	0.045	0.030	0.074	0.317	0.131	0.074	1.000
	Electric Utility	0.044	0.184	0.184	0.140	0.088	0.158	0.076	0.320	0.257	0.324	0.212	0.055	1.000
	Electronics	0.040	0.173	0.185	0.540	0.238	0.224	0.201	0.395	0.184	0.302	0.253	0.061	0.189	1.000
	Energy	0.003	0.225	0.226	0.190	0.230	0.059	0.097	0.181	0.083	0.329	0.436	0.119	0.141	0.215	1.000
	Food Processors	0.107	0.149	0.146	0.203	0.220	0.126	0.209	0.286	0.288	0.931	0.358	0.121	0.325	0.246	0.314	1.000
	Oil&Gas	-0.004	0.188	0.172	0.167	0.240	0.070	0.105	0.150	0.069	0.399	0.428	0.111	0.142	0.212	0.940	0.305	1.000
	Healthcare	0.048	0.243	0.259	0.139	0.188	0.269	0.297	0.378	0.344	0.264	0.178	0.067	0.196	0.251	0.109	0.221	0.093	1.000
	Home Builders	0.397	0.379	0.368	0.377	0.231	0.277	0.280	0.446	0.344	0.404	0.301	0.073	0.152	0.314	0.215	0.344	0.314	0.226	1.000
	Industrials	0.028	0.115	0.128	0.094	0.066	0.151	0.062	0.137	0.088	0.142	0.091	0.069	0.066	0.100	0.032	0.114	0.026	0.043	0.098	1.000
	Information/Data Technology	0.052	0.099	0.112	0.393	0.183	0.128	0.206	0.305	0.189	0.210	0.173	0.016	0.197	0.434	0.144	0.192	0.140	0.212	0.288	0.102	1.000
	Leisure	0.173	0.230	0.222	0.290	0.157	0.208	0.079	0.254	0.147	0.226	0.199	0.012	0.177	0.235	0.209	0.248	0.185	0.114	0.261	0.142	0.216	1.000
	Lodging	0.255	0.183	0.187	0.270	0.118	0.137	0.214	0.363	0.247	0.176	0.184	-0.008	0.116	0.140	0.040	0.163	0.061	0.167	0.395	0.227	0.245	0.144	1.000
	Machinery	0.281	0.432	0.438	0.334	0.251	0.298	0.153	0.451	0.284	0.335	0.358	-0.017	0.241	0.226	0.214	0.274	0.192	0.202	0.405	0.081	0.199	0.233	0.263	1.000
	Manufacturing	0.267	0.506	0.510	0.602	0.342	0.407	0.360	0.601	0.327	0.425	0.374	0.036	0.251	0.647	0.254	0.256	0.258	0.342	0.585	0.155	0.452	0.328	0.242	0.489	1.000
	Metals&Mining	0.241	0.297	0.277	0.458	0.374	0.236	0.323	0.434	0.297	0.425	0.315	0.093	0.206	0.464	0.221	0.337	0.318	0.315	0.559	0.093	0.318	0.197	0.266	0.481	0.670	1.000
	Financials	-0.150	0.111	0.109	0.070	0.328	0.000	0.111	0.076	-0.053	0.361	0.272	0.119	0.041	0.176	0.354	0.339	0.336	0.064	0.052	0.178	0.106	0.096	-0.037	0.082	0.135	0.140	1.000
	Other Financials	-0.150	0.111	0.109	0.070	0.328	0.000	0.111	0.076	-0.053	0.361	0.272	0.119	0.041	0.176	0.354	0.339	0.336	0.064	0.052	0.178	0.106	0.096	-0.037	0.082	0.135	0.140	1.000	1.000
	Oilfield Machinery and Products	0.220	0.417	0.416	0.293	0.172	0.224	0.149	0.366	0.198	0.286	0.210	0.027	0.168	0.165	0.182	0.163	0.182	0.194	0.262	0.081	0.176	0.116	0.142	0.402	0.415	0.345	-0.022	-0.022	1.000
	Pharmaceuticals	0.054	0.260	0.263	0.592	0.221	0.153	0.223	0.434	0.212	0.357	0.356	0.103	0.257	0.533	0.289	0.284	0.276	0.208	0.305	0.185	0.493	0.237	0.341	0.298	0.508	0.431	0.316	0.316	0.198	1.000
	Property&Casualty	0.196	0.113	0.126	0.263	0.019	0.107	0.208	0.331	0.246	0.186	0.188	-0.037	0.108	0.127	0.018	0.239	0.028	0.153	0.406	0.091	0.280	0.027	0.469	0.279	0.120	0.223	-0.023	-0.023	0.064	0.357	1.000
	Publishing	0.173	0.186	0.195	0.189	0.154	0.284	0.062	0.211	0.182	0.397	0.085	-0.024	0.009	0.068	-0.006	0.351	0.010	0.144	0.174	0.136	0.037	0.110	0.077	0.165	0.211	0.156	0.128	0.128	0.128	0.070	0.040	1.000
	Railroads	0.292	0.453	0.462	0.341	0.156	0.431	0.129	0.501	0.296	0.249	0.236	0.003	0.134	0.230	0.172	0.130	0.141	0.233	0.365	0.121	0.159	0.173	0.189	0.436	0.484	0.334	-0.002	-0.002	0.304	0.268	0.171	0.275	1.000
	Real Estate	0.177	0.363	0.367	0.274	0.399	0.236	0.252	0.392	0.191	0.372	0.297	0.012	0.179	0.246	0.257	0.346	0.297	0.258	0.327	0.084	0.163	0.240	0.238	0.434	0.402	0.449	0.176	0.176	0.370	0.303	0.211	0.129	0.295	1.000
	Other Retail	0.044	0.147	0.155	0.006	0.084	0.137	0.017	0.117	0.181	0.191	0.152	0.260	-0.015	0.050	0.076	0.174	0.063	0.118	0.110	0.132	0.033	0.217	0.059	0.072	0.086	0.057	0.179	0.179	0.059	0.115	-0.021	0.078	0.114	0.081	1.000
	Restaurants	0.120	0.134	0.143	0.376	0.130	0.187	0.230	0.300	0.463	0.203	0.171	0.085	0.128	0.222	0.084	0.151	0.092	0.179	0.346	0.052	0.181	0.138	0.283	0.177	0.314	0.288	-0.016	-0.016	0.139	0.206	0.213	0.113	0.221	0.216	0.033	1.000
	Consumer Services	0.268	0.455	0.466	0.312	0.284	0.606	0.271	0.592	0.401	0.438	0.328	0.055	0.216	0.351	0.137	0.322	0.197	0.439	0.474	0.150	0.210	0.295	0.252	0.456	0.637	0.557	0.113	0.113	0.351	0.291	0.161	0.393	0.484	0.413	0.183	0.313	1.000
	Retail Stores Food and Drug	0.315	0.438	0.456	0.303	0.248	0.433	0.265	0.600	0.425	0.306	0.360	0.031	0.199	0.249	0.133	0.279	0.167	0.324	0.525	0.193	0.196	0.235	0.314	0.402	0.549	0.460	-0.010	-0.010	0.403	0.214	0.242	0.212	0.428	0.364	0.194	0.306	0.628	1.000
	Healthcare Supplies	0.082	0.151	0.158	0.321	0.084	0.294	0.183	0.335	0.544	0.206	0.159	0.095	0.209	0.214	0.073	0.166	0.075	0.295	0.251	0.144	0.167	0.082	0.198	0.209	0.278	0.242	0.033	0.033	0.126	0.326	0.225	0.148	0.262	0.153	0.052	0.551	0.334	0.244	1.000
	Other Consumer Services	0.317	0.430	0.433	0.271	0.314	0.365	0.287	0.495	0.372	0.355	0.380	0.026	0.211	0.250	0.180	0.225	0.202	0.330	0.495	0.218	0.185	0.276	0.280	0.429	0.599	0.530	0.032	0.032	0.342	0.174	0.118	0.207	0.380	0.440	0.171	0.328	0.618	0.522	0.273	1.000
	Telecommunications	0.084	0.298	0.314	0.330	0.260	0.378	0.202	0.517	0.284	0.317	0.274	0.269	0.197	0.413	0.220	0.228	0.192	0.361	0.274	0.136	0.218	0.264	0.105	0.360	0.504	0.448	0.228	0.228	0.244	0.333	0.071	0.155	0.296	0.352	0.177	0.206	0.479	0.337	0.297	0.395	1.000
	Other Telecommunications	0.128	0.244	0.259	0.363	0.191	0.299	0.340	0.546	0.297	0.304	0.311	0.220	0.207	0.381	0.183	0.248	0.161	0.339	0.346	0.145	0.292	0.235	0.385	0.369	0.427	0.425	0.174	0.174	0.195	0.445	0.367	0.108	0.247	0.328	0.129	0.277	0.417	0.337	0.307	0.364	0.820	1.000
	Textiles\Apparel\Shoes	0.216	0.320	0.327	0.220	0.227	0.165	0.249	0.394	0.318	0.401	0.398	0.029	0.306	0.245	0.191	0.384	0.208	0.248	0.414	0.143	0.229	0.195	0.207	0.455	0.389	0.441	0.188	0.188	0.245	0.274	0.242	0.090	0.294	0.276	0.204	0.208	0.386	0.493	0.226	0.416	0.336	0.341	1.000
	Utility	-0.024	0.264	0.276	0.327	0.178	0.162	0.215	0.356	0.388	0.277	0.257	0.360	0.180	0.284	0.202	0.208	0.176	0.228	0.258	0.186	0.174	0.147	0.204	0.199	0.314	0.267	0.172	0.172	0.209	0.344	0.139	0.090	0.215	0.224	0.110	0.549	0.286	0.236	0.519	0.256	0.370	0.363	0.187	1.000
	Tobacco	0.121	0.264	0.272	0.242	0.171	0.153	0.135	0.344	0.246	0.251	0.132	0.040	0.140	0.198	0.121	0.114	0.092	0.118	0.203	0.328	0.071	0.079	0.232	0.198	0.289	0.220	0.047	0.047	0.271	0.281	0.089	0.078	0.264	0.239	0.038	0.126	0.216	0.310	0.160	0.209	0.230	0.206	0.174	0.331	1.000
	Transportation	0.002	-0.041	-0.032	-0.042	0.076	0.009	-0.060	-0.034	-0.048	0.039	-0.010	0.118	0.056	0.089	0.104	0.041	0.097	-0.050	-0.006	-0.072	0.030	-0.018	-0.038	-0.029	-0.019	-0.004	0.079	0.079	-0.008	-0.054	-0.003	-0.039	0.081	-0.023	-0.038	0.053	-0.008	-0.049	-0.060	-0.037	0.115	0.092	-0.058	0.087	0.164	1.000
	Other Transportation	-0.117	-0.027	-0.023	0.013	-0.015	0.003	-0.029	-0.004	0.007	0.066	0.026	0.170	0.080	0.105	0.134	0.091	0.129	0.002	0.032	-0.041	0.104	-0.020	0.036	-0.012	-0.036	0.005	0.030	0.030	-0.018	0.027	0.161	-0.059	0.102	-0.014	0.019	0.108	-0.030	-0.008	-0.002	-0.049	0.118	0.155	-0.003	0.117	0.163	0.884	1.000
	Vehicle Parts	0.127	0.200	0.211	0.338	0.167	0.254	0.090	0.238	0.114	0.184	0.087	-0.025	0.077	0.320	0.091	0.122	0.084	0.102	0.282	0.100	0.179	0.219	0.176	0.173	0.517	0.254	-0.009	-0.009	0.168	0.242	0.063	0.179	0.245	0.185	0.071	0.202	0.277	0.246	0.071	0.242	0.221	0.181	0.116	0.091	0.145	-0.078	-0.058	1.000
EQ	Utility	0.255	0.485	0.485	0.382	0.271	0.258	0.132	0.412	0.204	0.214	0.228	-0.016	0.149	0.230	0.117	0.079	0.091	0.174	0.344	0.136	0.129	0.236	0.222	0.450	0.505	0.349	0.007	0.007	0.503	0.159	0.085	0.105	0.300	0.367	0.122	0.160	0.354	0.407	0.168	0.516	0.352	0.275	0.284	0.179	0.301	-0.049	-0.058	0.249
	Other Utility	0.185	0.401	0.396	0.330	0.260	0.208	0.110	0.332	0.185	0.163	0.165	-0.030	0.136	0.179	0.081	0.053	0.061	0.268	0.290	0.102	0.094	0.193	0.200	0.389	0.420	0.355	-0.007	-0.007	0.470	0.140	0.078	0.106	0.236	0.369	0.110	0.141	0.297	0.316	0.179	0.469	0.311	0.248	0.226	0.150	0.265	-0.068	-0.051	0.209
	Airlines	0.321	0.260	0.259	0.182	0.137	0.204	0.022	0.197	0.162	0.087	0.081	-0.100	0.017	0.028	0.022	0.046	0.039	0.050	0.278	0.014	0.053	0.309	0.163	0.285	0.234	0.197	-0.115	-0.115	0.254	0.061	0.022	0.138	0.269	0.244	0.188	0.117	0.234	0.261	0.145	0.299	0.155	0.102	0.172	-0.004	0.105	-0.094	-0.117	0.177
	Vehicle Parts	0.258	0.355	0.350	0.260	0.255	0.228	0.055	0.281	0.118	0.158	0.107	-0.083	0.020	0.128	0.035	0.090	0.038	0.164	0.307	0.088	0.083	0.323	0.181	0.340	0.347	0.308	-0.026	-0.026	0.377	0.084	0.041	0.158	0.262	0.323	0.215	0.099	0.307	0.308	0.089	0.404	0.234	0.175	0.174	0.084	0.191	-0.054	-0.074	0.239
	Banks	0.237	0.386	0.386	0.232	0.170	0.213	0.032	0.262	0.102	0.104	0.052	-0.068	0.044	0.054	0.007	0.039	0.004	0.077	0.269	0.102	0.085	0.386	0.154	0.299	0.275	0.218	-0.056	-0.056	0.281	0.132	0.047	0.146	0.268	0.276	0.258	0.071	0.259	0.272	0.078	0.314	0.179	0.125	0.159	0.086	0.219	-0.073	-0.083	0.204
	Beverages/Bottling	0.177	0.342	0.333	0.233	0.260	0.177	0.088	0.253	0.149	0.143	0.137	-0.008	0.060	0.114	0.070	0.063	0.069	0.277	0.291	0.089	0.053	0.198	0.190	0.308	0.334	0.305	0.019	0.019	0.430	0.071	0.029	0.095	0.192	0.375	0.196	0.124	0.258	0.294	0.135	0.438	0.275	0.211	0.202	0.118	0.188	-0.057	-0.039	0.163
	Building Products	0.282	0.505	0.503	0.334	0.282	0.319	0.122	0.399	0.187	0.204	0.222	-0.053	0.108	0.169	0.099	0.077	0.090	0.161	0.348	0.117	0.106	0.265	0.225	0.482	0.481	0.363	0.005	0.005	0.499	0.142	0.059	0.137	0.333	0.381	0.192	0.123	0.400	0.428	0.122	0.522	0.310	0.238	0.271	0.114	0.258	-0.053	-0.068	0.277
	Basic Materials	0.244	0.426	0.421	0.268	0.281	0.229	0.089	0.294	0.154	0.185	0.159	-0.022	0.049	0.155	0.084	0.102	0.083	0.129	0.303	0.133	0.105	0.344	0.159	0.372	0.386	0.316	0.017	0.017	0.397	0.120	0.030	0.159	0.257	0.346	0.241	0.119	0.321	0.336	0.114	0.435	0.258	0.188	0.259	0.132	0.235	-0.033	-0.040	0.264
	Chemicals	0.240	0.459	0.451	0.312	0.290	0.264	0.090	0.306	0.152	0.197	0.179	-0.059	0.080	0.165	0.079	0.094	0.086	0.204	0.312	0.113	0.103	0.241	0.215	0.419	0.421	0.376	0.036	0.036	0.424	0.151	0.043	0.144	0.279	0.377	0.169	0.126	0.364	0.340	0.142	0.482	0.314	0.248	0.257	0.104	0.223	-0.064	-0.061	0.233
	Consumer Goods	0.236	0.492	0.484	0.334	0.332	0.222	0.126	0.350	0.153	0.214	0.220	-0.015	0.075	0.196	0.114	0.099	0.106	0.182	0.355	0.111	0.130	0.279	0.204	0.420	0.471	0.367	0.062	0.062	0.471	0.139	0.034	0.125	0.270	0.368	0.189	0.152	0.375	0.394	0.124	0.502	0.339	0.262	0.298	0.160	0.224	-0.032	-0.051	0.233
	Consumer Services	0.268	0.501	0.497	0.351	0.302	0.240	0.130	0.347	0.171	0.212	0.221	-0.048	0.074	0.187	0.095	0.097	0.083	0.152	0.348	0.110	0.126	0.307	0.210	0.411	0.464	0.353	0.028	0.028	0.433	0.160	0.047	0.137	0.306	0.348	0.188	0.156	0.356	0.390	0.136	0.485	0.299	0.229	0.304	0.142	0.218	-0.061	-0.084	0.246
	Other Consumer Services	0.249	0.428	0.424	0.307	0.283	0.198	0.108	0.272	0.156	0.164	0.150	-0.061	0.070	0.142	0.068	0.073	0.061	0.219	0.311	0.093	0.088	0.269	0.187	0.361	0.394	0.341	0.014	0.014	0.386	0.138	0.051	0.127	0.249	0.358	0.166	0.137	0.292	0.302	0.143	0.465	0.280	0.214	0.225	0.117	0.219	-0.064	-0.065	0.205
	Containers	0.246	0.419	0.420	0.299	0.307	0.253	0.108	0.313	0.134	0.173	0.116	-0.053	0.043	0.135	0.048	0.082	0.049	0.185	0.319	0.114	0.081	0.272	0.150	0.365	0.390	0.342	0.013	0.013	0.404	0.135	0.041	0.160	0.265	0.382	0.191	0.127	0.333	0.347	0.150	0.465	0.270	0.198	0.206	0.113	0.226	-0.075	-0.087	0.215
	Conglomerate/Diversified Mfg	0.240	0.393	0.388	0.317	0.243	0.230	0.058	0.270	0.112	0.166	0.117	-0.074	0.041	0.132	0.039	0.081	0.035	0.123	0.317	0.111	0.097	0.336	0.178	0.331	0.361	0.323	-0.002	-0.002	0.318	0.117	0.037	0.189	0.250	0.307	0.208	0.102	0.292	0.276	0.095	0.426	0.256	0.193	0.199	0.108	0.204	-0.069	-0.080	0.249
	Electric Utility	0.188	0.389	0.384	0.340	0.246	0.211	0.106	0.337	0.191	0.160	0.159	-0.031	0.140	0.185	0.077	0.048	0.054	0.258	0.289	0.098	0.100	0.191	0.198	0.396	0.426	0.353	-0.014	-0.014	0.469	0.148	0.078	0.106	0.240	0.365	0.101	0.142	0.293	0.314	0.186	0.460	0.308	0.243	0.218	0.146	0.260	-0.076	-0.061	0.215
	Electronics	0.162	0.406	0.398	0.284	0.323	0.209	0.087	0.266	0.097	0.193	0.139	-0.051	0.041	0.164	0.088	0.111	0.090	0.228	0.300	0.112	0.141	0.309	0.170	0.369	0.392	0.367	0.097	0.097	0.400	0.144	0.030	0.156	0.206	0.377	0.205	0.110	0.339	0.296	0.098	0.463	0.309	0.248	0.226	0.118	0.172	-0.060	-0.056	0.229
	Retail Stores Food and Drug	0.231	0.387	0.384	0.265	0.252	0.165	0.088	0.245	0.138	0.139	0.159	-0.082	0.071	0.116	0.073	0.052	0.059	0.182	0.305	0.088	0.070	0.241	0.155	0.338	0.357	0.304	0.013	0.013	0.331	0.068	0.024	0.103	0.182	0.325	0.134	0.113	0.251	0.283	0.115	0.456	0.288	0.227	0.195	0.087	0.197	-0.058	-0.062	0.156
	Financials	0.288	0.492	0.494	0.282	0.216	0.265	0.084	0.337	0.130	0.158	0.126	-0.069	0.059	0.102	0.046	0.067	0.032	0.100	0.339	0.104	0.133	0.347	0.179	0.410	0.376	0.271	-0.037	-0.037	0.397	0.136	0.050	0.158	0.320	0.319	0.279	0.092	0.317	0.333	0.081	0.402	0.205	0.149	0.221	0.110	0.218	-0.069	-0.093	0.242
	Other Financials	0.269	0.449	0.449	0.292	0.218	0.209	0.056	0.285	0.133	0.133	0.097	-0.066	0.050	0.113	0.038	0.044	0.023	0.176	0.294	0.101	0.098	0.321	0.177	0.371	0.359	0.287	-0.027	-0.027	0.354	0.179	0.062	0.141	0.306	0.330	0.211	0.093	0.287	0.274	0.125	0.391	0.227	0.169	0.183	0.114	0.251	-0.073	-0.078	0.221
	Food Processors	0.175	0.368	0.365	0.320	0.287	0.200	0.112	0.293	0.160	0.181	0.158	-0.031	0.081	0.198	0.097	0.084	0.087	0.267	0.320	0.099	0.153	0.265	0.188	0.385	0.426	0.387	0.041	0.041	0.431	0.148	0.041	0.122	0.214	0.377	0.162	0.148	0.305	0.311	0.147	0.463	0.340	0.273	0.229	0.141	0.213	-0.049	-0.035	0.246
	Other Retail	0.257	0.402	0.400	0.309	0.266	0.188	0.103	0.264	0.173	0.147	0.137	-0.058	0.072	0.134	0.053	0.055	0.041	0.210	0.296	0.078	0.090	0.232	0.183	0.361	0.380	0.319	0.001	0.001	0.380	0.150	0.058	0.121	0.279	0.343	0.152	0.149	0.271	0.289	0.170	0.431	0.260	0.189	0.206	0.128	0.227	-0.063	-0.062	0.177
	Healthcare Facilities	0.156	0.389	0.380	0.189	0.341	0.201	0.097	0.271	0.096	0.164	0.139	-0.035	0.061	0.114	0.080	0.093	0.088	0.300	0.284	0.119	0.070	0.211	0.162	0.328	0.339	0.365	0.071	0.071	0.369	0.078	0.021	0.104	0.184	0.361	0.197	0.093	0.305	0.279	0.088	0.476	0.307	0.235	0.226	0.118	0.176	-0.027	-0.026	0.153
	Healtchare	0.205	0.488	0.482	0.284	0.347	0.227	0.129	0.354	0.140	0.151	0.234	-0.004	0.092	0.177	0.116	0.110	0.105	0.205	0.342	0.114	0.095	0.250	0.209	0.427	0.449	0.360	0.081	0.081	0.443	0.114	0.040	0.122	0.252	0.375	0.190	0.128	0.359	0.357	0.115	0.506	0.343	0.266	0.292	0.179	0.215	-0.020	-0.040	0.206
	Home Builders	0.318	0.365	0.392	0.290	0.150	0.209	0.035	0.290	0.193	0.151	0.139	-0.043	0.068	0.100	0.039	0.070	0.028	0.099	0.298	0.090	0.085	0.317	0.197	0.402	0.321	0.245	-0.030	-0.030	0.354	0.169	0.101	0.201	0.392	0.324	0.221	0.160	0.267	0.301	0.162	0.344	0.222	0.167	0.237	0.137	0.241	-0.027	-0.044	0.208
	Lodging	0.291	0.336	0.335	0.241	0.247	0.250	0.086	0.272	0.151	0.148	0.101	-0.096	0.023	0.143	0.042	0.089	0.035	0.163	0.302	0.122	0.094	0.313	0.183	0.344	0.353	0.301	-0.024	-0.024	0.363	0.089	0.059	0.175	0.257	0.352	0.225	0.117	0.290	0.308	0.122	0.433	0.241	0.184	0.212	0.054	0.196	-0.092	-0.095	0.306
	Machinery	0.182	0.422	0.410	0.262	0.326	0.228	0.097	0.295	0.128	0.200	0.171	-0.059	0.043	0.136	0.096	0.112	0.107	0.232	0.339	0.121	0.131	0.314	0.179	0.386	0.403	0.384	0.080	0.080	0.408	0.112	0.035	0.163	0.229	0.378	0.214	0.118	0.360	0.337	0.105	0.490	0.303	0.245	0.241	0.108	0.184	-0.073	-0.070	0.228
	Other Industrials	0.219	0.426	0.415	0.322	0.317	0.231	0.096	0.297	0.123	0.189	0.155	-0.063	0.044	0.174	0.085	0.097	0.087	0.191	0.337	0.103	0.130	0.313	0.188	0.372	0.416	0.377	0.051	0.051	0.393	0.145	0.046	0.162	0.248	0.360	0.201	0.121	0.336	0.316	0.109	0.480	0.303	0.244	0.235	0.111	0.197	-0.058	-0.062	0.238
	Metals&Mining	0.247	0.408	0.403	0.283	0.227	0.245	0.071	0.285	0.144	0.150	0.135	-0.067	0.079	0.125	0.049	0.057	0.048	0.205	0.296	0.096	0.099	0.261	0.196	0.308	0.391	0.326	-0.023	-0.023	0.462	0.131	0.033	0.123	0.249	0.340	0.210	0.093	0.302	0.321	0.118	0.453	0.277	0.211	0.208	0.077	0.223	-0.075	-0.072	0.258
	Other Transportation	0.255	0.377	0.368	0.288	0.229	0.233	0.053	0.277	0.119	0.144	0.108	-0.080	0.035	0.158	0.061	0.069	0.061	0.143	0.292	0.090	0.113	0.320	0.181	0.357	0.375	0.309	-0.006	-0.006	0.406	0.124	0.042	0.186	0.248	0.303	0.209	0.083	0.294	0.299	0.071	0.416	0.227	0.174	0.201	0.050	0.168	-0.066	-0.078	0.243
	Industrials	0.259	0.510	0.502	0.333	0.316	0.271	0.129	0.366	0.138	0.221	0.208	-0.055	0.056	0.175	0.116	0.109	0.107	0.140	0.375	0.116	0.132	0.331	0.209	0.451	0.467	0.370	0.052	0.052	0.452	0.136	0.052	0.180	0.307	0.364	0.228	0.117	0.398	0.401	0.088	0.506	0.313	0.241	0.275	0.127	0.214	-0.035	-0.063	0.271
	Cable Meida	0.221	0.403	0.398	0.298	0.263	0.214	0.097	0.269	0.158	0.158	0.138	-0.062	0.062	0.153	0.066	0.076	0.062	0.223	0.326	0.117	0.103	0.312	0.190	0.350	0.386	0.329	0.004	0.004	0.375	0.109	0.052	0.134	0.211	0.333	0.200	0.125	0.291	0.308	0.112	0.466	0.282	0.216	0.220	0.096	0.210	-0.076	-0.068	0.244
	Healthcare Supplies	0.142	0.357	0.348	0.216	0.370	0.201	0.095	0.270	0.101	0.182	0.137	-0.020	0.065	0.124	0.076	0.102	0.089	0.258	0.297	0.129	0.096	0.194	0.158	0.346	0.368	0.412	0.111	0.111	0.361	0.103	0.032	0.149	0.213	0.355	0.148	0.146	0.326	0.298	0.119	0.461	0.321	0.246	0.240	0.154	0.172	0.003	-0.003	0.185
	Oil&Gas	0.206	0.423	0.420	0.264	0.276	0.175	0.104	0.273	0.137	0.164	0.169	-0.034	0.076	0.133	0.098	0.061	0.093	0.261	0.279	0.088	0.084	0.202	0.188	0.365	0.394	0.350	0.039	0.039	0.437	0.116	0.037	0.077	0.210	0.345	0.161	0.090	0.287	0.307	0.126	0.453	0.302	0.228	0.253	0.115	0.212	-0.046	-0.040	0.192
	Oilfield Machinery and Products	0.258	0.509	0.511	0.316	0.283	0.250	0.129	0.378	0.178	0.210	0.229	-0.025	0.109	0.168	0.118	0.081	0.106	0.178	0.340	0.121	0.111	0.250	0.211	0.462	0.480	0.350	0.038	0.038	0.487	0.134	0.052	0.095	0.265	0.367	0.179	0.112	0.358	0.409	0.127	0.524	0.336	0.253	0.310	0.146	0.263	-0.045	-0.056	0.244
	Other Oil&Gas	0.212	0.430	0.428	0.272	0.281	0.190	0.101	0.279	0.139	0.159	0.161	-0.043	0.081	0.134	0.094	0.057	0.088	0.259	0.286	0.097	0.091	0.211	0.193	0.385	0.397	0.347	0.027	0.027	0.441	0.120	0.042	0.082	0.223	0.349	0.168	0.090	0.288	0.314	0.126	0.457	0.296	0.223	0.252	0.110	0.222	-0.052	-0.043	0.207
	Property&Casualty	0.223	0.426	0.423	0.274	0.235	0.214	0.076	0.295	0.124	0.150	0.106	-0.059	0.055	0.140	0.053	0.066	0.043	0.200	0.288	0.098	0.108	0.310	0.176	0.365	0.353	0.318	-0.015	-0.015	0.401	0.145	0.050	0.135	0.275	0.380	0.218	0.092	0.291	0.289	0.107	0.407	0.244	0.184	0.197	0.118	0.247	-0.083	-0.074	0.221
	Textiles\Apparel\Shoes	0.216	0.412	0.402	0.267	0.304	0.179	0.107	0.285	0.129	0.172	0.162	-0.028	0.081	0.146	0.085	0.073	0.081	0.240	0.295	0.099	0.091	0.260	0.189	0.346	0.383	0.355	0.037	0.037	0.418	0.110	0.047	0.099	0.217	0.341	0.185	0.118	0.294	0.321	0.134	0.452	0.299	0.240	0.240	0.135	0.244	-0.041	-0.028	0.176
	Other Consumer Goods	0.202	0.372	0.361	0.254	0.327	0.156	0.103	0.262	0.108	0.203	0.168	-0.034	0.048	0.150	0.104	0.111	0.114	0.201	0.296	0.100	0.107	0.266	0.166	0.320	0.372	0.346	0.097	0.097	0.377	0.109	0.009	0.130	0.180	0.337	0.168	0.140	0.295	0.313	0.137	0.466	0.323	0.256	0.242	0.131	0.198	-0.033	-0.031	0.155
	Pharmaceuticals	0.178	0.354	0.352	0.280	0.283	0.182	0.077	0.251	0.120	0.146	0.129	-0.028	0.095	0.150	0.056	0.068	0.044	0.249	0.275	0.096	0.100	0.230	0.179	0.337	0.370	0.352	0.039	0.039	0.383	0.107	0.037	0.101	0.202	0.332	0.173	0.104	0.257	0.261	0.117	0.419	0.288	0.231	0.198	0.104	0.182	-0.055	-0.056	0.182
	Publishing	0.221	0.373	0.365	0.270	0.300	0.174	0.096	0.262	0.141	0.154	0.122	-0.050	0.055	0.136	0.045	0.073	0.037	0.214	0.286	0.102	0.094	0.270	0.183	0.362	0.355	0.328	0.011	0.011	0.364	0.094	0.034	0.128	0.200	0.325	0.162	0.088	0.270	0.293	0.099	0.435	0.251	0.197	0.226	0.076	0.210	-0.072	-0.072	0.203
	Railroad	0.225	0.363	0.351	0.248	0.190	0.229	0.034	0.248	0.100	0.131	0.102	-0.068	0.055	0.134	0.069	0.069	0.077	0.133	0.273	0.070	0.099	0.296	0.143	0.322	0.333	0.271	-0.011	-0.011	0.381	0.103	0.017	0.183	0.222	0.282	0.185	0.081	0.268	0.269	0.052	0.369	0.203	0.148	0.169	0.046	0.117	-0.058	-0.069	0.220
	Real Estate	0.296	0.312	0.315	0.300	0.169	0.220	0.061	0.272	0.130	0.140	0.058	-0.109	0.055	0.122	0.016	0.073	0.000	0.115	0.286	0.098	0.111	0.386	0.155	0.358	0.327	0.260	-0.085	-0.085	0.379	0.110	0.065	0.155	0.260	0.336	0.201	0.104	0.256	0.290	0.100	0.376	0.219	0.160	0.176	0.038	0.215	-0.098	-0.106	0.286
	Restaurants	0.279	0.412	0.408	0.276	0.247	0.193	0.070	0.271	0.125	0.197	0.169	-0.048	0.074	0.143	0.091	0.109	0.084	0.176	0.299	0.079	0.095	0.280	0.182	0.353	0.364	0.324	0.032	0.032	0.382	0.116	0.045	0.190	0.248	0.357	0.176	0.121	0.281	0.304	0.121	0.455	0.285	0.221	0.265	0.084	0.190	-0.041	-0.047	0.193
	Technology	0.250	0.507	0.505	0.336	0.278	0.239	0.114	0.360	0.155	0.212	0.216	-0.034	0.080	0.186	0.120	0.098	0.095	0.170	0.336	0.131	0.138	0.285	0.207	0.435	0.447	0.348	0.070	0.070	0.449	0.153	0.064	0.161	0.331	0.359	0.218	0.125	0.351	0.366	0.113	0.488	0.322	0.251	0.280	0.155	0.206	-0.038	-0.053	0.239
	Information/Data Technology	0.207	0.446	0.442	0.309	0.275	0.181	0.105	0.268	0.126	0.190	0.133	-0.035	0.046	0.152	0.075	0.094	0.059	0.236	0.312	0.079	0.118	0.258	0.185	0.364	0.394	0.338	0.068	0.068	0.398	0.152	0.044	0.157	0.271	0.367	0.206	0.103	0.300	0.287	0.118	0.450	0.305	0.233	0.223	0.121	0.221	-0.039	-0.036	0.208
	Telecommunications	0.287	0.453	0.457	0.384	0.244	0.212	0.082	0.336	0.187	0.201	0.185	-0.023	0.094	0.220	0.077	0.082	0.052	0.146	0.349	0.095	0.162	0.284	0.167	0.444	0.486	0.339	0.010	0.010	0.449	0.176	0.057	0.142	0.310	0.355	0.159	0.149	0.311	0.343	0.146	0.460	0.330	0.241	0.251	0.154	0.233	-0.040	-0.054	0.248
	Other Telecommunications	0.228	0.383	0.384	0.359	0.237	0.169	0.055	0.289	0.171	0.169	0.138	-0.039	0.099	0.190	0.072	0.059	0.047	0.234	0.298	0.071	0.147	0.268	0.160	0.367	0.420	0.326	0.004	0.004	0.430	0.170	0.049	0.137	0.249	0.340	0.152	0.140	0.260	0.288	0.150	0.420	0.299	0.218	0.187	0.134	0.249	-0.048	-0.037	0.225
	Tobacco	0.179	0.433	0.431	0.264	0.263	0.172	0.074	0.258	0.165	0.134	0.131	0.029	0.093	0.159	0.070	0.039	0.052	0.304	0.263	0.082	0.056	0.215	0.165	0.310	0.352	0.336	0.007	0.007	0.398	0.124	0.058	0.071	0.212	0.321	0.162	0.088	0.269	0.274	0.148	0.376	0.293	0.232	0.191	0.154	0.252	-0.026	0.001	0.162
	Leisure	0.296	0.435	0.431	0.285	0.256	0.225	0.086	0.281	0.143	0.157	0.129	-0.097	0.064	0.120	0.048	0.078	0.043	0.175	0.298	0.084	0.078	0.305	0.186	0.352	0.374	0.325	-0.012	-0.012	0.368	0.140	0.060	0.173	0.291	0.350	0.184	0.125	0.305	0.308	0.153	0.433	0.241	0.185	0.238	0.085	0.209	-0.081	-0.091	0.228

		EQ																																															
		Utility	Other Utili	Airlines	Vehicle Pa	Banks	Beverages/	Building P	Basic Mat	Chemicals	Consumer	Consumer	Other Con	Containers	Conglomer	Electric Ut	Electronics	Retail Stor	Financials	Other Fina	Food Proc	Other Reta	Healthcare	Healtchare	Home Buil	Lodging	Machinery	Other Indu	Metals&Mi	Other Trar	Industrials	Cable Mei	Healthcare	Oil&Gas	Oilfield Ma	Other Oil&	Property&	Textiles\A	Other Con	Pharmaceu	Publishing	Railroad	Real Estat	Restaurant	Technolog	Informatio	Telecomm	Other Tele	Tobacco	Leisure
EQ	Utility	1.000
	Other Utility	0.799	1.000
	Airlines	0.465	0.504	1.000
	Vehicle Parts	0.624	0.738	0.643	1.000
	Banks	0.507	0.608	0.620	0.780	1.000
	Beverages/Bottling	0.706	0.867	0.536	0.721	0.606	1.000
	Building Products	0.876	0.746	0.538	0.692	0.605	0.680	1.000
	Basic Materials	0.661	0.771	0.630	0.864	0.808	0.732	0.697	1.000
	Chemicals	0.715	0.852	0.593	0.825	0.711	0.786	0.767	0.843	1.000
	Consumer Goods	0.913	0.745	0.496	0.665	0.559	0.723	0.879	0.688	0.731	1.000
	Consumer Services	0.876	0.715	0.538	0.665	0.617	0.666	0.877	0.695	0.710	0.940	1.000
	Other Consumer Services	0.729	0.876	0.643	0.855	0.754	0.849	0.732	0.874	0.879	0.747	0.754	1.000
	Containers	0.676	0.823	0.630	0.861	0.787	0.792	0.718	0.885	0.881	0.705	0.702	0.904	1.000
	Conglomerate/Diversified Mfg	0.642	0.768	0.613	0.831	0.828	0.750	0.669	0.858	0.834	0.684	0.693	0.860	0.855	1.000
	Electric Utility	0.800	0.997	0.502	0.723	0.508	0.857	0.741	0.757	0.837	0.736	0.711	0.863	0.810	0.754	1.000
	Electronics	0.680	0.837	0.579	0.864	0.734	0.808	0.718	0.885	0.898	0.727	0.706	0.903	0.899	0.871	0.816	1.000
	Retail Stores Food and Drug	0.735	0.840	0.536	0.759	0.647	0.806	0.704	0.788	0.801	0.736	0.713	0.893	0.821	0.791	0.831	0.825	1.000
	Financials	0.720	0.608	0.577	0.705	0.762	0.588	0.805	0.719	0.671	0.784	0.849	0.685	0.696	0.724	0.665	0.679	0.612	1.000
	Other Financials	0.642	0.772	0.652	0.843	0.920	0.741	0.706	0.857	0.838	0.667	0.700	0.881	0.869	0.875	0.762	0.844	0.758	0.780	1.000
	Food Processors	0.736	0.904	0.559	0.794	0.664	0.885	0.720	0.811	0.864	0.747	0.711	0.902	0.848	0.813	0.893	0.887	0.856	0.625	0.809	1.000
	Other Retail	0.707	0.841	0.634	0.813	0.710	0.815	0.705	0.808	0.830	0.716	0.732	0.967	0.865	0.799	0.833	0.832	0.832	0.651	0.849	0.862	1.000
	Healthcare Facilities	0.665	0.856	0.530	0.767	0.661	0.848	0.678	0.776	0.840	0.699	0.663	0.884	0.832	0.797	0.837	0.875	0.827	0.594	0.796	0.888	0.824	1.000
	Healtchare	0.889	0.742	0.468	0.623	0.524	0.694	0.847	0.646	0.703	0.927	0.897	0.716	0.668	0.656	0.732	0.709	0.706	0.746	0.641	0.734	0.685	0.727	1.000
	Home Builders	0.569	0.631	0.650	0.713	0.781	0.593	0.605	0.775	0.684	0.565	0.619	0.748	0.716	0.731	0.631	0.659	0.617	0.677	0.810	0.657	0.753	0.601	0.527	1.000
	Lodging	0.621	0.711	0.665	0.851	0.767	0.719	0.689	0.853	0.786	0.654	0.684	0.847	0.827	0.819	0.700	0.828	0.736	0.706	0.823	0.766	0.801	0.741	0.623	0.751	1.000
	Machinery	0.687	0.833	0.603	0.870	0.742	0.803	0.726	0.807	0.807	0.732	0.711	0.902	0.894	0.875	0.814	0.957	0.840	0.665	0.837	0.874	0.829	0.868	0.706	0.678	0.833	1.000
	Other Industrials	0.706	0.848	0.625	0.888	0.786	0.816	0.738	0.909	0.914	0.749	0.739	0.936	0.920	0.933	0.830	0.963	0.857	0.710	0.882	0.893	0.868	0.876	0.719	0.719	0.854	0.963	1.000
	Metals&Mining	0.735	0.864	0.582	0.825	0.723	0.803	0.778	0.823	0.914	0.722	0.705	0.858	0.856	0.831	0.854	0.873	0.800	0.699	0.841	0.856	0.811	0.818	0.705	0.689	0.794	0.873	0.883	1.000
	Other Transportation	0.663	0.780	0.674	0.857	0.775	0.737	0.716	0.861	0.855	0.701	0.718	0.873	0.856	0.845	0.767	0.873	0.778	0.716	0.848	0.814	0.827	0.787	0.670	0.733	0.832	0.879	0.918	0.844	1.000
	Industrials	0.849	0.700	0.549	0.711	0.634	0.656	0.912	0.727	0.731	0.919	0.936	0.729	0.719	0.725	0.692	0.748	0.706	0.875	0.704	0.711	0.686	0.675	0.879	0.598	0.711	0.756	0.771	0.725	0.739	1.000
	Cable Meida	0.728	0.873	0.621	0.839	0.763	0.842	0.739	0.873	0.871	0.742	0.738	0.950	0.876	0.875	0.859	0.911	0.876	0.697	0.873	0.896	0.869	0.887	0.719	0.704	0.840	0.908	0.930	0.867	0.864	0.739	1.000
	Healthcare Supplies	0.621	0.794	0.519	0.726	0.614	0.787	0.647	0.735	0.800	0.665	0.657	0.828	0.787	0.751	0.777	0.836	0.748	0.562	0.743	0.838	0.788	0.916	0.682	0.578	0.722	0.831	0.835	0.755	0.736	0.663	0.815	1.000
	Oil&Gas	0.763	0.921	0.526	0.769	0.659	0.831	0.759	0.786	0.888	0.744	0.722	0.875	0.832	0.768	0.908	0.856	0.812	0.643	0.813	0.885	0.836	0.865	0.744	0.653	0.742	0.852	0.863	0.909	0.793	0.706	0.873	0.805	1.000
	Oilfield Machinery and Products	0.922	0.789	0.501	0.666	0.580	0.711	0.932	0.701	0.761	0.898	0.883	0.757	0.713	0.678	0.784	0.721	0.737	0.777	0.700	0.746	0.725	0.698	0.886	0.601	0.666	0.731	0.743	0.768	0.701	0.880	0.757	0.652	0.813	1.000
	Other Oil&Gas	0.765	0.922	0.541	0.785	0.680	0.834	0.766	0.803	0.901	0.746	0.728	0.883	0.847	0.806	0.909	0.868	0.818	0.661	0.828	0.887	0.840	0.868	0.745	0.668	0.759	0.865	0.877	0.922	0.809	0.715	0.885	0.808	0.996	0.814	1.000
	Property&Casualty	0.679	0.827	0.620	0.832	0.863	0.798	0.721	0.865	0.848	0.688	0.708	0.886	0.873	0.879	0.814	0.872	0.782	0.766	0.938	0.845	0.842	0.829	0.671	0.768	0.826	0.866	0.890	0.854	0.824	0.721	0.896	0.771	0.840	0.721	0.854	1.000
	Textiles\Apparel\Shoes	0.746	0.904	0.574	0.810	0.672	0.881	0.730	0.832	0.859	0.760	0.731	0.931	0.861	0.819	0.888	0.876	0.869	0.647	0.812	0.915	0.894	0.882	0.727	0.675	0.772	0.882	0.899	0.849	0.820	0.719	0.903	0.822	0.892	0.765	0.893	0.854	1.000
	Other Consumer Goods	0.706	0.898	0.572	0.798	0.640	0.828	0.699	0.817	0.833	0.741	0.713	0.909	0.837	0.778	0.822	0.865	0.848	0.604	0.762	0.876	0.870	0.845	0.696	0.656	0.769	0.875	0.877	0.795	0.797	0.700	0.873	0.798	0.840	0.731	0.841	0.799	0.933	1.000
	Pharmaceuticals	0.721	0.894	0.548	0.755	0.628	0.854	0.706	0.756	0.825	0.718	0.691	0.882	0.820	0.791	0.882	0.850	0.834	0.607	0.785	0.906	0.854	0.905	0.739	0.629	0.732	0.835	0.855	0.822	0.778	0.681	0.871	0.861	0.877	0.728	0.879	0.837	0.896	0.844	1.000
	Publishing	0.724	0.865	0.596	0.833	0.732	0.813	0.737	0.870	0.858	0.737	0.731	0.920	0.873	0.854	0.853	0.904	0.835	0.695	0.853	0.879	0.867	0.859	0.713	0.707	0.825	0.899	0.918	0.852	0.840	0.737	0.922	0.809	0.868	0.760	0.878	0.882	0.895	0.866	0.855	1.000
	Railroad	0.595	0.700	0.601	0.784	0.731	0.660	0.660	0.782	0.795	0.640	0.663	0.786	0.788	0.775	0.690	0.796	0.711	0.685	0.785	0.730	0.745	0.708	0.610	0.672	0.768	0.808	0.840	0.787	0.954	0.684	0.785	0.652	0.724	0.635	0.740	0.754	0.729	0.707	0.685	0.760	1.000
	Real Estate	0.646	0.733	0.679	0.841	0.864	0.693	0.698	0.849	0.770	0.652	0.680	0.825	0.829	0.853	0.731	0.797	0.738	0.766	0.891	0.776	0.784	0.709	0.603	0.780	0.857	0.805	0.839	0.801	0.822	0.706	0.842	0.664	0.730	0.672	0.749	0.886	0.765	0.732	0.734	0.827	0.764	1.000
	Restaurants	0.699	0.818	0.618	0.771	0.695	0.784	0.690	0.798	0.815	0.714	0.728	0.898	0.808	0.777	0.811	0.813	0.793	0.661	0.805	0.841	0.809	0.814	0.701	0.714	0.771	0.816	0.850	0.786	0.812	0.691	0.849	0.772	0.818	0.736	0.823	0.807	0.856	0.854	0.810	0.838	0.741	0.772	1.000
	Technology	0.846	0.686	0.541	0.648	0.594	0.652	0.880	0.667	0.714	0.905	0.919	0.712	0.679	0.693	0.680	0.703	0.674	0.840	0.692	0.703	0.684	0.656	0.881	0.596	0.662	0.701	0.725	0.697	0.689	0.927	0.712	0.632	0.700	0.878	0.707	0.705	0.703	0.681	0.683	0.698	0.633	0.666	0.701	1.000
	Information/Data Technology	0.713	0.846	0.611	0.829	0.750	0.826	0.732	0.834	0.882	0.743	0.732	0.918	0.872	0.868	0.831	0.913	0.826	0.694	0.880	0.881	0.874	0.864	0.722	0.708	0.804	0.887	0.926	0.862	0.839	0.742	0.911	0.813	0.867	0.745	0.878	0.882	0.885	0.849	0.856	0.881	0.761	0.803	0.846	0.758	1.000
	Telecommunications	0.896	0.762	0.535	0.648	0.581	0.694	0.847	0.677	0.717	0.892	0.891	0.752	0.702	0.700	0.766	0.694	0.729	0.780	0.700	0.746	0.743	0.658	0.853	0.631	0.655	0.699	0.730	0.736	0.700	0.852	0.743	0.617	0.730	0.879	0.753	0.723	0.749	0.719	0.729	0.739	0.639	0.708	0.729	0.876	0.743	1.000
	Other Telecommunications	0.761	0.896	0.584	0.759	0.679	0.835	0.732	0.779	0.825	0.736	0.729	0.891	0.823	0.808	0.893	0.826	0.826	0.658	0.826	0.887	0.869	0.822	0.706	0.713	0.749	0.822	0.851	0.846	0.784	0.698	0.881	0.758	0.875	0.767	0.879	0.851	0.892	0.844	0.876	0.862	0.701	0.793	0.830	0.720	0.876	0.808	1.000
	Tobacco	0.661	0.830	0.432	0.665	0.564	0.802	0.637	0.660	0.755	0.650	0.616	0.792	0.728	0.690	0.828	0.740	0.755	0.559	0.722	0.818	0.767	0.791	0.642	0.549	0.620	0.730	0.749	0.763	0.670	0.604	0.773	0.734	0.824	0.679	0.823	0.763	0.881	0.747	0.815	0.756	0.609	0.631	0.728	0.609	0.775	0.653	0.799	1.000
	Leisure	0.652	0.782	0.702	0.866	0.788	0.761	0.696	0.876	0.843	0.682	0.718	0.936	0.874	0.834	0.771	0.858	0.800	0.707	0.873	0.817	0.890	0.800	0.650	0.776	0.886	0.865	0.899	0.822	0.877	0.701	0.877	0.760	0.804	0.704	0.818	0.851	0.852	0.836	0.792	0.858	0.803	0.841	0.895	0.673	0.863	0.691	0.814	0.711	1.000

Table 49: Correlation Between CDS Spreads and Equity Volatility for the US Region [Crisis Period]

Table 50: Correlation Between CDS Spreads and Equity Volatility for the US Region [After-Crisis Period]

CDS Spread and Equity Volatility Correlation for UK Region		CDS														EQ																		
		Banking	Banks	Beverages/	Consumer	Electric P	Life Insura	Manufactu	Financials	Other Fin	Other Ret	Consumer	Other Con	Telecomm	Other Tel	Banks	Beverages/	Basic Mat	Consumer	Consumer	Other Con	Financials	Other Fin	Healthcare	Industrials	Life Insura	Oil&Gas	Other Ret	Technolog	Telecomm	Other Tel	Utility			
CDS	Banking	1.000																																
	Banks	0.999	1.000																															
	Beverages/Bottling	0.152	0.154	1.000																														
	Consumer Goods	0.210	0.210	0.567	1.000																													
	Electric Power	0.137	0.136	0.229	0.226	1.000																												
	Life Insurance	0.116	0.115	0.222	0.236	0.110	1.000																											
	Manufacturing	0.154	0.152	0.342	0.387	0.111	0.136	1.000																										
	Financials	0.310	0.309	0.280	0.391	0.233	0.292	0.236	1.000																									
	Other Financials	0.282	0.280	0.295	0.423	0.253	0.218	0.289	0.967	1.000																								
	Other Retail	0.166	0.166	0.456	0.545	0.239	0.240	0.467	0.362	0.413	1.000																							
	Consumer Services	0.217	0.215	0.455	0.567	0.232	0.300	0.348	0.356	0.390	0.589	1.000																						
	Other Consumer Services	0.129	0.124	0.193	0.231	0.108	0.118	0.170	0.156	0.184	0.197	0.365	1.000																					
	Telecommunications	0.156	0.155	0.262	0.389	0.140	0.182	0.292	0.210	0.222	0.348	0.339	0.139	1.000																				
	Other Telecommunications	0.156	0.155	0.262	0.389	0.140	0.183	0.292	0.210	0.222	0.347	0.340	0.139	1.000	1.000																			
EQ	Utility	0.186	0.186	0.275	0.259	0.127	0.154	0.217	0.211	0.236	0.268	0.274	0.154	0.162	0.162	1.000																		
	Banks	0.169	0.170	0.359	0.310	0.149	0.210	0.184	0.242	0.262	0.305	0.294	0.169	0.180	0.180	0.460	1.000																	
	Beverages/Bottling	0.144	0.145	0.267	0.216	0.118	0.139	0.191	0.211	0.231	0.238	0.233	0.104	0.089	0.089	0.469	0.530	1.000																
	Basic Materials	0.206	0.206	0.371	0.341	0.143	0.157	0.255	0.249	0.271	0.347	0.303	0.136	0.156	0.156	0.657	0.590	0.525	1.000															
	Consumer Goods	0.205	0.207	0.316	0.304	0.162	0.166	0.228	0.239	0.262	0.303	0.315	0.139	0.201	0.201	0.753	0.496	0.625	0.694	1.000														
	Consumer Services	0.246	0.247	0.378	0.391	0.183	0.242	0.280	0.301	0.324	0.417	0.409	0.227	0.299	0.300	0.682	0.565	0.539	0.680	0.778	1.000													
	Other Consumer Services	0.206	0.207	0.324	0.341	0.169	0.201	0.237	0.277	0.302	0.342	0.336	0.197	0.212	0.213	0.557	0.710	0.672	0.590	0.634	0.745	1.000												
	Financials	0.218	0.219	0.400	0.366	0.166	0.260	0.249	0.297	0.329	0.409	0.393	0.207	0.270	0.270	0.599	0.742	0.492	0.715	0.660	0.799	0.651	1.000											
	Other Financials	0.214	0.214	0.399	0.368	0.197	0.234	0.227	0.293	0.314	0.363	0.353	0.197	0.205	0.206	0.528	0.779	0.676	0.650	0.606	0.678	0.858	0.717	1.000										
	Healthcare	0.192	0.193	0.288	0.270	0.123	0.165	0.245	0.237	0.253	0.271	0.273	0.132	0.148	0.149	0.718	0.437	0.493	0.627	0.725	0.673	0.558	0.558	0.533	1.000									
	Industrials	0.231	0.232	0.379	0.387	0.187	0.271	0.287	0.301	0.328	0.394	0.409	0.211	0.298	0.298	0.648	0.565	0.544	0.739	0.773	0.874	0.672	0.797	0.683	0.656	1.000								
	Life Insurance	0.180	0.181	0.344	0.309	0.135	0.210	0.198	0.245	0.265	0.322	0.298	0.190	0.173	0.173	0.551	0.865	0.576	0.642	0.559	0.643	0.771	0.769	0.836	0.493	0.636	1.000							
	Oil&Gas	0.224	0.226	0.330	0.305	0.123	0.156	0.237	0.226	0.253	0.307	0.308	0.181	0.183	0.183	0.697	0.524	0.490	0.791	0.722	0.678	0.571	0.639	0.598	0.668	0.717	0.584	1.000						
	Other Retail	0.180	0.181	0.284	0.300	0.138	0.162	0.195	0.237	0.255	0.296	0.286	0.175	0.196	0.197	0.521	0.620	0.592	0.526	0.582	0.690	0.923	0.567	0.753	0.524	0.599	0.670	0.509	1.000					
	Technology	0.192	0.194	0.289	0.292	0.130	0.214	0.247	0.237	0.255	0.305	0.331	0.136	0.233	0.234	0.513	0.412	0.409	0.571	0.594	0.672	0.511	0.611	0.527	0.529	0.692	0.476	0.540	0.448	1.000				
	Telecommunications	0.185	0.185	0.341	0.306	0.162	0.152	0.251	0.247	0.266	0.335	0.305	0.196	0.206	0.206	0.653	0.527	0.488	0.654	0.677	0.744	0.602	0.706	0.618	0.646	0.692	0.613	0.655	0.553	0.561	1.000			
	Other Telecommunications	0.180	0.182	0.328	0.301	0.144	0.152	0.233	0.251	0.275	0.307	0.265	0.189	0.152	0.152	0.517	0.648	0.610	0.581	0.565	0.615	0.744	0.617	0.746	0.530	0.585	0.719	0.575	0.671	0.478	0.690	1.000		

Table 51: Correlation Between CDS Spreads and Equity Volatility for the UK Region [Full Sample Period]

CDS Spread and Equity Volatility Correlation for UK Region		CDS														EQ																	
		Banking	Banks	Beverages/E	Consumer G	Electric Pow	Life Insuran	Manufacturi	Financials	Other Finan	Other Retail	Consumer Se	Other Consu	Telecommun	Other Telec	Banks	Beverages/E	Basic Mater	Consumer G	Consumer Se	Other Consu	Financials	Other Finan	Healthcare	Industrials	Life Insuran	Oil&Gas	Other Retail	Technology	Telecommun	Other Telec	Utility
CDS	Banking	1.000																														
	Banks	0.989	1.000																													
	Beverages/Bottling	0.511	0.520	1.000																												
	Consumer Goods	0.655	0.660	0.686	1.000																											
	Electric Power	0.493	0.489	0.475	0.562	1.000																										
	Life Insurance	0.371	0.372	0.297	0.361	0.220	1.000																									
	Manufacturing	0.548	0.542	0.548	0.528	0.454	0.287	1.000																								
	Financials	0.620	0.617	0.503	0.648	0.496	0.423	0.520	1.000																							
	Other Financials	0.544	0.540	0.444	0.598	0.469	0.352	0.485	0.974	1.000																						
	Other Retail	0.565	0.567	0.524	0.676	0.597	0.301	0.559	0.579	0.565	1.000																					
	Consumer Services	0.526	0.519	0.392	0.655	0.394	0.288	0.414	0.533	0.515	0.618	1.000																				
	Other Consumer Services	0.207	0.192	0.148	0.155	0.119	0.085	0.260	0.206	0.198	0.231	0.343	1.000																			
	Telecommunications	0.607	0.604	0.518	0.630	0.584	0.378	0.526	0.551	0.512	0.663	0.519	0.159	1.000																		
	Other Telecommunications	0.610	0.605	0.520	0.632	0.582	0.380	0.527	0.553	0.514	0.664	0.522	0.159	0.999	1.000																	
EQ	Utility	0.364	0.369	0.258	0.318	0.322	0.172	0.302	0.371	0.362	0.305	0.224	0.100	0.274	0.276	1.000																
	Banks	0.441	0.445	0.299	0.354	0.245	0.232	0.249	0.404	0.368	0.304	0.185	0.081	0.278	0.280	0.448	1.000															
	Beverages/Bottling	0.421	0.428	0.247	0.351	0.267	0.239	0.274	0.414	0.378	0.257	0.208	0.097	0.223	0.226	0.531	0.572	1.000														
	Basic Materials	0.439	0.444	0.332	0.417	0.334	0.228	0.326	0.422	0.383	0.385	0.248	0.081	0.328	0.330	0.714	0.564	0.612	1.000													
	Consumer Goods	0.429	0.437	0.292	0.392	0.352	0.246	0.306	0.404	0.376	0.327	0.263	0.089	0.331	0.334	0.795	0.499	0.682	0.769	1.000												
	Consumer Services	0.514	0.523	0.349	0.430	0.378	0.270	0.387	0.478	0.445	0.451	0.308	0.156	0.406	0.408	0.703	0.527	0.628	0.735	0.818	1.000											
	Other Consumer Services	0.482	0.489	0.284	0.379	0.316	0.242	0.358	0.474	0.444	0.369	0.252	0.128	0.311	0.315	0.587	0.672	0.780	0.624	0.688	0.758	1.000										
	Financials	0.512	0.517	0.336	0.403	0.304	0.274	0.332	0.494	0.466	0.414	0.265	0.111	0.376	0.379	0.592	0.715	0.535	0.734	0.668	0.763	0.618	1.000									
	Other Financials	0.510	0.515	0.379	0.456	0.356	0.281	0.353	0.529	0.482	0.388	0.270	0.129	0.318	0.321	0.536	0.741	0.762	0.687	0.636	0.657	0.832	0.684	1.000								
	Healthcare	0.374	0.381	0.286	0.321	0.318	0.184	0.305	0.385	0.373	0.320	0.239	0.135	0.247	0.249	0.788	0.445	0.584	0.688	0.782	0.725	0.631	0.579	0.581	1.000							
	Industrials	0.475	0.484	0.342	0.447	0.333	0.320	0.379	0.486	0.450	0.425	0.312	0.129	0.429	0.432	0.662	0.522	0.637	0.795	0.812	0.862	0.674	0.756	0.667	0.696	1.000						
	Life Insurance	0.435	0.440	0.288	0.342	0.242	0.228	0.269	0.409	0.377	0.319	0.185	0.113	0.248	0.251	0.562	0.851	0.639	0.654	0.583	0.611	0.732	0.752	0.808	0.521	0.606	1.000					
	Oil&Gas	0.448	0.456	0.361	0.434	0.354	0.282	0.335	0.435	0.399	0.398	0.297	0.117	0.340	0.343	0.753	0.528	0.612	0.841	0.794	0.759	0.639	0.679	0.666	0.732	0.795	0.639	1.000				
	Other Retail	0.430	0.437	0.257	0.323	0.291	0.201	0.320	0.416	0.388	0.329	0.209	0.121	0.268	0.271	0.556	0.579	0.708	0.573	0.644	0.715	0.930	0.536	0.721	0.619	0.605	0.621	0.574	1.000			
	Technology	0.498	0.505	0.320	0.423	0.335	0.238	0.346	0.459	0.428	0.404	0.328	0.109	0.401	0.404	0.606	0.420	0.512	0.706	0.705	0.745	0.566	0.657	0.579	0.626	0.790	0.509	0.697	0.500	1.000		
	Telecommunications	0.471	0.475	0.328	0.384	0.360	0.182	0.335	0.408	0.369	0.377	0.251	0.161	0.320	0.322	0.715	0.521	0.542	0.723	0.730	0.772	0.623	0.718	0.638	0.718	0.705	0.626	0.740	0.575	0.652	1.000	
	Other Telecommunications	0.488	0.498	0.310	0.384	0.324	0.194	0.352	0.467	0.431	0.352	0.216	0.152	0.271	0.274	0.570	0.651	0.691	0.634	0.626	0.658	0.772	0.636	0.773	0.606	0.614	0.736	0.660	0.700	0.569	0.713	1.000

Table 52: Correlation Between CDS Spreads and Equity Volatility for the UK Region [Crisis Period]

CDS Spread and Equity Volatility Correlation for UK Region		CDS														EQ														
		Banking	Banks	Beverages/	Consumer	Electric Po	Life Insura	Manufactu	Financials	Other Fina	Other Reta	Consumer	Other Cons	Telecommu	Other Tele	Banks	Beverages/	Basic Mate	Consumer	Consumer	Other Cons	Financials	Other Fina	Healthcare	Industrials	Life Insura	Oil&Gas	Other Reta	Technology	Telecommu	Other Tele	Utility
CDS	Banking	1.000																												
	Banks	1.000	1.000																											
	Beverages/Bottling	0.035	0.036	1.000																										
	Consumer Goods	0.080	0.080	0.440	1.000																									
	Electric Power	0.079	0.080	0.020	0.061	1.000																								
	Life Insurance	0.054	0.054	0.065	0.117	0.048	1.000																							
	Manufacturing	0.075	0.075	0.148	0.300	-0.018	0.035	1.000																						
	Financials	0.252	0.252	0.088	0.247	0.143	0.221	0.116	1.000																					
	Other Financials	0.233	0.233	0.115	0.296	0.164	0.119	0.185	0.969	1.000																				
	Other Retail	0.058	0.058	0.224	0.395	0.031	0.146	0.405	0.230	0.285	1.000																			
	Consumer Services	0.177	0.178	0.443	0.473	0.118	0.312	0.322	0.257	0.284	0.492	1.000																		
	Other Consumer Services	0.133	0.133	0.189	0.280	0.082	0.112	0.087	0.115	0.152	0.092	0.360	1.000																	
	Telecommunications	0.072	0.072	0.190	0.308	0.033	0.113	0.228	0.112	0.126	0.238	0.359	0.146	1.000																
	Other Telecommunications	0.073	0.073	0.190	0.308	0.033	0.113	0.228	0.112	0.126	0.238	0.359	0.146	1.000	1.000															
EQ	Utility	0.197	0.197	0.110	0.147	-0.055	0.097	0.133	0.074	0.083	0.105	0.252	0.191	0.142	0.142	1.000														
	Banks	0.175	0.175	0.129	0.241	0.024	0.133	0.060	0.108	0.127	0.119	0.300	0.230	0.244	0.244	0.324	1.000													
	Beverages/Bottling	0.075	0.076	0.056	-0.026	-0.027	-0.046	0.085	0.034	0.052	0.076	0.065	0.017	0.022	0.022	0.177	0.172	1.000												
	Basic Materials	0.230	0.230	0.176	0.207	-0.062	-0.016	0.185	0.106	0.138	0.137	0.186	0.126	0.093	0.093	0.356	0.403	0.079	1.000											
	Consumer Goods	0.198	0.197	0.187	0.145	0.002	0.015	0.154	0.108	0.134	0.170	0.303	0.156	0.183	0.183	0.558	0.308	0.382	0.333	1.000										
	Consumer Services	0.248	0.248	0.197	0.333	0.017	0.174	0.175	0.178	0.199	0.254	0.499	0.262	0.356	0.356	0.546	0.471	0.155	0.349	0.605	1.000									
	Other Consumer Services	0.180	0.180	0.153	0.273	0.038	0.101	0.101	0.122	0.143	0.170	0.344	0.223	0.233	0.233	0.356	0.727	0.276	0.289	0.375	0.611	1.000								
	Financials	0.253	0.253	0.212	0.338	0.008	0.222	0.146	0.159	0.189	0.265	0.512	0.282	0.392	0.392	0.532	0.588	0.120	0.431	0.556	0.853	0.589	1.000							
	Other Financials	0.208	0.208	0.098	0.225	0.055	0.126	0.064	0.101	0.120	0.169	0.316	0.212	0.236	0.236	0.363	0.775	0.295	0.290	0.389	0.595	0.887	0.620	1.000						
	Healthcare	0.184	0.184	0.143	0.177	-0.035	0.116	0.198	0.128	0.127	0.117	0.237	0.068	0.124	0.124	0.481	0.304	0.189	0.391	0.530	0.493	0.292	0.443	0.316	1.000					
	Industrials	0.243	0.242	0.207	0.294	0.063	0.177	0.194	0.171	0.202	0.223	0.460	0.246	0.329	0.329	0.537	0.469	0.159	0.443	0.620	0.860	0.541	0.845	0.577	0.512	1.000				
	Life Insurance	0.192	0.192	0.141	0.258	-0.004	0.146	0.087	0.108	0.125	0.174	0.367	0.246	0.241	0.241	0.371	0.813	0.190	0.343	0.322	0.591	0.824	0.635	0.846	0.313	0.563	1.000			
	Oil&Gas	0.210	0.210	0.055	0.096	-0.068	-0.040	0.144	0.055	0.092	0.073	0.190	0.220	0.127	0.127	0.495	0.415	0.099	0.625	0.477	0.404	0.308	0.470	0.317	0.471	0.478	0.319	1.000		
	Other Retail	0.141	0.141	0.128	0.244	0.002	0.069	0.052	0.094	0.102	0.132	0.296	0.181	0.216	0.216	0.328	0.659	0.206	0.229	0.326	0.540	0.889	0.516	0.789	0.224	0.472	0.759	0.267	1.000	
	Technology	0.126	0.125	0.034	0.108	-0.022	0.151	0.149	0.075	0.083	0.079	0.201	0.095	0.184	0.184	0.249	0.242	0.103	0.172	0.308	0.471	0.306	0.448	0.309	0.298	0.450	0.286	0.184	0.258	1.000
	Telecommunications	0.125	0.125	0.151	0.164	-0.007	0.068	0.171	0.122	0.150	0.163	0.267	0.185	0.205	0.205	0.380	0.357	0.212	0.294	0.434	0.588	0.423	0.587	0.421	0.400	0.573	0.427	0.366	0.393	0.308
	Other Telecommunications	0.103	0.103	0.153	0.152	-0.018	0.050	0.108	0.069	0.095	0.120	0.202	0.181	0.121	0.121	0.240	0.520	0.289	0.255	0.276	0.377	0.586	0.409	0.579	0.250	0.385	0.574	0.275	0.518	0.206

Table 53: Correlation Between CDS Spreads and Equity Volatility for the UK Region [After-Crisis Period]

CDS Spread and Equity Volatility		CDS																							
Correlation for EU Region		Automat	Banking	Banks	Beverage	Building	Cable M	Chemical	Conglom	Telecom	Consume	Electric I	Electroni	Energy	Leisure	Manufac	Metals&I	Financial	Other Fi	Oil&gas	Consume	Other Cc	Other Tc	Transpor	Utility
CDS	Automative Manufacturer	1.000																							
	Banking	0.073	1.000																						
	Banks	0.071	0.955	1.000																					
	Beverage/Bottling	0.349	0.109	0.115	1.000																				
	Building Products	0.529	0.141	0.119	0.328	1.000																			
	Cable Media	0.545	0.048	0.042	0.204	0.388	1.000																		
	Chemicals	0.407	0.113	0.085	0.384	0.472	0.260	1.000																	
	Conglomerate/Diversified Mfg	0.347	0.066	0.053	0.278	0.348	0.246	0.436	1.000																
	Telecommunications	0.419	0.133	0.126	0.195	0.371	0.205	0.233	0.220	1.000															
	Consumer Goods	0.533	0.110	0.117	0.855	0.407	0.371	0.492	0.358	0.252	1.000														
	Electric Power	0.125	-0.046	-0.047	0.096	0.083	0.039	0.104	0.107	0.161	0.140	1.000													
	Electronics	0.377	0.121	0.108	0.315	0.323	0.248	0.402	0.381	0.162	0.421	0.064	1.000												
	Energy	0.697	0.121	0.112	0.437	0.476	0.502	0.540	0.398	0.270	0.648	0.154	0.464	1.000											
	Leisure	0.173	0.216	0.213	0.096	0.147	0.138	0.127	0.121	0.110	0.133	0.002	0.125	0.179	1.000										
	Manufacturing	0.126	0.069	0.069	0.047	0.071	0.125	0.069	0.056	0.054	0.099	-0.030	0.075	0.120	0.013	1.000									
	Metals&Mining	0.315	-0.007	-0.006	0.089	0.171	0.183	0.118	0.115	0.163	0.172	0.029	0.110	0.234	0.087	0.075	1.000								
	Financials	0.131	0.145	0.135	0.070	0.170	0.082	0.114	0.073	0.100	0.081	-0.026	0.105	0.179	0.170	0.099	0.030	1.000							
	Other Financials	0.142	0.163	0.154	0.050	0.177	0.088	0.110	0.073	0.112	0.062	-0.026	0.106	0.178	0.188	0.098	0.033	0.981	1.000						
	Oil&gas	0.701	0.117	0.114	0.399	0.414	0.542	0.472	0.347	0.248	0.621	0.113	0.406	0.953	0.180	0.130	0.277	0.155	0.157	1.000					
	Consumer Services	0.327	0.138	0.085	0.212	0.303	0.240	0.362	0.226	0.187	0.313	0.052	0.216	0.354	0.411	0.045	0.134	0.114	0.120	0.323	1.000				
	Other Consumer Services	0.295	0.021	0.013	0.240	0.333	0.173	0.289	0.270	0.132	0.345	0.124	0.274	0.352	0.062	0.021	0.195	0.028	0.026	0.316	0.342	1.000			
	Other Telecommunications	0.164	0.094	0.089	0.349	0.170	0.125	0.281	0.185	0.081	0.322	0.047	0.258	0.197	0.090	0.084	-0.003	0.089	0.080	0.169	0.141	0.146	1.000		
	Transportation	0.419	0.132	0.125	0.196	0.369	0.204	0.232	0.220	0.998	0.252	0.161	0.160	0.269	0.109	0.054	0.163	0.100	0.112	0.248	0.185	0.133	0.081	1.000	
	Utility	0.135	-0.051	-0.052	0.076	0.060	0.063	0.072	0.079	0.151	0.124	0.994	0.051	0.147	0.001	-0.030	0.040	-0.035	-0.035	0.121	0.045	0.117	0.037	0.151	1.000
EQ	Automative Manufacturer	0.225	0.049	0.037	0.198	0.313	0.144	0.423	0.364	0.118	0.257	0.050	0.287	0.283	0.056	0.029	0.026	0.024	0.024	0.229	0.168	0.163	0.168	0.118	0.030
	Banks	0.302	0.023	0.021	0.279	0.327	0.162	0.443	0.396	0.138	0.365	0.088	0.314	0.366	0.052	0.036	0.005	0.024	0.018	0.299	0.240	0.233	0.128	0.137	0.057
	Beverage/Bottling	0.270	0.075	0.071	0.260	0.316	0.146	0.342	0.344	0.109	0.308	0.031	0.224	0.308	0.055	0.027	0.020	-0.025	-0.025	0.263	0.180	0.184	0.121	0.109	0.006
	Transportation	0.300	0.010	0.004	0.279	0.341	0.133	0.437	0.390	0.125	0.346	0.066	0.331	0.338	0.050	0.010	0.018	0.019	0.014	0.268	0.203	0.231	0.165	0.124	0.032
	Basic Materials	0.246	0.021	0.001	0.238	0.294	0.124	0.404	0.389	0.083	0.296	0.044	0.285	0.312	0.018	0.013	-0.010	-0.006	-0.009	0.252	0.180	0.190	0.127	0.083	0.016
	Chemicals	0.238	0.044	0.029	0.232	0.317	0.126	0.414	0.361	0.126	0.285	0.055	0.254	0.274	0.051	-0.003	0.001	-0.008	-0.008	0.215	0.212	0.188	0.156	0.125	0.028
	Consumer Goods	0.332	0.067	0.059	0.265	0.397	0.182	0.487	0.417	0.166	0.324	0.063	0.287	0.334	0.086	0.032	0.052	0.020	0.019	0.270	0.228	0.206	0.189	0.166	0.033
	Consumer Services	0.351	0.069	0.060	0.309	0.399	0.209	0.469	0.415	0.174	0.374	0.071	0.311	0.380	0.077	0.041	0.037	0.027	0.022	0.306	0.240	0.230	0.211	0.174	0.036
	Other Consumer Services	0.298	0.067	0.055	0.280	0.365	0.175	0.416	0.382	0.150	0.340	0.054	0.270	0.338	0.051	0.029	0.002	0.005	0.001	0.273	0.220	0.193	0.155	0.150	0.023
	Conglomerate/Diversified Mfg	0.271	0.071	0.058	0.243	0.361	0.147	0.413	0.382	0.140	0.300	0.042	0.266	0.310	0.063	0.021	0.015	0.004	0.004	0.253	0.204	0.183	0.150	0.140	0.016
	Eletronics	0.278	0.033	0.020	0.268	0.335	0.136	0.453	0.382	0.156	0.336	0.088	0.274	0.334	0.046	0.037	0.000	-0.007	-0.010	0.264	0.224	0.193	0.158	0.156	0.056
	Financials	0.355	0.026	0.027	0.299	0.371	0.190	0.491	0.441	0.165	0.383	0.093	0.339	0.393	0.073	0.040	0.024	0.015	0.010	0.314	0.248	0.251	0.184	0.164	0.058
	Other Financials	0.310	0.062	0.054	0.312	0.362	0.161	0.459	0.413	0.151	0.382	0.073	0.308	0.364	0.043	0.032	0.016	0.004	-0.003	0.297	0.225	0.222	0.174	0.150	0.040
	Healthcare	0.326	0.089	0.089	0.269	0.372	0.177	0.384	0.341	0.168	0.315	0.062	0.246	0.317	0.069	0.042	0.061	0.047	0.050	0.269	0.185	0.184	0.174	0.166	0.033
	Metals&Mining	0.253	0.000	-0.001	0.247	0.314	0.139	0.403	0.363	0.119	0.313	0.046	0.301	0.308	0.045	0.005	0.025	0.016	0.012	0.253	0.185	0.193	0.112	0.118	0.020
	Industrials	0.322	0.033	0.021	0.274	0.370	0.170	0.480	0.434	0.157	0.350	0.087	0.311	0.365	0.065	0.029	0.022	0.007	0.002	0.286	0.235	0.230	0.192	0.156	0.053
	Leisure	0.245	0.000	-0.014	0.213	0.300	0.127	0.405	0.371	0.115	0.258	0.086	0.264	0.289	0.018	-0.014	-0.016	-0.065	-0.069	0.221	0.193	0.224	0.170	0.115	0.061
	Cable Media	0.289	0.077	0.064	0.278	0.360	0.159	0.418	0.351	0.154	0.335	0.055	0.286	0.341	0.047	0.033	0.006	0.001	-0.001	0.275	0.226	0.190	0.150	0.154	0.024
	Oil&Gas	0.328	0.085	0.080	0.284	0.380	0.178	0.447	0.366	0.139	0.339	0.056	0.305	0.354	0.102	0.047	0.053	0.064	0.065	0.302	0.201	0.221	0.198	0.139	0.028
	Other Oil&Gas	0.283	0.083	0.073	0.267	0.346	0.146	0.400	0.331	0.128	0.318	0.049	0.269	0.322	0.081	0.031	0.021	0.042	0.043	0.277	0.182	0.201	0.160	0.128	0.024
	Technology	0.312	0.039	0.025	0.287	0.342	0.161	0.456	0.430	0.153	0.356	0.112	0.299	0.360	0.079	0.021	0.030	-0.003	-0.008	0.287	0.205	0.216	0.219	0.152	0.078
	Telecommunications	0.356	0.098	0.097	0.301	0.403	0.192	0.477	0.398	0.181	0.356	0.071	0.317	0.375	0.118	0.057	0.067	0.075	0.074	0.311	0.237	0.216	0.201	0.180	0.034
	Other Telecommunications	0.316	0.100	0.093	0.289	0.378	0.155	0.429	0.363	0.162	0.342	0.072	0.284	0.345	0.089	0.038	0.038	0.049	0.050	0.291	0.221	0.196	0.157	0.161	0.039
	Utility	0.322	0.083	0.082	0.295	0.369	0.166	0.445	0.360	0.142	0.346	0.080	0.270	0.342	0.069	0.040	0.058	0.027	0.024	0.285	0.227	0.214	0.188	0.141	0.049
	Other Utility	0.284	0.076	0.070	0.281	0.341	0.136	0.387	0.324	0.120	0.323	0.068	0.243	0.309	0.053	0.025	0.025	0.005	0.004	0.261	0.208	0.187	0.141	0.120	0.041

CDS Spread and Equity Volatility		EQUITY																								
Correlation for EU Region		Automat	Banks	Beverage	Transpor	Basic Ma	Chemical	Consume	Consume	Other Cc	Conglom	Eletronic	Financial	Other Fi	Healthca	Metals&I	Industria	Leisure	Cable M	Oil&Gas	Other Oi	Technolo	Telecom	Other Tc	Utility	Other Ut
EQ	Automative Manufacturer	1.000																								
	Banks	0.589	1.000																							
	Beverage/Bottling	0.551	0.773	1.000																						
	Transportation	0.528	0.741	0.703	1.000																					
	Basic Materials	0.554	0.853	0.783	0.767	1.000																				
	Chemicals	0.652	0.850	0.815	0.785	0.885	1.000																			
	Consumer Goods	0.663	0.684	0.701	0.851	0.694	0.740	1.000																		
	Consumer Services	0.506	0.727	0.697	0.887	0.725	0.735	0.891	1.000																	
	Other Consumer Services	0.591	0.886	0.853	0.755	0.865	0.894	0.736	0.803	1.000																
	Conglomerate/Diversified Mfg	0.800	0.808	0.875	0.715	0.810	0.886	0.778	0.714	0.891	1.000															
	Eletronics	0.642	0.862	0.805	0.769	0.886	0.901	0.738	0.753	0.911	0.870	1.000														
	Financials	0.516	0.810	0.674	0.897	0.751	0.745	0.842	0.917	0.764	0.698	0.756	1.000													
	Other Financials	0.618	0.920	0.836	0.778	0.886	0.910	0.734	0.775	0.949	0.883	0.923	0.791	1.000												
	Healthcare	0.466	0.617	0.679	0.796	0.657	0.682	0.814	0.846	0.709	0.666	0.694	0.763	0.691	1.000											
	Metals&Mining	0.570	0.845	0.786	0.791	0.858	0.870	0.678	0.698	0.841	0.801	0.850	0.733	0.879	0.654	1.000										
	Industrials	0.544	0.755	0.691	0.938	0.776	0.780	0.891	0.949	0.785	0.730	0.801	0.937	0.792	0.819	0.743	1.000									
	Leisure	0.584	0.814	0.752	0.721	0.817	0.817	0.693	0.689	0.812	0.795	0.824	0.727	0.827	0.603	0.775	0.741	1.000								
	Cable Media	0.581	0.876	0.829	0.761	0.862	0.885	0.717	0.786	0.965	0.866	0.901	0.763	0.933	0.703	0.844	0.785	0.808	1.000							
	Oil&Gas	0.557	0.689	0.699	0.893	0.700	0.728	0.835	0.864	0.732	0.702	0.721	0.832	0.733	0.826	0.734	0.862	0.660	0.734	1.000						
	Other Oil&Gas	0.617	0.808	0.823	0.769	0.811	0.855	0.714	0.734	0.863	0.835	0.843	0.715	0.865	0.723	0.867	0.735	0.751	0.855	0.837	1.000					
	Technology	0.509	0.703	0.673	0.885	0.730	0.736	0.838	0.904	0.745	0.688	0.743	0.873	0.752	0.808	0.699	0.923	0.691	0.746	0.828	0.708	1.000				
	Telecommunications	0.531	0.695	0.673	0.839	0.683	0.715	0.861	0.916	0.749	0.702	0.713	0.876	0.746	0.849	0.671	0.883	0.639	0.745	0.856	0.730	0.848	1.000			
	Other Telecommunications	0.603	0.848	0.818	0.723	0.808	0.856	0.718	0.753	0.916	0.861	0.852	0.741	0.906	0.708	0.798	0.741	0.748	0.908	0.732	0.856	0.712	0.795	1.000		
	Utility	0.535	0.684	0.683	0.864	0.703	0.734	0.863	0.897	0.747	0.707	0.742	0.855	0.737	0.850	0.700	0.892	0.659	0.749	0.887	0.759	0.839	0.897	0.738	1.000	
	Other Utility	0.596	0.824	0.837	0.744	0.835	0.874	0.719	0.744	0.897	0.863	0.872	0.725	0.889	0.720	0.837	0.749	0.752	0.891	0.749	0.887	0.707	0.743	0.897	0.810	1.000

Table 54: Correlation Between CDS Spreads and Equity Volatility for the EU Region [Full Sample Period]

CDS Spread and Equity Volatility		CDS																							
Correlation for EU Region		Automative Mar	Banking	Banks	Beverage/Bott	Building Produ	Cable Media	Chemicals	Conglomerate/	Telecommunica	Consumer Goo	Electric Power	Electronics	Energy	Leisure	Manufacturing	Metals&Mining	Financials	Other Financia	Oil&gas	Consumer Serv	Other Consum	Other Telecom	Transportation	Utility
CDS	Automative Manufacturer	1.000																							
	Banking	0.353	1.000																						
	Banks	0.404	0.575	1.000																					
	Beverage/Bottling	0.609	0.418	0.513	1.000																				
	Building Products	0.693	0.406	0.353	0.576	1.000																			
	Cable Media	0.567	0.266	0.250	0.398	0.566	1.000																		
	Chemicals	0.603	0.412	0.376	0.542	0.634	0.509	1.000																	
	Conglomerate/Diversified Mfg	0.456	0.245	0.243	0.379	0.378	0.428	0.380	1.000																
	Telecommunications	0.228	0.335	0.351	0.235	0.238	0.163	0.221	0.131	1.000															
	Consumer Goods	0.654	0.433	0.538	0.950	0.598	0.443	0.576	0.415	0.262	1.000														
	Electric Power	0.248	0.156	0.184	0.211	0.184	0.158	0.159	0.123	0.326	0.246	1.000													
	Electronics	0.508	0.270	0.260	0.498	0.494	0.440	0.388	0.369	0.109	0.562	0.145	1.000												
	Energy	0.727	0.454	0.496	0.666	0.663	0.524	0.575	0.391	0.212	0.714	0.305	0.528	1.000											
	Leisure	0.390	0.216	0.186	0.345	0.400	0.367	0.386	0.349	0.196	0.376	0.077	0.295	0.394	1.000										
	Manufacturing	0.794	0.495	0.477	0.697	0.809	0.616	0.733	0.570	0.299	0.752	0.243	0.649	0.746	0.510	1.000									
	Metals&Mining	0.486	0.303	0.327	0.457	0.499	0.306	0.439	0.260	0.176	0.474	0.191	0.359	0.441	0.279	0.560	1.000								
	Financials	0.480	0.524	0.339	0.465	0.576	0.428	0.483	0.336	0.280	0.484	0.171	0.369	0.525	0.381	0.663	0.371	1.000							
	Other Financials	0.441	0.500	0.326	0.427	0.542	0.393	0.450	0.315	0.274	0.441	0.161	0.337	0.479	0.357	0.625	0.368	0.980	1.000						
	Oil&gas	0.689	0.425	0.479	0.662	0.620	0.490	0.564	0.380	0.195	0.708	0.256	0.484	0.934	0.374	0.714	0.453	0.474	0.436	1.000					
	Consumer Services	0.267	0.301	0.152	0.267	0.352	0.232	0.345	0.179	0.139	0.289	0.064	0.174	0.262	0.231	0.382	0.262	0.347	0.341	0.240	1.000				
	Other Consumer Services	0.305	0.205	0.218	0.355	0.431	0.248	0.260	0.236	0.086	0.393	0.148	0.296	0.336	0.161	0.387	0.400	0.246	0.224	0.333	0.315	1.000			
	Other Telecommunications	0.401	0.287	0.290	0.479	0.429	0.415	0.486	0.284	0.109	0.521	0.128	0.228	0.470	0.359	0.500	0.283	0.423	0.386	0.467	0.227	0.258	1.000		
	Transportation	0.228	0.334	0.351	0.236	0.232	0.160	0.220	0.129	0.997	0.263	0.327	0.106	0.211	0.193	0.299	0.176	0.279	0.273	0.195	0.137	0.087	0.109	1.000	
	Utility	0.197	0.118	0.139	0.154	0.146	0.120	0.115	0.093	0.315	0.185	0.995	0.108	0.243	0.055	0.189	0.164	0.135	0.128	0.195	0.046	0.140	0.094	0.314	1.000
EQ	Automative Manufacturer	0.338	0.148	0.147	0.264	0.403	0.344	0.420	0.353	0.098	0.298	0.039	0.303	0.310	0.219	0.439	0.334	0.209	0.208	0.309	0.136	0.128	0.296	0.097	0.022
	Banks	0.503	0.252	0.316	0.423	0.428	0.401	0.391	0.370	0.132	0.450	0.079	0.357	0.394	0.244	0.479	0.336	0.296	0.290	0.405	0.206	0.197	0.265	0.130	0.048
	Beverage/Bottling	0.443	0.186	0.219	0.353	0.409	0.367	0.306	0.357	0.075	0.353	0.020	0.259	0.355	0.207	0.378	0.340	0.219	0.214	0.383	0.132	0.156	0.219	0.075	-0.003
	Transportation	0.532	0.188	0.230	0.419	0.433	0.403	0.370	0.352	0.107	0.440	0.055	0.356	0.372	0.228	0.469	0.382	0.250	0.237	0.394	0.151	0.185	0.287	0.104	0.025
	Basic Materials	0.461	0.214	0.199	0.371	0.395	0.349	0.350	0.375	0.066	0.374	0.009	0.304	0.337	0.193	0.417	0.326	0.251	0.248	0.362	0.143	0.134	0.223	0.065	-0.018
	Chemicals	0.431	0.228	0.237	0.352	0.409	0.366	0.368	0.341	0.113	0.357	0.023	0.261	0.298	0.220	0.433	0.383	0.259	0.258	0.323	0.173	0.135	0.255	0.111	0.001
	Consumer Goods	0.524	0.194	0.216	0.345	0.497	0.442	0.466	0.396	0.120	0.368	0.051	0.295	0.368	0.272	0.513	0.387	0.291	0.286	0.382	0.180	0.168	0.325	0.119	0.027
	Consumer Services	0.568	0.257	0.288	0.437	0.501	0.446	0.418	0.364	0.128	0.457	0.070	0.317	0.440	0.292	0.513	0.383	0.352	0.345	0.453	0.195	0.196	0.356	0.128	0.038
	Other Consumer Services	0.501	0.249	0.267	0.408	0.454	0.387	0.363	0.348	0.116	0.416	0.047	0.283	0.382	0.255	0.454	0.361	0.313	0.310	0.403	0.183	0.158	0.286	0.115	0.020
	Conglomerate/Diversified Mfg	0.445	0.198	0.206	0.329	0.455	0.386	0.382	0.373	0.113	0.344	0.027	0.289	0.347	0.241	0.456	0.382	0.260	0.259	0.365	0.162	0.150	0.273	0.112	0.007
	Eletronics	0.501	0.257	0.276	0.429	0.445	0.401	0.407	0.346	0.157	0.432	0.075	0.291	0.377	0.242	0.486	0.366	0.318	0.313	0.396	0.186	0.128	0.305	0.157	0.047
	Financials	0.589	0.235	0.312	0.436	0.479	0.454	0.437	0.399	0.143	0.463	0.084	0.362	0.436	0.292	0.532	0.370	0.326	0.315	0.442	0.201	0.207	0.322	0.140	0.051
	Other Financials	0.535	0.264	0.304	0.467	0.458	0.401	0.421	0.381	0.131	0.474	0.058	0.329	0.415	0.256	0.489	0.400	0.299	0.292	0.434	0.190	0.184	0.300	0.130	0.027
	Healthcare	0.517	0.202	0.249	0.386	0.433	0.381	0.341	0.306	0.104	0.399	0.058	0.261	0.377	0.218	0.421	0.365	0.281	0.277	0.403	0.151	0.168	0.280	0.101	0.032
	Metals&Mining	0.438	0.170	0.223	0.374	0.386	0.366	0.344	0.335	0.114	0.393	0.047	0.337	0.318	0.166	0.398	0.385	0.202	0.197	0.341	0.128	0.150	0.202	0.112	0.023
	Industrials	0.568	0.238	0.261	0.403	0.482	0.453	0.420	0.393	0.144	0.427	0.073	0.323	0.407	0.300	0.522	0.378	0.358	0.350	0.419	0.191	0.172	0.340	0.143	0.043
	Leisure	0.439	0.168	0.173	0.275	0.407	0.402	0.357	0.357	0.107	0.297	0.050	0.277	0.319	0.215	0.410	0.315	0.247	0.240	0.331	0.161	0.177	0.276	0.106	0.028
	Cable Media	0.508	0.265	0.280	0.427	0.462	0.363	0.368	0.314	0.130	0.435	0.056	0.309	0.403	0.250	0.464	0.390	0.341	0.338	0.423	0.199	0.163	0.290	0.130	0.028
	Oil&Gas	0.537	0.217	0.252	0.436	0.460	0.416	0.402	0.342	0.106	0.457	0.072	0.333	0.405	0.250	0.485	0.399	0.273	0.262	0.437	0.148	0.201	0.352	0.105	0.043
	Other Oil&Gas	0.477	0.231	0.246	0.415	0.426	0.373	0.364	0.323	0.100	0.426	0.058	0.303	0.364	0.193	0.431	0.413	0.247	0.240	0.401	0.129	0.186	0.294	0.100	0.033
	Technology	0.547	0.250	0.260	0.428	0.448	0.433	0.406	0.398	0.126	0.449	0.084	0.306	0.424	0.313	0.497	0.336	0.347	0.340	0.438	0.157	0.166	0.356	0.125	0.054
	Telecommunications	0.580	0.254	0.312	0.439	0.511	0.427	0.447	0.351	0.122	0.461	0.088	0.334	0.464	0.290	0.537	0.429	0.359	0.353	0.489	0.186	0.192	0.343	0.121	0.053
	Other Telecommunications	0.537	0.269	0.304	0.444	0.482	0.379	0.407	0.337	0.122	0.454	0.087	0.316	0.436	0.257	0.495	0.422	0.335	0.332	0.472	0.184	0.181	0.304	0.120	0.055
	Utility	0.558	0.230	0.285	0.424	0.479	0.411	0.418	0.327	0.126	0.438	0.081	0.298	0.409	0.255	0.501	0.426	0.339	0.335	0.438	0.198	0.181	0.307	0.124	0.052
	Other Utility	0.515	0.234	0.269	0.420	0.454	0.367	0.366	0.309	0.120	0.416	0.065	0.279	0.369	0.215	0.452	0.421	0.314	0.313	0.404	0.183	0.155	0.256	0.119	0.041

CDS Spread and Equity Volatility		EQUITY																								
Correlation for EU Region		Automative Ma	Banks	Beverage/Bott	Transportation	Basic Material	Chemicals	Consumer Goo	Consumer Serv	Other Consum	Conglomerate/	Eletronics	Financials	Other Financia	Healthcare	Metals&Mining	Industrials	Leisure	Cable Media	Oil&Gas	Other Oil&Gas	Technology	Telecommunica	Other Telecom	Utility	Other Utility
EQ	Automative Manufacturer	1.000																								
	Banks	0.530	1.000																							
	Beverage/Bottling	0.519	0.796	1.000																						
	Transportation	0.464	0.701	0.730	1.000																					
	Basic Materials	0.484	0.836	0.819	0.739	1.000																				
	Chemicals	0.609	0.839	0.851	0.754	0.873	1.000																			
	Consumer Goods	0.644	0.643	0.694	0.837	0.664	0.719	1.000																		
	Consumer Services	0.450	0.678	0.716	0.895	0.701	0.715	0.878	1.000																	
	Other Consumer Services	0.539	0.866	0.888	0.737	0.866	0.900	0.706	0.775	1.000																
	Conglomerate/Diversified Mfg	0.797	0.783	0.872	0.683	0.789	0.880	0.754	0.679	0.878	1.000															
	Eletronics	0.597	0.832	0.828	0.729	0.866	0.896	0.707	0.717	0.911	0.861	1.000														
	Financials	0.453	0.778	0.689	0.888	0.718	0.712	0.819	0.901	0.723	0.657	0.702	1.000													
	Other Financials	0.569	0.908	0.871	0.753	0.886	0.911	0.701	0.734	0.942	0.870	0.919	0.751	1.000												
	Healthcare	0.436	0.618	0.720	0.834	0.692	0.709	0.814	0.873	0.734	0.664	0.719	0.777	0.709	1.000											
	Metals&Mining	0.518	0.841	0.826	0.769	0.874	0.883	0.657	0.683	0.855	0.796	0.852	0.708	0.895	0.680	1.000										
	Industrials	0.487	0.702	0.708	0.935	0.738	0.748	0.884	0.953	0.757	0.699	0.757	0.920	0.749	0.857	0.718	1.000									
	Leisure	0.544	0.809	0.785	0.674	0.801	0.802	0.669	0.654	0.810	0.790	0.802	0.687	0.813	0.620	0.769	0.692	1.000								
	Cable Media	0.529	0.863	0.871	0.746	0.867	0.894	0.687	0.758	0.964	0.858	0.904	0.727	0.932	0.729	0.867	0.757	0.805	1.000							
	Oil&Gas	0.532	0.665	0.739	0.926	0.712	0.743	0.851	0.893	0.738	0.702	0.727	0.839	0.737	0.875	0.728	0.893	0.662	0.744	1.000						
	Other Oil&Gas	0.593	0.802	0.873	0.786	0.839	0.895	0.721	0.750	0.893	0.851	0.871	0.711	0.895	0.769	0.880	0.745	0.779	0.891	0.841	1.000					
	Technology	0.449	0.654	0.684	0.878	0.692	0.698	0.814	0.903	0.715	0.647	0.695	0.852	0.713	0.830	0.673	0.914	0.628	0.716	0.861	0.721	1.000				
	Telecommunications	0.507	0.669	0.707	0.861	0.683	0.721	0.860	0.914	0.734	0.693	0.704	0.874	0.731	0.875	0.674	0.895	0.631	0.734	0.886	0.753	0.858	1.000			
	Other Telecommunications	0.574	0.840	0.860	0.732	0.818	0.876	0.707	0.736	0.914	0.860	0.864	0.729	0.913	0.735	0.817	0.734	0.760	0.914	0.748	0.886	0.706	0.789	1.000		
	Utility	0.497	0.648	0.701	0.869	0.688	0.728	0.850	0.901	0.738	0.687	0.726	0.840	0.716	0.885	0.694	0.896	0.633	0.744	0.911	0.779	0.834	0.912	0.741	1.000	
	Other Utility	0.552	0.802	0.858	0.736	0.831	0.884	0.699	0.736	0.901	0.850	0.873	0.702	0.891	0.758	0.848	0.735	0.741	0.906	0.766	0.911	0.691	0.756	0.912	0.809	1.000

Table 55: Correlation Between CDS Spreads and Equity Volatility for the EU Region [Crisis Period]

CDS Spread and Equity Volatility		CDS																							
Correlation for EU Region		Automative	Banking	Banks	Beverage/B	Building Pro	Cable Media	Chemicals	Conglomerat	Telecommun	Consumer G	Electric Pow	Electronics	Energy	Leisure	Manufacturi	Metals&Min	Financials	Other Finan	Oil&gas	Consumer S	Other Consu	Other Telec	Transportati	Utility
	Automative Manufacturer	1.000																							
	Banking	0.036	1.000																						
	Banks	0.036	1.000	1.000																					
	Beverage/Bottling	0.250	0.035	0.035	1.000																				
	Building Products	0.471	0.099	0.099	0.167	1.000																			
	Cable Media	0.550	0.002	0.002	0.153	0.359	1.000																		
	Chemicals	0.346	0.114	0.114	0.269	0.308	0.239	1.000																	
	Conglomerate/Diversified M	0.336	0.073	0.073	0.196	0.324	0.244	0.456	1.000																
	Telecommunications	0.570	0.090	0.090	0.166	0.497	0.260	0.252	0.365	1.000															
	Consumer Goods	0.503	0.041	0.041	0.799	0.241	0.394	0.374	0.260	0.235	1.000														
	Electric Power	0.072	-0.098	-0.098	0.020	0.006	0.005	0.022	0.078	0.011	0.045	1.000													
CDS	Electronics	0.335	0.125	0.125	0.161	0.151	0.211	0.391	0.369	0.222	0.244	-0.025	1.000												
	Energy	0.724	0.080	0.080	0.280	0.321	0.571	0.465	0.376	0.327	0.578	0.024	0.375	1.000											
	Leisure	0.142	0.209	0.209	0.039	0.097	0.103	0.086	0.078	0.103	0.081	-0.015	0.098	0.155	1.000										
	Manufacturing	0.109	0.026	0.026	0.004	0.034	0.101	0.081	0.060	0.053	0.080	-0.052	0.059	0.128	-0.014	1.000									
	Metals&Mining	0.317	-0.065	-0.065	0.032	0.143	0.166	0.136	0.171	0.212	0.156	0.009	0.096	0.272	0.064	0.044	1.000								
	Financials	0.117	0.093	0.093	0.028	0.157	0.049	0.164	0.101	0.105	0.052	-0.050	0.115	0.207	0.152	0.069	-0.006	1.000							
	Other Financials	0.135	0.114	0.114	0.010	0.174	0.059	0.171	0.110	0.127	0.034	-0.048	0.127	0.217	0.173	0.068	-0.003	0.981	1.000						
	Oil&gas	0.717	0.065	0.065	0.245	0.277	0.593	0.411	0.331	0.296	0.560	0.017	0.343	0.982	0.150	0.122	0.293	0.152	0.162	1.000					
	Consumer Services	0.514	0.175	0.175	0.181	0.268	0.398	0.336	0.280	0.293	0.370	0.024	0.284	0.525	0.811	0.059	0.219	0.178	0.199	0.502	1.000				
	Other Consumer Services	0.409	-0.016	-0.016	0.129	0.225	0.244	0.247	0.274	0.234	0.273	0.092	0.197	0.380	0.062	0.017	0.315	0.035	0.042	0.355	0.367	1.000			
	Other Telecommunications	0.087	0.047	0.047	0.286	0.037	0.048	0.174	0.140	0.068	0.214	0.006	0.308	0.049	0.033	0.061	-0.053	0.054	0.048	0.029	0.095	0.072	1.000		
	Transportation	0.570	0.090	0.090	0.166	0.497	0.260	0.252	0.366	1.000	0.235	0.011	0.222	0.327	0.103	0.053	0.212	0.105	0.127	0.296	0.293	0.234	0.068	1.000	
	Utility	0.110	-0.098	-0.098	0.028	0.000	0.049	0.019	0.062	0.010	0.073	0.995	-0.007	0.071	-0.012	-0.051	0.026	-0.061	-0.058	0.073	0.045	0.104	0.009	0.011	1.000
	Automative Manufacturer	0.272	0.231	0.231	0.208	0.261	0.151	0.286	0.312	0.234	0.194	0.062	0.259	0.210	0.021	0.085	-0.055	0.118	0.130	0.157	0.169	0.089	0.116	0.234	0.049
	Banks	0.234	0.097	0.097	0.187	0.223	0.160	0.333	0.303	0.155	0.226	0.077	0.173	0.245	0.032	0.128	-0.013	0.111	0.106	0.195	0.186	0.098	0.065	0.155	0.064
	Beverage/Bottling	0.195	0.192	0.192	0.201	0.207	0.105	0.221	0.160	0.167	0.215	0.012	0.084	0.159	0.037	0.075	-0.023	-0.032	-0.023	0.118	0.197	0.077	0.075	0.167	-0.001
	Transportation	0.234	0.171	0.171	0.233	0.303	0.109	0.371	0.349	0.196	0.193	0.048	0.266	0.189	0.055	0.106	0.015	0.173	0.173	0.116	0.191	0.101	0.184	0.196	0.023
	Basic Materials	0.130	0.155	0.155	0.152	0.181	0.120	0.260	0.256	0.107	0.138	0.054	0.190	0.164	-0.022	0.108	-0.045	0.073	0.074	0.116	0.090	0.082	0.130	0.106	0.045
	Chemicals	0.140	0.200	0.200	0.163	0.234	0.104	0.256	0.228	0.164	0.131	0.069	0.171	0.102	0.052	0.053	-0.047	0.058	0.067	0.052	0.156	0.074	0.175	0.164	0.052
	Consumer Goods	0.289	0.219	0.219	0.249	0.320	0.156	0.352	0.338	0.284	0.244	0.051	0.220	0.202	0.084	0.085	0.051	0.074	0.081	0.136	0.245	0.099	0.146	0.284	0.028
	Consumer Services	0.280	0.178	0.178	0.240	0.314	0.219	0.382	0.399	0.265	0.241	0.039	0.246	0.215	0.056	0.109	0.034	0.078	0.076	0.147	0.232	0.119	0.171	0.265	0.018
	Other Consumer Services	0.212	0.177	0.177	0.201	0.284	0.181	0.305	0.313	0.211	0.206	0.024	0.181	0.180	0.019	0.094	-0.034	0.042	0.042	0.122	0.177	0.063	0.105	0.211	0.005
	Conglomerate/Diversified M	0.206	0.225	0.225	0.207	0.279	0.111	0.267	0.250	0.207	0.207	0.025	0.152	0.161	0.046	0.070	-0.041	0.047	0.053	0.111	0.184	0.049	0.100	0.207	0.008
	Eletronics	0.185	0.151	0.151	0.155	0.233	0.104	0.324	0.315	0.179	0.162	0.089	0.175	0.163	0.024	0.155	-0.036	0.040	0.043	0.100	0.169	0.132	0.111	0.179	0.070
	Financials	0.303	0.134	0.134	0.241	0.287	0.202	0.407	0.425	0.234	0.273	0.085	0.262	0.259	0.061	0.140	0.031	0.092	0.090	0.190	0.243	0.145	0.164	0.234	0.066
EQ	Other Financials	0.219	0.181	0.181	0.220	0.282	0.152	0.320	0.350	0.198	0.239	0.064	0.215	0.202	0.000	0.109	-0.017	0.055	0.050	0.145	0.167	0.096	0.149	0.198	0.046
	Healthcare	0.256	0.174	0.174	0.168	0.328	0.148	0.350	0.324	0.298	0.157	0.049	0.167	0.173	0.050	0.075	0.034	0.084	0.097	0.112	0.183	0.085	0.127	0.297	0.027
	Metals&Mining	0.175	0.100	0.100	0.165	0.265	0.132	0.302	0.267	0.132	0.152	-0.003	0.168	0.202	0.070	0.072	0.003	0.137	0.135	0.150	0.203	0.058	0.099	0.133	-0.012
	Industrials	0.245	0.183	0.183	0.230	0.296	0.168	0.401	0.416	0.212	0.235	0.083	0.251	0.215	0.041	0.133	0.035	0.077	0.074	0.141	0.205	0.157	0.183	0.212	0.060
	Leisure	0.163	0.157	0.157	0.249	0.190	0.092	0.222	0.214	0.141	0.164	0.131	0.174	0.102	-0.033	0.050	-0.039	-0.085	-0.084	0.059	0.073	0.084	0.214	0.141	0.124
	Cable Media	0.186	0.199	0.199	0.170	0.263	0.166	0.299	0.273	0.203	0.156	0.014	0.182	0.154	0.012	0.105	-0.037	0.026	0.030	0.099	0.151	0.028	0.090	0.203	-0.004
	Oil&Gas	0.250	0.205	0.205	0.153	0.313	0.147	0.377	0.286	0.203	0.121	0.003	0.196	0.207	0.123	0.104	0.032	0.161	0.173	0.151	0.233	0.087	0.124	0.203	-0.010
	Other Oil&Gas	0.196	0.192	0.192	0.136	0.266	0.103	0.287	0.197	0.178	0.112	0.004	0.137	0.179	0.110	0.079	-0.049	0.121	0.131	0.130	0.209	0.041	0.090	0.178	-0.005
	Technology	0.230	0.156	0.156	0.211	0.246	0.136	0.355	0.388	0.240	0.199	0.158	0.245	0.169	0.055	0.096	0.052	0.027	0.023	0.104	0.193	0.126	0.227	0.240	0.136
	Telecommunications	0.265	0.190	0.190	0.194	0.293	0.163	0.383	0.387	0.283	0.179	0.023	0.236	0.182	0.126	0.104	0.050	0.140	0.147	0.114	0.270	0.111	0.139	0.283	-0.002
	Other Telecommunications	0.212	0.185	0.185	0.158	0.267	0.115	0.301	0.292	0.226	0.149	0.027	0.169	0.140	0.083	0.073	-0.008	0.095	0.103	0.084	0.204	0.060	0.074	0.226	0.006
	Utility	0.225	0.224	0.224	0.213	0.263	0.133	0.314	0.302	0.184	0.174	0.058	0.147	0.152	0.049	0.101	0.037	0.065	0.069	0.095	0.175	0.107	0.161	0.184	0.037
	Other Utility	0.164	0.203	0.203	0.173	0.213	0.091	0.212	0.194	0.116	0.138	0.048	0.089	0.117	0.035	0.073	-0.045	0.020	0.025	0.073	0.132	0.059	0.093	0.116	0.032

CDS Spread and Equity Volatility		EQUITY																								
Correlation for EU Region		Automative	Banks	Beverage/B	Transportati	Basic Mater	Chemicals	Consumer G	Consumer S	Other Consu	Conglomerat	Eletronics	Financials	Other Finan	Healthcare	Metals&Min	Industrials	Leisure	Cable Media	Oil&Gas	Other Oil&C	Technology	Telecommun	Other Telec	Utility	Other Utility
	Automative Manufacturer	1.000																								
	Banks	0.727	1.000																							
	Beverage/Bottling	0.560	0.573	1.000																						
	Transportation	0.566	0.577	0.398	1.000																					
	Basic Materials	0.703	0.748	0.522	0.484	1.000																				
	Chemicals	0.739	0.717	0.589	0.578	0.768	1.000																			
	Consumer Goods	0.606	0.574	0.562	0.802	0.520	0.582	1.000																		
	Consumer Services	0.579	0.658	0.490	0.802	0.559	0.573	0.878	1.000																	
	Other Consumer Services	0.741	0.861	0.684	0.601	0.762	0.797	0.661	0.744	1.000																
	Conglomerate/Diversified M	0.780	0.752	0.830	0.568	0.730	0.822	0.710	0.642	0.878	1.000															
	Eletronics	0.727	0.826	0.624	0.576	0.802	0.774	0.620	0.664	0.864	0.805	1.000														
	Financials	0.566	0.713	0.424	0.799	0.548	0.542	0.807	0.914	0.696	0.586	0.658	1.000													
EQ	Other Financials	0.745	0.884	0.639	0.616	0.766	0.810	0.646	0.725	0.936	0.845	0.861	0.717	1.000												
	Healthcare	0.483	0.487	0.440	0.691	0.420	0.497	0.778	0.759	0.559	0.562	0.526	0.696	0.547	1.000											
	Metals&Mining	0.603	0.693	0.496	0.573	0.561	0.618	0.458	0.493	0.665	0.633	0.627	0.512	0.685	0.428	1.000										
	Industrials	0.577	0.661	0.442	0.843	0.596	0.589	0.853	0.928	0.692	0.607	0.691	0.922	0.720	0.734	0.499	1.000									
	Leisure	0.528	0.587	0.490	0.415	0.571	0.585	0.479	0.510	0.662	0.623	0.625	0.490	0.681	0.405	0.450	0.515	1.000								
	Cable Media	0.703	0.814	0.615	0.582	0.726	0.750	0.618	0.713	0.943	0.805	0.814	0.666	0.881	0.543	0.620	0.674	0.634	1.000							
	Oil&Gas	0.511	0.573	0.417	0.751	0.435	0.479	0.680	0.705	0.566	0.522	0.506	0.720	0.554	0.614	0.579	0.700	0.396	0.548	1.000						
	Other Oil&Gas	0.616	0.720	0.566	0.553	0.584	0.621	0.516	0.542	0.705	0.680	0.654	0.542	0.690	0.481	0.747	0.525	0.474	0.663	0.742	1.000					
	Technology	0.515	0.572	0.416	0.737	0.523	0.549	0.804	0.853	0.638	0.572	0.610	0.810	0.648	0.724	0.425	0.863	0.519	0.625	0.589	0.448	1.000				
	Telecommunications	0.523	0.618	0.443	0.765	0.518	0.555	0.819	0.893	0.673	0.596	0.604	0.864	0.671	0.745	0.490	0.861	0.466	0.656	0.713	0.552	0.781	1.000			
	Other Telecommunications	0.694	0.820	0.625	0.576	0.721	0.768	0.625	0.686	0.893	0.819	0.791	0.658	0.867	0.555	0.661	0.653	0.607	0.860	0.576	0.713	0.593	0.733	1.000		
	Utility	0.490	0.576	0.440	0.753	0.491	0.519	0.821	0.836	0.626	0.577	0.582	0.825	0.622	0.685	0.451	0.830	0.445	0.602	0.726	0.537	0.724	0.824	0.616	1.000	
	Other Utility	0.660	0.785	0.667	0.537	0.723	0.738	0.597	0.613	0.836	0.821	0.778	0.591	0.813	0.484	0.637	0.596	0.584	0.779	0.535	0.726	0.512	0.591	0.824	0.672	1.000

Table 56: Correlation Between CDS Spreads and Equity Volatility for the EU Region [After-Crisis Period]

CDS Spread and Equity Volatility		CDS																		
Correlation for Japan Region		Automotive	Banks	Banking	Chemicals	Electric Po	Electronics	Industrials	Manufactu	Metals&M	Financials	Railroads	Other Reta	Consumer S	Other Cons	Telecomm	Other Tel	Transport	Other Tra	Utility
	Automotive manufacturer	1.000																		
	Banks	0.098	1.000																	
	Banking	0.097	0.998	1.000																
	Chemicals	0.176	0.152	0.151	1.000															
	Electric Power	0.118	0.374	0.375	0.242	1.000														
	Electronics	0.157	0.185	0.183	0.148	0.152	1.000													
	Industrials	0.055	0.023	0.021	0.173	0.057	0.189	1.000												
	Manufacturing	0.348	0.326	0.327	0.249	0.362	0.674	0.380	1.000											
	Metals&Mining	0.169	0.418	0.416	0.231	0.362	0.264	0.063	0.459	1.000										
CDS	Financials	0.188	0.427	0.425	0.167	0.393	0.302	0.061	0.504	0.583	1.000									
	Railroads	0.076	0.260	0.260	0.138	0.288	0.195	0.097	0.336	0.358	0.341	1.000								
	Other Retail	0.141	0.097	0.096	0.247	0.085	0.148	0.218	0.175	0.229	0.124	0.140	1.000							
	Consumer Services	0.065	0.026	0.026	0.194	0.091	0.242	0.199	0.214	0.170	0.165	0.195	0.546	1.000						
	Other Consumer Services	0.137	0.085	0.085	0.262	0.075	0.155	0.222	0.215	0.213	0.153	0.184	0.909	0.620	1.000					
	Telecommunications	0.404	0.165	0.163	0.225	0.182	0.129	0.230	0.321	0.156	0.238	0.126	0.061	0.070	0.081	1.000				
	Other Telecommunication	0.404	0.165	0.163	0.225	0.181	0.129	0.230	0.320	0.156	0.238	0.126	0.061	0.070	0.082	1.000	1.000			
	Transportation	0.142	0.385	0.385	0.221	0.233	0.242	0.132	0.349	0.370	0.397	0.479	0.204	0.213	0.231	0.210	0.210	1.000		
	Other Transportation	0.080	0.404	0.402	0.155	0.177	0.233	0.116	0.329	0.350	0.384	0.276	0.091	0.061	0.072	0.155	0.155	0.821	1.000	
	Utility	0.117	0.384	0.379	0.339	0.787	0.200	0.097	0.377	0.383	0.408	0.299	0.096	0.133	0.089	0.193	0.193	0.257	0.205	1.000
	Automotive manufacturer	-0.042	0.322	0.322	0.090	0.251	0.080	-0.006	0.238	0.406	0.358	0.231	-0.024	-0.003	-0.030	0.105	0.105	0.288	0.273	0.261
	Banks	-0.012	0.305	0.304	0.112	0.198	0.040	0.033	0.193	0.351	0.300	0.225	-0.037	-0.004	-0.028	0.094	0.095	0.304	0.290	0.202
	Basic Materials	0.003	0.349	0.347	0.080	0.273	0.081	-0.009	0.269	0.465	0.394	0.280	0.007	0.005	-0.003	0.115	0.116	0.333	0.342	0.277
	Chemicals	-0.010	0.324	0.324	0.109	0.249	0.078	0.008	0.241	0.386	0.350	0.271	-0.020	0.015	-0.010	0.101	0.101	0.289	0.273	0.263
	Consumer Goods	-0.013	0.347	0.346	0.076	0.266	0.051	-0.029	0.229	0.455	0.391	0.261	0.005	-0.014	-0.009	0.112	0.112	0.328	0.336	0.252
	Consumer Services	0.000	0.268	0.268	0.126	0.187	0.010	0.010	0.144	0.277	0.241	0.209	0.001	0.032	0.011	0.075	0.075	0.232	0.208	0.168
	Other Consumer Services	0.030	0.284	0.282	0.110	0.204	0.018	-0.005	0.176	0.356	0.279	0.233	0.037	0.026	0.029	0.109	0.109	0.273	0.252	0.168
	Electronics	-0.031	0.336	0.336	0.114	0.250	0.055	-0.025	0.209	0.386	0.344	0.226	-0.012	0.003	-0.012	0.076	0.076	0.261	0.265	0.253
	Financials	-0.010	0.343	0.341	0.075	0.249	0.039	-0.005	0.218	0.418	0.360	0.287	-0.004	-0.026	-0.016	0.110	0.110	0.340	0.347	0.229
	Healthcare	0.068	0.309	0.308	0.166	0.229	0.040	0.004	0.223	0.412	0.360	0.260	0.074	0.051	0.059	0.150	0.151	0.335	0.309	0.192
	Machinery	-0.027	0.367	0.366	0.087	0.278	0.053	-0.018	0.234	0.429	0.385	0.247	-0.010	0.000	-0.016	0.081	0.081	0.268	0.278	0.285
EQ	Metals&Mining	-0.008	0.338	0.336	0.106	0.232	0.066	-0.001	0.236	0.395	0.374	0.260	-0.009	0.009	-0.001	0.096	0.096	0.283	0.269	0.260
	Transportation	-0.017	0.330	0.330	0.092	0.237	0.037	0.003	0.220	0.392	0.358	0.256	-0.039	-0.010	-0.036	0.080	0.080	0.280	0.284	0.230
	Industrials	-0.032	0.363	0.363	0.097	0.271	0.049	-0.023	0.229	0.431	0.383	0.247	-0.019	-0.015	-0.025	0.079	0.079	0.267	0.275	0.274
	Other Industrials	-0.007	0.367	0.365	0.079	0.283	0.061	-0.041	0.253	0.486	0.411	0.263	0.007	-0.012	-0.010	0.100	0.101	0.319	0.346	0.269
	Oil&Gas	0.016	0.279	0.276	0.077	0.255	0.063	-0.048	0.239	0.420	0.409	0.245	-0.012	-0.044	-0.028	0.113	0.113	0.286	0.288	0.256
	Other Retail	-0.013	0.299	0.298	0.129	0.202	0.023	0.000	0.164	0.313	0.282	0.247	-0.020	0.015	-0.011	0.075	0.075	0.269	0.252	0.187
	Technology	-0.004	0.348	0.346	0.077	0.261	0.047	-0.046	0.233	0.483	0.405	0.279	0.003	-0.013	-0.014	0.096	0.097	0.317	0.342	0.258
	Telecommunications	0.007	0.275	0.275	0.147	0.199	0.034	-0.021	0.170	0.312	0.266	0.196	0.022	0.046	0.039	0.072	0.072	0.242	0.212	0.182
	Other Telecommunication	0.036	0.273	0.272	0.114	0.188	0.028	-0.029	0.163	0.356	0.291	0.217	0.027	0.010	0.022	0.099	0.099	0.281	0.264	0.162
	Utility	-0.054	0.150	0.148	0.053	0.091	0.000	0.003	0.053	0.098	0.090	0.087	0.001	0.004	0.002	0.074	0.074	0.137	0.121	0.088
	Other Utility	-0.037	0.175	0.172	0.038	0.100	0.005	-0.018	0.050	0.133	0.114	0.100	0.014	-0.010	-0.003	0.074	0.074	0.161	0.143	0.086

CDS Spread and Equity Volatility		EQ																					
Correlation for Japan Region		Automotiv	Banks	Basic Mat	Chemicals	Consumer	Consumer	Other Con	Electronics	Financials	Healthcare	Machinery	Metals&M	Transport	Industrials	Other Ind	Oil&Gas	Other Ret	Technolog	Telecomm	Other Tel	Utility	Other Utilit
	Automotive manufacturer	1.000																					
	Banks	0.792	1.000																				
	Basic Materials	0.667	0.628	1.000																			
	Chemicals	0.866	0.794	0.709	1.000																		
	Consumer Goods	0.696	0.624	0.929	0.690	1.000																	
	Consumer Services	0.723	0.749	0.579	0.830	0.594	1.000																
	Other Consumer Services	0.546	0.560	0.813	0.609	0.833	0.656	1.000															
	Electronics	0.880	0.781	0.693	0.933	0.693	0.805	0.597	1.000														
	Financials	0.639	0.689	0.858	0.631	0.871	0.548	0.775	0.634	1.000													
	Healthcare	0.605	0.582	0.821	0.622	0.846	0.619	0.875	0.628	0.771	1.000												
	Machinery	0.885	0.795	0.704	0.921	0.697	0.764	0.581	0.935	0.653	0.622	1.000											
EQ	Metals&Mining	0.831	0.793	0.684	0.875	0.654	0.731	0.556	0.867	0.639	0.595	0.878	1.000										
	Transportation	0.832	0.813	0.680	0.872	0.672	0.812	0.590	0.865	0.650	0.628	0.877	0.845	1.000									
	Industrials	0.894	0.821	0.712	0.943	0.705	0.806	0.598	0.961	0.666	0.633	0.977	0.906	0.908	1.000								
	Other Industrials	0.682	0.626	0.959	0.700	0.948	0.574	0.806	0.709	0.877	0.823	0.727	0.671	0.686	0.734	1.000							
	Oil&Gas	0.579	0.555	0.819	0.603	0.789	0.469	0.683	0.598	0.770	0.712	0.616	0.593	0.573	0.620	0.826	1.000						
	Other Retail	0.747	0.753	0.616	0.844	0.625	0.955	0.647	0.827	0.583	0.636	0.794	0.762	0.816	0.827	0.614	0.522	1.000					
	Technology	0.665	0.601	0.921	0.688	0.926	0.561	0.793	0.691	0.857	0.807	0.700	0.656	0.672	0.710	0.946	0.800	0.602	1.000				
	Telecommunications	0.700	0.711	0.619	0.763	0.619	0.800	0.615	0.758	0.591	0.641	0.723	0.713	0.745	0.754	0.609	0.530	0.792	0.601	1.000			
	Other Telecommunication	0.538	0.537	0.763	0.581	0.775	0.564	0.800	0.583	0.731	0.805	0.574	0.553	0.566	0.587	0.754	0.661	0.589	0.736	0.662	1.000		
	Utility	0.526	0.523	0.401	0.593	0.412	0.676	0.458	0.568	0.387	0.419	0.517	0.542	0.534	0.550	0.379	0.320	0.625	0.352	0.567	0.370	1.000	
	Other Utility	0.421	0.403	0.584	0.469	0.590	0.480	0.676	0.452	0.541	0.613	0.417	0.445	0.401	0.437	0.550	0.479	0.469	0.523	0.457	0.567	0.645	1.000

Table 57: Correlation Between CDS Spreads and Equity Volatility for the Japan Region [Full Sample Period]

CDS Spread and Equity Volatility Correlation for Japan		CDS																			EQ																					
		Automoti	Banks	Banking	Chemicals	Electric P	Electronics	Industrials	Manufact	Metals&	Financials	Railroads	Other R	Consum	Other C	Telecomm	Other T	Transpor	Other Tr	Utility	Automoti	Banks	Basic M	Chemicals	Consumer	Consum	Other C	Electronic	Financi	Healthc	Machinery	Metals&	Transport	Industrials	Other Indus	Oil&Gas	Other Re	Technolo	Telecom	Other Tel	Utility	Other Util
	Automotive manufacturer	1.000
	Banks	0.593	1.000
	Banking	0.592	0.998	1.000
	Chemicals	0.137	0.270	0.271	1.000
	Electric Power	0.574	0.663	0.661	0.237	1.000
	Electronics	0.274	0.394	0.394	0.161	0.332	1.000
	Industrials	0.095	0.227	0.227	0.209	0.176	0.125	1.000
	Manufacturing	0.603	0.591	0.595	0.239	0.583	0.759	0.316	1.000
	Metals&Mining	0.743	0.648	0.647	0.246	0.507	0.263	0.047	0.581	1.000
CDS	Financials	0.701	0.646	0.646	0.228	0.589	0.307	0.065	0.609	0.696	1.000
	Railroads	0.352	0.365	0.366	0.170	0.403	0.188	0.075	0.390	0.411	0.390	1.000
	Other Retail	0.109	0.342	0.340	0.234	0.250	0.140	0.301	0.131	0.101	0.142	0.067	1.000
	Consumer Services	0.280	0.372	0.373	0.279	0.382	0.349	0.222	0.399	0.212	0.303	0.185	0.382	1.000
	Other Consumer Services	0.176	0.449	0.450	0.295	0.350	0.289	0.366	0.293	0.131	0.223	0.161	0.732	0.659	1.000
	Telecommunications	0.319	0.491	0.490	0.141	0.388	0.315	0.181	0.374	0.338	0.406	0.217	0.134	0.209	0.219	1.000
	Other Telecommunications	0.319	0.492	0.490	0.141	0.385	0.315	0.181	0.370	0.339	0.405	0.217	0.135	0.208	0.219	1.000	1.000
	Transportation	0.581	0.588	0.587	0.292	0.527	0.222	0.134	0.520	0.639	0.692	0.591	0.119	0.222	0.152	0.386	0.386	1.000
	Other Transportation	0.598	0.588	0.585	0.282	0.496	0.239	0.183	0.520	0.622	0.686	0.378	0.218	0.247	0.212	0.377	0.379	0.889	1.000
	Utility	0.521	0.634	0.630	0.231	0.963	0.330	0.162	0.526	0.462	0.537	0.372	0.261	0.402	0.376	0.389	0.388	0.477	0.456	1.000
	Automotive manufacturer	0.367	0.459	0.459	0.283	0.351	0.211	0.057	0.397	0.543	0.501	0.278	0.106	0.130	0.130	0.265	0.265	0.462	0.433	0.324	1.000
	Banks	0.331	0.435	0.434	0.279	0.319	0.108	0.045	0.313	0.504	0.445	0.282	0.085	0.078	0.100	0.186	0.187	0.419	0.399	0.284	0.784	1.000
	Basic Materials	0.446	0.498	0.497	0.304	0.397	0.233	0.066	0.459	0.612	0.546	0.346	0.147	0.163	0.180	0.268	0.269	0.537	0.541	0.363	0.693	0.667	1.000
	Chemicals	0.407	0.468	0.469	0.279	0.370	0.199	0.064	0.404	0.539	0.490	0.343	0.136	0.136	0.169	0.245	0.245	0.458	0.422	0.343	0.857	0.793	0.750	1.000
	Consumer Goods	0.454	0.482	0.481	0.279	0.380	0.218	0.039	0.436	0.613	0.560	0.332	0.104	0.142	0.132	0.289	0.290	0.538	0.543	0.350	0.729	0.667	0.930	0.730	1.000
	Consumer Services	0.374	0.377	0.376	0.260	0.321	0.101	0.035	0.319	0.490	0.404	0.311	0.061	0.071	0.068	0.192	0.192	0.357	0.310	0.292	0.736	0.775	0.644	0.862	0.644	1.000
	Other Consumer Services	0.418	0.416	0.415	0.268	0.341	0.139	0.023	0.367	0.573	0.453	0.333	0.060	0.107	0.084	0.237	0.238	0.418	0.393	0.305	0.608	0.636	0.854	0.700	0.836	0.700	1.000
	Electronics	0.422	0.467	0.466	0.321	0.365	0.196	0.068	0.400	0.538	0.493	0.288	0.142	0.148	0.176	0.258	0.259	0.453	0.442	0.336	0.873	0.784	0.731	0.948	0.729	0.826	0.668	1.000
	Financials	0.379	0.473	0.472	0.293	0.341	0.158	0.047	0.376	0.555	0.513	0.342	0.105	0.103	0.126	0.254	0.255	0.532	0.531	0.300	0.650	0.742	0.862	0.671	0.868	0.610	0.802	0.662	1.000
	Healthcare	0.453	0.451	0.451	0.305	0.331	0.159	0.046	0.408	0.623	0.542	0.347	0.082	0.116	0.110	0.265	0.266	0.512	0.507	0.296	0.702	0.683	0.871	0.721	0.873	0.665	0.869	0.721	0.825	1.000
EQ	Machinery	0.431	0.517	0.516	0.293	0.390	0.204	0.067	0.417	0.568	0.528	0.310	0.145	0.156	0.175	0.256	0.257	0.478	0.465	0.355	0.886	0.815	0.742	0.929	0.738	0.797	0.669	0.942	0.689	0.730	1.000
	Metals&Mining	0.371	0.476	0.475	0.274	0.351	0.178	0.072	0.383	0.523	0.519	0.316	0.150	0.144	0.177	0.224	0.225	0.464	0.433	0.323	0.834	0.820	0.708	0.902	0.682	0.795	0.630	0.888	0.665	0.698	0.903	1.000
	Transportation	0.406	0.447	0.447	0.267	0.333	0.187	0.056	0.402	0.552	0.518	0.337	0.112	0.110	0.129	0.220	0.221	0.466	0.449	0.293	0.834	0.828	0.721	0.878	0.720	0.823	0.665	0.873	0.697	0.723	0.889	0.874	1.000
	Industrials	0.440	0.502	0.502	0.294	0.383	0.196	0.078	0.423	0.578	0.534	0.318	0.143	0.137	0.168	0.256	0.256	0.475	0.454	0.348	0.884	0.841	0.748	0.949	0.740	0.835	0.683	0.961	0.700	0.739	0.978	0.930	0.917	1.000
	Other Industrials	0.470	0.515	0.514	0.309	0.389	0.239	0.074	0.466	0.631	0.567	0.334	0.147	0.162	0.179	0.276	0.276	0.543	0.562	0.352	0.708	0.677	0.963	0.744	0.946	0.635	0.835	0.744	0.883	0.871	0.762	0.698	0.727	0.767	1.000
	Oil&Gas	0.415	0.470	0.468	0.312	0.362	0.175	0.020	0.388	0.557	0.547	0.319	0.125	0.095	0.136	0.254	0.255	0.517	0.531	0.323	0.614	0.624	0.853	0.668	0.826	0.556	0.761	0.662	0.812	0.804	0.676	0.629	0.637	0.681	0.868	1.000
	Other Retail	0.362	0.410	0.409	0.315	0.324	0.110	0.040	0.319	0.489	0.426	0.330	0.069	0.098	0.097	0.216	0.217	0.407	0.364	0.290	0.759	0.777	0.667	0.872	0.667	0.960	0.697	0.845	0.636	0.689	0.817	0.810	0.828	0.847	0.662	0.600	1.000
	Technology	0.450	0.481	0.479	0.327	0.354	0.205	0.058	0.429	0.627	0.550	0.357	0.142	0.177	0.174	0.258	0.260	0.533	0.543	0.323	0.690	0.650	0.928	0.734	0.934	0.628	0.829	0.731	0.862	0.857	0.735	0.688	0.715	0.742	0.946	0.845	0.657	1.000
	Telecommunications	0.314	0.359	0.359	0.306	0.305	0.099	0.017	0.306	0.482	0.405	0.278	0.037	0.091	0.091	0.168	0.168	0.367	0.333	0.286	0.717	0.768	0.683	0.799	0.665	0.823	0.657	0.784	0.660	0.683	0.755	0.764	0.780	0.787	0.667	0.611	0.811	0.665	1.000
	Other Telecommunications	0.354	0.368	0.368	0.321	0.299	0.104	0.007	0.313	0.516	0.432	0.288	0.050	0.106	0.098	0.187	0.187	0.426	0.409	0.259	0.611	0.631	0.800	0.656	0.790	0.625	0.823	0.648	0.790	0.829	0.646	0.616	0.641	0.660	0.786	0.738	0.649	0.782	0.693	1.000
	Utility	0.062	0.147	0.145	0.125	0.164	0.071	0.055	0.172	0.194	0.159	0.127	0.027	-0.015	0.026	0.204	0.203	0.158	0.091	0.163	0.455	0.448	0.382	0.545	0.366	0.614	0.418	0.502	0.337	0.408	0.465	0.507	0.480	0.491	0.350	0.331	0.564	0.331	0.536	0.363	1.000
	Other Utility	0.092	0.167	0.164	0.173	0.171	0.075	0.055	0.183	0.214	0.192	0.128	0.049	-0.023	0.042	0.205	0.204	0.197	0.143	0.163	0.396	0.373	0.540	0.470	0.506	0.435	0.614	0.430	0.466	0.566	0.414	0.432	0.387	0.428	0.491	0.483	0.427	0.476	0.421	0.537	0.630	1.000

Table 58: Correlation Between CDS Spreads and Equity Volatility for the Japan Region [Crisis Period]

CDS Spread and Equity Volatility Correlation for Japan Region		CDS Automotiv	CDS Banks	CDS Banking	CDS Chemicals	CDS Electric P	CDS Electronics	CDS Industrials	CDS Manufactu	CDS Metals&M	CDS Financials	CDS Railroads	CDS Other Ret	CDS Consumer	CDS Other Con	CDS Telecomm	CDS Other Tel	CDS Transport	CDS Other Tra	CDS Utility
	Automotive manufacturer	1.000																		
	Banks	-0.015	1.000																	
	Banking	-0.017	0.998	1.000																
	Chemicals	0.140	0.117	0.116	1.000															
	Electric Power	0.070	0.026	0.033	0.315	1.000														
	Electronics	0.124	0.018	0.016	0.123	0.046	1.000													
	Industrials	-0.004	-0.094	-0.096	0.120	0.044	0.187	1.000												
	Manufacturing	0.388	-0.028	-0.031	0.298	0.105	0.646	0.478	1.000											
	Metals&Mining	0.144	0.127	0.125	0.349	0.158	0.338	0.163	0.322	1.000										
CDS	Financials	0.151	0.082	0.080	0.223	0.101	0.364	0.121	0.355	0.384	1.000									
	Railroads	0.023	0.036	0.037	0.213	0.081	0.282	0.190	0.254	0.275	0.217	1.000								
	Other Retail	0.098	0.045	0.044	0.215	0.094	0.135	0.168	0.236	0.420	0.213	0.314	1.000							
	Consumer Services	0.007	-0.081	-0.081	0.151	0.062	0.221	0.159	0.218	0.280	0.223	0.380	0.537	1.000						
	Other Consumer Services	0.087	0.028	0.028	0.228	0.077	0.128	0.171	0.272	0.394	0.257	0.388	0.915	0.602	1.000					
	Telecommunications	0.428	-0.063	-0.065	0.231	0.078	0.032	0.224	0.309	0.080	0.156	0.070	0.027	0.028	0.046	1.000				
	Other Telecommunications	0.428	-0.063	-0.065	0.231	0.078	0.032	0.224	0.309	0.080	0.156	0.070	0.027	0.028	0.046	1.000	1.000			
	Transportation	0.036	0.194	0.195	0.178	0.006	0.235	0.096	0.196	0.190	0.121	0.432	0.216	0.210	0.251	0.102	0.102	1.000		
	Other Transportation	-0.024	0.232	0.230	0.111	-0.094	0.226	0.085	0.155	0.121	0.073	0.173	0.064	0.017	0.051	0.035	0.035	0.777	1.000	
	Utility	0.093	0.046	0.043	0.515	0.564	0.138	0.133	0.187	0.237	0.177	0.151	0.122	0.134	0.107	0.095	0.095	0.088	-0.025	1.000
	Automotive manufacturer	-0.123	0.122	0.123	0.085	0.069	0.012	0.042	-0.004	0.103	0.027	0.101	-0.006	0.018	-0.007	0.028	0.028	0.186	0.134	0.102
	Banks	-0.091	0.101	0.100	0.092	-0.001	0.005	0.084	0.007	0.057	-0.014	0.064	-0.058	0.002	-0.033	0.054	0.054	0.236	0.198	0.034
	Basic Materials	-0.079	0.115	0.113	0.042	0.055	-0.018	0.018	-0.035	0.151	0.040	0.081	0.029	0.011	0.020	0.039	0.039	0.185	0.155	0.080
	Chemicals	-0.098	0.102	0.103	0.101	0.047	0.005	0.037	-0.009	0.082	0.043	0.069	-0.030	0.028	-0.005	0.024	0.024	0.168	0.137	0.092
	Consumer Goods	-0.108	0.153	0.153	0.041	0.082	-0.064	-0.015	-0.079	0.157	0.040	0.073	0.032	-0.022	0.012	0.014	0.014	0.172	0.146	0.056
	Consumer Services	-0.133	0.116	0.116	0.059	0.043	-0.082	-0.033	-0.090	0.033	0.003	-0.003	-0.045	0.005	-0.026	-0.018	-0.018	0.097	0.109	0.023
	Other Consumer Services	-0.096	0.098	0.097	0.028	0.058	-0.098	-0.053	-0.077	0.110	0.026	0.027	0.014	-0.016	0.000	0.012	0.012	0.122	0.114	0.006
	Electronics	-0.139	0.139	0.141	0.088	0.058	-0.041	-0.029	-0.089	0.080	0.017	0.051	-0.015	0.003	-0.007	-0.039	-0.040	0.111	0.094	0.076
	Financials	-0.079	0.143	0.141	0.039	0.078	-0.035	0.042	-0.037	0.111	-0.004	0.124	0.027	-0.024	0.012	0.042	0.042	0.212	0.180	0.052
	Healthcare	-0.049	0.095	0.094	0.106	0.116	-0.080	-0.052	-0.040	0.156	0.069	0.067	0.072	0.024	0.044	0.065	0.065	0.144	0.107	0.066
EQ	Machinery	-0.125	0.132	0.133	0.079	0.066	-0.048	0.016	-0.073	0.098	0.025	0.041	0.011	0.019	0.011	-0.022	-0.022	0.115	0.100	0.101
	Metals&Mining	-0.075	0.119	0.118	0.116	0.013	0.005	0.033	0.000	0.100	0.023	0.085	-0.002	0.028	0.025	0.039	0.039	0.158	0.115	0.099
	Transportation	-0.130	0.140	0.141	0.066	0.069	-0.088	0.025	-0.085	0.061	-0.016	-0.002	-0.071	-0.017	-0.053	-0.007	-0.007	0.122	0.117	0.083
	Industrials	-0.135	0.154	0.155	0.095	0.064	-0.047	-0.006	-0.085	0.098	0.018	0.028	-0.009	-0.006	-0.007	-0.024	-0.024	0.116	0.108	0.089
	Other Industrials	-0.097	0.140	0.140	0.048	0.087	-0.066	-0.042	-0.094	0.166	0.038	0.045	0.043	-0.011	0.020	0.006	0.006	0.157	0.143	0.066
	Oil&Gas	-0.030	-0.038	-0.042	0.043	0.052	0.010	-0.017	0.002	0.100	0.069	0.011	0.014	-0.047	-0.003	0.055	0.055	0.107	0.036	0.080
	Other Retail	-0.148	0.118	0.117	0.054	0.033	-0.062	-0.032	-0.082	0.043	0.007	0.021	-0.066	-0.014	-0.050	-0.038	-0.038	0.126	0.137	0.023
	Technology	-0.075	0.152	0.153	0.042	0.080	-0.057	-0.032	-0.087	0.153	0.050	0.041	0.046	-0.013	0.023	0.019	0.019	0.175	0.164	0.082
	Telecommunications	-0.092	0.147	0.147	0.090	0.065	-0.027	-0.057	-0.029	0.079	0.028	-0.002	0.017	0.042	0.036	0.001	0.001	0.115	0.090	0.035
	Other Telecommunications	-0.054	0.129	0.127	0.025	0.048	-0.043	-0.067	-0.054	0.138	0.050	0.050	0.023	-0.025	0.006	0.037	0.037	0.137	0.119	0.024
	Utility	-0.126	0.150	0.149	0.009	0.014	-0.071	-0.046	-0.105	-0.004	-0.004	0.008	-0.026	-0.007	-0.023	-0.022	-0.022	0.106	0.147	0.003
	Other Utility	-0.107	0.182	0.179	-0.041	0.028	-0.065	-0.082	-0.126	0.055	0.005	0.051	-0.011	-0.027	-0.035	-0.024	-0.024	0.116	0.141	-0.002

CDS Spread and Equity Volatility Correlation for Japan Region		EQ Automotiv	EQ Banks	EQ Basic Mat	EQ Chemicals	EQ Consumer	EQ Consumer	EQ Other Con	EQ Electronics	EQ Financials	EQ Healthcare	EQ Machinery	EQ Metals&M	EQ Transport	EQ Industrials	EQ Other Indu	EQ Oil&Gas	EQ Other Ret	EQ Technolog	EQ Telecomm	EQ Other Tel	EQ Utility	EQ Other Util
	Automotive manufacturer	1.000																					
	Banks	0.808	1.000																				
	Basic Materials	0.568	0.524	1.000																			
	Chemicals	0.880	0.789	0.597	1.000																		
	Consumer Goods	0.602	0.521	0.925	0.589	1.000																	
	Consumer Services	0.810	0.759	0.550	0.850	0.576	1.000																
	Other Consumer Services	0.531	0.477	0.844	0.519	0.902	0.590	1.000															
	Electronics	0.887	0.766	0.584	0.899	0.600	0.846	0.545	1.000														
	Financials	0.568	0.558	0.835	0.514	0.874	0.526	0.836	0.539	1.000													
	Healthcare	0.516	0.440	0.822	0.502	0.870	0.545	0.883	0.523	0.766	1.000												
EQ	Machinery	0.868	0.751	0.569	0.908	0.582	0.846	0.533	0.923	0.514	0.517	1.000											
	Metals&Mining	0.804	0.726	0.589	0.807	0.567	0.720	0.511	0.812	0.532	0.480	0.796	1.000										
	Transportation	0.824	0.775	0.559	0.853	0.554	0.869	0.519	0.841	0.510	0.501	0.847	0.765	1.000									
	Industrials	0.902	0.777	0.591	0.933	0.606	0.886	0.551	0.965	0.536	0.530	0.970	0.835	0.886	1.000								
	Other Industrials	0.574	0.493	0.948	0.576	0.957	0.571	0.886	0.604	0.847	0.855	0.590	0.561	0.565	0.612	1.000							
	Oil&Gas	0.435	0.373	0.713	0.420	0.695	0.408	0.662	0.412	0.632	0.646	0.391	0.446	0.379	0.406	0.695	1.000						
	Other Retail	0.780	0.722	0.545	0.820	0.573	0.962	0.576	0.824	0.509	0.548	0.819	0.708	0.821	0.854	0.562	0.398	1.000					
	Technology	0.551	0.471	0.899	0.558	0.915	0.557	0.875	0.571	0.824	0.849	0.554	0.525	0.545	0.581	0.935	0.652	0.546	1.000				
	Telecommunications	0.730	0.627	0.543	0.733	0.572	0.770	0.554	0.748	0.504	0.574	0.740	0.670	0.710	0.763	0.557	0.425	0.760	0.544	1.000			
	Other Telecommunications	0.448	0.380	0.747	0.470	0.786	0.474	0.770	0.493	0.673	0.769	0.491	0.476	0.445	0.501	0.763	0.574	0.482	0.730	0.610	1.000		
	Utility	0.724	0.682	0.494	0.723	0.527	0.756	0.507	0.731	0.538	0.431	0.714	0.682	0.684	0.747	0.503	0.369	0.732	0.470	0.614	0.380	1.000	
	Other Utility	0.533	0.485	0.737	0.512	0.774	0.536	0.756	0.537	0.753	0.678	0.511	0.539	0.471	0.534	0.746	0.559	0.543	0.712	0.511	0.613	0.662	1.000

Table 59: Correlation Between CDS Spreads and Equity Volatility for the Japan Region [After-Crisis Period]

Correlation Matrix CDS Spreads Volatility		US																												
		Airlines	Bank	Banking	Beverage	Building	Cable M	Conglom	Chemical	Containe	Consume	Other C	Electric I	Electric U	Electroni	Energy	Food Pr	Oil&Gas	Healthca	Home Bu	Industria	Informat	Leisure	Lodging	Machiner	Manufac	Metals&	Financia	Other Fi	Oilfield M
US	Airlines	1.000																												
	Bank	0.163	1.000																											
	Banking	0.166	0.984	1.000																										
	Beverages/Bottling	0.046	0.110	0.112	1.000																									
	Building Products	0.098	0.257	0.267	0.107	1.000																								
	Cable Media	0.015	0.095	0.108	0.035	0.112	1.000																							
	Conglomerate/Diversified Mfg	0.098	0.269	0.277	0.062	0.188	0.059	1.000																						
	Chemicals	0.006	0.106	0.116	0.169	0.190	0.212	0.072	1.000																					
	Containers	0.151	0.206	0.215	0.165	0.124	0.160	0.227	0.102	1.000																				
	Consumer Goods	0.069	0.130	0.129	0.213	0.224	0.054	0.139	0.053	0.220	1.000																			
	Other Consumer Goods	0.079	0.128	0.132	0.159	0.116	0.061	0.067	0.078	0.132	0.303	1.000																		
	Electric Power	-0.019	-0.015	-0.013	0.086	-0.020	-0.012	0.005	0.000	0.149	0.086	0.011	1.000																	
	Electric Utility	0.049	0.071	0.071	0.129	0.040	0.024	0.004	0.079	0.141	0.168	0.044	0.049	1.000																
	Electronics	-0.039	0.098	0.107	0.219	0.184	0.185	0.116	0.311	0.107	0.125	0.216	-0.048	0.008	1.000															
	Energy	-0.003	0.029	0.033	0.209	0.082	0.059	0.016	0.088	0.109	0.108	0.136	-0.005	0.087	0.154	1.000														
	Food Processors	0.083	0.086	0.086	0.077	0.215	0.048	0.123	0.036	0.180	0.908	0.112	0.048	0.163	0.104	0.078	1.000													
	Oil&Gas	0.000	0.022	0.020	0.208	0.088	0.055	0.022	0.082	0.104	0.129	0.137	-0.004	0.089	0.148	0.988	0.102	1.000												
	Healthcare	0.016	0.086	0.095	0.111	0.167	0.201	0.044	0.386	0.090	0.037	0.107	-0.029	0.113	0.216	0.071	0.039	0.067	1.000											
	Home Builders	0.204	0.385	0.377	0.182	0.221	0.105	0.286	0.145	0.325	0.226	0.141	0.021	0.068	0.205	0.101	0.204	0.133	0.095	1.000										
	Industrials	0.001	0.056	0.065	0.010	0.001	0.021	0.044	0.008	0.093	0.041	0.020	0.046	0.106	0.109	0.126	0.045	0.129	0.007	0.061	1.000									
	Information/Data Technology	0.096	-0.021	-0.015	0.151	0.103	0.016	0.056	0.038	0.081	0.099	0.039	-0.020	-0.008	0.187	0.066	0.115	0.055	0.027	0.081	0.028	1.000								
	Leisure	0.126	0.254	0.248	0.128	0.146	0.064	0.124	0.013	0.173	0.164	0.087	-0.001	0.115	0.084	0.064	0.170	0.061	-0.013	0.254	0.096	0.048	1.000							
	Lodging	-0.053	-0.027	-0.024	0.009	0.020	0.071	0.044	0.067	0.042	-0.003	-0.012	-0.010	-0.041	0.099	0.190	0.019	0.194	0.095	0.029	0.086	0.004	-0.017	1.000						
	Machinery	0.102	0.032	0.037	0.106	0.036	0.125	0.010	0.020	0.110	0.067	0.129	-0.017	0.058	0.194	0.157	0.022	0.153	0.114	0.079	-0.020	0.155	0.095	-0.014	1.000					
	Manufacturing	0.039	0.129	0.132	0.102	0.147	0.195	0.139	0.112	0.104	0.158	0.139	-0.027	-0.027	0.351	0.075	0.152	0.069	0.037	0.204	0.024	0.244	0.099	0.065	0.094	1.000				
	Metals&Mining	0.044	0.015	0.014	0.051	0.086	0.136	0.046	0.072	0.031	0.135	0.089	-0.025	-0.037	0.245	0.049	0.166	0.047	0.026	0.094	0.001	0.216	0.022	0.069	0.066	0.914	1.000			
	Financials	-0.076	0.019	0.021	0.046	0.158	-0.053	0.032	0.044	-0.029	0.162	0.117	0.012	-0.008	0.138	0.112	0.130	0.108	0.047	0.042	0.142	0.053	0.077	-0.030	-0.002	0.000	-0.001	1.000		
	Other Financials	-0.076	0.019	0.021	0.046	0.158	-0.053	0.032	0.044	-0.029	0.162	0.117	0.012	-0.008	0.138	0.112	0.130	0.108	0.047	0.042	0.142	0.053	0.077	-0.030	-0.002	0.000	-0.001	1.000	1.000	
	Oilfield Machinery and Products	0.035	0.152	0.154	0.109	0.082	0.048	0.132	0.109	0.137	0.136	0.129	-0.023	0.045	0.287	0.163	0.095	0.143	0.051	0.160	0.081	0.297	0.037	0.056	0.234	0.217	0.167	0.057	0.057	1.000
	Pharmaceuticals	0.037	0.139	0.144	0.192	0.193	0.048	0.123	0.176	0.125	0.171	0.184	0.038	0.091	0.312	0.091	0.129	0.094	0.100	0.187	0.054	0.130	0.156	0.048	0.083	0.222	0.133	0.164	0.164	0.102
	Property&Casualty	0.134	0.179	0.187	0.088	0.041	0.035	0.250	0.084	0.234	0.106	0.076	-0.028	0.058	0.043	-0.018	0.162	-0.014	0.031	0.368	0.075	0.103	0.069	0.060	0.019	0.038	0.022	-0.028	-0.028	0.043
	Publishing	0.155	0.240	0.246	0.073	0.162	0.095	0.119	0.058	0.213	0.243	0.021	0.009	0.005	0.003	-0.024	0.219	-0.016	0.016	0.198	0.070	-0.022	0.156	-0.027	0.026	0.055	0.005	0.052	0.052	0.046
	Railroads	0.162	0.322	0.328	0.178	0.142	0.135	0.164	0.174	0.194	0.133	0.253	-0.013	0.079	0.258	0.041	0.059	0.036	0.144	0.296	0.117	0.027	0.129	0.002	0.124	0.127	0.032	0.036	0.036	0.178
	Real Estate	0.151	0.399	0.399	0.104	0.352	0.114	0.274	0.239	0.209	0.171	0.106	-0.023	0.094	0.150	0.071	0.184	0.089	0.124	0.334	0.064	0.007	0.244	-0.001	0.154	0.076	-0.007	0.054	0.054	0.140
	Other Retail	-0.027	0.130	0.134	0.032	0.038	0.067	0.019	0.077	0.149	0.090	0.129	0.051	-0.046	0.118	0.210	0.107	0.207	0.093	0.099	0.050	-0.031	0.093	0.082	0.041	0.193	0.225	0.042	0.042	0.074
	Restaurants	0.045	0.049	0.055	0.296	0.057	0.016	0.100	0.071	0.278	0.103	0.093	-0.005	0.016	0.092	0.224	0.047	0.226	0.056	0.164	0.064	0.150	0.087	-0.017	0.120	0.055	0.014	0.052	0.052	0.135
	Consumer Services	0.070	-0.010	-0.001	0.087	0.056	0.126	0.005	0.113	0.133	0.082	0.088	-0.004	0.075	0.047	0.347	0.070	0.345	0.154	0.093	-0.011	0.048	0.067	-0.015	0.150	0.053	0.033	0.035	0.035	0.116
	Retail Stores Food and Drug	0.096	-0.031	-0.023	0.068	0.023	0.040	-0.028	0.035	0.044	0.038	0.091	-0.001	0.089	-0.014	0.345	0.014	0.343	0.091	0.043	0.003	0.031	0.055	-0.025	0.169	-0.003	-0.010	0.037	0.037	0.089
	Healthcare Supplies	0.165	0.095	0.100	0.165	0.065	0.164	0.157	0.126	0.445	0.143	0.080	0.007	0.108	0.079	0.067	0.133	0.071	0.165	0.193	0.039	0.053	0.063	0.008	0.120	0.083	0.038	-0.033	-0.033	0.049
	Other Consumer Services	-0.014	-0.040	-0.038	0.036	0.048	0.093	0.020	0.093	0.173	0.074	0.034	0.000	-0.016	0.094	0.017	0.092	0.014	0.052	0.058	-0.022	0.046	-0.024	0.024	0.014	0.087	0.078	-0.032	-0.032	0.109
	Telecommunications	0.118	0.178	0.186	0.166	0.234	0.150	0.153	0.216	0.169	0.148	0.065	0.060	0.078	0.187	0.095	0.123	0.082	0.130	0.199	0.070	0.308	0.163	0.034	-0.014	0.274	0.197	0.081	0.081	0.157
	Other Telecommunications	0.133	0.175	0.183	0.178	0.208	0.131	0.242	0.221	0.193	0.151	0.081	0.054	0.087	0.183	0.080	0.138	0.068	0.124	0.249	0.075	0.307	0.164	0.058	-0.014	0.255	0.185	0.062	0.062	0.140
	Textiles\Apparel\Shoes	0.037	0.035	0.039	0.100	0.077	0.081	0.041	0.219	0.107	0.064	0.038	-0.022	0.140	0.197	0.318	0.076	0.324	0.188	0.115	0.193	-0.006	0.042	0.289	-0.017	0.026	0.016	0.096	0.096	0.053
	Utility	0.015	-0.005	-0.002	0.115	-0.023	-0.002	0.012	0.008	0.061	0.085	0.026	0.866	-0.012	-0.041	-0.019	0.032	-0.018	-0.024	0.020	0.036	-0.006	0.009	-0.026	-0.003	-0.010	-0.016	-0.003	-0.003	-0.018
	Tobacco	0.044	0.142	0.147	0.173	0.047	-0.015	0.092	0.018	0.105	0.196	0.043	0.305	0.002	0.072	-0.029	0.115	-0.033	0.010	0.093	0.101	-0.025	0.089	-0.005	0.046	0.139	0.135	0.030	0.030	0.069
	Transportation	0.122	-0.046	-0.041	0.092	0.109	0.055	-0.009	-0.052	0.000	0.134	0.007	0.066	0.057	-0.014	0.090	0.107	0.086	-0.003	-0.024	-0.073	0.008	0.015	-0.030	0.070	-0.012	-0.015	0.045	0.045	0.039
	Other Transportation	-0.003	-0.078	-0.076	0.141	0.072	0.094	-0.009	-0.032	0.008	0.181	0.037	0.068	0.044	0.004	0.114	0.154	0.109	0.019	-0.031	-0.070	0.024	-0.002	0.033	0.068	0.032	0.034	0.035	0.035	0.038
	Vehicle Parts	0.137	0.228	0.233	0.064	0.177	0.091	0.098	0.101	0.107	0.040	0.068	-0.017	0.016	0.210	-0.033	0.022	-0.032	0.056	0.194	0.013	-0.024	0.186	0.026	-0.033	0.111	0.012	-0.053	-0.053	0.020
UK	Banking	0.122	0.224	0.230	0.038	0.071	0.060	0.199	0.039	0.112	0.115	0.120	-0.028	-0.007	0.217	0.070	0.063	0.066	0.114	0.113	0.041	0.035	0.056	0.075	0.219	0.182	0.170	0.086	0.086	0.130
	Banks	0.122	0.225	0.226	0.038	0.064	0.056	0.188	0.036	0.111	0.113	0.121	-0.027	-0.007	0.217	0.071	0.061	0.066	0.113	0.112	0.039	0.034	0.057	0.075	0.219	0.182	0.170	0.081	0.081	0.130
	Beverages/Bottling	0.144	0.409	0.410	0.155	0.142	0.131	0.287	0.086	0.294	0.158	0.093	0.023	0.061	0.176	0.009	0.117	0.004	-0.009	0.456	0.050	0.092	0.142	0.016	0.013	0.147	0.052	-0.050	-0.050	0.111
	Consumer Goods	0.224	0.350	0.346	0.147	0.181	0.136	0.161	0.139	0.175	0.174	0.201	0.035	0.062	0.231	0.143	0.154	0.131	0.071	0.294	0.029	0.375	0.153	0.028	0.145	0.258	0.213	0.048	0.048	0.248
	Electric Power	0.271	0.175	0.179	0.073	0.028	0.096	0.150	0.037	0.225	0.095	0.064	0.038	0.068	0.016	0.008	0.046	0.007	0.058	0.136	-0.020	0.000	0.129	-0.064	0.257	0.037	-0.021	-0.030	-0.030	0.061
	Life Insurance	0.106	0.241	0.249	0.036	0.189	0.067	0.136	0.122	0.170	0.164	0.058	0.098	0.002	0.128	0.017	0.136	0.029	0.151	0.246	0.062	-0.008	0.125	-0.010	0.049	0.043	0.004	0.091	0.091	0.037
	Manufacturing	0.053	0.335	0.335	0.064	0.086	0.038	0.249	0.062	0.222	0.077	0.091	-0.009	0.011	0.128	-0.008	0.108	-0.015	0.119	0.266	0.004	0.064	0.102	0.013	-0.002	0.311	0.342	-0.014	-0.014	0.131
	Financials	0.117	0.279	0.280	0.118	0.163	0.193	0.157	0.101	0.286	0.186	0.165	0.004	0.062	0.155	0.267	0.104	0.259	0.126	0.251	0.032	0.089	0.169	0.005	0.204	0.171	0.120	0.024	0.024	0.169
	Other Financials	0.127	0.289	0.293	0.134	0.177	0.183	0.173	0.081	0.300	0.201	0.167	0.003	0.066	0.158	0.260	0.136	0.253	0.112	0.269	0.026	0.108	0.187	0.015	0.184	0.204	0.150	0.000	0.000	0.175
	Other Retail	0.134	0.408	0.410	0.129	0.150	0.114	0.225	0.111	0.310	0.143	0.144	0.077	-0.010	0.164	0.091	0.104	0.083	0.037	0.376	0.080	0.031	0.206	-0.007	0.054	0.218	0.147	0.002	0.002	0.155
	Consumer Services	0.152	0.440	0.430	0.096	0.223	0.095	0.292	0.067	0.243	0.210	0.145	-0.013	0.082	0.129	0.121	0.217	0.125	0.052	0.346	0.060	0.052	0.268	-0.012	0.035	0.143	0.076	0.117	0.117	0.131
	Other Consumer Services	0.189	0.149	0.154	0.039	0.115	0.053	0.275	0.031	0.106	0.084	0.016	-0.031	0.000	0.063	-0.013	0.068	-0.016	0.024	0.150	-0.030	0.321	0.075	-0.040	0.012	0.222	0.209	-0.010	-0.010	0.148
	Telecommunications	0.158	0.266	0.270	0.073	0.098	0.172	0.191	0.043	0.129	0.122	0.129	0.040	0.005	0.104	0.075	0.090	0.071	0.095	0.251	0.014	0.101	0.079	0.002	0.038	0.177	0.159	0.030	0.030	0.131
	Other Telecommunications	0.158	0.266	0.271	0.073	0.099	0.173	0.193	0.044	0.129	0.123	0.129	0.039	0.005	0.104	0.075	0.091	0.071	0.096	0.252	0.014	0.101	0.079	0.002	0.038	0.177	0.159	0.031	0.031	0.132
EU	Automative Manufacturer	0.109	0.315	0.321	0.170	0.108	0.115	0.169	0.103	0.169	0.110	0.080	0.014	0.034	0.145	0.072	0.078	0.064	0.187	0.295	0.032	0.103	0.125	0.071	0.051	0.214	0.178	-0.023	-0.023	0.170
	Banking	-0.070	0.044	0.049	0.049	0.071	0.094	0.091	0.058	0.018	0.086	0.006	-0.039	0.078	0.177	0.055	0.102	0.054	0.157	0.043	0.038	0.072	-0.040	0.101	0.052	0.324	0.385	0.056	0.056	0.073
	Banks	-0.066	0.032	0.032	0.043	-0.003	0.091	0.014	0.046	-0.015	0.053	0.000	-0.042	0.050	0.165	0.046	0.069	0.043	0.141	0.024	0.042	0.066	-0.042	0.100	0.058	0.318	0.388	0.052	0.052	0.076
	Beverages/Bottling	0.028	0.275	0.279	0.120	0.081	0.091	0.142	0.066	0.190	0.123	0.053	0.019	0.155	0.096	0.031	0.065	0.023	0.139	0.226	0.191	0.024	0.131	-0.028	0.010	0.076	0.023	0.118	0.118	0.112
	Building Products	0.088	0.339	0.350	0.194	0.161	0.138	0.259	0.125	0.196	0.191	0.160	-0.007	0.028	0.186	0.067	0.158	0.053	0.106	0.316	0.016	0.126	0.164	0.007	0.062	0.295	0.255	-0.003	-0.003	0.211
	Cable Media	0.070	0.100	0.105	0.208	0.061	0.054	0.102	0.160	0.136	0.126	0.141	-0.011	0.003	0.125	0.041	0.103	0.035	0.152	0.294	-0.004	0.024	0.066	0.053	0.012	0.218	0.188	-0.012	-0.012	0.098
	Chemicals	0.132	0.410	0.411	0.207	0.205	0.082	0.299	0.089	0.281	0.164	0.098	0.030	0.098	0.220	0.055	0.126	0.041	0.026	0.367	0.054	0.224	0.250	-0.035	0.013	0.291	0.178	0.006	0.006	0.183
	Conglomerate/Diversified Mfg	0.140	0.368	0.378	0.170	0.190	0.084	0.185	0.078	0.218	0.089	0.142	0.006	0.066	0.126	0.049	0.065	0.040	0.071	0.318	0.021	0.061	0.238	-0.014	0.034	0.132	0.080	-0.045	-0.045	0.129
	Other Telecommunications	-0.031	0.237	0.239	0.051	0.178	0.066	0.088	0.033	0.041	0.213	0.166	-0.011	0.044	0.099	0.137	0.254	0.136	0.113	0.162	0.002	0.052	0.190	0.057	0.032	0.198	0.217	0.147	0.147	0.083
	Consumer Goods	0.068	0.368	0.371	0.177	0.116	0.127	0.211	0.087	0.262	0.172	0.081	0.035	0.141	0.125	0.040	0.105	0.034	0.119	0.311	0.129	0.039	0.166	-0.030	0.039	0.092	0.016	0.075	0.075	0.154
	Electric Power	0.048	0.084	0.092	-0.015	0.073	0.005	0.113	-0.027	0.143	0.226	0.031	0.120	0.036	0.006	0.027	0.216	0.025	0.004	0.048	0.072	-0.012	0.007	-0.065	0.010	-0.022	-0.050	0.152	0.152	0.000
	Electronics	0.164	0.379	0.387	0.185	0.130	0.098	0.188	0.084	0.243	0.106	0.075	0.004	0.196	0.208	0.020	0.069	0.010	0.105	0.276	0.128	0.009	0.166	-0.018	0.088	0.157	0.101	-0.054	-0.054	0.192
	Energy	0.163	0.396	0.403	0.229	0.148	0.092	0.260	0.128	0.229	0.158	0.094	0.077	0.058	0.151	0.065	0.101	0.051	0.120	0.362	0.024	0.158	0.108	0.041	0.039	0.165	0.087	-0.030	-0.030	0.235
	Leisure	0.036	0.056	0.060	0.081	0.086	0.031	0.047	0.019	0.028	0.077	0.061	-0.025	-0.016	0.082	0.081	0.064	0.076	0.035	0.114	-0.036	0.105	0.047	0.028	0.057	0.347	0.293	-0.008	-0.008	0.041
	Manufacturing	-0.001	0.031	0.035	0.028	0.053	0.035	-0.005	-0.009	0.074	0.031	0.087	0.018	-0.043	0.189	0.032	0.025	0.027	0.050	0.123	-0.018	0.051	-0.017	0.121	0.079	0.023	0.034	-0.018	-0.018	0.118
	Metals&Mining	0.101	0.069	0.070	0.202	0.099	0.139	0.041	0.040	0.108	0.049	0.040	0.029	0.075	0.065	0.223	0.069	0.228	0.124	0.090	0.016	0.106	0.032	0.164	0.066	0.108	0.103	-0.055	-0.055	0.083
	Financials	-0.036	0.044	0.045	0.038	0.064	0.025	0.153	0.032	0.098	0.043	0.084	-0.015	-0.029	0.277	0.123	0.004	0.109	0.040	0.072	0.002	0.287	0.011	0.030	0.222	0.272	0.210	0.027	0.027	0.429
	Other Financials	-0.039	0.043	0.043	0.046	0.067	0.027	0.151	0.036	0.092	0.046	0.088	-0.014	-0.026	0.292	0.120	0.008	0.107	0.043	0.072	0.004	0.292	0.016	0.036	0.229	0.297	0.234	0.023	0.023	0.434
	Oil&Gas	0.145	0.327	0.331	0.252	0.136	0.077	0.193	0.136	0.167	0.155	0.086	0.091	0.062	0.152	0.081	0.107	0.070	0.142	0.344	0.005	0.177	0.077	0.056	0.044	0.153	0.096	-0.010	-0.010	0.217
	Consumer Services	0.053	0.208	0.212	0.125	0.147	0.044	0.213	0.083	0.242	0.198	0.127	-0.013	0.205	0.155	0.045	0.171	0.045	0.121	0.259	0.009	0.088	0.085	0.019	0.015	0.210	0.139	0.029	0.029	0.064
	Other Consumer Services	0.201	0.254	0.257	0.225	0.097	0.083	0.266	0.104	0.299	0.170	0.109	0.010	0.105	0.098	0.048	0.190	0.048	0.071	0.394	0.058	0.123	0.134	0.019	0.054	0.071	0.034	-0.033	-0.033	0.100
	Telecommunications	0.054	0.155	0.155	0.114	0.150	0.065	0.071	0.011	0.169	0.106	0.095	-0.011	0.184	0.116	0.151	0.060	0.147	0.077	0.249	0.201	0.018	0.080	-0.043	0.052	0.060	0.055	0.097	0.097	0.069
	Transportation	-0.031	0.239	0.238	0.049	0.176	0.068	0.083	0.031	0.042	0.214	0.165	-0.011	0.042	0.099	0.137	0.256	0.136	0.112	0.163	0.000	0.052	0.186	0.055	0.032	0.197	0.217	0.148	0.148	0.082
	Utility	0.042	0.043	0.051	-0.012	0.064	-0.006	0.097	-0.028	0.123	0.218	0.020	0.119	0.042	0.004	0.028	0.215	0.028	0.011	0.033	0.076	-0.015	-0.002	-0.058	0.007	-0.036	-0.056	0.157	0.157	-0.016
JP	Automative Manufacturer	0.028	0.041	0.045	0.056	0.046	0.191	-0.034	0.119	-0.027	0.094	-0.007	-0.034	0.014	0.073	-0.033	0.152	-0.035	0.132	0.093	-0.080	0.090	0.062	0.039	0.170	0.099	0.135	-0.038	-0.038	0.086
	Banking	0.180	0.253	0.253	0.147	0.134	0.088	0.128	0.064	0.254	0.255	0.185	0.045	0.084	0.035	0.112	0.202	0.126	0.049	0.304	0.051	0.034	0.244	0.004	0.207	0.105	0.058	0.026	0.026	0.148
	Banks	0.181	0.255	0.254	0.146	0.136	0.090	0.126	0.063	0.255	0.258	0.187	0.044	0.083	0.038	0.117	0.202	0.131	0.049	0.303	0.054	0.034	0.245	0.004	0.209	0.107	0.058	0.034	0.034	0.149
	Chemicals	0.100	0.072	0.075	0.077	0.056	0.041	0.058	0.117	0.073	0.078	0.101	-0.003	-0.019	0.151	0.050	0.120	0.039	0.144	0.129	-0.029	0.174	0.083	0.162	0.113	0.239	0.273	-0.001	-0.001	0.233
	Electric Power	0.211	0.227	0.220	0.157	0.176	0.048	0.174	0.047	0.182	0.216	0.160	-0.028	0.000	0.120	0.070	0.231	0.081	0.069	0.294	0.000	0.161	0.177	0.058	0.017	0.113	0.106	0.051	0.051	0.107
	Electronics	0.083	0.068	0.064	0.085	0.187	0.131	0.007	0.487	0.087	0.069	0.101	-0.001	0.090	0.187	0.038	0.083	0.047	0.279	0.146	-0.023	0.018	0.038	0.015	0.175	0.039	0.032	0.023	0.023	0.065
	Industrials	-0.065	-0.064	-0.061	0.043	0.117	0.071	-0.048	0.217	-0.040	0.125	-0.001	0.026	0.017	0.112	0.029	0.161	0.028	0.162	-0.024	0.046	-0.014	-0.025	0.091	-0.004	0.009	0.029	0.054	0.054	0.083
	Manufacturing	0.113	0.243	0.229	0.129	0.209	0.144	0.105	0.324	0.160	0.132	0.080	0.004	0.115	0.188	0.006	0.160	0.015	0.229	0.273	0.007	0.026	0.091	0.077	0.136	0.112	0.087	0.019	0.019	0.212
	Metals&Mining	0.182	0.419	0.424	0.132	0.132	0.048	0.162	0.239	0.188	0.141	0.096	-0.039	0.148	0.107	0.043	0.124	0.036	0.147	0.323	0.036	-0.006	0.198	0.143	0.056	0.180	0.108	-0.084	-0.084	0.167
	Financials	0.146	0.367	0.363	0.144	0.142	0.109	0.130	0.254	0.195	0.149	0.076	-0.014	0.070	0.219	0.046	0.116	0.045	0.147	0.299	0.032	0.007	0.198	0.099	0.059	0.138	0.073	0.035	0.035	0.175
	Railroads	0.142	0.203	0.206	0.125	0.099	0.100	0.117	0.194	0.232	0.110	0.117	0.010	0.099	0.154	0.025	0.092	0.025	0.111	0.270	0.060	0.019	0.092	0.107	0.073	0.063	0.040	0.013	0.013	0.165
	Other Retail	-0.013	-0.034	-0.030	0.108	0.058	0.081	-0.011	0.150	0.043	0.072	0.042	0.001	0.086	0.071	0.121	0.091	0.117	0.223	0.013	0.002	0.036	0.036	0.326	0.034	0.016	0.027	0.055	0.055	0.260
	Consumer Services	-0.015	-0.008	-0.007	0.135	0.067	0.086	-0.008	0.265	0.035	0.082	0.110	-0.013	0.024	0.170	0.059	0.071	0.057	0.339	0.059	-0.031	0.005	0.007	0.315	0.105	0.009	0.025	0.033	0.033	0.198
	Other Consumer Services	0.006	-0.033	-0.032	0.078	0.060	0.089	-0.010	0.183	0.042	0.089	0.040	0.005	0.064	0.109	0.082	0.112	0.083	0.198	0.038	0.004	0.025	0.027	0.403	0.064	0.033	0.052	0.080	0.080	0.317
	Telecommunications	-0.024	0.192	0.197	0.086	0.202	0.133	0.104	0.128	0.030	0.114	0.055	0.012	0.003	0.174	-0.001	0.169	-0.002	0.128	0.110	-0.045	0.027	0.097	0.144	0.054	0.106	0.111	-0.011	-0.011	0.107
	Other Telecommunications	-0.024	0.191	0.197	0.086	0.202	0.133	0.103	0.128	0.031	0.114	0.055	0.012	0.003	0.175	-0.001	0.169	-0.002	0.129	0.110	-0.044	0.027	0.097	0.145	0.054	0.106	0.112	-0.013	-0.013	0.108
	Transportation	0.139	0.199	0.208	0.234	0.146	0.120	0.091	0.242	0.169	0.171	0.144	0.083	0.046	0.171	0.062	0.099	0.053	0.122	0.277	0.040	0.015	0.146	0.160	0.138	0.099	0.054	0.018	0.018	0.185
	Other Transportation	0.167	0.224	0.237	0.232	0.148	0.059	0.110	0.225	0.169	0.161	0.095	0.058	0.050	0.067	0.057	0.096	0.049	0.076	0.265	0.089	-0.007	0.192	0.026	0.077	0.083	0.023	-0.001	-0.001	0.104
	Utility	0.210	0.237	0.238	0.078	0.266	0.043	0.206	0.109	0.162	0.236	0.185	-0.022	0.004	0.150	0.027	0.284	0.037	0.106	0.317	0.002	0.236	0.204	0.064	0.014	0.156	0.148	0.044	0.044	0.132

Correlation Matrix CDS Spreads Volatility		US																		
		Pharmac	Property	Publishi	Railroads	Real Est	Other R	Restaura	Consume	Retail St	Healthca	Other Co	Telecom	Other Te	Textiles\	Utility	Tobacco	Transpor	Other Tr	Vehicle Par
US	Pharmaceuticals	1.000																		
	Property&Casualty	0.230	1.000																	
	Publishing	0.088	0.091	1.000																
	Railroads	0.134	0.142	0.188	1.000															
	Real Estate	0.192	0.230	0.194	0.258	1.000														
	Other Retail	0.014	0.011	0.038	0.000	0.035	1.000													
	Restaurants	0.097	0.097	0.066	0.092	0.087	-0.006	1.000												
	Consumer Services	0.091	-0.013	0.098	0.048	0.042	0.095	0.380	1.000											
	Retail Stores Food and Drug	0.070	-0.012	0.061	-0.002	0.012	-0.005	0.400	0.880	1.000										
	Healthcare Supplies	0.197	0.176	0.124	0.128	0.149	0.038	0.263	0.171	0.120	1.000									
	Other Consumer Services	0.045	-0.035	-0.006	0.061	-0.008	0.184	-0.031	0.407	-0.022	0.072	1.000								
	Telecommunications	0.157	0.066	0.119	0.132	0.205	0.035	0.083	0.045	0.019	0.163	-0.007	1.000							
	Other Telecommunications	0.211	0.246	0.105	0.125	0.217	0.027	0.102	0.029	0.005	0.183	-0.008	0.934	1.000						
	Textiles\Apparel\Shoes	0.006	0.059	-0.026	0.092	0.028	0.084	0.051	0.159	0.089	0.083	0.127	0.098	0.100	1.000					
	Utility	0.049	0.002	0.030	0.008	-0.012	0.023	0.022	0.003	0.000	0.038	0.013	0.007	0.010	-0.027	1.000				
	Tobacco	0.102	0.050	0.097	0.175	0.094	0.218	0.024	-0.006	-0.001	0.047	-0.001	0.091	0.087	0.066	0.375	1.000			
	Transportation	0.008	-0.001	0.033	0.062	0.012	-0.019	0.067	0.109	0.137	0.019	-0.046	0.058	0.049	-0.045	0.048	0.123	1.000		
	Other Transportation	0.053	0.048	0.011	0.038	-0.019	0.000	0.092	0.124	0.154	0.044	-0.039	0.036	0.043	-0.017	0.056	0.095	0.908	1.000	
	Vehicle Parts	0.165	0.064	0.169	0.194	0.175	-0.002	0.053	0.024	-0.026	0.050	0.086	0.062	0.060	0.086	-0.020	0.049	-0.067	-0.090	1.000
UK	Banking	0.130	0.057	0.069	0.228	0.114	-0.011	0.051	0.033	0.016	0.049	0.016	0.042	0.034	0.000	-0.011	0.065	0.000	0.007	0.018
	Banks	0.130	0.053	0.067	0.227	0.111	-0.010	0.048	0.030	0.014	0.046	0.016	0.041	0.032	-0.001	-0.012	0.065	-0.001	0.007	0.017
	Beverages/Bottling	0.256	0.344	0.181	0.285	0.314	-0.003	0.074	-0.020	-0.048	0.153	-0.004	0.181	0.212	0.065	0.023	0.143	-0.050	-0.059	0.172
	Consumer Goods	0.160	0.128	0.126	0.262	0.275	0.185	0.049	0.068	0.028	0.127	0.049	0.270	0.249	0.086	0.027	0.147	0.005	-0.018	0.082
	Electric Power	0.100	0.085	0.158	0.159	0.190	0.001	0.039	0.127	0.157	0.234	0.001	0.090	0.092	0.008	0.011	0.091	0.065	0.027	0.062
	Life Insurance	0.182	0.093	0.134	0.172	0.213	0.051	0.174	0.107	0.069	0.100	0.032	0.147	0.167	0.052	0.110	0.122	0.069	0.023	0.075
	Manufacturing	0.102	0.285	0.131	0.184	0.185	0.384	0.051	-0.011	-0.049	0.112	0.018	0.089	0.129	0.108	-0.003	0.258	-0.074	-0.055	0.078
	Financials	0.160	0.109	0.146	0.245	0.230	0.111	0.149	0.138	0.109	0.212	0.017	0.188	0.176	0.095	0.020	0.125	0.047	0.041	0.061
	Other Financials	0.147	0.125	0.149	0.259	0.232	0.152	0.133	0.125	0.095	0.224	0.016	0.210	0.200	0.099	0.016	0.131	0.049	0.045	0.063
	Other Retail	0.121	0.176	0.203	0.320	0.294	0.477	0.087	0.066	-0.017	0.136	0.112	0.141	0.140	0.074	0.065	0.197	-0.009	-0.016	0.142
	Consumer Services	0.162	0.173	0.193	0.327	0.404	0.123	0.114	0.026	-0.012	0.150	0.026	0.186	0.183	0.092	0.008	0.127	-0.018	-0.043	0.103
	Other Consumer Services	0.096	0.080	0.085	0.150	0.137	-0.011	0.080	0.012	-0.009	0.098	0.020	0.373	0.354	-0.065	-0.012	0.034	-0.044	-0.072	0.042
	Telecommunications	0.069	0.081	0.086	0.187	0.118	0.180	0.081	0.047	0.028	0.074	-0.001	0.138	0.127	0.044	0.036	0.111	0.110	0.118	0.028
	Other Telecommunications	0.069	0.082	0.087	0.188	0.119	0.179	0.082	0.047	0.028	0.074	-0.001	0.138	0.127	0.044	0.036	0.112	0.110	0.118	0.029
EU	Automative Manufacturer	0.065	0.078	0.133	0.267	0.173	0.237	0.079	0.065	0.025	0.111	0.058	0.159	0.146	0.071	0.004	0.165	0.002	0.006	0.065
	Banking	0.029	-0.013	-0.001	0.064	0.021	-0.055	0.000	-0.002	-0.024	0.058	0.026	0.078	0.067	0.105	-0.037	-0.031	-0.061	-0.009	0.014
	Banks	0.015	-0.029	-0.010	0.066	-0.019	-0.052	-0.023	-0.003	-0.024	0.039	0.026	0.057	0.041	0.098	-0.042	-0.038	-0.057	-0.002	0.001
	Beverages/Bottling	0.125	0.127	0.107	0.224	0.212	0.013	0.044	-0.004	-0.029	0.093	-0.023	0.140	0.130	0.286	0.015	0.139	-0.060	-0.056	0.033
	Building Products	0.212	0.205	0.119	0.279	0.265	0.148	0.125	0.034	0.005	0.166	0.002	0.173	0.193	0.061	0.006	0.172	-0.015	0.021	0.102
	Cable Media	0.095	0.027	0.035	0.217	0.099	0.115	0.060	0.082	0.034	0.141	0.091	0.078	0.068	0.051	-0.007	0.056	0.022	0.065	0.023
	Chemicals	0.212	0.166	0.161	0.287	0.304	0.060	0.111	0.028	-0.034	0.188	0.053	0.488	0.466	0.076	0.034	0.108	-0.045	-0.069	0.169
	Conglomerate/Diversified Mfg	0.084	0.083	0.212	0.242	0.230	0.112	0.091	0.053	0.021	0.100	0.030	0.211	0.191	0.035	0.005	0.115	-0.010	-0.033	0.169
	Other Telecommunications	0.085	0.064	0.035	0.142	0.183	0.272	0.037	0.014	-0.005	0.032	-0.005	0.102	0.105	0.081	0.005	0.145	0.058	0.085	0.000
	Consumer Goods	0.160	0.150	0.152	0.323	0.293	0.058	0.066	0.053	-0.021	0.164	0.084	0.160	0.149	0.191	0.034	0.181	-0.048	-0.058	0.079
	Electric Power	0.086	0.027	0.101	0.052	0.051	0.013	0.051	0.021	0.030	0.095	-0.041	0.097	0.085	-0.008	0.027	0.017	0.066	0.056	-0.013
	Electronics	0.075	0.089	0.207	0.340	0.224	0.070	0.086	0.022	0.014	0.124	-0.005	0.205	0.194	0.035	-0.015	0.191	-0.049	-0.063	0.204
	Energy	0.114	0.151	0.192	0.372	0.244	0.044	0.073	0.063	-0.014	0.141	0.127	0.231	0.219	0.104	0.062	0.125	-0.046	-0.067	0.116
	Leisure	0.011	0.049	0.032	0.082	0.037	0.024	0.035	0.080	0.073	0.066	0.012	0.073	0.068	-0.008	-0.010	0.003	-0.012	-0.006	-0.003
	Manufacturing	-0.001	-0.023	-0.018	0.070	0.008	0.043	-0.011	0.024	-0.030	0.015	0.137	0.021	0.016	0.016	-0.011	-0.038	-0.058	-0.055	0.092
	Metals&Mining	0.076	0.043	0.020	0.056	0.053	0.120	0.018	0.110	0.082	0.116	0.085	0.078	0.082	0.116	0.022	0.050	0.057	0.074	0.018
	Financials	0.026	0.009	-0.012	0.111	0.018	0.054	0.019	0.029	0.004	-0.010	0.063	0.052	0.046	-0.013	-0.010	0.041	-0.042	-0.036	0.000
	Other Financials	0.028	0.008	-0.023	0.106	0.012	0.069	0.020	0.032	0.004	-0.011	0.066	0.054	0.048	-0.011	-0.010	0.051	-0.040	-0.031	-0.004
	Oil&Gas	0.096	0.123	0.134	0.334	0.200	0.046	0.057	0.081	-0.008	0.128	0.167	0.207	0.195	0.110	0.078	0.117	-0.041	-0.057	0.100
	Consumer Services	0.159	0.229	0.105	0.173	0.248	0.033	0.073	0.063	0.021	0.207	0.026	0.156	0.194	0.070	0.008	0.047	-0.019	-0.021	0.067
	Other Consumer Services	0.256	0.641	0.165	0.240	0.309	0.021	0.176	0.060	0.057	0.263	-0.016	0.146	0.281	0.050	0.036	0.124	0.075	0.118	0.102
	Telecommunications	0.073	0.046	0.081	0.113	0.121	0.062	0.172	0.171	0.116	0.043	0.113	0.150	0.134	0.132	-0.013	0.050	0.018	-0.019	0.011
	Transportation	0.081	0.068	0.035	0.142	0.178	0.272	0.035	0.015	-0.003	0.032	-0.005	0.102	0.099	0.081	0.004	0.145	0.058	0.085	0.000
	Utility	0.079	0.026	0.085	0.038	0.031	0.007	0.047	0.026	0.034	0.085	-0.031	0.084	0.078	-0.002	0.029	0.006	0.071	0.061	-0.023
JP	Automative Manufacturer	-0.004	0.034	-0.001	-0.002	0.047	0.056	-0.002	0.107	0.115	0.092	0.038	0.005	0.010	0.051	-0.020	0.010	-0.007	0.030	0.045
	Banking	0.105	0.173	0.117	0.185	0.297	0.087	0.116	0.148	0.142	0.147	0.032	0.144	0.144	0.112	0.082	0.233	0.072	0.078	0.071
	Banks	0.109	0.174	0.121	0.186	0.299	0.087	0.121	0.157	0.152	0.147	0.032	0.146	0.147	0.111	0.082	0.234	0.077	0.082	0.072
	Chemicals	0.047	0.055	0.037	0.065	0.048	0.376	0.005	0.153	0.084	0.076	0.161	0.104	0.091	-0.037	-0.003	0.179	0.012	0.016	0.029
	Electric Power	0.119	0.267	0.135	0.142	0.225	0.082	0.164	0.082	0.054	0.117	0.034	0.155	0.181	0.044	-0.012	0.087	0.027	0.042	0.056
	Electronics	0.161	0.122	0.015	0.096	0.276	-0.015	-0.016	0.130	0.103	0.102	0.079	0.153	0.173	0.062	-0.013	-0.021	0.039	0.043	0.045
	Industrials	0.024	-0.010	-0.029	0.042	-0.004	0.081	-0.055	0.005	-0.042	-0.005	0.106	-0.020	-0.026	0.139	0.015	0.060	0.038	0.066	0.002
	Manufacturing	0.186	0.276	0.070	0.141	0.295	0.064	0.020	0.074	0.044	0.197	0.076	0.133	0.180	0.120	-0.011	0.071	0.002	0.014	0.086
	Metals&Mining	0.114	0.221	0.186	0.200	0.296	0.134	0.023	0.059	0.051	0.105	0.010	0.167	0.185	0.140	-0.027	0.147	-0.025	-0.030	0.180
	Financials	0.198	0.244	0.121	0.193	0.306	0.084	0.028	0.054	0.030	0.139	0.019	0.169	0.186	0.137	-0.011	0.174	-0.011	-0.011	0.220
	Railroads	0.135	0.214	0.140	0.142	0.163	0.037	0.073	0.041	0.022	0.149	0.041	0.074	0.101	0.085	0.029	0.081	-0.012	0.006	0.088
	Other Retail	0.050	-0.022	-0.025	0.039	0.020	0.079	0.023	0.067	0.072	0.016	0.039	0.038	0.035	0.157	-0.012	0.019	0.033	0.054	0.029
	Consumer Services	0.069	0.082	0.001	0.076	0.054	0.088	0.033	0.066	0.043	0.039	0.043	0.009	0.036	0.105	-0.022	-0.012	0.001	0.039	0.021
	Other Consumer Services	0.030	-0.008	-0.013	0.040	0.031	0.080	0.013	0.059	0.067	0.025	0.027	0.023	0.020	0.134	-0.018	0.040	0.026	0.049	0.027
	Telecommunications	-0.018	0.072	-0.009	0.094	0.129	0.154	0.008	-0.035	-0.048	0.002	0.021	0.069	0.074	0.085	-0.006	0.117	-0.002	0.006	0.095
	Other Telecommunications	-0.017	0.072	-0.009	0.094	0.128	0.155	0.008	-0.034	-0.047	0.003	0.022	0.069	0.074	0.085	-0.006	0.118	-0.002	0.006	0.096
	Transportation	0.200	0.076	0.087	0.189	0.174	0.103	0.019	0.110	0.034	0.151	0.179	0.193	0.174	0.134	0.083	0.213	0.025	0.034	0.110
	Other Transportation	0.183	0.096	0.099	0.146	0.218	0.075	0.006	0.073	0.009	0.181	0.124	0.187	0.172	0.102	0.079	0.227	0.019	0.020	0.081
	Utility	0.116	0.297	0.128	0.149	0.250	0.116	0.023	0.002	-0.025	0.108	0.022	0.185	0.220	0.083	0.001	0.105	0.011	0.025	0.099

Correlation Matrix CDS Spreads Volatility		UK													
		Banking	Banks	Beverage	Consume	Electric I	Life Insu	Manufac	Financia	Other Fi	Other Re	Consume	Other Co	Telecom	Other Te
UK	Banking	1.000													
	Banks	0.999	1.000												
	Beverages/Bottling	0.152	0.154	1.000											
	Consumer Goods	0.197	0.197	0.523	1.000										
	Electric Power	0.137	0.136	0.229	0.204	1.000									
	Life Insurance	0.115	0.115	0.222	0.212	0.110	1.000								
	Manufacturing	0.154	0.152	0.342	0.347	0.111	0.136	1.000							
	Financials	0.310	0.309	0.280	0.377	0.232	0.292	0.235	1.000						
	Other Financials	0.282	0.281	0.295	0.412	0.252	0.217	0.288	0.967	1.000					
	Other Retail	0.165	0.165	0.455	0.481	0.239	0.240	0.467	0.360	0.410	1.000				
	Consumer Services	0.217	0.214	0.455	0.519	0.232	0.300	0.348	0.356	0.390	0.589	1.000			
	Other Consumer Services	0.128	0.124	0.192	0.304	0.104	0.113	0.162	0.164	0.195	0.183	0.356	1.000		
	Telecommunications	0.156	0.155	0.262	0.303	0.139	0.181	0.289	0.214	0.227	0.342	0.339	0.158	1.000	
	Other Telecommunications	0.157	0.156	0.263	0.303	0.139	0.181	0.290	0.214	0.227	0.342	0.339	0.158	1.000	1.000
EU	Automative Manufacturer	0.153	0.150	0.282	0.308	0.211	0.259	0.422	0.363	0.432	0.437	0.438	0.260	0.270	0.270
	Banking	0.309	0.308	0.054	0.127	-0.028	0.019	0.219	0.044	0.044	0.005	0.106	0.088	0.104	0.105
	Banks	0.311	0.313	0.054	0.140	-0.028	0.016	0.209	0.040	0.034	0.009	0.089	0.048	0.100	0.100
	Beverages/Bottling	0.182	0.181	0.369	0.330	0.178	0.194	0.288	0.248	0.266	0.336	0.342	0.191	0.209	0.209
	Building Products	0.206	0.201	0.417	0.384	0.176	0.160	0.447	0.323	0.372	0.460	0.447	0.258	0.313	0.314
	Cable Media	0.164	0.163	0.154	0.233	0.158	0.192	0.212	0.218	0.263	0.244	0.247	0.156	0.192	0.192
	Chemicals	0.172	0.168	0.488	0.464	0.209	0.240	0.335	0.352	0.401	0.507	0.510	0.410	0.293	0.293
	Conglomerate/Diversified Mfg	0.157	0.154	0.355	0.368	0.179	0.204	0.300	0.288	0.316	0.399	0.347	0.170	0.274	0.274
	Other Telecommunications	0.089	0.088	0.163	0.324	0.052	0.154	0.343	0.218	0.270	0.284	0.492	0.105	0.221	0.222
	Consumer Goods	0.204	0.203	0.498	0.464	0.269	0.297	0.321	0.354	0.385	0.475	0.481	0.236	0.253	0.253
	Electric Power	0.032	0.032	0.095	0.097	0.120	0.261	0.051	0.127	0.112	0.115	0.140	0.004	0.179	0.180
	Electronics	0.197	0.194	0.350	0.342	0.224	0.191	0.287	0.256	0.281	0.375	0.383	0.211	0.253	0.253
	Energy	0.211	0.210	0.462	0.535	0.294	0.287	0.347	0.361	0.414	0.475	0.497	0.338	0.298	0.298
	Leisure	0.105	0.103	0.075	0.148	0.072	0.059	0.077	0.115	0.133	0.141	0.123	0.085	0.107	0.107
	Manufacturing	0.026	0.026	0.060	0.149	-0.004	0.044	0.047	0.045	0.046	0.062	0.097	0.010	0.098	0.098
	Metals&Mining	0.021	0.022	0.070	0.245	0.145	0.044	0.133	0.118	0.155	0.119	0.108	0.083	0.065	0.066
	Financials	0.231	0.230	0.024	0.154	0.019	0.010	0.093	0.294	0.289	0.109	0.082	0.124	0.111	0.111
	Other Financials	0.240	0.240	0.019	0.156	0.018	0.005	0.106	0.278	0.278	0.103	0.075	0.125	0.112	0.112
	Oil&Gas	0.181	0.180	0.385	0.516	0.264	0.270	0.300	0.329	0.381	0.389	0.425	0.314	0.250	0.251
	Consumer Services	0.100	0.095	0.260	0.239	0.115	0.192	0.248	0.207	0.229	0.283	0.308	0.263	0.164	0.164
	Other Consumer Services	0.098	0.095	0.419	0.309	0.204	0.150	0.324	0.238	0.268	0.303	0.296	0.134	0.174	0.174
	Telecommunications	0.108	0.107	0.175	0.194	0.092	0.167	0.093	0.336	0.309	0.223	0.225	0.067	0.190	0.191
	Transportation	0.089	0.088	0.167	0.326	0.052	0.153	0.344	0.219	0.270	0.284	0.492	0.103	0.222	0.222
	Utility	0.013	0.012	0.058	0.071	0.108	0.259	0.030	0.109	0.095	0.076	0.112	-0.003	0.157	0.158
JP	Automative Manufacturer	0.043	0.043	0.014	0.093	0.204	-0.052	0.142	0.000	0.011	0.005	-0.008	0.005	0.054	0.055
	Banking	0.164	0.164	0.272	0.283	0.254	0.248	0.183	0.296	0.297	0.350	0.378	0.069	0.199	0.200
	Banks	0.169	0.168	0.271	0.284	0.253	0.255	0.183	0.298	0.296	0.350	0.382	0.072	0.200	0.201
	Chemicals	0.084	0.084	0.037	0.357	0.057	0.041	0.300	0.107	0.140	0.189	0.097	0.086	0.199	0.199
	Electric Power	0.114	0.112	0.267	0.358	0.111	0.162	0.252	0.194	0.222	0.245	0.298	0.173	0.246	0.247
	Electronics	0.068	0.066	0.087	0.157	0.130	0.087	0.030	0.121	0.111	0.031	0.097	0.006	0.054	0.054
	Industrials	-0.022	-0.023	-0.032	0.033	-0.028	0.074	0.002	0.041	0.048	0.038	0.052	-0.048	-0.018	-0.018
	Manufacturing	0.114	0.112	0.280	0.277	0.224	0.103	0.239	0.151	0.172	0.222	0.245	0.034	0.137	0.137
	Metals&Mining	0.118	0.118	0.313	0.297	0.219	0.140	0.319	0.187	0.211	0.345	0.283	0.071	0.202	0.203
	Financials	0.151	0.151	0.363	0.298	0.219	0.136	0.255	0.256	0.259	0.308	0.289	0.049	0.174	0.174
	Railroads	0.133	0.132	0.280	0.250	0.180	0.142	0.210	0.168	0.169	0.267	0.244	0.043	0.161	0.161
	Other Retail	-0.015	-0.015	-0.010	0.084	0.028	0.020	-0.009	0.015	0.020	0.002	0.082	-0.025	0.057	0.057
	Consumer Services	0.056	0.055	0.014	0.076	0.003	0.051	0.026	0.025	0.028	0.013	0.054	-0.028	0.047	0.047
	Other Consumer Services	-0.014	-0.014	-0.006	0.074	0.015	0.041	0.011	0.019	0.022	0.014	0.070	-0.031	0.054	0.054
	Telecommunications	0.058	0.057	0.096	0.159	0.043	0.072	0.248	0.089	0.122	0.121	0.165	0.047	0.115	0.115
	Other Telecommunications	0.058	0.057	0.096	0.158	0.043	0.072	0.248	0.089	0.122	0.121	0.163	0.046	0.115	0.115
	Transportation	0.117	0.117	0.258	0.259	0.274	0.164	0.158	0.187	0.193	0.295	0.228	0.072	0.205	0.205
	Other Transportation	0.065	0.065	0.254	0.214	0.303	0.129	0.143	0.172	0.182	0.287	0.226	0.029	0.160	0.160
	Utility	0.100	0.097	0.281	0.480	0.098	0.181	0.272	0.206	0.243	0.256	0.290	0.168	0.228	0.229

Correlation Matrix CDS Spreads Volatility		EU																							
		Automat	Banking	Banks	Beverage	Building	Cable M	Chemical	Conglom	Other Te	Consume	Electric I	Electroni	Energy	Leisure	Manufac	Metals&	Financial	Other Fi	Oil&Gas	Consume	Other Co	Telecom	Transpor	Utility
EU	Automative Manufacturer	1.000																							
	Banking	0.073	1.000																						
	Banks	0.071	0.955	1.000																					
	Beverages/Bottling	0.349	0.109	0.115	1.000																				
	Building Products	0.529	0.141	0.119	0.328	1.000																			
	Cable Media	0.545	0.048	0.042	0.204	0.388	1.000																		
	Chemicals	0.407	0.113	0.085	0.384	0.472	0.260	1.000																	
	Conglomerate/Diversified Mfg	0.347	0.066	0.053	0.278	0.348	0.246	0.436	1.000																
	Other Telecommunications	0.419	0.133	0.126	0.195	0.371	0.205	0.233	0.220	1.000															
	Consumer Goods	0.533	0.110	0.117	0.855	0.407	0.371	0.492	0.358	0.252	1.000														
	Electric Power	0.125	-0.046	-0.047	0.096	0.083	0.039	0.104	0.107	0.161	0.140	1.000													
	Electronics	0.377	0.121	0.108	0.315	0.323	0.248	0.402	0.381	0.162	0.421	0.064	1.000												
	Energy	0.097	0.121	0.112	0.437	0.476	0.502	0.540	0.398	0.270	0.648	0.154	0.464	1.000											
	Leisure	0.173	0.216	0.213	0.096	0.147	0.138	0.127	0.121	0.110	0.133	0.002	0.125	0.179	1.000										
	Manufacturing	0.126	0.069	0.069	0.047	0.071	0.125	0.069	0.056	0.054	0.099	-0.030	0.075	0.120	0.013	1.000									
	Metals&Mining	0.315	-0.007	-0.006	0.089	0.171	0.183	0.118	0.115	0.163	0.172	0.029	0.110	0.234	0.087	0.075	1.000								
	Financials	0.131	0.145	0.135	0.070	0.170	0.082	0.114	0.073	0.100	0.081	-0.026	0.105	0.179	0.170	0.099	0.030	1.000							
	Other Financials	0.142	0.163	0.154	0.050	0.177	0.088	0.110	0.073	0.112	0.062	-0.026	0.106	0.178	0.188	0.098	0.033	0.981	1.000						
	Oil&Gas	0.701	0.117	0.114	0.399	0.414	0.542	0.472	0.347	0.248	0.621	0.113	0.406	0.953	0.180	0.130	0.277	0.155	0.157	1.000					
	Consumer Services	0.327	0.138	0.085	0.212	0.303	0.240	0.362	0.226	0.187	0.313	0.052	0.216	0.354	0.411	0.045	0.134	0.114	0.120	0.323	1.000				
	Other Consumer Services	0.295	0.021	0.013	0.240	0.333	0.173	0.289	0.270	0.132	0.345	0.124	0.274	0.352	0.062	0.021	0.195	0.028	0.026	0.316	0.342	1.000			
	Telecommunications	0.164	0.094	0.089	0.349	0.170	0.125	0.281	0.185	0.081	0.322	0.047	0.258	0.197	0.090	0.084	-0.003	0.089	0.080	0.169	0.141	0.146	1.000		
	Transportation	0.419	0.132	0.125	0.196	0.369	0.204	0.232	0.220	0.998	0.252	0.161	0.160	0.269	0.109	0.054	0.163	0.100	0.112	0.248	0.185	0.133	0.081	1.000	
	Utility	0.135	-0.051	-0.052	0.076	0.060	0.063	0.072	0.079	0.151	0.124	0.994	0.051	0.147	0.001	-0.030	0.040	-0.035	-0.035	0.121	0.045	0.117	0.037	0.151	1.000
JP	Automative Manufacturer	0.078	0.180	0.184	0.022	0.243	0.052	-0.002	0.045	0.183	0.010	-0.052	0.009	0.036	0.077	0.020	0.203	0.007	0.016	0.057	0.013	0.081	-0.029	0.183	-0.053
	Banking	0.227	-0.008	-0.020	0.270	0.261	0.126	0.302	0.231	0.204	0.329	0.115	0.236	0.271	0.076	0.023	0.082	0.063	0.047	0.235	0.120	0.236	0.189	0.203	0.094
	Banks	0.229	-0.009	-0.021	0.270	0.261	0.125	0.302	0.231	0.206	0.329	0.117	0.237	0.271	0.077	0.023	0.082	0.063	0.047	0.234	0.127	0.235	0.191	0.204	0.096
	Chemicals	0.153	0.083	0.087	0.037	0.093	0.198	0.097	0.166	0.194	0.084	-0.020	0.120	0.158	0.117	0.163	0.145	0.161	0.176	0.187	0.069	0.065	0.071	0.194	-0.022
	Electric Power	0.217	0.093	0.078	0.158	0.289	0.128	0.276	0.233	0.176	0.194	0.130	0.176	0.270	0.088	0.024	0.074	0.019	0.023	0.249	0.156	0.344	0.176	0.176	0.115
	Electronics	0.096	0.076	0.076	0.023	0.074	0.110	0.083	0.065	0.071	0.078	0.006	0.096	0.111	0.050	0.048	0.090	0.041	0.046	0.131	0.092	0.187	0.086	0.072	0.013
	Industrials	0.129	0.053	0.049	0.012	-0.008	0.147	-0.051	-0.042	0.166	0.094	0.004	-0.010	0.091	0.003	0.075	0.052	0.032	0.041	0.135	-0.003	-0.016	-0.040	0.166	0.024
	Manufacturing	0.188	0.124	0.116	0.163	0.262	0.140	0.223	0.151	0.165	0.228	0.006	0.177	0.244	0.032	0.038	0.130	0.068	0.078	0.233	0.152	0.317	0.119	0.166	-0.001
	Metals&Mining	0.310	0.013	0.010	0.196	0.284	0.115	0.322	0.236	0.111	0.255	0.058	0.310	0.319	0.076	-0.002	0.145	0.018	0.022	0.274	0.140	0.296	0.139	0.111	0.037
	Financials	0.250	0.081	0.070	0.256	0.333	0.110	0.338	0.214	0.116	0.307	0.031	0.281	0.308	0.051	0.112	0.075	0.045	0.046	0.271	0.138	0.299	0.127	0.117	0.009
	Railroads	0.187	0.072	0.071	0.201	0.164	0.105	0.185	0.173	0.089	0.240	0.043	0.226	0.281	0.051	0.079	0.063	0.029	0.029	0.252	0.125	0.268	0.135	0.091	0.032
	Other Retail	0.126	0.083	0.088	0.005	0.066	0.018	-0.005	0.025	0.211	0.009	0.003	0.042	0.035	0.003	0.047	0.121	0.104	0.109	0.044	-0.005	0.066	0.068	0.210	0.004
	Consumer Services	0.125	0.166	0.168	-0.020	0.063	0.150	-0.008	0.021	0.085	0.026	-0.014	0.021	0.107	0.014	0.050	0.101	0.096	0.106	0.133	0.038	0.102	0.001	0.085	-0.003
	Other Consumer Services	0.136	0.112	0.116	-0.011	0.090	0.022	-0.015	0.015	0.215	-0.005	-0.012	0.038	0.040	0.003	0.064	0.107	0.121	0.126	0.052	0.002	0.049	0.037	0.216	-0.010
	Telecommunications	0.241	0.132	0.095	0.064	0.230	0.146	0.119	0.147	0.265	0.129	0.026	0.126	0.185	0.036	0.157	0.162	0.054	0.065	0.197	0.087	0.117	-0.002	0.265	0.026
	Other Telecommunications	0.241	0.132	0.095	0.063	0.230	0.146	0.118	0.147	0.265	0.129	0.026	0.126	0.185	0.036	0.157	0.162	0.054	0.065	0.197	0.086	0.117	-0.002	0.264	0.026
	Transportation	0.264	0.039	0.047	0.246	0.237	0.218	0.290	0.290	0.094	0.328	0.079	0.285	0.355	0.062	0.130	0.071	0.070	0.070	0.351	0.100	0.191	0.128	0.094	0.070
	Other Transportation	0.230	0.011	0.016	0.245	0.222	0.185	0.305	0.267	0.105	0.336	0.060	0.246	0.305	0.058	0.052	0.056	0.025	0.025	0.295	0.098	0.208	0.109	0.104	0.047
	Utility	0.180	0.082	0.065	0.160	0.220	0.131	0.308	0.251	0.200	0.198	0.109	0.171	0.278	0.086	0.044	0.115	0.045	0.051	0.269	0.142	0.321	0.108	0.197	0.095

Correlation Matrix CDS Spreads Volatility		JP																		
		Automat	Banking	Banks	Chemical	Electric I	Electroni	Industria	Manufac	Metals&	Financia	Railroads	Other R	Consume	Other C	Telecom	Other Te	Transpor	Other Tr	Utility
JP	Automative Manufacturer	1.000																		
	Banking	0.098	1.000																	
	Banks	0.097	0.998	1.000																
	Chemicals	0.176	0.152	0.151	1.000															
	Electric Power	0.118	0.374	0.375	0.242	1.000														
	Electronics	0.157	0.185	0.183	0.148	0.152	1.000													
	Industrials	0.055	0.023	0.021	0.173	0.057	0.189	1.000												
	Manufacturing	0.348	0.326	0.327	0.249	0.362	0.674	0.380	1.000											
	Metals&Mining	0.169	0.418	0.416	0.231	0.362	0.264	0.063	0.459	1.000										
	Financials	0.188	0.427	0.425	0.167	0.303	0.302	0.061	0.504	0.583	1.000									
	Railroads	0.076	0.260	0.260	0.138	0.288	0.195	0.097	0.336	0.358	0.341	1.000								
	Other Retail	0.141	0.097	0.096	0.247	0.085	0.148	0.218	0.175	0.229	0.124	0.140	1.000							
	Consumer Services	0.065	0.026	0.026	0.194	0.091	0.242	0.199	0.214	0.170	0.165	0.195	0.546	1.000						
	Other Consumer Services	0.137	0.085	0.085	0.262	0.075	0.155	0.222	0.215	0.213	0.153	0.184	0.909	0.620	1.000					
	Telecommunications	0.404	0.165	0.163	0.225	0.182	0.129	0.230	0.321	0.156	0.238	0.126	0.061	0.070	0.081	1.000				
	Other Telecommunications	0.404	0.165	0.163	0.225	0.181	0.129	0.230	0.320	0.156	0.238	0.126	0.061	0.070	0.082	1.000	1.000			
	Transportation	0.142	0.385	0.385	0.221	0.233	0.242	0.132	0.349	0.370	0.397	0.479	0.204	0.213	0.231	0.210	0.210	1.000		
	Other Transportation	0.080	0.404	0.402	0.155	0.177	0.233	0.116	0.329	0.350	0.384	0.276	0.091	0.061	0.072	0.155	0.155	0.821	1.000	
	Utility	0.117	0.384	0.379	0.339	0.787	0.200	0.097	0.377	0.383	0.408	0.299	0.096	0.133	0.089	0.193	0.193	0.257	0.205	1.000

Table 60: Correlation for Sectoral CDS Spreads Volatility [Full Sample Period]

Correlation Matrix CDS Spreads Volatility		US																																														UK														EU																								JP																		
		Airlines	Bank	Banking	Beverage	Building	Cable M	Conglom	Chemical	Containe	Consum	Other C	Electric I	Electric I	Electroni	Energy	Food Pr	Oil&Gas	Healthca	Home Bu	Industria	Informat	Leisure	Lodging	Machiner	Manufac	Metals&!	Financia	Other Fi	Oilfield M	Pharmac	Property	Publishi	Railroads	Real Est	Other R	Restaura	Consume	Retail St	Healthca	Other C	Telecom	Other Te	Textiles\	Utility	Tobacco	Transpor	Other Tr	Vehicle Par	Banking	Banks	Beverage	Consume	Electric I	Life Insu	Manufac	Financial	Other Fi	Other R	Consume	Other C	Telecom	Other Te	Automat	Banking	Banks	Beverage	Building	Cable M	Chemical	Conglom	Other Te	Consume	Electric I	Electroni	Energy	Leisure	Manufac	Metals&!	Financia	Other Fi	Oil&Gas	Consume	Other Co	Telecom	Transpor	Utility	Automat	Banking	Banks	Chemical	Electric I	Electroni	Industria	Manufac	Metals&!	Financia	Railroads	Other R	Consume	Other Co	Telecom	Other Tc	Transpor	Other Tr	Utility
US	Airlines	1.000
	Bank	0.258	1.000
	Banking	0.264	0.977	1.000
	Beverages/Bottling	0.119	0.327	0.324	1.000
	Building Products	0.061	0.260	0.274	0.209	1.000
	Cable Media	0.156	0.315	0.341	0.191	0.200	1.000
	Conglomerate/Diversified Mfg	0.104	0.190	0.203	0.211	0.228	0.137	1.000
	Chemicals	0.232	0.416	0.445	0.371	0.297	0.507	0.320	1.000
	Containers	0.160	0.195	0.209	0.311	0.121	0.313	0.189	0.436	1.000
	Consumer Goods	0.128	0.280	0.277	0.320	0.262	0.177	0.264	0.305	0.336	1.000
	Other Consumer Goods	0.108	0.317	0.321	0.228	0.232	0.138	0.189	0.371	0.273	0.495	1.000
	Electric Power	-0.119	0.017	0.021	0.029	0.046	0.045	0.030	0.074	0.317	0.131	0.074	1.000
	Electric Utility	0.044	0.184	0.184	0.140	0.088	0.158	0.076	0.320	0.257	0.324	0.212	0.055	1.000
	Electronics	0.040	0.173	0.185	0.540	0.238	0.224	0.201	0.395	0.184	0.302	0.253	0.061	0.189	1.000
	Energy	0.003	0.225	0.226	0.190	0.230	0.059	0.097	0.181	0.083	0.329	0.436	0.119	0.141	0.215	1.000
	Food Processors	0.107	0.149	0.146	0.203	0.220	0.126	0.209	0.286	0.288	0.931	0.358	0.121	0.325	0.246	0.314	1.000
	Oil&Gas	-0.004	0.188	0.172	0.167	0.240	0.070	0.105	0.150	0.069	0.399	0.428	0.111	0.142	0.212	0.940	0.305	1.000
	Healthcare	0.048	0.243	0.259	0.139	0.188	0.269	0.297	0.378	0.344	0.264	0.178	0.067	0.196	0.251	0.109	0.221	0.093	1.000
	Home Builders	0.397	0.379	0.368	0.377	0.231	0.277	0.280	0.446	0.344	0.404	0.301	0.073	0.152	0.314	0.215	0.344	0.314	0.226	1.000
	Industrials	0.028	0.115	0.128	0.094	0.066	0.151	0.062	0.137	0.088	0.142	0.091	0.069	0.066	0.100	0.032	0.114	0.026	0.043	0.098	1.000
	Information/Data Technology	0.052	0.099	0.112	0.393	0.183	0.128	0.206	0.305	0.189	0.210	0.173	0.016	0.197	0.434	0.144	0.192	0.140	0.212	0.288	0.102	1.000
	Leisure	0.173	0.230	0.222	0.290	0.157	0.208	0.079	0.254	0.147	0.226	0.199	0.012	0.177	0.235	0.209	0.248	0.185	0.114	0.261	0.142	0.216	1.000
	Lodging	0.255	0.183	0.187	0.270	0.118	0.137	0.214	0.363	0.247	0.176	0.184	-0.008	0.116	0.140	0.040	0.163	0.061	0.167	0.395	0.227	0.245	0.144	1.000
	Machinery	0.281	0.432	0.438	0.334	0.251	0.298	0.153	0.451	0.284	0.335	0.358	-0.017	0.241	0.226	0.214	0.274	0.192	0.202	0.405	0.081	0.199	0.233	0.263	1.000
	Manufacturing	0.267	0.506	0.510	0.602	0.342	0.407	0.360	0.601	0.327	0.425	0.374	0.036	0.251	0.647	0.254	0.256	0.258	0.342	0.585	0.155	0.452	0.328	0.242	0.489	1.000
	Metals&Mining	0.241	0.297	0.277	0.458	0.374	0.236	0.323	0.434	0.297	0.425	0.315	0.093	0.206	0.464	0.221	0.337	0.318	0.315	0.559	0.093	0.318	0.197	0.266	0.481	0.670	1.000
	Financials	-0.150	0.111	0.109	0.070	0.328	0.000	0.111	0.076	-0.053	0.361	0.272	0.119	0.041	0.176	0.354	0.339	0.336	0.064	0.052	0.178	0.106	0.096	-0.037	0.082	0.135	0.140	1.000
	Other Financials	-0.150	0.111	0.109	0.070	0.328	0.000	0.111	0.076	-0.053	0.361	0.272	0.119	0.041	0.176	0.354	0.339	0.336	0.064	0.052	0.178	0.106	0.096	-0.037	0.082	0.135	0.140	1.000	1.000
	Oilfield Machinery and Products	0.220	0.417	0.416	0.293	0.172	0.224	0.149	0.366	0.198	0.286	0.210	0.027	0.168	0.165	0.182	0.163	0.182	0.194	0.262	0.081	0.176	0.116	0.142	0.402	0.415	0.345	-0.022	-0.022	1.000
	Pharmaceuticals	0.054	0.260	0.263	0.592	0.221	0.153	0.223	0.434	0.212	0.357	0.356	0.103	0.257	0.533	0.289	0.284	0.276	0.208	0.305	0.185	0.493	0.237	0.341	0.298	0.508	0.431	0.316	0.316	0.198	1.000
	Property&Casualty	0.196	0.113	0.126	0.263	0.019	0.107	0.208	0.331	0.246	0.186	0.188	-0.037	0.108	0.127	0.018	0.239	0.028	0.153	0.406	0.091	0.280	0.027	0.469	0.279	0.120	0.223	-0.023	-0.023	0.064	0.357	1.000
	Publishing	0.173	0.186	0.195	0.189	0.154	0.284	0.062	0.211	0.182	0.397	0.085	-0.024	0.009	0.068	-0.006	0.351	0.010	0.144	0.174	0.136	0.037	0.110	0.077	0.165	0.211	0.156	0.128	0.128	0.070	0.040	1.000
	Railroads	0.292	0.453	0.462	0.341	0.156	0.431	0.129	0.501	0.296	0.249	0.236	0.003	0.134	0.230	0.172	0.130	0.141	0.233	0.365	0.121	0.159	0.173	0.189	0.426	0.484	0.334	-0.002	-0.002	0.304	0.268	0.171	0.275	1.000
	Real Estate	0.177	0.363	0.367	0.274	0.309	0.236	0.252	0.392	0.191	0.372	0.297	0.012	0.179	0.246	0.257	0.346	0.297	0.258	0.327	0.084	0.163	0.240	0.238	0.434	0.402	0.449	0.176	0.176	0.370	0.303	0.211	0.129	0.295	1.000
	Other Retail	0.044	0.147	0.155	0.006	0.084	0.137	0.017	0.117	0.181	0.191	0.152	0.260	-0.015	0.050	0.076	0.174	0.063	0.118	0.110	0.132	0.033	0.217	0.059	0.072	0.086	0.057	0.179	0.179	0.059	0.115	-0.021	0.078	0.114	0.081	1.000
	Restaurants	0.120	0.134	0.143	0.376	0.130	0.187	0.230	0.300	0.463	0.203	0.171	0.085	0.128	0.222	0.084	0.151	0.092	0.179	0.346	0.052	0.181	0.138	0.283	0.177	0.314	0.288	-0.016	-0.016	0.139	0.206	0.213	0.113	0.221	0.216	0.033	1.000
	Consumer Services	0.268	0.455	0.466	0.312	0.284	0.606	0.271	0.592	0.401	0.438	0.328	0.055	0.216	0.351	0.137	0.322	0.197	0.439	0.474	0.150	0.210	0.295	0.252	0.456	0.637	0.557	0.113	0.113	0.351	0.291	0.161	0.303	0.484	0.413	0.183	0.313	1.000
	Retail Stores Food and Drug	0.315	0.438	0.456	0.303	0.248	0.433	0.265	0.600	0.425	0.396	0.360	0.031	0.199	0.249	0.133	0.279	0.167	0.324	0.525	0.193	0.196	0.235	0.314	0.402	0.549	0.460	-0.010	-0.010	0.403	0.214	0.242	0.212	0.428	0.364	0.194	0.306	0.628	1.000
	Healthcare Supplies	0.082	0.151	0.158	0.321	0.084	0.294	0.183	0.335	0.544	0.206	0.159	0.095	0.209	0.214	0.073	0.166	0.075	0.295	0.251	0.144	0.167	0.082	0.198	0.209	0.278	0.242	0.033	0.033	0.126	0.326	0.225	0.148	0.262	0.153	0.052	0.551	0.334	0.244	1.000
	Other Consumer Services	0.317	0.430	0.433	0.271	0.314	0.365	0.287	0.495	0.372	0.355	0.380	0.026	0.211	0.250	0.180	0.225	0.202	0.330	0.495	0.218	0.185	0.276	0.280	0.429	0.599	0.530	0.032	0.032	0.342	0.174	0.118	0.207	0.380	0.440	0.171	0.328	0.618	0.522	0.273	1.000
	Telecommunications	0.084	0.298	0.314	0.330	0.260	0.378	0.202	0.517	0.284	0.317	0.274	0.269	0.197	0.413	0.220	0.228	0.192	0.361	0.274	0.136	0.218	0.264	0.105	0.360	0.504	0.448	0.228	0.228	0.244	0.333	0.071	0.155	0.296	0.352	0.177	0.206	0.479	0.337	0.297	0.395	1.000
	Other Telecommunications	0.128	0.244	0.259	0.363	0.191	0.299	0.340	0.546	0.297	0.304	0.311	0.220	0.207	0.381	0.183	0.248	0.161	0.339	0.346	0.145	0.292	0.235	0.385	0.369	0.427	0.425	0.174	0.174	0.195	0.445	0.367	0.108	0.247	0.328	0.129	0.277	0.417	0.337	0.307	0.364	0.820	1.000
	Textiles\Apparel\Shoes	0.216	0.320	0.327	0.220	0.227	0.165	0.249	0.394	0.318	0.401	0.308	0.029	0.306	0.245	0.191	0.384	0.208	0.248	0.414	0.143	0.229	0.195	0.207	0.455	0.389	0.441	0.188	0.188	0.245	0.274	0.242	0.090	0.294	0.276	0.204	0.208	0.386	0.493	0.226	0.416	0.336	0.341	1.000
	Utility	-0.024	0.264	0.276	0.327	0.178	0.162	0.215	0.356	0.388	0.277	0.257	0.360	0.180	0.284	0.202	0.208	0.176	0.228	0.258	0.186	0.174	0.147	0.204	0.199	0.314	0.267	0.172	0.172	0.209	0.344	0.139	0.090	0.215	0.224	0.110	0.549	0.286	0.236	0.519	0.256	0.370	0.363	0.187	1.000
	Tobacco	0.121	0.264	0.272	0.242	0.171	0.153	0.135	0.344	0.246	0.251	0.132	0.040	0.140	0.198	0.121	0.114	0.092	0.118	0.203	0.328	0.071	0.079	0.232	0.198	0.289	0.220	0.047	0.047	0.271	0.281	0.089	0.078	0.264	0.239	0.038	0.126	0.216	0.310	0.160	0.209	0.230	0.206	0.174	0.331	1.000
	Transportation	0.002	-0.041	-0.032	-0.042	0.076	0.009	-0.060	-0.034	-0.048	0.039	-0.010	0.118	0.056	0.089	0.104	0.041	0.097	-0.050	-0.006	-0.072	0.030	-0.018	-0.038	-0.029	-0.019	-0.004	0.079	0.079	-0.008	-0.054	-0.003	-0.039	0.081	-0.023	-0.038	0.053	-0.008	-0.049	-0.060	-0.037	0.115	0.092	-0.058	0.087	0.164	1.000
	Other Transportation	-0.117	-0.027	-0.023	0.013	-0.015	0.003	-0.029	-0.004	0.007	0.066	0.026	0.170	0.080	0.105	0.134	0.091	0.129	0.002	0.032	-0.041	0.104	-0.020	0.036	-0.012	-0.036	0.005	0.030	0.030	-0.018	0.027	0.161	-0.059	0.102	-0.014	0.019	0.108	-0.030	-0.008	-0.002	-0.049	0.118	0.155	-0.003	0.117	0.163	0.884	1.000
	Vehicle Parts	0.127	0.200	0.211	0.338	0.167	0.254	0.090	0.238	0.114	0.184	0.087	-0.025	0.077	0.320	0.091	0.122	0.084	0.102	0.282	0.100	0.179	0.219	0.176	0.173	0.517	0.254	-0.009	-0.009	0.168	0.242	0.063	0.179	0.245	0.185	0.071	0.202	0.277	0.246	0.071	0.242	0.221	0.181	0.116	0.091	0.145	-0.078	-0.058	1.000
UK	Banking	0.248	0.614	0.631	0.363	0.199	0.281	0.240	0.426	0.251	0.287	0.279	0.055	0.215	0.184	0.184	0.165	0.142	0.290	0.284	0.086	0.133	0.169	0.139	0.452	0.458	0.339	0.106	0.106	0.432	0.314	0.126	0.203	0.503	0.337	0.142	0.168	0.400	0.399	0.223	0.365	0.290	0.232	0.337	0.334	0.281	-0.034	-0.024	0.055	1.000
	Banks	0.249	0.620	0.621	0.364	0.176	0.261	0.207	0.407	0.246	0.278	0.283	0.057	0.217	0.182	0.190	0.157	0.149	0.282	0.282	0.079	0.128	0.174	0.135	0.455	0.455	0.339	0.087	0.087	0.435	0.316	0.113	0.197	0.502	0.329	0.146	0.156	0.385	0.381	0.216	0.364	0.289	0.225	0.333	0.328	0.279	-0.040	-0.023	0.053	0.989	1.000
	Beverages/Bottling	0.216	0.374	0.378	0.468	0.149	0.241	0.252	0.515	0.325	0.329	0.323	0.062	0.192	0.380	0.197	0.217	0.168	0.188	0.481	0.070	0.325	0.131	0.235	0.475	0.570	0.492	0.026	0.026	0.330	0.431	0.327	0.133	0.425	0.306	0.020	0.219	0.373	0.386	0.236	0.397	0.334	0.338	0.347	0.280	0.339	-0.028	0.022	0.138	0.511	0.520	1.000
	Consumer Goods	0.211	0.496	0.488	0.403	0.210	0.280	0.156	0.451	0.282	0.398	0.379	0.107	0.244	0.326	0.364	0.298	0.317	0.238	0.339	0.118	0.210	0.244	0.077	0.549	0.563	0.416	0.203	0.203	0.445	0.367	0.129	0.163	0.519	0.388	0.118	0.155	0.438	0.416	0.183	0.418	0.403	0.320	0.393	0.308	0.321	0.045	0.079	0.152	0.655	0.660	0.686	1.000
	Electric Power	0.288	0.338	0.354	0.362	0.106	0.226	0.147	0.353	0.301	0.298	0.212	0.098	0.100	0.297	0.182	0.170	0.147	0.197	0.322	0.027	0.103	0.106	0.076	0.303	0.467	0.367	0.024	0.024	0.372	0.258	0.132	0.290	0.415	0.240	0.110	0.196	0.363	0.399	0.226	0.363	0.301	0.265	0.228	0.210	0.284	0.000	0.013	0.193	0.493	0.489	0.475	0.562	1.000
	Life Insurance	0.109	0.303	0.314	0.190	0.186	0.167	0.154	0.344	0.217	0.277	0.238	0.134	0.105	0.242	0.171	0.230	0.186	0.194	0.274	0.058	0.100	0.166	0.234	0.417	0.343	0.409	0.181	0.181	0.218	0.206	0.090	0.108	0.256	0.274	0.058	0.211	0.390	0.250	0.092	0.278	0.356	0.371	0.260	0.361	0.228	0.129	0.085	0.055	0.371	0.372	0.297	0.361	0.220	1.000
	Manufacturing	0.251	0.429	0.431	0.403	0.157	0.243	0.376	0.484	0.420	0.271	0.244	0.037	0.184	0.208	0.174	0.182	0.155	0.413	0.412	0.066	0.298	0.120	0.304	0.415	0.449	0.453	-0.035	-0.035	0.330	0.387	0.433	0.143	0.443	0.332	0.051	0.262	0.429	0.455	0.312	0.440	0.276	0.358	0.359	0.262	0.294	-0.082	0.020	0.111	0.548	0.542	0.548	0.528	0.454	0.287	1.000
	Financials	0.200	0.429	0.432	0.408	0.223	0.370	0.165	0.519	0.375	0.287	0.302	0.070	0.132	0.300	0.222	0.176	0.205	0.326	0.336	0.104	0.191	0.264	0.141	0.463	0.502	0.420	0.131	0.131	0.365	0.380	0.149	0.190	0.527	0.336	0.152	0.300	0.434	0.402	0.382	0.372	0.431	0.352	0.341	0.385	0.317	0.006	0.030	0.127	0.620	0.617	0.503	0.648	0.496	0.423	0.520	1.000
	Other Financials	0.197	0.376	0.384	0.388	0.229	0.363	0.158	0.492	0.369	0.273	0.284	0.058	0.111	0.306	0.210	0.179	0.202	0.333	0.328	0.108	0.197	0.272	0.138	0.428	0.483	0.407	0.116	0.116	0.332	0.354	0.143	0.182	0.491	0.304	0.177	0.302	0.416	0.393	0.371	0.366	0.428	0.358	0.347	0.348	0.265	-0.001	0.029	0.138	0.544	0.540	0.444	0.598	0.469	0.352	0.485	0.974	1.000
	Other Retail	0.312	0.400	0.406	0.415	0.215	0.327	0.181	0.412	0.295	0.258	0.238	0.119	0.129	0.302	0.191	0.159	0.160	0.217	0.416	0.121	0.186	0.245	0.167	0.440	0.546	0.458	0.052	0.052	0.377	0.314	0.138	0.197	0.518	0.319	0.218	0.235	0.465	0.469	0.208	0.442	0.357	0.297	0.347	0.223	0.220	-0.046	-0.029	0.219	0.565	0.567	0.524	0.676	0.597	0.301	0.559	0.579	0.565	1.000
	Consumer Services	0.203	0.358	0.347	0.298	0.215	0.229	0.227	0.367	0.218	0.375	0.332	-0.004	0.221	0.229	0.429	0.357	0.419	0.196	0.295	0.101	0.139	0.295	0.128	0.431	0.424	0.365	0.269	0.269	0.254	0.284	0.112	0.131	0.411	0.430	0.074	0.232	0.368	0.345	0.206	0.362	0.334	0.279	0.307	0.194	0.196	0.005	0.032	0.093	0.526	0.519	0.392	0.655	0.394	0.288	0.414	0.533	0.515	0.618	1.000
	Other Consumer Services	0.125	0.094	0.105	0.114	0.075	0.144	0.315	0.324	0.132	0.123	0.062	-0.034	0.121	0.138	0.041	0.057	0.035	0.261	0.109	0.009	0.106	0.063	0.077	0.107	0.249	0.190	0.004	0.004	0.109	0.152	0.043	0.074	0.219	0.191	-0.042	0.121	0.205	0.144	0.168	0.183	0.260	0.215	0.114	0.078	0.079	-0.081	-0.093	0.078	0.207	0.192	0.148	0.155	0.119	0.085	0.260	0.206	0.198	0.231	0.343	1.000
	Telecommunications	0.240	0.475	0.483	0.322	0.162	0.297	0.232	0.416	0.277	0.303	0.285	0.123	0.130	0.223	0.248	0.176	0.239	0.239	0.438	0.099	0.146	0.160	0.108	0.356	0.520	0.430	0.034	0.034	0.347	0.200	0.123	0.179	0.498	0.304	0.079	0.298	0.493	0.494	0.226	0.471	0.354	0.289	0.313	0.332	0.233	0.045	0.075	0.105	0.607	0.604	0.518	0.630	0.584	0.378	0.526	0.551	0.512	0.663	0.519	0.159	1.000
	Other Telecommunications	0.242	0.478	0.486	0.324	0.166	0.300	0.237	0.419	0.279	0.306	0.287	0.118	0.131	0.224	0.249	0.178	0.240	0.241	0.442	0.100	0.147	0.162	0.109	0.359	0.523	0.431	0.035	0.035	0.349	0.202	0.124	0.180	0.501	0.307	0.073	0.301	0.496	0.498	0.227	0.474	0.354	0.290	0.315	0.334	0.235	0.045	0.071	0.107	0.610	0.605	0.520	0.632	0.582	0.380	0.527	0.553	0.514	0.664	0.522	0.159	0.999	1.000
EU	Automotive Manufacturer	0.250	0.529	0.545	0.380	0.200	0.317	0.246	0.427	0.300	0.299	0.291	0.113	0.102	0.247	0.217	0.165	0.179	0.363	0.379	0.116	0.209	0.248	0.113	0.447	0.568	0.437	0.053	0.053	0.456	0.234	0.089	0.231	0.445	0.341	0.161	0.228	0.485	0.508	0.181	0.506	0.366	0.286	0.339	0.260	0.209	-0.011	0.016	0.198	0.668	0.656	0.485	0.669	0.549	0.299	0.577	0.622	0.600	0.668	0.497	0.181	0.702	0.704	1.000
	Banking	0.072	0.392	0.401	0.260	0.368	0.191	0.344	0.394	0.257	0.332	0.242	0.054	0.260	0.198	0.295	0.277	0.283	0.303	0.241	-0.009	0.175	0.102	0.102	0.275	0.351	0.328	0.162	0.162	0.222	0.254	0.099	0.119	0.296	0.320	-0.031	0.269	0.303	0.243	0.199	0.282	0.323	0.266	0.344	0.341	0.190	0.013	0.041	-0.001	0.515	0.505	0.339	0.420	0.259	0.354	0.378	0.444	0.399	0.289	0.420	0.267	0.443	0.444	0.353	1.000
	Banks	0.118	0.430	0.419	0.241	0.113	0.175	0.114	0.292	0.176	0.212	0.219	0.040	0.126	0.139	0.225	0.150	0.200	0.167	0.210	0.004	0.101	0.122	0.007	0.352	0.273	0.275	0.148	0.148	0.251	0.214	0.073	0.121	0.355	0.230	-0.008	0.142	0.266	0.206	0.146	0.223	0.240	0.167	0.294	0.258	0.174	0.038	0.085	-0.054	0.571	0.589	0.414	0.556	0.321	0.406	0.373	0.490	0.417	0.378	0.436	0.124	0.467	0.468	0.404	0.575	1.000
	Beverages/Bottling	0.206	0.466	0.472	0.382	0.222	0.296	0.179	0.471	0.308	0.287	0.248	0.069	0.160	0.282	0.244	0.161	0.193	0.356	0.306	0.082	0.175	0.168	0.136	0.499	0.505	0.405	0.102	0.102	0.457	0.365	0.145	0.183	0.489	0.380	0.078	0.185	0.458	0.399	0.254	0.369	0.357	0.291	0.267	0.307	0.385	-0.024	0.002	0.137	0.673	0.671	0.600	0.747	0.524	0.369	0.576	0.626	0.561	0.578	0.493	0.239	0.554	0.556	0.609	0.418	0.513	1.000
	Building Products	0.217	0.407	0.428	0.515	0.292	0.235	0.307	0.494	0.289	0.255	0.241	0.043	0.138	0.324	0.216	0.144	0.166	0.338	0.386	0.093	0.252	0.254	0.214	0.371	0.538	0.511	0.045	0.045	0.358	0.357	0.256	0.142	0.431	0.382	0.040	0.293	0.457	0.436	0.241	0.480	0.382	0.390	0.311	0.274	0.261	-0.026	0.015	0.166	0.527	0.508	0.531	0.570	0.505	0.266	0.621	0.567	0.551	0.611	0.527	0.235	0.656	0.659	0.693	0.406	0.353	0.576	1.000
	Cable Media	0.216	0.268	0.280	0.326	0.161	0.254	0.193	0.378	0.423	0.227	0.178	0.077	0.069	0.213	0.169	0.121	0.134	0.215	0.393	0.072	0.139	0.213	0.135	0.338	0.444	0.375	0.011	0.011	0.291	0.174	0.067	0.133	0.404	0.262	0.225	0.284	0.386	0.422	0.191	0.443	0.303	0.239	0.251	0.233	0.199	0.006	-0.011	0.160	0.393	0.386	0.392	0.454	0.498	0.310	0.407	0.510	0.498	0.584	0.399	0.161	0.605	0.608	0.567	0.266	0.250	0.398	0.566	1.000
	Chemicals	0.176	0.384	0.390	0.505	0.211	0.226	0.239	0.449	0.277	0.268	0.232	0.073	0.193	0.430	0.235	0.160	0.188	0.240	0.359	0.051	0.248	0.265	0.080	0.427	0.606	0.488	0.096	0.096	0.293	0.424	0.110	0.123	0.400	0.313	0.044	0.256	0.411	0.359	0.270	0.387	0.434	0.360	0.302	0.352	0.214	-0.041	-0.035	0.203	0.507	0.495	0.505	0.585	0.462	0.337	0.485	0.587	0.567	0.599	0.502	0.281	0.544	0.546	0.603	0.412	0.376	0.542	0.634	0.509	1.000
	Conglomerate/Diversified Mfg	0.120	0.260	0.276	0.237	0.198	0.260	0.093	0.333	0.213	0.129	0.127	0.027	0.078	0.205	0.115	0.063	0.082	0.163	0.282	0.017	0.128	0.258	0.067	0.253	0.317	0.257	0.006	0.006	0.238	0.150	0.027	0.171	0.305	0.199	0.091	0.174	0.327	0.365	0.084	0.269	0.262	0.192	0.154	0.168	0.194	0.001	0.016	0.162	0.339	0.330	0.341	0.423	0.359	0.267	0.325	0.401	0.377	0.431	0.271	0.075	0.421	0.423	0.456	0.245	0.243	0.379	0.378	0.428	0.380	1.000
	Other Telecommunications	-0.026	0.210	0.211	0.097	0.226	0.060	0.076	0.142	0.030	0.295	0.392	0.001	0.119	0.112	0.516	0.301	0.504	0.087	0.105	0.075	0.133	0.241	0.019	0.281	0.178	0.159	0.392	0.392	0.109	0.211	0.042	0.016	0.193	0.270	0.087	0.058	0.166	0.109	0.024	0.165	0.187	0.173	0.322	0.141	0.036	0.069	0.116	-0.048	0.250	0.249	0.164	0.417	0.083	0.223	0.154	0.264	0.261	0.222	0.580	0.031	0.277	0.278	0.228	0.335	0.351	0.235	0.238	0.163	0.221	0.131	1.000
	Consumer Goods	0.228	0.508	0.512	0.426	0.218	0.315	0.181	0.504	0.316	0.347	0.281	0.093	0.222	0.314	0.263	0.210	0.216	0.308	0.341	0.109	0.187	0.187	0.136	0.523	0.552	0.434	0.126	0.126	0.483	0.405	0.149	0.195	0.521	0.399	0.110	0.206	0.491	0.425	0.247	0.393	0.305	0.321	0.286	0.357	0.422	-0.004	0.019	0.157	0.714	0.715	0.669	0.815	0.556	0.412	0.596	0.660	0.590	0.642	0.543	0.228	0.614	0.616	0.654	0.433	0.538	0.950	0.508	0.443	0.576	0.415	0.262	1.000
	Electric Power	-0.031	0.132	0.148	0.096	0.126	0.113	0.083	0.136	0.241	0.299	0.242	0.368	0.052	0.134	0.160	0.247	0.135	0.112	0.093	0.174	0.059	0.031	0.026	0.095	0.148	0.147	0.303	0.303	0.124	0.233	0.017	0.133	0.144	0.092	0.156	0.054	0.189	0.119	0.043	0.129	0.233	0.178	0.187	0.254	0.132	0.045	0.055	0.001	0.237	0.236	0.159	0.270	0.205	0.177	0.155	0.210	0.208	0.249	0.208	0.020	0.216	0.217	0.248	0.156	0.184	0.211	0.184	0.158	0.159	0.123	0.326	0.246	1.000
	Electronics	0.241	0.392	0.404	0.335	0.143	0.372	0.179	0.404	0.314	0.206	0.167	0.077	0.246	0.225	0.147	0.095	0.108	0.182	0.306	0.090	0.095	0.176	0.145	0.292	0.436	0.317	-0.078	-0.078	0.348	0.186	0.059	0.230	0.428	0.234	0.078	0.249	0.401	0.443	0.184	0.383	0.253	0.207	0.217	0.244	0.336	-0.061	-0.031	0.288	0.457	0.449	0.444	0.503	0.450	0.214	0.416	0.447	0.418	0.518	0.392	0.222	0.535	0.538	0.508	0.270	0.260	0.498	0.494	0.440	0.388	0.369	0.109	0.562	0.145	1.000
	Energy	0.273	0.511	0.525	0.403	0.160	0.299	0.237	0.463	0.306	0.326	0.278	0.107	0.151	0.272	0.265	0.175	0.212	0.327	0.406	0.082	0.171	0.147	0.129	0.397	0.546	0.417	0.062	0.062	0.470	0.285	0.141	0.214	0.474	0.285	0.043	0.202	0.448	0.456	0.214	0.453	0.376	0.305	0.300	0.263	0.306	-0.037	-0.017	0.123	0.688	0.684	0.587	0.692	0.648	0.313	0.560	0.592	0.544	0.669	0.507	0.237	0.721	0.723	0.727	0.454	0.496	0.666	0.663	0.524	0.575	0.391	0.212	0.714	0.305	0.528	1.000
	Leisure	0.175	0.265	0.277	0.263	0.164	0.187	0.108	0.289	0.147	0.153	0.152	0.001	0.093	0.198	0.149	0.073	0.114	0.146	0.297	0.015	0.098	0.160	0.120	0.303	0.389	0.307	0.098	0.098	0.142	0.179	0.127	0.139	0.323	0.177	-0.015	0.173	0.328	0.286	0.116	0.337	0.226	0.197	0.210	0.139	0.116	-0.001	-0.027	0.163	0.322	0.313	0.309	0.392	0.331	0.260	0.281	0.318	0.303	0.436	0.326	0.115	0.428	0.431	0.390	0.216	0.186	0.345	0.400	0.367	0.386	0.349	0.196	0.376	0.077	0.295	0.394	1.000
	Manufacturing	0.230	0.531	0.548	0.475	0.312	0.348	0.274	0.547	0.335	0.336	0.304	0.103	0.198	0.356	0.271	0.191	0.218	0.352	0.432	0.088	0.231	0.260	0.157	0.447	0.641	0.519	0.122	0.122	0.409	0.366	0.158	0.233	0.514	0.411	0.062	0.307	0.571	0.502	0.262	0.537	0.472	0.308	0.333	0.379	0.306	-0.016	0.011	0.191	0.663	0.651	0.621	0.731	0.576	0.402	0.630	0.653	0.611	0.710	0.583	0.252	0.768	0.771	0.794	0.495	0.477	0.697	0.809	0.616	0.733	0.570	0.299	0.752	0.243	0.649	0.746	0.510	1.000
	Metals&Mining	0.072	0.351	0.341	0.375	0.188	0.200	0.214	0.382	0.329	0.268	0.265	0.127	0.196	0.240	0.208	0.194	0.201	0.270	0.312	0.128	0.234	0.118	0.266	0.348	0.408	0.421	0.046	0.046	0.376	0.323	0.275	0.072	0.248	0.267	0.032	0.273	0.360	0.413	0.264	0.365	0.282	0.321	0.312	0.356	0.242	-0.051	0.062	0.087	0.364	0.369	0.422	0.479	0.354	0.256	0.506	0.306	0.372	0.438	0.329	0.119	0.421	0.423	0.486	0.303	0.327	0.457	0.499	0.306	0.439	0.260	0.176	0.474	0.191	0.359	0.441	0.279	0.560	1.000
	Financials	0.103	0.407	0.403	0.266	0.456	0.232	0.412	0.437	0.265	0.309	0.223	0.072	0.094	0.242	0.231	0.211	0.211	0.410	0.289	0.011	0.169	0.124	0.115	0.265	0.446	0.414	0.132	0.132	0.250	0.210	0.098	0.140	0.338	0.374	0.037	0.229	0.411	0.344	0.178	0.437	0.343	0.296	0.243	0.312	0.187	-0.014	-0.013	0.050	0.427	0.413	0.356	0.450	0.284	0.324	0.508	0.431	0.407	0.434	0.421	0.290	0.560	0.562	0.480	0.524	0.339	0.465	0.576	0.428	0.483	0.336	0.280	0.484	0.171	0.369	0.525	0.381	0.663	0.371	1.000
	Other Financials	0.081	0.384	0.372	0.263	0.451	0.195	0.396	0.393	0.248	0.289	0.205	0.067	0.093	0.231	0.193	0.196	0.184	0.396	0.279	0.016	0.171	0.148	0.108	0.243	0.426	0.403	0.107	0.107	0.240	0.200	0.082	0.122	0.315	0.343	0.029	0.210	0.380	0.303	0.162	0.417	0.330	0.286	0.228	0.296	0.160	-0.030	-0.021	0.039	0.379	0.377	0.329	0.416	0.240	0.296	0.485	0.400	0.388	0.402	0.369	0.271	0.522	0.524	0.441	0.500	0.326	0.427	0.542	0.393	0.450	0.315	0.274	0.441	0.161	0.337	0.479	0.357	0.625	0.368	0.980	1.000
	Oil&Gas	0.256	0.529	0.538	0.411	0.171	0.260	0.201	0.437	0.276	0.349	0.297	0.126	0.157	0.276	0.341	0.203	0.289	0.315	0.470	0.074	0.168	0.141	0.126	0.424	0.543	0.414	0.097	0.097	0.489	0.282	0.148	0.179	0.452	0.294	0.036	0.191	0.426	0.440	0.201	0.434	0.358	0.293	0.301	0.286	0.311	-0.035	-0.015	0.143	0.660	0.659	0.581	0.685	0.623	0.326	0.535	0.577	0.526	0.637	0.480	0.194	0.681	0.683	0.689	0.425	0.479	0.662	0.620	0.490	0.564	0.380	0.195	0.708	0.256	0.484	0.934	0.374	0.714	0.453	0.474	0.436	1.000
	Consumer Services	0.074	0.179	0.186	0.206	0.160	0.122	0.196	0.357	0.280	0.317	0.271	-0.001	0.426	0.268	0.081	0.259	0.077	0.308	0.238	0.051	0.225	0.079	0.146	0.196	0.346	0.315	0.129	0.129	0.125	0.288	0.227	0.081	0.188	0.260	-0.014	0.158	0.349	0.260	0.257	0.272	0.224	0.266	0.303	0.163	0.093	-0.016	0.010	0.084	0.235	0.220	0.248	0.275	0.164	0.224	0.359	0.251	0.225	0.278	0.254	0.263	0.283	0.285	0.267	0.301	0.152	0.267	0.352	0.232	0.345	0.179	0.139	0.289	0.064	0.174	0.262	0.231	0.382	0.262	0.347	0.341	0.240	1.000
	Other Consumer Services	0.241	0.242	0.248	0.356	0.109	0.236	0.261	0.467	0.317	0.267	0.232	0.024	0.166	0.260	0.080	0.293	0.074	0.239	0.450	0.111	0.332	0.110	0.441	0.324	0.266	0.315	0.013	0.013	0.178	0.447	0.719	0.107	0.318	0.294	0.074	0.309	0.307	0.393	0.300	0.198	0.222	0.436	0.292	0.286	0.254	0.026	0.193	0.134	0.317	0.309	0.443	0.355	0.301	0.172	0.564	0.344	0.323	0.342	0.259	0.081	0.348	0.349	0.305	0.205	0.218	0.355	0.431	0.248	0.260	0.236	0.086	0.393	0.148	0.296	0.336	0.161	0.387	0.400	0.246	0.224	0.333	0.315	1.000
	Telecommunications	0.263	0.290	0.288	0.310	0.362	0.189	0.147	0.368	0.167	0.241	0.188	0.011	0.151	0.304	0.199	0.171	0.195	0.143	0.361	0.008	0.116	0.112	0.085	0.456	0.438	0.442	0.118	0.118	0.207	0.264	0.068	0.135	0.312	0.272	-0.024	0.220	0.358	0.320	0.139	0.319	0.341	0.271	0.236	0.224	0.197	0.118	0.017	0.104	0.370	0.366	0.382	0.470	0.306	0.370	0.315	0.420	0.397	0.505	0.358	0.141	0.432	0.435	0.401	0.287	0.290	0.479	0.429	0.415	0.486	0.284	0.109	0.521	0.128	0.228	0.470	0.359	0.500	0.283	0.423	0.386	0.467	0.227	0.258	1.000
	Transportation	-0.026	0.211	0.210	0.091	0.223	0.065	0.068	0.136	0.031	0.296	0.389	0.001	0.116	0.112	0.515	0.305	0.504	0.086	0.106	0.071	0.133	0.233	0.003	0.280	0.177	0.159	0.392	0.392	0.106	0.202	0.047	0.016	0.192	0.261	0.086	0.048	0.163	0.106	0.023	0.160	0.186	0.160	0.320	0.137	0.037	0.068	0.116	-0.049	0.248	0.247	0.169	0.421	0.085	0.220	0.156	0.264	0.261	0.221	0.579	0.026	0.277	0.278	0.228	0.334	0.351	0.236	0.232	0.160	0.220	0.129	0.997	0.263	0.327	0.106	0.211	0.193	0.299	0.176	0.279	0.273	0.195	0.137	0.087	0.109	1.000
	Utility	-0.049	0.087	0.103	0.071	0.113	0.088	0.077	0.109	0.222	0.283	0.229	0.362	0.040	0.119	0.147	0.245	0.125	0.092	0.077	0.174	0.055	0.026	0.037	0.067	0.109	0.124	0.307	0.307	0.086	0.216	0.027	0.118	0.106	0.074	0.145	0.050	0.158	0.093	0.024	0.104	0.208	0.173	0.173	0.235	0.109	0.052	0.065	-0.008	0.174	0.172	0.116	0.215	0.156	0.153	0.116	0.160	0.163	0.196	0.171	0.002	0.164	0.165	0.197	0.118	0.139	0.154	0.146	0.120	0.115	0.093	0.315	0.185	0.995	0.108	0.243	0.055	0.189	0.164	0.135	0.128	0.195	0.046	0.140	0.094	0.314	1.000
JP	Automotive Manufacturer	0.314	0.381	0.385	0.357	0.183	0.134	0.165	0.372	0.207	0.228	0.240	-0.066	0.104	0.197	0.130	0.149	0.130	0.214	0.409	0.062	0.146	0.109	0.305	0.338	0.422	0.308	-0.068	-0.068	0.378	0.176	0.318	0.115	0.276	0.269	-0.001	0.144	0.336	0.432	0.139	0.402	0.178	0.236	0.296	0.084	0.236	-0.115	-0.062	0.188	0.387	0.385	0.397	0.403	0.442	0.149	0.445	0.327	0.313	0.416	0.321	0.102	0.456	0.459	0.486	0.173	0.176	0.415	0.558	0.297	0.405	0.236	0.085	0.403	0.063	0.351	0.473	0.255	0.485	0.440	0.298	0.283	0.477	0.207	0.362	0.285	0.083	0.038	1.000
	Banking	0.292	0.358	0.356	0.310	0.216	0.220	0.120	0.405	0.271	0.347	0.372	0.007	0.183	0.207	0.298	0.305	0.329	0.225	0.419	0.089	0.145	0.266	0.223	0.496	0.435	0.418	0.082	0.082	0.357	0.185	0.212	0.114	0.353	0.398	0.051	0.211	0.387	0.435	0.118	0.449	0.272	0.248	0.392	0.192	0.263	0.003	0.029	0.206	0.447	0.445	0.396	0.540	0.412	0.348	0.402	0.462	0.426	0.467	0.529	0.149	0.465	0.467	0.473	0.321	0.318	0.470	0.448	0.383	0.438	0.309	0.302	0.491	0.129	0.380	0.466	0.260	0.498	0.376	0.325	0.294	0.481	0.152	0.283	0.354	0.299	0.101	0.593	1.000
	Banks	0.290	0.360	0.356	0.310	0.214	0.220	0.118	0.405	0.271	0.349	0.376	0.005	0.180	0.208	0.301	0.304	0.330	0.224	0.417	0.091	0.144	0.264	0.224	0.496	0.440	0.420	0.089	0.089	0.358	0.186	0.212	0.116	0.353	0.400	0.049	0.211	0.389	0.435	0.117	0.451	0.275	0.253	0.393	0.194	0.262	0.002	0.027	0.206	0.447	0.445	0.396	0.544	0.409	0.350	0.403	0.462	0.426	0.469	0.533	0.153	0.466	0.469	0.474	0.321	0.318	0.472	0.448	0.383	0.441	0.309	0.306	0.494	0.129	0.379	0.466	0.261	0.500	0.379	0.329	0.297	0.480	0.163	0.282	0.354	0.303	0.100	0.592	0.998	1.000
	Chemicals	0.152	0.201	0.203	0.160	0.014	0.210	0.037	0.220	0.164	0.152	0.120	0.004	0.056	0.070	0.087	0.108	0.085	0.041	0.266	0.191	0.067	0.210	0.175	0.256	0.200	0.128	0.021	0.021	0.096	0.177	0.118	0.145	0.220	0.146	0.166	0.093	0.195	0.171	0.121	0.250	0.167	0.140	0.145	0.118	0.244	-0.019	-0.014	0.101	0.236	0.232	0.209	0.254	0.221	0.216	0.185	0.247	0.216	0.295	0.235	0.053	0.216	0.217	0.187	0.149	0.163	0.303	0.198	0.283	0.230	0.244	0.106	0.285	0.063	0.177	0.234	0.186	0.229	0.133	0.133	0.108	0.229	0.129	0.125	0.222	0.104	0.039	0.137	0.270	0.271	1.000
	Electric Power	0.238	0.311	0.298	0.321	0.251	0.218	0.227	0.376	0.266	0.327	0.316	-0.005	0.137	0.221	0.263	0.323	0.296	0.334	0.425	0.060	0.190	0.213	0.286	0.408	0.342	0.418	0.078	0.078	0.281	0.278	0.328	0.153	0.258	0.357	0.016	0.180	0.307	0.364	0.168	0.278	0.235	0.276	0.318	0.162	0.208	-0.047	0.015	0.122	0.399	0.393	0.363	0.450	0.325	0.301	0.452	0.441	0.409	0.394	0.419	0.115	0.379	0.383	0.411	0.346	0.333	0.451	0.455	0.309	0.399	0.258	0.231	0.431	0.113	0.295	0.427	0.211	0.436	0.371	0.324	0.296	0.423	0.190	0.410	0.323	0.229	0.088	0.574	0.663	0.661	0.237	1.000
	Electronics	0.092	0.128	0.116	0.196	0.179	0.097	0.098	0.280	0.207	0.193	0.198	0.077	0.116	0.108	0.190	0.189	0.238	0.184	0.294	0.044	0.176	0.130	0.255	0.370	0.206	0.370	0.148	0.148	0.107	0.268	0.295	0.013	0.170	0.301	0.015	0.177	0.297	0.283	0.122	0.244	0.235	0.288	0.256	0.189	0.144	0.017	0.072	0.075	0.191	0.183	0.274	0.270	0.115	0.214	0.300	0.221	0.217	0.191	0.251	0.089	0.245	0.245	0.258	0.204	0.217	0.256	0.312	0.207	0.257	0.146	0.201	0.267	0.045	0.152	0.214	0.190	0.298	0.292	0.185	0.172	0.215	0.177	0.327	0.274	0.203	0.041	0.274	0.394	0.394	0.161	0.332	1.000
	Industrials	0.000	0.036	0.037	0.018	0.025	0.056	0.010	0.101	0.023	0.160	0.155	0.107	0.087	0.003	0.358	0.212	0.364	-0.046	0.042	0.127	0.078	0.122	0.015	0.150	0.053	0.046	0.189	0.189	0.027	0.141	0.065	0.063	0.142	0.135	0.136	0.006	0.084	0.033	0.146	0.053	0.074	0.059	0.134	0.036	-0.002	0.054	0.102	0.015	0.081	0.079	0.056	0.215	0.055	0.044	0.065	0.104	0.098	0.101	0.292	0.003	0.123	0.123	0.060	0.166	0.112	0.092	0.061	0.086	0.077	0.062	0.473	0.086	0.022	0.030	0.055	0.116	0.096	0.099	0.037	0.018	0.045	0.021	0.045	0.048	0.474	0.014	0.095	0.227	0.227	0.209	0.176	0.125	1.000
	Manufacturing	0.225	0.325	0.300	0.348	0.206	0.155	0.159	0.384	0.292	0.277	0.291	0.073	0.171	0.172	0.195	0.225	0.230	0.250	0.416	0.102	0.223	0.153	0.330	0.482	0.383	0.458	0.117	0.117	0.285	0.328	0.392	0.083	0.287	0.329	0.068	0.254	0.347	0.401	0.307	0.355	0.288	0.359	0.336	0.242	0.198	-0.027	0.042	0.129	0.406	0.402	0.423	0.482	0.376	0.223	0.483	0.428	0.410	0.396	0.391	0.104	0.434	0.434	0.459	0.274	0.274	0.443	0.485	0.318	0.397	0.228	0.231	0.448	0.077	0.285	0.431	0.261	0.468	0.454	0.261	0.240	0.428	0.240	0.461	0.391	0.234	0.054	0.603	0.591	0.595	0.239	0.583	0.759	0.316	1.000
	Metals&Mining	0.344	0.478	0.488	0.356	0.123	0.209	0.143	0.367	0.206	0.259	0.275	-0.059	0.155	0.179	0.108	0.153	0.090	0.257	0.392	0.099	0.129	0.201	0.295	0.442	0.478	0.355	-0.066	-0.066	0.463	0.185	0.239	0.156	0.320	0.322	0.097	0.168	0.359	0.458	0.152	0.494	0.242	0.250	0.323	0.133	0.260	-0.092	-0.061	0.278	0.518	0.519	0.394	0.437	0.488	0.197	0.434	0.359	0.320	0.438	0.300	0.085	0.425	0.427	0.583	0.151	0.174	0.452	0.460	0.331	0.381	0.244	0.024	0.459	0.086	0.380	0.493	0.240	0.474	0.379	0.176	0.145	0.506	0.131	0.334	0.298	0.022	0.056	0.743	0.648	0.647	0.246	0.507	0.263	0.047	0.581	1.000
	Financials	0.280	0.454	0.448	0.456	0.152	0.182	0.135	0.400	0.238	0.278	0.261	0.016	0.152	0.297	0.203	0.177	0.194	0.254	0.380	0.082	0.222	0.194	0.242	0.429	0.499	0.432	0.027	0.027	0.416	0.321	0.286	0.105	0.330	0.337	0.046	0.188	0.354	0.387	0.178	0.366	0.331	0.324	0.292	0.225	0.378	-0.008	0.046	0.247	0.484	0.485	0.430	0.512	0.492	0.248	0.445	0.487	0.442	0.437	0.356	0.099	0.449	0.450	0.523	0.278	0.279	0.508	0.530	0.351	0.476	0.285	0.113	0.515	0.114	0.395	0.516	0.243	0.512	0.425	0.257	0.226	0.529	0.166	0.373	0.289	0.115	0.085	0.701	0.646	0.646	0.228	0.589	0.307	0.065	0.609	0.696	1.000
	Railroads	0.219	0.225	0.228	0.289	0.066	0.170	0.117	0.208	0.265	0.185	0.185	-0.007	0.181	0.161	0.101	0.156	0.100	0.120	0.298	0.082	0.162	0.097	0.209	0.266	0.283	0.237	-0.016	-0.016	0.250	0.185	0.233	0.137	0.162	0.146	-0.015	0.188	0.196	0.266	0.185	0.264	0.133	0.168	0.213	0.142	0.167	-0.012	0.044	0.093	0.322	0.323	0.300	0.334	0.331	0.114	0.353	0.283	0.263	0.336	0.231	0.015	0.255	0.255	0.315	0.148	0.168	0.292	0.238	0.187	0.228	0.181	0.090	0.305	0.074	0.251	0.367	0.183	0.312	0.338	0.100	0.086	0.365	0.132	0.303	0.188	0.093	0.055	0.352	0.365	0.366	0.170	0.403	0.188	0.075	0.390	0.411	0.390	1.000
	Other Retail	0.064	0.132	0.133	0.078	0.114	0.031	0.065	0.102	0.062	0.249	0.297	-0.033	0.102	0.086	0.504	0.310	0.475	0.004	0.096	0.007	0.022	0.241	0.086	0.215	0.067	0.094	0.260	0.260	0.044	0.184	0.091	-0.003	0.078	0.226	0.192	0.051	0.073	0.075	0.021	0.169	0.097	0.120	0.396	0.020	0.060	0.038	0.069	-0.018	0.121	0.122	0.120	0.258	0.087	0.171	0.045	0.152	0.137	0.092	0.461	-0.004	0.103	0.102	0.046	0.239	0.272	0.168	0.115	0.081	0.118	0.075	0.543	0.179	0.168	0.076	0.112	0.071	0.115	0.073	0.115	0.074	0.100	-0.007	0.039	0.118	0.535	0.166	0.109	0.342	0.340	0.234	0.250	0.140	0.301	0.131	0.101	0.142	0.067	1.000
	Consumer Services	0.195	0.140	0.132	0.239	0.099	0.106	0.142	0.317	0.191	0.265	0.299	0.036	0.157	0.169	0.167	0.306	0.188	0.070	0.346	0.142	0.239	0.284	0.413	0.370	0.184	0.290	0.093	0.093	0.044	0.331	0.531	0.094	0.197	0.254	0.026	0.222	0.251	0.241	0.095	0.245	0.156	0.350	0.318	0.202	0.141	0.075	0.130	0.060	0.179	0.177	0.290	0.232	0.187	0.328	0.274	0.244	0.223	0.205	0.320	0.021	0.225	0.225	0.147	0.172	0.154	0.174	0.278	0.203	0.196	0.150	0.248	0.188	0.069	0.139	0.204	0.155	0.216	0.210	0.132	0.101	0.181	0.155	0.429	0.221	0.247	0.078	0.280	0.372	0.373	0.279	0.382	0.349	0.222	0.399	0.212	0.303	0.185	0.382	1.000
	Other Consumer Services	0.145	0.182	0.173	0.121	0.120	0.129	0.095	0.182	0.145	0.347	0.290	0.012	0.146	0.146	0.387	0.441	0.439	0.046	0.277	0.074	0.152	0.327	0.154	0.357	0.181	0.269	0.225	0.225	0.070	0.195	0.243	0.077	0.184	0.326	0.147	0.092	0.258	0.196	0.053	0.188	0.154	0.178	0.440	0.108	0.096	0.053	0.100	0.023	0.199	0.198	0.183	0.315	0.136	0.316	0.175	0.256	0.236	0.201	0.542	-0.011	0.221	0.222	0.135	0.281	0.303	0.191	0.174	0.171	0.182	0.139	0.565	0.212	0.161	0.100	0.151	0.128	0.197	0.162	0.152	0.118	0.141	0.104	0.207	0.177	0.574	0.158	0.176	0.449	0.450	0.295	0.350	0.289	0.366	0.293	0.131	0.223	0.161	0.732	0.659	1.000
	Telecommunications	0.111	0.302	0.308	0.280	0.321	0.192	0.224	0.360	0.189	0.259	0.235	0.126	0.104	0.229	0.304	0.223	0.302	0.264	0.292	0.070	0.207	0.158	0.152	0.252	0.329	0.282	0.067	0.067	0.222	0.207	0.154	0.057	0.267	0.289	0.052	0.277	0.252	0.305	0.087	0.306	0.337	0.318	0.296	0.325	0.202	0.109	0.156	0.087	0.301	0.298	0.252	0.336	0.226	0.250	0.297	0.360	0.354	0.260	0.283	0.054	0.362	0.364	0.346	0.432	0.245	0.273	0.367	0.287	0.306	0.216	0.306	0.293	0.229	0.235	0.347	0.226	0.389	0.307	0.441	0.432	0.339	0.163	0.273	0.282	0.306	0.217	0.319	0.491	0.490	0.141	0.388	0.315	0.181	0.374	0.338	0.406	0.217	0.134	0.209	0.219	1.000
	Other Telecommunications	0.112	0.299	0.307	0.280	0.320	0.191	0.222	0.359	0.190	0.258	0.235	0.128	0.104	0.229	0.304	0.223	0.301	0.265	0.292	0.070	0.207	0.159	0.152	0.252	0.328	0.282	0.062	0.062	0.222	0.207	0.154	0.057	0.267	0.288	0.054	0.277	0.252	0.305	0.087	0.305	0.337	0.317	0.296	0.325	0.203	0.108	0.157	0.088	0.301	0.299	0.252	0.333	0.227	0.250	0.296	0.359	0.354	0.260	0.283	0.053	0.362	0.364	0.346	0.432	0.245	0.273	0.367	0.286	0.306	0.217	0.306	0.292	0.229	0.235	0.347	0.225	0.389	0.307	0.438	0.431	0.339	0.163	0.273	0.282	0.305	0.218	0.319	0.492	0.490	0.141	0.385	0.315	0.181	0.370	0.339	0.405	0.217	0.135	0.208	0.219	1.000	1.000
	Transportation	0.314	0.374	0.384	0.408	0.140	0.216	0.097	0.347	0.256	0.221	0.232	0.114	0.149	0.269	0.234	0.109	0.182	0.099	0.383	0.157	0.164	0.188	0.167	0.348	0.461	0.351	-0.011	-0.011	0.358	0.284	0.140	0.137	0.356	0.218	0.101	0.206	0.300	0.397	0.189	0.363	0.297	0.242	0.233	0.244	0.375	0.040	0.045	0.240	0.454	0.455	0.456	0.523	0.573	0.227	0.413	0.439	0.391	0.553	0.350	0.059	0.506	0.506	0.536	0.208	0.264	0.485	0.484	0.428	0.476	0.349	0.097	0.524	0.146	0.434	0.574	0.260	0.535	0.364	0.208	0.173	0.581	0.140	0.307	0.380	0.097	0.107	0.581	0.588	0.587	0.292	0.527	0.222	0.134	0.520	0.639	0.692	0.591	0.119	0.222	0.152	0.386	0.386	1.000
	Other Transportation	0.341	0.405	0.425	0.434	0.207	0.197	0.091	0.358	0.210	0.231	0.257	0.041	0.125	0.287	0.327	0.130	0.269	0.089	0.391	0.182	0.186	0.231	0.179	0.419	0.476	0.371	0.053	0.053	0.343	0.338	0.153	0.117	0.364	0.262	0.119	0.196	0.312	0.404	0.178	0.366	0.277	0.228	0.253	0.192	0.328	-0.021	-0.018	0.259	0.425	0.426	0.447	0.504	0.521	0.214	0.384	0.412	0.373	0.539	0.383	0.059	0.470	0.470	0.504	0.210	0.263	0.465	0.497	0.411	0.500	0.320	0.161	0.504	0.133	0.398	0.529	0.266	0.509	0.325	0.213	0.175	0.543	0.121	0.277	0.420	0.159	0.097	0.508	0.588	0.585	0.282	0.496	0.239	0.183	0.520	0.622	0.686	0.378	0.218	0.247	0.212	0.377	0.379	0.889	1.000
	Utility	0.216	0.265	0.268	0.292	0.280	0.216	0.226	0.378	0.272	0.336	0.340	-0.014	0.118	0.216	0.269	0.356	0.304	0.310	0.424	0.075	0.179	0.246	0.277	0.404	0.308	0.399	0.102	0.102	0.241	0.272	0.338	0.144	0.226	0.355	0.023	0.186	0.288	0.369	0.164	0.249	0.234	0.284	0.338	0.196	0.203	-0.043	0.019	0.118	0.344	0.335	0.323	0.403	0.271	0.320	0.392	0.412	0.385	0.335	0.367	0.078	0.333	0.338	0.365	0.329	0.311	0.404	0.403	0.296	0.361	0.236	0.234	0.381	0.101	0.254	0.356	0.185	0.383	0.342	0.283	0.263	0.363	0.168	0.415	0.309	0.230	0.083	0.521	0.634	0.630	0.231	0.963	0.330	0.162	0.526	0.462	0.537	0.372	0.261	0.402	0.376	0.389	0.388	0.477	0.456	1.000

Table 61: ***Correlation for Sectoral CDS Spreads Volatility [Crisis Period]***

Correlation Matrix CDS Spreads Volatility		US																																																UK														EU																								JP																		
		Airlines	Bank	Banking	Beverage	Building	Cable Mc	Conglom	Chemical	Containe	Consume	Other Cc	Electric I	Electric U	Electroni	Energy	Food Prc	Oil&Gas	Healthca	Home Bu	Industria	Informat	Leisure	Lodging	Machiner	Manufac	Metals&M	Financia	Other Fi	Oilfield M	Pharmac	Property	Publishir	Railroads	Real Esta	Other Rc	Restaura	Consume	Retail St	Healthca	Other Cc	Telecom	Other Te	Textiles\	Utility	Tobacco	Transpor	Other Tr	Vehicle Par	Banking	Banks	Beverage	Consume	Electric I	Life Insu	Manufac	Financial	Other Fi	Other Rc	Consume	Other Cc	Telecom	Other Te	Automat	Banking	Banks	Beverage	Building	Cable Mc	Chemical	Conglom	Other Tc	Consume	Electric I	Electroni	Energy	Leisure	Manufac	Metals&M	Financia	Other Fi	Oil&Gas	Consume	Other Cc	Telecom	Transpor	Utility	Automat	Banking	Banks	Chemical	Electric I	Electroni	Industria	Manufac	Metals&M	Financial	Railroads	Other Rc	Consume	Other Cc	Telecom	Other Tc	Transpor	Other Tr	Utility
US	Airlines	1.000
	Bank	0.020	1.000
	Banking	0.023	0.998	1.000
	Beverages/Bottling	0.040	0.101	0.101	1.000
	Building Products	0.129	0.228	0.232	0.072	1.000
	Cable Media	-0.023	0.040	0.040	-0.041	0.086	1.000
	Conglomerate/Diversified Mfg	0.066	0.257	0.259	0.029	0.055	0.079	1.000
	Chemicals	-0.028	0.126	0.125	0.110	0.224	0.147	0.050	1.000
	Containers	0.146	0.124	0.126	0.124	0.109	0.105	0.265	0.011	1.000
	Consumer Goods	0.051	0.047	0.045	0.136	0.206	-0.031	0.032	-0.074	0.102	1.000
	Other Consumer Goods	0.083	0.110	0.111	0.117	0.070	0.023	0.037	0.010	0.077	0.207	1.000
	Electric Power	0.027	-0.033	-0.033	0.102	-0.070	-0.034	-0.005	-0.019	0.035	0.059	-0.013	1.000
	Electric Utility	0.058	0.002	0.002	0.117	0.006	-0.033	-0.063	0.022	0.054	0.061	-0.024	0.044	1.000
	Electronics	-0.059	0.218	0.218	0.030	0.172	0.146	0.148	0.292	0.080	-0.054	0.183	-0.111	-0.109	1.000
	Energy	0.017	0.052	0.054	0.186	0.049	0.036	0.060	0.050	0.214	0.005	0.052	-0.040	0.067	0.106	1.000
	Food Processors	0.083	0.094	0.095	-0.016	0.228	-0.007	0.043	-0.060	0.046	0.885	-0.029	0.003	0.049	-0.041	-0.031	1.000
	Oil&Gas	0.021	0.050	0.052	0.192	0.048	0.028	0.060	0.048	0.209	0.004	0.052	-0.038	0.068	0.097	0.996	-0.034	1.000
	Healthcare	0.034	0.204	0.205	0.062	0.225	0.159	-0.026	0.368	-0.005	-0.101	0.064	-0.063	0.081	0.167	0.023	-0.070	0.022	1.000
	Home Builders	0.006	0.284	0.287	0.128	0.178	0.040	0.202	0.112	0.240	0.058	0.091	-0.009	0.015	0.183	0.128	0.058	0.124	0.117	1.000
	Industrials	-0.005	0.052	0.054	-0.044	-0.057	-0.045	0.070	-0.036	0.130	-0.049	-0.019	0.033	0.125	0.100	0.153	-0.020	0.160	-0.023	0.050	1.000
	Information/Data Technology	0.129	-0.003	-0.002	0.086	0.116	-0.022	0.071	-0.010	0.092	0.058	0.001	-0.032	-0.062	0.111	0.033	0.095	0.021	-0.031	0.057	0.001	1.000
	Leisure	0.068	0.190	0.193	0.070	0.101	-0.002	0.141	-0.064	0.190	0.134	0.051	-0.005	0.084	-0.031	0.047	0.092	0.051	-0.044	0.176	0.073	0.019	1.000
	Lodging	-0.078	0.041	0.041	-0.060	0.030	0.042	0.134	0.020	0.056	-0.072	-0.058	-0.017	-0.077	0.065	0.175	-0.029	0.180	0.047	0.014	0.065	-0.037	-0.019	1.000
	Machinery	0.123	0.116	0.118	0.057	0.035	0.094	0.085	-0.033	0.190	0.011	0.097	-0.026	0.036	0.185	0.126	-0.036	0.124	0.068	0.119	-0.052	0.132	0.183	-0.065	1.000
	Manufacturing	0.004	0.107	0.106	-0.007	0.129	0.151	0.171	0.046	0.070	0.084	0.090	-0.043	-0.095	0.292	0.033	0.134	0.025	-0.033	0.156	-0.015	0.210	0.067	0.033	0.054	1.000
	Metals&Mining	0.050	0.100	0.099	-0.025	0.086	0.111	0.102	0.023	0.023	0.090	0.050	-0.046	-0.082	0.219	0.002	0.162	-0.006	-0.044	0.096	-0.026	0.192	0.043	0.024	0.016	0.938	1.000
	Financials	-0.015	0.029	0.032	0.002	0.012	-0.103	0.009	0.014	0.038	-0.021	0.034	-0.045	-0.045	0.076	0.009	-0.062	0.006	0.003	0.091	0.109	0.021	0.113	-0.071	-0.049	-0.055	-0.057	1.000
	Other Financials	-0.015	0.029	0.032	0.002	0.012	-0.103	0.009	0.014	0.038	-0.021	0.034	-0.045	-0.045	0.076	0.009	-0.062	0.006	0.003	0.091	0.109	0.021	0.113	-0.071	-0.049	-0.055	-0.057	1.000	1.000
	Oilfield Machinery and Products	-0.009	0.142	0.142	0.026	0.062	-0.022	0.281	0.044	0.175	0.048	0.090	-0.043	-0.005	0.319	0.133	0.050	0.109	-0.020	0.187	0.073	0.305	0.034	0.017	0.207	0.174	0.131	0.063	0.063	1.000
	Pharmaceuticals	0.039	0.070	0.076	-0.023	0.182	-0.013	0.036	0.110	0.036	-0.002	0.099	0.003	-0.015	0.138	0.012	-0.020	0.017	0.044	0.087	-0.044	0.027	0.089	-0.009	0.054	0.162	0.098	0.040	0.040	0.050	1.000
	Property&Casualty	0.038	0.173	0.175	-0.005	0.071	0.040	0.283	0.061	0.110	0.046	0.050	-0.023	0.038	0.018	0.031	0.091	0.028	0.057	0.176	0.145	0.167	0.131	0.071	0.067	0.094	0.085	0.052	0.052	0.180	0.102	1.000
	Publishing	0.140	0.105	0.112	0.093	0.157	0.007	0.090	0.030	0.241	0.099	0.030	0.081	0.036	0.032	0.055	0.059	0.057	0.045	0.140	0.028	-0.008	0.199	0.024	0.143	0.072	0.078	0.042	0.042	0.097	0.226	0.096	1.000
	Railroads	0.076	0.172	0.172	0.126	0.123	0.018	0.223	0.118	0.064	0.058	0.282	-0.018	0.053	0.309	0.018	0.010	0.018	0.145	0.220	0.122	0.006	0.064	-0.007	0.132	0.059	0.013	0.079	0.079	0.152	0.044	0.115	0.045	1.000
	Real Estate	0.103	0.267	0.268	0.085	0.238	0.119	0.149	0.376	0.175	-0.031	0.038	-0.051	0.053	0.185	0.078	0.005	0.078	0.210	0.249	0.091	-0.006	0.154	0.032	0.313	0.012	-0.039	-0.006	-0.006	0.101	0.118	0.115	0.194	0.219	1.000
	Other Retail	-0.037	0.271	0.272	0.025	0.039	0.048	0.068	0.063	0.221	0.063	0.121	0.012	-0.059	0.135	0.220	0.098	0.219	0.077	0.153	0.029	-0.046	0.095	0.072	0.027	0.198	0.228	0.000	0.000	0.067	-0.019	0.104	0.092	-0.024	0.066	1.000
	Restaurants	0.023	0.029	0.034	0.269	0.023	-0.039	0.042	0.027	0.215	0.052	0.066	-0.035	-0.027	0.030	0.251	-0.010	0.253	0.018	0.082	0.068	0.143	0.083	-0.057	0.117	0.008	-0.020	0.076	0.076	0.129	0.047	0.046	0.085	0.042	0.032	-0.016	1.000
	Consumer Services	0.074	-0.036	-0.027	0.033	0.046	0.060	0.006	0.058	0.178	0.005	0.048	-0.017	0.055	-0.036	0.348	0.018	0.345	0.097	0.097	-0.051	0.015	0.090	-0.063	0.109	-0.003	-0.021	-0.003	-0.003	0.070	0.058	-0.025	0.207	0.003	0.049	0.080	0.404	1.000
	Retail Stores Food and Drug	0.117	-0.020	-0.010	0.031	0.026	0.000	-0.030	-0.007	0.052	-0.013	0.067	-0.008	0.088	-0.079	0.349	-0.028	0.349	0.050	0.053	-0.023	0.006	0.112	-0.066	0.138	-0.040	-0.052	0.021	0.021	0.054	0.061	-0.013	0.221	-0.023	0.048	-0.022	0.438	0.885	1.000
	Healthcare Supplies	0.279	0.000	-0.001	0.062	0.034	0.093	0.123	0.071	0.231	0.058	0.032	-0.070	0.019	-0.082	0.081	0.086	0.087	0.124	0.094	-0.081	0.014	0.031	-0.048	0.166	0.024	0.001	-0.123	-0.123	0.000	0.040	0.035	0.094	-0.022	0.179	0.046	0.100	0.212	0.176	1.000
	Other Consumer Services	-0.025	-0.057	-0.057	-0.005	0.052	0.066	0.062	0.060	0.300	0.042	-0.001	-0.006	-0.043	0.066	-0.017	0.091	-0.020	0.007	0.072	-0.059	0.023	-0.053	-0.011	-0.024	0.054	0.041	-0.072	-0.072	0.081	0.030	-0.065	0.024	0.059	-0.019	0.181	-0.062	0.387	-0.053	0.080	1.000
	Telecommunications	0.132	0.094	0.094	0.112	0.234	0.074	0.137	0.168	0.078	0.049	-0.006	-0.022	0.024	0.076	0.070	0.059	0.058	0.073	0.154	0.038	0.349	0.086	0.035	-0.048	0.246	0.198	0.007	0.007	0.137	0.060	0.100	0.119	0.040	0.092	0.009	0.041	-0.001	0.005	0.059	-0.033	1.000
	Other Telecommunications	0.129	0.092	0.092	0.113	0.231	0.072	0.136	0.169	0.076	0.048	-0.007	-0.022	0.025	0.075	0.065	0.059	0.054	0.072	0.151	0.037	0.348	0.083	0.035	-0.049	0.246	0.199	0.003	0.003	0.137	0.055	0.099	0.113	0.039	0.090	0.009	0.035	-0.013	-0.009	0.059	-0.033	0.999	1.000
	Textiles\Apparel\Shoes	0.010	-0.002	-0.002	0.041	0.045	0.041	0.004	0.175	0.061	-0.065	-0.058	-0.041	0.094	0.161	0.316	-0.058	0.322	0.143	0.046	0.212	-0.060	0.015	0.274	-0.084	-0.039	-0.049	0.044	0.044	-0.014	-0.102	0.033	-0.047	0.051	-0.027	0.059	0.012	0.117	0.050	0.024	0.096	0.045	0.045	1.000
	Utility	0.029	-0.037	-0.036	0.093	-0.067	-0.025	-0.007	-0.021	0.031	0.067	0.000	0.986	-0.038	-0.109	-0.046	0.004	-0.044	-0.060	-0.004	0.018	-0.024	-0.002	-0.047	-0.021	-0.034	-0.038	-0.038	-0.038	-0.048	0.011	-0.023	0.087	-0.013	-0.051	0.015	-0.025	-0.018	-0.014	-0.056	-0.001	-0.029	-0.029	-0.053	1.000
	Tobacco	0.019	0.131	0.133	0.145	-0.030	-0.073	0.115	-0.048	0.020	0.171	0.010	0.392	-0.054	0.007	-0.072	0.118	-0.072	-0.028	0.043	0.000	-0.050	0.135	-0.039	0.027	0.112	0.129	0.015	0.015	0.007	0.013	0.069	0.224	0.143	0.019	0.252	-0.008	-0.039	-0.026	-0.037	-0.021	0.041	0.040	0.037	0.403	1.000
	Transportation	0.200	-0.042	-0.041	0.156	0.156	0.074	0.090	-0.068	0.072	0.210	0.011	0.041	0.057	-0.096	0.087	0.177	0.082	0.006	-0.037	-0.076	-0.002	0.070	-0.043	0.091	-0.016	-0.027	0.016	0.016	0.055	0.051	0.025	0.221	0.052	0.082	-0.019	0.074	0.142	0.182	0.119	-0.063	0.028	0.023	-0.051	0.050	0.106	1.000
	Other Transportation	0.055	-0.064	-0.065	0.156	0.160	0.103	0.078	-0.059	0.041	0.231	0.025	0.033	0.026	-0.072	0.088	0.186	0.084	-0.009	-0.043	-0.095	-0.007	0.047	0.008	0.052	0.028	0.012	0.015	0.015	0.030	0.056	0.013	0.193	0.026	0.040	-0.012	0.083	0.123	0.155	0.065	-0.063	0.012	0.008	-0.045	0.046	0.070	0.959	1.000
	Vehicle Parts	0.127	0.200	0.202	-0.048	0.175	0.038	0.037	0.105	0.063	-0.065	0.088	-0.008	-0.015	0.181	-0.051	-0.055	-0.051	0.091	0.031	-0.042	-0.069	0.103	0.048	-0.034	0.029	0.013	-0.056	-0.056	-0.016	0.120	-0.021	0.090	0.140	0.092	-0.012	-0.012	0.018	-0.030	0.031	0.128	-0.046	-0.047	0.123	-0.031	0.009	-0.052	-0.088	1.000
UK	Banking	0.102	0.158	0.154	-0.045	0.034	0.007	0.333	-0.019	0.090	0.056	0.082	-0.049	-0.069	0.235	0.042	0.025	0.043	0.072	0.079	0.026	0.014	0.029	0.060	0.202	0.144	0.154	0.076	0.076	0.065	0.075	0.008	0.053	0.164	0.064	-0.033	0.025	-0.005	-0.008	-0.034	-0.007	-0.019	-0.019	-0.062	-0.037	0.018	0.009	0.005	0.019	1.000
	Banks	0.101	0.158	0.154	-0.045	0.034	0.007	0.333	-0.019	0.090	0.056	0.082	-0.049	-0.069	0.235	0.042	0.025	0.043	0.072	0.079	0.026	0.014	0.029	0.060	0.203	0.144	0.154	0.075	0.075	0.065	0.075	0.098	0.052	0.164	0.064	-0.033	0.024	-0.007	-0.009	-0.034	-0.007	-0.019	-0.019	-0.062	-0.037	0.018	0.009	0.004	0.019	1.000	1.000
	Beverages/Bottling	0.020	0.190	0.189	0.021	0.073	0.201	0.149	-0.016	0.102	-0.002	-0.018	0.010	-0.060	0.092	-0.005	0.034	-0.006	-0.023	0.299	0.096	0.116	0.012	0.110	0.036	0.093	0.105	-0.074	-0.074	0.094	0.106	0.162	0.024	0.090	0.076	0.029	-0.007	-0.066	-0.079	-0.042	0.010	0.045	0.046	0.023	0.010	0.041	-0.086	-0.086	0.163	0.036	0.036	1.000
	Consumer Goods	0.223	0.190	0.190	0.053	0.149	0.091	0.168	0.086	0.039	0.018	0.142	0.004	-0.035	0.200	0.101	0.050	0.094	0.039	0.246	-0.022	0.473	0.032	0.047	0.146	0.220	0.247	-0.037	-0.037	0.200	0.020	0.163	0.054	0.080	0.135	0.229	0.009	0.039	0.019	0.077	0.042	0.197	0.198	0.014	0.002	0.076	-0.020	-0.046	0.009	0.075	0.075	0.407	1.000
	Electric Power	0.257	0.018	0.016	0.018	-0.035	0.081	0.163	0.007	0.209	0.028	0.041	0.024	0.066	-0.067	-0.002	0.003	0.002	0.061	-0.002	-0.030	0.001	0.152	-0.054	0.304	-0.013	-0.029	-0.030	-0.030	0.008	0.048	0.024	0.035	0.046	0.157	-0.007	0.003	0.139	0.182	0.308	0.002	0.017	0.018	-0.011	0.005	0.044	0.101	0.051	-0.024	0.079	0.080	0.020	0.052	1.000
	Life Insurance	0.087	0.112	0.120	-0.004	0.185	0.048	0.065	0.102	0.098	0.106	-0.001	0.088	-0.050	0.095	-0.003	0.079	0.004	0.188	0.193	0.078	-0.017	0.047	-0.017	0.047	-0.011	-0.021	0.061	0.061	-0.007	0.183	0.068	0.149	0.102	0.095	0.066	0.173	0.112	0.098	0.127	0.041	0.030	0.022	0.019	0.108	0.086	0.034	0.020	0.063	0.054	0.054	0.065	0.098	0.048	1.000
	Manufacturing	-0.054	0.263	0.263	-0.024	0.020	-0.009	0.121	0.005	0.044	-0.007	0.062	-0.022	-0.056	0.134	-0.024	0.089	-0.032	0.082	0.141	-0.014	0.041	0.066	0.016	-0.008	0.323	0.406	0.026	0.026	0.103	-0.037	0.182	0.096	0.038	0.010	0.482	-0.010	-0.035	-0.061	-0.045	0.017	0.007	0.008	0.082	-0.020	0.258	-0.067	-0.058	0.029	0.075	0.076	0.147	0.248	-0.018	0.034	1.000
	Financials	0.072	0.181	0.180	0.037	0.127	0.150	0.170	0.037	0.254	0.154	0.133	-0.016	0.038	0.112	0.306	0.077	0.299	0.099	0.202	0.005	0.086	0.097	0.010	0.223	0.127	0.120	-0.012	-0.012	0.131	0.056	0.088	0.123	0.100	0.154	0.114	0.106	0.134	0.121	0.105	0.010	0.089	0.088	0.057	-0.009	0.066	0.072	0.058	0.007	0.253	0.253	0.092	0.242	0.143	0.220	0.116	1.000
	Other Financials	0.078	0.197	0.197	0.059	0.129	0.135	0.192	0.011	0.249	0.181	0.143	-0.016	0.051	0.107	0.315	0.126	0.307	0.078	0.211	-0.011	0.113	0.093	0.029	0.214	0.173	0.168	-0.045	-0.045	0.149	0.029	0.110	0.096	0.111	0.142	0.167	0.077	0.126	0.113	0.105	0.011	0.103	0.103	0.058	-0.012	0.085	0.084	0.070	-0.014	0.233	0.233	0.121	0.296	0.164	0.119	0.184	0.969	1.000
	Other Retail	-0.034	0.296	0.296	0.040	0.027	0.055	0.193	0.089	0.303	0.096	0.155	0.071	-0.096	0.147	0.134	0.094	0.130	0.043	0.254	0.078	0.030	0.073	0.031	0.086	0.206	0.217	0.022	0.022	0.126	-0.023	0.194	0.080	0.130	0.131	0.712	0.031	0.073	-0.019	0.049	0.175	-0.010	-0.010	0.039	0.084	0.227	0.037	0.039	-0.002	0.058	0.058	0.220	0.310	0.031	0.146	0.405	0.227	0.281	1.000
	Consumer Services	0.069	0.436	0.433	0.055	0.209	0.094	0.293	0.033	0.229	0.084	0.107	-0.010	-0.027	0.176	0.084	0.089	0.085	0.113	0.366	0.066	0.117	0.084	0.058	0.085	0.158	0.178	0.039	0.039	0.198	0.071	0.213	0.147	0.241	0.138	0.275	0.083	0.042	0.011	0.052	0.078	0.065	0.063	0.047	0.000	0.143	-0.038	-0.049	0.025	0.178	0.178	0.445	0.420	0.118	0.312	0.321	0.259	0.287	0.490	1.000
	Other Consumer Services	0.216	0.132	0.133	0.043	0.146	0.039	0.171	-0.021	0.035	0.088	0.019	-0.026	-0.067	0.058	0.003	0.107	-0.002	-0.023	0.156	-0.045	0.469	0.048	-0.028	0.045	0.276	0.312	0.016	0.016	0.218	0.071	0.107	0.014	0.081	-0.026	0.010	0.074	0.018	0.008	0.019	0.041	0.454	0.453	-0.103	-0.015	0.023	-0.008	-0.040	-0.032	0.130	0.130	0.202	0.406	0.077	0.105	0.080	0.131	0.173	0.074	0.352	1.000
	Telecommunications	0.135	0.244	0.244	0.002	0.077	0.140	0.263	-0.017	0.059	0.046	0.088	0.016	-0.037	0.061	0.040	0.056	0.036	0.064	0.194	-0.019	0.094	0.045	-0.009	0.014	0.127	0.144	0.029	0.029	0.080	0.015	0.125	0.055	0.071	0.023	0.198	0.025	0.006	0.006	-0.016	-0.028	0.071	0.070	-0.008	0.014	0.078	0.141	0.129	-0.004	0.073	0.073	0.196	0.316	0.033	0.112	0.225	0.118	0.135	0.233	0.361	0.174	1.000
	Other Telecommunications	0.135	0.244	0.244	0.002	0.077	0.140	0.263	-0.017	0.059	0.046	0.088	0.016	-0.037	0.061	0.040	0.056	0.036	0.064	0.194	-0.019	0.094	0.045	-0.009	0.015	0.127	0.144	0.029	0.029	0.080	0.016	0.125	0.055	0.071	0.023	0.198	0.026	0.006	0.006	-0.016	-0.028	0.071	0.070	-0.008	0.014	0.078	0.141	0.129	-0.003	0.073	0.073	0.196	0.316	0.033	0.112	0.225	0.118	0.135	0.232	0.361	0.174	1.000	1.000
EU	Automotive Manufacturer	0.049	0.228	0.226	0.124	0.056	0.069	0.138	0.063	0.094	0.034	0.030	-0.014	0.014	0.127	0.056	0.047	0.053	0.170	0.282	0.002	0.098	0.042	0.088	0.039	0.170	0.184	-0.044	-0.044	0.112	-0.004	0.101	0.062	0.191	0.057	0.260	0.042	0.041	0.014	0.087	0.049	0.087	0.087	0.031	-0.013	0.157	0.011	0.013	-0.013	0.056	0.056	0.192	0.289	0.113	0.241	0.367	0.277	0.369	0.343	0.547	0.303	0.161	0.161	1.000
	Banking	-0.088	0.010	0.010	-0.037	-0.025	0.049	0.084	-0.014	-0.070	-0.026	-0.067	-0.067	0.024	0.141	-0.019	0.028	-0.019	0.089	0.022	0.040	0.034	-0.084	0.063	-0.001	0.306	0.369	-0.007	-0.007	0.011	-0.062	-0.026	0.028	0.019	-0.042	-0.073	-0.063	-0.063	-0.071	-0.004	-0.015	0.028	0.029	0.036	-0.075	-0.088	-0.099	-0.048	0.065	0.274	0.274	0.038	0.072	-0.054	-0.049	0.232	-0.024	-0.021	-0.032	0.098	0.083	0.044	0.044	0.036	1.000
	Banks	-0.088	0.010	0.010	-0.037	-0.025	0.049	0.084	-0.014	-0.070	-0.026	-0.067	-0.067	0.024	0.141	-0.019	0.028	-0.019	0.089	0.022	0.040	0.034	-0.084	0.063	-0.001	0.306	0.369	-0.007	-0.007	0.011	-0.062	-0.026	0.028	0.019	-0.042	-0.073	-0.063	-0.063	-0.071	-0.004	-0.015	0.028	0.029	0.036	-0.075	-0.088	-0.099	-0.048	0.065	0.274	0.274	0.038	0.072	-0.054	-0.049	0.232	-0.024	-0.021	-0.032	0.098	0.083	0.044	0.044	0.036	1.000	1.000
	Beverages/Bottling	-0.073	0.096	0.095	0.011	-0.059	0.011	0.119	-0.027	0.068	0.007	-0.024	-0.003	0.154	-0.014	-0.030	-0.007	-0.027	0.078	0.160	0.261	-0.009	0.099	-0.051	-0.042	-0.018	-0.019	0.135	0.135	-0.011	-0.036	0.172	0.004	0.051	0.035	0.000	-0.012	-0.069	-0.064	-0.078	-0.057	0.029	0.029	0.317	-0.017	0.037	-0.084	-0.077	-0.051	0.050	0.050	0.146	0.065	0.045	0.079	0.150	0.073	0.099	0.149	0.226	0.155	0.086	0.086	0.250	0.035	0.035	1.000
	Building Products	0.000	0.277	0.277	0.071	0.018	0.115	0.204	0.056	0.078	0.164	0.145	-0.028	-0.029	0.126	0.043	0.188	0.038	0.054	0.238	-0.027	0.120	0.041	0.000	0.059	0.279	0.293	-0.015	-0.015	0.183	0.118	0.158	0.059	0.165	0.108	0.199	0.062	-0.007	-0.011	0.096	-0.025	0.056	0.056	0.006	-0.022	0.142	-0.004	0.040	0.031	0.128	0.128	0.323	0.249	0.031	0.071	0.352	0.199	0.256	0.320	0.305	0.259	0.191	0.191	0.471	0.099	0.099	0.167	1.000
	Cable Media	0.036	0.084	0.084	0.173	0.029	0.000	0.121	0.124	0.010	0.090	0.128	-0.035	-0.019	0.091	0.009	0.101	0.007	0.130	0.345	-0.033	0.000	0.011	0.036	-0.021	0.184	0.171	-0.031	-0.031	0.049	0.068	0.051	0.007	0.171	0.064	0.097	0.008	0.050	0.010	0.152	0.071	0.018	0.018	0.008	-0.028	0.021	0.028	0.074	-0.019	0.124	0.124	0.110	0.177	0.096	0.175	0.177	0.154	0.211	0.157	0.312	0.185	0.108	0.108	0.550	0.002	0.002	0.153	0.359	1.000
	Chemicals	0.056	0.250	0.249	0.124	0.158	0.065	0.288	0.041	0.224	0.134	0.087	0.016	0.054	0.145	0.066	0.158	0.058	0.020	0.291	0.105	0.382	0.121	0.019	0.036	0.346	0.316	-0.007	-0.007	0.255	0.028	0.185	0.032	0.157	0.100	0.128	0.059	0.034	-0.030	0.061	0.114	0.638	0.640	0.072	0.014	0.078	-0.039	-0.046	0.049	0.091	0.092	0.262	0.359	0.024	0.087	0.206	0.195	0.250	0.284	0.387	0.547	0.219	0.219	0.346	0.114	0.114	0.269	0.308	0.239	1.000
	Conglomerate/Diversified Mfg	0.146	0.504	0.503	0.234	0.147	0.013	0.299	0.044	0.170	0.106	0.240	-0.001	0.085	0.140	0.096	0.119	0.093	0.122	0.317	0.057	0.103	0.118	0.031	0.080	0.150	0.158	-0.052	-0.052	0.155	0.041	0.153	0.194	0.165	0.164	0.197	0.066	0.072	0.044	0.154	0.066	0.196	0.195	0.044	-0.009	0.097	-0.013	-0.030	0.128	0.139	0.139	0.244	0.321	0.049	0.099	0.290	0.223	0.265	0.280	0.413	0.253	0.257	0.257	0.336	0.073	0.073	0.196	0.324	0.244	0.456	1.000
	Other Telecommunications	-0.044	0.317	0.316	0.039	0.105	0.084	0.102	0.010	0.051	0.141	0.056	-0.018	-0.008	0.106	0.003	0.210	-0.003	0.159	0.241	-0.058	0.042	0.100	0.096	0.013	0.256	0.315	-0.057	-0.057	0.090	-0.031	0.138	0.059	0.093	0.024	0.400	0.032	-0.003	-0.009	0.049	-0.019	0.044	0.044	0.003	-0.014	0.227	0.051	0.086	0.041	0.041	0.041	0.174	0.243	0.033	0.085	0.492	0.200	0.283	0.356	0.390	0.173	0.219	0.219	0.570	0.090	0.090	0.166	0.497	0.260	0.252	0.365	1.000
	Consumer Goods	-0.060	0.125	0.125	0.078	-0.027	0.056	0.245	-0.011	0.171	0.034	-0.001	0.007	0.098	0.011	-0.016	0.019	-0.013	0.087	0.250	0.159	0.017	0.111	-0.039	0.007	-0.017	-0.022	0.062	0.062	0.034	-0.038	0.156	0.016	0.151	0.097	0.061	0.004	0.010	-0.049	0.058	0.100	0.007	0.007	0.209	0.001	0.068	-0.080	-0.082	-0.024	0.048	0.048	0.216	0.176	0.131	0.188	0.147	0.178	0.233	0.279	0.404	0.220	0.104	0.104	0.503	0.041	0.041	0.799	0.241	0.394	0.374	0.260	0.235	1.000
	Electric Power	0.088	-0.011	-0.013	-0.055	0.014	-0.034	0.159	-0.064	0.020	0.185	-0.053	0.003	0.031	-0.065	-0.003	0.203	0.001	-0.019	-0.020	0.011	-0.023	-0.041	-0.077	0.016	-0.060	-0.074	0.065	0.065	-0.039	-0.014	0.029	0.043	-0.018	-0.029	-0.018	0.055	0.011	0.041	0.169	-0.055	0.022	0.020	-0.060	0.006	-0.032	0.084	0.068	-0.038	-0.025	-0.025	-0.030	-0.026	0.081	0.311	-0.013	0.081	0.046	-0.022	0.039	-0.024	0.173	0.173	0.072	-0.098	-0.098	0.020	0.006	0.005	0.022	0.078	0.011	0.045	1.000
	Electronics	0.091	0.324	0.326	0.146	0.093	-0.038	0.153	0.011	0.088	0.028	0.049	-0.042	0.180	0.253	-0.003	0.061	-0.004	0.131	0.189	0.183	0.002	0.111	-0.023	0.125	0.119	0.134	-0.003	-0.003	0.167	-0.020	0.126	0.095	0.254	0.147	0.098	0.005	-0.022	-0.001	0.031	-0.031	0.180	0.179	-0.008	-0.058	0.129	-0.033	-0.067	0.079	0.135	0.135	0.089	0.187	0.099	0.149	0.195	0.132	0.162	0.158	0.338	0.171	0.134	0.134	0.335	0.125	0.125	0.161	0.151	0.211	0.391	0.369	0.222	0.244	-0.025	1.000
	Energy	0.067	0.148	0.147	0.208	0.112	0.029	0.246	0.088	0.089	0.056	0.040	0.074	0.015	0.129	0.046	0.066	0.040	0.111	0.270	0.002	0.216	-0.002	0.091	0.052	0.113	0.110	-0.057	-0.057	0.198	0.001	0.124	0.065	0.282	0.102	0.069	0.026	0.057	-0.021	0.063	0.172	0.146	0.147	0.094	0.065	0.053	-0.045	-0.063	0.064	0.086	0.086	0.222	0.410	0.120	0.239	0.204	0.231	0.313	0.231	0.471	0.392	0.136	0.136	0.724	0.080	0.080	0.280	0.321	0.571	0.465	0.376	0.327	0.578	0.024	0.375	1.000
	Leisure	0.012	0.015	0.015	0.036	0.084	-0.005	0.070	-0.020	-0.010	0.054	0.039	-0.033	-0.045	0.045	0.062	0.064	0.062	0.004	0.087	-0.057	0.099	0.025	0.011	0.034	0.339	0.290	-0.049	-0.049	0.015	-0.044	0.077	0.014	0.027	0.008	0.024	0.009	0.055	0.059	0.063	-0.009	0.043	0.042	-0.048	-0.022	-0.021	-0.019	-0.010	-0.048	0.073	0.073	0.016	0.099	0.037	0.017	0.046	0.082	0.107	0.086	0.116	0.100	0.054	0.054	0.142	0.209	0.209	0.039	0.097	0.103	0.086	0.078	0.103	0.081	-0.015	0.098	0.155	1.000
	Manufacturing	-0.003	0.073	0.072	-0.026	0.060	0.000	0.001	-0.051	0.113	-0.016	0.066	0.010	-0.076	0.187	-0.002	-0.002	-0.005	0.006	0.194	-0.042	0.028	-0.041	0.096	0.046	-0.015	-0.003	-0.060	-0.060	0.089	-0.050	-0.046	-0.021	0.058	0.013	0.035	-0.037	-0.013	-0.059	-0.021	0.114	-0.006	-0.005	-0.021	-0.027	-0.070	-0.081	-0.082	0.139	-0.008	-0.008	0.112	0.143	-0.018	0.043	0.036	0.022	0.026	0.060	0.179	0.017	0.068	0.068	0.109	0.026	0.026	0.004	0.034	0.101	0.081	0.060	0.053	0.080	-0.052	0.059	0.128	-0.014	1.000
	Metals&Mining	0.132	0.108	0.109	0.165	0.123	0.120	0.063	-0.008	0.112	-0.017	-0.005	0.012	0.054	0.006	0.208	0.037	0.215	0.081	0.096	-0.014	0.079	0.052	0.136	0.029	0.070	0.065	-0.108	-0.108	0.027	0.020	0.020	0.099	0.037	0.070	0.120	-0.021	0.075	0.054	0.112	0.060	0.054	0.054	0.077	0.001	0.020	0.084	0.061	0.032	-0.020	-0.020	0.060	0.245	0.144	0.029	0.108	0.096	0.151	0.118	0.177	0.121	0.023	0.023	0.317	-0.065	-0.065	0.032	0.143	0.166	0.136	0.171	0.212	0.156	0.009	0.096	0.272	0.064	0.044	1.000
	Financials	-0.041	0.085	0.085	-0.014	0.016	-0.015	0.284	-0.015	0.146	-0.020	0.058	-0.030	-0.057	0.302	0.092	-0.052	0.079	-0.026	0.102	-0.010	0.283	0.026	-0.004	0.197	0.251	0.179	-0.010	-0.010	0.449	-0.014	0.075	0.005	0.111	0.002	0.046	-0.007	-0.012	-0.027	-0.073	0.033	0.026	0.027	-0.060	-0.030	0.022	-0.059	-0.061	0.022	0.215	0.215	0.039	0.153	0.017	-0.012	0.080	0.321	0.335	0.139	0.135	0.159	0.075	0.075	0.117	0.093	0.093	0.028	0.157	0.049	0.164	0.101	0.105	0.052	-0.050	0.115	0.207	0.152	0.069	-0.006	1.000
	Other Financials	-0.041	0.097	0.097	-0.004	0.026	-0.009	0.291	-0.009	0.143	-0.012	0.064	-0.029	-0.053	0.323	0.091	-0.043	0.078	-0.021	0.108	-0.009	0.287	0.032	0.002	0.203	0.279	0.204	-0.013	-0.013	0.455	-0.008	0.087	-0.014	0.110	0.004	0.063	-0.004	-0.009	-0.027	-0.068	0.037	0.032	0.032	-0.056	-0.029	0.037	-0.056	-0.056	0.019	0.229	0.229	0.044	0.162	0.021	-0.013	0.101	0.307	0.325	0.140	0.145	0.166	0.080	0.080	0.135	0.114	0.114	0.010	0.174	0.059	0.171	0.110	0.127	0.034	-0.048	0.127	0.217	0.173	0.068	-0.003	0.981	1.000
	Oil&Gas	0.073	0.096	0.095	0.215	0.099	0.020	0.187	0.092	0.041	0.037	0.017	0.079	0.019	0.108	0.029	0.052	0.025	0.121	0.223	-0.029	0.210	-0.016	0.080	0.032	0.089	0.094	-0.055	-0.055	0.146	-0.016	0.094	0.051	0.252	0.075	0.059	0.010	0.064	-0.024	0.067	0.195	0.130	0.130	0.083	0.072	0.043	-0.041	-0.059	0.049	0.061	0.061	0.175	0.408	0.121	0.221	0.177	0.210	0.292	0.179	0.422	0.386	0.102	0.102	0.717	0.065	0.065	0.245	0.277	0.503	0.411	0.331	0.296	0.560	0.017	0.343	0.982	0.150	0.122	0.293	0.152	0.162	1.000
	Consumer Services	0.007	0.144	0.144	0.151	0.093	0.023	0.155	0.016	0.078	0.067	0.074	-0.023	-0.003	0.094	0.100	0.064	0.098	0.101	0.256	-0.030	0.100	0.028	0.054	0.038	0.309	0.268	-0.066	-0.066	0.092	0.004	0.119	0.046	0.165	0.102	0.103	0.035	0.068	0.047	0.089	0.046	0.116	0.116	-0.006	-0.014	0.033	-0.017	-0.020	-0.012	0.080	0.080	0.157	0.214	0.083	0.144	0.162	0.210	0.267	0.246	0.376	0.258	0.136	0.136	0.514	0.175	0.175	0.181	0.268	0.398	0.336	0.280	0.293	0.370	0.024	0.284	0.525	0.811	0.059	0.219	0.178	0.199	0.502	1.000
	Other Consumer Services	0.173	0.084	0.083	0.266	0.029	0.013	0.135	0.005	0.187	0.090	0.081	0.009	0.084	-0.039	0.127	0.068	0.128	0.059	0.181	0.020	0.130	0.122	-0.036	0.109	0.051	0.051	-0.049	-0.049	0.151	0.020	0.105	0.234	0.144	0.226	0.031	0.143	0.094	0.117	0.196	-0.020	0.094	0.094	-0.034	0.016	0.058	0.194	0.159	-0.017	0.020	0.020	0.157	0.289	0.165	0.094	0.103	0.180	0.237	0.158	0.266	0.185	0.106	0.106	0.409	-0.016	-0.016	0.129	0.225	0.244	0.247	0.274	0.234	0.273	0.092	0.197	0.380	0.062	0.017	0.315	0.035	0.042	0.355	0.367	1.000
	Telecommunications	-0.039	0.092	0.091	0.037	-0.007	0.019	0.021	-0.068	0.217	0.022	0.061	-0.020	0.198	0.013	0.140	-0.015	0.134	0.054	0.201	0.300	-0.005	0.074	-0.069	0.013	-0.017	0.012	0.083	0.083	0.022	-0.038	0.067	0.068	0.010	0.012	0.080	0.155	0.161	0.115	-0.043	0.110	0.069	0.067	0.107	-0.041	-0.004	-0.038	-0.035	-0.043	0.045	0.045	0.011	0.054	-0.001	0.066	0.009	0.308	0.274	0.061	0.176	0.031	0.116	0.116	0.087	0.047	0.047	0.286	0.037	0.048	0.174	0.140	0.068	0.214	0.006	0.308	0.049	0.033	0.061	-0.053	0.054	0.048	0.029	0.095	0.072	1.000
	Transportation	-0.044	0.317	0.317	0.039	0.106	0.085	0.102	0.010	0.051	0.141	0.056	-0.018	-0.008	0.107	0.003	0.210	-0.002	0.159	0.241	-0.058	0.042	0.100	0.096	0.013	0.256	0.315	-0.057	-0.057	0.090	-0.030	0.138	0.060	0.093	0.024	0.400	0.033	-0.001	-0.007	0.049	-0.019	0.044	0.044	0.003	-0.014	0.228	0.052	0.086	0.042	0.041	0.041	0.174	0.243	0.033	0.087	0.492	0.200	0.283	0.356	0.390	0.173	0.219	0.219	0.570	0.090	0.090	0.166	0.497	0.260	0.252	0.366	1.000	0.235	0.011	0.222	0.327	0.103	0.053	0.212	0.105	0.127	0.296	0.293	0.234	0.068	1.000
	Utility	0.090	-0.032	-0.032	-0.043	0.013	-0.042	0.142	-0.061	0.007	0.179	-0.064	0.007	0.046	-0.062	-0.001	0.200	0.003	-0.008	-0.023	0.017	-0.030	-0.045	-0.075	0.008	-0.071	-0.083	0.069	0.069	-0.050	-0.013	0.020	0.042	-0.011	-0.036	-0.024	0.049	0.017	0.043	0.166	-0.044	0.018	0.016	-0.050	0.009	-0.037	0.085	0.067	-0.043	-0.033	-0.033	-0.042	-0.025	0.089	0.327	-0.019	0.083	0.052	-0.035	0.041	-0.015	0.160	0.161	0.110	-0.098	-0.098	0.028	0.000	0.049	0.019	0.062	0.010	0.073	0.995	-0.007	0.071	-0.012	-0.051	0.026	-0.061	-0.058	0.073	0.045	0.104	0.009	0.011	1.000
JP	Automotive Manufacturer	0.011	0.119	0.119	-0.027	0.053	0.181	-0.033	0.067	-0.079	0.046	-0.068	-0.039	-0.011	0.005	-0.095	0.166	-0.096	0.076	0.109	-0.137	0.058	0.146	-0.020	0.123	0.051	0.083	-0.080	-0.080	0.017	-0.065	0.038	0.084	-0.036	0.117	0.046	-0.031	0.058	0.075	0.115	-0.005	-0.015	-0.014	-0.011	-0.040	-0.030	0.005	0.012	0.070	-0.002	-0.001	0.019	0.073	0.223	-0.062	0.152	-0.025	-0.008	-0.012	-0.007	0.034	0.009	0.009	0.051	0.141	0.141	-0.040	0.251	0.015	-0.018	0.089	0.279	-0.045	-0.068	-0.039	0.010	0.051	-0.024	0.164	-0.042	-0.033	0.019	0.009	0.118	-0.086	0.279	-0.070	1.000
	Banking	0.102	0.136	0.135	0.046	0.017	0.009	0.190	-0.058	0.243	0.150	0.084	0.075	0.008	-0.141	0.038	0.077	0.042	-0.046	0.141	0.015	-0.007	0.230	-0.052	0.231	0.006	-0.002	-0.034	-0.034	0.043	0.019	0.144	0.189	0.030	0.165	0.119	0.069	0.141	0.166	0.199	-0.014	0.055	0.054	0.000	0.089	0.239	0.142	0.113	-0.077	0.069	0.069	0.075	0.050	0.203	0.167	0.048	0.210	0.211	0.240	0.159	-0.008	0.076	0.076	0.108	-0.164	-0.163	0.100	0.092	0.019	0.132	0.125	0.081	0.152	0.108	0.049	0.081	0.018	-0.036	0.015	0.024	0.005	0.035	0.073	0.178	0.077	0.081	0.092	-0.015	1.000
	Banks	0.105	0.140	0.139	0.044	0.023	0.012	0.190	-0.059	0.249	0.154	0.085	0.074	0.007	-0.135	0.046	0.077	0.050	-0.044	0.144	0.018	-0.006	0.234	-0.051	0.234	0.007	-0.003	-0.025	-0.025	0.044	0.028	0.146	0.201	0.033	0.167	0.120	0.078	0.154	0.181	0.199	-0.015	0.058	0.056	-0.001	0.088	0.241	0.151	0.122	-0.074	0.077	0.077	0.073	0.049	0.203	0.180	0.046	0.214	0.210	0.237	0.167	-0.006	0.078	0.078	0.110	-0.165	-0.165	0.098	0.092	0.019	0.130	0.127	0.080	0.151	0.113	0.053	0.080	0.018	-0.036	0.015	0.022	0.004	0.034	0.073	0.176	0.081	0.081	0.097	-0.017	0.998	1.000
	Chemicals	0.117	0.196	0.196	0.017	0.120	-0.025	0.229	0.074	0.091	0.022	0.074	-0.011	-0.053	0.144	0.005	0.118	-0.006	0.118	0.161	-0.122	0.166	0.093	0.127	0.067	0.226	0.259	-0.047	-0.047	0.234	-0.017	0.196	0.103	0.037	0.118	0.401	-0.024	0.119	0.052	0.068	0.136	0.097	0.097	-0.018	-0.026	0.159	0.016	-0.007	0.047	0.049	0.049	0.085	0.447	0.054	0.019	0.383	0.096	0.155	0.263	0.189	0.157	0.198	0.198	0.167	0.030	0.030	-0.041	0.090	0.175	0.169	0.264	0.284	0.046	-0.035	0.159	0.209	0.097	0.142	0.123	0.140	0.157	0.214	0.128	0.146	0.027	0.284	-0.037	0.140	0.117	0.116	1.000
	Electric Power	0.185	0.033	0.035	0.099	0.063	-0.026	0.035	-0.036	0.026	0.132	0.103	-0.041	-0.092	0.071	0.024	0.152	0.022	-0.014	0.081	-0.039	0.201	0.098	0.060	-0.012	0.077	0.110	0.052	0.052	0.053	-0.014	0.133	0.054	0.031	-0.035	0.129	0.177	0.086	0.064	0.049	0.039	0.103	0.098	-0.037	-0.037	0.030	0.098	0.079	-0.038	0.026	0.026	0.043	0.276	-0.010	0.023	0.117	0.038	0.072	0.043	0.056	0.207	0.207	0.207	0.121	0.041	0.041	-0.079	0.137	0.074	0.063	0.167	0.108	-0.069	0.139	0.010	0.091	0.068	0.003	0.033	-0.014	0.000	0.105	0.073	0.223	0.089	0.108	0.137	0.070	0.026	0.033	0.315	1.000
	Electronics	0.096	0.135	0.135	0.013	0.233	0.128	-0.039	0.551	0.001	-0.038	0.049	-0.038	0.071	0.206	-0.030	-0.007	-0.033	0.293	0.068	-0.072	-0.037	-0.017	-0.043	0.152	-0.013	-0.034	-0.074	-0.074	0.029	0.085	-0.055	0.121	0.068	0.404	-0.032	-0.094	0.099	0.086	0.091	0.058	0.120	0.121	-0.013	-0.048	-0.093	0.047	0.014	0.055	0.029	0.029	-0.035	0.110	0.159	0.038	-0.065	0.093	0.077	-0.036	0.027	-0.018	-0.011	-0.011	0.049	0.017	0.017	-0.100	-0.048	0.077	0.002	0.046	-0.017	-0.029	-0.007	0.065	0.088	0.011	0.017	0.044	0.005	0.014	0.105	0.052	0.119	-0.003	-0.017	0.003	0.124	0.018	0.016	0.123	0.046	1.000
	Industrials	-0.062	0.009	0.009	0.002	0.232	0.044	0.000	0.206	-0.047	0.084	-0.071	-0.002	-0.018	0.105	-0.077	0.131	-0.081	0.155	0.003	0.002	-0.062	-0.072	0.053	-0.067	-0.027	-0.021	-0.035	-0.035	0.056	-0.045	0.033	0.006	0.032	0.019	0.060	-0.083	-0.048	-0.091	-0.117	0.081	-0.043	-0.042	0.103	-0.001	0.066	0.026	0.026	0.046	-0.057	-0.057	0.052	-0.007	-0.013	0.134	0.026	0.049	0.068	0.107	0.041	-0.023	-0.052	-0.052	0.170	-0.016	-0.016	-0.009	-0.007	0.148	-0.024	-0.038	0.055	0.149	0.016	0.013	0.185	-0.029	0.046	0.015	-0.005	0.006	0.206	0.049	0.017	-0.075	0.054	0.039	-0.004	-0.094	-0.096	0.120	0.044	0.187	1.000
	Manufacturing	0.032	0.167	0.167	-0.006	0.219	0.151	0.020	0.375	-0.067	-0.030	-0.042	-0.042	0.077	0.210	-0.084	0.084	-0.091	0.255	0.067	-0.081	-0.045	-0.006	0.047	0.123	0.040	0.041	-0.075	-0.075	0.198	0.044	0.021	0.071	0.008	0.288	0.076	-0.119	0.034	0.019	0.016	0.068	0.025	0.027	0.045	-0.062	-0.003	0.029	-0.003	0.046	0.007	0.008	0.042	0.097	0.170	-0.003	0.091	-0.024	-0.011	0.032	0.015	-0.035	-0.008	-0.008	0.050	0.084	0.084	-0.077	0.062	0.077	-0.018	0.039	0.084	-0.012	-0.059	0.041	0.063	-0.052	-0.005	0.071	0.047	0.068	0.080	-0.014	0.050	-0.072	0.084	-0.051	0.388	-0.028	-0.031	0.298	0.105	0.646	0.478	1.000
	Metals&Mining	0.027	0.198	0.198	0.060	0.118	-0.007	0.086	0.307	0.104	0.066	0.032	-0.022	0.173	0.121	0.078	0.132	0.072	0.195	0.148	0.001	-0.021	0.134	0.233	0.072	0.159	0.165	-0.056	-0.056	0.078	0.075	0.083	0.147	0.067	0.148	0.206	-0.051	0.069	0.077	0.040	-0.003	0.117	0.117	0.145	-0.050	0.109	0.053	0.025	0.018	-0.016	-0.016	-0.014	0.154	0.056	0.045	0.227	0.060	0.098	0.155	0.134	-0.003	0.114	0.114	0.168	0.020	0.020	-0.032	0.098	0.050	0.124	0.140	0.214	-0.016	0.014	0.175	0.075	0.048	-0.025	0.166	0.037	0.053	0.055	0.091	0.147	0.042	0.213	0.012	0.144	0.127	0.125	0.349	0.158	0.338	0.163	0.322	1.000
	Financials	0.011	0.122	0.120	-0.045	0.107	0.100	0.049	0.310	0.071	0.013	-0.026	-0.037	0.010	0.197	0.004	0.055	0.000	0.165	0.107	-0.007	-0.068	0.170	0.151	0.048	0.053	0.060	0.078	0.078	0.082	0.075	0.049	0.098	0.033	0.190	0.143	-0.077	0.032	0.026	0.070	0.002	0.039	0.040	0.128	-0.059	0.058	-0.009	-0.032	0.165	0.033	0.033	0.139	0.064	0.056	-0.010	0.107	0.090	0.086	0.083	0.072	-0.049	0.031	0.031	0.091	0.044	0.044	0.006	0.114	0.010	0.026	0.019	0.114	0.013	-0.075	0.074	0.020	-0.013	0.140	0.008	0.039	0.052	0.012	0.022	0.060	0.005	0.113	-0.080	0.151	0.082	0.080	0.223	0.101	0.364	0.121	0.355	0.384	1.000
	Railroads	0.073	0.155	0.157	0.000	0.191	0.079	0.111	0.339	0.128	-0.007	0.106	0.037	0.021	0.204	-0.014	-0.021	-0.015	0.186	0.207	0.044	-0.058	0.069	0.184	0.096	-0.025	0.020	0.073	0.073	0.178	0.079	0.108	0.156	0.142	0.224	0.102	-0.014	0.027	0.004	0.047	0.042	0.021	0.019	0.048	0.023	0.023	-0.012	-0.026	0.087	0.075	0.075	0.235	0.175	0.114	0.222	0.110	0.094	0.082	0.160	0.316	0.097	0.156	0.156	0.141	0.075	0.075	0.116	0.076	0.103	0.075	0.149	0.096	0.149	-0.002	0.188	0.176	-0.002	0.117	-0.018	0.038	0.043	0.154	0.089	0.127	0.118	0.096	0.002	0.023	0.036	0.037	0.213	0.081	0.282	0.190	0.254	0.275	0.217	1.000
	Other Retail	-0.003	0.037	0.038	0.077	0.089	0.063	0.059	0.125	0.110	0.006	-0.018	0.000	0.080	0.027	0.046	0.030	0.045	0.210	0.059	-0.015	0.009	0.035	0.307	-0.018	-0.014	-0.020	-0.019	-0.019	0.266	0.008	-0.007	0.075	0.058	0.062	0.058	0.011	0.029	0.039	0.014	0.003	0.038	0.038	0.101	-0.028	0.004	0.030	0.025	0.092	-0.043	-0.043	0.082	0.083	0.053	0.028	0.019	0.016	0.031	0.059	0.110	0.011	0.051	0.051	0.162	0.025	0.025	-0.021	0.092	-0.002	0.062	0.101	0.192	0.000	-0.016	0.087	0.083	-0.016	0.016	0.097	0.073	0.080	0.065	0.059	0.228	0.060	0.191	-0.020	0.098	0.045	0.044	0.215	0.094	0.135	0.168	0.236	0.420	0.213	0.314	1.000
	Consumer Services	-0.032	0.075	0.075	0.091	0.107	0.061	0.015	0.238	0.034	0.020	0.065	-0.027	-0.008	0.150	0.013	0.001	0.009	0.344	0.044	-0.086	-0.042	-0.049	0.283	0.058	-0.029	-0.027	-0.010	-0.010	0.195	0.002	-0.016	0.074	0.081	0.108	0.082	-0.001	0.022	0.007	0.030	0.008	-0.010	-0.010	0.052	-0.045	-0.044	-0.023	0.002	0.055	0.032	0.032	0.030	0.074	0.006	0.032	0.022	0.011	0.020	0.037	0.098	-0.003	0.025	0.025	0.145	0.130	0.130	-0.056	0.049	0.138	0.015	0.056	0.075	0.020	-0.020	0.029	0.161	-0.010	0.019	0.069	0.067	0.078	0.164	0.070	0.100	-0.041	0.075	-0.012	0.007	-0.081	-0.081	0.151	0.062	0.221	0.159	0.218	0.280	0.223	0.380	0.537	1.000
	Other Consumer Services	0.016	0.047	0.047	0.035	0.102	0.061	0.065	0.155	0.092	0.027	-0.011	-0.003	0.050	0.070	0.021	0.054	0.018	0.173	0.069	-0.024	-0.013	0.020	0.383	0.010	-0.002	0.000	0.033	0.033	0.327	-0.013	-0.020	0.081	0.048	0.085	0.064	-0.004	0.011	0.029	0.023	-0.010	0.016	0.016	0.078	-0.038	0.027	0.019	0.016	0.083	-0.044	-0.044	0.093	0.075	0.037	0.044	0.033	0.016	0.028	0.066	0.118	0.006	0.041	0.041	0.165	0.057	0.057	-0.037	0.122	-0.002	0.042	0.075	0.230	-0.012	-0.024	0.082	0.093	-0.019	0.031	0.077	0.088	0.094	0.076	0.037	0.132	0.018	0.230	-0.028	0.087	0.028	0.028	0.228	0.077	0.128	0.171	0.272	0.394	0.257	0.388	0.915	0.602	1.000
	Telecommunications	-0.071	0.262	0.262	-0.007	0.149	0.099	0.071	0.068	-0.092	0.012	-0.020	-0.034	-0.046	0.125	-0.101	0.130	-0.104	0.066	0.012	-0.111	-0.024	0.095	0.134	0.016	0.054	0.081	-0.073	-0.073	0.054	-0.154	0.067	-0.035	0.019	0.072	0.173	-0.086	-0.095	-0.097	-0.078	-0.014	-0.038	-0.036	0.016	-0.048	0.084	-0.064	-0.058	0.131	-0.006	-0.006	0.044	0.087	0.003	0.002	0.255	0.000	0.036	0.087	0.180	0.071	0.041	0.041	0.219	0.043	0.043	-0.033	0.180	0.105	0.048	0.163	0.265	0.055	-0.069	0.083	0.136	-0.010	0.145	0.134	-0.004	0.011	0.149	0.067	0.026	-0.119	0.265	-0.064	0.428	-0.063	-0.065	0.231	0.078	0.032	0.224	0.309	0.080	0.156	0.070	0.027	0.028	0.046	1.000
	Other Telecommunications	-0.070	0.262	0.262	-0.007	0.149	0.099	0.071	0.068	-0.092	0.012	-0.020	-0.034	-0.046	0.125	-0.100	0.130	-0.104	0.066	0.012	-0.111	-0.024	0.095	0.134	0.016	0.054	0.081	-0.073	-0.073	0.054	-0.153	0.067	-0.034	0.019	0.073	0.173	-0.085	-0.095	-0.097	-0.078	-0.014	-0.038	-0.036	0.016	-0.048	0.084	-0.064	-0.059	0.132	-0.006	-0.006	0.043	0.087	0.003	0.003	0.255	0.000	0.037	0.087	0.180	0.071	0.041	0.041	0.219	0.043	0.043	-0.033	0.180	0.105	0.048	0.163	0.265	0.055	-0.069	0.083	0.136	-0.010	0.145	0.134	-0.004	0.011	0.149	0.067	0.026	-0.119	0.265	-0.064	0.428	-0.063	-0.065	0.231	0.078	0.032	0.224	0.309	0.080	0.156	0.070	0.027	0.028	0.046	1.000	1.000
	Transportation	0.059	0.164	0.164	0.125	0.187	0.056	0.212	0.214	0.119	0.104	0.088	0.066	-0.024	0.064	-0.027	0.069	-0.023	0.098	0.247	-0.053	-0.050	0.166	0.153	0.104	-0.006	-0.017	0.005	0.005	0.093	0.123	0.091	0.153	0.092	0.255	0.103	-0.072	0.066	-0.019	0.113	0.179	0.146	0.145	0.081	0.065	0.138	0.008	0.005	0.043	0.007	0.007	0.172	0.101	0.191	0.155	0.062	0.083	0.103	0.155	0.233	0.126	0.092	0.092	0.171	-0.051	-0.051	0.100	0.091	0.150	0.221	0.334	0.106	0.204	0.048	0.190	0.250	0.000	0.097	-0.007	0.034	0.038	0.236	0.121	0.132	-0.011	0.107	0.053	0.036	0.194	0.195	0.178	0.006	0.235	0.096	0.196	0.190	0.121	0.432	0.216	0.210	0.251	0.102	0.102	1.000
	Other Transportation	0.071	0.082	0.083	0.132	0.101	-0.010	0.206	0.205	0.150	0.096	0.017	0.067	0.004	-0.099	-0.041	0.061	-0.037	0.063	0.165	0.023	-0.069	0.183	-0.006	0.037	-0.019	-0.035	-0.048	-0.048	0.001	0.062	0.057	0.151	-0.001	0.237	0.067	-0.081	0.037	-0.032	0.198	0.121	0.140	0.140	0.051	0.074	0.183	0.046	0.029	-0.054	-0.049	-0.049	0.068	0.022	0.234	0.081	0.031	0.060	0.077	0.102	0.095	0.018	0.040	0.040	0.122	-0.064	-0.064	0.105	0.038	0.114	0.157	0.261	0.059	0.211	0.014	0.118	0.154	0.001	0.012	-0.001	-0.009	-0.003	0.148	0.101	0.178	-0.059	0.059	0.016	-0.024	0.232	0.230	0.111	-0.094	0.226	0.085	0.155	0.121	0.073	0.173	0.064	0.017	0.051	0.035	0.035	0.777	1.000
	Utility	0.200	0.097	0.097	-0.020	0.230	-0.037	0.102	0.063	-0.081	0.162	0.135	-0.025	-0.079	0.145	-0.049	0.230	-0.056	0.064	0.101	-0.053	0.347	0.088	0.083	-0.012	0.165	0.196	0.025	0.025	0.124	-0.026	0.170	0.000	0.063	-0.016	0.195	-0.068	-0.028	-0.052	0.023	0.031	0.158	0.160	0.018	-0.024	0.063	0.072	0.060	0.044	0.023	0.023	0.123	0.562	-0.017	0.022	0.183	0.062	0.114	0.107	0.073	0.239	0.207	0.206	0.077	0.035	0.035	-0.061	0.029	0.087	0.163	0.230	0.148	-0.041	0.110	0.027	0.158	0.079	0.045	0.111	0.040	0.056	0.182	0.045	0.076	-0.030	0.148	0.104	0.093	0.046	0.043	0.515	0.564	0.138	0.133	0.187	0.237	0.177	0.151	0.122	0.134	0.107	0.005	0.095	0.088	-0.025	1.000

Table 62: *Correlation for Sectoral CDS Spreads Volatility [After-Crisis Period]*

Correlation Matrix Equity Volatility — US columns

		US: Airlines	Vehicle F	Banks	Beverage	Building	Basic Ma	Chemical	Consume	Consume	Other Co	Containe	Conglom	Electric U	Electroni	Retail St	Financial	Other Fi	Food Pro	Other Re	Healthca	Healtcha	Home Bu	Lodging	Machiner	Other In	Metals&?	Other Tr	Industria	Cable Mc	Healthca	Oil&Gas	Oilfield M	Other Oi	Property	Textiles\	Other Cc	Pharmac	Publishir	Railroad	Real Esta	Restaura	Technolo	Informat	Telecomr	Other Te	Tobacco	Leisure	Utility	Other U
US	Airlines	1.000
	Vehicle Parts	0.668	1.000
	Banks	0.644	0.808	1.000
	Beverages/Bottling	0.521	0.692	0.609	1.000
	Building Products	0.578	0.729	0.669	0.647	1.000
	Basic Materials	0.645	0.861	0.809	0.712	0.718	1.000
	Chemicals	0.629	0.844	0.755	0.749	0.791	0.847	1.000
	Consumer Goods	0.498	0.665	0.585	0.701	0.855	0.680	0.717	1.000
	Consumer Services	0.560	0.690	0.656	0.651	0.874	0.705	0.729	0.926	1.000
	Other Consumer Services	0.662	0.857	0.776	0.814	0.744	0.869	0.876	0.733	0.769	1.000
	Containers	0.642	0.842	0.786	0.748	0.721	0.864	0.866	0.680	0.700	0.876	1.000
	Conglomerate/Diversified Mfg	0.641	0.843	0.843	0.731	0.727	0.857	0.849	0.690	0.722	0.866	0.839	1.000
	Electric Utility	0.462	0.658	0.581	0.808	0.680	0.700	0.760	0.684	0.662	0.793	0.732	0.704	1.000
	Electronics	0.620	0.877	0.770	0.772	0.745	0.885	0.903	0.720	0.727	0.904	0.884	0.882	0.745	1.000
	Retail Stores Food and Drug	0.517	0.718	0.639	0.756	0.663	0.761	0.751	0.692	0.685	0.854	0.760	0.755	0.761	0.786	1.000
	Financials	0.606	0.741	0.795	0.584	0.837	0.734	0.715	0.789	0.861	0.712	0.707	0.758	0.579	0.717	0.598	1.000
	Other Financials	0.674	0.860	0.930	0.722	0.743	0.858	0.856	0.673	0.725	0.887	0.855	0.884	0.713	0.865	0.735	0.807	1.000
	Food Processors	0.529	0.754	0.656	0.857	0.681	0.778	0.814	0.724	0.690	0.867	0.800	0.780	0.833	0.843	0.818	0.613	0.780	1.000
	Other Retail	0.638	0.809	0.732	0.780	0.713	0.804	0.824	0.701	0.743	0.964	0.831	0.805	0.768	0.834	0.801	0.676	0.849	0.830	1.000
	Healthcare Facilities	0.547	0.758	0.681	0.813	0.680	0.777	0.824	0.686	0.674	0.875	0.809	0.795	0.779	0.861	0.802	0.618	0.796	0.857	0.820	1.000
	Healtchare	0.431	0.569	0.507	0.640	0.779	0.600	0.649	0.890	0.859	0.673	0.613	0.618	0.660	0.660	0.647	0.707	0.605	0.686	0.642	0.693	1.000
	Home Builders	0.658	0.739	0.782	0.583	0.643	0.788	0.709	0.574	0.635	0.751	0.722	0.752	0.587	0.694	0.594	0.703	0.807	0.627	0.744	0.612	0.482	1.000
	Lodging	0.691	0.857	0.796	0.692	0.731	0.849	0.812	0.657	0.706	0.849	0.825	0.836	0.646	0.842	0.703	0.744	0.840	0.731	0.796	0.746	0.579	0.765	1.000
	Machinery	0.640	0.877	0.778	0.767	0.755	0.890	0.901	0.721	0.731	0.894	0.878	0.887	0.745	0.956	0.787	0.725	0.857	0.825	0.822	0.845	0.652	0.706	0.845	1.000
	Other Industrials	0.657	0.894	0.814	0.783	0.765	0.904	0.917	0.740	0.760	0.933	0.898	0.940	0.759	0.964	0.811	0.746	0.896	0.849	0.866	0.863	0.668	0.741	0.865	0.963	1.000
	Metals&Mining	0.592	0.816	0.747	0.745	0.780	0.801	0.897	0.702	0.704	0.829	0.821	0.820	0.777	0.859	0.744	0.720	0.835	0.800	0.785	0.790	0.647	0.684	0.790	0.860	0.866	1.000
	Other Transportation	0.687	0.858	0.796	0.713	0.738	0.851	0.864	0.690	0.725	0.868	0.839	0.853	0.696	0.881	0.744	0.737	0.855	0.772	0.820	0.782	0.616	0.737	0.840	0.882	0.922	0.835	1.000
	Industrials	0.583	0.738	0.683	0.635	0.919	0.739	0.754	0.903	0.933	0.745	0.720	0.757	0.642	0.769	0.671	0.891	0.738	0.679	0.700	0.681	0.824	0.636	0.739	0.777	0.793	0.731	0.752	1.000
	Cable Meida	0.636	0.845	0.785	0.801	0.752	0.863	0.870	0.726	0.749	0.945	0.853	0.874	0.792	0.904	0.827	0.724	0.880	0.850	0.863	0.867	0.669	0.715	0.843	0.898	0.922	0.842	0.854	0.751	1.000
	Healthcare Supplies	0.519	0.700	0.620	0.742	0.630	0.730	0.767	0.644	0.627	0.806	0.755	0.732	0.714	0.806	0.731	0.566	0.728	0.803	0.768	0.900	0.648	0.573	0.706	0.791	0.801	0.719	0.711	0.646	0.786	1.000
	Oil&Gas	0.528	0.749	0.670	0.781	0.739	0.760	0.862	0.715	0.706	0.841	0.798	0.768	0.833	0.829	0.756	0.646	0.792	0.835	0.802	0.827	0.688	0.626	0.730	0.826	0.833	0.876	0.780	0.693	0.843	0.759	1.000
	Oilfield Machinery and Products	0.542	0.764	0.689	0.781	0.748	0.775	0.875	0.718	0.713	0.847	0.811	0.782	0.830	0.839	0.760	0.664	0.806	0.837	0.806	0.829	0.689	0.641	0.747	0.836	0.844	0.887	0.793	0.702	0.853	0.762	0.994	1.000
	Other Oil&Gas	0.500	0.651	0.600	0.665	0.898	0.674	0.740	0.854	0.847	0.728	0.692	0.668	0.717	0.705	0.678	0.765	0.691	0.702	0.698	0.680	0.819	0.578	0.662	0.712	0.721	0.746	0.685	0.846	0.733	0.629	0.801	0.804	1.000
	Property&Casualty	0.641	0.835	0.875	0.769	0.745	0.852	0.850	0.685	0.721	0.880	0.849	0.877	0.764	0.871	0.745	0.789	0.936	0.804	0.834	0.813	0.619	0.773	0.831	0.866	0.888	0.835	0.826	0.741	0.888	0.740	0.806	0.818	0.702	1.000
	Textiles\Apparel\Shoes	0.576	0.796	0.691	0.866	0.717	0.819	0.837	0.752	0.732	0.917	0.826	0.819	0.831	0.863	0.833	0.663	0.811	0.895	0.879	0.864	0.688	0.680	0.765	0.859	0.884	0.809	0.809	0.716	0.882	0.801	0.848	0.847	0.724	0.840	1.000
	Other Consumer Goods	0.578	0.793	0.671	0.798	0.699	0.803	0.823	0.724	0.714	0.898	0.814	0.782	0.752	0.853	0.809	0.631	0.775	0.850	0.859	0.834	0.653	0.660	0.768	0.851	0.864	0.773	0.795	0.699	0.861	0.783	0.807	0.808	0.702	0.790	0.922	1.000
	Pharmaceuticals	0.513	0.704	0.611	0.807	0.651	0.722	0.767	0.690	0.666	0.842	0.754	0.753	0.807	0.800	0.805	0.582	0.747	0.863	0.812	0.882	0.710	0.588	0.686	0.774	0.805	0.755	0.731	0.643	0.817	0.841	0.815	0.813	0.675	0.777	0.864	0.809	1.000
	Publishing	0.597	0.817	0.745	0.758	0.730	0.838	0.840	0.702	0.722	0.896	0.839	0.837	0.760	0.883	0.782	0.703	0.846	0.821	0.841	0.834	0.654	0.691	0.808	0.874	0.895	0.822	0.822	0.730	0.897	0.773	0.825	0.832	0.722	0.855	0.855	0.840	0.793	1.000
	Railroad	0.622	0.785	0.743	0.644	0.681	0.778	0.803	0.635	0.668	0.782	0.771	0.780	0.626	0.805	0.680	0.694	0.786	0.697	0.738	0.708	0.568	0.673	0.774	0.813	0.841	0.780	0.949	0.693	0.771	0.638	0.723	0.737	0.632	0.751	0.725	0.712	0.653	0.743	1.000
	Real Estate	0.681	0.836	0.870	0.673	0.728	0.834	0.781	0.650	0.696	0.818	0.805	0.853	0.710	0.800	0.701	0.791	0.889	0.734	0.778	0.705	0.556	0.788	0.854	0.808	0.837	0.791	0.810	0.727	0.835	0.643	0.710	0.727	0.660	0.887	0.755	0.723	0.681	0.796	0.745	1.000
	Restaurants	0.629	0.770	0.715	0.755	0.698	0.796	0.809	0.700	0.733	0.892	0.789	0.788	0.743	0.813	0.763	0.681	0.806	0.807	0.857	0.812	0.660	0.712	0.780	0.809	0.846	0.762	0.805	0.705	0.836	0.758	0.783	0.787	0.703	0.800	0.843	0.842	0.776	0.811	0.740	0.760	1.000
	Technology	0.554	0.669	0.633	0.628	0.872	0.676	0.726	0.888	0.915	0.720	0.675	0.711	0.627	0.715	0.646	0.845	0.708	0.675	0.688	0.658	0.840	0.611	0.682	0.713	0.738	0.696	0.698	0.917	0.719	0.622	0.687	0.695	0.844	0.709	0.698	0.679	0.649	0.687	0.644	0.673	0.707	1.000
	Information/Data Technology	0.625	0.830	0.769	0.786	0.738	0.831	0.874	0.727	0.742	0.915	0.848	0.864	0.759	0.907	0.788	0.712	0.876	0.845	0.870	0.853	0.676	0.708	0.808	0.876	0.917	0.834	0.839	0.748	0.898	0.793	0.835	0.843	0.723	0.864	0.869	0.840	0.816	0.855	0.764	0.787	0.845	0.761	1.000
	Telecommunications	0.531	0.650	0.602	0.655	0.825	0.670	0.705	0.866	0.862	0.728	0.673	0.695	0.712	0.687	0.679	0.778	0.699	0.700	0.715	0.637	0.787	0.622	0.658	0.693	0.716	0.712	0.681	0.831	0.722	0.592	0.720	0.722	0.836	0.717	0.722	0.687	0.669	0.701	0.621	0.707	0.703	0.840	0.715	1.000
	Other Telecommunications	0.581	0.751	0.692	0.802	0.720	0.765	0.805	0.718	0.719	0.862	0.780	0.795	0.840	0.809	0.777	0.669	0.814	0.840	0.839	0.790	0.652	0.608	0.740	0.806	0.830	0.810	0.768	0.692	0.856	0.723	0.833	0.836	0.729	0.834	0.868	0.809	0.810	0.816	0.689	0.786	0.804	0.703	0.840	0.795	1.000
	Tobacco	0.422	0.631	0.562	0.769	0.604	0.638	0.697	0.630	0.601	0.748	0.660	0.670	0.767	0.700	0.704	0.553	0.688	0.770	0.725	0.736	0.591	0.534	0.602	0.689	0.713	0.696	0.645	0.587	0.725	0.674	0.749	0.745	0.620	0.726	0.853	0.703	0.744	0.690	0.593	0.617	0.692	0.587	0.732	0.622	0.763	1.000
	Leisure	0.732	0.868	0.805	0.733	0.722	0.869	0.854	0.675	0.735	0.937	0.858	0.846	0.704	0.870	0.766	0.731	0.880	0.784	0.882	0.804	0.611	0.771	0.889	0.868	0.904	0.802	0.874	0.726	0.877	0.747	0.781	0.793	0.687	0.847	0.840	0.833	0.755	0.843	0.802	0.825	0.894	0.693	0.870	0.676	0.790	0.671	1.000
	Utility	0.434	0.578	0.505	0.657	0.799	0.613	0.659	0.857	0.808	0.675	0.620	0.608	0.771	0.631	0.667	0.686	0.612	0.682	0.658	0.627	0.806	0.534	0.584	0.640	0.654	0.686	0.609	0.780	0.675	0.573	0.709	0.708	0.846	0.643	0.697	0.649	0.658	0.649	0.549	0.629	0.647	0.775	0.658	0.847	0.721	0.614	0.604	1.000
	Other Utility	0.467	0.674	0.592	0.820	0.689	0.715	0.777	0.695	0.669	0.808	0.747	0.719	0.996	0.767	0.772	0.586	0.726	0.846	0.779	0.799	0.671	0.591	0.660	0.764	0.778	0.789	0.711	0.652	0.808	0.732	0.848	0.846	0.725	0.780	0.848	0.769	0.819	0.774	0.638	0.716	0.753	0.635	0.775	0.713	0.847	0.780	0.717	0.771	1.000
UK	Banks	0.585	0.700	0.771	0.552	0.641	0.706	0.682	0.555	0.612	0.684	0.689	0.710	0.543	0.685	0.589	0.705	0.762	0.594	0.638	0.634	0.500	0.661	0.688	0.703	0.718	0.680	0.722	0.648	0.693	0.582	0.608	0.624	0.596	0.705	0.633	0.623	0.548	0.647	0.680	0.700	0.648	0.615	0.676	0.567	0.625	0.507	0.715	0.510	0.548
	Beverages/Bottling	0.403	0.541	0.506	0.568	0.550	0.538	0.582	0.543	0.546	0.604	0.521	0.568	0.555	0.569	0.502	0.531	0.584	0.579	0.591	0.580	0.515	0.531	0.534	0.558	0.586	0.572	0.568	0.540	0.575	0.547	0.605	0.599	0.535	0.583	0.627	0.549	0.574	0.540	0.519	0.526	0.591	0.536	0.585	0.528	0.583	0.588	0.582	0.508	0.563
	Basic Materials	0.493	0.634	0.618	0.585	0.708	0.640	0.673	0.700	0.706	0.657	0.626	0.639	0.611	0.644	0.592	0.697	0.668	0.626	0.637	0.591	0.638	0.593	0.649	0.646	0.653	0.705	0.648	0.738	0.673	0.557	0.666	0.677	0.758	0.679	0.634	0.620	0.603	0.652	0.609	0.684	0.618	0.703	0.643	0.700	0.662	0.540	0.631	0.682	0.619
	Consumer Goods	0.399	0.547	0.492	0.581	0.652	0.543	0.577	0.714	0.682	0.616	0.547	0.557	0.581	0.581	0.534	0.604	0.584	0.610	0.607	0.580	0.678	0.517	0.543	0.574	0.588	0.592	0.566	0.652	0.598	0.526	0.641	0.635	0.689	0.594	0.625	0.594	0.600	0.580	0.528	0.544	0.609	0.664	0.591	0.661	0.613	0.547	0.566	0.654	0.591
	Consumer Services	0.475	0.586	0.544	0.527	0.694	0.562	0.591	0.697	0.723	0.620	0.589	0.559	0.528	0.565	0.510	0.667	0.613	0.560	0.624	0.543	0.649	0.589	0.581	0.567	0.591	0.582	0.596	0.697	0.572	0.518	0.593	0.595	0.678	0.587	0.588	0.583	0.550	0.590	0.557	0.559	0.625	0.698	0.588	0.663	0.585	0.492	0.623	0.611	0.533
	Other Consumer Services	0.539	0.685	0.612	0.627	0.631	0.646	0.689	0.606	0.634	0.723	0.680	0.650	0.604	0.671	0.591	0.621	0.709	0.645	0.715	0.659	0.569	0.627	0.660	0.666	0.696	0.675	0.677	0.625	0.668	0.639	0.672	0.678	0.623	0.672	0.693	0.659	0.650	0.682	0.627	0.605	0.703	0.620	0.698	0.594	0.664	0.586	0.737	0.551	0.611
	Financials	0.541	0.647	0.684	0.528	0.730	0.640	0.629	0.684	0.731	0.644	0.626	0.651	0.508	0.630	0.548	0.791	0.693	0.565	0.614	0.565	0.601	0.630	0.648	0.642	0.654	0.632	0.664	0.757	0.648	0.511	0.575	0.585	0.665	0.662	0.607	0.597	0.520	0.605	0.629	0.657	0.607	0.716	0.625	0.666	0.608	0.501	0.659	0.586	0.513
	Other Financials	0.544	0.726	0.680	0.654	0.682	0.694	0.755	0.629	0.653	0.749	0.715	0.726	0.649	0.740	0.624	0.673	0.767	0.694	0.723	0.687	0.572	0.665	0.702	0.731	0.757	0.740	0.718	0.671	0.728	0.655	0.709	0.717	0.642	0.736	0.735	0.679	0.662	0.715	0.671	0.679	0.696	0.653	0.748	0.636	0.715	0.663	0.749	0.582	0.653
	Healthcare	0.399	0.510	0.462	0.530	0.603	0.512	0.537	0.642	0.632	0.570	0.503	0.508	0.544	0.534	0.498	0.562	0.546	0.579	0.572	0.543	0.656	0.480	0.523	0.530	0.545	0.548	0.525	0.601	0.556	0.508	0.585	0.590	0.641	0.533	0.576	0.554	0.582	0.558	0.478	0.516	0.556	0.642	0.572	0.615	0.566	0.495	0.536	0.599	0.550
	Industrials	0.441	0.596	0.541	0.556	0.721	0.585	0.619	0.733	0.726	0.624	0.596	0.579	0.536	0.616	0.533	0.666	0.608	0.590	0.605	0.588	0.674	0.549	0.592	0.612	0.625	0.584	0.595	0.742	0.604	0.566	0.607	0.608	0.699	0.597	0.614	0.610	0.563	0.606	0.556	0.554	0.610	0.721	0.616	0.656	0.581	0.505	0.610	0.615	0.547
	Life Insurance	0.596	0.728	0.748	0.629	0.706	0.729	0.730	0.640	0.672	0.736	0.718	0.741	0.613	0.729	0.656	0.727	0.776	0.664	0.684	0.694	0.606	0.670	0.726	0.742	0.753	0.744	0.742	0.699	0.754	0.630	0.683	0.697	0.670	0.748	0.707	0.685	0.639	0.715	0.692	0.714	0.687	0.661	0.721	0.640	0.688	0.575	0.749	0.599	0.622
	Oil&Gas	0.423	0.555	0.492	0.587	0.717	0.562	0.617	0.702	0.675	0.628	0.587	0.561	0.633	0.593	0.581	0.586	0.574	0.632	0.614	0.603	0.680	0.504	0.583	0.591	0.603	0.646	0.581	0.667	0.635	0.571	0.693	0.694	0.781	0.591	0.625	0.624	0.611	0.626	0.549	0.581	0.605	0.676	0.614	0.683	0.642	0.519	0.579	0.701	0.640
	Other Retail	0.482	0.593	0.528	0.547	0.553	0.539	0.600	0.519	0.544	0.628	0.583	0.561	0.538	0.575	0.518	0.532	0.624	0.566	0.632	0.567	0.489	0.546	0.569	0.575	0.596	0.600	0.587	0.537	0.576	0.567	0.598	0.602	0.544	0.585	0.600	0.570	0.576	0.603	0.540	0.526	0.620	0.537	0.602	0.533	0.598	0.516	0.635	0.480	0.541
	Technology	0.368	0.434	0.389	0.444	0.566	0.474	0.479	0.555	0.577	0.493	0.461	0.446	0.431	0.478	0.417	0.510	0.458	0.459	0.485	0.455	0.527	0.432	0.464	0.477	0.477	0.447	0.450	0.571	0.471	0.441	0.476	0.478	0.544	0.462	0.470	0.472	0.439	0.460	0.407	0.401	0.493	0.584	0.490	0.532	0.479	0.393	0.487	0.489	0.434
	Telecommunications	0.468	0.573	0.544	0.551	0.657	0.572	0.581	0.670	0.676	0.613	0.576	0.586	0.553	0.566	0.560	0.637	0.609	0.562	0.597	0.539	0.616	0.571	0.590	0.575	0.595	0.596	0.579	0.660	0.604	0.504	0.603	0.609	0.675	0.597	0.599	0.595	0.560	0.586	0.539	0.588	0.600	0.663	0.596	0.691	0.631	0.494	0.602	0.639	0.555
	Other Telecommunications	0.499	0.623	0.590	0.625	0.620	0.630	0.643	0.598	0.622	0.675	0.641	0.646	0.637	0.631	0.597	0.611	0.671	0.636	0.658	0.632	0.560	0.594	0.622	0.633	0.658	0.645	0.630	0.610	0.666	0.603	0.669	0.675	0.636	0.653	0.668	0.630	0.648	0.649	0.579	0.609	0.639	0.598	0.663	0.622	0.691	0.577	0.666	0.591	0.639
	Utility	0.414	0.522	0.451	0.539	0.628	0.520	0.536	0.660	0.626	0.572	0.507	0.505	0.561	0.544	0.516	0.567	0.529	0.581	0.565	0.523	0.637	0.491	0.540	0.550	0.541	0.575	0.526	0.610	0.577	0.492	0.596	0.596	0.672	0.546	0.575	0.567	0.544	0.549	0.488	0.555	0.572	0.630	0.551	0.650	0.582	0.473	0.534	0.661	0.568
EU	Automotive Manufacturer	0.352	0.477	0.377	0.478	0.510	0.436	0.467	0.525	0.503	0.514	0.468	0.456	0.472	0.465	0.573	0.419	0.425	0.480	0.482	0.451	0.439	0.360	0.464	0.501	0.506	0.449	0.432	0.510	0.513	0.416	0.437	0.439	0.507	0.424	0.521	0.516	0.431	0.477	0.393	0.454	0.464	0.465	0.470	0.517	0.495	0.425	0.456	0.515	0.467
	Banks	0.502	0.678	0.670	0.555	0.671	0.661	0.671	0.621	0.637	0.653	0.653	0.669	0.526	0.681	0.570	0.701	0.699	0.577	0.604	0.616	0.547	0.590	0.650	0.695	0.695	0.657	0.674	0.691	0.660	0.585	0.591	0.603	0.611	0.671	0.636	0.610	0.535	0.631	0.629	0.637	0.600	0.641	0.652	0.577	0.585	0.534	0.660	0.543	0.536
	Beverages/Bottling	0.443	0.636	0.554	0.657	0.653	0.598	0.654	0.659	0.625	0.660	0.612	0.638	0.621	0.659	0.606	0.605	0.634	0.670	0.622	0.650	0.599	0.536	0.613	0.661	0.669	0.663	0.630	0.653	0.671	0.611	0.657	0.659	0.633	0.651	0.694	0.644	0.624	0.636	0.572	0.613	0.632	0.634	0.659	0.623	0.660	0.611	0.613	0.609	0.632
	Building Products	0.498	0.664	0.613	0.585	0.821	0.644	0.683	0.740	0.741	0.663	0.632	0.656	0.582	0.683	0.574	0.732	0.671	0.613	0.627	0.609	0.648	0.580	0.666	0.687	0.685	0.680	0.659	0.793	0.688	0.564	0.634	0.643	0.736	0.685	0.641	0.629	0.572	0.651	0.615	0.679	0.616	0.742	0.655	0.700	0.642	0.544	0.639	0.671	0.592
	Basic Materials	0.533	0.721	0.645	0.615	0.710	0.674	0.714	0.660	0.657	0.682	0.681	0.691	0.585	0.730	0.580	0.697	0.693	0.632	0.631	0.645	0.576	0.572	0.696	0.733	0.732	0.703	0.701	0.718	0.706	0.610	0.643	0.654	0.640	0.703	0.665	0.638	0.584	0.665	0.653	0.684	0.628	0.657	0.685	0.624	0.639	0.581	0.682	0.592	0.598
	Chemicals	0.480	0.673	0.585	0.617	0.704	0.632	0.697	0.663	0.655	0.673	0.640	0.667	0.583	0.700	0.599	0.641	0.652	0.632	0.633	0.662	0.606	0.541	0.651	0.704	0.707	0.671	0.655	0.706	0.682	0.621	0.628	0.635	0.638	0.663	0.667	0.642	0.593	0.644	0.603	0.632	0.618	0.652	0.679	0.613	0.621	0.579	0.641	0.595	0.594
	Consumer Goods	0.406	0.560	0.476	0.535	0.681	0.530	0.557	0.720	0.682	0.576	0.546	0.538	0.501	0.577	0.538	0.599	0.539	0.563	0.544	0.540	0.617	0.462	0.565	0.583	0.585	0.545	0.551	0.696	0.587	0.505	0.527	0.533	0.639	0.547	0.572	0.573	0.509	0.552	0.513	0.547	0.538	0.670	0.559	0.646	0.559	0.470	0.536	0.625	0.508
	Consumer Services	0.445	0.602	0.531	0.531	0.727	0.576	0.603	0.719	0.706	0.603	0.584	0.570	0.509	0.614	0.513	0.662	0.595	0.574	0.578	0.563	0.638	0.526	0.598	0.620	0.616	0.585	0.590	0.733	0.601	0.538	0.573	0.578	0.678	0.598	0.587	0.598	0.521	0.593	0.550	0.574	0.579	0.709	0.595	0.650	0.569	0.475	0.587	0.614	0.518
	Other Consumer Services	0.479	0.663	0.575	0.608	0.678	0.620	0.672	0.659	0.650	0.665	0.641	0.634	0.570	0.676	0.574	0.634	0.648	0.626	0.634	0.643	0.599	0.549	0.641	0.680	0.682	0.656	0.646	0.684	0.656	0.625	0.634	0.641	0.636	0.644	0.661	0.641	0.584	0.645	0.598	0.599	0.635	0.646	0.665	0.598	0.619	0.563	0.651	0.574	0.581
	Conglomerate/Diversified Mfg	0.432	0.623	0.513	0.624	0.640	0.570	0.628	0.647	0.612	0.643	0.597	0.604	0.579	0.632	0.620	0.569	0.584	0.625	0.606	0.620	0.572	0.493	0.601	0.647	0.652	0.614	0.597	0.644	0.643	0.587	0.594	0.600	0.608	0.592	0.661	0.632	0.574	0.608	0.555	0.577	0.602	0.600	0.630	0.595	0.610	0.572	0.597	0.588	0.586
	Electronics	0.499	0.662	0.567	0.623	0.698	0.638	0.701	0.666	0.651	0.681	0.649	0.649	0.582	0.703	0.600	0.631	0.656	0.635	0.640	0.652	0.598	0.553	0.650	0.709	0.703	0.663	0.650	0.698	0.688	0.632	0.638	0.644	0.642	0.652	0.660	0.646	0.587	0.654	0.595	0.609	0.633	0.652	0.679	0.611	0.629	0.564	0.651	0.589	0.593
	Financials	0.477	0.629	0.608	0.514	0.740	0.611	0.623	0.701	0.712	0.612	0.598	0.618	0.488	0.636	0.520	0.745	0.644	0.551	0.572	0.559	0.603	0.563	0.620	0.645	0.641	0.608	0.626	0.763	0.623	0.516	0.556	0.564	0.660	0.633	0.591	0.585	0.500	0.594	0.590	0.617	0.561	0.714	0.603	0.641	0.562	0.491	0.610	0.591	0.498
	Other Financials	0.504	0.678	0.620	0.616	0.701	0.641	0.704	0.662	0.665	0.689	0.657	0.671	0.593	0.698	0.591	0.677	0.696	0.635	0.653	0.646	0.589	0.589	0.660	0.705	0.708	0.690	0.672	0.701	0.687	0.618	0.652	0.659	0.644	0.685	0.677	0.640	0.588	0.660	0.626	0.635	0.637	0.667	0.691	0.624	0.644	0.600	0.672	0.588	0.600
	Healthcare	0.388	0.546	0.449	0.573	0.680	0.547	0.582	0.720	0.660	0.583	0.541	0.537	0.557	0.596	0.524	0.572	0.538	0.611	0.556	0.589	0.693	0.461	0.544	0.596	0.588	0.583	0.543	0.675	0.594	0.568	0.604	0.605	0.687	0.565	0.615	0.603	0.583	0.582	0.494	0.527	0.556	0.689	0.591	0.642	0.581	0.533	0.528	0.649	0.568
	Metals&Mining	0.492	0.698	0.646	0.618	0.720	0.672	0.723	0.662	0.660	0.682	0.663	0.690	0.629	0.715	0.597	0.685	0.692	0.650	0.640	0.651	0.596	0.577	0.667	0.722	0.723	0.746	0.692	0.711	0.704	0.613	0.684	0.694	0.667	0.703	0.681	0.643	0.605	0.672	0.648	0.683	0.635	0.656	0.683	0.629	0.652	0.603	0.663	0.610	0.638
	Industrials	0.483	0.640	0.574	0.544	0.770	0.614	0.640	0.730	0.727	0.629	0.612	0.612	0.515	0.656	0.537	0.704	0.624	0.574	0.591	0.581	0.632	0.545	0.640	0.664	0.656	0.609	0.622	0.779	0.644	0.549	0.579	0.586	0.689	0.628	0.599	0.608	0.522	0.610	0.578	0.620	0.581	0.729	0.619	0.661	0.577	0.488	0.613	0.621	0.527
	Leisure	0.502	0.645	0.607	0.535	0.669	0.607	0.629	0.616	0.643	0.615	0.597	0.661	0.496	0.640	0.538	0.662	0.629	0.540	0.565	0.582	0.543	0.529	0.642	0.652	0.665	0.611	0.628	0.690	0.639	0.544	0.541	0.551	0.582	0.620	0.581	0.563	0.498	0.583	0.582	0.625	0.568	0.645	0.628	0.567	0.551	0.476	0.607	0.548	0.506
	Cable Meida	0.463	0.662	0.567	0.605	0.685	0.627	0.677	0.655	0.649	0.661	0.644	0.639	0.578	0.688	0.575	0.640	0.645	0.628	0.622	0.649	0.601	0.525	0.639	0.690	0.688	0.657	0.640	0.692	0.660	0.632	0.642	0.647	0.645	0.655	0.663	0.644	0.583	0.651	0.597	0.600	0.623	0.648	0.666	0.598	0.620	0.576	0.643	0.581	0.590
	Oil&Gas	0.456	0.615	0.543	0.598	0.777	0.599	0.650	0.754	0.724	0.647	0.618	0.605	0.614	0.646	0.578	0.661	0.620	0.642	0.619	0.619	0.694	0.525	0.629	0.648	0.648	0.666	0.618	0.743	0.662	0.580	0.677	0.680	0.790	0.636	0.643	0.649	0.597	0.655	0.578	0.627	0.615	0.731	0.642	0.713	0.648	0.534	0.609	0.713	0.622
	Other Oil&Gas	0.485	0.664	0.573	0.667	0.740	0.634	0.713	0.717	0.690	0.692	0.658	0.655	0.673	0.695	0.627	0.646	0.660	0.694	0.662	0.689	0.677	0.539	0.656	0.697	0.702	0.736	0.671	0.709	0.701	0.651	0.747	0.751	0.752	0.672	0.708	0.687	0.654	0.701	0.627	0.639	0.663	0.692	0.696	0.680	0.685	0.612	0.654	0.686	0.682
	Technology	0.498	0.615	0.559	0.540	0.741	0.604	0.631	0.710	0.719	0.623	0.594	0.607	0.525	0.640	0.517	0.690	0.620	0.582	0.596	0.583	0.631	0.558	0.629	0.646	0.643	0.586	0.608	0.753	0.632	0.548	0.577	0.582	0.678	0.632	0.594	0.604	0.532	0.604	0.559	0.611	0.608	0.742	0.624	0.669	0.599	0.493	0.606	0.624	0.533
	Telecommunications	0.385	0.557	0.481	0.536	0.687	0.535	0.577	0.716	0.673	0.587	0.561	0.546	0.520	0.595	0.528	0.608	0.558	0.575	0.556	0.566	0.646	0.474	0.555	0.600	0.594	0.576	0.558	0.695	0.588	0.531	0.577	0.579	0.675	0.565	0.595	0.598	0.538	0.578	0.518	0.522	0.554	0.688	0.590	0.646	0.571	0.505	0.552	0.633	0.530
	Other Telecommunications	0.407	0.607	0.522	0.613	0.650	0.579	0.639	0.652	0.624	0.640	0.605	0.605	0.589	0.647	0.584	0.591	0.607	0.633	0.602	0.642	0.602	0.496	0.593	0.654	0.653	0.630	0.608	0.651	0.636	0.617	0.635	0.639	0.642	0.609	0.666	0.636	0.600	0.631	0.564	0.541	0.600	0.631	0.652	0.590	0.619	0.591	0.607	0.589	0.599
	Utility	0.403	0.576	0.471	0.565	0.721	0.558	0.601	0.731	0.675	0.595	0.561	0.543	0.567	0.615	0.534	0.612	0.553	0.601	0.564	0.578	0.661	0.477	0.573	0.623	0.604	0.601	0.565	0.703	0.605	0.544	0.602	0.601	0.704	0.580	0.605	0.610	0.548	0.595	0.524	0.561	0.562	0.691	0.588	0.666	0.584	0.517	0.555	0.683	0.576
	Other Utility	0.410	0.626	0.508	0.643	0.679	0.586	0.662	0.672	0.627	0.640	0.604	0.595	0.635	0.667	0.586	0.599	0.604	0.657	0.601	0.657	0.618	0.492	0.608	0.673	0.657	0.669	0.613	0.665	0.651	0.628	0.665	0.665	0.662	0.630	0.672	0.640	0.614	0.649	0.566	0.585	0.607	0.639	0.651	0.620	0.632	0.607	0.597	0.634	0.645
JP	Automotive Manufacturer	0.432	0.520	0.456	0.546	0.555	0.534	0.546	0.540	0.534	0.575	0.535	0.516	0.551	0.534	0.534	0.504	0.555	0.603	0.552	0.529	0.500	0.486	0.547	0.527	0.552	0.573	0.539	0.527	0.582	0.504	0.571	0.570	0.564	0.535	0.576	0.548	0.556	0.569	0.509	0.546	0.563	0.545	0.563	0.587	0.611	0.498	0.545	0.532	0.543
	Banks	0.373	0.450	0.451	0.502	0.479	0.473	0.500	0.455	0.455	0.522	0.495	0.469	0.540	0.461	0.485	0.450	0.536	0.532	0.521	0.477	0.431	0.485	0.459	0.460	0.486	0.539	0.492	0.435	0.508	0.446	0.553	0.553	0.515	0.501	0.523	0.482	0.531	0.520	0.463	0.494	0.513	0.460	0.505	0.533	0.584	0.485	0.500	0.486	0.530
	Basic Materials	0.411	0.462	0.405	0.498	0.593	0.493	0.510	0.618	0.602	0.537	0.502	0.467	0.528	0.490	0.511	0.509	0.496	0.544	0.530	0.475	0.573	0.448	0.490	0.490	0.504	0.539	0.493	0.579	0.532	0.462	0.557	0.555	0.618	0.492	0.545	0.532	0.527	0.530	0.453	0.492	0.535	0.580	0.514	0.626	0.577	0.449	0.502	0.592	0.523
	Chemicals	0.405	0.487	0.406	0.557	0.531	0.515	0.540	0.533	0.514	0.572	0.520	0.504	0.562	0.531	0.548	0.440	0.512	0.600	0.555	0.538	0.509	0.440	0.504	0.522	0.546	0.564	0.513	0.502	0.567	0.514	0.584	0.580	0.560	0.498	0.585	0.563	0.578	0.570	0.466	0.491	0.567	0.506	0.551	0.557	0.599	0.491	0.528	0.533	0.559
	Consumer Goods	0.396	0.445	0.384	0.483	0.567	0.479	0.493	0.605	0.591	0.529	0.495	0.463	0.511	0.481	0.496	0.500	0.479	0.544	0.519	0.463	0.561	0.438	0.486	0.475	0.496	0.521	0.482	0.564	0.520	0.448	0.536	0.535	0.587	0.471	0.535	0.517	0.515	0.520	0.444	0.482	0.515	0.572	0.503	0.620	0.568	0.451	0.491	0.564	0.504
	Consumer Services	0.248	0.266	0.212	0.376	0.385	0.301	0.327	0.468	0.434	0.373	0.339	0.297	0.402	0.316	0.365	0.318	0.307	0.415	0.370	0.331	0.487	0.257	0.284	0.305	0.332	0.369	0.328	0.381	0.357	0.317	0.423	0.419	0.470	0.291	0.392	0.369	0.406	0.371	0.306	0.277	0.377	0.420	0.359	0.465	0.418	0.329	0.336	0.454	0.397
	Other Consumer Services	0.257	0.312	0.263	0.465	0.334	0.335	0.378	0.387	0.358	0.434	0.379	0.350	0.458	0.366	0.416	0.287	0.373	0.491	0.429	0.425	0.408	0.282	0.312	0.344	0.381	0.406	0.366	0.319	0.417	0.403	0.476	0.471	0.407	0.353	0.458	0.419	0.501	0.434	0.336	0.317	0.430	0.349	0.420	0.400	0.465	0.407	0.384	0.387	0.454
	Electronics	0.422	0.516	0.438	0.573	0.556	0.548	0.562	0.560	0.548	0.598	0.549	0.532	0.577	0.562	0.565	0.475	0.544	0.633	0.575	0.556	0.537	0.467	0.539	0.551	0.575	0.581	0.539	0.538	0.602	0.534	0.601	0.599	0.581	0.534	0.601	0.577	0.597	0.594	0.492	0.522	0.581	0.546	0.585	0.580	0.609	0.504	0.557	0.546	0.573
	Financials	0.403	0.453	0.443	0.457	0.578	0.478	0.499	0.569	0.578	0.527	0.494	0.473	0.513	0.460	0.467	0.552	0.523	0.503	0.531	0.425	0.523	0.505	0.471	0.459	0.487	0.524	0.488	0.554	0.509	0.406	0.524	0.527	0.586	0.498	0.513	0.490	0.486	0.502	0.455	0.504	0.509	0.559	0.494	0.622	0.564	0.445	0.497	0.568	0.504
	Healthcare	0.289	0.340	0.286	0.447	0.483	0.378	0.421	0.562	0.516	0.449	0.403	0.384	0.502	0.411	0.451	0.401	0.396	0.513	0.444	0.413	0.577	0.334	0.356	0.396	0.417	0.461	0.399	0.479	0.440	0.413	0.504	0.500	0.557	0.397	0.484	0.452	0.511	0.454	0.364	0.373	0.447	0.517	0.443	0.565	0.516	0.425	0.390	0.555	0.496
	Machinery	0.453	0.563	0.486	0.597	0.606	0.579	0.619	0.591	0.585	0.639	0.590	0.577	0.615	0.605	0.595	0.522	0.593	0.650	0.617	0.593	0.561	0.516	0.586	0.602	0.622	0.629	0.588	0.579	0.640	0.563	0.640	0.638	0.615	0.578	0.631	0.610	0.621	0.624	0.538	0.568	0.612	0.584	0.623	0.623	0.659	0.536	0.599	0.584	0.611
	Metals&Mining	0.407	0.532	0.467	0.575	0.563	0.555	0.582	0.547	0.528	0.598	0.558	0.542	0.600	0.563	0.554	0.494	0.566	0.620	0.586	0.557	0.517	0.498	0.539	0.563	0.578	0.625	0.552	0.529	0.597	0.537	0.636	0.634	0.594	0.552	0.612	0.581	0.598	0.593	0.513	0.532	0.585	0.534	0.580	0.577	0.622	0.538	0.550	0.536	0.596
	Transportation	0.428	0.502	0.449	0.566	0.540	0.526	0.553	0.533	0.521	0.587	0.552	0.508	0.594	0.539	0.547	0.481	0.552	0.608	0.575	0.523	0.497	0.484	0.515	0.532	0.554	0.582	0.543	0.511	0.577	0.506	0.603	0.602	0.568	0.531	0.593	0.556	0.577	0.579	0.500	0.532	0.567	0.515	0.564	0.579	0.622	0.499	0.553	0.540	0.586
	Industrials	0.429	0.495	0.445	0.520	0.635	0.529	0.550	0.648	0.640	0.571	0.542	0.516	0.557	0.527	0.533	0.554	0.535	0.579	0.559	0.504	0.600	0.490	0.526	0.527	0.547	0.569	0.528	0.620	0.566	0.486	0.579	0.580	0.648	0.531	0.569	0.551	0.549	0.559	0.484	0.533	0.560	0.622	0.552	0.660	0.609	0.473	0.540	0.621	0.551
	Other Industrials	0.451	0.555	0.485	0.607	0.603	0.585	0.618	0.588	0.581	0.641	0.592	0.572	0.626	0.600	0.594	0.522	0.593	0.658	0.620	0.594	0.557	0.518	0.575	0.598	0.618	0.633	0.585	0.574	0.636	0.562	0.650	0.648	0.617	0.581	0.640	0.609	0.626	0.628	0.536	0.566	0.619	0.577	0.621	0.619	0.660	0.550	0.602	0.583	0.621
	Oil&Gas	0.415	0.469	0.424	0.484	0.624	0.471	0.528	0.601	0.603	0.545	0.512	0.474	0.534	0.487	0.494	0.518	0.510	0.530	0.544	0.471	0.566	0.452	0.482	0.497	0.510	0.564	0.499	0.582	0.539	0.453	0.575	0.578	0.659	0.507	0.534	0.527	0.512	0.523	0.455	0.484	0.527	0.588	0.523	0.630	0.577	0.444	0.505	0.615	0.532
	Other Retail	0.336	0.382	0.339	0.507	0.416	0.399	0.444	0.457	0.440	0.495	0.439	0.432	0.510	0.426	0.466	0.371	0.448	0.538	0.491	0.461	0.455	0.365	0.387	0.404	0.452	0.468	0.430	0.403	0.487	0.438	0.516	0.513	0.472	0.425	0.506	0.469	0.542	0.491	0.388	0.411	0.495	0.430	0.483	0.491	0.537	0.441	0.445	0.458	0.505
	Technology	0.457	0.500	0.446	0.520	0.636	0.525	0.543	0.638	0.639	0.574	0.535	0.522	0.550	0.527	0.524	0.565	0.535	0.563	0.565	0.493	0.588	0.501	0.530	0.527	0.546	0.567	0.527	0.622	0.567	0.470	0.564	0.565	0.631	0.534	0.565	0.543	0.534	0.557	0.475	0.540	0.560	0.622	0.549	0.656	0.603	0.470	0.545	0.603	0.546
	Telecommunications	0.318	0.354	0.323	0.393	0.453	0.386	0.399	0.502	0.495	0.435	0.400	0.384	0.433	0.390	0.414	0.416	0.410	0.453	0.427	0.369	0.498	0.361	0.373	0.382	0.403	0.432	0.395	0.453	0.424	0.358	0.453	0.453	0.507	0.390	0.437	0.416	0.439	0.436	0.359	0.394	0.440	0.477	0.417	0.517	0.467	0.363	0.413	0.484	0.427
	Other Telecommunications	0.338	0.394	0.362	0.480	0.427	0.421	0.440	0.447	0.441	0.495	0.453	0.438	0.491	0.433	0.467	0.395	0.464	0.520	0.484	0.458	0.459	0.384	0.416	0.426	0.452	0.479	0.422	0.412	0.485	0.436	0.508	0.507	0.477	0.449	0.501	0.456	0.524	0.497	0.381	0.425	0.479	0.425	0.476	0.473	0.517	0.437	0.462	0.451	0.484
	Utility	0.091	0.147	0.092	0.251	0.225	0.177	0.186	0.338	0.280	0.231	0.194	0.154	0.210	0.204	0.226	0.176	0.169	0.281	0.222	0.240	0.348	0.146	0.138	0.188	0.201	0.193	0.176	0.242	0.223	0.236	0.263	0.252	0.306	0.158	0.277	0.287	0.281	0.225	0.169	0.106	0.229	0.283	0.230	0.294	0.254	0.235	0.174	0.270	0.212
	Other Utility	0.100	0.182	0.137	0.332	0.192	0.204	0.242	0.279	0.226	0.279	0.238	0.191	0.266	0.248	0.253	0.163	0.228	0.329	0.264	0.314	0.292	0.159	0.166	0.228	0.242	0.226	0.207	0.200	0.277	0.304	0.317	0.307	0.271	0.216	0.323	0.326	0.339	0.272	0.199	0.134	0.285	0.249	0.282	0.245	0.294	0.298	0.216	0.224	0.270

Correlation Matrix Equity Volatility — UK columns

		UK: Banks	Beverage	Basic Ma	Consume	Consume	Other Co	Financial	Other Fi	Healthca	Industria	Life Insu	Oil&Gas	Other Re	Technolo	Telecomr	Other Te	Utility
UK	Banks	1.000
	Beverages/Bottling	0.531	1.000
	Basic Materials	0.591	0.525	1.000
	Consumer Goods	0.497	0.626	0.694	1.000
	Consumer Services	0.565	0.540	0.680	0.778	1.000
	Other Consumer Services	0.711	0.672	0.590	0.634	0.745	1.000
	Financials	0.742	0.493	0.715	0.660	0.800	0.651	1.000
	Other Financials	0.780	0.676	0.650	0.606	0.678	0.858	0.717	1.000
	Healthcare	0.438	0.493	0.627	0.725	0.673	0.558	0.558	0.534	1.000
	Industrials	0.565	0.544	0.739	0.773	0.874	0.672	0.797	0.684	0.656	1.000
	Life Insurance	0.865	0.577	0.642	0.560	0.643	0.771	0.769	0.837	0.493	0.636	1.000
	Oil&Gas	0.525	0.491	0.792	0.722	0.678	0.571	0.639	0.598	0.668	0.717	0.584	1.000
	Other Retail	0.620	0.592	0.526	0.582	0.690	0.923	0.567	0.753	0.524	0.599	0.670	0.509	1.000
	Technology	0.413	0.410	0.572	0.594	0.672	0.512	0.611	0.528	0.530	0.693	0.477	0.540	0.448	1.000
	Telecommunications	0.527	0.488	0.654	0.677	0.744	0.602	0.707	0.618	0.647	0.692	0.613	0.655	0.553	0.562	1.000
	Other Telecommunications	0.648	0.610	0.582	0.565	0.616	0.744	0.617	0.746	0.530	0.586	0.719	0.576	0.671	0.479	0.690	1.000
	Utility	0.459	0.469	0.657	0.752	0.681	0.557	0.599	0.527	0.717	0.648	0.551	0.697	0.520	0.512	0.653	0.516	1.000
EU	Automotive Manufacturer	0.480	0.263	0.440	0.396	0.390	0.410	0.482	0.494	0.337	0.446	0.497	0.474	0.369	0.336	0.423	0.414	0.393
	Banks	0.800	0.530	0.634	0.552	0.626	0.698	0.760	0.776	0.464	0.667	0.783	0.551	0.610	0.475	0.550	0.600	0.491
	Beverages/Bottling	0.624	0.705	0.627	0.678	0.613	0.681	0.630	0.710	0.545	0.644	0.660	0.606	0.610	0.463	0.548	0.603	0.573
	Building Products	0.610	0.534	0.887	0.703	0.725	0.600	0.786	0.684	0.597	0.800	0.663	0.728	0.526	0.610	0.646	0.559	0.641
	Basic Materials	0.682	0.550	0.658	0.576	0.613	0.669	0.693	0.751	0.521	0.654	0.719	0.574	0.575	0.478	0.563	0.598	0.549
	Chemicals	0.638	0.550	0.642	0.593	0.602	0.651	0.662	0.731	0.503	0.667	0.691	0.593	0.563	0.485	0.549	0.568	0.537
	Consumer Goods	0.525	0.446	0.673	0.704	0.695	0.548	0.709	0.603	0.552	0.746	0.574	0.652	0.483	0.561	0.598	0.495	0.613
	Consumer Services	0.575	0.496	0.719	0.727	0.840	0.648	0.786	0.662	0.605	0.849	0.624	0.668	0.578	0.645	0.652	0.545	0.667
	Other Consumer Services	0.665	0.583	0.639	0.642	0.698	0.775	0.684	0.773	0.548	0.720	0.708	0.596	0.693	0.529	0.570	0.616	0.579
	Conglomerate/Diversified Mfg	0.619	0.540	0.594	0.602	0.579	0.652	0.630	0.706	0.490	0.638	0.660	0.583	0.579	0.462	0.524	0.568	0.538
	Electronics	0.646	0.547	0.648	0.603	0.617	0.679	0.672	0.746	0.523	0.692	0.696	0.590	0.589	0.519	0.537	0.572	0.549
	Financials	0.665	0.485	0.732	0.656	0.765	0.617	0.899	0.691	0.535	0.807	0.696	0.629	0.533	0.608	0.644	0.557	0.591
	Other Financials	0.703	0.589	0.662	0.628	0.674	0.743	0.726	0.826	0.528	0.713	0.745	0.593	0.660	0.533	0.590	0.631	0.555
	Healthcare	0.486	0.505	0.694	0.752	0.712	0.579	0.639	0.608	0.752	0.751	0.551	0.701	0.518	0.584	0.655	0.534	0.699
	Metals&Mining	0.669	0.588	0.727	0.610	0.607	0.654	0.682	0.761	0.533	0.662	0.721	0.633	0.567	0.474	0.569	0.594	0.544
	Industrials	0.600	0.485	0.762	0.683	0.762	0.605	0.801	0.663	0.571	0.846	0.639	0.667	0.522	0.633	0.630	0.533	0.623
	Leisure	0.664	0.514	0.597	0.534	0.562	0.600	0.675	0.677	0.461	0.607	0.674	0.539	0.504	0.460	0.505	0.532	0.482
	Cable Meida	0.660	0.563	0.644	0.616	0.661	0.735	0.677	0.761	0.527	0.706	0.698	0.596	0.636	0.530	0.563	0.616	0.558
	Oil&Gas	0.575	0.505	0.819	0.735	0.737	0.604	0.738	0.663	0.647	0.786	0.639	0.887	0.536	0.580	0.682	0.585	0.707
	Other Oil&Gas	0.644	0.590	0.726	0.675	0.661	0.692	0.663	0.756	0.603	0.702	0.715	0.762	0.618	0.500	0.623	0.649	0.637
	Technology	0.578	0.489	0.740	0.695	0.748	0.593	0.762	0.644	0.596	0.806	0.601	0.667	0.522	0.690	0.642	0.542	0.636
	Telecommunications	0.534	0.459	0.687	0.705	0.759	0.598	0.745	0.640	0.602	0.785	0.594	0.675	0.532	0.593	0.727	0.559	0.666
	Other Telecommunications	0.633	0.541	0.622	0.626	0.649	0.709	0.665	0.748	0.539	0.689	0.684	0.609	0.635	0.503	0.608	0.667	0.562
	Utility	0.524	0.482	0.715	0.711	0.713	0.577	0.706	0.618	0.592	0.759	0.595	0.707	0.505	0.569	0.628	0.517	0.717
	Other Utility	0.603	0.566	0.636	0.634	0.615	0.674	0.627	0.725	0.542	0.668	0.669	0.621	0.596	0.480	0.557	0.592	0.609
JP	Automotive Manufacturer	0.550	0.429	0.554	0.498	0.515	0.545	0.549	0.623	0.478	0.519	0.584	0.572	0.497	0.414	0.524	0.576	0.494
	Banks	0.531	0.423	0.491	0.467	0.501	0.559	0.491	0.596	0.444	0.461	0.555	0.494	0.522	0.358	0.498	0.569	0.459
	Basic Materials	0.455	0.392	0.596	0.550	0.580	0.499	0.579	0.524	0.520	0.590	0.514	0.612	0.459	0.472	0.581	0.520	0.557
	Chemicals	0.504	0.428	0.535	0.493	0.492	0.542	0.493	0.586	0.478	0.506	0.554	0.560	0.491	0.417	0.503	0.553	0.497
	Consumer Goods	0.445	0.385	0.562	0.531	0.558	0.471	0.577	0.508	0.507	0.561	0.487	0.582	0.434	0.451	0.584	0.522	0.541
	Consumer Services	0.286	0.303	0.407	0.450	0.458	0.384	0.396	0.381	0.430	0.441	0.355	0.471	0.362	0.361	0.467	0.419	0.455
	Other Consumer Services	0.354	0.342	0.372	0.402	0.395	0.458	0.342	0.471	0.391	0.375	0.413	0.416	0.436	0.298	0.397	0.467	0.382
	Electronics	0.516	0.439	0.543	0.505	0.511	0.556	0.509	0.610	0.516	0.523	0.570	0.565	0.505	0.422	0.507	0.562	0.515
	Financials	0.482	0.421	0.581	0.545	0.600	0.518	0.617	0.547	0.497	0.575	0.523	0.562	0.479	0.464	0.608	0.552	0.534
	Healthcare	0.344	0.372	0.511	0.521	0.528	0.442	0.463	0.456	0.505	0.515	0.424	0.554	0.416	0.413	0.539	0.478	0.515
	Machinery	0.568	0.495	0.585	0.552	0.554	0.599	0.567	0.669	0.532	0.572	0.623	0.609	0.543	0.457	0.540	0.596	0.542
	Metals&Mining	0.539	0.470	0.563	0.533	0.535	0.591	0.536	0.642	0.508	0.534	0.598	0.566	0.542	0.427	0.534	0.589	0.528
	Transportation	0.529	0.441	0.546	0.486	0.505	0.559	0.518	0.615	0.483	0.506	0.576	0.554	0.515	0.411	0.512	0.573	0.499
	Industrials	0.493	0.428	0.623	0.574	0.606	0.522	0.616	0.562	0.547	0.618	0.544	0.631	0.473	0.498	0.606	0.554	0.580
	Other Industrials	0.569	0.498	0.585	0.550	0.559	0.607	0.561	0.671	0.537	0.569	0.627	0.599	0.550	0.456	0.546	0.607	0.546
	Oil&Gas	0.480	0.414	0.609	0.532	0.569	0.494	0.560	0.517	0.519	0.573	0.526	0.638	0.452	0.453	0.589	0.535	0.548
	Other Retail	0.406	0.380	0.437	0.446	0.453	0.502	0.404	0.524	0.432	0.427	0.472	0.463	0.478	0.346	0.456	0.512	0.436
	Technology	0.504	0.428	0.613	0.565	0.610	0.517	0.619	0.560	0.542	0.611	0.550	0.605	0.475	0.515	0.607	0.554	0.576
	Telecommunications	0.361	0.364	0.478	0.471	0.494	0.426	0.450	0.430	0.460	0.462	0.423	0.480	0.413	0.368	0.508	0.457	0.466
	Other Telecommunications	0.415	0.394	0.459	0.438	0.428	0.494	0.407	0.504	0.418	0.407	0.476	0.439	0.482	0.336	0.452	0.509	0.419
	Utility	0.179	0.192	0.224	0.301	0.285	0.243	0.236	0.215	0.281	0.315	0.221	0.288	0.227	0.229	0.286	0.244	0.320
	Other Utility	0.214	0.221	0.207	0.267	0.216	0.284	0.198	0.272	0.232	0.261	0.253	0.255	0.261	0.193	0.231	0.286	0.257

Correlation Matrix Equity Volatility — EU columns

		EU: Automot	Banks	Beverage	Building	Basic Ma	Chemical	Consume	Consume	Other Co	Conglom	Electroni	Financia	Other Fi	Healthca	Metals&?	Industria	Leisure	Cable Mc	Oil&Gas	Other Oi	Technolo	Telecomr	Other Te	Utility	Other U
EU	Automotive Manufacturer	1.000
	Banks	0.589	1.000
	Beverages/Bottling	0.551	0.773	1.000
	Building Products	0.528	0.742	0.704	1.000
	Basic Materials	0.554	0.853	0.783	0.767	1.000
	Chemicals	0.652	0.850	0.815	0.785	0.886	1.000
	Consumer Goods	0.663	0.684	0.701	0.851	0.694	0.740	1.000
	Consumer Services	0.507	0.727	0.698	0.887	0.725	0.735	0.892	1.000
	Other Consumer Services	0.591	0.886	0.853	0.755	0.865	0.894	0.736	0.803	1.000
	Conglomerate/Diversified Mfg	0.800	0.809	0.875	0.715	0.810	0.887	0.778	0.715	0.891	1.000
	Electronics	0.642	0.862	0.805	0.769	0.886	0.901	0.738	0.753	0.911	0.870	1.000
	Financials	0.516	0.810	0.674	0.897	0.751	0.744	0.842	0.917	0.764	0.698	0.756	1.000
	Other Financials	0.618	0.920	0.836	0.778	0.886	0.910	0.735	0.775	0.949	0.883	0.923	0.791	1.000
	Healthcare	0.466	0.617	0.679	0.796	0.658	0.682	0.814	0.846	0.709	0.666	0.694	0.764	0.691	1.000
	Metals&Mining	0.570	0.846	0.786	0.791	0.858	0.870	0.678	0.698	0.841	0.801	0.850	0.733	0.879	0.654	1.000
	Industrials	0.544	0.755	0.691	0.938	0.777	0.780	0.892	0.949	0.785	0.731	0.801	0.937	0.792	0.820	0.743	1.000
	Leisure	0.584	0.814	0.752	0.721	0.817	0.817	0.693	0.689	0.812	0.795	0.824	0.727	0.827	0.603	0.775	0.741	1.000
	Cable Meida	0.581	0.876	0.829	0.761	0.863	0.885	0.717	0.786	0.965	0.866	0.901	0.763	0.933	0.703	0.844	0.785	0.808	1.000
	Oil&Gas	0.557	0.689	0.699	0.893	0.701	0.728	0.836	0.864	0.732	0.702	0.721	0.832	0.732	0.827	0.734	0.862	0.660	0.734	1.000
	Other Oil&Gas	0.617	0.808	0.823	0.769	0.811	0.855	0.715	0.734	0.864	0.835	0.843	0.715	0.865	0.723	0.867	0.735	0.751	0.855	0.837	1.000
	Technology	0.509	0.704	0.673	0.885	0.730	0.736	0.838	0.904	0.745	0.688	0.743	0.874	0.752	0.808	0.699	0.923	0.691	0.746	0.828	0.708	1.000
	Telecommunications	0.531	0.695	0.673	0.839	0.683	0.715	0.861	0.916	0.749	0.702	0.713	0.876	0.746	0.849	0.671	0.883	0.639	0.745	0.856	0.730	0.848	1.000
	Other Telecommunications	0.603	0.848	0.818	0.723	0.808	0.856	0.718	0.753	0.916	0.861	0.852	0.741	0.906	0.708	0.798	0.741	0.748	0.908	0.732	0.856	0.712	0.795	1.000
	Utility	0.535	0.684	0.684	0.864	0.703	0.734	0.863	0.897	0.747	0.707	0.742	0.856	0.737	0.850	0.700	0.892	0.659	0.749	0.887	0.759	0.839	0.897	0.738	1.000
	Other Utility	0.596	0.824	0.837	0.744	0.835	0.874	0.719	0.744	0.897	0.863	0.872	0.725	0.889	0.720	0.837	0.749	0.752	0.891	0.749	0.887	0.707	0.743	0.897	0.810	1.000
JP	Automotive Manufacturer	0.484	0.537	0.545	0.528	0.519	0.510	0.515	0.503	0.538	0.549	0.549	0.507	0.576	0.512	0.539	0.493	0.481	0.525	0.580	0.604	0.511	0.506	0.554	0.510	0.550
	Banks	0.384	0.481	0.487	0.431	0.457	0.437	0.411	0.424	0.479	0.462	0.458	0.419	0.514	0.442	0.478	0.390	0.373	0.452	0.477	0.532	0.406	0.426	0.489	0.412	0.476
	Basic Materials	0.470	0.485	0.515	0.578	0.495	0.504	0.572	0.568	0.527	0.523	0.542	0.551	0.542	0.567	0.505	0.556	0.445	0.513	0.622	0.581	0.552	0.571	0.532	0.571	0.522
	Chemicals	0.480	0.495	0.533	0.492	0.496	0.508	0.468	0.471	0.530	0.539	0.543	0.453	0.550	0.496	0.518	0.457	0.446	0.515	0.537	0.588	0.475	0.478	0.539	0.473	0.527
	Consumer Goods	0.446	0.456	0.492	0.541	0.466	0.467	0.544	0.537	0.491	0.495	0.504	0.535	0.514	0.546	0.473	0.523	0.416	0.478	0.596	0.548	0.531	0.560	0.518	0.543	0.491
	Consumer Services	0.295	0.296	0.371	0.358	0.312	0.318	0.392	0.403	0.366	0.358	0.348	0.357	0.374	0.442	0.315	0.353	0.260	0.347	0.447	0.418	0.367	0.443	0.410	0.397	0.353
	Other Consumer Services	0.294	0.336	0.401	0.301	0.330	0.333	0.306	0.319	0.390	0.381	0.362	0.287	0.407	0.371	0.336	0.271	0.259	0.363	0.367	0.434	0.291	0.348	0.430	0.305	0.386
	Electronics	0.488	0.514	0.558	0.512	0.514	0.521	0.500	0.501	0.548	0.556	0.556	0.479	0.570	0.528	0.532	0.486	0.470	0.531	0.557	0.594	0.494	0.502	0.554	0.500	0.546
	Financials	0.407	0.487	0.488	0.556	0.477	0.471	0.512	0.540	0.500	0.476	0.497	0.559	0.528	0.524	0.492	0.528	0.421	0.479	0.576	0.539	0.538	0.541	0.506	0.532	0.478
	Healthcare	0.360	0.364	0.462	0.457	0.385	0.394	0.478	0.482	0.439	0.433	0.424	0.439	0.451	0.540	0.404	0.439	0.331	0.425	0.546	0.502	0.455	0.528	0.485	0.493	0.439
	Machinery	0.528	0.571	0.597	0.576	0.580	0.590	0.560	0.555	0.601	0.607	0.618	0.540	0.631	0.563	0.598	0.550	0.521	0.586	0.609	0.647	0.557	0.549	0.598	0.564	0.609
	Metals&Mining	0.466	0.539	0.575	0.524	0.542	0.542	0.482	0.503	0.567	0.563	0.572	0.490	0.598	0.536	0.588	0.486	0.452	0.554	0.557	0.620	0.497	0.509	0.576	0.509	0.584
	Transportation	0.487	0.516	0.540	0.506	0.515	0.508	0.489	0.481	0.535	0.545	0.537	0.471	0.567	0.492	0.532	0.468	0.450	0.520	0.547	0.596	0.472	0.478	0.545	0.488	0.543
	Industrials	0.474	0.514	0.537	0.611	0.531	0.534	0.591	0.598	0.553	0.541	0.569	0.587	0.571	0.590	0.532	0.592	0.484	0.540	0.649	0.604	0.593	0.599	0.560	0.603	0.550
	Other Industrials	0.508	0.571	0.597	0.565	0.577	0.580	0.538	0.546	0.600	0.597	0.610	0.531	0.629	0.561	0.594	0.536	0.511	0.583	0.598	0.648	0.540	0.540	0.599	0.551	0.606
	Oil&Gas	0.429	0.481	0.512	0.577	0.497	0.501	0.527	0.550	0.512	0.500	0.518	0.532	0.520	0.547	0.520	0.542	0.449	0.506	0.630	0.593	0.551	0.559	0.520	0.553	0.507
	Other Retail	0.367	0.380	0.455	0.371	0.390	0.396	0.367	0.373	0.439	0.439	0.418	0.339	0.458	0.407	0.395	0.333	0.322	0.407	0.423	0.483	0.363	0.393	0.462	0.357	0.430
	Technology	0.449	0.508	0.537	0.605	0.528	0.526	0.568	0.590	0.540	0.531	0.558	0.585	0.567	0.579	0.522	0.591	0.482	0.526	0.627	0.583	0.600	0.588	0.546	0.585	0.528
	Telecommunications	0.316	0.347	0.403	0.413	0.351	0.341	0.407	0.425	0.383	0.361	0.363	0.402	0.394	0.450	0.368	0.382	0.285	0.365	0.473	0.438	0.399	0.453	0.404	0.410	0.357
	Other Telecommunications	0.352	0.392	0.451	0.386	0.376	0.382	0.373	0.373	0.423	0.417	0.407	0.355	0.441	0.407	0.405	0.338	0.303	0.399	0.427	0.472	0.358	0.400	0.457	0.362	0.412
	Utility	0.199	0.184	0.240	0.203	0.167	0.211	0.252	0.261	0.243	0.237	0.242	0.218	0.227	0.311	0.172	0.219	0.122	0.233	0.277	0.257	0.238	0.307	0.282	0.272	0.247
	Other Utility	0.185	0.208	0.252	0.168	0.185	0.206	0.191	0.199	0.249	0.237	0.255	0.179	0.247	0.254	0.191	0.175	0.117	0.237	0.228	0.269	0.194	0.239	0.295	0.214	0.263

Correlation Matrix Equity Volatility — JP columns

		JP: Automotiv	Banks	Basic Ma	Chemical	Consume	Consume	Other Cc	Electroni	Financial	Healthca	Machiner	Metals&?	Transpor	Industria	Other In	Oil&Gas	Other Rc	Technolo	Telecomr	Other	Utility	Other Utility
JP	Automotive Manufacturer	1.000
	Banks	0.792	1.000
	Basic Materials	0.666	0.628	1.000
	Chemicals	0.866	0.794	0.709	1.000
	Consumer Goods	0.695	0.624	0.929	0.690	1.000
	Consumer Services	0.545	0.559	0.813	0.609	0.833	1.000
	Other Consumer Services	0.723	0.749	0.579	0.830	0.594	0.656	1.000
	Electronics	0.880	0.781	0.693	0.933	0.693	0.597	0.805	1.000
	Financials	0.638	0.689	0.858	0.631	0.871	0.775	0.547	0.633	1.000
	Healthcare	0.604	0.582	0.821	0.622	0.846	0.875	0.619	0.628	0.771	1.000
	Machinery	0.885	0.794	0.703	0.921	0.697	0.580	0.764	0.935	0.653	0.622	1.000
	Metals&Mining	0.831	0.792	0.684	0.875	0.653	0.555	0.731	0.867	0.638	0.595	0.878	1.000
	Transportation	0.832	0.813	0.680	0.872	0.672	0.590	0.812	0.865	0.649	0.628	0.877	0.845	1.000
	Industrials	0.681	0.625	0.959	0.699	0.948	0.806	0.573	0.708	0.877	0.823	0.726	0.670	0.686	1.000
	Other Industrials	0.894	0.821	0.712	0.943	0.704	0.597	0.806	0.961	0.665	0.633	0.977	0.906	0.908	0.733	1.000
	Oil&Gas	0.579	0.554	0.819	0.603	0.789	0.683	0.468	0.598	0.769	0.712	0.615	0.593	0.573	0.826	0.620	1.000
	Other Retail	0.747	0.752	0.615	0.844	0.625	0.647	0.955	0.827	0.582	0.636	0.794	0.762	0.816	0.613	0.827	0.522	1.000
	Technology	0.665	0.601	0.922	0.688	0.926	0.793	0.561	0.691	0.857	0.807	0.700	0.656	0.672	0.946	0.711	0.800	0.602	1.000
	Telecommunications	0.537	0.536	0.762	0.580	0.775	0.800	0.563	0.582	0.731	0.805	0.573	0.553	0.566	0.753	0.587	0.660	0.588	0.736	1.000
	Other Telecommunications	0.700	0.710	0.619	0.763	0.619	0.615	0.800	0.758	0.590	0.641	0.723	0.713	0.745	0.608	0.754	0.530	0.792	0.601	0.662	1.000
	Utility	0.421	0.403	0.584	0.469	0.589	0.675	0.480	0.453	0.540	0.612	0.417	0.445	0.401	0.549	0.437	0.479	0.469	0.524	0.566	0.457	1.000
	Other Utility	0.526	0.523	0.400	0.593	0.412	0.458	0.676	0.568	0.386	0.419	0.517	0.542	0.534	0.378	0.550	0.320	0.625	0.352	0.370	0.567	0.645	1.000

Table 63: ***Correlation for Sectoral Equity Volatility [Full Sample Period]***

Correlation Matrix Equity Volatility		US																																																	UK																	EU																									JP																					
		Airlines	Vehicle P	Banks	Beverage	Building	Basic Ma	Chemica	Consume	Consume	Other Co	Containe	Conglom	Electric U	Electroni	Retail St	Financial	Other Fi	Food Pro	Other Re	Healthca	Healthca	Home Bu	Lodging	Machine	Other In	Metals&M	Other Tr	Industria	Cable M	Healthca	Oil&Gas	Oilfield M	Other Oi	Property	Textiles\	Other Co	Pharmac	Publishin	Railroad	Real Esta	Restaura	Technolo	Informat	Telecom	Other Te	Tobacco	Leisure	Utility	Other U	Banks	Beverage	Basic Ma	Consume	Consume	Other Co	Financial	Other Fi	Healthca	Industria	Life Insu	Oil&Gas	Other Re	Technolo	Telecom	Other Te	Utility	Automot	Banks	Beverage	Building	Basic Ma	Chemica	Consume	Consume	Other Co	Conglom	Electroni	Financia	Other Fi	Healthca	Metals&M	Industria	Leisure	Cable M	Oil&Gas	Other Oi	Technolo	Telecom	Other Te	Utility	Other U	Automotiv	Banks	Basic Ma	Chemical	Consume	Consume	Other Co	Electroni	Financial	Healthca	Machiner	Metals&M	Transpor	Industria	Other In	Oil&Gas	Other Re	Technolo	Telecom	Other	Utility	Other Utility
US	Airlines	1.000
	Vehicle Parts	0.642	1.000
	Banks	0.619	0.780	1.000
	Beverages/Bottling	0.537	0.722	0.607	1.000
	Building Products	0.537	0.692	0.605	0.681	1.000
	Basic Materials	0.629	0.864	0.808	0.732	0.698	1.000
	Chemicals	0.592	0.825	0.711	0.786	0.767	0.843	1.000
	Consumer Goods	0.495	0.665	0.559	0.724	0.879	0.688	0.731	1.000
	Consumer Services	0.537	0.665	0.617	0.667	0.877	0.696	0.710	0.940	1.000
	Other Consumer Services	0.643	0.856	0.754	0.849	0.733	0.874	0.879	0.747	0.755	1.000
	Containers	0.630	0.861	0.787	0.792	0.718	0.885	0.881	0.705	0.701	0.905	1.000
	Conglomerate/Diversified Mfg	0.613	0.831	0.829	0.751	0.689	0.858	0.834	0.685	0.694	0.860	0.855	1.000
	Electric Utility	0.502	0.724	0.599	0.857	0.741	0.757	0.836	0.737	0.711	0.863	0.810	0.754	1.000
	Electronics	0.578	0.865	0.735	0.808	0.718	0.885	0.898	0.727	0.706	0.903	0.899	0.871	0.816	1.000
	Retail Stores Food and Drug	0.536	0.759	0.647	0.806	0.705	0.788	0.801	0.736	0.713	0.893	0.821	0.791	0.831	0.825	1.000
	Financials	0.576	0.705	0.762	0.590	0.805	0.720	0.671	0.784	0.849	0.685	0.696	0.725	0.606	0.680	0.613	1.000
	Other Financials	0.651	0.843	0.920	0.741	0.706	0.857	0.838	0.667	0.700	0.881	0.869	0.875	0.762	0.844	0.758	0.780	1.000
	Food Processors	0.560	0.795	0.665	0.885	0.722	0.811	0.863	0.747	0.712	0.903	0.849	0.813	0.893	0.887	0.856	0.626	0.809	1.000
	Other Retail	0.634	0.814	0.710	0.816	0.706	0.808	0.830	0.716	0.732	0.967	0.865	0.799	0.833	0.832	0.832	0.652	0.849	0.862	1.000
	Healthcare Facilities	0.530	0.767	0.662	0.849	0.679	0.776	0.840	0.700	0.663	0.883	0.832	0.797	0.836	0.875	0.827	0.594	0.796	0.888	0.824	1.000
	Healtchare	0.467	0.623	0.524	0.695	0.847	0.646	0.703	0.927	0.897	0.717	0.667	0.656	0.733	0.710	0.706	0.745	0.641	0.735	0.686	0.728	1.000
	Home Builders	0.649	0.713	0.781	0.595	0.605	0.775	0.684	0.565	0.619	0.749	0.716	0.731	0.631	0.660	0.617	0.677	0.810	0.658	0.753	0.601	0.526	1.000
	Lodging	0.664	0.851	0.767	0.720	0.689	0.853	0.786	0.654	0.684	0.847	0.827	0.819	0.700	0.828	0.736	0.706	0.823	0.767	0.801	0.741	0.623	0.751	1.000
	Machinery	0.603	0.870	0.742	0.804	0.726	0.897	0.897	0.732	0.711	0.902	0.894	0.875	0.814	0.957	0.840	0.685	0.837	0.875	0.829	0.869	0.706	0.678	0.833	1.000
	Other Industrials	0.624	0.888	0.787	0.816	0.738	0.909	0.914	0.749	0.740	0.936	0.920	0.933	0.830	0.963	0.857	0.710	0.882	0.893	0.868	0.876	0.719	0.720	0.854	0.963	1.000
	Metals&Mining	0.581	0.825	0.723	0.803	0.778	0.823	0.914	0.722	0.705	0.858	0.855	0.832	0.854	0.873	0.800	0.699	0.840	0.856	0.811	0.818	0.705	0.689	0.794	0.873	0.883	1.000
	Other Transportation	0.673	0.858	0.776	0.738	0.717	0.861	0.855	0.701	0.718	0.873	0.856	0.845	0.767	0.873	0.778	0.716	0.848	0.814	0.828	0.787	0.670	0.733	0.832	0.879	0.918	0.844	1.000
	Industrials	0.548	0.711	0.634	0.657	0.912	0.727	0.731	0.919	0.936	0.730	0.719	0.725	0.693	0.749	0.706	0.875	0.704	0.712	0.687	0.676	0.879	0.597	0.711	0.756	0.772	0.725	0.740	1.000
	Cable Meida	0.620	0.840	0.763	0.842	0.740	0.873	0.871	0.742	0.738	0.950	0.876	0.875	0.859	0.911	0.876	0.698	0.873	0.896	0.869	0.887	0.720	0.705	0.841	0.908	0.930	0.867	0.864	0.740	1.000
	Healthcare Supplies	0.520	0.727	0.614	0.787	0.648	0.736	0.801	0.666	0.637	0.828	0.788	0.751	0.777	0.836	0.748	0.563	0.744	0.838	0.788	0.916	0.683	0.579	0.723	0.831	0.835	0.755	0.737	0.664	0.815	1.000
	Oil&Gas	0.526	0.769	0.660	0.831	0.760	0.786	0.888	0.744	0.722	0.875	0.833	0.788	0.908	0.856	0.812	0.644	0.814	0.885	0.836	0.865	0.744	0.654	0.742	0.853	0.863	0.909	0.794	0.707	0.873	0.805	1.000
	Oilfield Machinery and Products	0.541	0.785	0.680	0.834	0.767	0.803	0.901	0.746	0.728	0.883	0.847	0.806	0.909	0.868	0.818	0.662	0.828	0.888	0.840	0.868	0.745	0.668	0.759	0.865	0.877	0.922	0.809	0.716	0.885	0.808	0.996	1.000
	Other Oil&Gas	0.500	0.666	0.580	0.712	0.932	0.702	0.761	0.898	0.883	0.758	0.713	0.678	0.784	0.722	0.737	0.776	0.699	0.747	0.726	0.698	0.886	0.600	0.666	0.731	0.744	0.768	0.701	0.880	0.758	0.653	0.813	0.815	1.000
	Property&Casualty	0.619	0.832	0.863	0.798	0.721	0.865	0.848	0.688	0.708	0.886	0.873	0.879	0.814	0.872	0.782	0.766	0.938	0.845	0.842	0.830	0.671	0.768	0.826	0.866	0.890	0.853	0.824	0.721	0.896	0.772	0.840	0.854	0.721	1.000
	Textiles\Apparel\Shoes	0.574	0.811	0.672	0.881	0.731	0.832	0.859	0.761	0.731	0.931	0.861	0.819	0.888	0.876	0.869	0.649	0.812	0.915	0.894	0.883	0.728	0.676	0.772	0.883	0.899	0.849	0.820	0.721	0.903	0.822	0.892	0.893	0.766	0.854	1.000
	Other Consumer Goods	0.571	0.799	0.641	0.828	0.701	0.817	0.833	0.742	0.714	0.909	0.837	0.778	0.822	0.865	0.849	0.604	0.763	0.876	0.869	0.845	0.697	0.657	0.770	0.875	0.877	0.796	0.798	0.701	0.873	0.798	0.840	0.841	0.731	0.799	0.933	1.000
	Pharmaceuticals	0.548	0.756	0.629	0.854	0.707	0.756	0.826	0.718	0.691	0.882	0.820	0.791	0.882	0.850	0.834	0.608	0.786	0.906	0.854	0.905	0.740	0.630	0.733	0.836	0.855	0.822	0.778	0.682	0.871	0.861	0.877	0.879	0.729	0.837	0.896	0.844	1.000
	Publishing	0.596	0.833	0.732	0.814	0.737	0.870	0.858	0.737	0.731	0.920	0.873	0.854	0.853	0.904	0.834	0.695	0.853	0.879	0.867	0.859	0.713	0.707	0.825	0.899	0.918	0.852	0.840	0.737	0.922	0.809	0.868	0.878	0.760	0.881	0.896	0.866	0.855	1.000
	Railroad	0.600	0.784	0.731	0.660	0.660	0.783	0.796	0.640	0.663	0.787	0.787	0.776	0.690	0.796	0.711	0.684	0.785	0.730	0.745	0.709	0.610	0.672	0.767	0.808	0.840	0.787	0.954	0.684	0.785	0.653	0.724	0.740	0.635	0.754	0.730	0.708	0.685	0.760	1.000
	Real Estate	0.679	0.841	0.864	0.694	0.698	0.849	0.770	0.652	0.680	0.826	0.829	0.853	0.731	0.797	0.738	0.766	0.891	0.777	0.784	0.709	0.602	0.780	0.857	0.805	0.839	0.800	0.822	0.705	0.842	0.665	0.731	0.750	0.672	0.886	0.766	0.732	0.734	0.827	0.763	1.000
	Restaurants	0.618	0.772	0.696	0.784	0.691	0.798	0.815	0.715	0.728	0.898	0.808	0.777	0.811	0.813	0.793	0.661	0.805	0.842	0.869	0.814	0.701	0.715	0.772	0.816	0.850	0.786	0.812	0.692	0.849	0.772	0.818	0.823	0.736	0.807	0.856	0.854	0.810	0.838	0.741	0.772	1.000
	Technology	0.540	0.648	0.594	0.653	0.880	0.667	0.714	0.905	0.919	0.713	0.679	0.694	0.680	0.703	0.674	0.840	0.692	0.704	0.685	0.656	0.881	0.596	0.662	0.701	0.725	0.697	0.689	0.927	0.713	0.633	0.701	0.708	0.878	0.705	0.705	0.682	0.684	0.698	0.633	0.666	0.702	1.000
	Information/Data Technology	0.612	0.830	0.751	0.826	0.733	0.835	0.883	0.743	0.733	0.919	0.872	0.868	0.831	0.914	0.826	0.695	0.880	0.881	0.874	0.864	0.723	0.708	0.804	0.887	0.926	0.863	0.840	0.743	0.912	0.813	0.868	0.878	0.746	0.883	0.885	0.850	0.856	0.881	0.762	0.804	0.846	0.759	1.000
	Telecommunications	0.534	0.648	0.581	0.696	0.847	0.677	0.716	0.892	0.891	0.753	0.702	0.700	0.766	0.694	0.729	0.779	0.700	0.747	0.743	0.659	0.853	0.630	0.655	0.699	0.730	0.736	0.700	0.852	0.743	0.618	0.751	0.754	0.879	0.723	0.749	0.719	0.729	0.739	0.639	0.708	0.729	0.876	0.744	1.000
	Other Telecommunications	0.584	0.759	0.680	0.835	0.733	0.779	0.825	0.736	0.729	0.891	0.824	0.808	0.893	0.826	0.826	0.659	0.826	0.887	0.870	0.822	0.706	0.714	0.749	0.823	0.851	0.846	0.784	0.699	0.881	0.758	0.875	0.879	0.768	0.851	0.892	0.844	0.876	0.862	0.701	0.794	0.830	0.721	0.876	0.809	1.000
	Tobacco	0.433	0.667	0.566	0.801	0.639	0.661	0.756	0.651	0.617	0.792	0.729	0.691	0.828	0.740	0.755	0.561	0.723	0.818	0.768	0.792	0.644	0.551	0.621	0.731	0.749	0.765	0.671	0.606	0.773	0.734	0.825	0.823	0.681	0.764	0.882	0.748	0.816	0.757	0.611	0.633	0.728	0.610	0.775	0.655	0.799	1.000
	Leisure	0.702	0.866	0.789	0.762	0.697	0.876	0.843	0.682	0.718	0.936	0.874	0.834	0.771	0.858	0.800	0.707	0.873	0.817	0.890	0.800	0.650	0.776	0.886	0.865	0.899	0.822	0.877	0.701	0.877	0.760	0.804	0.818	0.704	0.851	0.853	0.836	0.792	0.858	0.803	0.841	0.895	0.674	0.863	0.691	0.814	0.711	1.000
	Utility	0.464	0.624	0.507	0.707	0.876	0.661	0.716	0.913	0.876	0.729	0.675	0.642	0.800	0.681	0.735	0.720	0.642	0.737	0.708	0.665	0.889	0.569	0.622	0.687	0.707	0.735	0.664	0.849	0.728	0.622	0.763	0.766	0.922	0.679	0.746	0.707	0.722	0.724	0.595	0.646	0.699	0.846	0.713	0.896	0.761	0.662	0.653	1.000
	Other Utility	0.505	0.739	0.608	0.867	0.747	0.771	0.852	0.745	0.716	0.876	0.824	0.768	0.997	0.837	0.840	0.609	0.772	0.904	0.842	0.856	0.743	0.631	0.711	0.833	0.848	0.864	0.780	0.700	0.873	0.794	0.921	0.922	0.789	0.827	0.904	0.837	0.894	0.865	0.700	0.733	0.818	0.686	0.846	0.763	0.896	0.839	0.782	0.800	1.000
UK	Banks	0.553	0.654	0.746	0.548	0.594	0.696	0.637	0.538	0.583	0.657	0.670	0.682	0.574	0.644	0.608	0.679	0.736	0.595	0.616	0.618	0.529	0.641	0.641	0.670	0.686	0.656	0.705	0.612	0.670	0.567	0.596	0.610	0.588	0.682	0.619	0.593	0.565	0.616	0.672	0.680	0.621	0.588	0.650	0.561	0.622	0.522	0.682	0.536	0.577	1.000
	Beverages/Bottling	0.402	0.570	0.515	0.620	0.593	0.567	0.631	0.585	0.579	0.642	0.580	0.579	0.629	0.603	0.534	0.557	0.624	0.646	0.636	0.636	0.594	0.541	0.557	0.594	0.614	0.650	0.602	0.565	0.618	0.628	0.691	0.687	0.614	0.619	0.666	0.585	0.642	0.604	0.558	0.538	0.629	0.580	0.632	0.574	0.639	0.658	0.623	0.570	0.640	0.573	1.000
	Basic Materials	0.499	0.644	0.596	0.634	0.820	0.664	0.680	0.740	0.734	0.681	0.638	0.646	0.678	0.657	0.633	0.698	0.673	0.673	0.660	0.593	0.600	0.599	0.650	0.656	0.665	0.708	0.659	0.763	0.701	0.562	0.692	0.698	0.785	0.697	0.669	0.634	0.647	0.675	0.616	0.699	0.639	0.733	0.667	0.748	0.709	0.602	0.650	0.756	0.684	0.565	0.612	1.000
	Consumer Goods	0.402	0.573	0.492	0.637	0.696	0.570	0.604	0.740	0.717	0.655	0.581	0.561	0.653	0.604	0.591	0.616	0.611	0.660	0.657	0.609	0.728	0.533	0.562	0.602	0.609	0.628	0.588	0.678	0.638	0.560	0.694	0.685	0.745	0.623	0.661	0.637	0.652	0.622	0.545	0.562	0.649	0.700	0.628	0.714	0.670	0.602	0.596	0.718	0.662	0.500	0.683	0.769	1.000
	Consumer Services	0.467	0.576	0.518	0.562	0.707	0.564	0.586	0.720	0.743	0.634	0.588	0.537	0.605	0.541	0.542	0.661	0.607	0.590	0.664	0.535	0.687	0.613	0.570	0.547	0.575	0.587	0.601	0.698	0.574	0.520	0.627	0.624	0.715	0.584	0.605	0.595	0.586	0.596	0.561	0.565	0.638	0.704	0.588	0.720	0.633	0.534	0.626	0.697	0.605	0.527	0.629	0.735	0.818	1.000
	Other Consumer Services	0.519	0.687	0.591	0.667	0.636	0.662	0.697	0.630	0.649	0.742	0.691	0.644	0.691	0.661	0.625	0.624	0.711	0.682	0.759	0.661	0.620	0.660	0.654	0.663	0.697	0.702	0.692	0.622	0.678	0.651	0.713	0.716	0.656	0.683	0.720	0.667	0.699	0.698	0.639	0.624	0.720	0.624	0.704	0.643	0.720	0.653	0.741	0.626	0.696	0.672	0.779	0.624	0.688	0.758	1.000
	Financials	0.510	0.596	0.645	0.530	0.695	0.616	0.577	0.674	0.712	0.620	0.595	0.611	0.543	0.581	0.571	0.770	0.661	0.568	0.599	0.539	0.628	0.603	0.597	0.597	0.611	0.603	0.642	0.731	0.628	0.490	0.572	0.578	0.668	0.636	0.599	0.577	0.542	0.577	0.615	0.634	0.577	0.695	0.600	0.681	0.618	0.517	0.625	0.638	0.545	0.715	0.536	0.734	0.668	0.763	0.618	1.000
	Other Financials	0.504	0.705	0.646	0.687	0.671	0.690	0.749	0.638	0.641	0.741	0.715	0.709	0.731	0.720	0.654	0.656	0.753	0.723	0.732	0.685	0.612	0.665	0.677	0.720	0.741	0.763	0.714	0.652	0.722	0.660	0.740	0.746	0.665	0.736	0.749	0.669	0.703	0.712	0.674	0.683	0.686	0.643	0.745	0.673	0.759	0.732	0.729	0.653	0.733	0.742	0.763	0.688	0.637	0.658	0.832	0.684	1.000
	Healthcare	0.453	0.560	0.473	0.587	0.662	0.551	0.583	0.683	0.670	0.617	0.554	0.540	0.619	0.572	0.546	0.595	0.586	0.637	0.617	0.567	0.693	0.535	0.574	0.574	0.584	0.601	0.567	0.644	0.607	0.534	0.642	0.644	0.701	0.590	0.622	0.601	0.620	0.620	0.501	0.567	0.610	0.691	0.613	0.684	0.630	0.559	0.589	0.675	0.625	0.446	0.585	0.687	0.782	0.725	0.631	0.579	0.581	1.000
	Industrials	0.422	0.583	0.501	0.592	0.732	0.583	0.613	0.758	0.743	0.638	0.587	0.559	0.614	0.605	0.573	0.650	0.596	0.627	0.636	0.591	0.721	0.544	0.574	0.601	0.616	0.585	0.592	0.749	0.612	0.579	0.644	0.638	0.738	0.596	0.637	0.626	0.606	0.616	0.549	0.556	0.618	0.732	0.627	0.711	0.627	0.554	0.604	0.703	0.623	0.523	0.637	0.795	0.812	0.862	0.674	0.756	0.668	0.696	1.000
	Life Insurance	0.575	0.706	0.725	0.651	0.694	0.740	0.714	0.647	0.665	0.732	0.715	0.733	0.673	0.706	0.693	0.715	0.757	0.681	0.687	0.691	0.648	0.671	0.705	0.728	0.741	0.754	0.747	0.686	0.759	0.622	0.705	0.717	0.693	0.741	0.714	0.677	0.671	0.706	0.700	0.715	0.680	0.651	0.714	0.666	0.714	0.617	0.732	0.657	0.679	0.851	0.639	0.655	0.584	0.612	0.732	0.752	0.808	0.521	0.607	1.000
	Oil&Gas	0.476	0.608	0.497	0.662	0.787	0.625	0.663	0.768	0.733	0.693	0.627	0.599	0.724	0.648	0.661	0.615	0.621	0.706	0.672	0.637	0.752	0.572	0.639	0.646	0.659	0.684	0.628	0.728	0.705	0.599	0.728	0.727	0.810	0.655	0.692	0.676	0.676	0.686	0.579	0.640	0.662	0.735	0.675	0.763	0.727	0.611	0.634	0.797	0.728	0.528	0.612	0.841	0.794	0.759	0.639	0.678	0.667	0.732	0.794	0.639	1.000
	Other Retail	0.478	0.593	0.513	0.594	0.564	0.548	0.608	0.550	0.570	0.654	0.596	0.562	0.629	0.562	0.550	0.540	0.635	0.605	0.688	0.571	0.538	0.592	0.568	0.567	0.598	0.624	0.605	0.542	0.589	0.573	0.638	0.637	0.582	0.603	0.634	0.581	0.636	0.618	0.552	0.558	0.650	0.552	0.615	0.594	0.602	0.590	0.643	0.557	0.629	0.579	0.708	0.572	0.643	0.714	0.930	0.535	0.721	0.618	0.604	0.621	0.574	1.000
	Technology	0.370	0.465	0.400	0.525	0.639	0.491	0.525	0.642	0.639	0.553	0.498	0.471	0.543	0.509	0.497	0.552	0.496	0.535	0.561	0.505	0.617	0.478	0.496	0.512	0.511	0.494	0.483	0.633	0.522	0.495	0.570	0.569	0.650	0.509	0.541	0.551	0.534	0.520	0.428	0.437	0.538	0.643	0.544	0.631	0.564	0.476	0.525	0.626	0.546	0.421	0.513	0.706	0.704	0.745	0.566	0.656	0.580	0.626	0.790	0.509	0.697	0.499	1.000
	Telecommunications	0.481	0.588	0.548	0.604	0.690	0.592	0.600	0.707	0.715	0.655	0.610	0.601	0.639	0.573	0.619	0.656	0.629	0.613	0.651	0.551	0.674	0.608	0.613	0.588	0.612	0.630	0.602	0.684	0.636	0.510	0.650	0.656	0.729	0.630	0.639	0.620	0.611	0.619	0.562	0.625	0.634	0.698	0.623	0.748	0.689	0.560	0.633	0.737	0.636	0.522	0.542	0.723	0.730	0.772	0.623	0.718	0.639	0.718	0.704	0.627	0.739	0.574	0.651	1.000
	Other Telecommunications	0.501	0.645	0.593	0.691	0.655	0.658	0.666	0.640	0.662	0.715	0.674	0.670	0.739	0.646	0.649	0.640	0.695	0.692	0.707	0.661	0.635	0.634	0.644	0.653	0.682	0.700	0.662	0.638	0.706	0.626	0.724	0.730	0.688	0.693	0.708	0.652	0.711	0.683	0.599	0.650	0.672	0.640	0.698	0.682	0.748	0.667	0.694	0.679	0.737	0.651	0.691	0.635	0.626	0.659	0.772	0.637	0.773	0.607	0.615	0.736	0.660	0.700	0.569	0.713	1.000
	Utility	0.437	0.547	0.436	0.591	0.673	0.548	0.559	0.694	0.661	0.604	0.532	0.512	0.620	0.564	0.568	0.576	0.540	0.628	0.600	0.541	0.695	0.520	0.572	0.577	0.562	0.609	0.558	0.646	0.616	0.494	0.638	0.639	0.726	0.565	0.604	0.608	0.585	0.593	0.508	0.577	0.607	0.664	0.576	0.695	0.629	0.514	0.560	0.714	0.622	0.447	0.529	0.712	0.794	0.701	0.586	0.590	0.534	0.787	0.660	0.560	0.752	0.555	0.604	0.713	0.569	1.000
EU	Automotive Manufacturer	0.289	0.421	0.294	0.473	0.457	0.386	0.404	0.510	0.467	0.477	0.425	0.395	0.484	0.404	0.600	0.345	0.351	0.478	0.453	0.415	0.446	0.290	0.394	0.452	0.457	0.402	0.372	0.462	0.476	0.389	0.409	0.406	0.490	0.358	0.501	0.494	0.426	0.442	0.335	0.399	0.427	0.427	0.432	0.503	0.480	0.420	0.392	0.530	0.474	0.413	0.233	0.404	0.375	0.330	0.340	0.420	0.433	0.330	0.401	0.432	0.491	0.308	0.333	0.409	0.383	0.381	1.000
	Banks	0.437	0.640	0.627	0.580	0.640	0.657	0.635	0.641	0.630	0.640	0.630	0.644	0.593	0.650	0.617	0.679	0.668	0.613	0.601	0.621	0.616	0.550	0.594	0.669	0.671	0.644	0.656	0.676	0.647	0.597	0.603	0.610	0.628	0.651	0.651	0.596	0.587	0.610	0.619	0.619	0.579	0.635	0.645	0.592	0.605	0.584	0.619	0.611	0.602	0.773	0.612	0.650	0.592	0.588	0.659	0.729	0.745	0.511	0.646	0.752	0.594	0.557	0.511	0.552	0.607	0.495	0.530	1.000
	Beverages/Bottling	0.428	0.636	0.524	0.698	0.673	0.608	0.667	0.688	0.644	0.683	0.619	0.634	0.689	0.666	0.659	0.600	0.631	0.723	0.654	0.687	0.668	0.513	0.597	0.676	0.680	0.701	0.640	0.668	0.699	0.653	0.705	0.705	0.682	0.657	0.724	0.673	0.686	0.661	0.583	0.615	0.652	0.660	0.688	0.652	0.700	0.672	0.611	0.667	0.699	0.609	0.741	0.687	0.715	0.626	0.693	0.623	0.721	0.622	0.609	0.655	0.693	0.623	0.539	0.579	0.645	0.615	0.519	0.796	1.000
	Building Products	0.430	0.611	0.534	0.617	0.800	0.621	0.642	0.765	0.733	0.644	0.602	0.604	0.645	0.650	0.613	0.682	0.620	0.659	0.614	0.602	0.722	0.513	0.602	0.650	0.644	0.659	0.624	0.773	0.672	0.573	0.657	0.661	0.765	0.650	0.651	0.623	0.628	0.644	0.590	0.641	0.595	0.739	0.642	0.725	0.661	0.581	0.595	0.744	0.653	0.540	0.596	0.932	0.761	0.719	0.578	0.748	0.661	0.665	0.816	0.622	0.824	0.509	0.701	0.675	0.580	0.683	0.464	0.701	0.730	1.000
	Basic Materials	0.477	0.699	0.589	0.661	0.686	0.674	0.692	0.692	0.652	0.680	0.681	0.665	0.663	0.717	0.634	0.662	0.654	0.698	0.639	0.662	0.658	0.517	0.652	0.718	0.720	0.710	0.695	0.707	0.704	0.644	0.680	0.688	0.672	0.680	0.692	0.642	0.659	0.669	0.657	0.664	0.615	0.651	0.687	0.645	0.666	0.632	0.651	0.658	0.672	0.640	0.632	0.702	0.624	0.600	0.658	0.662	0.748	0.599	0.655	0.692	0.662	0.555	0.536	0.589	0.633	0.595	0.483	0.836	0.819	0.739	1.000
	Chemicals	0.410	0.638	0.510	0.655	0.679	0.608	0.668	0.691	0.641	0.654	0.619	0.621	0.650	0.676	0.647	0.589	0.600	0.685	0.621	0.674	0.690	0.465	0.590	0.683	0.680	0.670	0.625	0.686	0.668	0.655	0.655	0.656	0.667	0.626	0.678	0.641	0.654	0.635	0.579	0.593	0.599	0.644	0.670	0.633	0.641	0.614	0.591	0.660	0.658	0.584	0.614	0.674	0.633	0.578	0.624	0.616	0.707	0.555	0.673	0.656	0.676	0.530	0.541	0.564	0.580	0.571	0.609	0.839	0.851	0.754	0.873	1.000
	Consumer Goods	0.354	0.510	0.397	0.551	0.656	0.494	0.513	0.732	0.678	0.558	0.507	0.482	0.547	0.537	0.583	0.542	0.484	0.589	0.536	0.530	0.666	0.394	0.505	0.549	0.548	0.515	0.517	0.678	0.571	0.501	0.530	0.530	0.652	0.500	0.567	0.565	0.542	0.534	0.484	0.508	0.514	0.664	0.541	0.664	0.570	0.491	0.491	0.679	0.550	0.454	0.470	0.695	0.704	0.654	0.497	0.649	0.555	0.595	0.724	0.515	0.719	0.434	0.612	0.592	0.494	0.618	0.644	0.643	0.694	0.836	0.664	0.718	1.000
	Consumer Services	0.399	0.571	0.468	0.573	0.730	0.571	0.584	0.761	0.728	0.611	0.564	0.532	0.593	0.594	0.566	0.634	0.564	0.626	0.604	0.575	0.722	0.496	0.560	0.603	0.596	0.574	0.578	0.738	0.604	0.559	0.615	0.612	0.727	0.576	0.610	0.611	0.584	0.601	0.540	0.562	0.585	0.727	0.600	0.703	0.612	0.523	0.565	0.710	0.600	0.507	0.579	0.783	0.793	0.825	0.618	0.736	0.621	0.693	0.853	0.564	0.776	0.543	0.732	0.664	0.559	0.709	0.450	0.679	0.716	0.895	0.701	0.714	0.877	1.000
	Other Consumer Services	0.429	0.646	0.517	0.657	0.672	0.621	0.662	0.700	0.663	0.677	0.631	0.609	0.662	0.663	0.635	0.609	0.621	0.681	0.663	0.664	0.687	0.521	0.606	0.672	0.674	0.665	0.641	0.684	0.665	0.659	0.681	0.680	0.682	0.630	0.691	0.652	0.654	0.656	0.592	0.590	0.642	0.653	0.674	0.640	0.666	0.628	0.629	0.662	0.670	0.606	0.689	0.681	0.706	0.677	0.751	0.627	0.742	0.634	0.720	0.655	0.685	0.657	0.590	0.577	0.626	0.619	0.539	0.866	0.888	0.737	0.866	0.900	0.706	0.775	1.000
	Conglomerate/Diversified Mfg	0.380	0.585	0.435	0.649	0.613	0.540	0.592	0.653	0.597	0.631	0.571	0.558	0.632	0.597	0.676	0.514	0.529	0.653	0.604	0.621	0.621	0.425	0.545	0.622	0.624	0.600	0.565	0.620	0.634	0.599	0.606	0.604	0.625	0.549	0.664	0.629	0.612	0.595	0.526	0.541	0.584	0.584	0.616	0.605	0.623	0.603	0.554	0.637	0.635	0.559	0.567	0.604	0.608	0.537	0.607	0.574	0.669	0.528	0.619	0.608	0.643	0.534	0.499	0.516	0.564	0.551	0.797	0.783	0.871	0.683	0.789	0.880	0.754	0.679	0.878	1.000
	Electronics	0.432	0.611	0.479	0.669	0.663	0.612	0.669	0.697	0.636	0.671	0.619	0.600	0.658	0.677	0.652	0.570	0.603	0.694	0.644	0.666	0.678	0.482	0.578	0.682	0.675	0.655	0.622	0.672	0.674	0.667	0.669	0.667	0.671	0.614	0.679	0.648	0.653	0.645	0.575	0.560	0.620	0.642	0.677	0.629	0.652	0.619	0.604	0.660	0.668	0.574	0.607	0.670	0.649	0.581	0.647	0.606	0.715	0.589	0.682	0.642	0.678	0.548	0.573	0.538	0.577	0.583	0.597	0.832	0.828	0.729	0.866	0.896	0.708	0.717	0.911	0.861	1.000
	Financials	0.412	0.577	0.545	0.538	0.716	0.592	0.579	0.726	0.710	0.595	0.563	0.575	0.547	0.599	0.564	0.716	0.602	0.587	0.566	0.555	0.675	0.514	0.558	0.610	0.604	0.584	0.603	0.752	0.606	0.522	0.573	0.576	0.686	0.602	0.601	0.576	0.553	0.579	0.577	0.587	0.537	0.717	0.592	0.670	0.581	0.529	0.566	0.672	0.555	0.618	0.554	0.782	0.707	0.737	0.578	0.881	0.654	0.596	0.799	0.655	0.707	0.487	0.672	0.656	0.566	0.614	0.453	0.778	0.689	0.888	0.718	0.712	0.819	0.901	0.723	0.657	0.702	1.000
	Other Financials	0.454	0.651	0.566	0.664	0.686	0.633	0.690	0.691	0.665	0.690	0.647	0.646	0.681	0.678	0.645	0.650	0.671	0.688	0.670	0.661	0.665	0.555	0.617	0.692	0.693	0.704	0.664	0.690	0.687	0.648	0.697	0.698	0.684	0.672	0.704	0.644	0.655	0.661	0.625	0.619	0.634	0.667	0.697	0.660	0.686	0.667	0.642	0.671	0.686	0.655	0.685	0.706	0.684	0.647	0.718	0.682	0.809	0.602	0.704	0.704	0.682	0.627	0.589	0.603	0.650	0.586	0.568	0.908	0.871	0.753	0.885	0.911	0.701	0.734	0.942	0.870	0.919	0.751	1.000
	Healthcare	0.381	0.558	0.415	0.614	0.717	0.557	0.606	0.751	0.679	0.607	0.549	0.533	0.629	0.611	0.569	0.559	0.536	0.656	0.584	0.608	0.741	0.456	0.545	0.618	0.603	0.607	0.553	0.697	0.619	0.585	0.648	0.644	0.736	0.575	0.644	0.628	0.624	0.619	0.494	0.536	0.577	0.717	0.611	0.687	0.621	0.589	0.534	0.725	0.638	0.451	0.581	0.752	0.795	0.706	0.586	0.607	0.613	0.799	0.763	0.528	0.788	0.526	0.662	0.669	0.561	0.744	0.436	0.618	0.720	0.834	0.692	0.708	0.813	0.873	0.734	0.664	0.719	0.777	0.709	1.000
	Metals&Mining	0.432	0.674	0.589	0.654	0.692	0.668	0.702	0.678	0.642	0.669	0.649	0.663	0.684	0.695	0.628	0.645	0.655	0.693	0.630	0.654	0.653	0.530	0.620	0.703	0.701	0.741	0.668	0.689	0.696	0.631	0.702	0.708	0.674	0.688	0.698	0.637	0.657	0.666	0.634	0.656	0.620	0.638	0.675	0.643	0.673	0.654	0.630	0.661	0.691	0.618	0.666	0.733	0.646	0.585	0.638	0.638	0.756	0.581	0.653	0.696	0.671	0.552	0.527	0.588	0.613	0.564	0.518	0.841	0.826	0.769	0.874	0.883	0.657	0.684	0.855	0.796	0.852	0.708	0.895	0.680	1.000
	Industrials	0.415	0.586	0.489	0.580	0.750	0.591	0.596	0.769	0.729	0.614	0.580	0.556	0.585	0.622	0.583	0.655	0.568	0.628	0.588	0.582	0.721	0.476	0.573	0.629	0.618	0.584	0.589	0.769	0.627	0.568	0.605	0.605	0.728	0.585	0.612	0.609	0.586	0.600	0.556	0.579	0.563	0.736	0.609	0.694	0.597	0.522	0.565	0.709	0.594	0.524	0.542	0.821	0.746	0.747	0.566	0.755	0.615	0.656	0.858	0.577	0.776	0.479	0.724	0.646	0.542	0.669	0.487	0.702	0.708	0.935	0.739	0.747	0.884	0.952	0.758	0.699	0.757	0.920	0.749	0.857	0.719	1.000
	Leisure	0.433	0.594	0.535	0.552	0.628	0.574	0.580	0.639	0.622	0.580	0.565	0.615	0.526	0.597	0.575	0.611	0.572	0.578	0.533	0.570	0.618	0.440	0.573	0.604	0.625	0.593	0.599	0.664	0.612	0.553	0.545	0.555	0.603	0.570	0.578	0.544	0.537	0.554	0.563	0.574	0.520	0.637	0.610	0.575	0.549	0.497	0.545	0.595	0.536	0.627	0.551	0.619	0.564	0.532	0.573	0.635	0.647	0.515	0.586	0.648	0.604	0.470	0.469	0.505	0.541	0.507	0.544	0.809	0.785	0.674	0.801	0.802	0.668	0.654	0.810	0.790	0.802	0.687	0.813	0.620	0.769	0.692	1.000
	Cable Meida	0.405	0.642	0.505	0.652	0.680	0.630	0.668	0.695	0.659	0.672	0.633	0.616	0.674	0.680	0.636	0.615	0.615	0.687	0.646	0.672	0.692	0.489	0.598	0.686	0.683	0.668	0.634	0.695	0.668	0.673	0.691	0.690	0.694	0.644	0.700	0.656	0.656	0.664	0.589	0.587	0.627	0.658	0.676	0.637	0.665	0.645	0.618	0.672	0.683	0.602	0.671	0.684	0.682	0.630	0.701	0.619	0.736	0.603	0.707	0.648	0.685	0.592	0.591	0.569	0.625	0.595	0.529	0.863	0.871	0.746	0.867	0.894	0.687	0.758	0.964	0.858	0.904	0.727	0.932	0.729	0.867	0.757	0.805	1.000
	Oil&Gas	0.436	0.611	0.494	0.644	0.790	0.617	0.643	0.792	0.742	0.664	0.609	0.591	0.687	0.648	0.639	0.641	0.608	0.696	0.639	0.626	0.757	0.529	0.618	0.649	0.648	0.665	0.612	0.754	0.684	0.590	0.695	0.694	0.804	0.641	0.677	0.666	0.652	0.670	0.567	0.638	0.630	0.754	0.660	0.764	0.702	0.600	0.601	0.794	0.691	0.526	0.508	0.862	0.792	0.741	0.593	0.712	0.661	0.717	0.805	0.620	0.921	0.520	0.688	0.720	0.616	0.743	0.531	0.665	0.739	0.926	0.712	0.743	0.851	0.893	0.738	0.702	0.727	0.839	0.736	0.875	0.728	0.893	0.661	0.744	1.000
	Other Oil&Gas	0.455	0.663	0.524	0.714	0.757	0.651	0.712	0.757	0.708	0.704	0.656	0.645	0.753	0.695	0.683	0.632	0.646	0.744	0.679	0.703	0.749	0.532	0.637	0.698	0.704	0.748	0.665	0.723	0.718	0.668	0.762	0.761	0.778	0.678	0.739	0.697	0.708	0.714	0.611	0.648	0.673	0.708	0.713	0.727	0.735	0.686	0.640	0.766	0.758	0.599	0.692	0.757	0.733	0.669	0.689	0.638	0.761	0.666	0.722	0.702	0.804	0.606	0.593	0.658	0.685	0.676	0.593	0.802	0.873	0.786	0.839	0.895	0.721	0.750	0.893	0.851	0.871	0.711	0.895	0.769	0.880	0.745	0.779	0.891	0.841	1.000
	Technology	0.455	0.566	0.483	0.567	0.719	0.576	0.594	0.735	0.711	0.607	0.561	0.554	0.587	0.604	0.545	0.643	0.572	0.628	0.592	0.581	0.696	0.506	0.573	0.611	0.606	0.558	0.579	0.737	0.614	0.567	0.602	0.601	0.711	0.595	0.602	0.606	0.590	0.595	0.536	0.576	0.594	0.741	0.615	0.689	0.617	0.518	0.566	0.693	0.592	0.509	0.536	0.795	0.743	0.729	0.554	0.715	0.599	0.666	0.815	0.540	0.768	0.488	0.757	0.663	0.559	0.675	0.449	0.654	0.684	0.878	0.692	0.698	0.813	0.903	0.715	0.647	0.696	0.852	0.712	0.829	0.673	0.914	0.628	0.717	0.861	0.721	1.000
	Telecommunications	0.354	0.544	0.431	0.592	0.703	0.539	0.578	0.759	0.697	0.610	0.556	0.532	0.612	0.596	0.595	0.588	0.542	0.635	0.594	0.592	0.721	0.466	0.534	0.604	0.596	0.581	0.562	0.707	0.608	0.557	0.623	0.619	0.719	0.564	0.637	0.624	0.602	0.595	0.521	0.525	0.573	0.714	0.612	0.702	0.627	0.578	0.546	0.729	0.618	0.486	0.544	0.748	0.766	0.734	0.572	0.708	0.619	0.676	0.781	0.554	0.766	0.496	0.681	0.735	0.572	0.706	0.507	0.669	0.708	0.861	0.683	0.720	0.859	0.914	0.735	0.692	0.704	0.874	0.730	0.874	0.674	0.894	0.630	0.734	0.886	0.752	0.858	1.000
	Other Telecommunications	0.368	0.594	0.473	0.670	0.665	0.585	0.640	0.696	0.644	0.658	0.599	0.595	0.684	0.645	0.646	0.581	0.589	0.685	0.634	0.673	0.680	0.482	0.568	0.659	0.655	0.649	0.611	0.666	0.656	0.649	0.680	0.677	0.685	0.612	0.705	0.653	0.663	0.643	0.561	0.543	0.609	0.652	0.673	0.639	0.673	0.670	0.591	0.678	0.691	0.591	0.647	0.668	0.689	0.626	0.679	0.632	0.729	0.612	0.692	0.645	0.688	0.590	0.583	0.614	0.674	0.593	0.574	0.841	0.860	0.732	0.818	0.876	0.707	0.736	0.914	0.860	0.864	0.729	0.912	0.735	0.817	0.735	0.760	0.914	0.748	0.886	0.706	0.789	1.000
	Utility	0.354	0.548	0.399	0.604	0.722	0.553	0.587	0.767	0.689	0.603	0.551	0.508	0.634	0.607	0.585	0.570	0.545	0.652	0.580	0.594	0.747	0.441	0.539	0.616	0.592	0.596	0.552	0.705	0.611	0.567	0.638	0.633	0.744	0.554	0.630	0.627	0.608	0.604	0.513	0.536	0.573	0.707	0.598	0.697	0.613	0.561	0.536	0.756	0.639	0.462	0.549	0.760	0.759	0.701	0.555	0.656	0.590	0.676	0.770	0.553	0.798	0.475	0.662	0.647	0.532	0.747	0.496	0.648	0.701	0.869	0.687	0.728	0.849	0.901	0.738	0.686	0.727	0.840	0.715	0.884	0.694	0.895	0.632	0.744	0.911	0.779	0.834	0.912	0.741	1.000
	Other Utility	0.352	0.601	0.438	0.686	0.680	0.583	0.652	0.708	0.637	0.647	0.597	0.567	0.707	0.661	0.635	0.567	0.567	0.709	0.618	0.685	0.705	0.448	0.575	0.670	0.650	0.680	0.602	0.669	0.659	0.666	0.705	0.699	0.701	0.610	0.700	0.655	0.680	0.660	0.557	0.562	0.614	0.649	0.661	0.647	0.659	0.665	0.572	0.702	0.713	0.542	0.647	0.668	0.685	0.605	0.655	0.584	0.706	0.624	0.683	0.627	0.704	0.567	0.563	0.573	0.609	0.644	0.552	0.802	0.858	0.735	0.831	0.884	0.699	0.736	0.901	0.850	0.873	0.702	0.891	0.758	0.848	0.735	0.741	0.906	0.766	0.911	0.691	0.756	0.912	0.809	1.000
JP	Automotive Manufacturer	0.469	0.528	0.438	0.585	0.603	0.545	0.576	0.579	0.567	0.604	0.554	0.538	0.650	0.543	0.578	0.520	0.565	0.646	0.591	0.542	0.546	0.509	0.568	0.544	0.570	0.611	0.564	0.556	0.617	0.507	0.625	0.618	0.627	0.568	0.601	0.562	0.602	0.588	0.532	0.601	0.589	0.593	0.603	0.663	0.674	0.566	0.560	0.625	0.637	0.527	0.496	0.583	0.567	0.536	0.558	0.541	0.643	0.541	0.532	0.574	0.660	0.504	0.485	0.569	0.610	0.545	0.501	0.527	0.599	0.567	0.564	0.559	0.555	0.536	0.566	0.582	0.579	0.510	0.615	0.549	0.564	0.517	0.518	0.563	0.648	0.662	0.545	0.544	0.583	0.559	0.596	1.000
	Banks	0.435	0.494	0.488	0.550	0.568	0.522	0.581	0.504	0.520	0.590	0.551	0.539	0.658	0.505	0.543	0.510	0.597	0.589	0.601	0.525	0.501	0.570	0.512	0.518	0.547	0.622	0.553	0.498	0.573	0.473	0.638	0.633	0.602	0.573	0.571	0.522	0.604	0.584	0.517	0.576	0.582	0.526	0.576	0.629	0.677	0.569	0.561	0.583	0.641	0.549	0.534	0.545	0.552	0.573	0.637	0.523	0.668	0.521	0.502	0.590	0.579	0.608	0.454	0.572	0.648	0.517	0.400	0.512	0.556	0.495	0.533	0.514	0.453	0.480	0.545	0.506	0.520	0.452	0.589	0.487	0.531	0.435	0.430	0.516	0.552	0.613	0.459	0.486	0.551	0.473	0.542	0.784	1.000
	Basic Materials	0.461	0.473	0.392	0.556	0.642	0.510	0.548	0.649	0.643	0.587	0.530	0.485	0.638	0.510	0.588	0.514	0.513	0.602	0.584	0.493	0.617	0.473	0.512	0.513	0.529	0.573	0.523	0.608	0.576	0.464	0.613	0.606	0.678	0.526	0.591	0.572	0.588	0.563	0.472	0.541	0.579	0.619	0.554	0.692	0.649	0.524	0.533	0.696	0.628	0.437	0.475	0.631	0.619	0.609	0.529	0.570	0.539	0.580	0.594	0.518	0.688	0.495	0.552	0.625	0.563	0.617	0.492	0.489	0.571	0.633	0.548	0.564	0.617	0.613	0.566	0.561	0.590	0.569	0.585	0.603	0.531	0.604	0.483	0.554	0.688	0.647	0.603	0.608	0.565	0.632	0.577	0.692	0.667	1.000
	Chemicals	0.456	0.512	0.399	0.611	0.605	0.539	0.595	0.588	0.567	0.624	0.552	0.546	0.674	0.568	0.610	0.464	0.536	0.655	0.615	0.573	0.575	0.469	0.538	0.567	0.590	0.621	0.554	0.550	0.623	0.532	0.658	0.648	0.640	0.544	0.627	0.595	0.634	0.610	0.497	0.555	0.610	0.561	0.605	0.645	0.675	0.576	0.559	0.639	0.668	0.490	0.525	0.574	0.580	0.534	0.575	0.499	0.617	0.540	0.538	0.560	0.640	0.530	0.491	0.555	0.601	0.576	0.512	0.506	0.613	0.557	0.573	0.590	0.523	0.530	0.591	0.602	0.612	0.479	0.613	0.549	0.558	0.511	0.495	0.580	0.619	0.665	0.528	0.536	0.591	0.555	0.606	0.857	0.792	0.749	1.000
	Consumer Goods	0.461	0.470	0.386	0.546	0.634	0.508	0.549	0.642	0.639	0.593	0.541	0.498	0.635	0.517	0.581	0.522	0.512	0.610	0.592	0.494	0.604	0.483	0.528	0.513	0.535	0.577	0.527	0.605	0.581	0.466	0.608	0.602	0.662	0.522	0.589	0.572	0.580	0.567	0.479	0.552	0.575	0.629	0.561	0.704	0.659	0.534	0.538	0.684	0.623	0.446	0.451	0.610	0.591	0.588	0.507	0.581	0.535	0.577	0.564	0.503	0.669	0.474	0.534	0.632	0.567	0.608	0.483	0.469	0.556	0.605	0.540	0.540	0.593	0.586	0.537	0.543	0.559	0.561	0.572	0.589	0.511	0.580	0.471	0.535	0.674	0.625	0.596	0.605	0.561	0.612	0.560	0.729	0.667	0.930	0.730	1.000
	Consumer Services	0.383	0.380	0.293	0.489	0.538	0.396	0.467	0.556	0.550	0.504	0.440	0.410	0.567	0.425	0.490	0.419	0.418	0.508	0.508	0.414	0.554	0.386	0.400	0.421	0.451	0.493	0.455	0.498	0.486	0.366	0.551	0.544	0.601	0.410	0.497	0.479	0.500	0.482	0.418	0.420	0.508	0.539	0.486	0.612	0.575	0.452	0.459	0.616	0.558	0.356	0.415	0.506	0.549	0.538	0.485	0.453	0.467	0.531	0.493	0.439	0.579	0.458	0.469	0.551	0.515	0.569	0.380	0.378	0.494	0.508	0.478	0.478	0.496	0.513	0.488	0.472	0.497	0.445	0.503	0.519	0.425	0.489	0.406	0.479	0.570	0.555	0.508	0.529	0.502	0.519	0.482	0.607	0.636	0.854	0.700	0.836	1.000
	Other Consumer Services	0.370	0.422	0.341	0.569	0.488	0.418	0.513	0.479	0.465	0.550	0.472	0.475	0.622	0.471	0.514	0.398	0.483	0.582	0.557	0.515	0.480	0.395	0.421	0.465	0.499	0.543	0.483	0.432	0.537	0.460	0.611	0.601	0.535	0.477	0.546	0.499	0.594	0.529	0.442	0.465	0.539	0.460	0.539	0.544	0.612	0.542	0.487	0.526	0.617	0.401	0.476	0.466	0.507	0.478	0.539	0.410	0.544	0.471	0.445	0.472	0.511	0.515	0.403	0.472	0.552	0.482	0.357	0.398	0.519	0.440	0.483	0.472	0.396	0.424	0.499	0.482	0.494	0.375	0.523	0.433	0.439	0.390	0.376	0.478	0.481	0.549	0.406	0.431	0.514	0.416	0.507	0.736	0.775	0.644	0.862	0.644	0.700	1.000
	Electronics	0.471	0.543	0.437	0.629	0.627	0.579	0.615	0.612	0.595	0.643	0.585	0.574	0.688	0.597	0.626	0.505	0.569	0.684	0.629	0.582	0.588	0.503	0.578	0.597	0.617	0.640	0.578	0.582	0.651	0.550	0.670	0.665	0.659	0.583	0.641	0.611	0.649	0.637	0.520	0.594	0.622	0.599	0.632	0.669	0.684	0.584	0.584	0.655	0.682	0.500	0.519	0.585	0.584	0.542	0.576	0.510	0.627	0.583	0.552	0.571	0.654	0.522	0.496	0.562	0.609	0.593	0.518	0.524	0.631	0.574	0.588	0.595	0.557	0.561	0.602	0.613	0.620	0.505	0.625	0.581	0.574	0.543	0.524	0.593	0.638	0.669	0.550	0.556	0.601	0.580	0.619	0.873	0.783	0.731	0.948	0.729	0.668	0.826	1.000
	Financials	0.439	0.463	0.452	0.504	0.638	0.502	0.548	0.596	0.620	0.574	0.533	0.499	0.614	0.477	0.536	0.580	0.555	0.553	0.591	0.442	0.577	0.559	0.491	0.477	0.512	0.571	0.525	0.589	0.546	0.412	0.590	0.589	0.662	0.536	0.554	0.526	0.545	0.548	0.487	0.555	0.556	0.611	0.541	0.694	0.640	0.509	0.533	0.667	0.599	0.489	0.492	0.642	0.604	0.654	0.573	0.632	0.585	0.577	0.594	0.544	0.659	0.541	0.555	0.670	0.618	0.581	0.418	0.505	0.543	0.610	0.528	0.525	0.532	0.583	0.544	0.500	0.536	0.584	0.577	0.558	0.521	0.567	0.449	0.525	0.649	0.615	0.587	0.580	0.546	0.575	0.522	0.649	0.742	0.862	0.669	0.867	0.802	0.609	0.660	1.000
	Healthcare	0.447	0.488	0.388	0.582	0.666	0.510	0.594	0.678	0.658	0.606	0.542	0.522	0.680	0.551	0.598	0.529	0.536	0.636	0.605	0.521	0.663	0.495	0.508	0.540	0.564	0.614	0.550	0.626	0.602	0.492	0.659	0.653	0.720	0.548	0.614	0.589	0.632	0.586	0.495	0.547	0.600	0.674	0.601	0.737	0.695	0.573	0.539	0.739	0.672	0.435	0.505	0.642	0.643	0.625	0.560	0.547	0.573	0.622	0.601	0.526	0.700	0.521	0.528	0.658	0.606	0.648	0.454	0.478	0.605	0.639	0.574	0.580	0.610	0.620	0.582	0.564	0.596	0.563	0.606	0.646	0.548	0.612	0.501	0.582	0.702	0.665	0.622	0.648	0.604	0.642	0.591	0.701	0.683	0.871	0.721	0.873	0.809	0.665	0.720	0.825	1.000
	Machinery	0.480	0.568	0.463	0.639	0.652	0.592	0.649	0.629	0.610	0.665	0.608	0.593	0.717	0.621	0.646	0.525	0.597	0.697	0.653	0.610	0.612	0.533	0.601	0.625	0.643	0.677	0.611	0.603	0.668	0.580	0.698	0.691	0.679	0.603	0.658	0.627	0.669	0.648	0.560	0.613	0.642	0.621	0.657	0.694	0.721	0.611	0.613	0.680	0.709	0.545	0.570	0.617	0.620	0.586	0.622	0.562	0.687	0.590	0.597	0.623	0.695	0.565	0.530	0.586	0.640	0.615	0.536	0.572	0.661	0.616	0.633	0.642	0.600	0.604	0.647	0.647	0.659	0.552	0.675	0.608	0.629	0.586	0.546	0.634	0.680	0.713	0.591	0.597	0.641	0.629	0.672	0.886	0.815	0.741	0.929	0.738	0.609	0.797	0.942	0.687	0.730	1.000
	Metals&Mining	0.444	0.547	0.456	0.632	0.611	0.575	0.624	0.580	0.557	0.643	0.577	0.571	0.712	0.584	0.609	0.505	0.581	0.670	0.642	0.587	0.563	0.521	0.555	0.591	0.608	0.668	0.583	0.555	0.637	0.554	0.697	0.688	0.646	0.590	0.654	0.608	0.659	0.627	0.537	0.579	0.624	0.568	0.617	0.645	0.691	0.622	0.578	0.635	0.703	0.519	0.562	0.589	0.597	0.560	0.625	0.529	0.670	0.562	0.551	0.599	0.636	0.582	0.493	0.563	0.636	0.576	0.470	0.543	0.638	0.562	0.594	0.598	0.499	0.533	0.608	0.596	0.616	0.498	0.647	0.567	0.622	0.513	0.474	0.599	0.612	0.678	0.525	0.533	0.606	0.561	0.643	0.834	0.820	0.708	0.902	0.681	0.629	0.795	0.888	0.663	0.697	0.903	1.000
	Transportation	0.478	0.543	0.461	0.628	0.616	0.564	0.614	0.586	0.574	0.643	0.593	0.557	0.715	0.580	0.611	0.522	0.589	0.667	0.642	0.562	0.562	0.533	0.558	0.586	0.607	0.658	0.601	0.565	0.630	0.528	0.678	0.672	0.648	0.583	0.640	0.590	0.640	0.619	0.551	0.611	0.622	0.574	0.623	0.666	0.706	0.587	0.599	0.649	0.702	0.523	0.546	0.604	0.557	0.555	0.607	0.541	0.656	0.554	0.547	0.592	0.641	0.567	0.489	0.572	0.628	0.575	0.515	0.534	0.614	0.577	0.590	0.582	0.542	0.540	0.595	0.602	0.599	0.505	0.632	0.534	0.589	0.525	0.499	0.583	0.627	0.667	0.524	0.532	0.594	0.556	0.609	0.834	0.828	0.721	0.878	0.719	0.665	0.823	0.873	0.697	0.723	0.889	0.874	1.000
	Industrials	0.472	0.502	0.431	0.576	0.683	0.548	0.587	0.677	0.672	0.616	0.574	0.532	0.667	0.546	0.607	0.555	0.549	0.637	0.612	0.520	0.640	0.518	0.544	0.548	0.570	0.606	0.556	0.644	0.604	0.496	0.635	0.631	0.709	0.562	0.612	0.590	0.606	0.591	0.503	0.581	0.604	0.658	0.593	0.725	0.680	0.542	0.569	0.727	0.657	0.479	0.500	0.666	0.634	0.630	0.548	0.605	0.575	0.607	0.620	0.546	0.718	0.500	0.578	0.651	0.595	0.641	0.486	0.516	0.592	0.658	0.581	0.586	0.626	0.638	0.587	0.571	0.605	0.600	0.607	0.624	0.556	0.633	0.517	0.581	0.715	0.669	0.640	0.634	0.592	0.659	0.603	0.707	0.677	0.963	0.743	0.946	0.834	0.634	0.743	0.883	0.870	0.761	0.696	0.727	1.000
	Other Industrials	0.479	0.561	0.466	0.655	0.656	0.600	0.657	0.628	0.611	0.672	0.616	0.593	0.737	0.619	0.648	0.531	0.602	0.706	0.662	0.615	0.611	0.535	0.590	0.625	0.643	0.687	0.611	0.599	0.670	0.578	0.717	0.710	0.688	0.613	0.671	0.629	0.679	0.656	0.560	0.615	0.652	0.618	0.659	0.695	0.725	0.629	0.618	0.685	0.728	0.546	0.581	0.623	0.623	0.590	0.632	0.554	0.689	0.602	0.592	0.627	0.688	0.574	0.530	0.592	0.652	0.623	0.517	0.572	0.664	0.609	0.635	0.636	0.576	0.593	0.646	0.638	0.655	0.542	0.675	0.606	0.628	0.571	0.537	0.636	0.671	0.716	0.575	0.586	0.641	0.618	0.671	0.884	0.841	0.748	0.949	0.739	0.682	0.835	0.961	0.699	0.739	0.978	0.930	0.917	0.766	1.000
	Oil&Gas	0.457	0.474	0.407	0.548	0.669	0.499	0.566	0.641	0.644	0.600	0.546	0.494	0.634	0.509	0.578	0.519	0.528	0.604	0.604	0.504	0.620	0.491	0.496	0.512	0.540	0.592	0.528	0.613	0.584	0.479	0.621	0.617	0.693	0.544	0.595	0.582	0.592	0.559	0.459	0.518	0.582	0.625	0.567	0.694	0.650	0.527	0.539	0.703	0.625	0.460	0.510	0.635	0.602	0.607	0.527	0.559	0.544	0.569	0.602	0.535	0.678	0.482	0.560	0.638	0.585	0.601	0.437	0.479	0.579	0.618	0.541	0.552	0.558	0.591	0.551	0.538	0.556	0.547	0.562	0.581	0.530	0.580	0.468	0.546	0.666	0.635	0.599	0.589	0.547	0.599	0.548	0.613	0.623	0.853	0.667	0.826	0.761	0.555	0.662	0.812	0.803	0.675	0.628	0.637	0.867	0.680	1.000
	Other Retail	0.436	0.466	0.400	0.582	0.536	0.456	0.548	0.523	0.524	0.583	0.511	0.530	0.639	0.502	0.543	0.454	0.530	0.608	0.593	0.527	0.514	0.453	0.473	0.489	0.541	0.572	0.522	0.487	0.573	0.481	0.620	0.614	0.573	0.515	0.566	0.528	0.617	0.564	0.470	0.526	0.583	0.519	0.578	0.605	0.650	0.537	0.526	0.568	0.631	0.439	0.473	0.508	0.520	0.518	0.565	0.454	0.579	0.501	0.480	0.516	0.552	0.541	0.438	0.518	0.583	0.512	0.413	0.423	0.541	0.471	0.504	0.496	0.429	0.450	0.517	0.509	0.515	0.400	0.542	0.444	0.469	0.420	0.415	0.488	0.520	0.582	0.448	0.451	0.519	0.437	0.516	0.759	0.776	0.667	0.872	0.666	0.696	0.960	0.845	0.635	0.689	0.817	0.810	0.828	0.661	0.847	0.599	1.000
	Technology	0.501	0.501	0.428	0.581	0.683	0.538	0.575	0.668	0.671	0.615	0.565	0.536	0.659	0.542	0.594	0.567	0.545	0.624	0.616	0.514	0.637	0.527	0.544	0.546	0.564	0.607	0.555	0.647	0.602	0.485	0.628	0.623	0.702	0.558	0.607	0.585	0.596	0.583	0.498	0.581	0.604	0.662	0.583	0.717	0.670	0.538	0.569	0.709	0.650	0.496	0.499	0.661	0.628	0.633	0.543	0.608	0.569	0.605	0.610	0.554	0.699	0.506	0.581	0.650	0.602	0.638	0.453	0.501	0.591	0.643	0.565	0.565	0.586	0.616	0.565	0.553	0.582	0.585	0.594	0.610	0.539	0.619	0.500	0.557	0.690	0.650	0.635	0.613	0.569	0.627	0.569	0.690	0.649	0.928	0.734	0.934	0.829	0.628	0.731	0.862	0.857	0.735	0.687	0.714	0.946	0.742	0.844	0.656	1.000
	Telecommunications	0.445	0.471	0.417	0.499	0.590	0.484	0.529	0.585	0.607	0.562	0.502	0.498	0.578	0.491	0.525	0.523	0.527	0.548	0.559	0.442	0.570	0.488	0.494	0.490	0.516	0.551	0.515	0.561	0.549	0.414	0.579	0.579	0.634	0.517	0.546	0.523	0.540	0.546	0.462	0.536	0.574	0.594	0.546	0.664	0.616	0.489	0.541	0.634	0.571	0.439	0.459	0.578	0.546	0.575	0.525	0.509	0.519	0.555	0.514	0.509	0.587	0.511	0.456	0.598	0.561	0.573	0.373	0.432	0.492	0.548	0.496	0.474	0.494	0.529	0.486	0.445	0.476	0.492	0.508	0.530	0.460	0.499	0.412	0.471	0.589	0.556	0.520	0.528	0.478	0.517	0.467	0.610	0.631	0.800	0.656	0.790	0.823	0.624	0.647	0.789	0.829	0.645	0.615	0.641	0.786	0.660	0.738	0.649	0.782	1.000
	Other	0.455	0.506	0.450	0.574	0.567	0.510	0.562	0.533	0.543	0.608	0.543	0.555	0.642	0.532	0.569	0.507	0.574	0.602	0.607	0.538	0.521	0.497	0.525	0.535	0.560	0.611	0.528	0.523	0.599	0.494	0.637	0.634	0.607	0.576	0.590	0.531	0.621	0.599	0.473	0.570	0.586	0.529	0.595	0.615	0.664	0.572	0.569	0.589	0.634	0.465	0.493	0.555	0.525	0.494	0.577	0.468	0.579	0.482	0.465	0.533	0.542	0.564	0.415	0.525	0.599	0.504	0.410	0.459	0.543	0.518	0.513	0.512	0.462	0.468	0.524	0.507	0.519	0.443	0.551	0.469	0.501	0.449	0.419	0.499	0.545	0.589	0.459	0.477	0.532	0.467	0.518	0.717	0.768	0.683	0.799	0.664	0.657	0.823	0.784	0.659	0.682	0.754	0.764	0.781	0.665	0.786	0.610	0.811	0.665	0.692	1.000
	Utility	0.147	0.169	0.108	0.280	0.291	0.184	0.245	0.364	0.329	0.279	0.216	0.183	0.292	0.240	0.284	0.210	0.199	0.302	0.284	0.264	0.380	0.172	0.165	0.230	0.237	0.227	0.217	0.287	0.264	0.243	0.325	0.307	0.373	0.201	0.306	0.342	0.302	0.266	0.201	0.156	0.274	0.351	0.284	0.371	0.322	0.291	0.204	0.362	0.292	0.194	0.227	0.234	0.341	0.299	0.260	0.227	0.214	0.313	0.321	0.238	0.328	0.257	0.281	0.293	0.252	0.360	0.249	0.213	0.297	0.263	0.238	0.303	0.304	0.313	0.297	0.292	0.329	0.249	0.285	0.345	0.217	0.287	0.207	0.292	0.340	0.332	0.324	0.352	0.327	0.358	0.339	0.397	0.373	0.540	0.471	0.506	0.614	0.436	0.431	0.465	0.566	0.415	0.433	0.388	0.491	0.429	0.484	0.428	0.476	0.537	0.423	1.000
	Other Utility	0.134	0.208	0.163	0.373	0.267	0.212	0.305	0.329	0.277	0.329	0.264	0.233	0.357	0.294	0.303	0.218	0.272	0.363	0.330	0.368	0.340	0.188	0.192	0.265	0.287	0.285	0.246	0.256	0.328	0.333	0.389	0.373	0.344	0.280	0.351	0.365	0.380	0.319	0.232	0.191	0.334	0.323	0.350	0.328	0.371	0.379	0.238	0.310	0.361	0.206	0.264	0.228	0.329	0.231	0.297	0.211	0.265	0.266	0.295	0.258	0.301	0.279	0.259	0.255	0.291	0.301	0.214	0.220	0.305	0.238	0.250	0.288	0.239	0.256	0.299	0.282	0.335	0.220	0.302	0.292	0.227	0.243	0.174	0.295	0.300	0.328	0.278	0.295	0.339	0.299	0.344	0.456	0.448	0.382	0.546	0.366	0.418	0.614	0.503	0.337	0.408	0.466	0.508	0.480	0.349	0.492	0.331	0.564	0.332	0.363	0.537	0.631	1.000

*Table 64: **Correlation for Sectoral Equity Volatility [Crisis Period]***

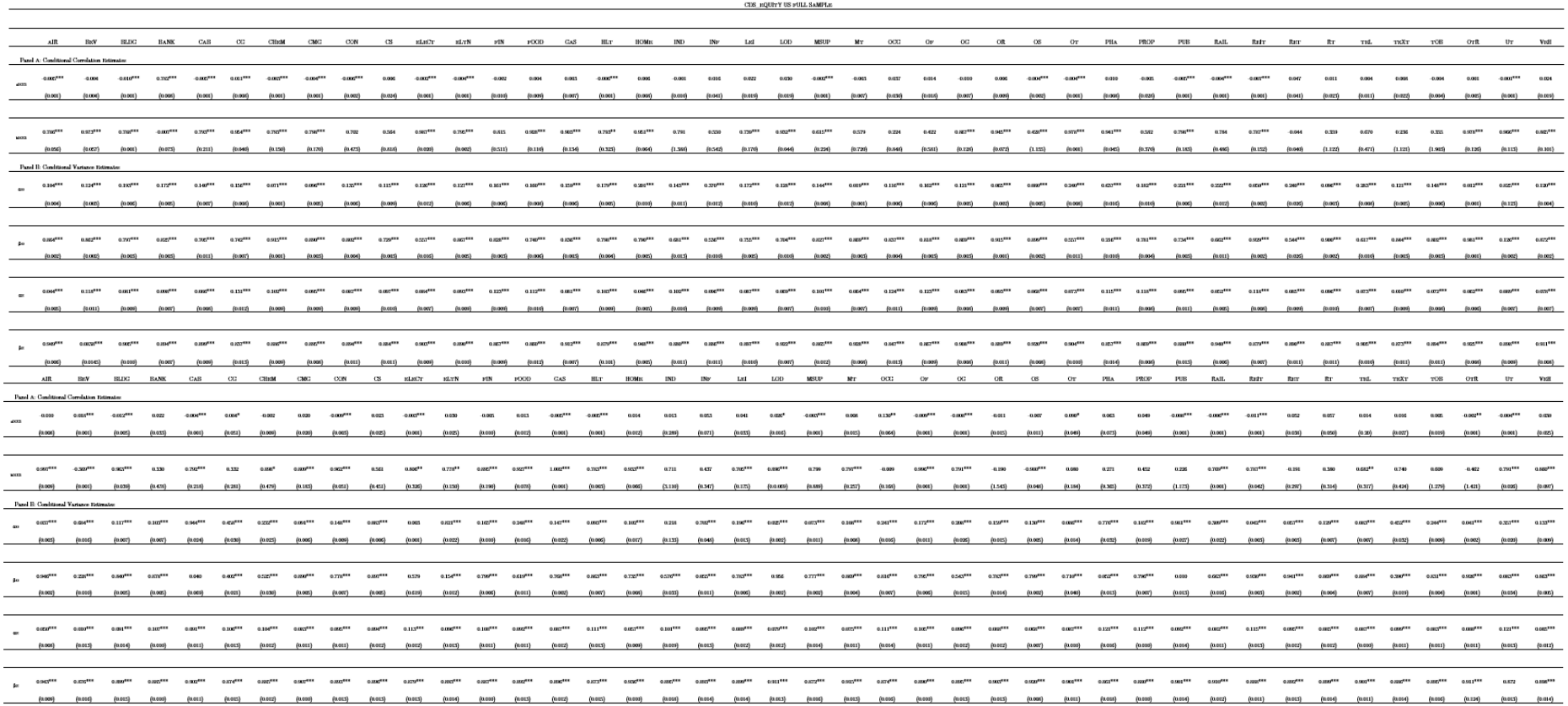
Correlation Matrix Equity Volatility		US																																																	UK																	EU																									JP																					
		Airlines	Vehicle F	Banks	Beverage	Building	Basic Ma	Chemica	Consume	Consume	Other Cc	Containe	Conglom	Electric U	Electroni	Retail St	Financial	Other Fi	Food Prc	Other Re	Healthca	Healthca	Home Bu	Lodging	Machiner	Other In	Metals&M	Other Tr	Industria	Cable Me	Healthca	Oil&Gas	Oilfield M	Other Oi	Property	Textiles\	Other Cc	Pharmac	Publishir	Railroad	Real Esta	Restaura	Technolo	Informat	Telecomr	Other Te	Tobacco	Leisure	Utility	Other U	Banks	Beverage	Basic Ma	Consume	Consume	Other Cc	Financial	Other Fi	Healthca	Industria	Life Insu	Oil&Gas	Other Re	Technolo	Telecomr	Other Te	Utility	Automot	Banks	Beverage	Building	Basic Ma	Chemica	Consume	Consume	Other Cc	Conglom	Electroni	Financial	Other Fi	Healthca	Metals&!	Industria	Leisure	Cable M	Oil&Gas	Other Oi	Technolo	Telecomr	Other Te	Utility	Other U	Automotiv	Banks	Basic Ma	Chemica	Consume	Consume	Other Cc	Electroni	Financial	Healthca	Machiner	Metals&!	Transpor	Industria	Other In	Oil&Gas	Other Rc	Technolo	Telecomr	Other	Utility	Other Utility
	Airlines	1.000
	Vehicle Parts	0.368	1.000
	Banks	0.289	0.647	1.000
	Beverages/Bottling	0.240	0.477	0.517	1.000
	Building Products	0.220	0.403	0.486	0.343	1.000
	Basic Materials	0.348	0.649	0.562	0.534	0.416	1.000
	Chemicals	0.371	0.679	0.670	0.510	0.553	0.668	1.000
	Consumer Goods	0.183	0.447	0.460	0.497	0.707	0.441	0.457	1.000
	Consumer Services	0.225	0.419	0.465	0.439	0.701	0.439	0.497	0.828	1.000
	Other Consumer Services	0.418	0.691	0.662	0.600	0.444	0.701	0.703	0.493	0.604	1.000
	Containers	0.376	0.585	0.580	0.482	0.416	0.634	0.658	0.386	0.422	0.618	1.000
	Conglomerate/Diversified Mfg	0.328	0.609	0.626	0.586	0.441	0.664	0.675	0.522	0.543	0.733	0.588	1.000
	Electric Utility	0.017	0.193	0.275	0.503	0.207	0.329	0.275	0.306	0.259	0.343	0.276	0.338	1.000
	Electronics	0.413	0.756	0.686	0.549	0.476	0.744	0.785	0.500	0.526	0.701	0.696	0.773	0.262	1.000
	Retail Stores Food and Drug	0.210	0.460	0.500	0.480	0.324	0.573	0.444	0.397	0.425	0.653	0.431	0.529	0.366	0.553	1.000
	Financials	0.184	0.444	0.561	0.389	0.756	0.431	0.501	0.821	0.822	0.495	0.446	0.504	0.196	0.505	0.344	1.000
	Other Financials	0.383	0.746	0.857	0.571	0.490	0.697	0.754	0.500	0.532	0.821	0.665	0.726	0.265	0.839	0.571	0.575	1.000
	Food Processors	0.228	0.602	0.616	0.704	0.437	0.622	0.617	0.547	0.513	0.722	0.570	0.654	0.496	0.672	0.621	0.493	0.690	1.000
	Other Retail	0.317	0.568	0.585	0.537	0.393	0.594	0.592	0.441	0.557	0.914	0.516	0.628	0.332	0.665	0.598	0.431	0.698	0.665	1.000
	Healthcare Facilities	0.320	0.555	0.609	0.587	0.435	0.642	0.632	0.460	0.507	0.759	0.590	0.666	0.404	0.705	0.623	0.466	0.708	0.692	0.681	1.000
	Healthcare	0.172	0.341	0.434	0.383	0.658	0.395	0.447	0.765	0.801	0.490	0.375	0.477	0.298	0.470	0.389	0.749	0.472	0.467	0.437	0.530	1.000
	Home Builders	0.284	0.438	0.374	0.374	0.229	0.588	0.389	0.317	0.271	0.462	0.463	0.463	0.227	0.454	0.319	0.317	0.459	0.403	0.420	0.377	0.231	1.000
	Lodging	0.416	0.574	0.565	0.494	0.420	0.607	0.631	0.435	0.430	0.665	0.645	0.610	0.239	0.670	0.478	0.417	0.643	0.592	0.529	0.623	0.415	0.412	1.000
	Machinery	0.400	0.693	0.673	0.545	0.482	0.701	0.760	0.482	0.508	0.705	0.676	0.772	0.275	0.876	0.487	0.500	0.781	0.625	0.577	0.625	0.450	0.413	0.622	1.000
US	Other Industrials	0.414	0.745	0.718	0.597	0.506	0.753	0.794	0.535	0.581	0.842	0.687	0.886	0.319	0.920	0.580	0.549	0.860	0.706	0.711	0.734	0.494	0.460	0.687	0.892	1.000
	Metals&Mining	0.217	0.501	0.582	0.358	0.460	0.450	0.646	0.406	0.370	0.452	0.472	0.485	0.256	0.582	0.381	0.437	0.550	0.507	0.406	0.487	0.384	0.255	0.456	0.584	0.575	1.000
	Other Transportation	0.408	0.649	0.670	0.512	0.456	0.621	0.719	0.439	0.452	0.686	0.599	0.690	0.225	0.777	0.513	0.460	0.725	0.568	0.593	0.616	0.383	0.393	0.639	0.735	0.837	0.584	1.000
	Industrials	0.253	0.434	0.482	0.384	0.812	0.464	0.494	0.819	0.842	0.511	0.427	0.550	0.228	0.540	0.376	0.864	0.531	0.457	0.441	0.473	0.748	0.295	0.429	0.548	0.596	0.406	0.471	1.000
	Cable Meida	0.315	0.659	0.617	0.538	0.422	0.645	0.674	0.449	0.522	0.847	0.589	0.670	0.303	0.723	0.547	0.453	0.761	0.634	0.679	0.673	0.447	0.398	0.621	0.669	0.762	0.460	0.608	0.467	1.000
	Healthcare Supplies	0.306	0.515	0.586	0.505	0.415	0.632	0.582	0.444	0.440	0.675	0.550	0.603	0.379	0.658	0.599	0.427	0.651	0.631	0.615	0.817	0.487	0.367	0.590	0.591	0.639	0.463	0.511	0.433	0.619	1.000
	Oil&Gas	0.246	0.523	0.557	0.457	0.475	0.504	0.688	0.432	0.439	0.563	0.539	0.530	0.335	0.601	0.418	0.429	0.552	0.563	0.508	0.545	0.420	0.246	0.537	0.600	0.601	0.628	0.607	0.423	0.577	0.494	1.000
	Oilfield Machinery and Products	0.249	0.527	0.570	0.452	0.490	0.507	0.705	0.441	0.448	0.562	0.546	0.519	0.323	0.595	0.415	0.445	0.558	0.563	0.505	0.540	0.428	0.261	0.548	0.596	0.592	0.628	0.600	0.427	0.576	0.499	0.980	1.000
	Other Oil&Gas	0.166	0.319	0.441	0.318	0.732	0.328	0.460	0.565	0.563	0.389	0.417	0.370	0.237	0.407	0.299	0.586	0.402	0.412	0.362	0.422	0.545	0.164	0.405	0.409	0.411	0.455	0.401	0.597	0.392	0.411	0.641	0.654	1.000
	Property&Casualty	0.319	0.564	0.679	0.582	0.418	0.505	0.603	0.464	0.446	0.694	0.580	0.629	0.302	0.672	0.486	0.488	0.732	0.635	0.611	0.616	0.377	0.467	0.534	0.640	0.717	0.431	0.625	0.462	0.625	0.567	0.444	0.453	0.331	1.000
	Textiles\Apparel\Shoes	0.297	0.617	0.638	0.761	0.429	0.652	0.636	0.588	0.557	0.802	0.563	0.738	0.469	0.728	0.615	0.525	0.738	0.793	0.729	0.699	0.498	0.487	0.605	0.664	0.773	0.456	0.646	0.497	0.692	0.659	0.537	0.529	0.360	0.703	1.000
	Other Consumer Goods	0.296	0.629	0.655	0.604	0.439	0.508	0.652	0.499	0.504	0.780	0.586	0.650	0.319	0.694	0.578	0.498	0.744	0.713	0.716	0.690	0.446	0.404	0.601	0.625	0.716	0.484	0.639	0.444	0.704	0.658	0.549	0.544	0.406	0.619	0.830	1.000
	Pharmaceuticals	0.260	0.547	0.589	0.590	0.413	0.591	0.585	0.525	0.529	0.724	0.488	0.671	0.432	0.651	0.668	0.468	0.677	0.677	0.655	0.797	0.574	0.374	0.549	0.569	0.688	0.460	0.555	0.461	0.627	0.749	0.523	0.514	0.390	0.563	0.736	0.666	1.000
	Publishing	0.265	0.576	0.633	0.412	0.410	0.542	0.605	0.364	0.435	0.678	0.562	0.593	0.177	0.668	0.475	0.456	0.695	0.526	0.574	0.612	0.389	0.325	0.551	0.627	0.687	0.502	0.581	0.432	0.661	0.558	0.508	0.507	0.375	0.562	0.567	0.617	0.529	1.000
	Railroad	0.392	0.564	0.596	0.460	0.434	0.556	0.647	0.407	0.400	0.569	0.523	0.586	0.218	0.668	0.445	0.416	0.612	0.496	0.494	0.531	0.365	0.340	0.574	0.661	0.702	0.555	0.888	0.422	0.489	0.450	0.592	0.593	0.420	0.527	0.551	0.548	0.490	0.486	1.000
	Real Estate	0.136	0.364	0.403	0.519	0.248	0.496	0.384	0.396	0.333	0.484	0.451	0.486	0.612	0.419	0.437	0.347	0.441	0.572	0.452	0.487	0.337	0.479	0.408	0.378	0.476	0.345	0.377	0.308	0.418	0.478	0.365	0.367	0.278	0.477	0.586	0.471	0.512	0.346	0.341	1.000
	Restaurants	0.356	0.526	0.568	0.561	0.396	0.602	0.595	0.466	0.527	0.772	0.538	0.644	0.359	0.638	0.564	0.467	0.669	0.644	0.689	0.695	0.489	0.412	0.607	0.582	0.688	0.425	0.590	0.476	0.625	0.630	0.513	0.504	0.381	0.608	0.698	0.690	0.653	0.553	0.536	0.464	1.000
	Technology	0.209	0.401	0.479	0.376	0.712	0.413	0.495	0.753	0.820	0.502	0.395	0.491	0.221	0.483	0.387	0.786	0.497	0.465	0.439	0.453	0.740	0.270	0.416	0.466	0.524	0.404	0.441	0.797	0.475	0.434	0.449	0.455	0.591	0.421	0.480	0.447	0.461	0.393	0.414	0.287	0.502	1.000
	Information/Data Technology	0.346	0.658	0.689	0.543	0.463	0.654	0.708	0.491	0.552	0.819	0.611	0.713	0.324	0.783	0.559	0.491	0.774	0.685	0.736	0.713	0.485	0.399	0.635	0.694	0.796	0.516	0.679	0.504	0.730	0.656	0.591	0.586	0.450	0.631	0.721	0.689	0.675	0.616	0.586	0.432	0.718	0.571	1.000
	Telecommunications	0.099	0.312	0.274	0.277	0.511	0.356	0.323	0.648	0.551	0.307	0.270	0.340	0.199	0.335	0.283	0.532	0.307	0.353	0.288	0.269	0.499	0.219	0.309	0.332	0.342	0.272	0.275	0.551	0.267	0.320	0.353	0.349	0.456	0.278	0.378	0.297	0.314	0.234	0.260	0.277	0.350	0.518	0.326	1.000
	Other Telecommunications	0.198	0.484	0.435	0.553	0.315	0.508	0.488	0.450	0.397	0.551	0.382	0.518	0.411	0.521	0.440	0.345	0.497	0.560	0.511	0.469	0.364	0.341	0.426	0.508	0.549	0.378	0.474	0.339	0.510	0.477	0.455	0.454	0.308	0.463	0.640	0.492	0.482	0.397	0.432	0.455	0.541	0.373	0.517	0.494	1.000
	Tobacco	0.111	0.332	0.362	0.509	0.256	0.405	0.313	0.414	0.365	0.463	0.250	0.469	0.416	0.406	0.422	0.315	0.399	0.526	0.429	0.401	0.341	0.258	0.364	0.382	0.462	0.245	0.403	0.322	0.384	0.371	0.316	0.305	0.214	0.447	0.685	0.412	0.429	0.279	0.374	0.434	0.444	0.329	0.456	0.299	0.506	1.000
	Leisure	0.589	0.683	0.653	0.535	0.433	0.677	0.712	0.433	0.528	0.879	0.648	0.692	0.281	0.771	0.561	0.468	0.797	0.642	0.729	0.706	0.449	0.420	0.747	0.697	0.798	0.454	0.692	0.482	0.739	0.635	0.554	0.554	0.405	0.640	0.695	0.709	0.647	0.642	0.612	0.407	0.798	0.485	0.783	0.300	0.479	0.384	1.000
	Utility	0.008	0.129	0.218	0.294	0.318	0.210	0.187	0.516	0.358	0.222	0.210	0.234	0.503	0.177	0.245	0.347	0.191	0.330	0.234	0.289	0.423	0.160	0.188	0.207	0.215	0.273	0.147	0.338	0.172	0.254	0.284	0.273	0.346	0.146	0.312	0.222	0.298	0.095	0.170	0.362	0.274	0.343	0.242	0.424	0.308	0.273	0.196	1.000
	Other Utility	0.015	0.207	0.287	0.518	0.223	0.345	0.292	0.325	0.268	0.358	0.296	0.352	0.991	0.282	0.382	0.212	0.282	0.520	0.346	0.422	0.308	0.238	0.256	0.290	0.334	0.267	0.239	0.237	0.319	0.401	0.354	0.345	0.256	0.326	0.487	0.337	0.446	0.188	0.231	0.634	0.372	0.230	0.341	0.217	0.423	0.429	0.293	0.507	1.000
	Banks	0.300	0.544	0.647	0.393	0.388	0.419	0.519	0.346	0.348	0.492	0.491	0.465	0.201	0.529	0.324	0.416	0.632	0.472	0.402	0.454	0.307	0.319	0.503	0.501	0.531	0.457	0.476	0.382	0.468	0.473	0.436	0.459	0.374	0.493	0.456	0.487	0.398	0.508	0.423	0.363	0.455	0.383	0.496	0.222	0.328	0.218	0.552	0.157	0.205	1.000
	Beverages/Bottling	0.137	0.210	0.230	0.301	0.147	0.240	0.205	0.257	0.239	0.307	0.131	0.344	0.194	0.254	0.278	0.177	0.237	0.281	0.270	0.250	0.226	0.286	0.212	0.215	0.307	0.091	0.262	0.237	0.229	0.197	0.181	0.167	0.109	0.266	0.382	0.274	0.306	0.145	0.205	0.292	0.313	0.197	0.267	0.175	0.219	0.273	0.260	0.175	0.189	0.172	1.000
	Basic Materials	0.090	0.256	0.433	0.236	0.548	0.261	0.370	0.379	0.358	0.283	0.328	0.285	0.165	0.290	0.281	0.451	0.348	0.330	0.276	0.361	0.409	0.225	0.329	0.290	0.308	0.481	0.323	0.402	0.266	0.384	0.389	0.419	0.517	0.287	0.281	0.346	0.362	0.334	0.325	0.308	0.283	0.374	0.299	0.257	0.191	0.127	0.256	0.220	0.175	0.402	0.080	1.000
	Consumer Goods	0.154	0.285	0.315	0.270	0.386	0.278	0.322	0.540	0.450	0.330	0.273	0.404	0.174	0.346	0.220	0.502	0.322	0.347	0.271	0.342	0.449	0.280	0.309	0.308	0.374	0.305	0.334	0.463	0.280	0.303	0.325	0.330	0.379	0.326	0.377	0.309	0.358	0.280	0.312	0.328	0.343	0.429	0.318	0.310	0.221	0.243	0.301	0.297	0.183	0.306	0.382	0.336	1.000
	Consumer Services	0.203	0.366	0.426	0.268	0.495	0.306	0.367	0.502	0.515	0.360	0.384	0.388	0.099	0.418	0.256	0.604	0.449	0.354	0.276	0.383	0.493	0.237	0.361	0.396	0.419	0.334	0.346	0.545	0.328	0.368	0.316	0.331	0.419	0.406	0.358	0.359	0.359	0.374	0.317	0.234	0.392	0.534	0.376	0.270	0.176	0.203	0.397	0.166	0.113	0.470	0.156	0.352	0.607	1.000
	Other Consumer Services	0.361	0.521	0.566	0.383	0.308	0.395	0.498	0.363	0.382	0.517	0.481	0.496	0.158	0.553	0.351	0.418	0.628	0.443	0.406	0.514	0.358	0.278	0.510	0.505	0.549	0.398	0.446	0.421	0.465	0.491	0.402	0.418	0.353	0.514	0.471	0.485	0.441	0.477	0.400	0.280	0.500	0.417	0.533	0.194	0.269	0.243	0.596	0.129	0.165	0.727	0.277	0.289	0.375	0.610	1.000
	Financials	0.203	0.419	0.522	0.337	0.551	0.359	0.417	0.552	0.548	0.393	0.419	0.401	0.162	0.441	0.255	0.689	0.499	0.427	0.324	0.387	0.490	0.285	0.412	0.421	0.443	0.391	0.383	0.590	0.360	0.381	0.342	0.363	0.455	0.425	0.392	0.392	0.344	0.411	0.346	0.281	0.387	0.550	0.391	0.323	0.236	0.224	0.424	0.188	0.171	0.587	0.121	0.433	0.558	0.853	0.589	1.000
	Other Financials	0.347	0.571	0.638	0.414	0.417	0.454	0.563	0.398	0.431	0.594	0.505	0.560	0.182	0.620	0.370	0.464	0.697	0.515	0.481	0.526	0.383	0.348	0.539	0.548	0.622	0.418	0.494	0.453	0.543	0.516	0.438	0.450	0.356	0.559	0.538	0.529	0.477	0.541	0.417	0.337	0.521	0.440	0.579	0.206	0.316	0.285	0.629	0.115	0.186	0.776	0.296	0.290	0.388	0.594	0.887	0.619	1.000
UK	Healthcare	0.074	0.264	0.386	0.283	0.398	0.301	0.317	0.467	0.483	0.352	0.251	0.329	0.217	0.340	0.280	0.486	0.371	0.350	0.361	0.397	0.522	0.198	0.287	0.308	0.357	0.291	0.309	0.444	0.311	0.362	0.334	0.353	0.396	0.240	0.364	0.331	0.426	0.281	0.312	0.273	0.319	0.453	0.378	0.306	0.258	0.226	0.290	0.279	0.219	0.303	0.190	0.394	0.532	0.495	0.293	0.444	0.316	1.000
	Industrials	0.173	0.376	0.481	0.322	0.553	0.351	0.406	0.559	0.536	0.367	0.416	0.397	0.144	0.436	0.270	0.656	0.471	0.384	0.281	0.413	0.519	0.267	0.391	0.424	0.439	0.353	0.361	0.600	0.356	0.397	0.345	0.362	0.463	0.416	0.384	0.382	0.370	0.387	0.338	0.253	0.384	0.552	0.377	0.297	0.213	0.206	0.398	0.204	0.155	0.468	0.160	0.445	0.622	0.861	0.541	0.845	0.576	0.514	1.000
	Life Insurance	0.325	0.543	0.656	0.386	0.413	0.409	0.519	0.390	0.395	0.504	0.496	0.485	0.150	0.570	0.354	0.475	0.685	0.499	0.393	0.508	0.398	0.300	0.521	0.538	0.552	0.435	0.448	0.435	0.466	0.526	0.386	0.416	0.357	0.529	0.485	0.506	0.456	0.537	0.404	0.321	0.466	0.421	0.519	0.184	0.276	0.221	0.583	0.118	0.164	0.813	0.191	0.342	0.321	0.590	0.824	0.634	0.846	0.312	0.562	1.000
	Oil&Gas	0.077	0.285	0.429	0.286	0.525	0.256	0.412	0.446	0.443	0.341	0.377	0.353	0.268	0.328	0.269	0.505	0.339	0.356	0.348	0.421	0.452	0.145	0.327	0.326	0.345	0.477	0.347	0.437	0.325	0.418	0.543	0.547	0.682	0.268	0.336	0.389	0.380	0.362	0.357	0.321	0.349	0.436	0.343	0.346	0.257	0.157	0.318	0.328	0.286	0.414	0.100	0.627	0.479	0.407	0.309	0.472	0.317	0.473	0.480	0.318	1.000
	Other Retail	0.302	0.474	0.497	0.303	0.352	0.339	0.451	0.284	0.287	0.423	0.403	0.412	0.122	0.495	0.309	0.348	0.541	0.371	0.320	0.434	0.288	0.203	0.438	0.475	0.468	0.389	0.383	0.345	0.396	0.451	0.363	0.382	0.291	0.433	0.377	0.410	0.345	0.433	0.344	0.186	0.401	0.325	0.434	0.143	0.233	0.183	0.501	0.091	0.129	0.658	0.206	0.231	0.328	0.541	0.889	0.517	0.788	0.227	0.473	0.759	0.269	1.000
	Technology	0.190	0.186	0.193	0.175	0.304	0.311	0.228	0.275	0.353	0.226	0.247	0.241	0.062	0.279	0.139	0.340	0.235	0.218	0.170	0.228	0.303	0.145	0.240	0.264	0.265	0.184	0.224	0.342	0.211	0.235	0.145	0.154	0.205	0.218	0.196	0.173	0.174	0.193	0.206	0.094	0.278	0.374	0.244	0.176	0.140	0.105	0.269	0.054	0.055	0.241	0.104	0.175	0.311	0.473	0.306	0.450	0.309	0.301	0.452	0.285	0.188	0.260	1.000
	Telecommunications	0.193	0.343	0.367	0.247	0.418	0.327	0.331	0.434	0.405	0.295	0.297	0.364	0.089	0.370	0.244	0.492	0.386	0.291	0.226	0.340	0.384	0.252	0.336	0.353	0.371	0.294	0.325	0.457	0.315	0.361	0.298	0.306	0.365	0.275	0.313	0.367	0.321	0.314	0.287	0.224	0.332	0.417	0.346	0.342	0.242	0.141	0.331	0.137	0.104	0.356	0.212	0.297	0.437	0.589	0.424	0.588	0.420	0.403	0.575	0.426	0.369	0.394	0.311	1.000
	Other Telecommunications	0.285	0.411	0.478	0.293	0.329	0.387	0.428	0.314	0.315	0.405	0.395	0.435	0.130	0.444	0.313	0.348	0.505	0.365	0.340	0.403	0.263	0.283	0.414	0.429	0.452	0.287	0.372	0.344	0.382	0.427	0.355	0.366	0.324	0.352	0.413	0.431	0.383	0.402	0.357	0.258	0.397	0.290	0.412	0.213	0.340	0.157	0.450	0.117	0.136	0.521	0.289	0.256	0.276	0.376	0.587	0.409	0.580	0.250	0.385	0.574	0.275	0.518	0.207	0.543	1.000
	Utility	0.095	0.245	0.351	0.229	0.332	0.242	0.278	0.434	0.365	0.295	0.251	0.297	0.207	0.302	0.215	0.441	0.318	0.318	0.275	0.315	0.395	0.185	0.241	0.274	0.292	0.289	0.230	0.346	0.252	0.370	0.304	0.304	0.356	0.299	0.334	0.279	0.326	0.227	0.251	0.336	0.313	0.386	0.310	0.332	0.218	0.204	0.270	0.350	0.229	0.323	0.177	0.358	0.560	0.547	0.357	0.533	0.362	0.483	0.539	0.371	0.497	0.329	0.252	0.382	0.240	1.000
	Automotive Manufacturer	0.244	0.354	0.426	0.305	0.388	0.294	0.421	0.360	0.335	0.369	0.375	0.355	0.129	0.421	0.238	0.407	0.470	0.334	0.272	0.363	0.328	0.214	0.445	0.369	0.399	0.311	0.355	0.389	0.337	0.365	0.312	0.345	0.335	0.417	0.377	0.363	0.347	0.353	0.328	0.249	0.333	0.324	0.334	0.195	0.173	0.225	0.437	0.137	0.139	0.541	0.124	0.335	0.338	0.461	0.564	0.494	0.585	0.272	0.464	0.607	0.335	0.512	0.256	0.315	0.407	0.278	1.000
	Banks	0.285	0.424	0.541	0.296	0.378	0.322	0.436	0.321	0.310	0.376	0.443	0.372	0.077	0.474	0.222	0.435	0.542	0.331	0.259	0.352	0.272	0.259	0.441	0.453	0.443	0.378	0.392	0.382	0.376	0.382	0.327	0.353	0.323	0.440	0.360	0.400	0.274	0.435	0.339	0.217	0.337	0.349	0.380	0.182	0.175	0.166	0.466	0.081	0.083	0.716	0.076	0.318	0.277	0.550	0.674	0.629	0.714	0.226	0.539	0.742	0.335	0.644	0.256	0.373	0.440	0.317	0.728	1.000
	Beverages/Bottling	0.146	0.381	0.408	0.395	0.296	0.296	0.350	0.397	0.304	0.346	0.359	0.409	0.222	0.401	0.279	0.347	0.407	0.385	0.260	0.333	0.312	0.300	0.408	0.356	0.400	0.276	0.344	0.345	0.324	0.338	0.312	0.319	0.265	0.418	0.427	0.355	0.344	0.337	0.287	0.342	0.349	0.316	0.345	0.287	0.290	0.260	0.369	0.239	0.227	0.453	0.506	0.216	0.472	0.416	0.515	0.423	0.517	0.250	0.425	0.486	0.280	0.461	0.185	0.308	0.342	0.315	0.562	0.574	1.000
	Building Products	0.165	0.290	0.425	0.271	0.574	0.250	0.352	0.481	0.448	0.308	0.358	0.326	0.100	0.361	0.203	0.553	0.402	0.317	0.237	0.331	0.421	0.213	0.355	0.349	0.366	0.358	0.324	0.543	0.308	0.340	0.281	0.306	0.448	0.382	0.322	0.340	0.302	0.337	0.291	0.210	0.282	0.470	0.320	0.260	0.148	0.172	0.313	0.194	0.108	0.439	0.061	0.653	0.457	0.635	0.452	0.686	0.476	0.376	0.683	0.493	0.461	0.405	0.337	0.433	0.300	0.418	0.566	0.578	0.399	1.000
	Basic Materials	0.233	0.327	0.404	0.269	0.295	0.239	0.372	0.284	0.249	0.294	0.340	0.316	0.047	0.397	0.156	0.347	0.440	0.262	0.172	0.300	0.242	0.187	0.378	0.390	0.366	0.280	0.304	0.317	0.310	0.319	0.242	0.259	0.243	0.409	0.303	0.322	0.237	0.335	0.264	0.154	0.302	0.315	0.337	0.137	0.141	0.195	0.394	0.096	0.060	0.477	0.049	0.172	0.256	0.433	0.534	0.437	0.540	0.194	0.441	0.562	0.201	0.501	0.187	0.289	0.316	0.224	0.705	0.749	0.525	0.486	1.000
	Chemicals	0.201	0.304	0.409	0.323	0.322	0.288	0.395	0.326	0.324	0.303	0.367	0.402	0.127	0.408	0.228	0.358	0.459	0.333	0.305	0.370	0.296	0.246	0.389	0.372	0.418	0.276	0.351	0.366	0.357	0.346	0.282	0.301	0.269	0.445	0.399	0.369	0.319	0.367	0.307	0.218	0.323	0.333	0.396	0.154	0.172	0.271	0.413	0.137	0.138	0.456	0.126	0.220	0.322	0.456	0.564	0.450	0.590	0.260	0.443	0.547	0.256	0.521	0.212	0.314	0.361	0.263	0.740	0.718	0.590	0.579	0.769	1.000
	Consumer Goods	0.126	0.305	0.371	0.287	0.459	0.261	0.308	0.512	0.415	0.286	0.358	0.324	0.099	0.358	0.166	0.527	0.361	0.324	0.204	0.303	0.404	0.221	0.366	0.311	0.333	0.284	0.282	0.473	0.275	0.321	0.257	0.283	0.376	0.392	0.338	0.329	0.278	0.312	0.254	0.230	0.283	0.437	0.291	0.300	0.172	0.173	0.301	0.239	0.116	0.423	0.141	0.368	0.640	0.693	0.496	0.705	0.506	0.348	0.698	0.506	0.385	0.455	0.356	0.477	0.306	0.489	0.607	0.574	0.564	0.804	0.520	0.583	1.000
	Consumer Services	0.174	0.316	0.408	0.239	0.468	0.241	0.306	0.452	0.407	0.266	0.361	0.312	0.050	0.362	0.164	0.540	0.389	0.301	0.178	0.288	0.378	0.178	0.334	0.342	0.339	0.305	0.279	0.481	0.266	0.309	0.229	0.255	0.365	0.398	0.296	0.325	0.249	0.308	0.258	0.180	0.266	0.444	0.290	0.237	0.126	0.140	0.310	0.158	0.064	0.488	0.081	0.349	0.487	0.823	0.569	0.795	0.570	0.333	0.768	0.589	0.341	0.530	0.408	0.516	0.352	0.477	0.578	0.658	0.491	0.802	0.561	0.574	0.879	1.000
	Other Consumer Services	0.249	0.400	0.498	0.332	0.391	0.305	0.418	0.362	0.336	0.370	0.425	0.401	0.121	0.461	0.233	0.428	0.511	0.371	0.266	0.390	0.312	0.225	0.425	0.435	0.435	0.360	0.366	0.399	0.351	0.399	0.311	0.339	0.307	0.473	0.395	0.405	0.317	0.389	0.332	0.237	0.356	0.374	0.400	0.190	0.205	0.216	0.438	0.127	0.132	0.632	0.145	0.290	0.364	0.618	0.749	0.624	0.728	0.260	0.580	0.717	0.291	0.701	0.296	0.412	0.469	0.354	0.741	0.861	0.684	0.600	0.764	0.797	0.661	0.743	1.000
	Conglomerate/Diversified Mfg	0.170	0.388	0.467	0.386	0.369	0.311	0.419	0.421	0.340	0.387	0.395	0.424	0.188	0.448	0.248	0.420	0.481	0.409	0.290	0.380	0.341	0.284	0.440	0.400	0.432	0.337	0.369	0.387	0.347	0.382	0.326	0.355	0.307	0.477	0.452	0.403	0.356	0.383	0.331	0.306	0.370	0.356	0.401	0.244	0.263	0.285	0.417	0.202	0.201	0.557	0.273	0.291	0.465	0.516	0.638	0.540	0.644	0.278	0.515	0.628	0.311	0.582	0.247	0.374	0.423	0.347	0.781	0.752	0.831	0.569	0.731	0.823	0.710	0.643	0.879	1.000
	Electronics	0.223	0.357	0.435	0.293	0.358	0.302	0.408	0.314	0.313	0.353	0.424	0.368	0.062	0.421	0.216	0.387	0.463	0.310	0.232	0.343	0.301	0.236	0.442	0.411	0.400	0.293	0.320	0.370	0.363	0.362	0.275	0.306	0.272	0.402	0.340	0.358	0.285	0.384	0.261	0.193	0.316	0.334	0.353	0.155	0.169	0.151	0.409	0.080	0.072	0.567	0.131	0.268	0.317	0.530	0.634	0.563	0.653	0.246	0.550	0.652	0.237	0.598	0.275	0.343	0.391	0.279	0.726	0.826	0.623	0.574	0.803	0.773	0.618	0.664	0.864	0.805	1.000
	Financials	0.194	0.322	0.429	0.235	0.478	0.247	0.319	0.440	0.426	0.274	0.367	0.293	0.045	0.357	0.144	0.581	0.405	0.294	0.182	0.270	0.362	0.191	0.341	0.341	0.339	0.299	0.282	0.503	0.278	0.290	0.225	0.249	0.363	0.366	0.284	0.318	0.218	0.324	0.247	0.166	0.251	0.439	0.273	0.225	0.111	0.134	0.333	0.107	0.054	0.501	0.031	0.354	0.414	0.762	0.535	0.859	0.568	0.298	0.750	0.596	0.355	0.499	0.308	0.500	0.361	0.418	0.566	0.713	0.424	0.799	0.550	0.542	0.809	0.914	0.696	0.587	0.657	1.000
EU	Other Financials	0.243	0.305	0.494	0.311	0.393	0.313	0.429	0.364	0.353	0.403	0.410	0.406	0.110	0.469	0.244	0.436	0.519	0.361	0.288	0.372	0.318	0.251	0.421	0.431	0.451	0.339	0.368	0.412	0.385	0.381	0.298	0.324	0.288	0.471	0.391	0.392	0.307	0.406	0.313	0.239	0.354	0.389	0.409	0.191	0.198	0.222	0.455	0.105	0.115	0.619	0.141	0.268	0.346	0.597	0.703	0.628	0.755	0.247	0.584	0.715	0.267	0.658	0.300	0.406	0.450	0.331	0.746	0.885	0.640	0.616	0.768	0.810	0.647	0.725	0.935	0.846	0.861	0.717	1.000
	Healthcare	0.140	0.294	0.402	0.312	0.429	0.317	0.300	0.512	0.465	0.315	0.338	0.355	0.135	0.373	0.236	0.541	0.368	0.364	0.262	0.374	0.496	0.227	0.346	0.333	0.359	0.313	0.308	0.485	0.317	0.308	0.300	0.319	0.392	0.350	0.374	0.372	0.374	0.276	0.300	0.275	0.310	0.476	0.356	0.300	0.235	0.211	0.303	0.229	0.152	0.415	0.165	0.382	0.552	0.655	0.436	0.642	0.456	0.591	0.654	0.471	0.411	0.386	0.362	0.524	0.335	0.482	0.485	0.487	0.441	0.692	0.422	0.499	0.780	0.759	0.558	0.563	0.525	0.696	0.548	1.000
	Metals&Mining	0.219	0.346	0.497	0.304	0.433	0.289	0.432	0.362	0.364	0.380	0.390	0.376	0.226	0.436	0.283	0.447	0.487	0.376	0.317	0.382	0.350	0.228	0.389	0.420	0.447	0.480	0.430	0.413	0.372	0.382	0.412	0.433	0.419	0.373	0.373	0.391	0.342	0.414	0.365	0.328	0.352	0.399	0.406	0.199	0.204	0.220	0.408	0.201	0.234	0.545	0.134	0.495	0.352	0.468	0.530	0.514	0.573	0.306	0.500	0.562	0.468	0.470	0.203	0.327	0.366	0.314	0.605	0.694	0.497	0.573	0.564	0.618	0.459	0.493	0.666	0.635	0.627	0.512	0.686	0.429	1.000
	Industrials	0.164	0.285	0.397	0.226	0.475	0.224	0.304	0.431	0.404	0.256	0.349	0.285	0.020	0.340	0.149	0.531	0.366	0.251	0.158	0.273	0.363	0.171	0.345	0.328	0.325	0.267	0.265	0.492	0.279	0.285	0.204	0.231	0.346	0.363	0.263	0.297	0.214	0.301	0.228	0.147	0.231	0.433	0.262	0.217	0.091	0.130	0.305	0.115	0.032	0.451	0.039	0.356	0.427	0.731	0.513	0.755	0.543	0.287	0.772	0.554	0.327	0.479	0.379	0.468	0.315	0.389	0.577	0.661	0.443	0.843	0.597	0.590	0.853	0.928	0.691	0.608	0.690	0.922	0.720	0.735	0.498	1.000
	Leisure	0.185	0.233	0.336	0.271	0.229	0.219	0.258	0.243	0.285	0.303	0.297	0.320	0.173	0.319	0.162	0.303	0.335	0.238	0.221	0.310	0.241	0.197	0.319	0.330	0.321	0.189	0.222	0.302	0.279	0.309	0.207	0.207	0.180	0.340	0.281	0.276	0.260	0.310	0.192	0.170	0.317	0.279	0.296	0.087	0.121	0.140	0.341	0.158	0.170	0.381	0.140	0.142	0.268	0.396	0.464	0.409	0.495	0.189	0.418	0.444	0.234	0.424	0.297	0.294	0.301	0.196	0.529	0.588	0.490	0.415	0.573	0.585	0.480	0.510	0.662	0.624	0.625	0.490	0.681	0.405	0.451	0.515	1.000
	Cable Meida	0.235	0.376	0.470	0.322	0.364	0.287	0.396	0.338	0.321	0.341	0.417	0.377	0.090	0.435	0.217	0.406	0.480	0.344	0.237	0.379	0.298	0.180	0.424	0.408	0.407	0.328	0.338	0.374	0.339	0.377	0.294	0.316	0.291	0.440	0.358	0.388	0.293	0.373	0.320	0.218	0.333	0.348	0.378	0.171	0.185	0.202	0.417	0.097	0.104	0.604	0.095	0.287	0.313	0.589	0.717	0.606	0.680	0.250	0.551	0.675	0.283	0.643	0.292	0.397	0.463	0.327	0.703	0.815	0.616	0.581	0.728	0.750	0.618	0.712	0.943	0.805	0.814	0.666	0.881	0.543	0.620	0.673	0.634	1.000
	Oil&Gas	0.161	0.316	0.478	0.292	0.589	0.240	0.419	0.493	0.466	0.334	0.417	0.359	0.189	0.382	0.207	0.577	0.403	0.352	0.290	0.405	0.461	0.127	0.377	0.380	0.384	0.448	0.369	0.519	0.317	0.402	0.471	0.483	0.647	0.348	0.332	0.401	0.338	0.396	0.359	0.241	0.323	0.472	0.345	0.316	0.185	0.137	0.358	0.287	0.205	0.488	0.061	0.566	0.475	0.610	0.467	0.675	0.476	0.403	0.638	0.495	0.802	0.441	0.262	0.458	0.352	0.517	0.512	0.573	0.418	0.751	0.436	0.480	0.682	0.706	0.565	0.523	0.504	0.720	0.554	0.615	0.579	0.701	0.396	0.548	1.000
	Other Oil&Gas	0.256	0.407	0.568	0.384	0.479	0.309	0.520	0.428	0.402	0.440	0.455	0.445	0.245	0.481	0.295	0.484	0.516	0.439	0.381	0.482	0.411	0.202	0.479	0.481	0.483	0.515	0.469	0.435	0.420	0.477	0.587	0.602	0.539	0.439	0.441	0.488	0.413	0.481	0.460	0.302	0.420	0.439	0.441	0.275	0.272	0.214	0.472	0.249	0.263	0.600	0.149	0.467	0.393	0.492	0.574	0.533	0.601	0.363	0.509	0.600	0.615	0.537	0.189	0.388	0.424	0.410	0.616	0.720	0.567	0.554	0.585	0.622	0.517	0.542	0.706	0.680	0.654	0.542	0.691	0.482	0.747	0.525	0.475	0.664	0.742	1.000
	Technology	0.129	0.259	0.359	0.222	0.436	0.255	0.287	0.420	0.442	0.270	0.339	0.310	0.020	0.346	0.166	0.515	0.347	0.257	0.190	0.281	0.390	0.189	0.320	0.322	0.331	0.247	0.252	0.478	0.265	0.277	0.183	0.205	0.311	0.359	0.265	0.282	0.212	0.288	0.217	0.116	0.285	0.489	0.284	0.267	0.128	0.159	0.299	0.139	0.028	0.415	0.079	0.302	0.457	0.709	0.506	0.696	0.517	0.339	0.696	0.498	0.304	0.455	0.530	0.448	0.291	0.395	0.515	0.572	0.418	0.740	0.522	0.550	0.804	0.854	0.638	0.572	0.608	0.812	0.649	0.727	0.426	0.863	0.520	0.625	0.591	0.449	1.000
	Telecommunications	0.141	0.321	0.424	0.231	0.482	0.257	0.323	0.476	0.430	0.281	0.358	0.322	0.070	0.367	0.182	0.557	0.400	0.296	0.192	0.309	0.401	0.162	0.355	0.355	0.354	0.342	0.288	0.502	0.292	0.320	0.270	0.291	0.415	0.365	0.297	0.342	0.276	0.327	0.264	0.188	0.272	0.453	0.310	0.290	0.158	0.143	0.313	0.204	0.086	0.450	0.078	0.362	0.467	0.738	0.519	0.754	0.535	0.361	0.711	0.542	0.396	0.487	0.345	0.634	0.399	0.484	0.524	0.618	0.444	0.765	0.520	0.556	0.821	0.893	0.672	0.598	0.603	0.864	0.671	0.746	0.489	0.861	0.466	0.655	0.714	0.552	0.783	1.000
	Other Telecommunications	0.213	0.423	0.527	0.333	0.407	0.329	0.441	0.385	0.364	0.397	0.432	0.425	0.157	0.481	0.274	0.441	0.530	0.395	0.290	0.405	0.336	0.221	0.456	0.456	0.466	0.377	0.384	0.405	0.376	0.419	0.361	0.386	0.370	0.455	0.416	0.432	0.357	0.429	0.353	0.255	0.379	0.382	0.419	0.226	0.252	0.233	0.452	0.167	0.172	0.601	0.133	0.315	0.358	0.580	0.683	0.601	0.695	0.288	0.562	0.688	0.340	0.647	0.247	0.482	0.559	0.372	0.694	0.821	0.626	0.575	0.724	0.769	0.626	0.686	0.893	0.820	0.791	0.657	0.868	0.556	0.661	0.653	0.608	0.860	0.576	0.714	0.594	0.733	1.000
	Utility	0.127	0.252	0.349	0.222	0.412	0.186	0.260	0.416	0.317	0.196	0.274	0.241	0.069	0.280	0.130	0.461	0.304	0.260	0.128	0.242	0.309	0.127	0.262	0.264	0.257	0.271	0.222	0.391	0.194	0.275	0.210	0.223	0.347	0.310	0.247	0.281	0.213	0.260	0.210	0.165	0.186	0.375	0.219	0.246	0.106	0.139	0.231	0.196	0.088	0.406	0.052	0.341	0.454	0.624	0.450	0.681	0.465	0.264	0.617	0.478	0.376	0.436	0.264	0.430	0.282	0.535	0.491	0.576	0.442	0.754	0.492	0.520	0.822	0.836	0.626	0.578	0.581	0.825	0.622	0.687	0.452	0.831	0.446	0.602	0.728	0.537	0.725	0.825	0.616	1.000
	Other Utility	0.185	0.348	0.437	0.327	0.312	0.234	0.372	0.320	0.243	0.285	0.333	0.319	0.151	0.372	0.214	0.345	0.427	0.340	0.194	0.313	0.244	0.196	0.352	0.354	0.346	0.320	0.307	0.298	0.270	0.341	0.288	0.312	0.282	0.397	0.343	0.338	0.287	0.345	0.282	0.231	0.285	0.309	0.330	0.186	0.201	0.212	0.347	0.148	0.164	0.560	0.129	0.263	0.328	0.467	0.588	0.499	0.613	0.199	0.455	0.614	0.281	0.566	0.158	0.335	0.383	0.357	0.661	0.786	0.668	0.537	0.724	0.738	0.598	0.613	0.836	0.821	0.778	0.591	0.813	0.485	0.638	0.596	0.585	0.779	0.536	0.727	0.513	0.591	0.825	0.672	1.000
	Automotive Manufacturer	0.157	0.418	0.491	0.365	0.318	0.407	0.368	0.336	0.331	0.410	0.379	0.345	0.153	0.423	0.331	0.308	0.523	0.427	0.338	0.399	0.328	0.286	0.424	0.388	0.420	0.368	0.367	0.336	0.405	0.410	0.325	0.346	0.281	0.367	0.428	0.417	0.381	0.431	0.333	0.279	0.400	0.299	0.349	0.239	0.335	0.218	0.411	0.143	0.157	0.554	0.166	0.382	0.232	0.364	0.425	0.486	0.499	0.271	0.388	0.554	0.310	0.394	0.208	0.325	0.418	0.278	0.370	0.472	0.303	0.311	0.269	0.247	0.287	0.308	0.372	0.355	0.377	0.389	0.392	0.331	0.367	0.308	0.236	0.326	0.308	0.366	0.294	0.315	0.399	0.248	0.312	1.000
	Banks	0.145	0.363	0.438	0.344	0.221	0.340	0.285	0.286	0.241	0.335	0.336	0.273	0.133	0.348	0.302	0.317	0.450	0.356	0.281	0.318	0.222	0.258	0.353	0.300	0.331	0.302	0.329	0.241	0.326	0.346	0.284	0.306	0.235	0.311	0.375	0.355	0.318	0.330	0.300	0.296	0.320	0.251	0.299	0.206	0.291	0.225	0.345	0.140	0.142	0.530	0.128	0.329	0.215	0.302	0.356	0.427	0.427	0.239	0.340	0.487	0.278	0.303	0.152	0.284	0.353	0.275	0.352	0.419	0.283	0.262	0.258	0.222	0.266	0.269	0.316	0.328	0.305	0.333	0.340	0.292	0.343	0.262	0.195	0.284	0.258	0.312	0.243	0.251	0.324	0.204	0.274	0.807	1.000
	Basic Materials	0.105	0.334	0.401	0.246	0.424	0.349	0.302	0.471	0.425	0.292	0.325	0.312	0.070	0.337	0.209	0.533	0.401	0.312	0.261	0.325	0.412	0.251	0.350	0.330	0.345	0.357	0.303	0.457	0.299	0.376	0.305	0.322	0.370	0.297	0.323	0.329	0.302	0.344	0.287	0.218	0.323	0.396	0.297	0.348	0.243	0.141	0.317	0.165	0.074	0.416	0.092	0.431	0.299	0.440	0.336	0.567	0.401	0.325	0.518	0.422	0.385	0.292	0.263	0.404	0.333	0.332	0.331	0.382	0.270	0.388	0.228	0.227	0.370	0.302	0.353	0.322	0.336	0.449	0.353	0.403	0.337	0.378	0.208	0.324	0.381	0.328	0.331	0.415	0.376	0.309	0.261	0.567	0.524	1.000
	Chemicals	0.170	0.420	0.495	0.372	0.310	0.428	0.380	0.335	0.324	0.415	0.397	0.377	0.168	0.426	0.340	0.393	0.517	0.424	0.352	0.404	0.308	0.307	0.435	0.387	0.430	0.382	0.372	0.341	0.401	0.421	0.334	0.351	0.284	0.372	0.446	0.446	0.403	0.435	0.328	0.297	0.427	0.303	0.369	0.226	0.345	0.206	0.433	0.145	0.169	0.544	0.142	0.391	0.220	0.338	0.420	0.452	0.490	0.296	0.382	0.535	0.343	0.355	0.239	0.325	0.393	0.242	0.378	0.440	0.279	0.291	0.246	0.252	0.257	0.280	0.354	0.332	0.356	0.346	0.374	0.311	0.390	0.274	0.271	0.322	0.278	0.358	0.283	0.290	0.376	0.178	0.259	0.880	0.789	0.597	1.000
	Consumer Goods	0.111	0.340	0.375	0.267	0.415	0.354	0.295	0.493	0.464	0.314	0.320	0.332	0.083	0.345	0.221	0.548	0.400	0.335	0.264	0.323	0.431	0.251	0.364	0.336	0.363	0.329	0.309	0.473	0.313	0.346	0.291	0.306	0.351	0.284	0.348	0.323	0.317	0.348	0.286	0.237	0.311	0.308	0.295	0.363	0.260	0.176	0.319	0.159	0.083	0.398	0.160	0.402	0.344	0.445	0.323	0.581	0.394	0.318	0.513	0.403	0.359	0.285	0.260	0.436	0.368	0.338	0.308	0.367	0.275	0.383	0.209	0.214	0.381	0.389	0.332	0.318	0.332	0.462	0.335	0.398	0.327	0.376	0.191	0.288	0.371	0.313	0.336	0.418	0.373	0.318	0.249	0.601	0.521	0.925	0.589	1.000
	Consumer Services	0.133	0.311	0.358	0.244	0.411	0.332	0.294	0.472	0.459	0.320	0.335	0.337	0.100	0.340	0.215	0.534	0.382	0.330	0.273	0.314	0.440	0.218	0.357	0.324	0.359	0.334	0.299	0.451	0.315	0.333	0.292	0.306	0.359	0.291	0.335	0.306	0.300	0.327	0.264	0.249	0.306	0.403	0.292	0.336	0.226	0.170	0.328	0.178	0.102	0.380	0.200	0.391	0.363	0.466	0.336	0.583	0.416	0.320	0.514	0.406	0.366	0.295	0.282	0.429	0.350	0.331	0.304	0.372	0.275	0.395	0.231	0.247	0.402	0.421	0.349	0.329	0.336	0.482	0.373	0.414	0.344	0.407	0.236	0.309	0.388	0.322	0.357	0.446	0.394	0.346	0.269	0.530	0.477	0.844	0.519	0.902	1.000
	Other Consumer Services	0.203	0.411	0.492	0.375	0.311	0.417	0.402	0.356	0.369	0.459	0.409	0.396	0.178	0.438	0.342	0.414	0.532	0.426	0.387	0.422	0.341	0.306	0.440	0.380	0.448	0.354	0.385	0.362	0.447	0.417	0.345	0.360	0.283	0.414	0.467	0.453	0.411	0.454	0.321	0.337	0.435	0.323	0.400	0.244	0.334	0.233	0.457	0.159	0.177	0.551	0.205	0.357	0.294	0.388	0.464	0.474	0.565	0.315	0.404	0.557	0.330	0.410	0.218	0.365	0.429	0.279	0.394	0.476	0.324	0.325	0.300	0.332	0.318	0.321	0.409	0.395	0.401	0.376	0.448	0.364	0.395	0.313	0.316	0.365	0.305	0.387	0.304	0.335	0.432	0.250	0.336	0.809	0.759	0.549	0.851	0.576	0.591	1.000
	Electronics	0.190	0.452	0.510	0.378	0.351	0.440	0.412	0.374	0.381	0.464	0.416	0.414	0.183	0.468	0.358	0.422	0.562	0.471	0.391	0.448	0.372	0.314	0.467	0.423	0.472	0.392	0.409	0.399	0.470	0.448	0.364	0.375	0.313	0.416	0.462	0.450	0.434	0.451	0.362	0.300	0.441	0.359	0.431	0.252	0.356	0.231	0.476	0.145	0.181	0.562	0.189	0.383	0.251	0.380	0.462	0.480	0.553	0.323	0.404	0.565	0.326	0.413	0.238	0.319	0.401	0.262	0.392	0.460	0.318	0.323	0.273	0.284	0.288	0.308	0.385	0.364	0.378	0.372	0.414	0.342	0.391	0.300	0.279	0.340	0.300	0.364	0.290	0.320	0.400	0.212	0.292	0.887	0.766	0.584	0.899	0.600	0.545	0.847	1.000
	Financials	0.126	0.301	0.317	0.222	0.314	0.286	0.214	0.414	0.365	0.266	0.262	0.269	0.072	0.280	0.168	0.455	0.347	0.281	0.229	0.256	0.323	0.221	0.298	0.274	0.292	0.260	0.251	0.372	0.275	0.289	0.210	0.231	0.256	0.259	0.286	0.271	0.252	0.243	0.235	0.192	0.258	0.307	0.228	0.294	0.188	0.160	0.270	0.142	0.076	0.351	0.147	0.319	0.311	0.388	0.286	0.533	0.351	0.242	0.455	0.363	0.270	0.244	0.231	0.379	0.302	0.330	0.265	0.330	0.230	0.326	0.188	0.173	0.356	0.346	0.287	0.287	0.272	0.425	0.298	0.355	0.287	0.338	0.182	0.247	0.290	0.234	0.301	0.366	0.318	0.304	0.225	0.567	0.558	0.834	0.514	0.873	0.836	0.526	0.540	1.000
	Healthcare	0.090	0.295	0.375	0.238	0.430	0.315	0.301	0.482	0.462	0.307	0.292	0.363	0.131	0.354	0.232	0.536	0.384	0.338	0.269	0.325	0.474	0.215	0.324	0.347	0.369	0.343	0.301	0.479	0.286	0.359	0.277	0.291	0.338	0.299	0.347	0.314	0.326	0.346	0.271	0.227	0.310	0.397	0.287	0.333	0.231	0.190	0.298	0.180	0.128	0.387	0.216	0.413	0.364	0.494	0.347	0.592	0.419	0.348	0.526	0.421	0.363	0.318	0.315	0.413	0.325	0.328	0.328	0.375	0.315	0.430	0.244	0.258	0.420	0.446	0.382	0.358	0.356	0.494	0.389	0.438	0.350	0.420	0.257	0.334	0.407	0.333	0.383	0.461	0.413	0.372	0.294	0.516	0.441	0.821	0.503	0.869	0.883	0.546	0.524	0.766	1.000
JP	Machinery	0.164	0.442	0.509	0.379	0.336	0.420	0.424	0.359	0.379	0.461	0.420	0.413	0.153	0.458	0.346	0.415	0.551	0.437	0.385	0.435	0.356	0.302	0.452	0.419	0.468	0.351	0.396	0.379	0.457	0.418	0.347	0.364	0.288	0.393	0.451	0.454	0.423	0.445	0.331	0.257	0.408	0.339	0.405	0.228	0.330	0.199	0.449	0.127	0.154	0.542	0.190	0.371	0.265	0.355	0.438	0.469	0.532	0.319	0.403	0.534	0.328	0.397	0.235	0.314	0.384	0.235	0.420	0.457	0.300	0.328	0.284	0.304	0.301	0.303	0.377	0.370	0.396	0.372	0.412	0.339	0.388	0.312	0.290	0.342	0.294	0.361	0.307	0.317	0.395	0.217	0.287	0.867	0.751	0.568	0.908	0.582	0.533	0.846	0.923	0.514	0.518	1.000
	Metals&Mining	0.126	0.430	0.506	0.329	0.344	0.417	0.390	0.363	0.339	0.382	0.418	0.379	0.129	0.432	0.314	0.426	0.526	0.413	0.321	0.380	0.334	0.323	0.447	0.412	0.429	0.433	0.372	0.361	0.405	0.412	0.374	0.396	0.349	0.367	0.408	0.423	0.372	0.413	0.340	0.299	0.393	0.330	0.386	0.237	0.302	0.202	0.387	0.096	0.137	0.543	0.148	0.402	0.281	0.384	0.430	0.484	0.513	0.319	0.407	0.547	0.340	0.373	0.235	0.380	0.396	0.321	0.406	0.455	0.314	0.328	0.302	0.287	0.318	0.328	0.390	0.381	0.383	0.373	0.404	0.375	0.424	0.310	0.260	0.355	0.316	0.388	0.305	0.361	0.430	0.239	0.322	0.803	0.726	0.589	0.807	0.566	0.512	0.721	0.812	0.532	0.481	0.797	1.000
	Transportation	0.207	0.397	0.493	0.337	0.311	0.405	0.379	0.330	0.322	0.413	0.416	0.356	0.122	0.421	0.316	0.385	0.524	0.403	0.342	0.366	0.281	0.319	0.433	0.369	0.410	0.324	0.361	0.332	0.420	0.402	0.332	0.353	0.271	0.390	0.423	0.427	0.365	0.443	0.316	0.209	0.389	0.302	0.369	0.227	0.306	0.187	0.425	0.097	0.125	0.572	0.127	0.344	0.241	0.331	0.402	0.448	0.504	0.274	0.369	0.536	0.312	0.349	0.224	0.308	0.389	0.239	0.394	0.467	0.295	0.303	0.292	0.283	0.293	0.298	0.371	0.358	0.377	0.363	0.400	0.330	0.356	0.299	0.296	0.335	0.292	0.379	0.290	0.302	0.394	0.232	0.313	0.823	0.774	0.559	0.852	0.553	0.519	0.869	0.841	0.509	0.501	0.846	0.765	1.000
	Industrials	0.103	0.335	0.396	0.253	0.431	0.340	0.305	0.488	0.469	0.308	0.324	0.334	0.074	0.339	0.216	0.558	0.408	0.331	0.261	0.333	0.447	0.242	0.353	0.331	0.358	0.333	0.306	0.483	0.321	0.358	0.300	0.318	0.371	0.305	0.331	0.318	0.324	0.347	0.282	0.208	0.308	0.418	0.305	0.355	0.246	0.160	0.322	0.167	0.074	0.408	0.133	0.406	0.332	0.456	0.347	0.586	0.417	0.341	0.534	0.426	0.366	0.308	0.278	0.407	0.357	0.332	0.339	0.380	0.269	0.399	0.240	0.242	0.388	0.408	0.358	0.330	0.358	0.470	0.364	0.417	0.328	0.397	0.220	0.316	0.382	0.324	0.354	0.427	0.384	0.326	0.263	0.573	0.492	0.948	0.576	0.957	0.886	0.571	0.605	0.847	0.855	0.589	0.500	0.565	1.000
	Other Industrials	0.189	0.456	0.525	0.387	0.342	0.449	0.421	0.370	0.383	0.469	0.425	0.421	0.167	0.468	0.353	0.432	0.568	0.459	0.392	0.441	0.358	0.333	0.464	0.431	0.479	0.367	0.403	0.396	0.463	0.434	0.354	0.372	0.294	0.422	0.469	0.463	0.426	0.460	0.344	0.295	0.431	0.342	0.416	0.244	0.354	0.221	0.470	0.131	0.166	0.566	0.190	0.375	0.265	0.380	0.455	0.485	0.553	0.318	0.416	0.559	0.324	0.408	0.241	0.334	0.408	0.247	0.413	0.475	0.314	0.327	0.289	0.307	0.302	0.316	0.392	0.377	0.401	0.383	0.425	0.352	0.395	0.317	0.299	0.346	0.296	0.375	0.308	0.327	0.412	0.221	0.305	0.902	0.777	0.590	0.933	0.605	0.552	0.886	0.965	0.537	0.530	0.970	0.835	0.886	0.612	1.000
	Oil&Gas	0.066	0.276	0.346	0.171	0.405	0.211	0.247	0.379	0.358	0.211	0.263	0.225	0.079	0.240	0.126	0.450	0.306	0.215	0.201	0.225	0.361	0.123	0.266	0.290	0.250	0.351	0.244	0.372	0.225	0.268	0.323	0.348	0.479	0.193	0.208	0.219	0.206	0.272	0.285	0.146	0.216	0.358	0.240	0.299	0.174	0.073	0.234	0.220	0.090	0.404	0.051	0.434	0.245	0.364	0.286	0.456	0.305	0.333	0.403	0.365	0.483	0.271	0.170	0.369	0.305	0.315	0.269	0.334	0.192	0.341	0.186	0.172	0.298	0.328	0.280	0.235	0.250	0.362	0.266	0.360	0.351	0.304	0.193	0.262	0.438	0.370	0.265	0.385	0.342	0.280	0.233	0.434	0.373	0.713	0.420	0.694	0.662	0.408	0.412	0.632	0.646	0.391	0.446	0.379	0.695	0.407	1.000
	Other Retail	0.181	0.393	0.455	0.375	0.313	0.422	0.380	0.377	0.376	0.441	0.394	0.392	0.172	0.425	0.331	0.417	0.517	0.418	0.362	0.395	0.343	0.314	0.413	0.376	0.439	0.345	0.365	0.380	0.455	0.394	0.318	0.331	0.282	0.408	0.464	0.436	0.396	0.438	0.304	0.343	0.418	0.330	0.382	0.262	0.336	0.246	0.428	0.175	0.173	0.518	0.229	0.362	0.314	0.388	0.449	0.464	0.549	0.308	0.402	0.535	0.309	0.401	0.223	0.369	0.408	0.293	0.392	0.453	0.339	0.341	0.293	0.337	0.332	0.323	0.408	0.403	0.392	0.367	0.440	0.372	0.387	0.314	0.286	0.364	0.283	0.351	0.314	0.342	0.427	0.251	0.329	0.780	0.722	0.545	0.820	0.573	0.576	0.962	0.825	0.509	0.548	0.819	0.708	0.820	0.561	0.854	0.398	1.000
	Technology	0.105	0.320	0.356	0.222	0.380	0.321	0.265	0.453	0.431	0.295	0.292	0.309	0.057	0.315	0.200	0.519	0.377	0.293	0.244	0.282	0.404	0.227	0.325	0.296	0.333	0.283	0.265	0.439	0.298	0.309	0.230	0.248	0.293	0.298	0.308	0.278	0.284	0.340	0.230	0.196	0.284	0.380	0.292	0.341	0.228	0.142	0.311	0.128	0.058	0.372	0.122	0.356	0.299	0.450	0.323	0.557	0.401	0.323	0.513	0.406	0.310	0.290	0.317	0.407	0.325	0.313	0.305	0.367	0.253	0.375	0.237	0.227	0.377	0.405	0.337	0.312	0.337	0.470	0.357	0.398	0.299	0.392	0.221	0.297	0.342	0.271	0.368	0.422	0.374	0.321	0.249	0.552	0.473	0.900	0.559	0.916	0.877	0.558	0.572	0.825	0.850	0.556	0.527	0.546	0.936	0.583	0.653	0.548	1.000
	Telecommunications	0.121	0.279	0.308	0.195	0.388	0.318	0.271	0.424	0.412	0.276	0.293	0.311	0.085	0.326	0.219	0.483	0.347	0.288	0.231	0.294	0.382	0.235	0.316	0.315	0.333	0.295	0.275	0.434	0.272	0.295	0.220	0.232	0.298	0.228	0.269	0.270	0.250	0.297	0.244	0.239	0.262	0.356	0.240	0.251	0.166	0.114	0.283	0.133	0.079	0.343	0.231	0.373	0.368	0.426	0.306	0.533	0.369	0.309	0.464	0.369	0.314	0.279	0.270	0.388	0.298	0.282	0.309	0.322	0.300	0.350	0.188	0.200	0.349	0.362	0.307	0.294	0.301	0.415	0.310	0.341	0.333	0.347	0.162	0.277	0.334	0.286	0.306	0.399	0.344	0.284	0.206	0.447	0.380	0.746	0.470	0.785	0.770	0.475	0.494	0.673	0.769	0.491	0.476	0.445	0.763	0.502	0.574	0.482	0.732	1.000
	Other	0.181	0.374	0.438	0.334	0.326	0.396	0.375	0.346	0.363	0.412	0.403	0.399	0.140	0.408	0.306	0.406	0.498	0.401	0.341	0.390	0.364	0.317	0.443	0.385	0.431	0.326	0.359	0.356	0.411	0.380	0.284	0.299	0.252	0.353	0.409	0.410	0.356	0.402	0.304	0.313	0.389	0.321	0.351	0.201	0.249	0.179	0.420	0.132	0.132	0.513	0.258	0.360	0.305	0.380	0.423	0.467	0.502	0.324	0.387	0.532	0.278	0.387	0.250	0.363	0.388	0.283	0.368	0.430	0.351	0.315	0.252	0.276	0.300	0.312	0.365	0.357	0.375	0.352	0.386	0.337	0.378	0.295	0.226	0.339	0.272	0.332	0.302	0.334	0.406	0.228	0.289	0.729	0.627	0.542	0.733	0.571	0.555	0.770	0.749	0.504	0.576	0.740	0.670	0.709	0.556	0.763	0.426	0.761	0.546	0.611	1.000
	Utility	0.077	0.337	0.323	0.284	0.356	0.347	0.264	0.435	0.380	0.311	0.299	0.317	0.081	0.342	0.185	0.448	0.389	0.326	0.241	0.324	0.350	0.280	0.324	0.318	0.351	0.294	0.263	0.397	0.347	0.311	0.243	0.251	0.290	0.308	0.356	0.313	0.305	0.278	0.237	0.231	0.285	0.307	0.267	0.277	0.251	0.197	0.293	0.132	0.085	0.336	0.202	0.336	0.302	0.371	0.314	0.472	0.365	0.276	0.427	0.357	0.277	0.245	0.207	0.362	0.312	0.320	0.247	0.296	0.236	0.333	0.205	0.215	0.305	0.319	0.292	0.277	0.285	0.366	0.286	0.335	0.255	0.310	0.113	0.273	0.278	0.229	0.258	0.339	0.308	0.240	0.187	0.532	0.484	0.736	0.511	0.773	0.755	0.535	0.537	0.752	0.677	0.510	0.537	0.469	0.746	0.533	0.558	0.542	0.713	0.612	0.509	1.000
	Other Utility	0.147	0.383	0.375	0.349	0.253	0.383	0.344	0.297	0.289	0.379	0.347	0.332	0.126	0.382	0.234	0.315	0.454	0.352	0.288	0.343	0.250	0.293	0.381	0.339	0.391	0.271	0.317	0.286	0.399	0.340	0.285	0.291	0.224	0.328	0.420	0.401	0.328	0.325	0.275	0.267	0.352	0.243	0.303	0.181	0.276	0.213	0.377	0.086	0.132	0.448	0.220	0.288	0.214	0.284	0.371	0.360	0.451	0.218	0.307	0.431	0.228	0.302	0.148	0.260	0.364	0.240	0.301	0.368	0.259	0.232	0.246	0.228	0.230	0.227	0.305	0.296	0.322	0.278	0.318	0.262	0.309	0.235	0.182	0.281	0.198	0.277	0.190	0.236	0.325	0.161	0.235	0.724	0.682	0.493	0.723	0.527	0.506	0.756	0.731	0.538	0.430	0.713	0.681	0.683	0.503	0.746	0.369	0.732	0.471	0.379	0.613	0.662	1.000

Table 65: Correlation for Sectoral Equity Volatility [After-Crisis Period]

Appendix B

B.1 Symmetric DCC-GARCH Model

B.1.1 CDS Spreads and Equity Sectoral Returns



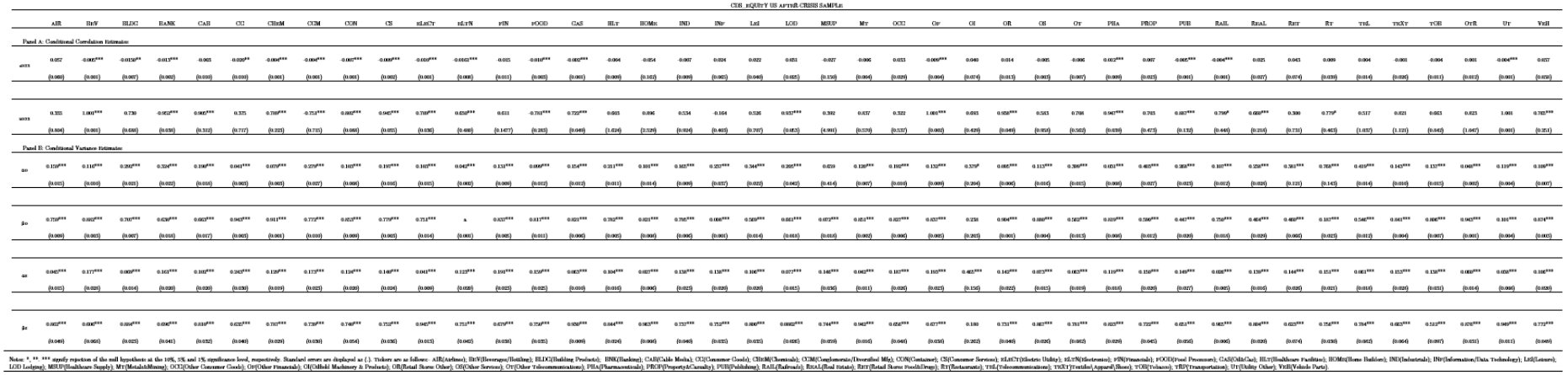


Table 66: Estimates of DCC-GARCH (1,1) Model for Sectoral US CDS Spreads and Equity Returns

CDS_EQUITY UK FULL SAMPLE

	BEV	BANK	CG	CS	FIN	LF	OF	OS	OT	OR	TEL
Panel A: Conditional Correlation Estimates											
a_{DCC1}	-0.007***	0.029	0.006	0.006	0.004	-0.003***	-0.015***	-0.001	-0.007	-0.008	-0.002
	(0.001)	(0.021)	(0.008)	(0.013)	(0.002)	(0.001)	(0.001)	(0.004)	(0.005)	(0.010)	(0.002)
b_{DCC2}	0.778***	-0.071	0.909***	0.906***	0.997***	0.999***	0.785***	0.931***	0.979	0.657	0.761
	(0.188)	(0.511)	(0.157)	(0.167)	(0.004)	(0.003)	(0.001)	(0.189)	(0.019)	(0.529)	(1.116)
Panel B: Conditional Variance Estimates											
α_O	0.172***	0.169***	0.092***	0.150***	0.072***	0.291***	0.077***	0.090***	0.161***	0.167***	0.315***
	(0.006)	(0.007)	(0.004)	(0.027)	(0.002)	(0.015)	(0.004)	(0.002)	(0.008)	(0.009)	(0.023)
β_O	0.792***	0.827***	0.889***	0.600***	0.928***	0.536***	0.922***	0.908***	0.798***	0.790***	0.662***
	(0.005)	(0.007)	(0.003)	(0.065)	(0.002)	(0.012)	(0.001)	(0.001)	(0.009)	(0.008)	(0.014)
α_S	0.088***	0.096***	0.131***	0.101***	0.113***	0.118***	0.117***	0.101***	0.089***	0.101***	0.090***
	(0.010)	(0.006)	(0.012)	(0.009)	(0.008)	(0.009)	(0.009)	(0.009)	(0.010)	(0.009)	(0.010)
β_S	0.899***	0.900***	0.837***	0.880***	0.882***	0.873***	0.869***	0.880***	0.879***	0.878***	0.878***
	(0.010)	(0.007)	(0.013)	(0.010)	(0.009)	(0.010)	(0.010)	(0.010)	(0.013)	(0.012)	(0.013)

CDS_EQUITY UK CRISIS SAMPLE

	BEV	BANK	CG	CS	FIN	LF	OF	OS	OT	OR	TEL
Panel A: Conditional Correlation Estimates											
a_{DCC1}	-0.012***	0.047	0.040	0.004	-0.005***	-0.007***	-0.019***	-0.006***	-0.023	-0.016***	-0.017***
	(0.003)	(0.030)	(0.025)	(0.009)	(0.001)	(0.001)	(0.001)	(0.001)	(0.019)	(0.001)	(0.006)

$\mathbf{b}_{DCC2}$	0.972***	0.072	0.730***	0.922***	1.000***	0.785***	0.737***	0.790***	0.449	0.777***	0.468
	(0.027)	(0.356)	(0.150)	(0.137)	(0.001)	(0.600)	(0.196)	(0.208)	(0.543)	(0.001)	(0.505)
Panel B: Conditional Variance Estimates											
$\boldsymbol{\alpha}_O$	0.213***	0.208***	0.099***	0.124***	0.050***	0.454***	0.070***	0.050***	0.139***	0.110***	0.135***
	(0.009)	(0.011)	(0.006)	(0.009)	(0.002)	(0.026)	(0.005)	(0.002)	(0.010)	(0.008)	(0.010)
$\boldsymbol{\beta}_O$	0.736***	0.771***	0.899***	0.811***	0.949***	0.416***	0.918***	0.946***	0.814***	0.878***	0.816***
	(0.010)	(0.012)	(0.004)	(0.010)	(0.002)	(0.024)	(0.005)	(0.002)	(0.013)	(0.008)	(0.013)
$\boldsymbol{\alpha}_S$	0.098***	0.086***	0.106***	0.085***	0.089***	0.106***	0.088***	0.083***	0.062***	0.106***	0.059***
	(0.017)	(0.008)	(0.013)	(0.012)	(0.010)	(0.013)	(0.010)	(0.011)	(0.009)	(0.015)	(0.009)
$\boldsymbol{\beta}_S$	0.873***	0.907***	0.873***	0.907***	0.904***	0.888***	0.902***	0.909***	0.929***	0.885***	0.933***
	(0.020)	(0.009)	(0.015)	(0.012)	(0.011)	(0.014)	(0.011)	(0.011)	(0.011)	(0.017)	(0.100)

CDS_EQUITY UK AFTER-CRISIS SAMPLE

	BEV	BANK	CG	CS	FIN	LF	OF	OS	OT	OR	TEL
Panel A: Conditional Correlation Estimates											
$\mathbf{a}_{DCC1}$	-0.007***	-0.014	-0.002	0.004	0.024	0.025	-0.003***	0.090	-0.023***	0.023	0.025
	(0.001)	(0.019)	(0.003)	(0.025)	(0.024)	(0.067)	(0.001)	(0.001)	(0.009)	(0.018)	(0.035)
$\mathbf{b}_{DCC2}$	0.788***	0.683***	0.893**	0.828*	0.529	-0.062	0.352	-0.037***	0.417***	0.898***	0.783**
	(0.088)	(0.579)	(0.355)	(0.423)	(0.440)	(0.715)	(1.925)	(0.001)	(0.122)	(0.069)	(0.374)
Panel B: Conditional Variance Estimates											
	0.372***	0.078***	0.359***	0.194***	0.240***	0.300***	0.079***	0.541***	0.139***	0.448***	0.148***

α_O	(0.036)	(0.009)	(0.034)	(0.017)	(0.013)	(0.085)	(0.013)	0.030)	(0.010)	(0.037)	(0.016)
β_O	0.014	0.917***	0.169***	0.654***	0.731***	0.278***	0.918***	0.086***	0.813***	0.340***	0.805***
	(0.044)	(0.009)	(0.039)	(0.020)	(0.011)	(0.080)	(0.004)	(0.017)	(0.013)	(0.029)	(0.017)
α_S	0.095***	0.133***	0.240***	0.127***	0.152***	0.132***	0.149***	0.127***	0.115***	0.093***	0.115***
	(0.014)	(0.016)	(0.030)	(0.018)	(0.019)	(0.015)	(0.020)	(0.018)	(0.022)	(0.013)	(0.022)
β_S	0.896***	0.825***	0.634***	0.783***	0.797***	0.826***	0.789***	0.783***	0.736***	0.838***	0.737***
	(0.013)	(0.025)	(0.041)	(0.030)	(0.028)	(0.022)	(0.030)	(0.031)	(0.050)	(0.026)	(0.049)

Notes: *, **. *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- BEV(Beverages/Bottling); BNK(Banking); CG(Consumer Goods); CS(Consumer Services); FIN(Financials); LF(Life Insurance); OF(Other Financials); OS(Other Services); OT(Other Telecommunications); OR (Other Retail Stores); TEL(Telecommunications).

Table 67: Estimates of DCC-GARCH (1,1) Model for Sectoral UK CDS Spreads and Equity Returns

CDS_EQUITY EU FULL SAMPLE

	AU	BEV	BLDG	BNK	CAB	CG	CHEM	CGM	CS	ELTN	FIN	LEI	MT	OS	OF	GAS	OT	TEL	UT
Panel A: Conditional Correlation Estimates																			
a_{DCC1}	-0.001	-0.018	0.003	-0.011	0.010	0.004	-0.032	-0.001	-0.005	-0.016***	-0.004	-0.002***	-0.014	0.003	0.008	-0.006***	-0.014***	-0.002	-0.002***
	(0.002)	(0.014)	(0.002)	(0.021)	(0.015)	(0.006)	(0.026)	(0.019)	(0.011)	(0.008)	(0.035)	(0.001)	(0.337)	(0.018)	(0.008)	(0.002)	(0.002)	(0.008)	(0.001)
b_{DCC2}	0.937**	-0.768***	0.996***	0.194***	0.967***	0.977***	-0.253	0.828	-0.852**	0.317	0.838	0.775***	-1.823	0.670	0.931***	0.999***	0.283	0.930	0.786***
	(0.157)	(0.213)	(0.002)	(0.872)	(0.062)	(0.040)	(0.523)	(3.041)	(0.402)	(0.678)	(1.923)	(0.001)	(7.884)	(0.742)	(0.430)	(0.001)	(0.589)	(0.119)	(0.260)
Panel B: Conditional Variance Estimates																			
α_O	0.267***	0.166***	0.088***	0.082***	0.107***	0.257***	0.138***	0.257***	0.126***	0.150***	0.102***	0.098***	0.180***	0.096***	0.140***	0.099***	0.215***	0.210***	0.114***
	(0.017)	(0.007)	(0.003)	(0.004)	(0.013)	(0.014)	(0.006)	(0.013)	(0.003)	(0.016)	(0.003)	(0.008)	(0.002)	(0.003)	(0.004)	(0.004)	(0.007)	(0.007)	(0.007)
β_O	0.588***	0.823***	0.892***	0.907***	0.484***	0.689***	0.847***	0.688***	0.866***	0.600***	0.882***	0.743***	0.840***	0.889***	0.808***	0.891***	0.778***	0.782***	0.800***
	(0.016)	(0.005)	(0.002)	(0.003)	(0.044)	(0.013)	(0.005)	(0.013)	(0.002)	(0.047)	(0.002)	(0.017)	(0.001)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.006)
α_S	0.114***	0.063***	0.094***	0.099***	0.010***	0.096***	0.075***	0.083***	0.092***	0.095***	0.114***	0.075***	0.076***	0.075***	0.105***	0.078***	0.102***	0.099***	0.089***
	(0.008)	(0.007)	(0.009)	(0.007)	(0.009)	(0.009)	(0.007)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)	(0.006)	(0.010)	(0.007)	(0.009)	(0.009)	(0.009)
β_S	0.873***	0.914***	0.884***	0.888***	0.887***	0.889***	0.913***	0.902***	0.894***	0.896***	0.875***	0.918***	0.914***	0.898***	0.882***	0.915***	0.869***	0.874***	0.891***
	(0.010)	(0.009)	(0.012)	(0.009)	(0.010)	(0.010)	(0.008)	(0.009)	(0.009)	(0.008)	(0.009)	(0.007)	(0.008)	(0.009)	(0.010)	(0.008)	(0.013)	(0.012)	(0.011)

CDS_EQUITY EU CRISIS SAMPLE

	AU	BEV	BLDG	BNK	CAB	CG	CHEM	CGM	CS	ELTN	FIN	LEI	MT	OS	OF	GAS	OT	TEL	UT
Panel A: Conditional Correlation Estimates																			
a_{DCC1}	0.027***	0.009	0.029***	0.009***	0.038***	-0.050***	0.058***	0.040***	-0.005***	-0.006***	-0.027	0.049***	0.039***	0.005	0.012	-0.006	-0.022***	-0.013***	-0.012
	(0.004)	(0.006)	(0.007)	(0.014)	(0.007)	(0.009)	(0.042)	(0.007)	(0.001)	(0.002)	(0.003)	(0.110)	(0.020)	(0.018)	(0.012)	(0.001)	(0.001)	(0.006)	(0.001)
b_{DCC2}	0.974***	0.987***	0.970***	0.895***	0.959***	0.813***	0.011***	0.958***	0.796***	0.999***	0.917***	0.927***	0.899***	0.799	0.931***	1.001***	0.060***	0.953***	0.931
	(0.004)	(0.012)	(0.007)	(0.139)	(0.007)	(0.067)	(0.006)	(0.007)	(0.115)	(0.002)	(0.229)	(0.161)	(0.043)	(0.399)	(0.007)	(0.001)	(0.017)	(0.006)	(0.076)
Panel B: Conditional Variance Estimates																			
α_O	0.098***	0.142***	0.084***	0.091***	0.159***	0.178***	0.167***	0.364***	0.068***	0.110***	0.212***	0.072***	0.083***	0.047***	0.226***	0.124***	0.086***	0.239***	0.085***
	(0.010)	(0.012)	(0.005)	(0.008)	(0.002)	(0.007)	(0.011)	(0.003)	(0.005)	(0.004)	(0.010)	(0.014)	(0.009)	(0.007)	(0.014)	(0.011)	(0.012)	(0.012)	(0.012)
β_O	0.860***	0.844***	0.892***	0.899***	0.687***	0.817***	0.811***	0.518***	0.874***	0.887***	0.762***	0.661***	0.847***	0.942***	0.741***	0.863***	0.891***	0.758***	0.899***
	(0.013)	(0.010)	(0.005)	(0.006)	(0.003)	(0.006)	(0.008)	(0.003)	(0.007)	(0.003)	(0.007)	(0.061)	(0.007)	(0.009)	(0.008)	(0.009	(0.016)	(0.009)	(0.013)
α_S	0.133***	0.078***	0.106***	0.100***	0.084***	0.093***	0.079***	0.078***	0.071***	0.080***	0.108***	0.074***	0.076***	0.047***	0.090***	0.077***	0.024***	0.084***	0.311***
	(0.012)	(0.011)	(0.015)	(0.012)	(0.013)	(0.013)	(0.011)	(0.011)	(0.010)	(0.011)	(0.013)	(0.010)	(0.007)	(0.007)	(0.013)	(0.012)	(0.013)	(0.012)	(0.013)
β_S	0.856***	0.907***	0.875***	0.889***	0.903***	0.891***	0.909***	0.914***	0.916***	0.908***	0.879***	0.919***	0.915***	0.941***	0.898***	0.908***	0.751***	0.893***	0.672***
	(0.015)	(0.013)	(0.018)	(0.014)	(0.014)	(0.016)	(0.013)	(0.013)	(0.013)	(0.012)	(0.016)	(0.010)	(0.013)	(0.009)	(0.016)	(0.014)	(0.009)	(0.016)	(0.014)

	CDS_EQUITY EU AFTER-CRISIS SAMPLE																	
	AU	BEV	BLDG	BNK	CAB	CG	CHEM	CGM	CS	ELTN	FIN	LEI	MT	OS	OF	GAS	OT	TEL	UT
	Panel A: Conditional Correlation Estimates																		
a_D	-0.00117	0.011	0.023***	-0.019***	0.093***	0.012	-0.008	0.017***	-0.014	0.005***	0.003***	-0.016***	-0.004***	0.027***	-0.007	-0.006	-0.017	0.015	-0.012***
cc_1	(0.002)	(0.009)	(0.005)	(0.001)	(0.005)	(0.041)	(0.011)	(0.002)	(0.033)	(0.022)	(0.001)	(0.001)	(0.033)	(0.036)	(0.019)	(0.006)	(0.002)	(0.013)	(0.001)
b_D	-0.863***	0.919	0.975***	0.787***	0.852***	0.472	0.734	0.982***	0.031	0.699***	1.015***	0.899***	-0.114***	0.573***	0.659***	-0.106	0.822*	0.940	0.931***
cc_2	(0.062)	(0.055)	(0.006)	(0.004)	(0.008)	(1.867)	(0.522)	(0.003)	(1.246)	(0.449)	(0.001)	(0.001)	(1.683)	(0.316)	(0.483)	(1.795)	(0.004)	(0.050)	0.459
	Panel B: Conditional Variance Estimates																		
α_O	0.214***	0.253***	0.078***	0.075***	0.112***	0.092***	0.065***	0.236***	0.275***	0.222***	0.164***	0.151***	0.139***	0.098***	0.070***	0.096***	0.199***	0.198***	0.090***
	(0.018)	(0.016)	(0.004)	(0.005)	(0.023)	(0.006)	(0.015)	(0.003)	(0.017)	(0.017)	(0.007)	(0.029)	(0.009)	(0.010)	(0.005)	(0.006)	(0.010)	(0.010)	(0.005)
β_O	0.757***	0.738***	0.906***	0.916***	0.355***	0.902***	0.864***	0.724***	0.582***	0.738***	0.856***	0.635***	0.852***	0.842***	0.905***	0.897***	0.790***	0.790***	0.855***
	(0.015)	(0.009)	(0.003)	(0.004)	(0.078)	(0.003)	(0.034)	(0.002)	(0.024)	(0.014)	(0.003)	(0.006)	(0.007)	(0.022)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)
α_S	0.102***	0.040***	0.074***	0.105***	0.133***	0.093***	0.068***	0.084***	0.118***	0.112***	0.109***	0.100***	0.040***	0.286***	0.117***	0.072***	0.120***	0.119***	0.105***
	(0.013)	(0.009)	(0.012)	(0.015)	(0.024)	(0.015)	(0.005)	(0.021)	(0.019)	(0.018)	(0.013)	(0.009)	(0.011)	(0.018)	(0.016)	(0.011)	(0.016)	(0.016)	(0.020)
β_S	0.839***	0.911***	0.871*** (0.025***)	0.821*** 0.028***	0.772***	0.844***	0.911***	0.779***	0.803***	0.801***	0.815***	0.896***	0.945***	0.563***	0.801***	0.916***	0.797***	0.799***	0.798***
	(0.025)	(0.018)			(0.040)	(0.025)	(0.005)	(0.058)	(0.033)	(0.035)	(0.025)	(0.006)	(0.016)	(0.025)	(0.027)	(0.011)	(0.030)	(0.030)	(0.036)

Notes: *, **. *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- AU(Automotive Manufacturer); BEV(Beverages/Bottling); BLDG(Building Products); BNK(Banking); CAB(Cable Media); CG(Consumer Goods); CHEM(Chemicals); CGM(Conglomerate/Diversified Mfg); CS(Consumer Services); ELTN(Electronics); FIN(Financials); GAS(Oil&Gas); LEI(Leisure); MT(Metals&Mining); OF(Other Financials); OS(Other Services); OT(Other Telecommunications); TEL(Telecommunications); UT(Utility Other).

Table 68: Estimates of DCC-GARCH (1,1) Model for EU Sectoral CDS Spreads and Equity Returns

CDS_EQUITY JAPAN FULL SAMPLE

	AU	BNK	CHEM	CS	ELTN	IND	OR	MT	OS	OF	OT	OTR	TEL	UT
Panel A: Conditional Correlation Estimates														
a_{DCC1}	0.008	-0.015***	-0.006**	0.074	0.004***	-0.005***	-0.004***	0.028***	-0.005***	-0.006***	-0.005***	-0.010***	-0.005***	-0.004***
	(0.005)	(0.001)	(0.002)	(0.070)	(0.007)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.004)
b_{DCC2}	0.984***	0.785***	0.013	0.493	0.964***	0.289	0.932***	-0.238***	0.789	0.935***	0.792***	0.928***	-0.487	0.988***
	(0.013)	(0.001)	(1.505)	(0.369)	(0.065)	(1.177)	(0.001)	(0.001)	(0.145)	(0.001)	(0.070)	(0.086)	(0.740)	(0.015)
Panel B: Conditional Variance Estimates														
α_O	0.100***	0.124***	0.123***	0.150***	0.153***	0.078***	0.285***	0.192***	0.150***	0.122***	0.115***	0.130***	0.116***	0.103***
	(0.004)	(0.006)	(0.006)	(0.017)	(0.007)	(0.002)	(0.017)	(0.011)	(0.002)	(0.007)	(0.005)	(0.009)	(0.005)	(0.005)
β_O	0.865***	0.874***	0.848***	0.600***	0.822***	0.907***	0.564***	0.746***	0.600***	0.830***	0.865***	0.805***	0.862***	0.836***
	(0.011)	(0.005)	(0.003)	(0.014)	(0.005)	(0.002)	(0.010)	(0.010)	(0.062)	(0.006)	(0.003)	(0.009)	(0.003)	(0.004)
α_S	0.115***	0.080***	0.120***	0.151***	0.112***	0.124***	0.132***	0.120***	0.082***	0.105***	0.105***	0.106***	0.105***	0.123***
	(0.010)	(0.006)	(0.010)	(0.009)	(0.010)	(0.001)	(0.009)	(0.001)	(0.010)	(0.008)	(0.008)	(0.008)	(0.010)	(0.008)
β_S	0.868***	0.905***	0.850***	0.821***	0.860***	0.838***	0.845***	0.850***	0.854***	0.874***	0.876***	0.873***	0.865***	0.858***
	(0.011)	(0.006)	(0.013)	(0.011)	(0.012)	(0.013)	(0.011)	(0.013)	(0.017)	(0.008)	(0.009)	(0.010)	(0.013)	(0.008)

CDS_EQUITY JAPAN CRISIS SAMPLE

	AU	BNK	CHEM	CS	ELTN	IND	OR	MT	OS	OF	OT	OTR	TEL	UT
Panel A: Conditional Correlation Estimates														
a_{DCC1}	0.008	-0.007***	-0.006***	-0.001	-0.005***	-0.012	-0.003***	0.050	-0.012***	-0.007***	-0.006***	-0.015***	-0.008***	0.079*
	(0.007)	(0.006)	(0.001)	(0.008)	(0.001)	(0.010)	(0.001)	(0.045)	(0.001)	(0.001)	(0.001)	(0.005)	(0.001)	(0.046)
b_{DCC2}	0.980***	0.983***	0.990***	0.862	0.615	0.521	0.788**	-0.005	0.160**	0.788***	0.976***	0.940***	-0.523	0.019
	(0.021)	(0.001)	(0.001)	(0.365)	(0.668)	(0.731)	(0.348)	(0.354)	(0.081)	(0.093)	(0.001)	(0.050)	(0.700)	(0.229)
Panel B: Conditional Variance Estimates														
α_O	0.120***	0.130***	0.073***	0.215***	0.125***	0.091***	0.133***	0.083***	0.144***	0.117***	0.076***	0.096***	0.076***	0.068***
	(0.007)	(0.007)	(0.005)	(0.013)	(0.009)	(0.007)	(0.011)	(0.009)	(0.011)	(0.011)	(0.006)	(0.009)	(0.006)	(0.006)
β_O	0.851***	0.864***	0.905***	0.773***	0.817***	0.883***	0.698***	0.847***	0.845***	0.841***	0.893***	0.903***	0.893***	0.840***
	(0.003)	(0.007)	(0.004)	(0.011)	(0.008)	(0.007)	(0.009)	(0.011)	(0.009)	(0.011)	(0.004)	(0.008)	(0.004)	(0.008)
α_S	0.086***	0.067***	0.131***	0.176***	0.122***	0.130***	0.151***	0.131	0.103***	0.079***	0.131***	0.116***	0.085***	0.158***
	(0.012)	(0.007)	(0.015)	(0.012)	(0.016)	(0.015)	(0.011)	(0.015)	(0.014)	(0.009)	(0.011)	(0.011)	(0.012)	(0.015)
β_S	0.890***	0.923***	0.835***	0.793***	0.840***	0.838***	0.828***	0.835***	0.806***	0.907***	0.853***	0.863***	0.893***	0.834***
	(0.016)	(0.007)	(0.021)	(0.018)	(0.020)	(0.019)	(0.014)	(0.021)	(0.026)	(0.009)	(0.012)	(0.013)	(0.015)	(0.012)

CDS_EQUITY JAPAN AFTER-CRISIS SAMPLE

	AU	BNK	CHEM	CS	ELTN	IND	OR	MT	OS	OF	OT	OTR	TEL	UT
Panel A: Conditional Correlation Estimates														
a_{DCC1}	0.007	-0.027***	0.008	0.110	0.026	0.009	0.008***	0.043	-0.007***	-0.008	-0.004***	-0.012***	-0.004	-0.012
	(0.007)	(0.001)	(0.001)	(0.083)	(0.032)	(0.016)	(0.001)	(0.042)	(0.001)	(0.010)	(0.001)	(0.003)	(0.003)	(0.009)
b_{DCC2}	0.987***	0.795***	0.975***	0.326	0.081	0.901***	0.916***	0.588*	0.077	0.944***	0.791***	0.734	0.847**	0.639
	(0.016)	(0.109)	(0.024)	(0.397)	(0.690)	(0.139)	(0.001)	(0.321)	(0.977)	(0.069)	(0.277)	(0.568)	(0.360)	(0.657)
Panel B: Conditional Variance Estimates														
α_O	0.085***	0.072***	0.180***	0.300**	0.078***	0.073***	0.220***	0.237***	0.231***	0.127***	0.164***	0.118***	0.180***	0.123***
	(0.010)	(0.008)	(0.013)	(0.085)	(0.004)	(0.005)	(0.106)	(0.032)	(0.043)	(0.009)	(0.012)	(0.014)	(0.011)	(0.012)
β_O	0.861***	0.916***	0.788***	0.068**	0.921***	0.884***	0.275***	0.127***	0.254***	0.784***	0.828***	0.774***	0.818***	0.777***
	(0.001)	(0.008)	(0.010)	(0.031)	(0.002)	(0.005)	(0.096)	(0.039)	(0.043)	(0.009)	(0.007)	(0.016)	(0.006)	(0.014)
α_S	0.144***	0.134***	0.105***	0.132***	0.100***	0.110***	0.112***	0.101***	0.054***	0.160***	0.091***	0.099***	0.119***	0.112***
	(0.015)	(0.016)	(0.013)	(0.016)	(0.012)	(0.014)	(0.016)	(0.014)	(0.010)	(0.019)	(0.013)	(0.014)	(0.016)	(0.014)
β_S	0.833***	0.829***	0.864***	0.828***	0.877***	0.838***	0.857***	0.869***	0.919***	0.799***	0.874***	0.877***	0.800***	0.864***
	(0.017)	(0.018)	(0.016)	(0.021)	(0.015)	(0.020)	(0.022)	(0.016)	(0.017)	(0.021)	(0.019)	(0.017)	(0.030)	(0.015)

Notes: *, **. *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- AU(Automotive Manufacturer); BNK(Banking); CHEM(Chemicals); CS(Consumer Services); ELTN(Electronics); IND(Industrials); OR(Retail Stores Other); MT(Metals&Mining); OF(Other Financials); OS(Other Services); OT(Other Telecommunications); OTR(Other Transportation); TEL(Telecommunications); UT(Utility Other).

Table 69: Estimates of DCC-GARCH (1,1) Model for Japan Sectoral CDS Spreads and Equity Returns

B.1.2 CDS Spread and Equity Regional Connectedness

CDS SPREADS REGIONAL ANALYSIS FULL SAMPLE

	BEV	BLDG	BNK	BNKG	CAB	CG	CGM	CHM	ELEC	ELTN	EN	IND	LEI	MNG	MT	FIN	OF	GAS	OS	OT	OTR	RAIL	OR	CS	TEL	TR	UT
Panel A: Conditional Correlation Estimates																											
$\alpha_{0,0,1,1}$	0.010***	-0.051***	0.008***	0.005***	0.074*	0.047***	0.051***	0.023***	0.007***	0.017***	0.012***	0.046***	0.064***	0.003***	0.040***	0.023***	0.030***	0.073***	0.020***	0.043***	0.03688	0.011	0.030***	0.042***	0.022***	0.027***	0.031***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.038)	(0.008)	(0.009)	(0.006)	(0.001)	(0.004)	(0.003)	(0.014)	(0.016)	(0.001)	(0.001)	(0.003)	(0.005)	(0.027)	(0.004)	(0.008)	(0.015)	(0.009)	(0.008)	(0.005)	(0.003)	(0.009)	(0.005)
$b_{0,0,1,1}$	0.980***	-0.187***	0.990***	0.992***	0.244	0.885***	0.898***	0.941**	0.992***	0.964***	0.988***	0.955***	0.791***	0.996***	-0.168***	0.956***	0.935***	0.384	0.920***	0.857***	0.915***	0.822***	0.838***	0.842***	0.959***	0.946***	0.941***
	(0.006)	(0.001)	(0.002)	(0.002)	(0.226)	(0.025)	(0.017)	(0.017)	(0.001)	(0.009)	(0.004)	(0.014)	(0.055)	(0.001)	(0.001)	(0.007)	(0.009)	(0.267)	(0.016)	(0.035)	(0.026)	(0.166)	(0.037)	(0.020)	(0.008)	(0.022)	(0.011)
Panel B: Conditional Variance Estimates																											
$\alpha_{0,0}$	0.048***	0.110***	0.173***	0.170***	0.136***	0.155***	0.095***	0.072***	0.415***	0.100***	0.120***	0.143***	0.131***	0.121***	0.094***	0.130***	0.160***	0.186***	0.101***	0.230***	0.049***	0.226***	0.240***	0.166***	0.273***	0.333***	0.121***
	(0.002)	(0.006)	(0.005)	(0.006)	(0.008)	(0.008)	(0.005)	(0.002)	(0.018)	(0.005)	(0.006)	(0.011)	(0.006)	(0.006)	(0.004)	(0.006)	(0.004)	(0.012)	(0.005)	(0.008)	(0.002)	(0.015)	(0.026)	(0.010)	(0.007)	(0.029)	(0.006)
$\beta_{0,0}$	0.931***	0.791***	0.825***	0.828***	0.709***	0.743***	0.890***	0.915***	0.468***	0.878***	0.846***	0.682***	0.838***	0.864***	0.898***	0.842***	0.829***	0.689***	0.882***	0.525***	0.934***	0.644***	0.540***	0.801***	0.622***	0.290***	0.862***
	(0.002)	(0.003)	(0.003)	(0.004)	(0.012)	(0.007)	(0.003)	(0.001)	(0.012)	(0.004)	(0.004)	(0.013)	(0.004)	(0.005)	(0.003)	(0.003)	(0.003)	(0.018)	(0.004)	(0.013)	(0.001)	(0.015)	(0.026)	(0.008)	(0.009)	(0.017)	(0.006)
$\alpha_{0,1}$	0.060***	-	0.184***	0.163***	-	0.124***	-	-	0.130***	-	-	-	-	0.130***	-	0.072***	0.073***	-	0.082***	0.161***	-	-	0.172***	0.117***	0.134***	-	-
	(0.003)	-	(0.007)	(0.007)	-	(0.004)	-	-	(0.005)	-	-	-	-	(0.006)	-	(0.002)	(0.003)	-	(0.002)	(0.008)	-	-	(0.009)	(0.005)	(0.007)	-	-
$\beta_{0,1}$	0.935***	-	0.815***	0.820***	-	0.850***	-	-	0.846***	-	-	-	-	0.867***	-	0.927***	0.925***	-	0.895***	0.758***	-	-	0.756***	0.857***	0.857***	-	-
	(0.002)	-	(0.007)	(0.008)	-	(0.004)	-	-	(0.004)	-	-	-	-	(0.004)	-	(0.002)	(0.002)	-	(0.002)	(0.009)	-	-	(0.008)	(0.006)	(0.009)	-	-
$\alpha_{1,0}$	0.165***	0.081***	0.126***	0.072***	0.115***	0.121***	0.273***	0.146***	0.056***	0.175***	0.225***	-	0.093***	0.101***	0.126***	0.277***	0.140***	0.133***	0.128***	-	-	-	-	0.080***	0.210***	0.136***	0.111***
	(0.008)	(0.003)	(0.006)	(0.003)	(0.014)	(0.003)	(0.015)	(0.006)	(0.002)	(0.006)	(0.012)	-	(0.008)	(0.004)	(0.008)	(0.009)	(0.006)	(0.009)	(0.015)	-	-	-	-	(0.003)	(0.007)	(0.005)	(0.006)
$\beta_{1,0}$	0.826***	0.900***	0.855***	0.925***	0.448***	0.871***	0.695***	0.830***	0.925***	0.817***	0.753***	-	0.771***	0.872***	0.837**	0.722***	0.808***	0.864***	0.200***	-	-	-	-	0.896***	0.782***	0.855***	0.893***
	(0.005)	(0.002)	(0.005)	(0.003)	(0.043)	(0.002)	(0.015)	(0.006)	(0.001)	(0.005)	(0.010)	-	(0.015)	(0.004)	(0.007)	(0.007)	(0.007)	(0.008)	(0.055)	-	-	-	-	(0.002)	(0.003)	(0.003)	(0.005)
$\alpha_{1,1}$	-	-	0.126***	0.126***	-	-	-	0.167***	0.113***	0.130***	-	0.079***	-	0.150***	-	0.122***	-	-	0.438***	0.119***	0.078***	0.045***	0.282***	0.200***	0.119***	0.086***	0.120***
	-	-	(0.006)	(0.006)	-	-	-	(0.006)	(0.005)	(0.007)	-	(0.002)	-	(0.031)	-	(0.007)	-	-	(0.016)	(0.005)	(0.003)	(0.001)	(0.017)	(0.003)	(0.005)	(0.004)	(0.005)
$\beta_{1,1}$	-	-	0.874***	0.874***	-	-	-	0.818***	0.861***	0.830***	-	0.907***	-	0.650***	-	0.830***	-	-	0.541***	0.852***	0.912***	0.940***	0.565***	0.785***	0.859***	0.914***	0.826***
	-	-	(0.005)	(0.005)	-	-	-	(0.004)	(0.004)	(0.005)	-	(0.002)	-	(0.083)	-	(0.006)	-	-	(0.015)	(0.003)	(0.003)	(0.001)	(0.009)	(0.004)	(0.003)	(0.003)	(0.003)

CDS SPREADS REGIONAL ANALYSIS CRISIS SAMPLE

	BEV	BLDG	BNK	BNKC	CAB	CG	CGM	CHM	ELEC	ELTN	EN	IND	LEI	MNG	MT	FIN	OF	GAS	OS	OT	OTR	RAIL	OR	CS	TEL	TR	UT
Panel A: Conditional Correlation Estimates																											
a_{0CCC}	0.013**	0.035**	0.032***	0.030***	0.135***	0.058***	0.052***	0.013*	0.017***	0.014***	0.073**	0.017	0.128***	0.010***	0.050***	0.022***	0.032***	0.044*	0.008**	0.114***	0.156	0.152***	0.014***	0.026***	0.008***	0.045***	0.014***
	(0.005)	(0.017)	(0.008)	(0.007)	(0.046)	(0.014)	(0.011)	(0.007)	(0.004)	(0.004)	(0.030)	(0.017)	(0.022)	(0.003)	(0.001)	(0.003)	(0.005)	(0.026)	(0.003)	(0.003)	(0.099)	(0.001)	(0.003)	(0.006)	(0.002)	(0.011)	(0.001)
b_{0CCC}	0.941***	-0.359**	0.847***	0.782***	0.263	0.720***	0.909***	0.923***	0.955***	0.970***	0.073	0.964***	0.803***	0.963***	-0.172***	0.943***	0.932***	0.601***	0.942***	0.987***	-0.016	-0.034***	0.979***	0.854***	0.990***	0.883***	-0.271***
	(0.030)	(0.169)	(0.051)	(0.074)	(0.310)	(0.101)	(0.019)	(0.044)	(0.011)	(0.010)	(0.299)	(0.026)	(0.043)	(0.014)	(0.001)	(0.010)	(0.010)	(0.212)	(0.018)	(0.004)	(0.038)	(0.001)	(0.006)	(0.038)	(0.003)	(0.029)	(0.001)
Panel B: Conditional Variance Estimates																											
α_{0CCC}	0.076***	0.111***	0.111***	0.111***	0.047***	0.306***	0.080***	0.232***	0.197***	0.171***	0.269***	0.097***	0.119***	0.181***	0.127***	0.165***	0.165***	0.080***	0.106***	0.150***	0.625***	0.251***	0.055***	0.073***	0.049***	0.116***	0.381***
	(0.005)	(0.007)	(0.006)	(0.006)	(0.005)	(0.023)	(0.005)	(0.023)	(0.009)	(0.014)	(0.019)	(0.022)	(0.010)	(0.014)	(0.007)	(0.010)	(0.010)	(0.006)	(0.007)	(0.055)	(0.031)	(0.017)	(0.003)	(0.005)	(0.005)	(0.007)	(0.020)
β_{0CCC}	0.897***	0.846***	0.871***	0.871***	0.946***	0.547***	0.900***	0.525***	0.751***	0.729***	0.677***	0.398***	0.867***	0.809***	0.865***	0.799***	0.799***	0.876***	0.883***	0.600***	0.086***	0.732***	0.943***	0.909***	0.901***	0.807***	0.108***
	(0.007)	(0.005)	(0.005)	(0.005)	(0.004)	(0.021)	(0.004)	(0.030)	(0.011)	(0.022)	(0.016)	(0.063)	(0.007)	(0.009)	(0.005)	(0.006)	(0.006)	(0.008)	(0.004)	(0.107)	(0.012)	(0.014)	(0.002)	(0.004)	(0.006)	(0.006)	(0.029)
α_{1CCC}	0.116***	-	0.208***	0.192***		0.010***	-	-	0.259***	-	-	-	-	0.135***	-	0.041***	0.069***	-	0.050***	0.148***	-	-	0.110***	0.126***	0.135***	-	-
	(0.010)	-	(0.011)	(0.010)		(0.006)	-	-	(0.012)	-	-	-	-	(0.009)	-	(0.002)	(0.005)	-	(0.002)	(0.011)	-	-	(0.008)	(0.009)	(0.010)	-	-
β_{1CCC}	0.878***	-	0.771***	0.766***		0.899***	-	-	0.725***	-	-	-	-	0.856***	-	0.949***	0.918***	-	0.946***	0.893***	-	-	0.878***	0.811***	0.816***	-	-
	(0.007)	-	(0.012)	(0.012)		(0.004)	-	-	(0.014)	-	-	-	-	(0.006)	-	(0.002)	(0.005)	-	(0.002)	(0.014)	-	-	(0.008)	(0.010)	(0.013)	-	-
α_{2CCC}	0.058***	0.082***	0.180***	0.091***	0.162***	0.123***	0.366***	0.172***	0.104***	0.106***	0.179***	-	0.076***	0.186***	0.083***	0.211***	0.256***	0.117***	0.096***	-	-	-	-	0.068***	0.230***	0.293***	0.311***
	(0.005)	(0.005)	(0.013)	(0.008)	(0.024)	(0.010)	(0.028)	(0.011)	(0.006)	(0.003)	(0.012)	-	(0.015)	(0.013)	(0.009)	(0.010)	(0.014)	(0.014)	(0.018)	-	-	-	-	(0.005)	(0.012)	(0.019)	(0.013)
β_{2CCC}	0.928***	0.894***	0.793***	0.899***	0.683***	0.865***	0.519***	0.805***	0.885***	0.894***	0.792***	-	0.926***	0.760***	0.847***	0.762***	0.741***	0.880***	0.233***	-	-	-	-	0.876***	0.758***	0.650***	0.672***
	(0.005)	(0.005)	(0.012)	(0.006)	(0.030)	(0.009)	(0.025)	(0.009)	(0.005)	(0.003)	(0.013)	-	(0.063)	(0.017)	(0.011)	(0.007)	(0.015)	(0.014)	(0.083)	-	-	-	-	(0.007)	(0.009)	(0.020)	(0.014)
α_{3CCC}	-	-	0.130***	0.141***	-	-	-	0.072***	0.114***	0.111***	-	0.091***	-	0.167***	-	0.115***	-	-	0.144***	0.076***	0.096***	0.050***	0.133***	0.215***	0.076***	0.010***	0.068***
	-	-	(0.007)	(0.007)	-	-	-	(0.005)	(0.006)	(0.008)	-	(0.007)	-	(0.020)	-	(0.010)	-	-	(0.011)	(0.006)	(0.008)	(0.005)	(0.012)	(0.013)	(0.006)	(0.009)	(0.006)
β_{3CCC}	-	-	0.864***	0.854***	-	-	-	0.905***	0.849***	0.825***	-	0.883***	-	0.653***	-	0.846***	-	-	0.849***	0.893***	0.903***	0.905***	0.698***	0.773***	0.893***	0.900***	0.840***
	-	-	(0.006)	(0.007)	-	-	-	(0.004)	(0.004)	(0.007)	-	(0.007)	-	(0.035)	-	(0.010)	-	-	(0.010)	(0.004)	(0.008	(0.005)	(0.009)	(0.011)	(0.004)	(0.007)	(0.008)

CDS SPREADS REGIONAL ANALYSIS AFTER-CRISIS SAMPLE																										
	BEV	BLDG	BNK	BKG	CAB	CG	CGM	CHM	ELEC	ELTN	EN	IND	LEI	MNG	MT	FIN	OF	GAS	OS	OT	OTR	RAIL	OR	CS	TEL	TR	UT
Panel A: Conditional Correlation Estimates																											
$a_{0,0,2,3}$	0.021***	0.019***	0.008	0.010***	-0.002	0.021*	0.061***	0.021***	0.005	0.012***	0.015**	0.122***	0.013*	0.010***	0.023*	0.041***	0.062***	0.126***	0.010	0.023*	0.051***	0.002	0.050***	0.077***	0.030***	0.026***	0.056**
	(0.006)	(0.007)	(0.002)	(0.002)	(0.002)	(0.013)	(0.017)	(0.015)	(0.008)	(0.005)	(0.006)	(0.0046)	(0.007)	(0.003)	(0.013)	(0.013)	(0.014)	(0.044)	(0.007)	(0.012)	(0.021)	(0.009)	(0.015)	(0.016)	(0.005)	(0.010)	(0.027)
$b_{0,0,2,3}$	0.926***	0.971***	0.989***	0.986***	0.994***	0.442	0.835***	0.845***	0.716	0.919***	0.982***	0.703***	0.959***	0.988***	0.957***	0.093	0.819***	0.178	0.685***	0.851***	0.903***	0.926***	0.762***	0.637***	0.928***	0.957***	0.526**
	(0.026)	(0.010)	(0.003)	(0.003)	(0.027)	(0.339)	(0.043)	(0.151)	(0.771)	(0.037)	(0.007)	(0.132)	(0.025)	(0.003)	(0.041)	(0.338)	(0.042)	(0.188)	(0.232)	(0.084)	(0.022)	(0.157)	(0.057)	(0.064)	(0.015)	(0.022)	(0.236)
Panel B: Conditional Variance Estimates																											
$\alpha_{0,0}$	0.058***	0.111***	0.322***	0.322***	0.230***	0.010***	0.130***	0.428***	0.321***	0.038***	0.146***	0.165***	0.328***	0.068***	0.053***	0.150***	0.150***	0.240***	0.124***	0.418***	0.066***	0.125***	0.449***	0.219***	0.419***	0.233***	0.361***
	(0.004)	(0.006)	(0.019)	(0.019)	(0.016)	(0.010)	(0.015)	(0.037)	(0.028)	(0.004)	(0.012)	(0.009)	(0.022)	(0.006)	(0.008)	(0.034)	(0.034)	(0.027)	(0.010)	(0.013)	(0.004)	(0.024)	(0.104)	(0.020)	(0.013)	(0.029)	(0.017)
$\beta_{0,0}$	0.921***	0.879***	0.631***	0.631***	0.637***	0.811***	0.820***	0.533***	0.471***	0.952***	0.821***	0.795***	0.578***	0.920***	0.922***	0.600***	0.600***	0.552***	0.840***	0.537***	0.921***	0.337***	0.436***	0.765***	0.538***	0.488***	0.591***
	(0.003)	(0.004)	(0.019)	(0.019)	(0.015)	(0.011)	(0.011)	(0.018)	(0.035)	(0.003)	(0.006)	(0.006)	(0.014)	(0.007)	(0.006)	(0.067)	(0.067)	(0.037)	(0.010)	(0.010)	(0.002)	(0.063)	(0.046)	(0.014)	(0.010)	(0.018)	(0.013)
$\alpha_{0,1}$	0.061***	-	0.190***	0.087***	-	0.422***	-	-	0.176***	-	-	-	-	0.152***	-	0.238***	0.069***	-	0.288***	0.182***	-	-	0.451***	0.192***	0.147***	-	-
	(0.005)	-	(0.015)	(0.010)	-	(0.033)	-	-	(0.008)	-	-	-	-	(0.021)	-	(0.013)	(0.054)	-	(0.019)	(0.014)	-	-	(0.037)	(0.017)	(0.015)	-	-
$\beta_{0,1}$	0.885***	-	0.806***	0.906***	-	0.276***	-	-	0.753***	-	-	-	-	0.600***	-	0.731***	0.907***	-	0.613***	0.776***	-	-	0.562***	0.656***	0.806***	-	-
	(0.005)	-	(0.015)	(0.010)	-	(0.029)	-	-	(0.006)	-	-	-	-	(0.041)	-	(0.011)	(0.004)	-	(0.011)	(0.014)	-	-	(0.029)	(0.020)	(0.017)	-	-
$\alpha_{1,1}$	0.251***	0.095***	0.308***	0.079***	0.112***	0.096***	0.230***	0.077***	0.149***	0.221***	0.455***	-	0.092***	0.086***	0.133***	0.114***	0.079***	0.397***	0.158***	-	-	-	-	0.286***	0.198***	0.092***	0.085***
	(0.016)	(0.005)	(0.030)	(0.005)	(0.026)	(0.006)	(0.027)	(0.006)	(0.010)	(0.016)	(0.040)	-	(0.008)	(0.006)	(0.009)	(0.005)	(0.007)	(0.040)	(0.009)	-	-	-	-	(0.018)	(0.010)	(0.005)	(0.005)
$\beta_{1,1}$	0.738***	0.889***	0.573***	0.914***	0.350***	0.897***	0.721***	0.896***	0.827***	0.741***	0.501***	-	0.905***	0.899***	0.852***	0.877***	0.918***	0.509***	0.815***	-	-	-	-	0.569***	0.791***	0.902***	0.861***
	(0.010)	(0.004)	(0.031)	(0.003)	(0.078)	(0.004)	(0.023)	(0.006)	(0.008)	(0.014)	(0.028)	-	(0.006)	(0.005)	(0.007)	(0.003)	(0.004)	(0.031)	(0.005)	-	-	-	-	(0.025)	(0.004)	(0.003)	(0.003)
$\alpha_{2,2}$	-	-	0.084***	0.094***	-	-	-	0.173***	0.132***	0.159***	-	0.065***	-	0.265***	-	0.148***	-	-	0.232***	0.179***	0.111***	0.104***	0.253***	0.504***	0.179***	0.111***	0.189***
	-	-	(0.010)	(0.011)	-	-	-	(0.013)	(0.011)	(0.010)	-	(0.004)	-	(0.017)	-	(0.010)	-	-	(0.043)	(0.011)	(0.011)	(0.006)	(0.041)	(0.050)	(0.011)	(0.011)	(0.011)
$\beta_{2,2}$	-	-	0.903***	0.887***	-	-	-	0.792***	0.776***	0.820***	-	0.900***	-	0.677***	-	0.761***	-	-	0.255***	0.818***	0.852***	0.889***	0.350***	0.172***	0.818***	0.852***	0.755***
	-	-	(0.009)	(0.011)	-	-	-	(0.010)	(0.012)	(0.007)	-	(0.004)	-	(0.016)	-	(0.009)	-	-	(0.042)	(0.006)	(0.011)	(0.005)	(0.037)	(0.026)	(0.006)	(0.010)	(0.012)

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- BEV(Beverages/Bottling); BLDG(Building Products); BNK(Banks); BKG(Banking); CAB(Cable Media); CG(Consumer Goods); CHM(Chemicals); CGM(Conglomerate/Diversified Mfg); CON(Container); CS(Consumer Services); ELEC(Electric {Power); ELTN(Electronics); EN (Energy); FIN(Financials); GAS(Oil&Gas); IND(Industrials); LEI(Leisure); MNG(Manufacturing); MT(Metals&Mining); OF(Other Financials); OR(Retail Stores Other); OS(Other Services); OT(Other Telecommunications); OTR(Other Transport); TR(Transport); RAIL(Railroads); TEL(Telecommunications); UT(Utility Other).

Table 70: Estimates of DCC-GARCH (1,1) Model for Regional CDS Spreads Sectoral Returns

EQUITY REGIONAL ANALYSIS FULL SAMPLE

	BEV	BLDG	BMAT	BNK	CAB	CG	CGM	CHEM	ELTN	HLT	IND	LEI	MT	FIN	OF	OIL	OS	OT	OTRSP	RET	SERV	TEC	TEL	UT
Panel A: Conditional Correlation Estimates																								
a_{EQUITY}	0.010***	-0.002	0.007***	0.015***	0.011***	0.009*	0.021***	0.005***	0.025***	0.009***	0.015***	0.010***	-0.001	0.017***	0.029***	0.015***	0.016***	0.004	0.024	0.011**	0.013***	0.006***	0.007***	0.009***
	(0.002)	(0.010)	(0.001)	(0.003)	(0.003)	(0.005)	(0.005)	(0.003)	(0.009)	(0.003)	(0.002)	(0.004)	(0.005)	(0.003)	(0.004)	(0.002)	(0.004)	(0.004)	(0.018)	(0.005)	(0.002)	(0.002)	(0.002)	(0.002)
b_{EQUITY}	0.986***	0.780	0.991***	0.963***	0.987***	0.879***	0.971***	0.966***	0.708***	0.936***	0.959***	0.983***	0.879***	0.955***	0.948***	0.964***	0.925***	0.938***	0.175	0.927***	0.952	0.981***	0.959***	0.955***
	(0.003)	(0.481)	(0.002)	(0.008)	(0.005)	(0.122)	(0.008)	(0.024)	(0.159)	(0.024)	(0.007)	(0.007)	(0.191)	(0.009)	(0.008)	(0.007)	(0.026)	(0.105)	(0.660)	(0.035)	(0.009)	(0.008)	(0.015)	(0.013)
Panel B: Conditional Variance Estimates																								
α_o	0.117***	0.080***	0.085***	0.098***	0.086***	0.131***	0.095***	0.103***	0.093***	0.110***	0.101***	0.089***	0.062***	0.122***	0.123***	0.081***	0.067***	0.073***	0.062***	0.093***	0.098***	0.095***	0.073***	0.089***
	(0.011)	(0.009)	(0.008)	(0.007)	(0.008)	(0.012)	(0.009)	(0.009)	(0.009)	(0.010)	(0.010)	(0.009)	(0.006)	(0.009)	(0.009)	(0.007)	(0.007)	(0.007)	(0.006)	(0.010)	(0.010)	(0.009)	(0.007)	(0.008)
β_o	0.838***	0.906***	0.907***	0.894***	0.900***	0.837***	0.896***	0.885***	0.890***	0.864***	0.880***	0.896***	0.925***	0.868***	0.867***	0.913***	0.920***	0.905***	0.925***	0.889***	0.884***	0.887***	0.905***	0.898***
	(0.015)	(0.010)	(0.008)	(0.007)	(0.009)	(0.013)	(0.008)	(0.009)	(0.010)	(0.013)	(0.011)	(0.010)	(0.008)	(0.009)	(0.009)	(0.007)	(0.008)	(0.010)	(0.008)	(0.010)	(0.011)	(0.011)	(0.010)	(0.009)
α_c	0.089***	-	0.059***	0.095***	-	0.130***	-	-	-	0.063***	0.101	-	-	0.113***	0.118***	0.070***	0.101***	0.090***	-	0.103***	0.100***	0.085***	0.090***	0.073***
	(0.010)	-	(0.006)	(0.007)	-	(0.012)	-	-	-	(0.006)	(0.010)	-	-	(0.009)	(0.009)	(0.0060	(0.009)	(0.010)	-	(0.010)	(0.010)	(0.007)	(0.010)	(0.006)
β_c	0.898***	-	0.934***	0.902***	-	0.838***	-	-	-	0.914***	0.876***	-	-	0.882***	0.868***	0.923***	0.879***	0.878***	-	0.876***	0.881***	0.901***	0.878***	0.901***
	(0.010)	-	(0.007)	(0.007)	-	(0.013)	-	-	-	(0.009)	(0.012)	-	-	(0.010)	(0.011)	(0.006)	(0.010)	(0.013)	-	(0.012)	(0.010)	(0.007)	(0.013)	(0.008)
α_z	0.063***	0.087***	0.060***	0.101***	0.092***	0.092***	0.074***	0.074***	0.095***	0.088***	0.089***	0.075***	0.064***	0.106***	0.105***	0.074***	0.076***	0.010***	-	-	0.083***	0.080***	0.107***	0.090***
	(0.007)	(0.009)	(0.006)	(0.008)	(0.008)	(0.009)	(0.007)	(0.007)	(0.008)	(0.009)	(0.008)	(0.007)	(0.007)	(0.009)	(0.010)	(0.007)	(0.005)	(0.009)	-	-	(0.007)	(0.008)	(0.008)	(0.009)
β_z	0.914***	0.893***	0.935***	0.889***	0.896***	0.894***	0.913***	0.915***	0.896***	0.882***	0.900***	0.918***	0.929***	0.883***	0.882***	0.919***	0.895***	0.873***	-	-	0.904***	0.906***	0.874***	0.890***
	(0.009)	(0.011)	(0.007)	(0.010)	(0.010)	(0.010)	(0.008)	(0.008)	(0.008)	(0.013)	(0.009)	(0.007)	(0.008)	(0.010)	(0.010)	(0.008)	(0.010)	(0.012)	-	-	(0.009)	(0.009)	(0.009)	(0.011)
α_z	-	-	0.118***	0.082***	-	0.122***	-	0.119***	0.110***	0.130***	0.124***	-	0.107***	0.105***	-	0.075***	0.082***	0.106***	0.107***	0.130***	0.150***	0.150***	0.099***	0.131***
	-	-	(0.009)	(0.006)	-	(0.010)	-	(0.010)	(0.009)	(0.007)	(0.010)	-	(0.008)	(0.008)	-	(0.007)	(0.009)	(0.008)	(0.008)	(0.008)	(0.009)	(0.045)	(0.009)	(0.009)
β_z	-	-	0.856***	0.903***	-	0.856***	-	0.852***	0.863***	0.850***	0.855***	-	0.872***	0.875***	-	0.909***	0.854***	0.874***	0.872***	0.847***	0.822***	0.600***	0.874***	0.852***
	-	-	(0.012)	(0.006)	-	(0.011)	-	(0.013)	(0.012)	(0.009)	(0.012)	-	(0.010)	(0.008)	-	(0.007)	(0.017)	(0.009)	(0.010)	(0.010)	(0.011)	(0.100)	(0.012)	(0.008)

EQUITY REGIONAL ANALYSIS CRISIS SAMPLE

	BEV	BLDG	BMAT	BNK	CAB	CG	CGM	CHEM	ELTN	HLT	IND	LEI	MT	FIN	OF	OIL	OS	OT	OTRSP	RET	SERV	TEC	TEL	UT
Panel A: Conditional Correlation Estimates																								
a_{PCC2}	0.008***	-0.009	0.009***	0.018***	0.012***	0.006**	0.024***	0.005	0.006*	0.014***	0.014***	0.013***	-0.021	0.016***	0.028***	0.015***	0.013**	0.008*	-0.025	0.015	0.016***	0.009**	0.008***	0.015***
	(0.002)	(0.014)	(0.003)	(0.005)	(0.004)	(0.003)	(0.006)	(0.005)	(0.004)	(0.004)	(0.003)	(0.005)	(0.001)	(0.004)	(0.006)	(0.003)	(0.005)	(0.005)	(0.001)	(0.012)	(0.004)	(0.004)	(0.003)	(0.004)
b_{PCC2}	0.989***	0.841***	0.964***	0.941***	0.986***	0.978***	0.973***	0.962***	0.979***	0.930***	0.958***	0.983***	0.774***	0.937***	0.951***	0.951***	0.916***	0.900***	0.770***	0.842***	0.939***	0.934***	0.954***	0.931***
	(0.003)	(0.153)	(0.015)	(0.021)	(0.005)	(0.013)	(0.008)	(0.044)	(0.014)	(0.024)	(0.011)	(0.007)	(0.001)	(0.019)	(0.013)	(0.013)	(0.044)	(0.078)	(0.002)	(0.208)	(0.019)	(0.034)	(0.021)	(0.020)
Panel B: Conditional Variance Estimates																								
α_D	0.101***	0.091***	0.093***	0.110***	0.091***	0.104***	0.083***	0.106***	0.095***	0.110***	0.098***	0.089***	0.081***	0.108***	0.108***	0.098***	0.071***	0.087***	0.081***	0.089***	0.093***	0.095***	0.087***	0.122***
	(0.013)	(0.014)	(0.012)	(0.010)	(0.011)	(0.013)	(0.11)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)	(0.011)	(0.011)	(0.011)	(0.012)	(0.011)	(0.010)	(0.011)	(0.012)	(0.012)	(0.013)	(0.010)	(0.013)
β_D	0.878***	0.899***	0.898***	0.883***	0.903***	0.876***	0.907***	0.884***	0.894***	0.871***	0.892***	0.899***	0.910***	0.889***	0.888***	0.895***	0.906***	0.902***	0.910***	0.902***	0.896***	0.893***	0.903***	0.872***
	(0.016)	(0.015)	(0.012)	(0.011)	(0.011)	(0.015)	(0.010)	(0.012)	(0.014)	(0.015)	(0.014)	(0.014)	(0.012)	(0.010)	(0.010)	(0.012)	(0.016)	(0.011)	(0.012)	(0.013)	(0.013)	(0.014)	(0.011)	(0.013)
α_C	0.102***	-	0.073***	0.088***	-	0.106***	-	-	-	0.079***	0.084***	-	-	0.089***	0.089***	0.088***	0.087***	0.059***	-	0.111***	0.085***	0.084***	0.060***	0.082***
	(0.018)	-	(0.011)	(0.008)	-	(0.013)	-	-	-	(0.012)	(0.013)	-	-	(0.010)	(0.010)	(0.013)	(0.012)	(0.009)	-	(0.015)	(0.012)	(0.011)	(0.009)	(0.009)
β_C	0.868***	-	0.916***	0.908***	-	0.873***	-	-	-	0.903***	0.899***	-	-	0.903***	0.904***	0.899***	0.907***	0.933***	-	0.881***	0.906***	0.893***	0.931***	0.900***
	(0.021)	-	(0.012)	(0.009)	-	(0.015)	-	-	-	(0.014)	(0.015)	-	-	(0.011)	(0.010)	(0.014)	(0.016)	(0.010)	-	(0.017)	(0.012)	(0.014)	(0.011)	(0.011)
α_S	0.078***	0.095***	0.074***	0.106***	0.079***	0.092***	0.074***	0.080***	0.082***	0.097***	0.081***	0.068***	0.077***	0.100***	0.092***	0.078***	0.051***	0.087***	-	-	0.071***	0.078***	0.086***	0.086***
	(0.011)	(0.015)	(0.011)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.015)	(0.013)	(0.008)	(0.011)	(0.013)	(0.013)	(0.012)	(0.007)	(0.012)	-	-	(0.010)	(0.012)	(0.013)	(0.012)
β_S	0.907***	0.889***	0.915***	0.886***	0.909***	0.892***	0.919***	0.907***	0.907***	0.877***	0.908***	0.925***	0.914***	0.888***	0.897***	0.908***	0.935***	0.892***	-	-	0.916***	0.907***	0.891***	0.899***
	(0.013)	(0.017)	(0.013)	(0.014)	(0.014)	(0.016)	(0.013)	(0.014)	(0.012)	(0.020)	(0.015)	(0.009)	(0.013)	(0.015)	(0.016)	(0.014)	(0.007)	(0.015)	-	-	(0.013)	(0.015)	(0.017)	(0.014)
α_X	-	-	0.125***	0.067***	-	0.115***	-	0.132***	0.123***	0.152***	0.123***	-	0.114***	0.079***	-	0.085***	0.103***	0.125***	0.112***	0.147***	0.173***	0.119***	0.129***	0.174***
	-	-	(0.013)	(0.007)	-	(0.015)	-	(0.015)	(0.016)	(0.011)	(0.016)	-	(0.011)	(0.008)	-	(0.010)	(0.014)	(0.011)	(0.012)	(0.011)	(0.012)	(0.017)	(0.011)	(0.017)
β_X	-	-	0.845***	0.922***	-	0.854***	-	0.837***	0.843***	0.830***	0.850***	-	0.866***	0.907***	-	0.896***	0.817***	0.859***	0.869***	0.836***	0.796***	0.854***	0.855***	0.817***
	-	-	(0.017)	(0.007)	-	(0.019)	-	(0.020)	(0.019)	(0.014)	(0.020)	-	(0.013)	(0.008)	-	(0.011)	(0.024)	(0.011)	(0.013)	(0.013)	(0.018)	(0.019)	(0.012)	(0.014)

EQUITY REGIONAL ANALYSIS AFTER-CRISIS SAMPLE

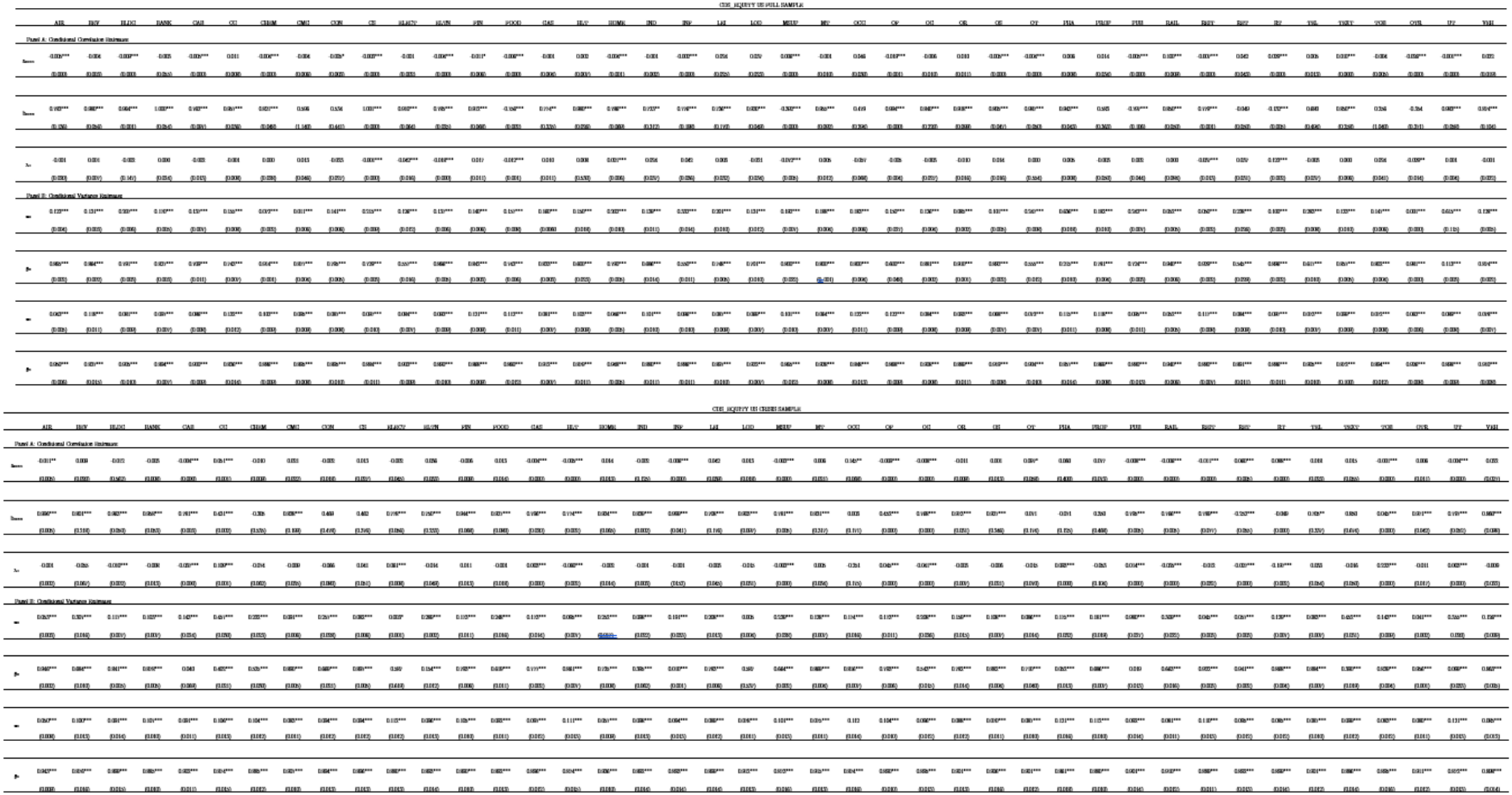
	BEV	BLDG	BMAT	BNK	CAB	CG	CGM	CHM	ELTN	HLT	IND	LEI	MT	FIN	OF	GAS	OS	OT	OTR	OR	CS	TEC	TEL	UT
Panel A: Conditional Correlation Estimates																								
a_{DCC1}	0.012***	0.005	0.005	0.015**	0.033	0.015*	0.021***	0.005	0.045***	0.002	0.012***	0.025	0.017*	0.018***	0.026***	0.015***	0.018***	-0.011***	0.044**	0.007	0.012***	0.014	0.006*	-0.004
	(0.003)	(0.005)	(0.003)	(0.007)	(0.024)	(0.008)	(0.005)	(0.007)	(0.016)	(0.004)	(0.004)	(0.021)	(0.011)	(0.006)	(0.006)	(0.003)	(0.006)	(0.004)	(0.020)	(0.005)	(0.004)	(0.010)	(0.003)	(0.007)
b_{DCC2}	0.982***	0.972***	0.958***	0.894***	0.432	0.616**	0.971***	0.926***	0.538***	0.933***	0.948***	0.388	0.746***	0.905***	0.938***	0.966***	0.893***	0.193	0.696***	0.937***	0.948***	-0.100	0.976***	0.639
	(0.004)	(0.028)	(0.031)	(0.062)	(0.369)	(0.245)	(0.008)	(0.134)	(0.205)	(0.149)	(0.016)	(0.425)	(0.175)	(0.042)	(0.017)	(0.009)	(0.039)	(0.447)	(0.182)	(0.047)	(0.016)	(0.369)	(0.013)	(0.710)
Panel B: Conditional Variance Estimates																								
α_0	0.169***	0.068***	0.107***	0.155***	0.099***	0.233***	0.095***	0.129***	0.119***	0.121***	0.134***	0.105***	0.041***	0.190***	0.190***	0.063***	0.065***	0.060***	0.058***	0.142***	0.137***	0.131***	0.060***	0.038***
	(0.027)	(0.013)	(0.017)	(0.019)	(0.020)	(0.029)	(0.009)	(0.019)	(0.019)	(0.018)	(0.023)	(0.020)	(0.011)	(0.022)	(0.022)	(0.010)	(0.013)	(0.018)	(0.013)	(0.021)	(0.023)	(0.019)	(0.018)	(0.008)
β_0	0.614***	0.883***	0.822***	0.707***	0.812***	0.642***	0.896***	0.783***	0.755***	0.828***	0.740***	0.799***	0.943***	0.678***	0.678***	0.929***	0.880***	0.792***	0.877***	0.732***	0.754***	0.760***	0.792***	0.949***
	(0.067)	(0.023)	(0.027)	(0.040)	(0.032)	(0.040)	(0.008)	(0.030)	(0.042)	(0.027)	(0.040)	(0.035)	(0.016)	(0.038)	(0.038)	(0.009)	(0.024)	(0.080)	(0.0301)	(0.040)	(0.036)	(0.035)	(0.079)	(0.011)
α_1	0.092***	-	0.050***	0.129***	-	0.239***	-	-	-	0.052***	0.150***	-	-	0.152***	0.147***	0.056***	0.127***	0.114***	-	0.093***	0.128***	0.087***	0.115***	0.059***
	(0.013)	-	(0.009)	(0.016)	-	(0.030)	-	-	-	(0.010)	(0.025)	-	-	(0.019)	(0.020)	(0.008)	(0.018)	(0.022)	-	(0.013)	(0.018)	(0.010)	(0.022)	(0.010)
β_1	0.899***	-	0.941***	0.829***	-	0.637***	-	-	-	0.904***	0.737***	-	-	0.797***	0.790***	0.940***	0.784***	0.737***	-	0.840***	0.783***	0.905***	0.738***	0.897***
	(0.012)	-	(0.012)	(0.024)	-	(0.040)	-	-	-	(0.017)	(0.043)	-	-	(0.028)	(0.030)	(0.0080	(0.030)	(0.050)	-	(0.025)	(0.030)	(0.010)	(0.049)	(0.016)
α_2	0.040***	0.077***	0.041***	0.101***	0.132***	0.095***	0.074***	0.066***	0.111***	0.075***	0.109***	0.148***	0.058***	0.110***	0.116***	0.074***	0.099***	0.121***	-	-	0.120***	0.094***	0.119***	0.109***
	(0.009)	(0.012)	(0.009)	(0.013)	(0.024)	(0.015)	(0.007)	(0.016)	(0.018)	(0.014)	(0.018)	(0.028)	(0.013)	(0.014)	(0.016)	(0.010)	(0.011)	(0.017)	-	-	(0.020)	(0.020)	(0.016)	(0.021)
β_2	0.911***	0.867***	0.944***	0.825***	0.773***	0.840***	0.913***	0.861***	0.801***	0.869***	0.790***	0.640***	0.877***	0.813***	0.802***	0.913***	0.841***	0.795***	-	-	0.800***	0.778***	0.800***	0.787***
	(0.018)	(0.026)	(0.014)	(0.028)	(0.040)	(0.026)	(0.008)	(0.035)	(0.035)	(0.021)	(0.036)	(0.059)	(0.031)	(0.026)	(0.027)	(0.011)	(0.022)	(0.031)	-	-	(0.034)	(0.051)	(0.030)	(0.037)
α_3	-	-	0.110***	0.127***	-	0.132***	-	0.103***	0.098***	0.113***	0.125***	-	0.100***	0.160***	-	0.065***	0.053***	0.092***	0.100***	0.112***	0.133***	0.093***	0.091	0.108***
	-	-	(0.013)	(0.015)	-	(0.013)	-	(0.013)	(0.012)	(0.013)	(0.013)	-	(0.014)	(0.019)	-	(0.009)	(0.010)	(0.014)	(0.014)	(0.017)	(0.016)	(0.012)	(0.013)	(0.013)
β_3	-	-	0.859***	0.836***	-	0.847***	-	0.867***	0.879***	0.863***	0.853***	-	0.878***	0.796***	-	0.922***	0.920***	0.872***	0.878***	0.857***	0.827***	0.870***	0.87488	0.868***
	-	-	(0.018)	(0.018)	-	(0.014)	-	(0.016)	(0.014)	(0.015)	(0.015)	-	(0.017)	(0.021)	-	(0.010)	(0.016)	(0.019)	(0.017)	(0.022)	(0.021)	(0.016)	8 (0.019)	(0.015)

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- BEV(Beverages/Bottling); BLDG(Building Products); BNK(Banks); BMT(Basic Materials); CAB(Cable Media); CG(Consumer Goods); CHM(Chemicals); CGM(Conglomerate/Diversified Mfg); HLT(Healthcare Facilities); CS(Consumer Services); ELTN(Electronics); FIN(Financials); GAS(Oil&Gas); IND(Industrials); LEI(Leisure); TEC(Technology); MT(Metals&Mining); OF(Other Financials); OR(Retail Stores Other); OS(Other Services); OT(Other Telecommunications); OTR(Other Transport); TEL(Telecommunications); UT(Utility Other).

Table 71: Estimates of DCC-GARCH (1,1) Model for Regional Equity Sectoral Returns

B.2 Asymmetric DCC-GARCH Model

B.2.1 CDS Spreads and Equity Sectoral Returns



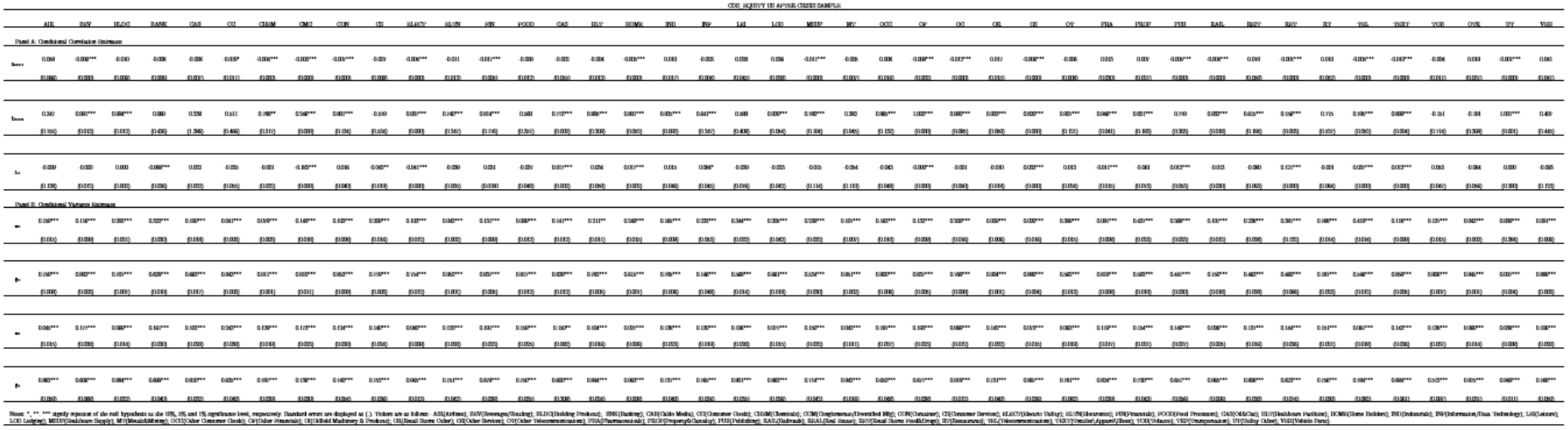


Table 72: Estimates of ADCC-GARCH (1,1) Model for Sectoral US CDS Spreads and Equity Returns

CDS_EQUITY UK FULL SAMPLE

	BEV	BANK	CG	CS	FIN	LF	OF	OS	OT	OR	TEL
Panel A: Conditional Correlation Estimates											
a_{DCC1}	-0.007***	0.004	0.004	-0.002	-0.004*	-0.002**	-0.016***	-0.004***	-0.008	-0.002	-0.013***
	(0.000)	(0.022)	(0.009)	(0.005)	(0.002)	(0.001)	(0.000)	(0.001)	(0.005)	(0.012)	(0.002)
b_{DCC2}	0.777***	-0.019	0.818***	0.960***	0.997***	1.001***	0.782***	0.951***	0.980***	0.837***	-0.109
	(0.165)	(0.475)	(0.282)	(0.045)	(0.005)	(0.000)	(0.000)	(0.065)	(0.016)	(0.139)	(0.287)
λ_1	-0.027	0.047**	0.010	0.008	-0.000	0.000**	-0.007	-0.003	0.001	-0.023	0.081**
	(0.034)	(0.019)	(0.013)	(0.008)	(0.001)	(0.000)	(0.016)	(0.010)	(0.003)	(0.028)	(0.07)
Panel B: Conditional Variance Estimates											
α_o	0.174***	0.173***	0.099***	0.130***	0.063***	0.347***	0.075***	0.069***	0.161***	0.180***	0.129***
	(0.006)	(0.008)	(0.003)	(0.005)	(0.002)	(0.023)	(0.003)	(0.002)	(0.008)	(0.010)	(0.007)
β_o	0.789***	0.819***	0.895***	0.821***	0.927***	0.291***	0.924***	0.923***	0.798***	0.774***	0.834***
	(0.006)	(0.007)	(0.003)	(0.006)	(0.002)	(0.022)	(0.003)	(0.002)	(0.009)	(0.008)	(0.008)
α_s	0.089***	0.096***	0.132***	0.101***	0.114***	0.116***	0.119***	0.101***	0.090***	0.101***	0.090***
	(0.009)	(0.007)	(0.012)	(0.009)	(0.009)	(0.009)	(0.010)	(0.010)	(0.009)	(0.009)	(0.010)

β_s	0.899***	0.900** *	0.836** *	0.879** *	0.881***	0.874***	0.866***	0.879***	0.879** *	0.877***	0.878***
	(0.010)	(0.007)	(0.014)	(0.010)	(0.009)	(0.010)	(0.011)	(0.010)	(0.013)	(0.012)	(0.013)

CDS_EQUITY UK CRISIS SAMPLE

	BEV	BANK	CG	CS	FIN	LF	OF	OS	OT	OR	TEL
Panel A: Conditional Correlation Estimates											
a_{DC} $_{C1}$	- 0.011***	0.021	0.029	0.002	- 0.004***	- 0.006***	- 0.018***	- 0.006***	-0.023	- 0.016***	-0.017**
	(0.003)	(0.034)	(0.024)	(0.005)	(0.001)	(0.001)	(0.000)	(0.002)	(0.017)	(0.002)	(0.008)
b_{DC} $_{C2}$	0.976***	0.072	0.746** *	0.983** *	1.001***	0.784***	0.778***	0.781***	0.445	0.856***	-0.079
	(0.025)	(0.430)	(0.187)	(0.024)	(0.005)	(0.015)	(0.000)	(0.010)	(0.0592)	(0.001)	(0.295)
λ_1	-0.001	0.031	0.008	0.005	0.005***	0.017***	-0.024	- 0.011***	0.005	- 0.027***	0.117***
	(0.005)	(0.030)	(0.043)	(0.007)	(0.001)	(0.002)	(0.022)	(0.002)	(0.069)	(0.002)	(0.034)
Panel B: Conditional Variance Estimates											
α_o	0.212***	0.205** *	0.126** *	0.135** *	0.056***	0.443***	0.080***	0.050***	0.139** *	0.115***	0.127***
	(0.010)	(0.013)	(0.005)	(0.009)	(0.002)	(0.026)	(0.006)	(0.002)	(0.010)	(0.008)	(0.009)
β_o	0.735***	0.774** *	0.865** *	0.797** *	0.93tu5* **	0.414***	0.903***	0.946***	0.814** *	0.872***	0.826***
	(0.010)	(0.012)	(0.004)	(0.011)	(0.002)	(0.021)	(0.007)	(0.002)	(0.013)	(0.008)	(0.012)

α_s	0.096***	0.086**	0.106**	0.086**	0.089***	0.106***	0.088***	0.084***	0.059**	0.107***	0.583***
	(0.017)	(0.008)	(0.013)	(0.012)	(0.010)	(0.014)	(0.010)	(0.011)	(0.009)	(0.016)	(0.009)
β_s	0.875***	0.907**	0.873**	0.906**	0.904***	0.888***	0.902***	0.908***	0.932**	0.884***	0.933***
	(0.020)	(0.009)	(0.015)	(0.012)	(0.011)	(0.014)	(0.011)	(0.012)	(0.011)	(0.017)	(0.010)

CDS_EQUITY UK AFTER-CRISIS SAMPLE

	BEV	BANK	CG	CS	FIN	LF	OF	OS	OT	OR	TEL
Panel A: Conditional Correlation Estimates											
a_{DC} $_{C1}$	-0.007***	-0.018	-0.003**	-0.006	0.023	0.001	-0.014	0.147***	-0.019	0.027	0.010
	(0.001)	(0.018)	(0.001)	(0.005)	(0.026)	(0.024)	(0.011)	(0.005)	(0.032)	(0.019)	(0.009)
b_{DC} $_{C2}$	0.863***	0.680	0.930**	0.849**	0.577	0.835*	0.646**	-0.554***	-0.298	0.893***	0.955***
	(0.020)	(0.507)	(0.102)	(0.390)	(0.402)	(0.432)	(0.320)	(0.005)	(0.297)	(0.066)	(0.047)
λ_1	0.000	0.032	0.010	0.016	0.008	-0.026	0.040	-0.288**	0.097	0.003	0.006
	(0.256)	(0.045)	(0.012)	(0.037)	(0.045)	(0.080)	(0.063)	(0.002)	(0.070)	(0.027)	(0.013)
Panel B: Conditional Variance Estimates											
α_o	0.374***	0.078**	0.354**	0.227**	0.211***	0.269***	0.077***	0.539***	0.192**	0.478***	0.148***
	(0.035)	(0.009)	(0.035)	(0.017)	(0.015)	(0.113)	(0.006)	(0.030)	(0.015)	(0.038)	(0.015)
β_o	0.160***	0.916**	0.179**	0.611**	0.764***	0.278***	0.920***	0.087***	0.765**	0.285***	0.807***

	(0.045)	(0.009)	(0.040)	(0.019)	(0.010)	(0.114)	(0.005)	(0.013)	(0.014)	(0.030)	(0.016)
α_s	0.097***	0.133***	0.243***	0.125***	0.153***	0.132***	0.149***	0.127***	0.115***	0.091***	0.115***
	(0.014)	(0.017)	(0.030)	(0.018)	(0.020)	(0.016)	(0.021)	(0.018)	(0.023)	(0.013)	(0.023)
β_s	0.893***	0.825***	0.633***	0.786***	0.797***	0.826***	0.790***	0.783***	0.736***	0.842***	0.737***
	(0.014)	(0.025)	(0.041)	(0.030)	(0.028)	(0.022)	(0.030)	(0.031)	(0.050)	(0.026)	(0.050)

Notes: *, **. *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- BEV(Beverages/Bottling); BNK(Banking); CG(Consumer Goods); CS(Consumer Services); FIN(Financials); LF(Life Insurance); OF(Other Financials); OS(Other Services); OT(Other Telecommunications); OR (Other Retail Stores); TEL(Telecommunications).

Table 73: Estimates of ADCC-GARCH (1,1) Model for Sectoral UK CDS Spreads and Equity Returns

CDS_EQUITY EUROPE FULL SAMPLE

	AU	BEV	BLDG	BNK	CAB	CC	CHEM	CGM	CS	ELTN	FIN	LEI	MT	OS	OF	GAS	OT	TEL	UT
Panel A: Conditional Correlation Estimates																			
a_{DCC1}	0.018	0.019	0.042	-0.020***	0.007	-0.004	0.032	-0.004***	-0.003	-0.004	-0.001***	-0.001	0.018	0.016	0.007	-0.006**	-0.007***	0.005	-0.002
	(0.021)	(0.012)	(0.030)	(0.002)	(0.009)	(0.200)	(0.036)	(0.000)	(0.009)	(0.017)	(0.000)	(0.005)	(0.023)	(0.024)	(0.20)	(0.002)	(0.002)	(0.018)	(0.030)
b_{DCC2}	-0.103	0.771***	0.073	-0.781***	0.962***	0.840***	0.035	0.789	0.803**	-0.034	0.782	0.977***	0.904***	0.453	0.511*	0.648	0.583	0.689	0.843***
	(0.043)	(0.285)	(0.366)	(0.137)	(0.038)	(0.002)	(0.627)	(0.699)	(0.408)	(0.240)	(0.592)	(0.060)	(0.125)	(0.314)	(0.278)	(0.433)	(1.138)	(0.534)	(0.001)
λ_1	-0.076	-0.017	-0.013	0.100***	0.004	0.018***	-0.061	0.004	0.008	-0.089**	-0.001	0.002	-0.017	-0.079	-0.052	0.022	0.020	-0.010	0.002
	(0.052)	(0.037)	(0.059)	(0.020)	(0.008)	(0.001)	(0.069)	(0.037)	(0.016)	(0.035)	(0.042)	(0.007)	(0.039)	(0.052)	(0.041)	(0.025)	(0.055)	(0.022)	(0.050)
Panel B: Conditional Variance Estimates																			
α_0	0.305***	0.170***	0.087***	0.085***	0.115***	0.315***	0.143***	0.286***	0.121***	0.168***	0.104***	0.109***	0.157***	0.096***	0.150***	0.098***	0.244***	0.252***	0.051***
	(0.020)	(0.008)	(0.003)	(0.004)	(0.013)	(0.018)	(0.006)	(0.016)	(0.004)	(0.006)	(0.004)	(0.010)	(0.005)	(0.003)	(0.007)	(0.004)	(0.008)	(0.010)	(0.002)
β_0	0.556***	0.821***	0.893***	0.906***	0.448***	0.619***	0.842***	0.655***	0.870***	0.824***	0.880***	0.709***	0.828***	0.889***	0.801***	0.891***	0.727***	0.721***	0.929***
	(0.017)	(0.005)	(0.003)	(0.003)	(0.043)	(0.018)	(0.006)	(0.015)	(0.002)	(0.005)	(0.002)	(0.022)	(0.002)	(0.003)	(0.008)	(0.003)	(0.003)	(0.003)	(0.001)
α_1	0.113***	0.063***	0.086***	0.101***	0.092***	0.090***	0.073***	0.074***	0.084***	0.094***	0.105***	0.075***	0.064***	0.075***	0.104***	0.074***	0.099***	0.099***	0.088***
	(0.008)	(0.007)	(0.009)	(0.008)	(0.008)	(0.009)	(0.007)	(0.007)	(0.007)	(0.008)	(0.009)	(0.007)	(0.007)	(0.006)	(0.009)	(0.007)	(0.009)	(0.009)	(0.009)
β_1	0.874***	0.915***	0.893***	0.887***	0.896***	0.895***	0.916***	0.913***	0.904***	0.897***	0.884***	0.918***	0.928***	0.898***	0.882***	0.919***	0.874***	0.874***	0.892***
	(0.010)	(0.009)	(0.012)	(0.009)	(0.010)	(0.010)	(0.008)	(0.008)	(0.009)	(0.008)	(0.010)	(0.007)	(0.008)	(0.009)	(0.010)	(0.008)	(0.012)	(0.012)	(0.011)

CDS_EQUITY EUROPE CRISIS SAMPLE

	AU	BEV	BLDG	BNK	CAB	CC	CHEM	CGM	CS	ELTN	FIN	LEI	MT	OS	OF	GAS	OT	TEL	UT
Panel A: Conditional Correlation Estimates																			
a_{DCC1}	0.001***	0.032	0.015	0.005	-0.002	0.006	0.068	-0.006***	-0.006	-0.001***	0.001	-0.003***	0.029	0.029	0.014	-0.009	-0.008	-0.014*	-0.003
	(0.000)	(0.034)	(0.016)	(0.012)	(0.029)	(0.006)	(0.051)	(0.000)	(0.011)	(0.000)	(0.012)	(0.000)	(0.019)	(0.040)	(0.013)	(0.002)	(0.012)	(0.008)	(0.000)
b_{DCC2}	0.165***	-0.195	0.935***	0.906***	0.864**	0.980***	0.094	0.801***	0.448	0.025***	0.907***	0.801***	0.906***	0.102	0.930***	0.140	0.839***	0.934***	0.799***
	(0.007)	(0.592)	(0.055)	(0.147)	(0.035)	(0.015)	(0.306)	(0.000)	(0.610)	(0.004)	(0.127)	(0.001)	(0.042)	(0.762)	(0.071)	(0.424)	(0.283)	(0.051)	(0.286)
λ_1	-0.190***	0.072	-0.000	0.004	0.019	-0.001	-0.131	0.001	0.049*	-0.097***	0.014	-0.014***	0.010	-0.089	-0.022	0.082***	-0.000	0.001	-0.011
	(0.000)	(0.087)	(0.013)	(0.022)	(0.047)	(0.005)	(0.098)	(0.020)	(0.029)	(0.000)	(0.019)	(0.000)	(0.021)	(0.069)	(0.013)	(0.018)	(0.025)	(0.008)	(0.038)
Panel B: Conditional Variance Estimates																			
α_0	0.093***	0.142***	0.082***	0.078***	0.149***	0.365***	0.172***	0.371***	0.175***	0.176***	0.226***	0.083***	0.079***	0.076***	0.214***	0.124***	0.221***	0.222***	0.040***
	(0.008)	(0.012)	(0.005)	(0.008)	(0.021)	(0.028)	(0.011)	(0.029)	(0.008)	(0.006)	(0.012)	(0.017)	(0.009)	(0.006)	(0.015)	(0.011)	(0.012)	(0.013)	(0.002)
β_0	0.869***	0.845***	0.894***	0.897***	0.696***	0.511***	0.805***	0.508***	0.818***	0.815***	0.747***	0.617***	0.850***	0.863***	0.753***	0.862***	0.710***	0.706***	0.952***
	(0.011)	(0.010)	(0.005)	(0.007)	(0.029)	(0.026)	(0.009)	(0.028)	(0.006)	(0.005)	(0.009)	(0.067)	(0.012)	(0.008)	(0.015)	(0.010)	(0.006)	(0.006)	(0.001)
α_1	0.129***	0.074***	0.094***	0.101***	0.077***	0.091***	0.079***	0.072***	0.071***	0.094***	0.099***	0.069***	0.075***	0.048***	0.090***	0.079***	0.086***	0.085***	0.085***
	(0.012)	(0.010)	(0.015)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.010)	(0.008)	(0.013)	(0.009)	(0.011)	(0.007)	(0.013)	(0.012)	(0.013)	(0.012)	(0.012)
β_1	0.856***	0.908***	0.891***	0.889***	0.910***	0.892***	0.909***	0.918***	0.916***	0.897***	0.889***	0.924***	0.915***	0.939***	0.898***	0.907***	0.891***	0.892***	0.899***
	(0.015)	(0.013)	(0.016)	(0.014)	(0.014)	(0.016)	(0.013)	(0.013)	(0.013)	(0.008)	(0.015)	(0.009)	(0.012)	(0.010)	(0.016)	(0.014)	(0.016)	(0.016)	(0.013)

CDS_EQUITY EUROPE AFTER-CRISIS SAMPLE

	AU	BEV	BLDG	BNK	CAB	CG	CHEM	CGM	CS	ELTN	FIN	LEI	MT	OS	OF	GAS	OT	TEL	UT
Panel A: Conditional Correlation Estimates																			
a_{DCC1}	0.001	-0.010	0.003	-0.019***	0.019	-0.005	-0.008	0.017	-0.007	0.007	-0.002***	-0.025	-0.003***	-0.004***	-0.002	-0.004	-0.010***	0.023	-0.002***
	(0.017)	(0.019)	(0.007)	(0.000)	(0.021)	(0.006)	(0.009)	(0.039)	(0.004)	(0.000)	(0.000)	(0.020)	(0.000)	(0.000)	(0.022)	(0.013)	(0.002)	(0.022)	(0.000)
b_{DCC2}	0.204	0.794	0.989***	0.778***	0.951***	0.847**	0.766***	0.479	-0.014	-0.220***	0.779***	0.940***	0.818***	0.808***	0.613	-0.177	0.047	0.919***	0.747***
	(1.516)	(0.642)	(0.019)	(0.000)	(0.052)	(0.377)	(0.199)	(0792)	(0.682)	(0.001)	(0.210)	(0.001)	(0.127)	(0.218)	(0.397)	(0.778)	(1.493)	(0.077)	(0.201)
λ_1	-0.028	0.010	0.001	0.025***	0.004	0.001	-0.029	-0.012	-0.016	-0.150***	0.016	-0.022	-0.070***	-0.043	-0.020	-0.033	0.059	-0.007	-0.008
	(0.060)	(0.034)	(0.003)	(0.008)	(0.014)	(0.027)	(0.039)	(0.071)	(0.034)	(0.000)	(0.040)	(0.030)	(0.001)	(0.073)	(0.043)	(0.039)	(0.069)	(0.023)	(0.023)
Panel B: Conditional Variance Estimates																			
α_o	0.267***	0.272***	0.097***	0.075***	0.113***	0.243***	0.074***	0.241***	0.097***	0.218***	0.152***	0.145***	0.217***	0.336***	0.071***	0.097***	0.261***	0.256***	0.082***
	(0.029)	(0.018)	(0.006)	(0.005)	(0.024)	(0.028)	(0.006)	(0.028)	(0.006)	(0.017)	(0.010)	(0.029)	(0.019)	(0.027)	(0.006)	(0.006)	(0.019)	(0.016)	(0.006)
β_o	0.407***	0.718***	0.882***	0.916***	0.349***	0.715***	0.902***	0.718***	0.897***	0.742***	0.862***	0.647***	0.784***	0.522***	0.903***	0.897***	0.743***	0.736***	0.862***
	(0.019)	(0.011)	(0.004)	(0.004)	(0.078)	(0.023)	(0.006)	(0.024)	(0.004)	(0.015)	(0.004)	(0.060)	(0.003)	(0.025)	(0.005)	(0.004)	(0.005)	(0.004)	(0.006)
α_z	0.104***	0.040***	0.076***	0.105***	0.136***	0.095***	0.064***	0.085***	0.120***	0.109***	0.111***	0.150***	0.042***	0.097***	0.118***	0.067***	0.125***	0.121***	0.108***
	(0.013)	(0.009)	(0.013)	(0.015)	(0.024)	(0.015)	(0.015)	(0.021)	(0.020)	(0.019)	(0.014)	(0.044)	(0.011)	(0.011)	(0.016)	(0.009)	(0.018)	(0.017)	(0.021)
β_z	0.834***	0.911***	0.865***	0.821***	0.768***	0.840***	0.865***	0.780***	0.800***	0.802***	0.813***	0.600***	0.941***	0.845***	0.801***	0.922***	0.785***	0.795***	0.787***
	(0.026)	(0.018)	(0.027)	(0.028)	(0.040)	(0.026)	(0.034)	(0.058)	(0.034)	(0.037)	(0.025)	(0.133)	(0.016)	(0.022)	(0.027)	(0.011)	(0.033)	(0.031)	(0.038)

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- AU(Automotive Manufacturer); BEV(Beverages/Bottling); BLDG(Building Products); BNK(Banking); CAB(Cable Media); CG(Consumer Goods); CHEM(Chemicals); CGM(Conglomerate/Diversified Mfg); CS(Consumer Services); ELTN(Electronics); FIN(Financials); GAS(Oil&Gas); LEI(Leisure); MT(Metals&Mining); OF(Other Financials); OS(Other Services); OT(Other Telecommunications); TEL(Telecommunications); UT(Utility Other).

Table 74: Estimates of ADCC-GARCH (1,1) Model for Sectoral EU CDS Spreads and Equity Returns

CDS_EQUITY JAPAN FULL SAMPLE

	AU	BNK	CHEM	CS	ELTN	IND	OR	MT	OS	OF	OT	OTR	TEL	UT
Panel A: Conditional Correlation Estimates														
a_{DCC1}	0.007	-0.004***	-0.004	0.020	-0.004***	0.009***	-0.004***	0.003	-0.003	-0.006***	-0.005***	-0.010	-0.003	0.016
	(0.005)	(0.000)	(0.010)	(0.030)	(0.000)	(0.000)	(0.000)	(0.019)	(0.010)	(0.000)	(0.000)	(0.053)	(0.005)	(0.028)
b_{DCC2}	0.984***	1.000***	-0.411	0.350	0.792*	-0.601***	0.783***	0.698*	0.784***	0.791***	0.790***	0.784***	-0.622***	-0.138
	(0.014)	(0.000)	(0.359)	(0.304)	(0.475)	(0.000)	(0.000)	(0.397)	(0.001)	(0.001)	(0.097)	(0.005)	(0.195)	(0.466)
λ_1	0.002	0.003***	-0.084*	0.025	0.027**	-0.041***	0.000	0.020	0.001	-0.007***	-0.001	-0.029	-0.049	0.045
	(0.004)	(0.000)	(0.049)	(0.050)	(0.012)	(0.000)	(0.010)	(0.037)	(0.005)	(0.000)	(0.031)	(0.156)	(0.032)	(0.049)
Panel B: Conditional Variance Estimates														
α_o	0.090***	0.117***	0.122***	0.192***	0.153***	0.078***	0.296***	0.124***	0.453***	0.129***	0.115***	0.080***	0.115***	0.099***
	(0.004)	(0.006)	(0.006)	(0.007)	(0.007)	(0.002)	(0.047)	(0.008)	(0.025)	(0.007)	(0.006)	(0.004)	(0.005)	(0.005)
β_o	0.865***	0.874***	0.849***	0.788***	0.822***	0.908***	0.517***	0.837***	0.534***	0.821***	0.863***	0.919***	0.862***	0.842***
	(0.003)	(0.006)	(0.005)	(0.004)	(0.005)	(0.002)	(0.018)	(0.007)	(0.024)	(0.006)	(0.004)	(0.003)	(0.003)	(0.004)
α_x	0.115***	0.081***	0.120***	0.151***	0.112***	0.123***	0.133***	0.120***	0.082***	0.104***	0.112***	0.111***	0.099***	0.132***
	(0.010)	(0.006)	(0.010)	(0.009)	(0.010)	(0.010)	(0.009)	(0.010)	(0.009)	(0.008)	(0.008)	(0.009)	(0.009)	(0.010)
β_x	0.868***	0.904***	0.850***	0.821***	0.860***	0.839***	0.844***	0.850***	0.853***	0.875***	0.867***	0.869***	0.874***	0.850***
	(0.011)	(0.006)	(0.013)	(0.011)	(0.012)	(0.013)	(0.011)	(0.013)	(0.017)	(0.008)	(0.009)	(0.010)	(0.012)	(0.008)

CDS_EQUITY JAPAN CRISIS SAMPLE

	AU	BNK	CHEM	CS	ELTN	IND	OR	MT	OS	OF	OT	OTR	TEL	UT
Panel A: Conditional Correlation Estimates														
a_{DCC1}	0.007	0.007	-0.006***	0.019	-0.005***	-0.004***	-0.011***	-0.001	-0.012	-0.007***	-0.008***	-0.015***	-0.008***	0.104*
	(0.007)	(0.023)	(0.000)	(0.037)	(0.000)	(0.000)	(0.000)	(0.017)	(0.050)	(0.001)	(0.000)	(0.004)	(0.002)	(0.063)
b_{DCC2}	0.976***	-0.167	0.999***	0.242	0.871***	1.001***	0.788***	0.811***	0.891***	0.788***	-0.941***	0.933***	0.628***	0.049
	(0.029)	(0.187)	(0.000)	(0.451)	(0.158)	(0.001)	(0.000)	(0.255)	(0.001)	(0.001)	(0.000)	(0.065)	(0.001)	(0.209)
λ_1	0.005	0.110***	-0.000	0.050	0.036	-0.000	-0.044***	0.026	0.012***	-0.015***	-0.023	-0.002	0.017	-0.050
	(0.008)	(0.026)	(0.020)	(0.071)	(0.0350	(0.010)	(0.000)	(0.035)	(0.000)	(0.002)	(0.021)	(0.012)	(0.123)	(0.104)
Panel B: Conditional Variance Estimates														
α_o	0.131***	0.130***	0.072***	0.215***	0.125***	0.092***	0.128***	0.079***	0.141***	0.118***	0.079***	0.090***	0.079***	0.069***
	(0.007)	(0.007)	(0.005)	(0.018)	(0.009)	(0.007)	(0.014)	(0.009)	(0.012)	(0.010)	(0.006)	(0.009)	(0.006)	(0.006)
β_o	0.851***	0.865***	0.905***	0.774***	0.817***	0.882***	0.705***	0.850***	0.846***	0.840***	0.890***	0.907***	0.890***	0.839***
	(0.003)	(0.007)	(0.004)	(0.013)	(0.008)	(0.007)	(0.011)	(0.012)	(0.010)	(0.010)	(0.005)	(0.007)	(0.005)	(0.008)
α_x	0.086***	0.067***	0.131***	0.179***	0.122***	0.130***	0.152***	0.131***	0.101***	0.078***	0.130***	0.114***	0.085***	0.160***
	(0.012)	(0.007)	(0.015)	(0.012)	(0.016)	(0.015)	(0.012)	(0.015)	(0.014)	(0.008)	(0.011)	(0.012)	(0.013)	(0.016)
β_x	0.890***	0.923***	0.836***	0.787***	0.840***	0.838***	0.827***	0.836***	0.810***	0.907***	0.854***	0.865***	0.892***	0.832***
	(0.016)	(0.007)	(0.021)	(0.018)	(0.020)	(0.019)	(0.014)	(0.021)	(0.025)	(0.009)	(0.012)	(0.013)	(0.016)	(0.012)

CDS_EQUITY JAPAN AFTER-CRISIS SAMPLE

	AU	BNK	CHEM	CS	ELTN	IND	OR	MT	OS	OF	OT	OTR	TEL	UT
Panel A: Conditional Correlation Estimates														
a_{0003}	0.008	-0.015*	0.008	0.084	-0.004***	0.055***	-0.009***	0.014	-0.005***	-0.008	-0.004***	-0.001	-0.004***	-0.010
	(0.014)	(0.008)	(0.008)	(0.056)	(0.015)	(0.000)	(0.001)	(0.018)	(0.000)	(0.012)	(0.001)	(0.025)	(0.000)	(0.008)
b_{0003}	0.896***	0.988***	0.975***	0.399	0.721	-0.336***	0.925***	0.889***	0.885***	0.947***	0.861***	0.409	0.749***	0.489
	(0.274)	(0.010)	(0.027)	(0.267)	(0.931)	(0.001)	(0.001)	(0.119)	(0.002)	(0.068)	(0.001)	(0.358)	(0.000)	(0.608)
λ_1	-0.015	0.001	0.001	-0.076	0.015	-0.079***	0.005***	-0.006	0.000	0.000	0.026	-0.057	-0.017	0.036
	(0.050)	(0.003)	(0.009)	(0.083)	(0.036)	(0.001)	(0.001)	(0.022)	(0.050)	(0.011)	(0.050)	(0.059)	(0.018)	(0.048)
Panel B: Conditional Variance Estimates														
α_0	0.080***	0.063***	0.176***	0.213***	0.069***	0.065***	0.202***	0.101***	0.596***	0.127***	0.164***	0.112***	0.166***	0.096***
	(0.011)	(0.007)	(0.013)	(0.012)	(0.003)	(0.004)	(0.073)	(0.013)	(0.095)	(0.009)	(0.012)	(0.011)	(0.012)	(0.011)
β_0	0.861***	0.925***	0.791***	0.770***	0.930***	0.899***	0.395***	0.869***	0.003***	0.782***	0.828***	0.849***	0.826***	0.816***
	(0.006)	(0.007)	(0.011)	(0.007)	(0.002)	(0.004)	(0.056)	(0.016)	(0.000)	(0.009)	(0.007)	(0.010)	(0.007)	(0.015)
α_0	0.144***	0.134***	0.101***	0.132***	0.010***	0.109***	0.111***	0.139***	0.054***	0.162***	0.091***	0.099***	0.121***	0.113***
	(0.015)	(0.016)	(0.013)	(0.016)	(0.012)	(0.014)	(0.016)	(0.009)	(0.010)	(0.019)	(0.013)	(0.014)	(0.017)	(0.014)
β_0	0.833***	0.828***	0.870***	0.828***	0.877***	0.838***	0.858***	0.851***	0.919***	0.797***	0.874***	0.879***	0.795***	0.862***
	(0.017)	(0.019)	(0.016)	(0.021)	(0.015)	(0.020)	(0.022)	(0.008)	(0.017)	(0.021)	(0.019)	(0.017)	(0.031)	(0.015)

Notes: *, **. *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- AU(Automotive Manufacturer); BNK(Banking); CHEM(Chemicals); CS(Consumer Services); ELTN(Electronics); IND(Industrials); OR(Retail Stores Other); MT(Metals&Mining); OF(Other Financials); OS(Other Services); OT(Other Telecommunications); OTR(Other Transportation); TEL(Telecommunications); UT(Utility Other).

Table 75: Estimates of ADCC-GARCH (1,1) Model for Sectoral Japan CDS Spreads and Equity Returns

B.2.2 CDS Spread and Equity Regional Connectedness

CDS SPREADS REGIONAL ANALYSIS FULL SAMPLE

	BEV	BLDG	BNK	BNKG	CAB	CG	CGM	CHM	ELEC	ELTN	EN	IND	LEI	MNG	MT	FIN	OF	GAS	OS	OT	OTR	RAIL	OR	CS	TEL	TR	UT
Panel A: Conditional Correlation Estimates																											
α_{CCC}	0.010***	-0.000	0.008***	0.009***	0.021	0.021***	0.030***	0.020***	0.021***	0.016***	0.010***	0.051***	0.053**	0.025***	0.157***	0.029***	0.030***	0.080***	0.010***	0.053***	0.072***	0.013	0.053***	0.025***	0.029***	0.023***	0.031***
	(0.002)	(0.001)	(0.001)	(0.002)	(0.017)	(0.000)	(0.008)	(0.000)	(0.000)	(0.004)	(0.003)	(0.018)	(0.024)	(0.000)	(0.000)	(0.003)	(0.006)	(0.032)	(0.004)	(0.011)	(0.240)	(0.011)	(0.013)	(0.005)	(0.003)	(0.008)	(0.005)
b_{CCC}	0.976***	0.473***	0.990***	0.982***	0.694***	0.980***	0.968***	0.913***	0.899***	0.967***	0.980***	0.947***	0.804***	0.973***	0.131***	0.953***	0.945***	0.409**	0.938***	0.801***	0.889***	0.829***	0.766***	0.892***	0.958***	0.949***	0.930***
	(0.006)	(0.182)	(0.001)	(0.006)	(0.113)	(0.000)	(0.016)	(0.000)	(0.000)	(0.008)	(0.004)	(0.020)	(0.068)	(0.000)	(0.000)	(0.010)	(0.010)	(0.187)	(0.010)	(0.050)	(0.025)	(0.180)	(0.046)	(0.015)	(0.007)	(0.023)	(0.011)
χ_{11}	0.004***	0.008***	0.000	0.003*	0.068***	-0.004***	0.030***	0.185***	0.020***	0.001***	0.002	-0.008	0.005	0.018***	0.185***	0.012***	0.013***	-0.013	0.028***	-0.014	-0.038	-0.004	-0.072**	0.019***	0.007***	-0.003	-0.001
	(0.001)	(0.006)	(0.001)	(0.002)	(0.014)	(0.000)	(0.006)	(0.000)	(0.000)	(0.004)	(0.003)	(0.018)	(0.024)	(0.000)	(0.000)	(0.003)	(0.002)	(0.029)	(0.004)	(0.010)	(0.024)	(0.025)	(0.033)	(0.001)	(0.002)	(0.006)	(0.007)
Panel B: Conditional Variance Estimates																											
α_{11}	0.048***	0.094***	0.171***	0.171***	0.137***	0.155***	0.110***	0.356***	0.245***	0.099***	0.136***	0.140***	0.154***	0.125***	0.007***	0.139***	0.139***	0.196***	0.105***	0.244***	0.078***	0.238***	0.230***	0.183***	0.280***	0.320***	0.120***
	(0.002)	(0.004)	(0.005)	(0.005)	(0.008)	(0.008)	(0.0060)	(0.020)	(0.011)	(0.005)	(0.007)	(0.011)	(0.007)	(0.007)	(0.005)	(0.006)	(0.006)	(0.013)	(0.005)	(0.008)	(0.003)	(0.016)	(0.026)	(0.011)	(0.007)	(0.028)	(0.006)
β_{11}	0.931***	0.875***	0.827***	0.827***	0.708***	0.744***	0.878***	0.510***	0.638***	0.878***	0.841***	0.686***	0.810***	0.861***	0.899***	0.842***	0.842***	0.669***	0.879***	0.535***	0.922***	0.641***	0.542***	0.781***	0.617***	0.258***	0.863***
	(0.002)	(0.002)	(0.003)	(0.003)	(0.012)	(0.007)	(0.004)	(0.015)	(0.013)	(0.004)	(0.005)	(0.014)	(0.005)	(0.006)	(0.003)	(0.003)	(0.003)	(0.018)	(0.004)	(0.014)	(0.003)	(0.015)	(0.029)	(0.010)	(0.010)	(0.018)	(0.006)
α_{22}	0.068***	-	0.100***	0.143***	-	0.150***	-	-	0.156***	-	-	-	-	0.150***	-	0.072***	0.075***	-	0.081***	0.160***	-	-	0.185***	0.129***	0.129***	-	-
	(0.003)	-	(0.008)	(0.006)	-	(0.027)	-	-	(0.005)	-	-	-	-	(0.020)	-	(0.002)	(0.003)	-	(0.003)	(0.008)	-	-	(0.010)	(0.005)	(0.007)	-	-
β_{22}	0.926***	-	0.895***	0.835***	-	0.600***	-	-	0.846***	-	-	-	-	0.600***	-	0.927***	0.924***	-	0.896***	0.800***	-	-	0.768***	0.821***	0.836***	-	-
	(0.002)	-	(0.007)	(0.006)	-	(0.064)	-	-	(0.004)	-	-	-	-	(0.030)	-	(0.002)	(0.003)	-	(0.002)	(0.009)	-	-	(0.008)	(0.006)	(0.008)	-	-
α_{33}	0.159***	0.081***	0.147***	0.086***	0.115***	0.098***	0.258***	0.146***	0.188***	0.160***	0.216***	-	0.115***	0.108***	0.122***	0.227***	0.149***	0.154***	0.146***	-	-	-	-	0.096***	0.226***	0.139***	0.112
	(0.038)	(0.003)	(0.007)	(0.004)	(0.016)	(0.004)	(0.017)	(0.006)	(0.006)	(0.005)	(0.013)	-	(0.011)	(0.004)	(0.008)	(0.009)	(0.007)	(0.009)	(0.019)	-	-	-	-	(0.003)	(0.007)	(0.005)	(0.007)
β_{33}	0.821***	0.900***	0.820***	0.906***	0.449***	0.891***	0.637***	0.839***	0.821***	0.836***	0.760***	-	0.664***	0.865***	0.839***	0.722***	0.802***	0.842***	0.256***	-	-	-	-	0.887***	0.770***	0.855***	0.892***
	(0.005)	(0.002)	(0.006)	(0.003)	(0.0414)	(0.003)	(0.016)	(0.006)	(0.005)	(0.004)	(0.011)	-	(0.027)	(0.004)	(0.008)	(0.007)	(0.008)	(0.008)	(0.056)	-	-	-	-	(0.002)	(0.003)	(0.003)	(0.006)
α_{44}	-	-	0.118***	0.132***	-	-	-	0.121***	0.113***	0.128***	-	0.079***	-	0.208***	-	0.122***	-	-	0.432***	0.116***	0.045***	0.044***	0.300***	0.192***	0.116***	0.083***	0.127***
	-	-	(0.006)	(0.006)	-	-	-	(0.006)	(0.005)	(0.006)	-	(0.002)	-	(0.013)	-	(0.007)	-	-	(0.015)	(0.005)	(0.0020	(0.001)	(0.042)	(0.007)	(0.005)	(0.004)	(0.005)
β_{44}	-	-	0.872***	0.854***	-	-	-	0.850***	0.841***	0.831***	-	0.907***	-	0.661***	-	0.830***	-	-	0.546***	0.862***	0.956***	0.942***	0.541***	0.788***	0.862***	0.916***	0.823***
	-	-	(0.005)	(0.006)	-	-	-	(0.005)	(0.004)	(0.005)	-	(0.002)	-	(0.017)	-	(0.006)	-	-	(0.016)	(0.003)	(0.001)	(0.001)	(0.009)	(0.004)	(0.003)	(0.003)	(0.003)

CDS SPREADS REGIONAL ANALYSIS CRISIS SAMPLE

	BEV	BLDG	BNK	BNKG	CAB	CG	CGM	CHM	ELEC	ELTN	EN	IND	LEI	MNG	MT	FIN	OF	GAS	OS	OT	OTR	RAIL	OR	CS	TEL	TR	UT
Panel A: Conditional Correlation Estimates																											
α_{ECCA}	0.004	0.044***	0.035***	0.009***	0.104***	0.075***	0.035***	0.014***	0.015***	0.0126	0.122***	-0.001	0.123***	0.007***	0.072***	0.014***	0.030***	0.033	0.005**	0.046***	0.166	0.032	0.015***	0.033***	0.011***	0.039***	0.016***
	(0.002)	(0.015)	(0.009)	(0.003)	(0.031)	(0.022)	(0.002)	(0.001)	(0.003)	(0.003)	(0.040)	(0.006)	(0.026)	(0.003)	(0.001)	(0.004)	(0.006)	(0.028)	(0.002)	(0.014)	(0.122)	(0.023)	(0.004)	(0.000)	(0.002)	(0.010)	(0.006)
b_{ECCA}	0.977***	-0.286***	0.790***	0.953***	0.653***	0.610***	0.886***	0.791***	0.957***	0.971***	-0.019	0.559	0.802***	0.963***	-0.110***	0.962***	0.938***	0.600***	0.792***	0.825***	0.300	0.337	0.979***	0.806***	0.981***	0.873***	0.949***
	(0.011)	(0.105)	(0.062)	(0.011)	(0.103)	(0.146)	(0.001)	(0.006)	(0.010)	(0.008)	(0.0163)	(0.0778)	(0.044)	(0.011)	(0.004)	(0.010)	(0.012)	(0.206)	(0.001)	(0.058)	(0.226)	(0.263)	(0.008)	(0.001)	(0.003)	(0.031)	(0.017)
λ_{EI}	0.004**	0.088***	0.000	0.013***	-0.130***	-0.001	0.081***	0.019***	0.008***	0.004	-0.049	-0.029	-0.000	0.004**	-0.214	0.011***	0.008***	0.020	0.020***	-0.002	-0.198	0.138***	-0.004	0.026***	0.006***	0.018***	-0.007
	(0.025)	(0.026)	(0.008)	(0.002)	(0.050)	(0.006)	(0.005)	(0.000)	(0.003)	(0.005)	(0.041)	(0.023)	(0.018)	(0.002)	(0.589)	(0.002)	(0.003)	(0.025)	(0.001)	(0.010)	(0.147)	(0.034)	(0.005)	(0.000)	(0.002)	(0.015)	(0.007)
Panel B: Conditional Variance Estimates																											
α_{ii}	0.087***	0.107***	0.103***	0.103***	0.144***	0.457***	0.080***	0.268***	0.181***	0.207***	0.196***	0.068***	0.119***	0.158***	0.128***	0.165***	0.173***	0.074***	0.108***	0.086***	0.078***	0.093***	0.057***	0.073***	0.065***	0.201***	0.085***
	(0.006)	(0.006)	(0.007)	(0.007)	(0.026)	(0.030)	(0.005)	(0.028)	(0.009)	(0.017)	(0.014)	(0.022)	(0.010)	(0.014)	(0.007)	(0.010)	(0.011)	(0.006)	(0.007)	(0.014)	(0.005)	(0.006)	(0.003)	(0.005)	(0.005)	(0.013)	(0.006)
β_{ii}	0.883***	0.841***	0.878***	0.878***	0.04	0.402***	0.909***	0.457***	0.771***	0.768***	0.793***	0.305***	0.867***	0.804***	0.869***	0.799***	0.793***	0.883***	0.882***	0.710***	0.922***	0.909***	0.941***	0.909***	0.914***	0.553***	0.904***
	(0.007)	(0.005)	(0.007)	(0.005)	(0.060)	(0.021)	(0.004)	(0.039)	(0.011)	(0.022)	(0.013)	(0.062)	(0.007)	(0.009)	(0.004)	(0.006)	(0.006)	(0.007)	(0.004)	(0.040)	(0.005)	(0.004)	(0.002)	(0.004)	(0.005)	(0.009)	(0.009)
α_{ii}	0.053***	-	0.205***	0.193***	-	0.102***	-	-	0.107***	-	-	-	-	0.138***	-	0.050***	0.080***	-	0.050***	0.139***	-	-	0.115***	0.124***	0.149***	-	-
	(0.005)	-	(0.013)	(0.012)	-	(0.007)	-	-	(0.006)	-	-	-	-	(0.009)	-	(0.002)	(0.006)	-	(0.002)	(0.010)	-	-	(0.008)	(0.009)	(0.011)	-	-
β_{ii}	0.936***	-	0.774***	0.795***	-	0.897***	-	-	0.881***	-	-	-	-	0.862***	-	0.949***	0.903***	-	0.946***	0.814***	-	-	0.872***	0.811***	0.815***	-	-
	(0.005)	-	(0.012)	(0.012)	-	(0.005)	-	-	(0.005)	-	-	-	-	(0.006)	-	(0.002)	(0.007)	-	(0.002)	(0.013)	-	-	(0.008)	(0.010)	(0.012)	-	-
α_{ii}	0.142***	0.077***	0.204***	0.058***	0.149***	0.127***	0.356***	0.173***	0.252***	0.110***	0.168***	-	0.076***	0.177***	0.079***	0.211***	0.214***	0.111***	0.108***	-	-	-	-	0.068***	0.241***	0.273***	0.204***
	(0.012)	(0.004)	(0.016)	(0.008)	(0.021)	(0.011)	(0.028)	(0.012)	(0.013)	(0.004)	(0.012)	-	(0.015)	(0.012)	(0.009)	(0.010)	(0.015)	(0.014)	(0.025)	-	-	-	-	(0.005)	(0.014)	(0.020)	(0.017)
β_{ii}	0.843***	0.902***	0.779***	0.937***	0.696***	0.869***	0.519***	0.803***	0.738***	0.887***	0.803***	-	0.926***	0.752***	0.850***	0.762***	0.753***	0.867***	0.250***	-	-	-	-	0.874***	0.753***	0.667***	0.696***
	(0.010)	(0.004)	(0.012)	(0.007)	(0.029)	(0.010)	(0.025)	(0.009)	(0.013)	(0.003)	(0.013)	-	(0.063)	(0.015)	(0.012)	(0.007)	(0.015)	(0.013)	(0.088)	-	-	-	-	(0.007)	(0.009)	(0.019)	(0.013)
α_{ii}	-	-	0.130***	0.140***	-	-	-	0.071***	0.117***	0.125***	-	0.093***	-	0.174***	-	0.115***	-	-	0.144***	0.079***	0.574***	0.050***	0.134***	0.215***	0.087***	0.058***	0.062***
	-	-	(0.007)	(0.008)	-	-	-	(0.005)	(0.006)	(0.009)	-	(0.007)	-	(0.018)	-	(0.010)	-	-	(0.012)	(0.006)	(0.056)	(0.003)	(0.012)	(0.013)	(0.007)	(0.009)	(0.006)
β_{ii}	-	-	0.865***	0.855***	-	-	-	0.906***	0.848***	0.817***	-	0.883***	-	0.660***	-	0.846***	-	-	0.845***	0.950***	0.080***	0.905***	0.696***	0.773***	0.902***	0.901***	0.839***
	-	-	(0.007)	(0.007)	-	-	-	(0.004)	(0.004)	(0.008)	-	(0.007)	-	(0.032)	-	(0.010)	-	-	(0.010)	(0.005)	(0.016)	(0.003)	(0.010)	(0.011)	(0.004)	(0.007)	(0.008)

CDS SPREADS REGIONAL ANALYSIS CRISIS SAMPLE

	BEV	BLDG	BNK	BNKG	CAB	CG	CGM	CHM	ELEC	ELTN	EN	IND	LEI	MNG	MT	FIN	OF	GAS	OS	OT	OTR	RAIL	OR	CS	TEL	TR	UT
Panel A: Conditional Correlation Estimates																											
α_{corr}	0.022***	0.018**	0.009***	0.010***	-0.002	0.015**	0.050***	0.034	0.004	0.010**	0.038*	0.079***	0.14	0.035***	0.030*	0.026**	0.051***	0.166***	0.005**	0.049**	0.076**	0.032	0.077***	0.070***	0.177***	0.100***	0.037
	(0.007)	(0.007)	(0.002)	(0.002)	(0.000)	(0.007)	(0.016)	(0.022)	(0.005)	(0.005)	(0.023)	(0.014)	(0.008)	(0.010)	(0.012)	(0.012)	(0.013)	(0.054)	(0.002)	(0.021)	(0.033)	(0.056)	(0.020)	(0.015)	(0.001)	(0.001)	(0.024)
b_{corr}	0.929***	0.971***	0.990***	0.987***	0.786***	0.933***	0.850***	0.265	0.688	0.951***	0.804***	0.919***	0.949***	0.649***	0.930***	0.612***	0.827***	0.241	0.981***	0.189	0.890***	0.231	0.726***	0.688***	0.153***	0.850***	0.582***
	(0.024)	(0.011)	(0.002)	(0.003)	(0.001)	(0.020)	(0.038)	(0.508)	(0.220)	(0.031)	(0.105)	(0.016)	(0.030)	(0.116)	(0.061)	(0.204)	(0.041)	(0.282)	(0.0006)	(0.210)	(0.029)	(0.472)	(0.048)	(0.062)	(0.001)	(0.001)	(0.211)
λ_1	-0.004	0.002	-0.004***	-0.004**	0.068***	-0.020**	-0.010	0.055***	0.011	0.002	-0.068	-0.188***	0.001	0.015***	0.007***	0.013	-0.005	-0.085	0.008***	-0.055**	-0.018	-0.059	-0.196***	0.001***	0.192***	0.000	-0.003
	(0.007)	(0.010)	(0.001)	(0.002)	(0.000)	(0.010)	(0.021)	(0.013)	(0.015)	(0.010)	(0.054)	(0.031)	(0.014)	(0.006)	(0.019)	(0.017)	(0.014)	(0.078)	(0.003)	(0.026)	(0.030)	(0.060)	(0.056)	(0.018)	(0.000)	(0.200)	(0.045)
Panel B: Conditional Variance Estimates																											
α_{1}	0.047***	0.112***	0.322***	0.326***	0.104***	0.041***	0.143***	0.428***	0.256***	0.047***	0.136***	0.165***	0.342***	0.068***	0.077***	0.131***	0.131***	0.240***	0.115***	0.413***	0.059***	0.132***	0.376***	0.218***	0.421***	0.256***	0.241***
	(0.003)	(0.006)	(0.019)	(0.021)	(0.018)	(0.003)	(0.017)	(0.037)	(0.025)	(0.004)	(0.012)	(0.009)	(0.022)	(0.006)	(0.008)	(0.009)	(0.009)	(0.027)	(0.010)	(0.014)	(0.004)	(0.025)	(0.120)	(0.021)	(0.015)	(0.012)	(0.019)
β_{1}	0.923***	0.879***	0.631***	0.625***	0.660***	0.945***	0.813***	0.533***	0.572***	0.953***	0.838	0.795***	0.569***	0.920***	0.920***	0.837***	0.837***	0.552***	0.850***	0.543***	0.924***	0.320***	0.459***	0.767***	0.538***	0.652***	0.717***
	(0.003)	(0.004)	(0.019)	(0.018)	(0.017)	(0.003)	(0.012)	(0.018)	(0.032)	(0.003)	(0.007)	(0.006)	(0.014)	(0.007)	(0.006)	(0.005)	(0.005)	(0.037)	(0.010)	(0.012)	(0.005)	(0.063)	(0.066)	(0.015)	(0.012)	(0.001)	(0.012)
α_{2}	0.061***	-	0.190***	0.088***	-	0.417***	-	-	0.176***	-	-	-	-	0.227***	-	0.209***	0.076***	-	0.243***	0.191***	-	-	0.490***	0.225***	0.147***	-	-
	(0.005)	-	(0.015)	(0.010)	-	(0.033)	-	-	(0.013)	-	-	-	-	(0.021)	-	(0.014)	(0.006)	-	(0.019)	(0.014)	-	-	(0.039)	(0.017)	(0.015)	-	-
β_{2}	0.885***	-	0.806***	0.903***	-	0.283***	-	-	0.752***	-	-	-	-	0.688***	-	0.765***	0.920***	-	0.640***	0.768***	-	-	0.279***	0.613***	0.808***	-	-
	(0.006)	-	(0.015)	(0.010)	-	(0.029)	-	-	(0.008)	-	-	-	-	(0.016)	-	(0.010)	(0.005)	-	(0.012)	(0.013)	-	-	(0.031)	(0.019)	(0.016)	-	-
α_{3}	0.251***	0.095***	0.308***	0.098***	0.122***	0.097***	0.243***	0.097***	0.156***	0.213***	0.475***	-	0.103***	0.084***	0.130***	0.433***	0.070***	0.397***	0.182***	-	-	-	-	0.324***	0.268***	0.102***	0.082***
	(0.016)	(0.005)	(0.030)	(0.005)	(0.025)	(0.006)	(0.027)	(0.006)	(0.011)	(0.016)	(0.043)	-	(0.009)	(0.007)	(0.009)	(0.019)	(0.006)	(0.040)	(0.010)	-	-	-	-	(0.026)	(0.012)	(0.006)	(0.005)
β_{3}	0.738***	0.889***	0.573***	0.915***	0.330***	0.896***	0.714***	0.896***	0.826***	0.749***	0.498***	-	0.896***	0.901***	0.852***	0.530***	0.905***	0.501***	0.801***	-	-	-	-	0.522***	0.786***	0.895***	0.892***
	(0.010)	(0.004)	(0.031)	(0.004)	(0.070)	(0.004)	(0.023)	(0.006)	(0.011)	(0.014)	(0.029)	-	(0.006)	(0.006)	(0.008)	(0.014)	(0.004)	(0.031)	(0.005)	-	-	-	-	(0.025)	(0.005)	(0.003)	(0.003)
α_{4}	-	-	0.084***	0.088***	-	-	-	0.173***	0.826***	0.157***	-	0.065***	-	0.210***	-	0.127***	-	-	0.597***	0.167***	0.107***	0.083***	0.221***	0.266***	0.160***	0.107***	0.163***
	-	-	(0.009)	(0.010)	-	-	-	(0.013)	(0.011)	(0.010)	-	(0.004)	-	(0.015)	-	(0.009)	-	-	(0.005)	(0.012)	(0.011)	(0.006)	(0.058)	(0.012)	(0.012)	(0.011)	(0.013)
β_{4}	-	-	0.903***	0.894***	-	-	-	0.792***	0.826***	0.839***	-	0.901***	-	0.734***	-	0.783***	-	-	0.003***	0.825***	0.851***	0.908***	0.406***	0.768***	0.839***	0.851***	0.779***
	-	-	(0.009)	(0.010)	-	-	-	(0.010)	(0.008)	(0.007)	-	(0.004)	-	(0.015)	-	(0.009)	-	-	(0.000)	(0.007)	(0.011)	(0.004)	(0.031)	(0.008)	(0.007)	(0.011)	(0.013)

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- BEV(Beverages/Bottling); BLDG(Building Products); BNK(Banks); BKG(Banking); CAB(Cable Media); CG(Consumer Goods); CHM(Chemicals); CGM(Conglomerate/Diversified Mfg); CON(Container); CS(Consumer Services); ELEC(Electric (Power); ELTN(Electronics); EN (Energy); FIN(Financials); GAS(Oil&Gas); IND(Industrials); LEI(Leisure); MNG(Manufacturing); MT(Metals&Mining); OF(Other Financials); OR(Retail Stores Other); OS(Other Services); OT(Other Telecommunications); OTR(Other Transport); TR(Transport); RAIL(Railroads); TEL(Telecommunications); UT(Utility Other).

Table 76: Estimates of ADCC-GARCH (1,1) Model for Regional CDS Spreads Sectoral Returns

EQUITY REGIONAL ANALYSIS FULL SAMPLE

	BEV	BLDG	BMAT	BNK	CAB	CG	CGM	CHEM	ELTN	HLT	IND	LEI	MT	FIN	OF	OIL	OS	OT	OTRSP	RET	SERV	TEC	TEL	UT
Panel A: Conditional Correlation Estimates																								
a_{0000}	0.010***	0.019	0.021***	0.011***	0.138***	0.035***	0.018***	0.004	0.073***	0.005*	0.011***	0.009**	0.024*	0.022***	0.033***	0.021***	0.011***	0.002	0.063**	0.018*	0.010***	0.005***	0.002***	0.006***
	(0.002)	(0.021)	(0.000)	(0.002)	(0.030)	(0.012)	(0.005)	(0.003)	(0.017)	(0.003)	(0.002)	(0.004)	(0.014)	(0.000)	(0.000)	(0.000)	(0.003)	(0.002)	(0.029)	(0.010)	(0.000)	(0.002)	(0.000)	(0.002)
b_{0000}	0.986***	-0.439	0.949***	0.967***	0.428***	-0.033	0.975***	0.969***	0.440***	0.936***	0.960***	0.985***	0.106	0.822***	0.887***	0.836***	0.933***	0.989***	-0.215	0.888***	0.803***	0.975***	0.795***	0.952***
	(0.003)	(0.028)	(0.000)	(0.006)	(0.125)	(0.347)	(0.007)	(0.021)	(0.158)	(0.016)	(0.006)	(0.007)	(0.391)	(0.000)	(0.000)	(0.000)	(0.021)	(0.012)	(0.333)	(0.073)	(0.000)	(0.010)	(0.001)	(0.011)
λ_1	0.000	-0.056*	0.006***	0.003***	-0.076***	-0.046***	0.002	0.001	-0.061***	0.005***	0.003***	0.001	-0.026	0.004***	0.005***	0.005***	0.005***	-0.001	-0.056	-0.006	0.006***	0.005	0.010***	0.005***
	(0.001)	(0.030)	(0.000)	(0.005)	(0.024)	(0.013)	(0.002)	(0.002)	(0.019)	(0.002)	(0.001)	(0.001)	(0.016)	(0.000)	(0.000)	(0.000)	(0.003)	(0.001)	(0.035)	(0.006)	(0.000)	(0.001)	(0.000)	(0.002)
Panel B: Conditional Variance Estimates																								
α_0	0.117***	0.060***	0.085***	0.098***	0.086***	0.132***	0.095***	0.103***	0.093***	0.110***	0.102***	0.088***	0.062***	0.122***	0.122***	0.081***	0.068***	0.073***	0.062***	0.093***	0.097***	0.095***	0.073***	0.089***
	(0.011)	(0.009)	(0.008)	(0.007)	(0.008)	(0.012)	(0.009)	(0.009)	(0.009)	(0.0106)	(0.880***	(0.009)	(0.006)	(0.009)	(0.009)	(0.007)	(0.007)	(0.007)	(0.006)	(0.009)	(0.010)	(0.009)	(0.007)	(0.008)
β_0	0.838***	0.906***	0.907***	0.894***	0.900***	0.837***	0.896***	0.885***	0.891***	0.863***	0.880***	0.896***	0.926***	0.868***	0.868***	0.913***	0.919***	0.905***	0.926***	0.889***	0.885***	0.886***	0.905***	0.897***
	(0.015)	(0.010)	(0.008)	(0.007)	(0.010)	(0.013)	(0.008)	(0.009)	(0.010)	(0.013)	(0.010)	(0.010)	(0.008)	(0.009)	(0.009)	(0.007)	(0.008)	(0.010)	(0.008)	(0.011)	(0.011)	(0.011)	(0.010)	(0.009)
α_1	0.089***	-	0.059***	0.095***	-	0.131***	-	-	-	0.063***	0.102***	-	-	0.113***	0.118***	0.070***	0.102***	0.089***	-	0.103***	0.102***	0.085***	0.090***	0.072***
	(0.010)	-	(0.006)	(0.007)	-	(0.012)	-	-	-	(0.006)	(0.010)	-	-	(0.009)	(0.010)	(0.006)	(0.009)	(0.009)	-	(0.009)	(0.009)	(0.007)	(0.010)	(0.006)
β_1	0.898***	-	0.934***	0.902***	-	0.837***	-	-	-	0.915***	0.874***	-	-	0.882***	0.868***	0.923***	0.879***	0.878***	-	0.876***	0.879***	0.900***	0.878***	0.903***
	(0.010)	-	(0.007)	(0.007)	-	(0.013)	-	-	-	(0.008)	(0.012)	-	-	(0.009)	(0.011)	(0.006)	(0.010)	(0.013)	-	(0.012)	(0.010)	(0.007)	(0.013)	(0.008)
α_2	0.063***	0.087***	0.060***	0.101***	0.092***	0.092***	0.074***	0.074***	0.095***	0.089***	0.090***	0.075	0.064***	0.106***	0.104***	0.074***	0.076***	0.100***	-	-	0.084***	0.080***	0.099***	0.089***
	(0.007)	(0.009)	(0.006)	(0.008)	(0.008)	(0.009)	(0.007)	(0.007)	(0.008)	(0.009)	(0.008)	(0.007)	(0.007)	(0.009)	(0.010)	(0.007)	(0.006)	(0.009)	-	-	(0.007)	(0.008)	(0.009)	(0.009)
β_2	0.914***	0.892***	0.935***	0.887***	0.896***	0.894***	0.913***	0.915***	0.896***	0.882***	0.900***	0.918***	0.929***	0.883***	0.882***	0.919***	0.895***	0.873***	-	-	0.903***	0.907***	0.874***	0.892***
	(0.009)	(0.012)	(0.007)	(0.010)	(0.010)	(0.010)	(0.009)	(0.008)	(0.008)	(0.013)	(0.008)	(0.007)	(0.008)	(0.010)	(0.010)	(0.008)	(0.010)	(0.012)	-	-	(0.009)	(0.009)	(0.012)	(0.011)
α_3	-	-	0.118***	0.082***	-	0.122***	-	0.118***	0.110***	0.129***	0.124***	-	0.108***	0.105***	-	0.075***	0.082***	0.106***	0.108***	0.130***	0.150***	0.107***	0.106***	0.130***
	-	-	(0.009)	(0.006)	-	(0.010)	-	(0.010)	(0.009)	(0.007)	(0.010)	-	(0.008)	(0.008)	-	(0.007)	(0.010)	(0.008)	(0.008)	(0.008)	(0.009)	(0.010)	(0.008)	(0.009)
β_3	-	-	0.856***	0.903***	-	0.856***	-	0.852***	0.863***	0.851***	0.855***	-	0.872***	0.875***	-	0.909***	0.854***	0.875***	0.872***	0.847***	0.822***	0.864***	0.874***	0.852***
	-	-	(0.012)	(0.006)	-	(0.011)	-	(0.013)	(0.012)	(0.008)	(0.012)	-	(0.010)	(0.008)	-	(0.007)	(0.017)	(0.009)	(0.010)	(0.010)	(0.011)	(0.012)	(0.009)	(0.008)

EQUITY REGIONAL ANALYSIS CRISIS SAMPLE

.	BEV	BLDG	BMAT	BNK	CAB	CG	CGM	CHEM	ELTN	HLT	IND	LEI	MT	FIN	OF	OIL	OS	OT	OTRSP	RET	SERV	TEC	TEL	UT
Panel A: Conditional Correlation Estimates																								
$a_{[illegible]}$	0.008***	-0.007***	0.009***	0.016***	0.135***	0.006*	0.019***	0.045*	0.070***	0.009**	0.012***	0.011**	-0.006	0.013***	0.025***	0.012***	0.008	0.007	-0.024***	0.036*	0.011***	0.006*	0.002***	0.011***
	(0.002)	(0.000)	(0.003)	(0.005)	(0.040)	(0.003)	(0.006)	(0.024)	(0.023)	(0.004)	(0.003)	(0.005)	(0.010)	(0.004)	(0.006)	(0.010)	(0.005)	(0.005)	(0.000)	(0.022)	(0.004)	(0.004)	(0.000)	(0.004)
$b_{[illegible]}$	0.990***	1.001***	0.963***	0.946***	0.484***	0.980***	0.979***	-0.226	0.258	0.927***	0.960***	0.985***	0.801***	0.945***	0.954***	0.956***	0.933***	0.906***	0.758***	0.549**	0.943***	0.944***	0.795***	0.936***
	(0.003)	(0.000)	(0.016)	(0.019)	(0.165)	(0.013)	(0.006)	(0.351)	(0.168)	(0.020)	(0.010)	(0.006)	(0.117)	(0.014)	(0.013)	(0.010)	(0.056)	(0.075)	(0.000)	(0.236)	(0.015)	(0.026)	(0.001)	(0.017)
λ_1	0.000	0.002***	0.000	0.001	-0.053**	0.000	0.003*	-0.064*	-0.089***	0.007***	0.002***	0.001	-0.018	0.002***	0.001	0.002***	0.004***	0.001	-0.030***	0.014	0.003***	0.002	0.010***	0.006***
	(0.001)	(0.000)	(0.000)	(0.001)	(0.025)	(0.001)	(0.002)	(0.034)	(0.026)	(0.002)	(0.001)	(0.002)	(0.013)	(0.001)	(0.001)	(0.001)	(0.003)	(0.005)	(0.000)	(0.018)	(0.001)	(0.001)	(0.000)	(0.002)
Panel B: Conditional Variance Estimates																								
α_0	0.100***	0.150***	0.094***	0.108***	0.091***	0.104***	0.083***	0.106***	0.095***	0.111***	0.098***	0.089***	0.080***	0.105***	0.105***	0.097***	0.071***	0.087***	0.080***	0.089***	0.093***	0.094***	0.073***	0.122***
	(0.013)	(0.086)	(0.012)	(0.010)	(0.011)	(0.013)	(0.011)	(0.012)	(0.013)	(0.014)	(0.013)	(0.013)	(0.011)	(0.010)	(0.010)	(0.012)	(0.011)	(0.010)	(0.011)	(0.012)	(0.012)	(0.013)	(0.007)	(0.013)
β_0	0.878***	0.600***	0.897***	0.885***	0.903***	0.876***	0.907***	0.884***	0.894***	0.869***	0.892***	0.899***	0.911***	0.890***	0.890***	0.895***	0.906***	0.902***	0.911***	0.902***	0.897***	0.894***	0.905***	0.872***
	(0.016)	(0.0158)	(0.012)	(0.010)	(0.011)	(0.015)	(0.010)	(0.012)	(0.014)	(0.016)	(0.014)	(0.014)	(0.012)	(0.010)	(0.010)	(0.012)	(0.016)	(0.011)	(0.012)	(0.013)	(0.013)	(0.014)	(0.010)	(0.013)
α_1	0.101***	-	0.074***	0.088***	-	0.106***	-	-	-	0.078***	0.084***	-	-	0.090***	0.089***	0.088***	0.088***	0.059***	-	0.111***	0.086***	0.085***	0.090***	0.082***
	(0.018)	-	(0.011)	(0.009)	-	(0.013)	-	-	-	(0.011)	(0.013)	-	-	(0.010)	(0.010)	(0.013)	(0.012)	(0.009)	-	(0.016)	(0.012)	(0.011)	(0.010)	(0.009)
β_1	0.869***	-	0.915***	0.907***	-	0.873***	-	-	-	0.906***	0.898***	-	-	0.903***	0.904***	0.900***	0.906***	0.933***	-	0.881***	0.905***	0.893***	0.878***	0.899***
	(0.021)	-	(0.012)	(0.009)	-	(0.016)	-	-	-	(0.013)	(0.015)	-	-	(0.011)	(0.010)	(0.014)	(0.011)	(0.010)	-	(0.017)	(0.012)	(0.014)	(0.013)	(0.011)
α_2	0.077***	0.095***	0.074***	0.106***	0.078***	0.092***	0.074***	0.080***	0.082***	0.097***	0.081***	0.068***	0.076***	0.100***	0.092***	0.078***	0.048***	0.088***	-	-	0.071***	0.078***	0.099***	0.085***
	(0.011)	(0.015)	(0.011)	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.015)	(0.013)	(0.009)	(0.011)	(0.013)	(0.013)	(0.012)	(0.007)	(0.012)	-	-	(0.013)	(0.012)	(0.009)	(0.012)
β_2	0.907***	0.888***	0.915***	0.886***	0.909***	0.891***	0.919***	0.907***	0.907***	0.878***	0.908***	0.925***	0.915***	0.888***	0.897***	0.908***	0.939***	0.892***	-	-	0.916***	0.907***	0.874***	0.899***
	(0.013)	(0.017)	(0.013)	(0.015)	(0.014)	(0.012)	(0.013)	(0.014)	(0.012)	(0.020)	(0.015)	(0.009)	(0.013)	(0.015)	(0.015)	(0.014)	(0.010)	(0.015)	-	-	(0.013)	(0.015)	(0.009)	(0.013)
α_3	-	-	0.124***	0.067***	-	0.115***	-	0.131***	0.123***	0.153***	0.123***	-	0.112***	0.078***	-	0.084***	0.100***	0.125***	0.112***	0.147***	0.177***	0.119***	0.106***	0.176***
	-	-	(0.013)	(0.007)	-	(0.015)	-	(0.015)	(0.016)	(0.011)	(0.016)	-	(0.012)	(0.008)	-	(0.010)	(0.014)	(0.011)	(0.012)	(0.011)	(0.012)	(0.017)	(0.008)	(0.018)
β_3	-	-	0.846***	0.923***	-	0.855***	-	0.838***	0.843***	0.830***	0.851***	-	0.859***	0.908***	-	0.896***	0.821***	0.860***	0.869***	0.836***	0.790***	0.854***	0.874***	0.815***
	-	-	(0.017)	(0.007)	-	(0.019)	-	(0.021)	(0.019)	(0.014)	(0.020)	-	(0.013)	(0.009)	-	(0.011)	(0.024)	(0.011)	(0.013)	(0.013)	(0.018)	(0.019)	(0.009)	(0.014)

EQUITY REGIONAL ANALYSIS AFTER-CRISIS SAMPLE

	BEV	BLDG	BMAT	BNK	CAB	CG	CGM	CHEM	ELTN	HLT	IND	LEI	MT	FIN	OF	OIL	OS	OT	OTRSP	RET	SERV	TEC	TEL	UT
Panel A: Conditional Correlation Estimates																								
a_{DCC1}	0.012***	0.003	0.002	0.003**	0.140***	0.053***	0.121***	0.015	0.074***	-0.001	0.008**	0.075**	0.015	0.011	0.041***	0.004**	0.013***	0.009	0.078**	0.037	-0.010***	-0.002	-0.002***	-0.003
	(0.003)	(0.006)	(0.003)	(0.001)	(0.045)	(0.000)	(0.000)	(0.022)	(0.023)	(0.002)	(0.004)	(0.040)	(0.014)	(0.001)	(0.000)	(0.002)	(0.006)	(0.010)	(0.037)	(0.037)	(0.000)	(0.005)	(0.000)	(0.005)
b_{DCC1}	0.983***	0.968***	0.969***	0.996***	0.163	-0.300***	-0.152***	0.530	0.548***	0.959***	0.936***	0.239	0.739***	0.787***	0.810***	0.978***	0.904***	-0.470	0.633***	0.556	0.996***	0.771***	0.957***	0.918***
	(0.004)	(0.035)	(0.015)	(0.001)	(0.298)	(0.000)	(0.000)	(0.604)	(0.175)	(0.026)	(0.019)	(0.415)	(0.191)	(0.002)	(0.000)	(0.004)	(0.031)	(0.347)	(0.210)	(1.139)	(0.000)	(0.098)	(0.000)	(0.058)
λ_1	0.000	0.003	0.002*	-0.003***	-0.126***	-0.056***	-0.130***	-0.024	-0.042**	0.004**	0.005**	-0.061	0.003***	0.006	0.006***	0.003***	0.006***	-0.031**	-0.036	-0.029	0.004***	0.013**	0.009***	0.007**
	(0.001)	(0.007)	(0.001)	(0.001)	(0.051)	(0.000)	(0.000)	(0.030)	(0.021)	(0.002)	(0.002)	(0.045)	(0.011)	(0.020)	(0.000)	(0.000)	(0.005)	(0.014)	(0.030)	(0.045)	(0.000)	(0.006)	(0.000)	(0.003)
Panel B: Conditional Variance Estimates																								
α_0	0.172***	0.068***	0.108***	0.155***	0.098***	0.235***	0.165***	0.130***	0.012***	0.121***	0.136***	0.105***	0.059***	0.189***	0.187***	0.065***	0.068***	0.060***	0.059***	0.140***	0.136***	0.126***	0.060***	0.038***
	(0.027)	(0.013)	(0.017)	(0.020)	(0.020)	(0.030)	(0.023)	(0.020)	(0.019)	(0.018)	(0.023)	(0.020)	(0.013)	(0.023)	(0.023)	(0.010)	(0.014)	(0.018)	(0.013)	(0.021)	(0.023)	(0.019)	(0.018)	(0.008)
β_0	0.808***	0.884***	0.821***	0.707***	0.813***	0.641***	0.741***	0.783***	0.756***	0.829***	0.738***	0.799***	0.877***	0.680***	0.682***	0.927***	0.876***	0.791***	0.876***	0.734***	0.754***	0.769***	0.792***	0.949***
	(0.068)	(0.023)	(0.027)	(0.040)	(0.032)	(0.040)	(0.030)	(0.030)	(0.042)	(0.028)	(0.040)	(0.035)	(0.031)	(0.038)	(0.038)	(0.009)	(0.024)	(0.079)	(0.031)	(0.040)	(0.036)	(0.033)	(0.060)	(0.011)
α_C	0.092***	-	0.050***	0.129***	-	0.242***	-	-	-	0.051***	0.148***	-	-	0.151***	0.147***	0.055***	0.124***	0.113***	-	0.092***	0.127***	0.089***	0.115***	0.059***
	(0.013)	-	(0.009)	(0.017)	-	(0.030)	-	-	-	(0.009)	(0.025)	-	-	(0.012)	(0.020)	(0.008)	(0.018)	(0.022)	-	(0.013)	(0.018)	(0.010)	(0.022)	(0.010)
β_C	0.899***	-	0.941***	0.829***	-	0.635***	-	-	-	0.905***	0.742***	-	-	0.799***	0.792***	0.941***	0.788***	0.738***	-	0.843***	0.764***	0.904***	0.738***	0.896***
	(0.013)	-	(0.012)	(0.024)	-	(0.040)	-	-	-	(0.017)	(0.043)	-	-	(0.028)	(0.030)	(0.006)	(0.030)	(0.050)	-	(0.025)	(0.030)	(0.009)	(0.049)	(0.017)
α_S	0.040***	0.076***	0.041***	0.132***	0.132***	0.095***	0.082***	0.066***	0.111***	0.075***	0.109***	0.146***	0.012***	0.112***	0.115***	0.069***	0.098***	0.120***	0.099***	-	0.120***	0.096***	0.119***	0.109***
	(0.009)	(0.013)	(0.009)	(0.015)	(0.024)	(0.015)	(0.021)	(0.016)	(0.018)	(0.014)	(0.018)	(0.028)	(0.011)	(0.014)	(0.016)	(0.010)	(0.011)	(0.017)	(0.014)	-	(0.020)	(0.020)	(0.016)	(0.022)
β_S	0.911***	0.867***	0.944***	0.831***	0.774***	0.840***	0.784***	0.862***	0.801***	0.867***	0.789***	0.648***	0.940***	0.812***	0.803***	0.915***	0.844***	0.795***	0.879***	-	0.800***	0.779***	0.800***	0.788***
	(0.018)	(0.027)	(0.014)	(0.018)	(0.041)	(0.026)	(0.058)	(0.035)	(0.035)	(0.022)	(0.037)	(0.059)	(0.016)	(0.025)	(0.027)	(0.011)	(0.021)	(0.031)	(0.017)	-	(0.034)	(0.051)	(0.030)	(0.038)
α_R	-	-	0.108***	0.103***	-	0.133***	-	0.100***	0.097***	0.112***	0.124***	-	0.099***	0.158***	-	0.064***	0.052***	0.092***	-	0.110***	0.132***	0.093***	0.091***	0.109***
	-	-	(0.013)	(0.014)	-	(0.013)	-	(0.013)	(0.012)	(0.013)	(0.013)	-	(0.014)	(0.019)	-	(0.009)	(0.010)	(0.013)	-	(0.016)	(0.016)	(0.012)	(0.013)	(0.013)
β_R	-	-	0.861***	0.824***	-	0.846***	-	0.871***	0.880***	0.864***	0.854***	-	0.879***	0.801***	-	0.922***	0.921***	0.873***	-	0.859***	0.828***	0.867***	0.874***	0.867***
	-	-	(0.018)	(0.028)	-	(0.014)	-	(0.016)	(0.014)	(0.015)	(0.015)	-	(0.017)	(0.021)	-	(0.010)	(0.016)	(0.019)	-	(0.022)	(0.021)	(0.016)	(0.019)	(0.015)

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- BEV(Beverages/Bottling); BLDG(Building Products); BNK(Banks); BMT(Basic Materials); CAB(Cable Media); CG(Consumer Goods); CHM(Chemicals); CGM(Conglomerate/Diversified Mfg); HLT(Healthcare Facilities); CS(Consumer Services); ELTN(Electronics); FIN(Financials); GAS(Oil&Gas); IND(Industrials); LEI(Leisure); TEC(Technology); MT(Metals&Mining); OF(Other Financials); OR(Retail Stores Other); OS(Other Services); OT(Other Telecommunications); OTR(Other Transport); TEL(Telecommunications); UT(Utility Other).

Table 77: Estimates of ADCC-GARCH (1,1) Model for Regional Equity Sectoral Returns

B.3 BEKK-GARCH Model

B.3.1 CDS Spreads and Equity Sectoral Returns

Bivariate BEKK-GARCH parameterisation:

$$h_1^2 = \Omega_{11} + \beta_1^2 \epsilon_{1,t-1}^2 + \delta_1^2 h_{1,t-1}^2$$

$$h_{12} = \Omega_{12} + \beta_2 \beta_1 \epsilon_{1,t-1} \epsilon_{2,t-1} + \delta_2 \delta_1 h_{1,t-1} h_{2,t-1}$$

$$h_2^2 = \Omega_{22} + \beta_2^2 \epsilon_{2,t-1}^2 + \delta_2^2 h_{2,t-1}^2$$

CDS_EQUITY ANALYSIS US FULL SAMPLE

	AIR	BnV	BLDG	BANK	CAR	CI	CHnM	CMG	CON	CS	nLnCr	nLrN	FIN	FOOD	GAS	HLT	HOMe	IND	INF	Ltd	LOD	MSUP	MT	OOG	Or	OG	OR	OS	Or	PHA	PROP	PUB	RAIL	RnFr	Rscr	Rr	TnL	TrXTr	TOR	OrR	Ur	Vntl
Estimated Coefficients for Conditional Variance-Covariance Equations																																										
C[1,1]	0.000***	0.000***	0.000***	0.000***	0.000***	0.001***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C[1,2]	0.000	0.000	0.000**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C[2,2]	0.000***	0.000***	0.000***	0.000***	0.000***	0.001***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
A[1,1]	0.344***	0.389***	0.441***	0.397***	0.398***	0.367***	0.364***	0.321***	0.365***	0.356***	0.322***	0.367***	0.396***	0.325***	0.408***	0.417***	0.464***	0.426***	0.541***	0.532***	0.630***	0.464***	0.402***	0.442***	0.322***	0.347***	0.396***	0.431***	0.229***	0.795***	0.596***	0.636***	0.402***	0.207***	0.464***	0.289***	0.546***	0.593***	0.381***	0.364***	0.690***	0.332***
	(0.026)	(0.025)	(0.027)	(0.026)	(0.026)	(0.023)	(0.024)	(0.026)	(0.024)	(0.024)	(0.026)	(0.026)	(0.026)	(0.023)	(0.026)	(0.027)	(0.026)	(0.026)	(0.014)	(0.026)	(0.022)	(0.027)	(0.024)	(0.026)	(0.026)	(0.026)	(0.025)	(0.026)	(0.026)	(0.011)	(0.026)	(0.027)	(0.014)	(0.024)	(0.027)	(0.025)	(0.026)	(0.011)	(0.026)	(0.027)	(0.023)	(0.027)
A[2,2]	0.169***	0.339***	0.241***	0.241***	0.269***	0.322***	0.272***	0.225***	0.249***	0.276***	0.279***	0.283***	0.304***	0.287***	0.269***	0.269***	0.182***	0.289***	0.297***	0.256***	0.251***	0.305***	0.220***	0.305***	0.304***	0.254***	0.262***	0.194***	0.254***	0.322***	0.311***	0.241***	0.209***	0.322***	0.277***	0.306***	0.221***	0.245***	0.231***	0.247***	0.265***	0.362***
	(0.009)	(0.025)	(0.012)	(0.027)	(0.012)	(0.024)	(0.011)	(0.012)	(0.011)	(0.012)	(0.012)	(0.015)	(0.009)	(0.012)	(0.011)	(0.012)	(0.009)	(0.012)	(0.024)	(0.012)	(0.012)	(0.025)	(0.011)	(0.012)	(0.010)	(0.012)	(0.013)	(0.009)	(0.012)	(0.015)	(0.011)	(0.011)	(0.009)	(0.011)	(0.025)	(0.025)	(0.009)	(0.010)	(0.012)	(0.012)	(0.010)	(0.012)
B[1,1]	0.931***	0.929***	0.896***	0.905***	0.897***	0.859***	0.957***	0.939***	0.892***	0.952***	0.871***	0.931***	0.916***	0.865***	0.915***	0.893***	0.889***	0.845***	0.742***	0.866***	0.456***	0.913***	0.925***	0.912***	0.916***	0.939***	0.957***	0.947***	0.954***	0.449***	0.894***	0.836***	0.815***	0.967***	0.733***	0.952***	0.775***	0.795***	0.896***	0.934***	0.354***	0.937***
	(0.011)	(0.01)	(0.012)	(0.012)	(0.015)	(0.024)	(0.01)	(0.015)	(0.015)	(0.009)	(0.024)	(0.013)	(0.012)	(0.024)	(0.012)	(0.012)	(0.015)	(0.015)	(0.039)	(0.015)	(0.124)	(0.01)	(0.011)	(0.012)	(0.01)	(0.013)	(0.009)	(0.009)	(0.009)	(0.012)	(0.015)	(0.012)	(0.015)	(0.01)	(0.025)	(0.01)	(0.009)	(0.009)	(0.012)	(0.012)	(0.015)	(0.011)
B[2,2]	0.964***	0.959***	0.951***	0.960***	0.956***	0.932***	0.957***	0.957***	0.951***	0.952***	0.955***	0.952***	0.949***	0.944***	0.952***	0.949***	0.951***	0.952***	0.946***	0.952***	0.964***	0.931***	0.972***	0.958***	0.946***	0.959***	0.955***	0.975***	0.953***	0.933***	0.945***	0.951***	0.976***	0.943***	0.949***	0.943***	0.960***	0.959***	0.959***	0.951***	0.959***	0.929***
	(0.012)	(0.017)	(0.015)	(0.012)	(0.014)	(0.016)	(0.014)	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)	(0.015)	(0.014)	(0.012)	(0.014)	(0.015)	(0.014)	(0.015)	(0.016)	(0.015)	(0.015)	(0.015)	(0.015)	(0.014)	(0.015)	(0.014)	(0.016)	(0.014)	(0.014)	(0.012)	(0.014)	(0.015)	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)

Table 78: Transformed Variance Coefficients of DBEKK-GARCH (1,1) Model for US Sectoral CDS Spreads and Equity Returns

CDS_EQUITY ANALYSIS UK FULL SAMPLE

	BEV	BANK	CG	CS	FIN	LF	OF	OCS	OT	OTR	TEL
Estimated Coefficients for Conditional Variance-Covariance Equations											
C(1,1)	0.000***	0.000***	0.000	0.000***	0.000***	0.001***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,2)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000*	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,2)	0.000***	0.000***	0.000	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
A(1,1)	0.424***	0.396***	0.387***	0.334***	0.238***	0.587***	0.247***	0.172***	0.400***	0.419***	0.338***
	(0.007)	(0.008)	(0.002)	(0.007)	(0.004)	(0.020)	(0.006)	(0.002)	(0.010)	(0.011)	(0.009)
A(2,2)	0.023***	0.257***	0.387***	0.309***	0.319***	0.319***	0.329***	0.303***	0.235***	0.269***	0.239***
	(0.011)	(0.009)	(0.001)	(0.013)	(0.011)	(0.013)	(0.013)	(0.013)	(0.013)	(0.011)	(0.013)
B(1,1)	0.884***	0.914***	0.775***	0.917***	0.970***	0.522***	0.968***	0.982***	0.889***	0.884***	0.922***
	(0.003)	(0.003)	(0.001)	(0.003)	(0.001)	(0.020)	(0.001)	(0.002)	(0.005)	(0.004)	(0.004)

B(2,2)	0.968***	0.965***	0.775***	0.940***	0.946***	0.944***	0.937***	0.943***	0.960***	0.954***	0.959***
	(0.003)	(0.002)	(0.001)	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.005)

CDS_EQUITY ANALYSIS UK CRISIS SAMPLE

	BEV	BANK	CG	CS	FIN	LF	OF	OCS	OT	OTR	TEL
Estimated Coefficients for Conditional Variance-Covariance Equations											
C(1,1)	0.000***	0.000***	0.000	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,2)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,2)	0.000***	0.000***	0.000	0.000***	0.000***	0.000**	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
A(1,1)	0.472***	0.439***	0.426***	0.350***	0.217***	0.361***	0.243***	0.198***	0.371***	0.341***	0.326***
	(0.011)	(0.012)	(0.002)	(0.012)	(0.005)	(0.010)	(0.008)	(0.004)	(0.014)	(0.012)	(0.011)
A(2,2)	0.215***	0.248***	0.241***	0.248***	0.289***	0.302***	0.281***	0.268***	0.207***	0.251***	0.207***
	(0.015)	(0.012)	(0.001)	(0.016)	(0.015)	(0.021)	(0.015)	(0.018)	(0.015)	(0.018)	(0.015)

B(1,1)	0.847***	0.885***	0.825***	0.899***	0.976***	0.935***	0.963***	0.978***	0.897***	0.933***	0.922***
	(0.006)	(0.006)	(0.001)	(0.006)	(0.001)	(0.002)	(0.002)	(0.001)	(0.008)	(0.004)	(0.005)
B(2,2)	0.968***	0.966***	0.756***	0.964***	0.954***	0.952***	0.956***	0.959***	0.974***	0.964***	0.976***
	(0.005)	(0.003)	(0.001)	(0.004)	(0.004)	(0.007)	(0.005)	(0.005)	(0.004)	(0.005)	(0.004)

CDS_EQUITY ANALYSIS UK AFTER-CRISIS SAMPLE

	BEV	BANK	CG	CS	FIN	LF	OF	OCS	OT	OTR	TEL
Estimated Coefficients for Conditional Variance-Covariance Equations											
C(1,1)	0.000***	0.000***	0.000	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,2)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,2)	0.000***	0.000***	0.000	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
A(1,1)	0.589***	0.243***	0.340***	0.441***	0.391***	0.514***	0.256***	0.719***	0.437***	0.675***	0.307***
	(0.027)	(0.016)	(0.002)	(0.017)	(0.016)	(0.101)	(0.011)	(0.020)	(0.017)	(0.027)	(0.019)

A(2,2)	0.297***	0.342***	0.441***	0.315***	0.351***	0.353***	0.364***	0.336***	0.257***	0.279***	0.285***
	(0.022)	(0.022)	(0.001)	(0.022)	(0.020)	(0.021)	(0.026)	(0.023)	(0.029)	(0.018)	(0.033)
B(1,1)	0.174*	0.967***	0.725***	0.805***	0.898***	0.532***	0.964***	0.300***	0.871***	0.558***	0.903***
	(0.103)	(0.004)	(0.001)	(0.012)	(0.006)	(0.103)	(0.002)	(0.023)	(0.008)	(0.028)	(0.009)
B(2,2)	0.951***	0.915***	0.625***	0.916***	0.909***	0.914***	0.897***	0.903***	0.889***	0.934***	0.867***
	(0.006)	(0.012)	(0.001)	(0.013)	(0.012)	(0.011)	(0.015)	(0.014)	(0.028)	(0.011)	(0.032)

Notes: *, **. *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- BEV(Beverages/Bottling); BNK(Banking); CG(Consumer Goods); CS(Consumer Services); FIN(Financials); LF(Life Insurance); OF(Other Financials); OS(Other Services); OT(Other Telecommunications); OR (Other Retail Stores); TEL(Telecommunications).

Table 79: Transformed Variance Coefficients of DBEKK-GARCH (1,1) Model for UK Sectoral CDS Spreads and Equity Returns

CDS_EQUITY ANALYSIS EU FULL SAMPLE

	AU	BEV	BLDG	BNK	CAB	CC	CHEM	CGM	CS	ELTN	FIN	LEI	MT	OS	OF	GAS	OT	TEL	UT
Estimated Coefficients for Conditional Variance-Covariance Equations																			
C(1,1)	0.000***	0.000***	0.000***	0.000***	0.000***	0.001***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,2)	0.000	0.000	0.000**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,2)	0.000***	0.000***	0.000***	0.000***	0.000***	0.001***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
A(1,1)	0.352***	0.409***	0.291***	0.276***	0.309***	0.451***	0.362***	0.478***	0.340***	0.395***	0.315***	0.323***	0.325***	0.295***	0.354***	0.304***	0.594***	0.565***	0.224***
	(0.011)	(0.009)	(0.006)	(0.011)	(0.009)	(0.009)	(0.008)	(0.011)	(0.005)	(0.006)	(0.004)	(0.015)	(0.009)	(0.006)	(0.008)	(0.007)	(0.007)	(0.007)	(0.004)
A(2,2)	0.279***	0.213***	0.251***	0.297***	0.267***	0.249***	0.225***	0.228***	0.252***	0.261***	0.317***	0.257***	0.235***	0.251***	0.276***	0.245***	0.255***	0.313***	0.296***
	(0.009)	(0.011)	(0.013)	(0.011)	(0.001)	(0.009)	(0.010)	(0.010)	(0.009)	(0.009)	(0.012)	(0.012)	(0.012)	(0.009)	(0.011)	(0.011)	(0.011)	(0.011)	(0.014)
B(1,1)	0.917***	0.905***	0.947***	0.955***	0.937***	0.863***	0.923***	0.851***	0.935***	0.914***	0.942***	0.819***	0.918***	0.949***	0.909***	0.946***	0.850***	0.854***	0.964***
	(0.005)	(0.003)	(0.001)	(0.002)	(0.004)	(0.004)	(0.003)	(0.005)	(0.001)	(0.002)	(0.001)	(0.017)	(0.004)	(0.002)	(0.004)	(0.005)	(0.002)	(0.002)	(0.001)
B(2,2)	0.958***	0.967***	0.959***	0.948***	0.957***	0.964***	0.969***	0.968***	0.962***	0.961***	0.944***	0.963***	0.968***	0.953***	0.954***	0.966***	0.957***	0.935***	0.943***
	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)	(0.004)	(0.005)	(0.006)

CDS_EQUITY ANALYSIS EU CRISIS SAMPLE

	AU	BEV	BLDG	BNK	CAB	CC	CHEM	CGM	CS	ELTN	FIN	LEI	MT	OS	OF	GAS	OT	TEL	UT
Estimated Coefficients for Conditional Variance-Covariance Equations																			
C(1,1)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,2)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,2)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000**	0.000***	0.000***	0.000***	0.000***	0.000**	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
A(1,1)	0.299***	0.372***	0.273***	0.301***	0.287***	0.592***	0.402***	0.594***	0.409***	0.333***	0.456***	0.262***	0.325***	0.286***	0.436***	0.322***	0.576***	0.575***	0.213***
	(0.013)	(0.017)	(0.008)	(0.014)	(0.012)	(0.024)	(0.013)	(0.023)	(0.009)	(0.006)	(0.014)	(0.025)	(0.009)	(0.008)	(0.0149)	(0.015)	(0.011)	(0.012)	(0.005)
A(2,2)	0.348***	0.239***	0.279***	0.296***	0.252***	0.261***	0.247***	0.244***	0.233***	0.253***	0.276***	0.254***	0.235***	0.208***	0.253***	0.267***	0.244***	0.231***	0.300***
	(0.009)	(0.016)	(0.022)	(0.018)	(0.018)	(0.014)	(0.016)	(0.017)	(0.016)	(0.016)	(0.016)	(0.016)	(0.012)	(0.015)	(0.015)	(0.019)	(0.016)	(0.015)	(0.020)
B(1,1)	0.929***	0.917***	0.952***	0.948***	0.941***	0.706***	0.899***	0.717***	0.907***	0.941***	0.876***	0.801***	0.918***	0.948***	0.877***	0.932***	0.839***	0.839***	0.977***
	(0.007)	(0.005)	(0.002)	(0.004)	(0.005)	(0.019)	(0.005)	(0.018)	(0.003)	(0.002)	(0.005)	(0.034)	(0.004)	(0.002)	(0.008)	(0.005)	(0.004)	(0.004)	(0.001)
B(2,2)	0.931***	0.962***	0.952***	0.948***	0.961***	0.960***	0.963***	0.966***	0.966***	0.961***	0.956***	0.964***	0.968***	0.971***	0.962***	0.956***	0.959***	0.962***	0.943***
	(0.008)	(0.005)	(0.007)	(0.007)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.005)	(0.006)	(0.006)	(0.005)	(0.008)

CDS_EQUITY ANALYSIS EU AFTER-CRISIS SAMPLE

	AU	BEV	BLDG	BNK	CAB	CG	CHEM	CGM	CS	ELTN	FIN	LEI	MT	OS	OF	GAS	OT	TEL	UT
Estimated Coefficients for Conditional Variance-Covariance Equations																			
C(1,1)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,2)	0.000	0.000	0.000*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000**	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,2)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
A(1,1)	0.441***	0.477***	0.309***	0.255***	0.323***	0.469***	0.256***	0.474***	0.297***	0.457***	0.374***	0.325***	0.317***	0.472***	0.230***	0.305***	0.595***	0.587***	0.323***
	(0.021)	(0.014)	(0.009)	(0.009)	(0.013)	(0.027)	(0.009)	(0.027)	(0.010)	(0.018)	(0.011)	(0.014)	(0.009)	(0.013)	(0.010)	(0.011)	(0.012)	(0.013)	(0.011)
A(2,2)	0.154***	0.201***	0.239***	0.308***	0.336***	0.263***	0.229***	0.226***	0.308***	0.284***	0.312***	0.423***	0.168***	0.262***	0.318***	0.202***	0.277***	0.286***	0.309***
	(0.018)	(0.021)	(0.022)	(0.022)	(0.032)	(0.023)	(0.026)	(0.032)	(0.027)	(0.021)	(0.019)	(0.043)	(0.021)	(0.013)	(0.021)	(0.015)	(0.022)	(0.024)	(0.033)
B(1,1)	0.868***	0.871***	0.942***	0.962***	0.939***	0.848***	0.956***	0.854***	0.952***	0.867***	0.934***	0.943***	0.948***	0.860***	0.964***	0.949***	0.866***	0.868***	0.916***
	(0.008)	(0.005)	(0.002)	(0.002)	(0.005)	(0.015)	(0.003)	(0.014)	(0.002)	(0.008)	(0.002)	(0.003)	(0.002)	(0.007)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
B(2,2)	0.984***	0.953***	0.942***	0.908***	0.885***	0.934***	0.928***	0.900***	0.907***	0.913***	0.912***	0.634***	0.975***	0.937***	0.904***	0.976***	0.933***	0.922***	0.889***
	(0.004)	(0.009)	(0.013)	(0.016)	(0.022)	(0.013)	(0.018)	(0.032)	(0.018)	(0.017)	(0.012)	(0.055)	(0.006)	(0.009)	(0.013)	(0.003)	(0.012)	(0.016)	(0.023)

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- AU(Automotive Manufacturer); BEV(Beverages/Bottling); BLDG(Building Products); BNK(Banking); CAB(Cable Media); CG(Consumer Goods); CHEM(Chemicals); CGM(Conglomerate/Diversified Mfg); CS(Consumer Services); ELTN(Electronics); FIN(Financials); GAS(Oil&Gas); LEI(Leisure); MT(Metals&Mining); OF(Other Financials); OS(Other Services); OT(Other Telecommunications); TEL(Telecommunications); UT(Utility Other).

Table 80: Transformed Variance Coefficients of DBEKK-GARCH (1,1) Model for EU Sectoral CDS Spreads and Equity Returns

CDS_EQUITY ANALYSIS JAPAN FULL SAMPLE

	AU	BNK	CHEM	CS	ELTN	IND	OR	MT	OS	OF	OT	OTR	TEL	UT
Estimated Coefficients for Conditional Variance-Covariance Equations														
C(1,1)	0.000***	0.000***	0.000***	0.000***	0.000***	0.001***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,2)	0.000***	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,2)	0.000***	0.000***	0.000***	0.000***	0.000***	0.001***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
A(1,1)	0.540***	0.295***	0.346***	0.439***	0.379***	0.277***	0.496***	0.339***	0.667***	0.333***	0.335***	0.206***	0.332***	0.296***
	(0.004)	(0.008)	(0.008)	(0.008)	(0.008)	(0.004)	(0.006)	(0.011)	(0.014)	(0.009)	(0.008)	(0.004)	(0.008)	(0.008)
A(2,2)	0.261***	0.243***	0.305***	0.362***	0.302***	0.329***	0.344***	0.317***	0.234***	0.279***	0.298***	0.318***	0.293***	0.335***
	(0.011)	(0.009)	(0.012)	(0.011)	(0.013)	(0.013)	(0.011)	(0.012)	(0.012)	(0.011)	(0.009)	(0.012)	(0.013)	(0.011)
B(1,1)	0.931***	0.950***	0.921***	0.886***	0.909***	0.953***	0.933***	0.917***	0.725***	0.916***	0.931***	0.979***	0.931***	0.916***
	(0.000)	(0.003)	(0.002)	(0.002)	(0.003)	(0.001)	(0.001)	(0.004)	(0.013)	(0.003)	(0.002)	(0.001)	(0.002)	(0.002)
B(2,2)	0.956***	0.963***	0.937***	0.917***	0.938***	0.923***	0.928***	0.933***	0.947***	0.952***	0.944***	0.936***	0.942***	0.932***
	(0.004)	(0.003)	(0.005)	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)	(0.004)	(0.004)	(0.005)	(0.006)	(0.004)

CDS_EQUITY ANALYSIS JAPAN CRISIS SAMPLE

	AU	BNK	CHEM	CS	ELTN	IND	OR	MT	OS	OF	OT	OTR	TEL	UT
Estimated Coefficients for Conditional Variance-Covariance Equations														
C(1,1)	0.000***	0.000***	0.000	0.000***	0.000***	0.001***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,2)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000***	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,2)	0.000***	0.000***	0.000	0.000***	0.000***	0.001***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
A(1,1)	0.242***	0.343***	0.303***	0.479***	0.347***	0.302***	0.352***	0.269***	0.372***	0.328***	0.281***	0.249***	0.274***	0.259***
	(0.008)	(0.010)	(0.009)	(0.023)	(0.013)	(0.012)	(0.002)	(0.016)	(0.017)	(0.015)	(0.011)	(0.012)	(0.011)	(0.011)
A(2,2)	0.242***	0.258***	0.322***	0.406***	0.312***	0.318***	0.373***	0.338***	0.222***	0.253***	0.338***	0.315***	0.288***	0.384***
	(0.015)	(0.012)	(0.017)	(0.015)	(0.019)	(0.018)	(0.014)	(0.019)	(0.013)	(0.014)	(0.014)	(0.016)	(0.022)	(0.018)
B(1,1)	0.927***	0.936***	0.939***	0.877***	0.904***	0.938***	0.841***	0.924***	0.922***	0.919***	0.944***	0.967***	0.945***	0.907***
	(0.002)	(0.004)	(0.002)	(0.007)	(0.004)	(0.004)	(0.006)	(0.006)	(0.006)	(0.006)	(0.002)	(0.003)	(0.003)	(0.005)
B(2,2)	0.961***	0.960***	0.931***	0.899***	0.932***	0.932***	0.917***	0.924***	0.943***	0.961***	0.932***	0.938***	0.945***	0.918***
	(0.005)	(0.003)	(0.009)	(0.009)	(0.009)	(0.008)	(0.007)	(0.010)	(0.008)	(0.004)	(0.006)	(0.006)	(0.008)	(0.006)

CDS_EQUITY ANALYSIS AFTER-CRISIS SAMPLE

	AU	BNK	CHEM	CS	ELTN	IND	OR	MT	OS	OF	OT	OTR	TEL	UT
Estimated Coefficients for Conditional Variance-Covariance Equations														
C(1,1)	0.000***	0.000***	0.000***	0.000***	0.000***	0.001***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,2)	0.000***	0.000***	0.000	0.000	0.000	0.001***	0.000	0.000	0.000	0.000	0.000***	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,2)	0.000***	0.000***	0.000***	0.000***	0.000***	0.001***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
A(1,1)	0.609***	0.228***	0.402***	0.457***	0.266***	0.234***	0.190***	0.369***	0.221***	0.365***	0.394***	0.321***	0.401***	0.199***
	(0.007)	(0.014)	(0.016)	(0.013)	(0.006)	(0.008)	(0.018)	(0.012)	(0.071)	(0.015)	(0.016)	(0.017)	(0.015)	(0.008)
A(2,2)	0.321***	0.352***	0.281***	0.329***	0.299***	0.318***	0.320***	0.290***	0.199***	0.353***	0.264***	0.262***	0.320***	0.314***
	(0.016)	(0.021)	(0.018)	(0.021)	(0.019)	(0.019)	(0.024)	(0.018)	(0.019)	(0.019)	(0.017)	(0.017)	(0.025)	(0.019)
B(1,1)	0.934***	0.967***	0.893***	0.878***	0.963***	0.948***	0.269***	0.924***	0.181***	0.874***	0.914***	0.924***	0.913***	0.958***
	(0.001)	(0.003)	(0.006)	(0.004)	(0.001)	(0.002)	(0.040)	(0.004)	(0.061)	(0.006)	(0.004)	(0.006)	(0.004)	(0.003)
B(2,2)	0.933***	0.913***	0.943***	0.922***	0.941***	0.917***	0.932***	0.941***	0.971***	0.911***	0.949***	0.956***	0.893***	0.933***
	(0.007)	(0.001)	(0.008)	(0.011)	(0.008)	(0.011)	(0.011)	(0.008)	(0.006)	(0.010)	(0.007)	(0.006)	(0.020)	(0.008)

Notes: *, **. *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- AU(Automotive Manufacturer); BNK(Banking); CHEM(Chemicals); CS(Consumer Services); ELTN(Electronics); IND(Industrials); OR(Retail Stores Other); MT(Metals&Mining); OF(Other Financials); OS(Other Services); OT(Other Telecommunications); OTR(Other Transportation); TEL(Telecommunications); UT(Utility Other).

Table 81: Transformed Variance Coefficients of DBEKK-GARCH (1,1) Model for Japan Sectoral CDS Spreads and Equity Returns

CDS_EQ ANALYSIS US FULL SAMPLE

	AIR	BEV	BLDG	BANK	CAB	CG	CHEM	CMG	CON	CS	ELECT	ELTN	FIN	FOOD	GAS	HLT	HOME	IND	INF	LEI	LOD	MSUP	MT	OCG	OF	OG	OR	OS	OT	PHA	PROP	PUB	RAIL	REIT	RET	RT	TEL	TEXT	TOB	OTR	UT	VEH
ARCH and GARCH estimates																																										
Constant																																										
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ARCH parameters																																									
β_1^2	0.118	0.151	0.194	0.158	0.095	0.134	0.068	0.103	0.133	0.127	0.126	0.115	0.143	0.141	0.134	0.174	0.135	0.181	0.297	0.183	0.397	0.134	0.117	0.108	0.139	0.121	0.093	0.086	0.053	0.632	0.155	0.281	0.216	0.043	0.234	0.084	0.301	0.352	0.145	0.103	0.763	0.120
$\beta_1\beta_1$	0.058	0.132	0.106	0.096	0.082	0.118	0.072	0.088	0.087	0.099	0.099	0.104	0.114	0.108	0.106	0.120	0.088	0.119	0.162	0.156	0.158	0.153	0.093	0.135	0.112	0.091	0.082	0.064	0.059	0.256	0.106	0.151	0.093	0.068	0.134	0.089	0.122	0.146	0.087	0.090	0.689	0.093
β_2^2	0.028	0.114	0.058	0.058	0.073	0.104	0.074	0.076	0.057	0.077	0.078	0.079	0.091	0.082	0.067	0.083	0.033	0.078	0.088	0.066	0.063	0.099	0.048	0.092	0.091	0.070	0.072	0.037	0.066	0.103	0.097	0.060	0.041	0.104	0.077	0.095	0.049	0.060	0.053	0.061	0.070	0.069
GARCH parameters																																										
δ_1^2	0.866	0.823	0.803	0.839	0.805	0.756	0.917	0.883	0.800	0.061	0.757	0.866	0.839	0.754	0.837	0.797	0.792	0.713	0.550	0.751	0.210	0.833	0.856	0.832	0.842	0.873	0.807	0.896	0.929	0.292	0.795	0.703	0.665	0.936	0.537	0.906	0.601	0.633	0.893	0.872	0.125	0.876
$\delta_1\delta_1$	0.916	0.851	0.865	0.887	0.895	0.811	0.916	0.899	0.863	0.071	0.831	0.886	0.869	0.820	0.881	0.847	0.873	0.803	0.702	0.833	0.442	0.890	0.899	0.855	0.870	0.902	0.915	0.924	0.919	0.419	0.823	0.806	0.796	0.914	0.696	0.897	0.750	0.764	0.861	0.899	0.239	0.898
δ_2^2	0.967	0.839	0.933	0.938	0.915	0.869	0.916	0.917	0.931	0.083	0.911	0.905	0.901	0.892	0.926	0.901	0.962	0.906	0.895	0.915	0.929	0.887	0.944	0.881	0.899	0.921	0.914	0.954	0.909	0.871	0.894	0.923	0.954	0.893	0.901	0.889	0.935	0.923	0.922	0.927	0.919	0.921

CDS_EQ ANALYSIS US CRISIS SAMPLE

	AIR	BEV	BLDG	BANK	CAB	CG	CHEM	CMG	CON	CS	ELECT	ELTN	FIN	FOOD	GAS	HLT	HOME	IND	INF	LEI	LOD	MSUP	MT	OCG	OF	OG	OR	OS	OT	PHA	PROP	PUB	RAIL	REIT	RET	RT	TEL	TEXT	TOB	OTR	UT	VEH
ARCH and GARCH estimates																																										
Constant																																										
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ARCH parameters																																									
β_1^2	0.040	0.287	0.109	0.103	0.054	0.504	0.234	0.088	0.251	0.061	0.103	0.332	0.179	0.215	0.169	0.022	0.115	0.218	0.733	0.191	0.024	0.254	0.121	0.128	0.176	0.444	0.157	0.096	0.046	0.205	0.176	0.232	0.342	0.045	0.057	0.024	0.072	0.285	0.145	0.068	0.359	0.023
$\beta_1\beta_1$	0.042	0.117	0.089	0.104	0.067	0.214	0.139	0.081	0.151	0.071	0.104	0.317	0.126	0.126	0.144	0.093	0.111	0.154	0.256	0.142	0.043	0.069	0.086	0.147	0.123	0.224	0.107	0.073	0.063	0.376	0.104	0.169	0.148	0.070	0.072	0.092	0.073	0.165	0.012	0.075	0.195	0.099
β_2^2	0.044	0.097	0.072	0.105	0.084	0.091	0.083	0.075	0.068	0.083	0.105	0.076	0.089	0.073	0.091	0.125	0.042	0.083	0.089	0.069	0.079	0.086	0.062	0.109	0.087	0.092	0.074	0.054	0.086	0.118	0.100	0.067	0.059	0.091	0.090	0.109	0.074	0.071	0.057	0.082	0.106	0.074
GARCH parameters																																										
δ_1^2	0.959	0.712	0.852	0.878	0.927	0.333	0.434	0.892	0.673	0.918	0.811	0.147	0.787	0.632	0.723	0.923	0.832	0.454	0.235	0.786	0.955	0.686	0.870	0.819	0.790	0.519	0.775	0.889	0.941	0.034	0.802	0.713	0.648	0.914	0.939	0.970	0.893	0.664	0.832	0.474	0.064	0.967
$\delta_1\delta_1$	0.950	0.847	0.886	0.882	0.918	0.545	0.628	0.904	0.788	0.914	0.849	0.566	0.846	0.759	0.845	0.895	0.698	0.627	0.608	0.851	0.933	0.846	0.899	0.848	0.847	0.683	0.844	0.906	0.920	0.173	0.847	0.813	0.779	0.904	0.918	0.921	0.904	0.780	0.876	0.656	0.238	0.889
δ_2^2	0.954	0.790	0.920	0.886	0.909	0.892	0.908	0.916	0.924	0.909	0.889	0.913	0.908	0.911	0.899	0.863	0.838	0.906	0.890	0.922	0.912	0.911	0.929	0.879	0.909	0.897	0.919	0.923	0.900	0.867	0.895	0.928	0.934	0.893	0.897	0.873	0.915	0.917	0.923	0.908	0.885	0.912

CDS_EQ ANALYSIS US AFTER-CRISIS SAMPLE

	AIR	BEV	BLDG	BANK	CAB	CG	CHEM	CMG	CON	CS	ELECT	ELTN	FIN	FOOD	GAS	HLT	HOME	IND	INF	LEI	LOD	MSUP	MT	OCG	OF	OG	OR	OS	OT	PHA	PROP	PUB	RAIL	REIT	RET	RT	TEL	TEXT	TOB	OTR	UT	VEH
ARCH and GARCH estimates																																										
Constant																																										
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ARCH parameters																																									
β_1^2	0.151	0.096	0.056	0.334	0.110	0.023	0.045	0.122	0.081	0.119	0.156	0.044	0.124	0.037	0.127	0.194	0.135	0.152	0.195	0.341	0.095	0.086	0.022	0.107	0.124	0.201	0.121	0.068	0.139	0.096	0.329	0.262	0.025	0.244	0.357	0.029	0.422	0.227	0.137	0.017	0.304	0.084
$\beta_1\beta_1$	0.063	0.137	0.144	0.134	0.092	0.069	0.031	0.133	0.075	0.106	0.071	0.067	0.125	0.068	0.084	0.102	0.075	0.143	0.159	0.169	0.107	0.072	0.066	0.165	0.156	0.113	0.111	0.110	0.075	0.091	0.216	0.172	0.035	0.137	0.185	0.313	0.089	0.128	0.111	0.075	0.497	0.097
β_2^2	0.043	0.151	0.041	0.054	0.076	0.211	0.038	0.145	0.069	0.083	0.032	0.103	0.126	0.124	0.055	0.056	0.024	0.135	0.131	0.084	0.047	0.061	0.036	0.146	0.149	0.055	0.103	0.060	0.041	0.086	0.109	0.113	0.028	0.078	0.096	0.056	0.018	0.073	0.089	0.049	0.020	0.111
GARCH parameters																																										
δ_1^2	0.769	0.891	0.703	0.613	0.754	0.953	0.946	0.828	0.881	0.893	0.707	0.919	0.846	0.942	0.845	0.792	0.819	0.807	0.093	0.569	0.859	0.882	0.922	0.831	0.845	0.779	0.853	0.921	0.755	0.813	0.589	0.439	0.958	0.438	0.476	0.191	0.547	0.614	0.868	0.923	0.103	0.893
$\delta_1\delta_1$	0.232	0.718	0.802	0.743	0.805	0.801	0.956	0.795	0.865	0.809	0.822	0.862	0.807	0.962	0.889	0.855	0.889	0.775	0.045	0.694	0.863	0.888	0.932	0.718	0.779	0.853	0.845	0.870	0.792	0.842	0.676	0.563	0.955	0.623	0.595	0.414	0.686	0.711	0.716	0.909	0.315	0.814
δ_2^2	0.873	0.579	0.916	0.901	0.859	0.664	0.946	0.763	0.851	0.816	0.954	0.777	0.846	0.790	0.937	0.924	0.960	0.743	0.761	0.848	0.907	0.894	0.942	0.621	0.720	0.933	0.782	0.822	0.830	0.871	0.774	0.722	0.952	0.889	0.745	0.901	0.863	0.822	0.634	0.895	0.967	0.742

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- AIR(Airlines); BEV(Beverages/Bottling); BLDG(Building Products); BNK(Banking); CAB(Cable Media); CG(Consumer Goods); CHEM(Chemicals); CGM(Conglomerate/Diversified Mfg); CON(Container); CS(Consumer Services); ELECT(Electric Utility); ELTN(Electronics); FIN(Financials); FOOD(Food Processors); GAS(Oil&Gas); HLT(Healthcare Facilities); HOME(Home Builders); IND(Industrials); INF(Information/Data Technology); LEI(Leisure); LOD Lodging); MSUP(Healthcare Supply); MT(Metals&Mining); OCG(Other Consumer Goods); OF(Other Financials); OI(Oilfield Machinery & Products); OR(Retail Stores Other); OS(Other Services); OT(Other Telecommunications); PHA(Pharmaceuticals); PROP(Property&Casualty); PUB(Publishing); RAIL(Railroads); REAL(Real Estate); RET(Retail Stores Food&Drugs); RT(Restaurants); TEL(Telecommunications); TEXT(Textile\Apparel\Shoes); TOB(Tobacco); TRP(Transportation); UT(Utility Other); VEH(Vehicle Parts).

Table 82: Variance-Covariance Equations from the DBEKK-GARCH (1,1) Model for US Sectoral CDS Spreads and Equity Returns

UK CDS_EQUITY ANALYSIS FULL SAMPLE

	BEV	BANK	CC	CS	FIN	LF	OF	OCS	OT	OR	TEL
ARCH and GARCH estimates											
Constant											
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ARCH parameters											
β_1^2	0.180	0.157	0.150	0.112	0.056	0.345	0.062	0.029	0.160	0.176	0.114
$\beta_2\beta_1$	0.052	0.102	0.145	0.103	0.076	0.187	0.081	0.052	0.094	0.113	0.081
β_2^2	0.097	0.067	0.148	0.096	0.102	0.101	0.108	0.092	0.055	0.072	0.057
GARCH parameters											
δ_1^2	0.781	0.835	0.615	0.842	0.942	0.273	0.936	0.964	0.790	0.781	0.849
$\delta_2\delta_1$	0.937	0.882	0.678	0.863	0.918	0.892	0.907	0.926	0.853	0.943	0.884
δ_2^2	0.856	0.931	0.785	0.884	0.895	0.494	0.879	0.889	0.922	0.781	0.921

UK CDS_EQUITY ANALYSIS CRISIS SAMPLE

	BEV	BANK	CC	CS	FIN	LF	OF	OCS	OT	OR	TEL
ARCH and GARCH estimates											
Constant											
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ARCH parameters											
β_1^2	0.224	0.193	0.120	0.123	0.047	0.130	0.059	0.039	0.138	0.117	0.106
$\beta_2\beta_1$	0.101	0.109	0.148	0.087	0.063	0.109	0.068	0.053	0.077	0.063	0.043
β_2^2	0.046	0.061	0.186	0.062	0.084	0.091	0.079	0.072	0.042	0.086	0.067
GARCH parameters											
δ_1^2	0.718	0.783	0.625	0.809	0.952	0.874	0.927	0.956	0.805	0.871	0.851
$\delta_2\delta_1$	0.801	0.855	0.689	0.868	0.931	0.89	0.920	0.937	0.874	0.899	0.952
δ_2^2	0.939	0.933	0.678	0.930	0.911	0.907	0.913	0.919	0.950	0.929	0.899

UK CDS_EQUITY ANALYSIS AFTER-CRISIS SAMPLE

	BEV	BANK	CG	CS	FIN	LF	OF	OCS	OT	OR	TEL
ARCH and GARCH estimates											
Constant											
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ARCH parameters											
β_1^2	0.346	0.059	0.149	0.194	0.153	0.264	0.066	0.517	0.192	0.456	0.137
$\beta_2\beta_1$	0.174	0.083	0.185	0.009	137.000	0.181	0.093	0.242	0.113	0.189	0.082
β_2^2	0.089	0.117	0.145	0.139	0.123	0.124	0.133	0.113	0.067	0.078	0.106
GARCH parameters											
δ_1^2	0.03	0.936	0.718	0.648	0.808	0.283	0.929	0.09	0.758	0.312	0.817
$\delta_2\delta_1$	0.166	0.885	0.564	0.737	0.818	0.486	0.865	0.271	0.791	0.521	0.784
δ_2^2	0.904	0.838	0.587	0.839	0.828	0.836	0.806	0.815	0.775	0.872	0.752

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- BEV(Beverages/Bottling); BNK(Banking); CG(Consumer Goods); CS(Consumer Services); FIN(Financials); LF(Life Insurance); OF(Other Financials); OS(Other Services); OT(Other Telecommunications); OR (Other Retail Stores); TEL(Telecommunications).

Table 83: Variance-Covariance Equations from the DBEKK-GARCH (1,1) Model for UK Sectoral CDS Spreads and Equity Returns

CDS_EQ ANALYSIS EU FULL SAMPLE

	AU	BEV	BLDG	BNK	CAB	CG	CHEM	CGM	CS	ELTN	FIN	LEI	MT	OS	OF	GAS	OT	TEL	UT
ARCH and GARCH estimates																			
Constants																			
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ARCH parameters																			
β_1^2	0.124	0.167	0.085	0.076	0.095	0.204	0.131	0.229	0.116	0.157	0.099	0.105	0.066	0.086	0.126	0.093	0.254	0.319	0.050
$\beta_2\beta_1$	0.098	0.087	0.073	0.082	0.083	0.112	0.082	0.109	0.085	0.103	0.099	0.083	0.076	0.079	0.098	0.075	0.065	0.177	0.067
β_2^2	0.078	0.045	0.063	0.088	0.072	0.062	0.051	0.052	0.063	0.068	0.100	0.066	0.055	0.063	0.076	0.060	0.152	0.098	0.087
GARCH parameters																			
δ_1^2	0.841	0.819	0.897	0.912	0.878	0.745	0.852	0.723	0.876	0.836	0.886	0.671	0.917	0.902	0.827	0.896	0.723	0.630	0.929
$\delta_2\delta_1$	0.878	0.874	0.908	0.905	0.897	0.832	0.895	0.823	0.900	0.878	0.888	0.789	0.842	0.905	0.868	0.915	0.814	0.800	0.909
δ_2^2	0.917	0.934	0.919	0.899	0.917	0.929	0.940	0.938	0.825	0.924	0.890	0.926	0.888	0.909	0.911	0.914	0.817	0.875	0.890

CDS_EQ ANALYSIS EU CRISIS SAMPLE

	AU	BEV	BLDG	BNK	CAB	CG	CHEM	CGM	CS	ELTN	FIN	LEI	MT	OS	OF	GAS	OT	TEL	UT
ARCH and GARCH estimates																			
Constants																			
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ARCH parameters																			
β_1^2	0.089	0.138	0.074	0.091	0.082	0.350	0.162	0.353	0.168	0.111	0.208	0.068	0.105	0.082	0.191	0.104	0.232	0.332	0.045
$\beta_2\beta_1$	0.104	0.088	0.076	0.098	0.072	0.154	0.099	0.145	0.095	0.084	0.126	0.066	0.076	0.059	0.110	0.086	0.141	0.133	0.064
β_2^2	0.121	0.057	0.078	0.087	0.063	0.068	0.061	0.059	0.054	0.064	0.076	0.065	0.055	0.043	0.064	0.071	0.059	0.053	0.090
GARCH parameters																			
δ_1^2	0.860	0.841	0.907	0.898	0.887	0.499	0.809	0.514	0.822	0.886	0.768	0.772	0.843	0.899	0.769	0.880	0.704	0.604	0.925
$\delta_2\delta_1$	0.864	0.882	0.907	0.899	0.905	0.678	0.867	0.692	0.876	0.906	0.837	0.642	0.884	0.921	0.843	0.897	0.805	0.807	0.921
δ_2^2	0.867	0.926	0.908	0.899	0.923	0.922	0.927	0.934	0.933	0.924	0.914	0.929	0.937	0.942	0.925	0.915	0.920	0.926	0.889

CDS_EQ ANALYSIS EU AFTER-CRISIS SAMPLE

	AU	BEV	BLDG	BNK	CAB	CG	CHEM	CGM	CS	ELTN	FIN	LEI	MT	OS	OF	GAS	OT	TEL	UT
ARCH and GARCH estimates																			
Constants																			
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ARCH parameters																			
β_1^2	0.194	0.228	0.096	0.065	0.105	0.220	0.065	0.225	0.089	0.209	0.119	0.106	0.100	0.222	0.052	0.093	0.105	0.245	0.105
$\beta_2\beta_1$	0.068	0.040	0.074	0.078	0.109	0.069	0.059	0.107	0.092	0.130	0.117	0.141	0.043	0.124	0.073	0.041	0.165	0.168	0.100
β_2^2	0.024	0.085	0.058	0.095	0.113	0.123	0.053	0.051	0.095	0.081	0.097	0.187	0.028	0.069	0.101	0.041	0.076	0.082	0.095
GARCH parameters																			
δ_1^2	0.754	0.758	0.888	0.926	0.882	0.720	0.914	0.729	0.906	0.753	0.872	0.890	0.899	0.739	0.931	0.901	0.751	0.754	0.839
$\delta_2\delta_1$	0.855	0.829	0.887	0.874	0.831	0.793	0.888	0.769	0.863	0.792	0.852	0.597	0.950	0.806	0.872	0.926	0.823	0.800	0.815
δ_2^2	0.968	0.909	0.887	0.825	0.782	0.873	0.863	0.815	0.823	0.834	0.832	0.402	0.924	0.878	0.816	0.952	0.809	0.849	0.791

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- AU(Automotive Manufacturer); BEV(Beverages/Bottling); BLDG(Building Products); BNK(Banking); CAB(Cable Media); CG(Consumer Goods); CHEM(Chemicals); CGM(Conglomerate/Diversified Mfg); CS(Consumer Services); ELTN(Electronics); FIN(Financials); GAS(Oil&Gas); LEI(Leisure); MT(Metals&Mining); OF(Other Financials); OS(Other Services); OT(Other Telecommunications); TEL(Telecommunications); UT(Utility Other).

Table 84: Variance-Covariance Equations from the DBEKK-GARCH (1,1) Model for EU Sectoral CDS Spreads and Equity Returns

CDS_EQ ANALYSIS Japan FULL SAMPLE

	AU	BNK	CHEM	CS	ELTN	IND	OR	MT	OS	OF	OT	OTR	TEL	UT
ARCH and GARCH estimates														
Constant														
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ARCH parameters														
β_1^2	0.092	0.087	0.119	0.191	0.144	0.077	0.121	0.115	0.444	0.111	0.112	0.023	0.111	0.088
$\beta_2\beta_1$	0.101	0.072	0.106	0.159	0.114	0.091	0.131	0.108	0.055	0.093	0.099	0.065	0.097	0.112
β_2^2	0.068	0.059	0.093	0.131	0.090	0.108	0.119	0.101	0.106	0.078	0.089	0.101	0.086	0.099
GARCH parameters														
δ_1^2	0.867	0.903	0.847	0.785	0.827	0.908	0.871	0.841	0.527	0.838	0.865	0.958	0.867	0.838
$\delta_2\delta_1$	0.889	0.915	0.867	0.813	0.853	0.879	0.866	0.855	0.687	0.871	0.879	0.916	0.877	0.853
δ_2^2	0.913	0.927	0.877	0.840	0.886	0.852	0.861	0.869	0.877	0.905	0.893	0.876	0.887	0.868

CDS_EQ ANALYSIS Japan CRISIS SAMPLE

	AU	BNK	CHEM	CS	ELTN	IND	OR	MT	OS	OF	OT	OTR	TEL	UT
ARCH and GARCH estimates														
Constant														
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ARCH parameters														
β_1^2	0.120	0.117	0.091	0.229	0.121	0.091	0.124	0.073	0.138	0.107	0.079	0.062	0.075	0.067
$\beta_2\beta_1$	0.103	0.089	0.097	0.194	0.108	0.096	0.131	0.091	0.083	0.083	0.095	0.078	0.078	0.099
β_2^2	0.058	0.066	0.103	0.164	0.097	0.101	0.139	0.113	0.049	0.064	0.115	0.099	0.083	0.148
GARCH parameters														
δ_1^2	0.859	0.877	0.881	0.769	0.817	0.879	0.706	0.854	0.849	0.846	0.891	0.935	0.893	0.822
$\delta_2\delta_1$	0.890	0.899	0.874	0.789	0.842	0.874	0.771	0.853	0.889	0.884	0.879	0.907	0.893	0.832
δ_2^2	0.922	0.922	0.867	0.809	0.868	0.869	0.840	0.854	0.869	0.924	0.868	0.879	0.840	0.842

CDS_EQ ANALYSIS Japan AFTER-CRISIS SAMPLE

	AU	BNK	CHEM	CS	ELTN	IND	OR	MT	OS	OF	OT	OTR	TEL	UT
ARCH and GARCH estimates														
Constant														
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ARCH parameters														
β_1^2	0.125	0.052	0.161	0.209	0.071	0.055	0.420	0.136	0.491	0.133	0.155	0.103	0.161	0.039
$\beta_2\beta_1$	0.115	0.080	0.113	0.151	0.079	0.074	0.103	0.107	0.243	0.128	0.104	0.084	0.129	0.063
β_2^2	0.103	0.124	0.079	0.109	0.089	0.101	0.183	0.084	0.039	0.125	0.069	0.069	0.102	0.098
GARCH parameters														
δ_1^2	0.873	0.936	0.797	0.771	0.927	0.899	0.073	0.854	0.003	0.764	0.835	0.854	0.833	0.918
$\delta_2\delta_1$	0.872	0.883	0.842	0.809	0.905	0.869	0.251	0.869	0.741	0.796	0.868	0.883	0.815	0.894
δ_2^2	0.871	0.833	0.889	0.850	0.885	0.841	0.769	0.885	0.175	0.831	0.902	0.914	0.797	0.871

Notes: *, **. *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- AU(Automotive Manufacturer); BNK(Banking); CHEM(Chemicals); CS(Consumer Services); ELTN(Electronics); IND(Industrials); OR(Retail Stores Other); MT(Metals&Mining); OF(Other Financials); OS(Other Services); OT(Other Telecommunications); OTR(Other Transportation); TEL(Telecommunications); UT(Utility Other).

Table 85: Variance-Covariance Equations from the DBEKK-GARCH (1,1) Model for Japan Sectoral CDS Spreads and Equity Returns

B.3.2 CDS Spread and Equity Regional Connectedness

Bivariate BEKK-GARCH parameterisation:

$$h_1^2 = \Omega_{11} + \beta_1^2 \epsilon_{1,t-1}^2 + \delta_1^2 h_{1,t-1}^2$$

$$h_{12} = \Omega_{12} + \beta_2 \beta_1 \epsilon_{1,t-1} \epsilon_{2,t-1} + \delta_2 \delta_1 h_{1,t-1} h_{2,t-1}$$

$$h_2^2 = \Omega_{22} + \beta_2^2 \epsilon_{2,t-1}^2 + \delta_2^2 h_{2,t-1}^2$$

Ti-variate BEKK-GARCH parameterisation:

$$h_1^2 = \Omega_{11} + \beta_1^2 \epsilon_{1,t-1}^2 + \delta_1^2 h_{1,t-1}^2$$

$$h_{12} = \Omega_{12} + \beta_2 \beta_1 \epsilon_{1,t-1} \epsilon_{2,t-1} + \delta_2 \delta_1 h_{1,t-1} h_{2,t-1}$$

$$h_{13} = \Omega_{13} + \beta_3 \beta_1 \epsilon_{1,t-1} \epsilon_{3,t-1} + \delta_3 \delta_1 h_{1,t-1} h_{3,t-1}$$

$$h_2^2 = \Omega_{22} + \beta_2^2 \epsilon_{2,t-1}^2 + \delta_2^2 h_{2,t-1}^2$$

$$h_{23} = \Omega_{23} + \beta_3 \beta_2 \epsilon_{2,t-1} \epsilon_{3,t-1} + \delta_3 \delta_2 h_{2,t-1} h_{3,t-1}$$

$$h_3^2 = \Omega_{33} + \beta_3^2 \epsilon_{3,t-1}^2 + \delta_3^2 h_{3,t-1}^2$$

Four-variate BEKK-GARCH parameterisation:

$$h_1^2 = \Omega_{11} + \beta_1^2 \epsilon_{1,t-1}^2 + \delta_1^2 h_{1,t-1}^2$$

$$h_{12} = \Omega_{12} + \beta_2 \beta_1 \epsilon_{1,t-1} \epsilon_{2,t-1} + \delta_2 \delta_1 h_{1,t-1} h_{2,t-1}$$

$$h_{13} = \Omega_{13} + \beta_3 \beta_1 \epsilon_{1,t-1} \epsilon_{3,t-1} + \delta_3 \delta_1 h_{1,t-1} h_{3,t-1}$$

$$h_{14} = \Omega_{14} + \beta_4 \beta_1 \epsilon_{1,t-1} \epsilon_{4,t-1} + \delta_4 \delta_1 h_{1,t-1} h_{4,t-1}$$

$$h_2^2 = \Omega_{22} + \beta_2^2 \epsilon_{2,t-1}^2 + \delta_2^2 h_{2,t-1}^2$$

$$h_{23} = \Omega_{23} + \beta_3 \beta_2 \epsilon_{2,t-1} \epsilon_{3,t-1} + \delta_3 \delta_2 h_{2,t-1} h_{3,t-1}$$

$$h_{24} = \Omega_{24} + \beta_4 \beta_2 \epsilon_{2,t-1} \epsilon_{4,t-1} + \delta_4 \delta_2 h_{2,t-1} h_{4,t-1}$$

$$h_3^2 = \Omega_{33} + \beta_3^2 \epsilon_{3,t-1}^2 + \delta_3^2 h_{3,t-1}^2$$

$$h_{34} = \Omega_{34} + \beta_4 \beta_3 \epsilon_{3,t-1} \epsilon_{4,t-1} + \delta_4 \delta_3 h_{3,t-1} h_{4,t-1}$$

$$h_4^2 = \Omega_{44} + \beta_4^2 \epsilon_{4,t-1}^2 + \delta_4^2 h_{4,t-1}^2$$

CDS REGIONAL ANALYSIS FULL SAMPLE

	BRV	BLDG	BNK	BNKG	CAB	CG	CGM	CHM	MLTC	MLTN	MN	IND	LEI	MNG	MT	PIN	OG	OAS	OT	OTR	RAIL	OR	CS	TEL	TR	UT
Estimated Coefficients for Conditional Variance-Covariance Equations:																										
Q(1,1)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.001***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q(1,2)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000*	0.000***	0.000***	0.000**	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000**	0.000***	0.000*	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q(1,3)	0.000***	–	0.000***	0.000***	–	0.000***	–	0.000***	0.000***	0.000***	–	–	–	0.000***	–	0.000***	0.000***	–	0.000***	0.000***	–	–	0.000**	0.000***	0.000***	0.000***	0.000
	(0.000)	–	(0.000)	(0.000)	–	(0.000)	–	(0.000)	(0.000)	(0.000)	–	–	–	(0.000)	–	(0.000)	(0.000)	–	(0.000)	(0.000)	–	–	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q(1,4)	–	–	0.000***	0.000***	–	–	–	–	0.000***	–	–	–	–	0.000***	–	0.000***	–	–	0.000***	–	–	–	–	0.000	0.000***	–	–
	–	–	(0.000)	(0.000)	–	–	–	–	(0.000)	–	–	–	–	(0.000)	–	(0.000)	–	–	(0.000)	–	–	–	–	(0.000)	(0.000)	–	–
Q(2,2)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q(2,3)	0.000***	–	0.000***	0.000***	–	0.000***	–	0.000***	0.000***	0.000*	–	–	–	0.000***	–	0.000***	0.000***	–	0.000***	0.000***	–	–	0.000	0.000***	0.000***	0.000**	0.000**
	(0.000)	–	(0.000)	(0.000)	–	(0.000)	–	(0.000)	(0.000)	(0.000)	–	–	–	(0.000)	–	(0.000)	(0.000)	–	(0.000)	(0.000)	–	–	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q(2,4)	–	–	0.000***	0.000***	–	–	–	–	0.000	–	–	–	–	0.000***	–	0.000***	–	–	0.000	–	–	–	–	0.000	0.000***	–	–
	–	–	(0.000)	(0.000)	–	–	–	–	(0.000)	–	–	–	–	(0.000)	–	(0.000)	–	–	(0.000)	–	–	–	–	(0.000)	(0.000)	–	–
Q(3,3)	0.000***	–	0.000***	0.000***	–	0.000***	–	0.000***	0.000***	0.000***	–	–	–	0.000***	–	0.000***	0.000***	–	0.000***	0.000***	–	–	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	–	(0.000)	(0.000)	–	(0.000)	–	(0.000)	(0.000)	(0.000)	–	–	–	(0.000)	–	(0.000)	(0.000)	–	(0.000)	(0.000)	–	–	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q(3,4)	–	–	0.000***	0.000***	–	–	–	–	0.000***	–	–	–	–	0.000***	–	0.000***	–	–	0.000**	–	–	–	–	0.000***	0.000***	–	–
	–	–	(0.000)	(0.000)	–	–	–	–	(0.000)	–	–	–	–	(0.000)	–	(0.000)	–	–	(0.000)	–	–	–	–	(0.000)	(0.000)	–	–
Q(4,4)	–	–	0.000***	0.000***	–	–	–	–	0.000***	–	–	–	–	0.000***	–	0.000***	–	–	0.000***	–	–	–	–	0.000***	0.000***	–	–
	–	–	(0.000)	(0.000)	–	–	–	–	(0.000)	–	–	–	–	(0.000)	–	(0.000)	–	–	(0.000)	–	–	–	–	(0.000)	(0.000)	–	–
A(1,1)	0.305***	0.317***	0.325***	0.291***	0.364***	0.322***	0.325***	0.536***	0.325***	0.210***	0.322***	0.364***	0.395***	0.291***	0.252***	0.320***	0.320***	0.446***	0.245***	0.418***	0.306***	0.456***	0.426***	0.320***	0.432***	0.536***	0.275***
	(0.004)	(0.006)	(0.005)	(0.005)	(0.011)	(0.005)	(0.009)	(0.012)	(0.006)	(0.005)	(0.009)	(0.014)	(0.010)	(0.006)	(0.007)	(0.006)	(0.006)	(0.011)	(0.006)	(0.007)	(0.004)	(0.013)	(0.018)	(0.007)	(0.007)	(0.023)	(0.006)
A(2,2)	0.307***	0.364***	0.344***	0.372***	0.324***	0.384***	0.928***	0.325***	0.370***	0.371***	0.446***	0.289***	0.393***	0.267***	0.313***	0.256***	0.272***	0.225***	0.267***	0.428***	0.303***	0.253***	0.412***	0.349***	0.325***	0.325***	0.325***
	(0.005)	(0.005)	(0.006)	(0.005)	(0.019)	(0.005)	(0.002)	(0.007)	(0.002)	(0.005)	(0.013)	(0.004)	(0.012)	(0.004)	(0.010)	(0.004)	(0.006)	(0.012)	(0.005)	(0.006)	(0.006)	(0.005)	(0.011)	(0.006)	(0.007)	(0.006)	(0.010)
A(3,3)	0.306***	–	0.292***	0.256***	–	0.292***	–	0.364***	0.417***	0.319***	–	–	–	0.292***	–	0.341***	0.227***	–	0.264***	0.329***	–	–	0.667***	0.328***	0.292***	0.259***	0.343***
	(0.006)	–	(0.005)	(0.005)	–	(0.005)	–	(0.009)	(0.006)	(0.006)	–	–	–	(0.006)	–	(0.005)	(0.006)	–	(0.017)	(0.007)	–	–	(0.031)	(0.005)	(0.006)	(0.006)	(0.002)

A(4,4)	–	–	0.191***	0.252***	–	–	–	–	0.309***	–	–	–	–	0.225***	–	0.286***	–	–	0.363***	–	–	–	–	0.359***	0.322***	–	–
	–	–	(0.006)	(0.006)	–	–	–	–	(0.007)	–	–	–	–	(0.010)	–	(0.010)	–	–	(0.005)	–	–	–	–	(0.006)	(0.007)	–	–
B(1,1)	0.959***	0.951***	0.949***	0.953***	0.847***	0.892***	0.959***	0.754***	0.892***	0.957***	0.959***	0.941***	0.895***	0.946***	0.963***	0.959***	0.953***	0.772***	0.959***	0.772***	0.970***	0.899***	0.702***	0.962***	0.922***	0.572***	0.954***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.007)	(0.004)	(0.002)	(0.009)	(0.007)	(0.002)	(0.002)	(0.008)	(0.003)	(0.002)	(0.001)	(0.001)	(0.002)	(0.011)	(0.002)	(0.009)	(0.001)	(0.009)	(0.014)	(0.002)	(0.005)	(0.017)	(0.002)
B(2,2)	0.972***	0.922***	0.946***	0.927***	0.641***	0.947***	0.878***	0.936***	0.954***	0.923***	0.893***	0.922***	0.897***	0.959***	0.924***	0.957***	0.962***	0.930***	0.945***	0.926***	0.952***	0.946***	0.894***	0.910***	0.926***	0.939***	0.902***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.035)	(0.001)	(0.004)	(0.006)	(0.006)	(0.002)	(0.006)	(0.001)	(0.007)	(0.000)	(0.004)	(0.001)	(0.001)	(0.004)	(0.010)	(0.005)	(0.002)	(0.001)	(0.004)	(0.003)	(0.003)	(0.011)	(0.005)
B(3,3)	0.949***	–	0.952***	0.951***	–	0.953***	–	0.908***	0.916***	0.939***	–	–	–	0.946***	–	0.935***	0.932***	–	0.837***	0.932***	–	–	0.674***	0.924***	0.917***	0.922***	0.911***
	(0.002)	–	(0.001)	(0.001)	–	(0.001)	–	(0.003)	(0.002)	(0.003)	–	–	–	(0.002)	–	(0.001)	(0.002)	–	(0.016)	(0.002)	–	–	(0.006)	(0.002)	(0.002)	(0.001)	(0.002)
B(4,4)	–	–	0.976***	0.959***	–	–	–	–	0.921***	–	–	–	–	0.895***	–	0.925***	–	–	0.962***	–	–	–	–	0.914***	0.954***	–	–
	–	–	(0.001)	(0.002)	–	–	–	–	(0.002)	–	–	–	–	(0.007)	–	(0.004)	–	–	(0.000)	–	–	–	–	(0.002)	(0.002)	–	–

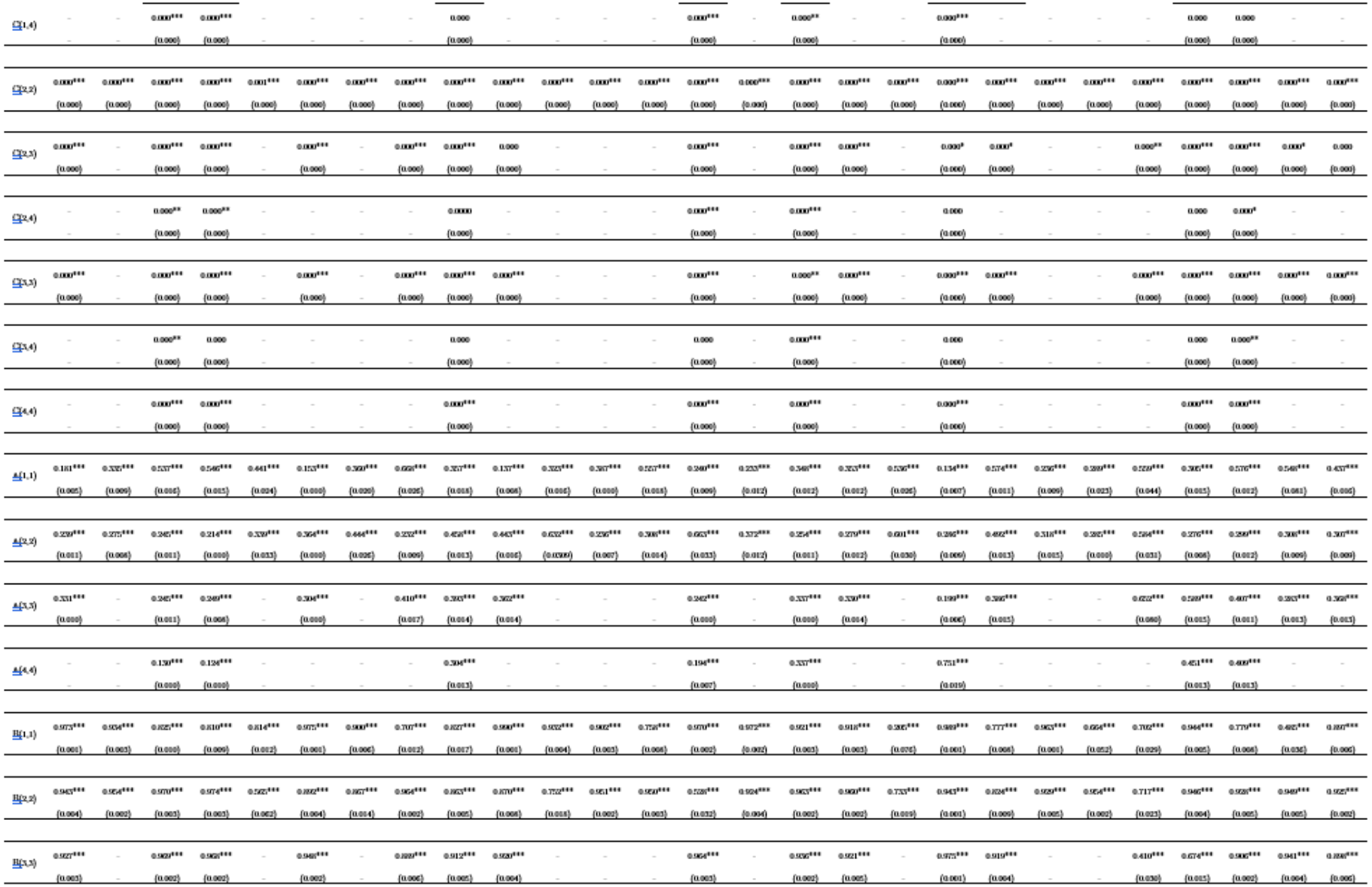
CDS Regional analysis crisis sample

	BrV	BLDC	BNK	BNKC	CAB	CC	CCM	CHM	cLoC	cLrN	cN	IND	Ltl	MNC	Mr	rIN	Ov	CaS	CS	Cr	CrR	RaIL	CR	CS	TtL	rR	Ur
Estimated Coefficients for Conditional Variance-Covariance Equations:																											
C(1,1)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,2)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000*	0.000*	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000**	0.000	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,3)	0.000***	–	0.000***	0.000***	–	0.000***	–	0.000***	0.000***	0.000***	–	–	–	0.000***	–	0.000***	0.000***	–	0.000***	0.000	–	–	0.000	0.000***	0.000***	0.000*	0.000***
	(0.000)	–	(0.000)	(0.000)	–	(0.000)	–	(0.000)	(0.000)	(0.000)	–	–	–	(0.000)	–	(0.000)	(0.000)	–	(0.000)	(0.000)	–	–	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,4)	–	–	0.000***	0.000***	–	–	–	–	0.000***	–	–	–	–	0.000***	–	0.000*	–	–	0.000	–	–	–	–	0.000***	0.000***	–	–
	–	–	(0.000)	(0.000)	–	–	–	–	(0.000)	–	–	–	–	(0.000)	–	(0.000)	–	–	(0.000)	–	–	–	–	(0.000)	(0.000)	–	–
C(2,2)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,3)	0.000***	–	0.000***	0.000***	–	0.000***	–	0.000***	0.000***	0.000*	–	–	–	0.000***	–	0.000***	0.000***	–	0.000***	0.000***	–	–	0.000**	0.000***	0.000***	0.000*	0.000***
	(0.000)	–	(0.000)	(0.000)	–	(0.000)	–	(0.000)	(0.000)	(0.000)	–	–	–	(0.000)	–	(0.000)	(0.000)	–	(0.000)	(0.000)	–	–	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,4)	–	–	0.000***	0.000***	–	–	–	–	0.000***	–	–	–	–	0.000***	–	0.000**	–	–	0.000	–	–	–	–	0.000**	0.000***	–	–
	–	–	(0.000)	(0.000)	–	–	–	–	(0.000)	–	–	–	–	(0.000)	–	(0.000)	–	–	(0.000)	–	–	–	–	(0.000)	(0.000)	–	–
C(3,3)	0.000***	–	0.000***	0.000***	–	0.000***	–	0.000***	0.000***	0.000***	–	–	–	0.000***	–	0.000***	0.000***	–	0.000***	0.000***	–	–	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	–	(0.000)	(0.000)	–	(0.000)	–	(0.000)	(0.000)	(0.000)	–	–	–	(0.000)	–	(0.000)	(0.000)	–	(0.000)	(0.000)	–	–	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

C(3,4)	-	-	0.000***	0.000***	-	-	-	-	0.000***	-	-	-	-	0.000***	-	0.000***	-	-	0.000**	-	-	-	-	0.000***	0.000***	-	-		
	-	-	(0.000)	(0.000)	-	-	-	-	(0.000)	-	-	-	-	(0.000)	-	(0.000)	-	-	(0.000)	-	-	-	-	(0.000)	(0.000)	-	-		
C(4,4)	-	-	0.000***	0.000***	-	-	-	-	0.000***	-	-	-	-	0.000***	-	0.000***	-	-	0.000***	-	-	-	-	0.000***	0.000***	-	-		
	-	-	(0.000)	(0.000)	-	-	-	-	(0.000)	-	-	-	-	(0.000)	-	(0.000)	-	-	(0.000)	-	-	-	-	(0.000)	(0.000)	-	-		
A(1,1)	0.237***	0.229***	0.225***	0.220***	0.217***	0.510***	0.300***	0.266***	0.379***	0.226***	0.406***	0.280***	0.541***	0.317***	0.310***	0.228***	0.227***	0.246***	0.201***	0.203***	0.745***	0.285***	0.211***	0.209***	0.189***	0.411***	0.214***	
	(0.008)	(0.011)	(0.009)	(0.009)	(0.011)	(0.018)	(0.011)	(0.019)	(0.010)	(0.008)	(0.015)	(0.033)	(0.014)	(0.012)	(0.009)	(0.005)	(0.011)	(0.009)	(0.007)	(0.007)	(0.032)	(0.008)	(0.006)	(0.009)	(0.006)	(0.015)	(0.009)	
A(2,2)	0.152***	0.264***	0.420***	0.405***	0.370***	0.273***	0.527***	0.346***	0.292***	0.343***	0.076***	0.310***	0.279***	0.252***	0.250***	0.253***	0.245***	0.239***	0.189***	0.241***	0.316***	0.270***	0.230***	0.230***	0.287***	0.295***	0.628***	
	(0.007)	(0.007)	(0.009)	(0.007)	(0.025)	(0.006)	(0.009_	(0.012)	(0.007)	(0.006)	(0.007)	(0.012)	(0.025)	(0.006)	(0.014)	(0.006)	(0.007)	(0.020)	(0.004)	(0.013)	(0.014)	(0.008)	(0.011)	(0.011)	(0.008)	(0.013)	(0.017)	
A(3,3)	0.312***	-	0.340***	0.293***	-	0.273***	-	0.304***	0.432***	0.317***	-	-	-	0.269***	-	0.246***	0.436***	-	0.218***	0.273***	-	-	0.226***	0.283***	0.234***	0.295***	0.224***	
	(0.010)	-	(0.010)	(0.009)	-	(0.008)	-	(0.011)	(0.011)	(0.011)	-	-	-	(0.010)	-	(0.007)	(0.012)	-	(0.022)	(0.011)	-	-	(0.015)	(0.012)	(0.006)	(0.012)	(0.011)		
A(4,4)	-	-	0.252***	0.244***	-	-	-	-	0.290***	-	-	-	-	0.288***	-	0.289***	-	-	0.193***	-	-	-	-	0.245***	0.254***	-	-		
	-	-	(0.010)	(0.011)	-	-	-	-	(0.011)	-	-	-	-	(0.015)	-	(0.015)	-	-	(0.016)	-	-	-	-	(0.016)	(0.010)	-	-		
B(1,1)	0.952***	0.960***	0.959***	0.962***	0.962***	0.721***	0.943***	0.696***	0.875***	0.942***	0.876***	0.871***	0.931***	0.956***	0.945***	0.972***	0.956***	0.946***	0.969***	0.962***	0.254***	0.960***	0.974***	0.962***	0.973***	0.807***	0.964***	
	(0.003)	(0.005)	(0.003)	(0.003)	(0.003)	(0.014)	(0.002)	(0.023)	(0.007)	(0.006)	(0.007)	(0.046)	(0.004)	(0.004)	(0.002)	(0.001)	(0.003)	(0.004)	(0.002)	(0.002)	(0.049)	(0.002)	(0.001)	(0.002)	(0.001)	(0.006)	(0.005)	
B(2,2)	0.962***	0.959***	0.963***	0.960***	0.836***	0.952***	0.751***	0.917***	0.951***	0.954***	0.911***	0.954***	0.859***	0.949***	0.956***	0.956***	0.957***	0.959***	0.979***	0.957***	0.949***	0.951***	0.962***	0.960***	0.962***	0.899***	0.769***	
	(0.001)	(0.002)	(0.003)	(0.003)	(0.017)	(0.002)	(0.017)	(0.005)	(0.002)	(0.002)	(0.006)	(0.004)	(0.025)	(0.002)	(0.006)	(0.001)	(0.002)	(0.007)	(0.001)	(0.006)	(0.004)	(0.002)	(0.004)	(0.005)	(0.003)	(0.006)	(0.010)	
B(3,3)	0.933***	-	0.934***	0.954***	-	0.953***	-	0.956***	0.890***	0.910***	-	-	-	0.892***	-	0.926***	0.891***	-	0.812***	0.947***	-	-	0.937***	0.959***	0.945***	0.962***	0.922***		
	(0.003)	-	(0.006)	(0.002)	-	(0.003)	-	(0.003)	(0.005)	(0.004)	-	-	-	(0.006)	-	(0.003)	(0.006)	-	(0.045)	(0.003)	-	-	(0.006)	(0.004)	(0.002)	(0.003)	(0.005)		
B(4,4)	-	-	0.961***	0.954***	-	-	-	-	0.923***	-	-	-	-	0.951***	-	0.926***	-	-	0.911***	-	-	-	-	0.922***	0.951***	-	-		
	-	-	(0.003)	(0.004)	-	-	-	-	(0.004)	-	-	-	-	(0.017)	-	(0.006)	-	-	(0.006)	-	-	-	-	(0.006)	(0.002)	-	-		

CDS Regional analysis after crisis sample

	BrV	BLDG	BNK	BNKG	CAB	CG	CGM	CHM	nLsC	nLTN	nN	IND	Ltl	MNG	Mt	nIN	Ov	GaS	OS	Ot	OtR	RaIL	OR	CS	TrL	tR	Ut
Estimated Coefficients for Conditional Variance-Covariance Equations:																											
C(1,1)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.001***	0.000***	0.000***	0.000***	0.000***	0.001***	0.001***	0.000***	0.001***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
C(1,2)	0.000**	0.000	0.000***	0.000***	0.000	0.000***	0.000***	0.000***	0.000*	0.000*	0.000*	0.000***	0.000*	0.000***	0.000*	0.000	0.000	0.000***	0.000***	0.000***	0.000	0.000**	0.000	0.000***	0.000***	0.000	0.000*	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
C(1,3)	0.000	-	0.000***	0.000***	-	0.000***	-	0.000***	0.000*	0.000	-	-	-	0.000***	-	0.000**	0.000**	-	0.000***	0.000	-	-	0.000**	0.000***	0.000***	0.000*	0.000		
	(0.000)	-	(0.000)	(0.000)	-	(0.000)	-	(0.000)	(0.000)	(0.000)	-	-	-	(0.000)	-	(0.000)	(0.000)	-	(0.000)	(0.000)	-	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)		



B(4,4)	–	–	0.995***	0.987***	–	–	–	–	0.917***	–	–	–	0.979***	–	0.996***	–	–	0.715***	–	–	–	–	0.999***	0.914***	–	–
	–	–	(0.002)	(0.002)	–	–	–	–	(0.005)	–	–	–	(0.001)	–	(0.005)	–	–	(0.013)	–	–	–	–	(0.004)	(0.004)	–	–

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows: BEV(Beverages/Bottling); BLDG(Building Products); BNK(Banks); BKG(Banking); CAB(Cable Media); CG(Consumer Goods); CHM(Chemicals); CGM(Conglomerate/Diversified Mfg); CS(Consumer Services); ELEC(Electric (Power); ELTN(Electronics); EN (Energy); FIN(Financials); GAS(Oil&Gas); IND(Industrials); LEI(Leisure); MNG(Manufacturing); MT(Metals&Mining); OF(Other Financials); OR(Retail Stores Other); OS(Other Services); OT(Other Telecommunications); OTR(Other Transport); TR(Transport); RAIL(Railroads); TEL(Telecommunications); UT(Utility Other).

Table 86: Transformed Variance Coefficients of DBEKK-GARCH (1,1) Model for Regional CDS Spreads Sectoral Returns

CDS REGIONAL ANALYSIS FULL SAMPLE

	BEV	BLDG	BNK	BNKG	CAB	CG	CGM	CHM	ELEC	ELTN	EN	IND	LEI	MNG	MT	FIN	OF	GAS	OS	OT	OTR	RAIL	OR	CS	TEL	TR	UT
ARCH and GARCH estimates																											
Constants																											
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{13}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{14}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{23}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{24}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{33}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{34}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{44}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ARCH parameters																											
β_1^2	0.042	0.101	0.106	0.078	0.132	0.104	0.106	0.287	0.112	0.044	0.124	0.132	0.156	0.084	0.063	0.102	0.107	0.201	0.060	0.175	0.043	0.210	0.181	0.057	0.186	0.289	0.075
$\beta_2\beta_1$	0.042	0.084	0.112	0.104	0.118	0.095	0.136	0.174	0.090	0.078	0.157	0.079	0.116	0.077	0.078	0.082	0.089	0.159	0.070	0.179	0.063	0.116	0.176	0.083	0.139	0.18	0.089
$\beta_3\beta_1$	0.063	-	0.093	0.074	-	0.091	-	0.194	0.139	0.067	-	-	-	0.083	-	0.109	0.107	-	0.069	0.138	-	-	0.285	0.079	0.169	0.139	0.094
$\beta_4\beta_1$	-	-	0.062	0.071	-	-	-	-	0.104	-	-	-	-	0.094	-	0.095	-	-	0.089	-	-	-	-	0.087	0.139	-	-
β_2^2	0.043	0.069	0.118	0.138	0.105	0.086	0.176	0.106	0.073	0.137	0.200	0.102	0.086	0.070	0.097	0.066	0.073	0.126	0.082	0.184	0.092	0.064	0.170	0.122	0.104	0.112	0.106
$\beta_3\beta_2$	0.063	-	0.098	0.098	-	0.084	-	0.118	0.113	0.118	-	-	-	0.075	-	0.088	0.088	-	0.814	0.142	-	-	0.275	0.115	0.126	0.087	0.111
$\beta_4\beta_2$	-	-	0.066	0.094	-	-	-	-	0.083	-	-	-	-	0.085	-	0.077	-	-	0.104	-	-	-	-	0.129	0.104	-	-
β_3^2	0.094	-	0.081	0.064	-	0.081	-	0.132	0.174	0.101	-	-	-	0.081	-	0.116	0.107	-	0.081	0.109	-	-	0.445	0.135	0.153	0.067	0.117
$\beta_4\beta_3$	-	-	0.054	0.067	-	-	-	-	0.129	-	-	-	-	0.085	-	0.102	-	-	0.103	-	-	-	-	0.121	0.126	-	-
β_4^2	-	-	0.036	0.065	-	-	-	-	0.096	-	-	-	-	0.104	-	0.089	-	-	0.1316	-	-	-	-	0.136	0.103	-	-
GARCH parameters																											
δ_1^2	0.937	0.866	0.884	0.908	0.718	0.796	0.879	0.539	0.744	0.935	0.862	0.707	0.802	0.892	0.927	0.88	0.871	0.596	0.919	0.596	0.939	0.652	0.627	0.924	0.676	0.327	0.909
$\delta_2\delta_1$	0.941	0.888	0.887	0.883	0.411	0.845	0.770	0.688	0.832	0.892	0.820	0.801	0.794	0.905	0.889	0.907	0.895	0.711	0.906	0.670	0.922	0.762	0.707	0.874	0.763	0.536	0.860
$\delta_3\delta_1$	0.910	-	0.895	0.916	-	0.849	-	0.666	0.790	0.889	-	-	-	0.891	-	0.876	0.869	-	0.803	0.719	-	-	0.534	0.889	0.754	0.552	0.868
$\delta_4\delta_1$	-	-	0..917	0.914	-	0.897	-	-	0.794	-	-	-	-	0.834	-	0.866	-	-	0.922	-	-	-	-	0.879	0.769	-	-
δ_2^2	0.945	0.911	0.891	0.859	0.543	0.897	0.822	0.880	0.930	0.852	0.780	0.907	0.786	0.92	0.853	0.935	0.868	0.847	0.892	0.754	0.906	0.891	0.799	0.854	0.861	0.879	0.814
$\delta_3\delta_2$	0.914	-	0.898	0.891	-	0.902	-	0.852	0.884	0.849	-	-	-	0.906	-	0.904	0.869	-	0.791	0.809	-	-	0.602	0.840	0.851	0.905	0.822
$\delta_4\delta_2$	-	-	0.921	0.888	-	-	-	-	0.888	-	-	-	-	0.847	-	0.893	-	-	0.908	-	-	-	-	0.831	0.867	-	-
δ_3^2	0.883	-	0.906	0.924	-	0.907	-	0.825	0.839	0.846	-	-	-	0.891	-	0.875	0.894	-	0.701	0.869	-	-	0.454	0.854	0.841	0.932	0.829

$\delta_4\delta_3$	-	-	0.929	0.921	-	-	-	-	0.843	-	-	-	-	0.847	-	0.864	-	-	0.925	-	-	-	-	0.844	0.857	-	-
δ_z^2	-	-	0.952	0.919	-	-	-	-	0.848	-	-	-	-	0.779	-	0.852	-	-	0.805	-	-	-	-	0.836	0.874	-	-

CDS REGIONAL ANALYSIS CRISS SAMPLE

	BEV	BLDG	BNK	BNKG	CAB	CG	CGM	CHM	ELEC	ELTN	EN	IND	LEI	MNG	MT	FIN	OF	GAS	OS	OT	OTR	RAIL	OR	CS	TEL	TR	UT
ARCH and GARCH estimates																											
Constants																											
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{13}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{14}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{23}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{24}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.000
Ω_{33}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.000
Ω_{34}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.000
Ω_{44}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.000
ARCH parameters																											
β_1^2	0.056	0.129	0.055	0.049	0.047	0.259	0.089	0.147	0.144	0.051	0.166	0.079	0.116	0.100	0.096	0.052	0.107	0.062	0.060	0.041	0.554	0.081	0.044	0.044	0.036	0.169	0.045
$\beta_2\beta_1$	0.036	0.059	0.098	0.089	0.080	0.159	0.157	0.132	0.107	0.078	0.154	0.086	0.095	0.079	0.071	0.058	0.080	0.084	0.070	0.069	0.235	0.077	0.069	0.071	0.054	0.158	0.134
$\beta_3\beta_1$	0.074	-	0.079	0.064	-	0.138	-	0.116	0.164	0.072	-	-	-	0.114	-	0.079	0.143	-	0.069	0.056	-	-	0.076	0.059	0.063	0.109	0.048
$\beta_4\beta_1$	-	-	0.059	0.076	-	-	-	-	0.108	-	-	-	-	0.095	-	0.066	-	-	0.089	-	-	-	-	0.114	0.048	-	-
β_2^2	0.023	0.087	0.017	0.164	0.136	0.097	0.277	0.092	0.079	0.118	0.143	0.096	0.078	0.063	0.053	0.064	0.059	0.115	0.082	0.117	0.099	0.073	0.109	0.079	0.082	0.071	0.395
$\beta_3\beta_2$	0.048	-	0.143	0.119	-	0.085	-	0.104	0.122	0.072	-	-	-	0.091	-	0.088	0.106	-	0.081	0.093	-	-	0.118	0.095	0.095	0.103	0.141
$\beta_4\beta_2$	-	-	0.107	0.139	-	-	-	-	0.187	-	-	-	-	0.075	-	0.073	-	-	0.104	-	-	-	-	0.095	0.073	-	-
β_3^2	0.098	-	0.116	0.086	-	0.074	-	0.092	0.081	0.100	-	-	-	0.129	-	0.121	0.189	-	0.081	0.075	-	-	0.128	0.080	0.111	0.071	0.050
$\beta_4\beta_3$	-	-	0.087	0.101	-	-	-	-	0.123	-	-	-	-	0.108	-	0.101	-	-	0.103	-	-	-	-	0.154	0.084	-	-
β_4^2	-	-	0.065	0.118	-	-	-	-	0.082	-	-	-	-	0.089	-	0.084	-	-	0.132	-	-	-	-	0.198	0.064	-	-
GARCH parameters																											
δ_1^2	0.912	0.809	0.918	0.926	0.938	0.519	0.889	0.473	0.765	0.051	0.768	0.450	0.866	0.875	0.893	0.945	0.858	0.895	0.918	0.941	0.064	0.911	0.948	0.936	0.945	0.652	0.930
$\delta_2\delta_1$	0.938	0.921	0.866	0.875	0.809	0.686	0.708	0.631	0.832	0.078	0.798	0.873	0.790	0.886	0.884	0.941	0.886	0.878	0.905	0.870	0.241	0.894	0.917	0.879	0.916	0.726	0.741
$\delta_3\delta_1$	0.891	-	0.886	0.918	-	0.687	-	0.642	0.779	0.072	-	-	-	0.834	-	0.902	0.816	-	0.803	0.918	-	-	0.815	0.900	0.916	0.776	0.889
$\delta_4\delta_1$	-	-	0.921	0.898	-	-	-	-	0.807	-	-	-	-	0.796	-	0.902	-	-	0.922	-	-	-	-	0.824	0.925	-	-
δ_2^2	0.964	0.863	0.816	0.827	0.698	0.906	0.546	0.840	0.905	0.118	0.829	0.627	0.722	0.898	0.876	0.937	0.916	0.863	0.892	0.805	0.899	0.867	0.887	0.826	0.887	0.808	0.591
$\delta_3\delta_2$	0.916	-	0.834	0.867	-	0.907	-	0.855	0.846	0.109	-	-	-	0.845	-	0.898	0.843	-	0.791	0.849	-	-	0.787	0.845	0.888	0.864	0.709
$\delta_4\delta_2$	-	-	0.868	0.849	-	-	-	-	0.877	-	-	-	-	0.807	-	0.898	-	-	0.908	-	-	-	-	0.774	0.895	-	-
δ_3^2	0.871	-	0.854	0.909	-	0.909	-	0.870	0.793	0.828	-	-	-	0.795	-	0.861	0.777	-	0.701	0.896	-	-	0.699	0.865	0.888	0.925	0.850
$\delta_4\delta_3$	-	-	0.888	0.891	-	-	-	-	0.878	-	-	-	-	0.759	-	0.861	-	-	0.805	-	-	-	-	0.792	0.897	-	-
δ_4^2	-	-	0.923	0.872	-	-	-	-	0.821	-	-	-	-	0.724	-	0.862	-	-	0.925	-	-	-	-	0.726	0.905	-	-

CDS REGIONAL ANALYSIS AFTER-CRISS SAMPLE

	BEV	BLDG	BNK	BNKG	CAB	CG	CGM	CHM	ELEC	ELTN	EN	IND	LEI	MNG	MT	FIN	OF	GAS	OS	OT	OTR	RAIL	OR	CS	TEL	TR	UT
ARCH and GARCH estimates																											
Constants																											
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{13}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{14}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{23}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{24}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{33}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{34}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{44}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ARCH parameters																											
β_1^2	0.033	0.112	0.055	0.298	0.194	0.023	0.059	0.446	0.128	0.018	0.104	0.150	0.310	0.057	0.054	0.121	0.124	0.289	0.018	0.329	0.015	0.209	0.313	0.093	0.332	0.118	0.191
$\beta_2\beta_1$	0.043	0.076	0.099	0.117	0.149	0.056	0.177	0.155	0.164	0.061	0.204	0.091	0.171	0.159	0.087	0.088	0.098	0.321	0.038	0.283	0.055	0.116	0.327	0.085	0.172	0.17	0.134
$\beta_3\beta_1$	0.059	-	0.079	0.136	-	0.047	-	0.274	0.140	0.049	-	-	-	0.058	-	0.117	0.116	-	0.026	0.221	-	-	0.365	0.179	0.234	0.384	0.161
$\beta_4\beta_1$	-	-	0.059	0.067	-	-	-	-	0.109	-	-	-	-	0.046	-	0.111	-	-	0.100	-	-	-	-	0.137	0.236	-	-
β_2^2	0.057	0.092	0.176	0.046	0.115	0.132	0.053	0.054	0.21	0.196	0.400	0.056	0.095	0.440	0.138	0.064	0.078	0.360	0.082	0.242	0.196	0.064	0.341	0.077	0.122	0.087	0.094
$\beta_3\beta_2$	0.079	-	0.143	0.053	-	0.111	-	0.094	0.179	0.160	-	-	-	0.16	-	0.085	0.092	-	0.057	0.189	-	-	0.381	0.163	0.089	0.033	0.113
$\beta_4\beta_2$	-	-	0.107	0.026	-	-	-	-	0.139	-	-	-	-	0.128	-	0.081	-	-	0.214	-	-	-	-	0.125	0.1215	-	-
β_3^2	0.109	-	0.115	0.062	-	0.092	-	0.168	0.154	0.131	-	-	-	0.059	-	0.113	0.109	-	0.039	0.149	-	-	0.426	0.347	0.1223	0.125	0.135
$\beta_4\beta_3$	-	-	0.087	0.031	-	-	-	-	0.119	-	-	-	-	0.047	-	0.107	-	-	0.149	-	-	-	-	0.265	0.166	-	-
β_4^2	-	-	0.065	0.015	-	-	-	-	0.092	-	-	-	-	0.038	-	0.101	-	-	0.053	-	-	-	-	0.203	0.167	-	-
GARCH parameters																											
δ_1^2	0.947	0.873	0.918	0.660	0.663	0.950	0.904	0.499	0.684	0.980	0.868	0.813	0.574	0.941	0.944	0.848	0.844	0.042	0.979	0.604	0.981	0.653	0.493	0.890	0.607	0.039	0.805
$\delta_2\delta_1$	0.918	0.910	0.865	0.788	0.459	0.869	0.714	0.681	0.714	0.862	0.700	0.858	0.903	0.512	0.987	0.887	0.882	0.150	0.932	0.64	0.884	0.762	0.503	0.893	0.723	0.189	0.829
$\delta_3\delta_1$	0.902	-	0.886	0.784	-	0.924	-	0.629	0.755	0.911	-	-	-	0.935	-	0.862	0.846	-	0.965	0.714	-	-	0.288	0.636	0.706	0.196	0.806
$\delta_4\delta_1$	-	-	0.921	0.799	-	-	-	-	0.759	-	-	-	-	0.949	-	0.825	-	-	0.707	-	-	-	-	0.838	0.712	-	-
δ_2^2	0.889	0.891	0.816	0.947	0.319	0.795	0.804	0.793	0.745	0.758	0.565	0.905	0.719	0.279	0.853	0.927	0.921	0.537	0.888	0.679	0.796	0.891	0.514	0.895	0.860	0.922	0.855
$\delta_3\delta_2$	0.874	-	0.834	0.942	-	0.846	-	0.857	0.787	0.801	-	-	-	0.509	-	0.902	0.884	-	0.919	0.757	-	-	0.294	0.638	0.841	0.954	0.808
$\delta_4\delta_2$	-	-	0.868	0.961	-	-	-	-	0.791	-	-	-	-	0.517	-	0.863	-	-	0.674	-	-	-	-	0.841	0.847	-	-
δ_3^2	0.859	-	0.854	0.974	-	0.899	-	0.790	0.832	0.846	-	-	-	0.929	-	0.877	0.848	-	0.951	0.845	-	-	0.168	0.454	0.821	0.985	0.831
$\delta_4\delta_3$	-	-	0.888	0.956	-	-	-	-	0.836	-	-	-	-	0.944	-	0.839	-	-	0.697	-	-	-	-	0.599	0.828	-	-
δ_4^2	-	-	0.923	0.974	-	-	-	-	0.841	-	-	-	-	0.958	-	0.803	-	-	0.512	-	-	-	-	0.790	0.836	-	-

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- BEV(Beverages/Bottling); BLDG(Building Products); BNK(Banks); BKG(Banking); CAB(Cable Media); CG(Consumer Goods); CHM(Chemicals); CGM(Conglomerate/Diversified Mfg); CS(Consumer Services); ELEC(Electric {Power); ELTN(Electronics); EN (Energy); FIN(Financials); GAS(Oil&Gas); IND(Industrials); LEI(Leisure); MNG(Manufacturing); MT(Metals&Mining); OF(Other Financials); OR(Retail Stores Other); OS(Other Services); OT(Other Telecommunications); OTR(Other Transport); TR(Transport); RAIL(Railroads); TEL(Telecommunications); UT(Utility Other).

Table 87: Variance-Covariance Equations from the DBEKK-GARCH (1,1) Model for Regional CDS Spreads Sectoral Returns

EQUITY REGIONAL ANALYSIS FULL SAMPLE

	BEV	BLDG	BMAT	BNK	CAB	CG	CGM	CHEM	ELTN	HLT	IND	LEI	MT	FIN	OF	OIL	OS	OT	OTRSP	RET	SERV	TEC	TEL	UT
Estimated Coefficients for Conditional Variance-Covariance Equations																								
C(1,1)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,2)	0.000***	0.000**	0.000	0.000***	0.000**	0.000	0.000***	0.000	0.000***	0.000	0.000	0.000***	0.000	0.000	0.000***	0.000	0.000***	0.000***	0.000**	0.000***	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,3)	0.000***	-	0.000	0.000***	-	0.000	-	0.000	0.000***	0.000	0.000	-	0.000*	0.000	0.000***	0.000	0.000***	0.000**	-	0.000	0.000	0.000	0.000	0.000
	(0.000)	-	(0.000)	(0.000)	-	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,4)	-	-	0.000***	0.000	-	0.000*	-	-	-	0.000	0.000	-	-	0.000***	-	0.000	0.000	0.000*	-	-	0.000	0.000	0.000	0.000
	-	-	(0.000)	(0.000)	-	(0.000)	-	-	-	(0.000)	(0.000)	-	-	(0.000)	-	(0.000)	(0.000)	(0.000)	-	-	(0.000)	(0.000)	(0.000)	(0.000)
C(2,2)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,3)	0.000***	-	0.000***	0.000***	-	0.000***	-	0.000***	0.000***	0.000***	0.000***	-	0.000***	0.000***	0.000***	0.000***	0.000***	0.000	-	0.000**	0.000***	0.000***	0.000***	0.000***
	(0.000)	-	(0.000)	(0.000)	-	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,4)	-	-	0.000***	0.000	-	0.000	-	-	-	0.000***	0.000***	-	-	0.000***	-	0.000***	0.000***	0.000***	-	-	0.000***	0.000***	0.000	0.000*
	-	-	(0.000)	(0.000)	-	(0.000)	-	-	-	(0.000)	(0.000)	-	-	(0.000)	-	(0.000)	(0.000)	(0.000)	-	-	(0.000)	(0.000)	(0.000)	(0.000)
C(3,3)	0.000***	-	0.000***	0.000***	-	0.000***	-	0.000***	0.000***	0.000***	0.000***	-	0.000***	0.000***	0.000***	0.000***	0.000**	0.000**	-	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	-	(0.000)	(0.000)	-	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(3,4)	-	-	0.000***	0.000	-	0.000	-	-	-	0.000***	0.000***	-	-	0.000***	-	0.000***	0.000***	0.000	-	-	0.000***	0.000***	0.000***	0.000**
	-	-	(0.000)	(0.000)	-	(0.000)	-	-	-	(0.000)	(0.000)	-	-	(0.000)	-	(0.000)	(0.000)	(0.000)	-	-	(0.000)	(0.000)	(0.000)	(0.000)
C(4,4)	-	-	0.000***	0.000***	-	0.000***	-	-	-	0.000***	0.000***	-	-	0.000***	-	0.000***	0.000***	0.000***	-	-	0.000***	0.000***	0.000***	0.000***
	-	-	(0.000)	(0.000)	-	(0.000)	-	-	-	(0.000)	(0.000)	-	-	(0.000)	-	(0.000)	(0.000)	(0.000)	-	-	(0.000)	(0.000)	(0.000)	(0.000)
A(1,1)	0.288***	0.240***	0.212***	0.255***	0.274***	0.281***	0.267***	0.278***	0.247***	0.280***	0.316***	0.261***	0.186***	0.251***	0.308***	0.237***	0.159***	0.199***	0.204***	0.229***	0.310***	0.246***	0.246***	0.230***
	(0.013)	(0.013)	(0.008)	(0.006)	(0.011)	(0.012)	(0.011)	(0.012)	(0.009)	(0.012)	(0.011)	(0.017)	(0.008)	(0.008)	(0.008)	(0.010)	(0.005)	(0.008)	(0.009)	(0.009)	(0.011)	(0.011)	(0.011)	(0.009)
A(2,2)	0.198***	0.269***	0.181***	0.214***	0.254***	0.228***	0.233***	0.215***	0.224***	0.134***	0.314***	0.253***	0.232***	0.268***	0.222***	0.187***	0.208***	0.138***	0.311***	0.246***	0.309***	0.207***	0.207***	0.184***
	(0.007)	(0.013)	(0.006)	(0.005)	(0.011)	(0.008)	(0.010)	(0.007)	(0.007)	(0.005)	(0.009)	(0.015)	(0.010)	(0.006)	(0.006)	(0.006)	(0.008)	(0.007)	(0.012)	(0.009)	(0.009)	(0.007)	(0.007)	(0.005)
A(3,3)	0.200***	-	0.191***	0.227***	-	0.179***	-	0.314***	0.298***	0.172***	0.295***	-	0.297***	0.246***	0.215***	0.210***	0.206***	0.273***	-	0.314***	0.285***	0.182***	0.182***	0.217***
	(0.007)	-	(0.005)	(0.006)	-	(0.005)	-	(0.013)	(0.011)	(0.006)	(0.008)	-	(0.011)	(0.007)	(0.007)	(0.006)	(0.007)	(0.011)	-	(0.009)	(0.008)	(0.006)	(0.006)	(0.006)

A(4,4)	-	-	0.295***	0.225***	-	0.315***	-	-	-	0.325***	0.345***	-	-	0.165***	-	0.221***	0.245***	0.282***	-	-	0.383***	0.299***	0.299***	0.288***
	-	-	(0.009)	(0.009)	-	(0.011)	-	-	-	(0.009)	(0.010)	-	-	(0.005)	-	(0.009)	(0.012)	(0.009)	-	-	(0.010)	(0.012)	(0.012)	(0.008)
B(1,1)	0.937***	0.965***	0.975***	0.962***	0.954***	0.944***	0.958***	0.956***	0.962***	0.945***	0.939***	0.959***	0.979***	0.964***	0.945***	0.968***	0.984***	0.971***	0.975***	0.967***	0.941***	0.961***	0.961***	0.965***
	(0.006)	(0.004)	(0.002)	(0.002)	(0.004)	(0.005)	(0.003)	(0.004)	(0.003)	(0.005)	(0.004)	(0.005)	(0.002)	(0.022)	(0.003)	(0.003)	(0.001)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.002)
B(2,2)	0.974***	0.952***	0.981***	0.972***	0.961***	0.963***	0.966***	0.972***	0.969***	0.987***	0.937***	0.962***	0.967***	0.957***	0.970***	0.978***	0.971***	0.984***	0.937***	0.959***	0.940***	0.966***	0.966***	0.976***
	(0.002)	(0.005)	(0.001)	(0.001)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.001)	(0.003)	(0.004)	(0.003)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.005)	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)
B(3,3)	0.974***	-	0.978***	0.967***	-	0.978***	-	0.927***	0.932***	0.977***	0.949***	-	0.939***	0.963***	0.971***	0.973***	0.966***	0.943***	-	0.934***	0.952***	0.978***	0.978***	0.968***
	(0.002)	-	(0.001)	(0.002)	-	(0.002)	-	(0.007)	(0.005)	(0.002)	(0.002)	-	(0.005)	(0.002)	(0.002)	(0.002)	(0.003)	(0.005)	-	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)
B(4,4)	-	-	0.935***	0.967***	-	0.932***	-	-	-	0.933***	0.927***	-	-	0.980***	-	0.964***	0.922***	0.946***	-	-	0.907***	0.930***	0.930***	0.946***
	-	-	(0.005)	(0.002)	-	(0.005)	-	-	-	(0.004)	(0.004)	-	-	(0.002)	-	(0.003)	(0.009)	(0.004)	-	-	(0.005)	(0.006)	(0.006)	(0.003)

EQUITY REGIONAL ANALYSIS CRISS SAMPLE

	BEV	BLDG	BMAT	BNK	CAB	CG	CGM	CHEM	ELTN	HLT	IND	LEI	MT	FIN	OF	OIL	OS	OT	OTRSP	RET	SERV	TEC	TEL	UT
Estimated Coefficients for Conditional Variance-Covariance Equations																								
C(1,1)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,2)	0.000***	0.000**	0.000	0.000***	0.000**	0.000	0.000***	0.000	0.000***	0.000	0.000	0.000***	0.000	0.000	0.000***	0.000	0.000***	0.000***	0.000	0.000***	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,3)	0.000***	-	0.000	0.000***	-	0.000	-	0.000	0.000***	0.000	0.000	-	0.000	0.000	0.000***	0.000	0.000***	0.000*	-	0.000	0.000	0.000	0.000	0.000
	(0.000)	-	(0.000)	(0.000)	-	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,4)	-	-	0.000	0.000	-	0.000	-	0.000***	-	0.000	0.000	-	-	0.000***	-	0.000	0.000	0.000	-	-	0.000	0.000	0.000	0.000
	-	-	(0.000)	(0.000)	-	(0.000)	-	(0.000)	-	(0.000)	(0.000)	-	-	(0.000)	-	(0.000)	(0.000)	(0.000)	-	-	(0.000)	(0.000)	(0.000)	(0.000)
C(2,2)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,3)	0.000***	-	0.000***	0.000***	-	0.000***	-	0.000***	0.000***	0.000***	0.000***	-	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	-	0.000**	0.000***	0.000***	0.000***	0.000***
	(0.000)	-	(0.000)	(0.000)	-	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,4)	-	-	0.000***	0.000	-	0.000	-	-	-	0.000	0.000***	-	-	0.000***	-	0.000***	0.000*	0.000	-	-	0.000***	0.000***	0.000	0.000**
	-	-	(0.000)	(0.000)	-	(0.000)	-	-	-	(0.000)	(0.000)	-	-	(0.000)	-	(0.000)	(0.000)	(0.000)	-	-	(0.000)	(0.000)	(0.000)	(0.000)
C(3,3)	0.000***	-	0.000***	0.000***	-	0.000***	-	0.000***	0.000***	0.000***	0.000***	-	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	-	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	-	(0.000)	(0.000)	-	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

C(3,4)	-	-	0.000***	0.000	-	0.000	-	-	-	0.000**	0.000***	-	-	0.000***	-	0.000***	0.000	0.000***	-	-	0.000***	0.000***	0.000	0.000
	-	-	(0.000)	(0.000)	-	(0.000)	-	-	-	(0.000)	(0.000)	-	-	(0.000)	-	(0.000)	(0.000)	(0.000)	-	-	(0.000)	(0.000)	(0.000)	(0.000)
C(4,4)	-	-	0.000***	0.000***	-	0.000***	-	-	-	0.000***	0.000***	-	-	0.000***	-	0.000***	0.000***	0.000***	-	-	0.000***	0.000***	0.000***	0.000***
	-	-	(0.000)	(0.000)	-	(0.000)	-	-	-	(0.000)	(0.000)	-	-	(0.000)	-	(0.000)	(0.000)	(0.000)	-	-	(0.000)	(0.000)	(0.000)	(0.000)
A(1,1)	0.267***	0.265***	0.244***	0.309***	0.291***	0.291***	0.261***	0.296***	0.247***	0.304***	0.269***	0.261***	0.226***	0.284***	0.330***	0.247***	0.197***	0.225***	0.244***	0.241***	0.292***	0.299***	0.238***	0.284***
	(0.015)	(0.020)	(0.014)	(0.010)	(0.015)	(0.015)	(0.015)	(0.018)	(0.014)	(0.016)	(0.015)	(0.017)	(0.015)	(0.012)	(0.012)	(0.013)	(0.013)	(0.011)	(0.015)	(0.013)	(0.017)	(0.016)	(0.013)	(0.014)
A(2,2)	0.190***	0.286***	0.191***	0.226***	0.245***	0.242***	0.249***	0.234***	0.212***	0.170***	0.181***	0.253***	0.243***	0.263***	0.260***	0.278***	0.196***	0.168***	0.309***	0.242***	0.185***	0.286***	0.157***	0.246***
	(0.011)	(0.020)	(0.009)	(0.008)	(0.016)	(0.012)	(0.016)	(0.012)	(0.010)	(0.008)	(0.010)	(0.015)	(0.016)	(0.010)	(0.009)	(0.013)	(0.013)	(0.009)	(0.015)	(0.014)	(0.009)	(0.012)	(0.008)	(0.009)
A(3,3)	0.202***	-	0.199***	0.249***	-	0.260***	-	0.342***	0.341***	0.188***	0.189***	-	0.286***	0.267***	0.222***	0.228***	0.180***	0.257***	-	0.368***	0.190***	0.271***	0.198***	0.235***
	(0.010)	-	(0.009)	(0.010)	-	(0.008)	-	(0.019)	(0.019)	(0.010)	(0.009)	-	(0.012)	(0.012)	(0.010)	(0.011)	(0.012)	(0.019)	-	(0.013)	(0.009)	(0.012)	(0.010)	(0.013)
A(4,4)	-	-	0.320***	0.203***	-	0.290***	-	-	-	0.333***	0.334***	-	-	0.161***	-	0.199***	0.309***	0.297***	-	-	0.481***	0.339***	0.321***	0.293***
	-	-	(0.014)	(0.011)	-	(0.014)	-	-	-	(0.011)	(0.014)	-	-	(0.007)	-	(0.011)	(0.019)	(0.012)	-	-	(0.019)	(0.016)	(0.013)	(0.010)
B(1,1)	0.956***	0.960***	0.965***	0.948***	0.953***	0.947***	0.961***	0.947***	0.962***	0.940***	0.958***	0.959***	0.971***	0.958***	0.942***	0.964***	0.968***	0.969***	0.966***	0.966***	0.952***	0.957***	0.966***	0.955***
	(0.005)	(0.005)	(0.004)	(0.003)	(0.005)	(0.005)	(0.004)	(0.006)	(0.005)	(0.007)	(0.005)	(0.005)	(0.004)	(0.003)	(0.004)	(0.004)	(0.005)	(0.003)	(0.005)	(0.004)	(0.006)	(0.005)	(0.004)	(0.004)
B(2,2)	0.976***	0.949***	0.977***	0.968***	0.961***	0.963***	0.964***	0.961***	0.969***	0.982***	0.977***	0.962***	0.961***	0.957***	0.976***	0.936***	0.977***	0.983***	0.942***	0.965***	0.977***	0.946***	0.984***	0.958***
	(0.002)	(0.007)	(0.002)	(0.002)	(0.005)	(0.004)	(0.005)	(0.004)	(0.003)	(0.001)	(0.002)	(0.004)	(0.005)	(0.003)	(0.002)	(0.005)	(0.003)	(0.002)	(0.006)	(0.004)	(0.002)	(0.004)	(0.002)	(0.003)
B(3,3)	0.972***	-	0.973***	0.959***	-	0.971***	-	0.916***	0.910***	0.974***	0.976***	-	0.946***	0.954***	0.967***	0.959***	0.975***	0.947***	-	0.916***	0.975***	0.954***	0.971***	0.960***
	(0.003)	-	(0.003)	(0.003)	-	(0.003)	-	(0.011)	(0.010)	(0.003)	(0.002)	-	(0.005)	(0.004)	(0.004)	(0.004)	(0.003)	(0.007)	-	(0.007)	(0.003)	(0.004)	(0.003)	(0.003)
B(4,4)	-	-	0.920***	0.975***	-	0.938***	-	-	-	0.930***	0.914***	-	-	0.982***	-	0.971***	0.896***	0.945***	-	-	0.898***	0.925***	0.935***	0.947***
	-	-	(0.008)	(0.003)	-	(0.007)	-	-	-	(0.005)	(0.008)	-	-	(0.002)	-	(0.003)	(0.014)	(0.004)	-	-	(0.015)	(0.007)	(0.005)	(0.003)

EQUITY REGIONAL ANALYSIS AFTER-CRISS SAMPLE

	BEV	BLDG	BMAT	BNK	CAB	CC	CGM	CHEM	ELTN	HLT	IND	LEI	MT	FIN	OF	OIL	OS	OT	OTRSP	RET	SERV	TEC	TEL	UT
Estimated Coefficients for Conditional Variance-Covariance Equations																								
C(1,1)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,2)	0.000***	0.000**	0.000	0.000***	0.000**	0.000	0.000***	0.000	0.000***	0.000	0.000	0.000***	0.000	0.000	0.000***	0.000	0.000***	0.000***	0.000*	0.000***	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,3)	0.000***	-	0.000	0.000***	-	0.000	-	0.000	0.000***	0.000	0.000	-	0.000**	0.000	0.000***	0.000	0.000**	0.000***	-	0.000*	0.000	0.000	0.000	0.000

	(0.000)	-	(0.000)	(0.000)	-	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(1,4)	-	-	0.000	0.000	-	0.000	-	0.000***	-	0.000	0.000	-	-	0.000***	-	0.000	0.000***	0.000***	-	-	0.000	0.000	0.000*	0.000
	-	-	(0.000)	(0.000)	-	(0.000)	-	(0.000)	-	(0.000)	(0.000)	-	-	(0.000)	-	(0.000)	(0.000)	(0.000)	-	-	(0.000)	(0.000)	(0.000)	(0.000)
C(2,2)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,3)	0.000***	-	0.000***	0.000***	-	0.000***	-	0.000***	0.000***	0.000***	0.000***	-	0.000***	0.000***	0.000***	0.000***	0.000***	0.000	-	0.000**	0.000***	0.000***	0.000***	0.000***
	(0.000)	-	(0.000)	(0.000)	-	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(2,4)	-	-	0.000**	0.000	-	0.000***	-	-	-	0.000***	0.000***	-	-	0.000***	-	0.000***	0.000***	0.000***	-	-	0.000***	0.000***	0.000***	0.000***
	-	-	(0.000)	(0.000)	-	(0.000)	-	-	-	(0.000)	(0.000)	-	-	(0.000)	-	(0.000)	(0.000)	(0.000)	-	-	(0.000)	(0.000)	(0.000)	(0.000)
C(3,3)	0.000***	-	0.000***	0.000***	-	0.000***	-	0.000***	0.000***	0.000***	0.000***	-	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	-	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	-	(0.000)	(0.000)	-	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	-	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
C(3,4)	-	-	0.000***	0.000	-	0.000***	-	-	-	0.000***	0.000***	-	-	0.000***	-	0.000***	0.000**	0.000	-	-	0.000***	0.000***	0.000***	0.000**
	-	-	(0.000)	(0.000)	-	(0.000)	-	-	-	(0.000)	(0.000)	-	-	(0.000)	-	(0.000)	(0.000)	(0.000)	-	-	(0.000)	(0.000)	(0.000)	(0.000)
C(4,4)	-	-	0.000***	0.000***	-	0.000***	-	-	-	0.000***	0.000***	-	-	0.000***	-	0.000***	0.000**	0.000***	-	-	0.000***	0.000***	0.000***	0.000***
	-	-	(0.000)	(0.000)	-	(0.000)	-	-	-	(0.000)	(0.000)	-	-	(0.000)	-	(0.000)	(0.000)	(0.000)	-	-	(0.000)	(0.000)	(0.000)	(0.000)
A(1,1)	0.369***	0.202***	0.255***	0.292***	0.293***	0.371***	0.357***	0.313***	0.347***	0.228***	0.199***	0.278***	0.186***	0.291***	0.390***	0.269***	0.199***	0.079***	0.259***	0.343***	0.249***	0.354***	-0.206***	0.154***
	(0.026)	(0.023)	(0.026)	(0.024)	(0.027)	(0.033)	(0.026)	(0.027)	(0.026)	(0.022)	(0.025)	(0.025)	(0.008)	(0.028)	(0.026)	(0.017)	(0.024)	(0.026)	(0.030)	(0.024)	(0.027)	(0.029)	(0.032)	(0.018)
A(2,2)	0.217***	0.244***	0.155***	0.255***	0.335***	0.323***	0.245***	0.154***	0.287***	0.065***	0.299***	0.331***	0.232***	0.290***	0.265***	0.017***	0.334***	-0.232***	0.295***	0.261***	0.257***	0.192***	0.224***	0.077***
	(0.015)	(0.021)	(0.010)	(0.016)	(0.027)	(0.011)	(0.025)	(0.018)	(0.020)	(0.010)	(0.018)	(0.034)	(0.011)	(0.015)	(0.014)	(0.001)	(0.021)	(0.037)	(0.021)	(0.017)	(0.016)	(0.013)	(0.023)	(0.010)
A(3,3)	0.201***	-	0.177***	0.219***	-	0.137***	-	0.273***	0.241***	0.133***	0.254***	-	0.297***	0.250***	0.241***	0.204***	0.244***	0.281***	-	0.216***	0.224***	0.209***	0.248***	0.154***
	(0.014)	-	(0.010)	(0.014)	-	(0.011)	-	(0.017)	(0.014)	(0.012)	(0.018)	-	(0.011)	(0.017)	(0.018)	(0.010)	(0.014)	(0.021)	-	(0.013)	(0.014)	(0.026)	(0.019)	(0.009)
A(4,4)	-	-	0.256***	0.247***	-	0.321***	-	-	-	0.339***	0.244***	-	-	0.173***	-	0.232***	0.150***	0.245***	-	-	0.221***	0.268***	0.238***	0.321***
	-	-	(0.015)	(0.016)	-	(0.017)	-	-	-	(0.020)	(0.014)	-	-	(0.025)	-	(0.018)	(0.150)	(0.018)	-	-	(0.013)	(0.018)	(0.016)	(0.020)
B(1,1)	0.751***	0.962***	0.932***	0.823***	0.906***	0.791***	0.877***	0.893***	0.812***	0.958***	0.926***	0.918***	0.979***	0.861***	0.780***	0.975***	0.942***	0.889***	0.877***	0.852***	0.918***	0.804***	0.859***	0.979***
	(0.038)	(0.009)	(0.013)	(0.029)	(0.017)	(0.029)	(0.017)	(0.017)	(0.029)	(0.008)	(0.020)	(0.015)	(0.002)	(0.025)	(0.028)	(0.004)	(0.015)	(0.041)	(0.032)	(0.025)	(0.015)	(0.031)	(0.046)	(0.005)
B(2,2)	0.961***	0.938***	0.981***	0.921***	0.881***	0.815***	0.895***	0.967***	0.886***	0.990***	0.864***	0.770***	0.967***	0.917***	0.916***	0.981***	0.848***	0.653***	0.942***	0.928***	0.912***	0.964***	0.888***	0.994***
	(0.005)	(0.013)	(0.002)	(0.010)	(0.023)	(0.021)	(0.026)	(0.011)	(0.019)	(0.002)	(0.021)	(0.054)	(0.003)	(0.011)	(0.013)	(0.002)	(0.022)	(0.011)	(0.008)	(0.012)	(0.015)	(0.004)	(0.029)	(0.002)
B(3,3)	0.969***	-	0.965***	0.929***	-	0.967***	-	0.945***	0.958***	0.969***	0.898***	-	0.939***	0.922***	0.917***	0.970***	0.934***	0.920***	-	0.965***	0.936***	0.802***	0.918***	0.972***

	(0.005)	-	(0.005)	(0.012)	-	(0.006)	-	(0.007)	(0.005)	(0.007)	(0.017)	-	(0.005)	(0.013)	(0.014)	(0.003)	(0.010)	(0.015)	-	(0.005)	(0.012)	(0.049)	(0.015)	(0.005)
B(4,4)	-	-	0.951***	0.958***	-	0.934***	-	-	-	0.922***	0.954***	-	-	0.973***	-	0.952***	0.934***	0.952***	-	-	0.963***	0.941***	0.954***	0.924***
	-	-	(0.006)	(0.005)	-	(0.064)	-	-	-	(0.010)	(0.006)	-	-	(0.004)	-	(0.007)	(0.006)	(0.008)	-	-	(0.005)	(0.008)	(0.007)	(0.009)

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- BEV(Beverages/Bottling); BLDG(Building Products); BNK(Banks); BMT(Basic Materials); CAB(Cable Media); CG(Consumer Goods); CHM(Chemicals); CGM(Conglomerate/Diversified Mfg); HLT(Healthcare Facilities); CS(Consumer Services); ELTN(Electronics); FIN(Financials); GAS(Oil&Gas); IND(Industrials); LEI(Leisure); TEC(Technology); MT(Metals&Mining); OF(Other Financials); OR(Retail Stores Other); OS(Other Services); OT(Other Telecommunications); OTR(Other Transport); TEL(Telecommunications); UT(Utility Other).

Table 88: Variance-Covariance Equations from the DBEKK-GARCH (1,1) Model for Regional CDS Spreads Sectoral Returns

EQUITY REGIONAL ANALYSIS FULL SAMPLE

	BEV	BLDG	BMAT	BNK	CAB	CG	CGM	CHEM	ELTN	HLT	IND	LEI	MT	FIN	OF	OIL	OS	OT	OTRSP	RET	SERV	TEC	TEL	UT
ARCH and GARCH estimates																								
Constant																								
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{13}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{14}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{23}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{24}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{33}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{34}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{44}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ARCH parameters																								
β_1^2	0.083	0.057	0.045	0.065	0.075	0.079	0.071	0.077	0.061	0.078	0.099	0.064	0.035	0.099	0.094	0.057	0.026	0.039	0.041	0.052	0.058	0.061	0.039	0.053
$\beta_2\beta_1$	0.057	0.064	0.038	0.055	0.069	0.064	0.062	0.059	0.055	0.038	0.099	0.059	0.043	0.099	0.068	0.045	0.033	0.027	0.063	0.056	0.038	0.051	0.029	0.043
$\beta_3\beta_1$	0.058	-	0.040	0.058	-	0.050	-	0.087	0.074	0.048	0.093	-	0.055	0.093	0.066	0.049	0.033	0.054	-	0.072	0.043	0.044	0.039	0.049
$\beta_4\beta_1$	-	-	0.063	0.057	-	0.089	-	-	-	0.091	0.109	-	-	0.109	-	0.052	0.039	0.056	-	-	0.081	0.073	0.059	0.066
β_2^2	0.039	0.072	0.032	0.046	0.064	0.052	0.054	0.046	0.05	0.018	0.099	0.054	0.054	0.099	0.049	0.035	0.043	0.019	0.096	0.060	0.025	0.043	0.022	0.034
$\beta_3\beta_2$	0.039	-	0.035	0.048	-	0.041	-	0.067	0.067	0.023	0.093	-	0.069	0.093	0.048	0.039	0.043	0.038	-	0.098	0.029	0.038	0.029	0.039
$\beta_4\beta_2$	-	-	0.053	0.051	-	0.071	-	-	-	0.044	0.109	-	-	0.109	-	0.041	0.051	0.039	-	-	0.056	0.062	0.044	0.053
β_3^2	0.040	-	0.036	0.052	-	0.032	-	0.099	0.089	0.029	0.087	-	0.088	0.087	0.046	0.044	0.042	0.075	-	0.077	0.032	0.033	0.039	0.047
$\beta_4\beta_3$	-	-	0.056	0.051	-	0.056	-	-	-	0.056	0.102	-	-	0.102	-	0.046	0.051	0.077	-	-	0.061	0.055	0.059	0.062
β_4^2	-	-	0.087	0.050	-	0.099	-	-	-	0.105	0.119	-	-	0.119	-	0.049	0.061	0.079	-	-	0.113	0.089	0.089	0.083
GARCH parameters																								
δ_1^2	0.877	0.931	0.951	0.926	0.911	0.89	0.918	0.912	0.925	0.892	0.882	0.922	0.958	0.882	0.893	0.938	0.969	0.943	0.949	0.936	0.947	0.924	0.946	0.933
$\delta_2\delta_1$	0.912	0.918	0.956	0.935	0.918	0.909	0.926	0.928	0.932	0.932	0.879	0.931	0.947	0.879	0.917	0.947	0.956	0.956	0.913	0.927	0.960	0.929	0.956	0.943
$\delta_3\delta_1$	0.813	-	0.954	0.930	-	0.923	-	0.089	0.860	0.923	0.892	-	0.919	0.892	0.918	0.943	0.951	0.916	-	0.92	0.958	0.94	0.945	0.935
$\delta_4\delta_1$	-	-	0.912	0.931	-	0.879	-	-	-	0.881	0.870	-	-	0.870	-	0.934	0.907	0.919	-	-	0.927	0.894	0.913	0.914
δ_2^2	0.949	0.907	0.962	0.945	0.924	0.928	0.934	0.945	0.939	0.973	0.877	0.939	0.936	0.877	0.941	0.958	0.943	0.97	0.877	0.873	0.974	0.934	0.967	0.952
$\delta_3\delta_2$	0.950	-	0.959	0.939	-	0.942	-	0.900	0.903	0.963	0.889	-	0.909	0.889	0.942	0.952	0.939	0.929	-	0.896	0.972	0.945	0.955	0.945
$\delta_4\delta_2$	-	-	0.917	0.840	-	0.898	-	-	-	0.921	0.868	-	-	0.867	-	0.944	0.895	0.932	-	-	0.939	0.899	0.923	0.923
δ_3^2	0.950	-	0.957	0.934	-	0.857	-	0.858	0.869	0.954	0.877	-	0.882	0.903	0.943	0.947	0.934	0.89	-	0.873	0.969	0.957	0.944	0.938
$\delta_4\delta_3$	-	-	0.915	0.935	-	0.912	-	-	-	0.911	0.880	-	-	0.990	-	0.939	0.849	0.893	-	-	0.937	0.909	0.912	0.916
δ_4^2	-	-	0.875	0.935	-	0.869	-	-	-	0.871	0.858	-	-	0.868	-	0.929	0.890	0.896	-	-	0.906	0.866	0.881	0.895

EQUITY REGIONAL ANALYSIS CRISIS SAMPLE

	BEV	BLDG	BMAT	BNK	CAB	CG	CGM	CHEM	ELTN	HLT	IND	LEI	MT	FIN	OF	OIL	OS	OT	OTRSP	RET	SERV	TEC	TEL	UT
ARCH and GARCH estimates																								
Constant																								
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{13}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{14}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{23}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{24}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
Ω_{33}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
Ω_{34}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
Ω_{44}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
ARCH parameters																								
β_1^2	0.071	0.070	0.059	0.096	0.084	0.085	0.068	0.087	0.061	0.092	0.073	0.068	0.509	0.073	0.109	0.061	0.039	0.051	0.059	0.057	0.085	0.089	0.056	0.081
$\beta_2\beta_1$	0.051	0.076	0.047	0.070	0.071	0.070	0.065	0.069	0.052	0.052	0.049	0.066	0.055	0.049	0.066	0.068	0.039	0.038	0.073	0.058	0.054	0.085	0.037	0.069
$\beta_3\beta_1$	0.054	-	0.048	0.077	-	0.058	-	0.101	0.084	0.057	0.051	-	0.064	0.051	0.073	0.056	0.353	0.059	-	0.088	0.055	0.081	0.047	0.067
$\beta_4\beta_1$	-	-	0.078	0.063	-	0.084	-	-	-	0.101	0.090	-	-	0.090	-	0.019	0.061	0.067	-	-	0.140	0.101	0.076	0.083
β_2^2	0.036	0.082	0.037	0.051	0.061	0.059	0.062	0.055	0.045	0.029	0.033	0.064	0.059	0.033	0.039	0.052	0.039	0.028	0.089	0.058	0.035	0.082	0.024	0.061
$\beta_3\beta_2$	0.038	-	0.061	0.056	-	0.048	-	0.081	0.072	0.032	0.034	-	0.069	0.034	0.073	0.063	0.035	0.043	-	0.089	0.035	0.077	0.031	0.580
$\beta_4\beta_2$	-	-	0.063	0.046	-	0.0711	-	-	-	0.057	0.060	-	-	0.060	-	0.055	0.061	0.050	-	-	0.089	0.097	0.05	0.072
β_3^2	0.041	-	0.039	0.062	-	0.040	-	0.117	0.116	0.035	0.036	-	0.082	0.036	0.049	0.039	0.032	0.066	-	0.135	0.036	0.073	0.039	0.055
$\beta_4\beta_3$	-	-	0.063	0.051	-	0.058	-	-	-	0.062	0.063	-	-	0.063	-	0.046	0.056	0..077	-	-	0.091	0.092	0.063	0.069
β_4^2	-	-	0.010	0.041	-	0.084	-	-	-	0.110	0.112	-	-	0.112	-	0.932	0.096	0.037	-	-	0.231	0.115	0.103	0.085
GARCH parameters																								
δ_1^2	0.913	0.922	0.931	0.899	0.907	0.898	0.923	0.897	0.925	0.884	0.918	0.920	0.942	0.918	0.887	0.931	0.937	0.938	0.933	0.932	0.907	0.898	0.934	0.912
$\delta_2\delta_1$	0.933	0.911	0.942	0.918	0.916	0.912	0.926	0.910	0.932	0.923	0.936	0.923	0.932	0.936	0.919	0.903	0.945	0.952	0.888	0.932	0.931	0.0897	0.951	0.915
$\delta_3\delta_1$	0.929	-	0.939	0.909	-	0.92	-	0.867	0.876	0.915	0.935	-	0.918	0.935	0.911	0.926	0.944	0.917	-	0.885	0.928	0.905	0.938	0.917
$\delta_4\delta_1$	-	-	0.888	0.924	-	0.888	-	-	-	0.874	0.876	-	-	0.876	-	0.937	0.867	0.915	-	-	0.769	0.877	0.904	0.905
δ_2^2	0.952	0.901	0.954	0.938	0.907	0.926	0.929	0.839	0.939	0.948	0.955	0.926	0.923	0.955	0.953	0.921	0.953	0.965	0.910	0.932	0.955	0.895	0.967	0.918
$\delta_3\delta_2$	0.949	-	0.950	0.929	-	0.935	-	0.880	0.882	0.956	0.954	-	0.908	0.954	0.944	0.877	0.953	0.093	-	0.885	0.953	0.903	0.954	0.920
$\delta_4\delta_2$	-	-	0.0898	0.944	-	0.903	-	-	-	0.913	0.893	-	-	0.893	-	0.898	0.875	0.928	-	-	0.790	0.875	0.919	0.908
δ_3^2	0.945	-	0.0947	0.920	-	0.944	-	0.839	0.829	0.948	0.954	-	0.894	0.954	0.936	0.909	0.951	0.896	-	0.839	0.949	0.913	0.942	0.922
$\delta_4\delta_3$	-	-	0.896	0.950	-	0.911	-	-	-	0.905	0.895	-	-	0.892	-	0.944	0.802	0.894	-	-	0.788	0.883	0.907	0.909
δ_4^2	-	-	0.847	0.935	-	0.879	-	-	-	0.864	0.836	-	-	0.835	-	0.932	0.873	0.893	-	-	0.653	0.856	0.874	0.897

EQUITY REGIONAL ANALYSIS AFTER-CRISIS SAMPLE

	BEV	BLDG	BMAT	BNK	CAB	CG	CGM	CHEM	ELTN	HLT	IND	LEI	MT	FIN	OF	OIL	OS	OT	OTRSP	RET	SERV	TEC	TEL	UT
ARCH and GARCH estimates																								
Constant																								
Ω_{11}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{12}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{13}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{14}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{22}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{23}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{24}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{33}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{34}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ω_{44}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ARCH parameters																								
β_1^2	0.136	0.041	0.065	0.085	0.086	0.138	0.128	0.097	0.121	0.052	0.040	0.077	0.034	0.040	0.152	0.043	0.039	0.006	0.067	0.118	0.062	0.125	0.043	0.024
$\beta_2\beta_1$	0.079	0.049	0.039	0.074	0.098	0.119	0.088	0.048	0.099	0.015	0.058	0.092	0.043	0.058	0.104	0.035	0.067	0.018	0.087	0.089	0.064	0.067	0.046	0.011
$\beta_3\beta_1$	0.074	-	0.045	0.064	-	0.510	-	0.085	0.084	0.030	0.050	-	0.055	0.504	0.094	0.042	0.049	0.022	-	0.074	0.056	0.074	0.051	0.024
$\beta_4\beta_1$	-	-	0.065	0.721	-	0.119	-	-	-	0.078	0.049	-	-	0.048	-	0.048	0.03	0.019	-	-	0.055	0.094	0.049	0.049
β_2^2	0.047	0.059	0.024	0.065	0.112	0.105	0.059	0.024	0.082	0.009	0.084	0.109	0.054	0.084	0.070	0.034	0.113	0.053	0.077	0.068	0.066	0.036	0.050	0.006
$\beta_3\beta_2$	0.044	-	0.027	0.056	-	0.044	-	0.042	0.069	0.004	0.073	-	0.069	0.073	0.094	0.042	0.081	0.065	-	0.056	0.056	0.040	0.055	0.012
$\beta_4\beta_2$	-	-	0.04	0.063	-	0.104	-	-	-	0.009	0.071	-	-	0.071	-	0.039	0.050	0.057	-	-	0.057	0.051	0.053	0.025
β_3^2	0.041	-	0.031	0.048	-	0.019	-	0.075	0.058	0.022	0.064	-	0.088	0.064	0.058	0.047	0.059	0.078	-	0.047	0.050	0.044	0.061	0.023
$\beta_4\beta_3$	-	-	0.045	0.054	-	0.044	-	-	-	0.018	0.062	-	-	0.062	-	0.053	0.036	0.069	-	-	0.049	0.051	0.058	0.049
β_4^2	-	-	0.066	0.061	-	0.103	-	-	-	0.115	0.059	-	-	0.060	-	0.047	0.023	0.060	-	-	0.049	0.055	0.056	0.103
GARCH parameters																								
δ_1^2	0.564	0.926	0.868	0.678	0.821	0.625	0.769	0.807	0.659	0.918	0.858	0.843	0.958	0.858	0.609	0.950	0.888	0.791	0.769	0.725	0.842	0.072	0.739	0.958
$\delta_2\delta_1$	0.722	0.902	0.914	0.758	0.797	0.644	0.800	0.868	0.719	0.948	0.800	0.707	0.947	0.800	0.715	0.956	0.799	0.581	0.826	0.791	0.837	0.646	0.764	0.973
$\delta_3\delta_1$	0.728	-	0.899	0.765	-	0.765	-	0.849	0.778	0.928	0.832	-	0.919	0.832	0.715	0.946	0.881	0.0818	-	0.821	0.859	0.775	0.789	0.952
$\delta_4\delta_1$	-	-	0.886	0.788	-	0.738	-	-	-	0.883	0.883	-	-	0.883	-	0.928	0.920	0.847	-	-	0.883	0.0644	0.819	0.904
δ_2^2	0.924	0.879	0.931	0.848	0.776	0.663	0.785	0.934	0.784	0.979	0.746	0.593	0.935	0.746	0.839	0.963	0.719	0.845	0.888	0.861	0.832	0.756	0.789	0.987
$\delta_3\delta_2$	0.932	-	0.947	0.856	-	0.788	-	0.913	0.848	0.959	0.776	-	0.909	0.776	0.39	0.952	0.792	0.601	-	0.895	0.854	0.929	0.816	0.966
$\delta_4\delta_2$	-	-	0.933	0.882	-	0.761	-	-	-	0.913	0.823	-	-	0.824	-	0.934	0.828	0.622	-	-	0.878	0.907	0.847	0.918
δ_3^2	0.940	-	0.931	0.863	-	0.937	-	0.892	0.919	0.939	0.807	-	0.882	0.807	0.84	0.941	0.873	0.845	-	0.936	0.876	0.644	0.844	0.946
$\delta_4\delta_3$	-	-	0.917	0.889	-	0.904	-	-	-	0.893	0.857	-	-	0.857	-	0.924	0.912	0.875	-	-	0.901	0.755	0.876	0.898
δ_4^2	-	-	0.904	0.917	-	0.873	-	-	-	0.850	0.910	-	-	0.909	-	0.907	0.953	0.891	-	-	0.927	0.885	0.910	0.853

Notes: *, **, *** signify rejection of the null hypothesis at the 10%, 5% and 1% significance level, respectively. Standard errors are displayed as (.). Tickers are as follows:- BEV(Beverages/Bottling); BLDG(Building Products); BNK(Banks); BMT(Basic Materials); CAB(Cable Media); CG(Consumer Goods); CHM(Chemicals); CGM(Conglomerate/Diversified Mfg); HLT(Healthcare Facilities); CS(Consumer Services); ELTN(Electronics); FIN(Financials); GAS(Oil&Gas); IND(Industrials); LEI(Leisure); TEC(Technology); MT(Metals&Mining); OF(Other Financials); OR(Retail Stores Other); OS(Other Services); OT(Other Telecommunications); OTR(Other Transport); TEL(Telecommunications); UT(Utility Other).

Table 89: Variance-Covariance Equations from the DBEKK-GARCH (1,1) Model for Regional Equity Sectoral Returns

APPENDIX C

C.1 CDS Spreads Volatility Sectoral Connectedness: Within Regions Static Analysis

FULL-SAMPLE PERIOD

	BK	CG	EP	EN	MF	OF	SV	TL	TR	From Others
BK	93.6	0.8	0.0	0.6	2.4	0.2	0.2	2.2	0.0	6.0
CG	3.2	88.0	0.6	1.4	2.2	1.2	0.6	2.5	0.3	12.0
EP	0.1	0.4	98.7	0.1	0.1	0.0	0.0	0.5	0.2	1.0
EN	0.4	0.3	0.0	89.9	0.4	0.6	8.0	0.3	0.1	10.0
MF	1.2	1.9	0.1	0.4	81.7	0.1	0.8	13.7	0.1	18.0
OF	0.1	1.7	0.1	0.4	0.1	96.3	0.1	1.1	0.1	4.0
SV	0.2	0.2	0.0	2.4	0.1	0.1	96.3	0.1	0.6	4.0
TL	2.0	2.2	0.1	0.3	0.8	0.4	0.6	93.3	0.2	7.0
TR	0.1	1.4	1.9	0.2	0.0	0.1	0.7	0.1	95.4	5.0
Contribution to others	7.0	9.0	3.0	6.0	6.0	3.0	11.0	21.0	2.0	67.0
Net Contribution	1.0	-3.0	2.0	-4.0	-12.0	-1.0	7.0	14.0	-3.0	7.4%

Notes: Tickers are as follows:- BK(Banks); CG(Consumer Goods); EP(Electric Power); EN(Energy); MF (Manufacturing); OF(Other Financial); SV(Service Company); TL(Telecommunications); and TR(Transportation).

CRISIS PERIOD

	BK	CG	EP	EN	MF	OF	SV	TL	TR	From Others
BK	67.5	2.0	0.1	2.3	11.5	1.7	10.5	45.0	0.0	33.0
CG	4.7	55.8	1.9	7.8	9.5	6.0	9.0	4.4	0.4	44.0
EP	0.2	0.6	91.1	0.5	0.6	0.7	0.9	4.8	0.7	9.0
EN	2.7	2.7	0.9	74.2	4.7	6.5	2.5	4.6	1.1	26.0
MF	9.5	7.6	0.2	3.4	48.8	3.2	16.5	10.5	0.2	51.0
OF	0.9	8.6	0.4	2.6	2.4	76.0	2.8	6.1	0.1	24.0
SV	8.6	11.7	0.2	1.3	17.0	2.1	50.0	9.1	0.1	50.0
TL	3.1	5.8	2.5	1.1	12.2	2.6	14.8	57.2	0.8	43.0
TR	0.2	0.4	0.5	0.3	0.4	0.0	0.2	0.4	97.6	2.0
Contribution to others	30.0	39.0	7.0	19.0	58.0	23.0	57.0	45.0	3.0	282.0
Net Contribution	-3.0	-5.0	-2.0	-7.0	7.0	-1.0	7.0	2.0	1.0	31.3%

Notes: Tickers are as follows:- BK(Banks); CG(Consumer Goods); EP(Electric Power); EN(Energy); MF (Manufacturing); OF(Other Financial); SV(Service Company); TL(Telecommunications); and TR(Transportation).

AFTER-CRISIS PERIOD

	BK	CG	EP	EN	MF	OF	SV	TL	TR	From Others
BK	95.3	0.2	0.0	0.3	2.9	0.4	0.1	0.7	0.1	5.0
CG	0.8	96.6	0.1	0.1	0.5	0.1	0.4	0.8	0.6	3.0
EP	0.1	0.3	97.9	0.0	0.1	0.5	0.0	0.0	1.0	2.0
EN	0.2	0.0	0.0	90.5	0.1	0.0	8.9	0.1	0.3	10.0
MF	0.4	0.4	0.2	0.1	82.7	0.3	0.5	15.1	0.4	17.0
OF	0.0	0.1	0.0	0.1	0.1	99.4	0.1	0.0	0.2	1.0
SV	0.1	0.3	0.0	2.7	0.2	0.1	95.5	0.1	1.0	4.0
TL	0.5	0.3	0.1	0.1	0.5	0.0	0.5	97.7	0.1	2.0
TR	0.0	5.9	2.2	0.3	0.1	0.3	1.7	0.2	89.3	11.0
Contribution to others	2.0	8.0	3.0	4.0	4.0	2.0	12.0	17.0	4.0	55.0
Net Contribution	-3.0	5.0	1.0	-6.0	-13.0	1.0	8.0	15.0	-7.0	6.1%

Notes: Tickers are as follows:- BK(Banks); CG(Consumer Goods); EP(Electric Power); EN(Energy); MF (Manufacturing); OF(Other Financial); SV(Service Company); TL(Telecommunications); and TR(Transportation).

Table 90: CDS Spreads Volatility Sectoral Connectedness: US Static Analysis

FULL-SAMPLE PERIOD

	CG	EP	BK	MF	OF	SV	TL	From Others
CG	66.9	2.4	1.5	4.7	8.0	10.1	6.3	33.0
EP	2.7	85.2	0.3	0.7	5.5	4.4	1.2	15.0
BK	1.3	2.7	84.4	2.1	5.9	2.7	0.9	16.0
MF	5.5	1.1	0.5	79.5	4.1	6.6	2.8	20.0
OF	7.2	2.4	8.2	1.9	72.4	6.1	1.9	28.0
SV	15.4	2.9	2.4	4.2	7.8	62.4	4.9	38.0
TL	9.8	1.8	1.2	5.3	4.4	4.1	73.5	27.0
Contribution to others	42.0	13.0	14.0	19.0	36.0	34.0	18.0	176.0
Net Contribution	9.0	-2.0	-2.0	-1.0	8.0	-4.0	-9.0	25.1%

Notes: Tickers are as follows:- CG(Consumer Goods); EP(Electric Power); BK(Banks); MF (Manufacturing); OF(Other Financial); SV(Service Company); and TL(Telecommunications).

CRISIS PERIOD

	CG	EP	BK	MF	OF	SV	TL	From Others
CG	37.9	7.6	13.7	6.0	11.1	13.5	10.2	62.0
EP	12.4	47.4	8.0	5.7	7.4	8.0	11.0	53.0
BK	11.9	5.7	44.2	8.9	9.8	9.8	9.6	56.0
MF	11.5	8.2	9.6	45.3	10.3	7.1	8.0	55.0
OF	13.0	7.3	13.1	6.6	42.1	10.5	7.4	58.0
SV	16.4	5.9	8.2	5.6	9.8	45.7	8.5	54.0
TL	12.9	10.8	11.8	7.8	9.5	9.2	37.9	62.0
Contribution to others	78.0	46.0	64.0	41.0	58.0	58.0	55.0	399.0
Net Contribution	16.0	-7.0	8.0	-14.0	0.0	4.0	-7.0	57.1%

Notes: Tickers are as follows:- CG(Consumer Goods); EP(Electric Power); BK(Banks); MF (Manufacturing); OF(Other Financial); SV(Service Company); and TL(Telecommunications).

AFTER-CRISIS PERIOD

	CG	EP	BK	MF	OF	SV	TL	From Others
CG	82.2	0.6	0.2	3.5	5	4.2	4.3	18
EP	0.3	94.7	0	0.1	3.4	1.4	0.1	5
BK	0	2.3	90	1.2	5.3	1	0.1	10
MF	1.8	0	0.1	90.3	1.2	5.6	1	10
OF	3	1	8.7	0.4	84.4	1.8	0.7	16
SV	13.1	1	2.3	2.9	5.9	68.6	6.3	31
TL	7.2	0.3	0.2	3.6	2.3	2.7	83.7	16
Contribution to others	25.0	5.0	12.0	12.0	23.0	17.0	12.0	106
Net Contribution	7.0	0.0	2.0	2.0	7.0	-14.0	-4.0	15.20%

Notes: Tickers are as follows:- CG(Consumer Goods); EP(Electric Power); BK(Banks); MF (Manufacturing); OF(Other Financial); SV(Service Company); and TL(Telecommunications).

Table 91: CDS Spreads Volatility Sectoral Connectedness: UK Static Analysis

FULL-SAMPLE PERIOD

	BK	CG	EP	EN	MF	OF	SV	TL	TR	From Others
BK	95.1	1.3	0.2	0.9	0.0	1.8	0.1	0.5	0.1	5.0
CG	0.8	61.6	0.7	20.9	0.6	1.2	4.0	5.8	4.4	38.0
EL	0.2	2.0	89.9	2.4	0.1	0.0	0.4	0.3	4.7	10.0
EN	1.3	21.1	1.1	61.6	1.1	1.8	4.5	2.7	4.8	38.0
MF	0.6	1.3	0.1	0.9	95.8	0.5	0.2	0.4	0.2	4.0
OF	0.9	0.3	0.1	0.9	1.7	93.5	0.6	1.3	0.7	6.0
SV	0.9	6.5	0.3	8.2	0.2	1.0	79.0	1.9	1.9	21.0
TL	1.0	5.4	0.0	1.6	0.5	0.7	1.1	89.2	0.6	11.0
TR	1.2	4.7	0.5	6.0	0.0	0.7	2.6	1.2	83.0	17.0
Contribution to others	7.0	43.0	3.0	42.0	4.0	8.0	13.0	14.0	17.0	151.0
Net Contribution	2.0	5.0	-7.0	4.0	0.0	2.0	-8.0	3.0	0.0	16.8%

Notes: Tickers are as follows:- BK(Banks); CG(Consumer Goods); EP(Electric Power); EN(Energy); MF (Manufacturing); OF(Other Financial); SV(Service Company); TL(Telecommunications); and TR(Transportation).

CRISIS PERIOD

	BK	CG	EP	EN	MF	OF	SV	TL	TR	From Others
BK	52.4	9.7	1.1	11.3	8.6	7.5	0.2	2.9	6.3	48.0
CG	9.3	37.6	0.7	14.5	15.7	8.9	2.6	7.3	3.5	62.0
EL	1.3	5.0	67.4	6.2	2.9	2.5	0.7	1.2	12.8	33.0
EN	9.1	15.4	1.7	37.5	15.7	10.6	1.7	4.9	3.2	62.0
MF	8.0	15.5	0.9	16.9	31.4	13.9	4.0	5.2	4.3	69.0
OF	5.9	8.2	0.6	11.7	15.4	46.6	3.7	4.2	3.7	53.0
SV	3.7	3.9	0.4	4.3	7.4	5.9	71.3	2.6	0.5	29.0
TL	3.7	10.8	0.1	8.3	9.2	9.9	1.1	56.1	1.0	44.0
TR	4.4	3.0	0.9	5.0	4.9	4.4	1.8	1.5	74.2	26.0
Contribution to others	45.0	72.0	6.0	78.0	80.0	64.0	16.0	30.0	35.0	426.0
Net Contribution	-3.0	10.0	-27.0	16.0	11.0	11.0	-13.0	-14.0	9.0	47.3%

Notes: Tickers are as follows:- BK(Banks); CG(Consumer Goods); EP(Electric Power); EN(Energy); MF (Manufacturing); OF(Other Financial); SV(Service Company); TL(Telecommunications); and TR(Transportation).

AFTER-CRISIS PERIOD

	BK	CG	EP	EN	MF	OF	SV	TL	TR	From Others
BK	95.7	0.6	0.4	0.2	0.1	1.2	0.9	0.4	0.7	4.0
CG	0.1	62.7	0.5	20.8	0.4	1.5	8.7	2.1	3.2	37.0
EL	0.3	0.8	97.6	0.3	0.1	0.0	0.3	0.1	0.4	2.0
EN	0.5	18.1	0.2	59.4	1.1	2.5	13.4	0.6	4.2	41.0
MF	0.2	0.9	0.1	0.7	97.0	0.3	0.3	0.2	0.1	3.0
OF	0.5	0.1	0.1	0.9	1.4	93.3	1.8	1.2	0.7	7.0
SV	2.4	9.9	0.2	14.5	0.1	3.2	63.8	0.7	5.3	36.0
TL	0.8	1.6	0.0	0.1	0.3	0.5	1.3	95.1	0.3	5.0
TR	1.8	5.2	0.2	6.7	0.0	0.9	5.5	0.7	79.0	21.0
Contribution to others	7.0	37.0	2.0	44.0	3.0	10.0	32.0	6.0	15.0	156.0
Net Contribution	3.0	0.0	0.0	3.0	0.0	3.0	-4.0	1.0	-6.0	17.4%

Notes: Tickers are as follows:- BK(Banks); CG(Consumer Goods); EP(Electric Power); EN(Energy); MF (Manufacturing); OF(Other Financial); SV(Service Company); TL(Telecommunications); and TR(Transportation).

Table 92: CDS Spreads Volatility Sectoral Connectedness: EU Static Analysis

FULL-SAMPLE PERIOD

	BK	EP	MF	OF	SV	TL	TR	From Others
BK	69.8	6.8	6.8	7.8	0.3	2.1	6.4	30.0
EP	8.6	65.9	8.9	8.3	0.2	4.3	3.8	34.0
MF	6	6.4	62.1	12.5	2.3	5.3	5.4	38.0
OF	10.4	7.4	11.7	60.9	0.4	2.8	6.4	39.0
SV	0.7	0.8	3.2	2.8	88.8	0.4	3.4	11.0
TL	2.9	0.8	4.2	4.5	0.5	84.7	2.5	15.0
TR	8.4	1.3	4.7	8.0	3.2	1.7	72.7	27.0
Contribution to others	37.0	23.0	39.0	44.0	7.0	17.0	28.0	195.0
Net Contribution	7.0	-11.0	1.0	5.0	-4.0	2.0	1.0	27.90%

Notes: Tickers are as follows:- BK(Banks); EP(Electric Power); MF (Manufacturing); OF(Other Financial); SV(Service Company); TL(Telecommunications); and TR(Transportation).

CRISIS PERIOD

	BK	EP	MF	OF	SV	TL	TR	From Others
BK	40.3	11.2	11.8	12.6	6.0	9.7	8.5	60.0
EP	16.7	37.7	12.5	11.9	4.1	8.0	9.1	62.0
MF	12.0	12.6	45.5	12.8	3.0	5.8	8.3	55.0
OF	14.3	10.1	11.2	40.3	1.9	6.5	15.6	60.0
SV	10.6	2.3	7.8	3.9	67.7	7.0	0.6	32.0
TL	11.7	4.2	7.2	8.7	1.7	60.8	5.6	39.0
TR	14.4	5.2	8.6	15.2	1.2	6.1	49.4	51.0
Contribution to others	80.0	46.0	59.0	65.0	18.0	43.0	48.0	358.0
Net Contribution	20.0	-16.0	4.0	5.0	-14.0	4.0	-3.0	0.5

Notes: Tickers are as follows:- BK(Banks); EP(Electric Power); MF (Manufacturing); OF(Other Financial); SV(Service Company); TL(Telecommunications); and TR(Transportation).

AFTER-CRISIS PERIOD

	BK	EP	MF	OF	SV	TL	TR	From Others
BK	94.6	0.2	0.5	1	0.1	0.5	3.1	5.0
EP	0.2	94.7	1.7	0.4	0.3	2.1	0.6	5.0
MF	0.6	1.7	77.4	7.4	4.9	5.4	2.6	23.0
OF	2.2	0.9	6.8	87.9	0.8	0.5	0.9	12.0
SV	0.2	1.3	5.1	6.5	82.7	0.2	4.0	17.0
TL	0.1	0.2	2.1	2.7	0.2	93.7	1.0	6.0
TR	1.9	1.5	2.1	1.8	5.3	0.2	87.2	13.0
Contribution to others	5.0	6.0	18.0	20.0	12.0	9.0	12.0	82.0
Net Contribution	0.0	1.0	-5.0	8.0	-5.0	3.0	-1.0	11.70%

Notes: Tickers are as follows:- BK(Banks); EP(Electric Power); MF (Manufacturing); OF(Other Financial); SV(Service Company); TL(Telecommunications); and TR(Transportation).

Table 93: CDS Spreads Volatility Sectoral Connectedness: Japan Static Analysis

C.2 CDS Spreads Volatility Sub-Sectoral Connectedness: Within Regions Static Analysis

FULL-SAMPLE PERIOD

	AR	BNK	BV	BG	CB	CH	CGM	CN	CP	EC	ET	OFI	FD	HL	HS	HM	IND	LEI	INF	RE	RT	RET	PC	OL	GS	MI	MC	LO	PB	PH	RL	RFD	OSV	OTL	TX	TO	OTR	UT	VH	From Others
AR	74.3	1.4	0.1	0.6	0.4	0.2	0.7	0.7	0.8	0.5	0.1	0.4	0.7	0.5	1.0	1.3	0.4	0.8	1.7	0.9	0.5	0.2	1.3	0.2	0.3	1.1	1.0	0.2	0.3	0.4	2.2	1.2	0.7	1.1	0.4	0.2	0.3	0.1	0.8	25.6
BNK	0.4	55.3	0.5	2.4	0.9	0.8	3.0	1.2	0.3	0.1	0.6	0.2	0.4	1.8	0.5	4.3	0.5	2.0	0.2	5.8	0.7	0.6	1.0	1.7	0.5	0.4	0.3	0.0	2.8	1.7	3.5	0.1	0.0	1.8	0.3	1.7	0.0	0.0	1.7	45.0
BV	0.1	1.8	68.2	0.6	0.1	1.2	0.8	1.2	1.7	0.5	2.8	0.2	0.7	0.2	0.5	1.9	0.1	2.1	1.1	0.6	3.0	0.3	1.1	0.4	0.2	0.3	0.7	0.2	0.9	2.7	1.0	0.4	0.2	1.5	1.9	1.1	0.6	1.0	0.8	32.0
BG	0.6	3.3	0.4	67.3	0.5	1.6	1.4	0.7	0.4	0.1	1.4	1.4	1.3	1.5	0.0	0.8	0.2	1.2	0.5	3.7	0.7	0.2	0.2	0.1	0.4	0.6	0.1	0.2	1.7	1.1	0.4	0.4	0.2	2.2	1.3	0.4	0.6	0.0	1.0	33.0
CB	0.2	1.0	0.1	0.9	71.1	4.1	0.7	1.6	0.5	0.2	2.2	0.4	0.1	2.3	1.5	1.0	0.2	0.4	0.2	0.6	0.2	0.1	0.2	0.2	0.8	0.2	1.1	0.2	0.8	0.1	1.7	0.1	0.1	1.7	1.2	0.1	0.7	0.1	1.1	29.0
CH	0.1	1.0	1.9	0.8	1.4	61.4	0.8	0.7	0.4	0.5	4.7	0.2	0.2	6.4	1.1	0.9	0.1	0.1	0.3	2.5	0.6	0.1	1.1	0.8	0.1	0.0	0.1	0.5	0.1	0.9	1.6	0.0	0.8	2.0	4.5	0.1	0.0	0.0	1.0	39.0
CGM	0.5	3.4	0.4	1.2	0.3	0.6	62.8	2.7	0.6	0.2	0.6	0.4	1.3	0.5	1.2	4.1	0.4	1.1	0.1	2.5	1.7	0.1	1.9	1.7	0.5	0.3	0.2	0.1	0.7	0.9	0.9	0.1	0.3	3.9	0.4	0.8	0.1	0.1	0.4	37.0
CN	1.1	1.2	0.8	0.9	1.5	1.1	2.5	48.0	1.1	1.2	0.8	0.0	2.3	1.8	8.2	2.9	0.5	0.6	1.0	0.8	5.2	1.4	2.3	1.1	0.3	0.2	1.0	0.2	1.2	0.9	0.9	0.4	0.7	2.8	1.7	0.7	0.0	0.2	0.4	52.0
CP	0.2	1.1	0.4	0.4	0.4	0.3	0.4	0.7	75.9	0.5	1.5	0.7	0.6	0.3	0.1	1.0	0.6	0.8	0.4	2.1	0.8	2.3	0.5	0.6	0.9	0.0	0.4	0.0	0.1	2.0	1.2	0.2	0.1	0.7	0.3	0.1	0.3	0.8	0.2	24.0
EC	0.8	0.6	0.8	0.1	0.1	1.1	0.1	2.2	0.4	78.5	0.3	0.1	3.1	1.1	0.3	0.4	0.3	1.0	0.1	0.6	0.1	0.1	0.5	0.5	0.1	0.1	0.6	0.3	0.2	0.9	0.6	0.6	0.1	0.9	1.9	0.1	0.2	0.0	0.2	21.0
ET	0.2	1.2	3.6	1.1	0.9	3.5	0.7	1.1	1.3	0.2	53.9	0.6	0.6	1.8	0.3	1.8	0.6	1.6	1.8	0.8	0.7	0.9	0.1	2.3	1.5	1.5	1.2	0.1	0.1	5.0	2.3	0.0	0.7	2.0	1.1	0.5	0.1	0.1	2.2	46.0
OFI	0.0	0.2	0.1	1.3	0.3	0.2	0.4	0.1	0.3	0.0	1.8	84.3	1.0	0.2	0.3	0.1	1.9	0.3	0.1	0.5	0.8	0.2	0.2	0.1	0.2	0.0	0.1	0.2	0.2	2.9	0.2	0.2	0.2	0.4	0.3	0.1	0.2	0.0	0.0	16.0
FD	0.5	1.5	0.7	3.8	0.3	0.5	0.9	3.3	1.4	2.4	0.7	0.5	52.4	0.5	0.8	5.0	0.6	1.5	0.9	1.3	0.6	0.2	2.4	0.5	1.3	1.3	0.2	0.1	1.1	0.7	0.2	0.1	0.4	1.7	0.8	0.9	0.7	0.1	0.3	41.0
HL	0.3	0.8	1.2	0.8	2.8	4.9	0.3	1.5	0.6	1.1	1.9	0.1	0.3	72.8	1.7	0.2	0.1	0.2	0.2	1.0	0.5	0.5	0.5	0.2	0.1	0.0	0.6	0.2	0.1	0.3	0.3	0.5	0.4	0.6	1.3	0.2	0.1	0.1	0.8	27.0
HS	1.2	0.5	1.6	0.3	2.4	0.8	1.6	12.5	0.4	0.9	0.7	0.0	1.9	1.0	52.7	1.7	0.3	0.4	0.2	0.6	6.1	0.1	2.0	0.1	0.2	0.2	0.8	0.1	0.7	2.1	0.8	0.9	0.4	2.1	0.9	0.1	0.1	0.3	0.2	47.0
HM	1.5	4.4	0.5	2.4	0.6	0.9	3.7	4.0	1.0	0.3	1.8	0.2	1.2	1.4	1.4	47.2	0.2	2.1	0.4	3.3	2.2	0.4	3.7	1.2	1.3	0.6	0.3	0.3	1.0	1.4	2.4	0.1	1.2	2.8	1.2	0.5	0.0	0.0	1.0	53.0
IND	0.7	0.8	0.3	0.5	0.2	0.1	0.6	0.7	0.4	0.6	0.3	0.1	0.2	0.1	0.6	0.5	82.0	0.4	0.3	0.3	0.9	0.1	0.7	0.1	0.5	0.2	0.3	0.1	2.5	0.3	0.7	0.2	0.1	1.0	1.6	0.2	0.1	0.5	0.1	18.0
LEI	0.9	1.6	1.1	0.9	0.8	0.2	0.9	1.6	0.7	0.5	1.5	0.8	0.3	0.3	0.1	2.4	0.6	71.0	0.2	1.7	1.0	0.3	0.1	0.2	0.2	0.2	0.3	0.0	1.6	2.1	0.5	0.6	0.0	2.1	0.1	0.5	1.1	0.0	1.0	29.0
INF	1.0	0.1	0.3	0.2	0.0	0.1	0.2	0.3	0.1	0.1	2.1	0.2	0.7	0.1	0.2	0.4	0.1	0.7	63.7	0.2	0.1	0.4	1.0	4.5	0.1	1.4	2.0	0.0	0.1	1.0	0.2	0.0	6.4	11.2	0.2	0.1	0.0	0.1	0.3	36.0
RE	0.8	4.1	0.9	4.6	1.0	2.8	3.7	2.2	0.5	0.4	0.9	0.4	2.3	1.3	1.1	4.5	0.5	1.7	0.1	50.0	0.8	0.2	2.1	1.2	1.3	0.1	1.4	0.1	1.1	1.6	1.1	0.4	0.0	2.6	0.4	0.6	0.1	0.0	1.1	50.0
RT	0.5	0.7	1.0	0.2	0.2	0.3	1.8	4.8	0.3	0.2	0.4	0.1	0.5	0.5	5.6	1.8	0.4	0.5	3.0	1.0	68.5	0.1	0.7	0.5	0.3	0.1	0.8	0.2	0.2	0.8	0.1	1.6	0.1	1.3	0.2	0.3	0.1	0.1	0.3	32.0
RET	0.1	1.4	0.1	0.0	1.7	1.4	0.1	1.2	0.2	0.1	0.5	0.4	0.3	0.9	0.1	1.0	0.4	0.6	0.0	0.1	0.2	75.4	0.0	0.2	2.2	4.9	0.2	1.2	0.0	0.1	0.1	0.0	0.2	0.1	0.6	3.5	0.0	0.2	0.0	25.0
PC	1.0	1.0	0.8	0.2	0.2	1.4	4.2	3.3	0.8	0.3	0.7	0.1	2.9	0.5	1.8	8.6	0.5	0.3	1.8	2.2	0.9	0.0	52.8	0.1	0.1	0.3	0.1	0.6	0.3	4.5	0.5	0.1	0.0	5.5	0.5	0.4	0.7	0.0	0.2	47.2
OL	0.2	1.8	0.6	0.3	0.0	0.2	0.8	0.7	0.2	0.5	2.6	0.1	0.5	0.2	0.1	1.0	0.2	0.2	4.9	0.6	0.1	1.0	0.1	73.8	0.7	1.3	2.1	0.2	0.7	0.3	0.3	0.9	0.6	1.0	0.1	0.7	0.1	0.1	0.1	26.2
GS	0.7	0.4	0.2	0.2	0.4	0.2	0.3	0.2	0.8	0.1	0.3	0.2	0.5	0.8	0.1	0.7	0.3	0.0	0.1	0.7	1.0	1.4	0.2	0.4	74.7	0.2	0.4	0.8	0.1	0.3	0.3	5.8	0.0	0.2	6.6	0.1	0.1	0.0	0.2	25.3
MI	0.2	0.1	0.2	0.3	0.6	0.5	0.3	0.2	0.9	0.1	1.7	0.0	1.2	0.0	0.0	1.0	0.2	0.5	1.8	0.3	0.0	0.8	0.1	0.2	0.3	72.9	0.8	1.3	0.2	1.4	0.3	0.0	2.1	6.3	0.5	1.6	0.1	0.2	0.7	27.0
MC	2.1	0.4	0.5	0.2	0.3	0.2	0.3	1.2	0.6	0.4	1.7	0.2	0.1	1.2	0.7	0.4	0.5	1.3	0.1	1.8	0.7	0.4	0.1	1.3	2.6	0.2	76.4	0.1	0.0	0.5	0.2	2.8	0.0	0.1	0.1	0.1	0.1	0.0	0.1	24.0
LO	0.2	0.0	0.0	0.1	0.2	0.1	0.6	0.2	0.1	0.0	0.6	0.1	0.1	0.9	0.3	0.2	0.4	0.1	0.1	0.1	0.2	0.2	0.8	0.0	1.4	0.1	0.2	85.9	0.2	0.3	0.2	0.0	0.0	0.3	3.3	1.3	0.3	0.1	0.9	14.0
PB	1.6	2.8	0.5	1.4	0.5	0.6	1.1	2.6	0.2	0.1	0.1	0.4	5.5	0.5	0.7	4.4	0.4	0.5	0.1	0.5	0.6	0.1	0.4	0.2	0.2	0.0	0.1	0.0	66.1	0.2	1.9	1.7	0.1	1.6	0.1	0.4	0.3	0.3	1.4	34.0
PH	0.3	0.5	2.5	1.9	0.1	1.7	1.1	1.4	1.4	0.6	4.7	1.1	1.0	0.6	1.5	2.5	0.4	2.0	2.6	1.0	1.4	0.1	3.9	0.2	0.6	0.1	0.2	0.3	0.2	54.4	1.2	1.1	0.2	3.6	0.3	1.0	0.4	0.1	1.9	46.0
RL	0.3	3.7	1.1	1.6	1.2	1.2	1.9	1.4	2.1	0.3	2.5	0.4	0.3	2.6	0.4	3.8	1.6	1.0	0.2	3.4	0.6	0.3	0.9	2.3	0.2	0.2	1.7	0.1	1.4	0.7	54.9	0.0	0.8	1.4	1.0	1.3	0.5	0.0	0.8	45.0
RFD	0.4	0.2	1.2	0.1	1.8	0.0	0.1	0.0	0.4	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.2	0.1	7.3	0.1	0.1	0.1	1.8	0.3	0.3	0.1	0.2	0.4	0.2	82.3	0.0	0.1	0.2	0.2	0.4	0.1	0.3	18.0
OSV	0.1	0.1	0.1	0.2	3.4	0.1	0.2	1.4	0.0	0.0	0.0	0.2	0.7	0.3	0.1	0.1	0.1	0.0	0.5	0.2	0.1	5.4	0.1	0.5	0.0	0.3	0.0	0.4	0.2	0.6	0.3	0.1	81.8	0.2	1.8	0.0	0.1	0.0	0.4	18.0
OTL	1.8	1.4	1.4	1.1	1.2	2.3	2.8	2.2	1.2	0.4	1.3	0.2	1.2	1.1	1.4	2.4	0.5	1.2	2.1	1.1	1.1	0.3	4.1	1.4	0.1	0.3	0.1	0.4	1.1	2.1	0.8	0.0	1.2	55.8	1.3	0.5	0.3	0.0	0.5	44.0
TX	0.1	0.5	0.4	0.2	0.5	1.8	0.2	0.5	0.1	1.0	2.1	0.2	0.5	4.0	0.5	0.2	0.8	0.4	0.2	0.2	0.7	0.2	0.2	0.0	0.9	0.2	0.3	4.8	0.1	0.0	1.8	0.8	0.9	0.5	72.8	0.5	0.5	0.1	0.5	27.0
TO	0.1	1.2	1.3	0.7	0.5	0.3	0.8	1.1	0.6	0.2	0.5	0.3	0.7	0.1	0.5	0.7	1.2	0.5	0.1	0.7	0.3	1.2	0.2	0.4	0.1	1.3	0.5	1.8	0.5	0.7	1.4	0.5	0.0	0.8	0.2	71.7	0.1	6.1	0.2	28.0
OTR	0.2	0.1	0.4	0.9	1.9	0.1	0.1	0.1	0.0	0.2	0.2	0.1	1.9	0.2	0.0	0.1	0.5	0.5	0.1	0.1	0.4	0.0	0.7	0.2	0.1	0.1	0.1	0.3	0.3	0.1	0.8	0.6	0.1	0.3	0.1	0.8	85.7	1.3	0.2	14.0
UT	0.2	0.1	0.0	0.1	0.0	0.1	0.1	0.3	2.3	0.0	0.4	0.2	0.4	0.1	0.4	0.1	0.1	0.1	0.0	0.1	0.4	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.4	0.1	0.1	0.0	0.0	0.1	0.0	6.3	0.3	86.8	0.0	13.0
VH	0.5	2.0	0.4	2.5	0.3	0.3	0.7	0.4	0.3	0.2	4.7	0.1	0.1	0.7	0.3	2.2	0.1	2.1	0.7	0.6	0.6	0.3	0.3	0.1	0.2	0.2	0.0	0.3	0.3	2.8	2.4	0.1	0.9	0.9	0.8	0.6	0.1	0.0	69.7	30.0
Net Contribution	-24.0	6.0	-2.0	-4.0	-11.0	40.0	-15.0	12.0	-26.0	-22.0	4.0	-30.0	17.0	8.0	-30.0	22.0	4.0	-11.0	25.0	-24.0	3.0	-13.0	-17.0	9.0	-11.0	31.0	13.0	-9.0	-24.0	11.0	-6.0	26.0	30.0	27.0	43.0	-6.0	-8.0	-1.0	25.0	61.4%

Notes: Tickers are as follows:- AR(Airline); BKG(Banking); BV(Beverage); BG(Building Products); CB(Cable); CH(Chemical); CGM(Conglomerate/Diversified); CN(Container); CP(Consumer Products); EC(Electric Utility); ET(Electronics); OFI(Other Financial Services); FD(Food Processors); HL(Healthcare Facilities); HS(Healthcare Supply); HM(Home Builders); IND(Industrial); LEI(Leisure); INF(Information/Data Technology); RE(REITS); RT(Restaurants); RET(Retail Stores); PC(Property & Casualty Insurance); OL(Oil Field Machinery & Products); GS(Oil & Gas); MI(Metals/Mining); MC(Machinery); LO(Lodging); PB(Publishing); PH(Pharmaceuticals); RL(Railroads); RFD(Retail Stores Food & Drugs); OSV(Other Service Company); OTL(Other Telecommunications); TX(Textiles); TO(Tobacco); OTR(Other Transportation); UT(Utility Other); and VH(Vehicles Parts).

CRISIS PERIOD

	AR	BNK	BV	BC	CB	CH	CCM	CN	CP	EC	ET	OFI	FD	HL	HS	HM	IND	LEI	INF	RE	RET	Rstr	PC	OL	GS	MI	MC	LO	PB	PH	RL	RFD	OSV	OTL	TX	TO	OtR	UT	VH	From Others
AR	55.2	3.5	0.0	0.4	1.2	2.8	1.0	0.5	0.1	0.1	0.4	0.3	0.6	0.7	0.3	5.3	0.4	1.5	0.1	1.0	0.8	0.7	1.7	1.7	0.2	1.7	2.9	2.5	0.6	0.2	2.7	1.5	3.2	0.9	2.0	0.5	0.3	0.3	0.3	45.0
BNK	0.4	33.2	1.7	2.2	2.9	3.0	0.9	0.7	0.2	0.2	1.1	1.0	0.5	5.3	0.7	2.3	0.6	1.0	0.4	2.9	0.6	0.9	0.5	4.8	0.7	2.9	3.5	0.7	2.0	2.1	4.7	2.4	4.1	2.0	1.2	2.6	0.0	1.9	1.0	67.0
BV	0.2	1.8	28.0	1.8	0.3	2.4	1.0	1.2	1.1	0.2	5.8	0.9	1.6	0.3	1.1	2.9	0.4	2.6	3.3	0.6	2.2	0.1	1.7	1.5	0.8	4.2	2.4	2.2	1.4	9.2	1.3	1.5	1.9	3.8	1.8	1.7	0.1	2.1	2.5	72.0
BC	0.2	2.5	0.7	40.0	3.5	4.0	1.1	0.5	0.6	0.1	1.5	4.2	2.2	1.0	0.2	0.6	0.2	0.5	0.6	2.1	0.9	0.2	0.1	0.6	0.8	3.5	1.6	0.3	1.6	0.9	0.6	2.1	1.8	2.1	3.3	1.9	0.2	1.1	0.4	59.0
CB	0.2	4.4	0.4	1.6	30.7	9.2	1.4	3.0	0.6	1.0	1.7	0.5	0.8	2.8	3.3	2.0	0.9	0.5	0.5	0.7	1.0	0.6	0.5	1.0	0.7	1.4	2.3	0.3	2.8	0.3	6.5	5.0	3.8	4.3	0.7	0.3	0.0	0.9	1.3	69.0
CH	0.2	2.9	1.3	1.6	3.2	19.7	1.8	3.6	2.0	1.3	2.8	0.7	1.8	3.5	1.8	2.3	0.6	1.1	1.7	1.1	1.7	0.3	2.2	2.4	0.4	2.7	2.8	2.4	1.1	2.9	3.6	5.0	4.0	5.8	2.8	1.7	0.1	1.8	0.4	80.0
CCM	0.3	1.9	0.9	1.2	0.9	4.0	41.1	1.8	0.6	1.4	0.9	1.3	2.4	2.7	0.9	3.1	0.3	0.5	0.9	1.1	1.9	0.2	1.3	1.0	0.5	2.1	1.5	0.9	0.5	1.1	1.0	3.8	3.4	4.8	4.1	1.3	0.2	1.9	0.5	59.0
CN	0.2	0.9	1.2	0.6	1.7	3.9	1.2	29.5	1.6	1.7	0.8	0.1	3.5	3.5	7.0	3.0	0.4	0.1	0.9	0.6	6.4	1.8	1.8	0.9	0.1	1.6	1.6	1.0	0.6	0.8	1.1	4.3	3.6	3.2	3.6	1.3	0.2	3.8	0.1	70.0
CP	0.1	3.3	0.7	0.6	1.3	2.3	0.7	1.3	33.0	1.2	1.6	2.1	3.1	2.1	0.3	1.7	0.6	0.8	0.4	3.3	0.8	1.0	0.6	2.0	5.3	2.0	2.5	0.8	0.2	2.0	1.4	2.8	5.2	2.4	8.5	0.3	0.2	1.3	0.1	67.0
EC	0.1	1.7	0.5	0.4	0.3	3.7	0.2	3.9	1.8	45.6	1.4	0.3	6.6	2.4	0.8	0.8	0.4	1.2	1.2	0.9	0.7	0.1	1.0	1.3	0.6	1.5	3.7	0.7	0.1	3.3	0.4	2.1	1.8	1.9	4.1	0.7	0.5	1.0	0.1	54.0
ET	0.0	1.1	9.6	2.0	1.2	4.1	0.5	1.0	1.4	1.0	28.9	1.4	1.8	1.7	0.7	2.1	0.6	2.0	4.8	0.4	1.0	0.2	0.1	0.7	1.6	5.3	1.1	0.6	0.3	7.3	1.4	1.6	1.6	3.4	2.1	1.0	0.2	1.6	2.4	71.0
OFI	0.2	1.5	0.6	2.7	1.1	1.4	0.8	0.4	1.8	0.3	2.7	57.3	3.9	0.7	0.3	0.2	4.8	1.1	0.4	1.8	0.2	0.3	0.3	0.2	1.8	1.3	0.3	0.1	0.4	2.7	0.5	0.5	0.5	1.8	2.3	1.0	0.2	1.0	0.7	43.0
FD	0.5	1.0	1.1	1.2	0.7	2.7	1.3	4.1	3.0	3.7	1.0	1.9	31.2	2.7	0.9	5.0	1.2	1.0	0.6	2.2	1.0	0.4	1.8	1.3	4.1	2.6	1.8	0.7	1.6	1.1	0.5	3.7	1.0	2.1	5.8	1.3	0.8	1.2	0.3	69.0
HL	0.1	1.0	0.3	0.7	3.2	4.6	1.8	5.0	0.3	1.9	2.0	0.3	2.6	40.5	2.7	1.5	0.1	0.4	1.2	1.3	1.5	1.1	1.2	1.1	0.4	2.8	0.9	1.1	1.0	1.0	2.2	2.6	2.9	4.3	1.9	0.3	0.1	1.3	0.6	60.0
HS	0.2	0.5	2.5	0.2	3.0	3.1	1.1	10.0	0.4	1.3	1.8	0.4	1.9	2.7	29.7	1.6	0.3	0.5	0.7	0.4	10.3	0.1	1.2	0.4	0.2	1.3	1.4	0.7	0.7	2.0	1.5	1.6	1.9	3.0	2.3	0.2	0.1	8.5	0.2	70.0
HM	2.1	2.7	1.7	1.5	1.4	3.6	2.0	2.0	1.3	0.6	2.0	0.3	1.7	1.3	1.1	24.4	0.2	1.5	1.1	1.0	2.6	0.3	2.4	1.6	2.9	6.2	2.3	2.5	0.6	1.4	1.7	5.3	5.0	2.5	4.7	1.6	0.2	1.8	0.9	76.0
IND	0.3	1.3	0.1	0.4	0.7	0.5	0.9	0.5	0.5	0.3	0.4	0.3	0.5	0.1	1.9	0.6	69.0	1.1	0.2	0.5	0.5	0.4	0.8	0.6	0.1	0.6	0.7	1.4	2.4	0.3	0.9	2.6	2.4	1.4	0.6	1.7	0.1	1.6	0.5	31.0
LEI	1.0	1.6	2.4	0.9	2.5	1.9	0.5	1.2	0.8	0.6	2.2	1.0	0.6	1.1	0.5	1.7	1.4	51.7	0.8	1.3	1.3	0.6	0.2	0.3	1.6	0.3	2.5	1.0	1.3	2.9	0.7	1.8	3.3	3.6	0.1	0.3	0.2	1.4	1.1	48.0
INF	0.2	0.4	5.6	0.6	0.4	3.1	1.3	1.0	0.9	1.6	7.3	0.7	1.0	1.3	0.9	3.6	0.6	1.6	34.3	0.4	1.0	0.1	2.3	1.4	0.4	3.3	1.7	2.0	0.2	9.4	0.7	1.4	1.2	3.1	2.0	0.4	0.3	1.3	1.4	66.0
RE	0.5	1.7	1.6	3.6	2.1	3.5	1.8	1.2	0.8	0.6	1.3	1.4	4.3	2.1	0.8	2.2	0.3	0.9	0.3	27.9	1.5	0.3	1.1	4.4	2.1	6.2	4.1	1.5	0.5	1.9	1.4	3.1	2.9	3.3	2.4	2.0	0.1	1.7	0.6	72.0
RT	0.2	0.7	3.3	0.6	0.6	2.4	2.6	6.6	0.7	0.3	1.0	0.2	1.3	0.6	9.4	2.4	0.3	0.7	0.6	0.9	33.0	0.2	1.0	1.1	0.3	2.0	1.1	2.1	0.6	1.1	0.5	2.9	3.1	2.1	2.0	0.6	0.0	10.3	0.5	67.0
RET	0.1	1.7	0.3	0.4	1.6	0.5	0.1	1.0	0.2	0.0	0.4	0.7	1.6	0.8	1.3	0.9	5.5	1.8	0.4	0.2	0.6	68.5	0.3	0.2	0.5	0.4	0.3	0.2	0.3	0.9	0.9	1.6	2.6	0.4	1.2	0.3	0.7	0.4	0.1	31.5
PC	0.8	0.4	2.5	0.1	0.4	3.9	2.3	2.5	1.0	0.6	1.2	0.0	2.4	0.9	1.2	7.3	0.5	0.3	2.3	1.3	0.8	0.0	34.8	0.2	0.0	1.8	2.9	7.4	0.2	3.8	0.5	2.3	0.4	6.2	3.3	0.6	2.1	0.6	0.3	65.0
OL	0.8	3.5	2.6	1.3	1.2	1.8	0.7	0.8	0.5	0.3	0.6	0.3	1.1	1.7	0.3	1.5	0.1	0.2	0.4	2.2	0.2	0.9	0.2	49.3	2.7	4.9	4.2	1.2	1.3	1.3	1.1	3.2	1.0	0.7	0.9	2.8	0.1	1.5	0.7	51.0
GS	0.3	0.8	0.8	1.2	0.7	1.0	0.5	0.2	2.5	0.5	1.2	2.3	3.0	1.1	0.2	2.4	0.3	0.3	0.2	3.8	0.2	0.1	0.2	2.6	47.0	3.7	1.1	0.3	0.2	1.6	2.2	2.5	1.7	1.3	0.9	1.0	0.8	1.0	0.4	53.0
MI	1.1	0.6	3.3	2.5	1.3	2.7	1.8	1.6	1.6	0.9	4.4	1.1	3.0	1.8	0.6	4.8	0.2	0.6	1.8	1.4	1.5	0.2	0.8	1.9	3.8	23.0	3.6	1.1	0.6	3.6	1.1	4.0	5.1	3.2	5.4	1.1	0.1	1.5	1.3	77.0
MC	0.0	3.3	1.5	1.1	2.4	2.8	0.7	1.3	1.7	0.7	1.9	0.6	2.5	2.6	0.3	2.5	0.2	1.2	0.5	2.4	0.6	0.2	1.3	4.6	1.3	6.5	31.8	1.1	0.5	1.4	2.7	2.1	4.5	2.5	4.1	1.2	0.3	1.4	0.7	68.0
LO	0.7	1.0	1.3	0.0	0.3	3.5	2.3	1.8	0.8	0.2	0.5	0.1	1.1	0.5	1.0	5.7	1.8	0.8	2.0	1.5	2.4	0.1	7.6	0.5	0.1	1.4	2.8	37.3	0.1	3.8	0.5	2.0	2.4	5.2	2.2	0.7	0.6	1.1	0.3	63.0
PB	2.5	2.3	1.4	1.5	2.3	2.8	0.5	1.8	0.7	0.1	0.1	0.8	12.2	1.4	1.2	4.8	0.4	0.2	0.1	0.1	1.3	1.6	0.2	0.6	0.8	1.0	0.7	0.4	46.2	0.0	3.1	1.9	1.6	1.1	0.2	0.9	0.1	0.4	0.9	54.0
PH	0.1	0.5	7.8	1.1	0.7	4.1	1.0	1.1	1.7	1.6	7.0	2.4	1.3	1.1	1.5	2.3	1.0	2.2	5.2	0.9	1.2	0.3	2.4	1.0	1.0	3.8	2.1	2.8	0.1	23.8	1.2	0.9	0.7	5.0	3.0	2.0	0.2	2.1	1.9	76.0
RL	1.0	4.3	1.7	1.0	3.2	5.3	0.9	1.3	1.0	0.2	1.5	0.4	0.9	2.3	1.4	2.8	0.5	0.8	0.7	1.5	1.9	0.8	0.7	2.2	0.5	4.0	4.3	1.2	1.3	1.5	32.8	3.1	4.5	2.2	1.8	1.6	1.0	1.2	0.8	67.0
RFD	1.0	4.5	0.7	1.5	2.9	5.4	1.8	2.5	2.0	0.3	1.4	0.3	2.5	3.2	1.0	4.6	0.7	0.6	0.7	1.7	2.0	1.0	1.9	3.5	1.2	3.9	2.7	1.9	1.0	0.7	2.4	23.6	4.7	2.5	4.7	1.3	0.2	1.1	0.6	76.0
OSV	1.6	2.7	0.6	2.6	3.4	3.3	1.4	2.6	1.0	0.7	1.2	0.3	2.1	3.2	1.8	3.7	1.9	0.8	0.6	2.3	3.2	0.3	0.4	3.5	1.6	6.1	2.1	1.0	1.5	0.3	1.9	3.7	27.9	2.3	3.8	0.3	0.1	1.5	0.6	72.0
OTL	0.6	1.3	1.8	0.4	2.5	7.2	2.0	2.9	1.4	1.2	3.1	0.6	1.6	2.6	2.0	1.8	0.5	0.9	1.8	0.6	2.0	0.6	3.7	1.1	0.3	3.4	3.0	4.4	0.8	3.6	1.1	2.5	4.2	24.1	3.9	0.6	0.6	2.6	0.6	76.0
TX	0.3	3.5	0.6	0.3	1.2	2.0	1.1	1.6	1.5	2.8	1.4	1.0	4.4	3.0	0.4	1.7	0.9	2.2	0.7	0.9	0.9	0.9	0.8	2.0	0.4	4.8	4.8	0.6	0.2	0.9	2.1	5.4	4.6	2.3	36.5	0.7	0.0	0.6	0.2	64.0
TO	0.1	2.2	0.8	2.0	0.5	2.8	0.9	2.5	0.8	0.6	0.9	0.6	0.6	0.7	1.6	1.0	4.7	0.2	0.0	1.3	0.5	0.3	0.2	3.3	0.4	1.3	1.9	1.8	0.5	1.5	1.4	4.4	1.3	1.3	1.4	47.6	1.2	4.2	0.8	52.0
OTR	0.8	0.1	0.4	0.1	0.2	0.3	0.2	0.4	0.1	0.1	0.4	0.5	0.5	0.5	0.4	0.6	0.3	0.8	0.7	0.1	1.4	0.1	2.9	0.4	0.2	0.3	0.5	0.7	0.4	0.7	1.3	0.3	0.1	0.9	0.6	2.3	79.0	0.3	0.4	21.0
UT	0.5	1.8	3.0	0.8	0.7	3.3	1.0	6.1	1.4	1.1	2.2	0.9	1.5	1.6	8.3	0.9	0.5	1.1	0.5	0.9	10.3	0.2	0.6	1.3	0.4	1.6	0.9	0.9	0.4	2.6	0.7	2.1	1.8	2.7	1.6	3.4	0.4	29.5	0.6	71.0
VH	0.3	2.3	3.0	2.3	0.6	1.7	1.0	0.1	0.1	0.4	6.3	0.9	0.7	0.6	0.3	3.9	0.2	1.8	1.7	0.4	1.5	0.6	0.3	0.6	0.9	3.8	0.6	1.0	0.3	5.2	1.0	1.4	2.3	1.4	1.1	0.6	0.2	0.6	47.7	52.0
Contribution to others	21.0	73.0	70.0	46.0	58.0	120.0	44.0	82.0	41.0	32.0	75.0	33.0	86.0	68.0	60.0	98.0	35.0	37.0	41.0	48.0	70.0	18.0	48.0	60.0	42.0	108.0	81.0	54.0	30.0	87.0	61.0	102.0	102.0	103.0	107.0	44.0	13.0	70.0	27.0	2336.0
Net Contribution	-24.0	6.0	-2.0	-4.0	-11.0	40.0	-15.0	12.0	-26.0	-22.0	4.0	-10.0	17.0	8.0	-10.0	22.0	4.0	-11.0	-25.0	-24.0	3.0	-13.0	-17.0	9.0	-11.0	31.0	13.0	-9.0	-24.0	11.0	-4.0	26.0	30.0	27.0	43.0	-8.0	-8.0	-1.0	-25.0	61.4%

Notes: Tickers are as follows- AR(Airline); BNK(Banking); BV(Beverage); BC(building Products); CB(Cable); CH(Chemical); CCM(Conglomerate/Diversified); CN(Container); CP(Consumer Products); EC(Electric Utility); ET(Electronics); OFI(Other Financial Services); FD(food Processors); HL(Healthcare Facilities); HS(Healthcare Supply); HM(Home Builders); IND(Industrial); LEI(Leisure); INF(Information/Data Technology); RE(REITS); RT(Restaurants); RET(Retail Stores); PC(Property & Casualty Insurance); OL(Oil Field Machinery & Products); GS(Oil & Gas); MI(Metals/Mining); MC(Machinery); LO(Lodging); PB(Publishing); PH(Pharmaceuticals); RL(Railroads); RFD(Retail Stores Food & Drugs); OSV(Other Service Company); OTL(Other Telecommunications); TX(Textiles); TO(Tobacco); OTR(Other Transportation); UT(Utility Other); and VH(Vehicles Parts).

AFTER-CRISIS PERIOD

	AR	BNK	BV	BC	CB	CH	CCM	CN	CP	EC	ET	OFI	FD	HL	HS	HM	IND	LEI	INF	RE	RT	RET	PC	OL	GS	MI	MC	LO	PB	PH	RL	RFD	OSV	OTL	TX	TO	OTR	UT	VH	From Other n
AR	74.0	0.2	0.4	0.8	0.4	0.0	0.2	1.0	1.2	1.2	0.3	0.1	1.4	0.5	2.3	0.4	0.6	0.5	2.4	0.7	0.4	0.3	0.1	0.2	0.4	1.1	1.4	0.4	0.5	0.4	1.1	1.3	1.5	0.8	0.2	0.1	0.4	0.1	0.8	26.0
BNK	0.4	61.8	0.7	0.6	0.8	1.0	4.4	1.1	0.8	0.3	0.2	0.4	0.4	1.9	0.2	4.7	0.2	6.0	0.2	1.4	0.8	1.0	0.8	0.8	0.4	1.1	1.4	0.2	0.4	0.6	0.6	0.1	0.3	0.2	0.2	0.9	0.1	0.3	2.4	38.0
BV	0.3	2.6	75.1	0.0	0.1	0.8	0.9	1.2	1.0	0.6	0.3	0.0	0.6	0.0	0.1	1.2	0.3	0.9	0.5	0.5	2.6	0.4	0.6	0.4	0.1	0.1	0.4	0.0	0.4	0.3	1.0	0.8	0.1	0.3	1.5	0.5	1.7	1.7	0.0	25.0
BC	1.6	4.3	0.3	66.8	0.1	1.3	0.3	1.2	0.1	0.1	0.4	0.2	0.3	1.9	0.8	0.3	0.3	2.4	1.1	0.9	0.7	0.3	0.5	0.0	0.1	0.6	0.3	0.7	0.9	0.5	0.4	0.7	0.8	1.2	1.2	0.7	3.1	0.2	2.3	33.0
CB	0.6	0.3	0.1	0.5	78.2	2.2	0.9	0.4	0.3	0.4	1.6	0.9	0.1	1.7	0.6	0.3	0.9	0.5	0.4	0.7	0.2	0.3	0.2	0.2	0.9	0.1	0.8	0.3	0.1	0.2	0.8	0.4	0.2	0.3	0.8	0.5	1.2	0.1	1.1	22.0
CH	0.2	0.9	1.4	0.2	0.7	65.9	0.9	0.0	0.0	0.4	4.4	0.1	0.3	5.4	0.6	0.3	0.0	0.1	0.0	6.5	0.1	0.2	0.6	0.3	0.0	0.4	0.3	0.2	0.1	0.6	0.7	0.1	0.6	0.4	5.0	0.3	0.2	0.0	1.5	34.0
CCM	0.6	2.0	0.5	0.4	0.2	0.1	67.0	4.0	0.5	0.4	0.4	0.1	0.3	0.2	1.0	2.7	1.1	3.0	0.0	2.6	0.8	0.2	1.0	4.4	0.7	0.8	0.6	0.0	0.4	0.4	0.6	0.0	1.0	0.8	0.1	0.5	0.3	0.1	0.1	33.0
CN	2.5	0.8	0.8	1.9	1.5	0.3	4.9	52.3	0.8	0.2	1.5	0.5	0.6	1.1	2.0	1.4	0.8	2.2	1.2	2.1	2.5	2.9	0.4	2.2	1.4	0.1	3.1	0.2	2.6	0.4	0.4	0.4	1.6	1.0	0.4	0.1	0.0	0.0	0.9	48.0
CP	0.3	0.1	0.2	0.1	0.3	0.2	0.4	0.5	82.0	0.3	0.6	0.2	0.9	0.3	0.1	0.1	1.0	0.4	0.4	0.7	0.3	2.4	0.7	0.2	0.0	0.1	0.2	0.0	0.3	1.2	1.5	0.1	0.2	0.5	0.1	0.1	1.0	2.1	0.2	18.0
EC	1.6	0.0	0.7	0.1	0.3	0.4	0.2	0.4	0.1	84.5	0.4	0.6	0.3	0.5	0.1	0.2	0.2	0.5	0.3	0.5	0.0	0.1	0.3	0.5	0.0	0.3	0.7	1.1	1.1	0.0	1.1	0.7	0.1	0.4	0.9	0.3	0.1	0.1	0.1	15.0
ET	0.3	3.5	0.3	0.0	0.8	3.2	1.2	1.1	0.7	0.3	62.9	0.0	0.4	1.0	0.3	0.8	0.9	0.3	0.7	1.9	0.3	1.5	0.3	2.6	1.7	1.2	1.7	0.0	0.1	1.3	3.0	0.1	1.4	0.6	0.7	0.6	0.2	0.4	1.4	37.0
OFI	0.4	0.0	0.2	0.0	1.2	0.3	0.2	0.3	0.0	0.1	0.5	86.9	0.1	0.1	1.0	0.3	0.6	0.1	0.1	0.0	1.5	0.1	0.3	0.1	0.2	0.1	0.0	0.5	0.2	1.8	0.2	0.4	0.8	0.0	0.0	0.1	0.3	0.0	0.7	13.0
FD	0.4	1.8	0.3	0.2	0.1	0.1	0.2	1.2	0.0	0.6	0.2	0.1	69.8	0.3	0.2	1.4	0.3	2.6	1.4	0.0	0.0	0.5	0.6	0.5	0.0	1.5	0.2	0.2	1.0	1.5	0.2	0.0	0.3	1.3	0.1	1.2	0.5	0.1	0.2	30.0
HL	0.3	5.3	0.8	0.5	2.8	3.6	0.3	0.7	0.3	1.0	0.5	0.2	0.8	72.9	1.7	0.2	0.0	0.3	0.2	1.4	0.4	0.3	0.2	0.1	0.2	0.2	0.5	0.1	0.4	0.2	0.1	0.3	0.5	0.1	1.2	0.2	0.1	0.3	0.7	27.0
HS	4.0	0.1	0.9	0.6	2.7	0.1	1.0	3.4	0.2	0.1	0.3	0.5	0.8	0.0	74.9	0.3	0.4	0.3	0.3	1.0	0.2	0.4	0.3	0.2	0.4	0.1	1.9	0.3	0.0	0.4	0.0	2.2	0.5	0.0	0.6	0.0	0.4	0.2	0.2	25.0
HM	0.1	2.3	0.1	1.2	0.5	0.1	2.4	6.0	0.8	0.1	0.4	0.4	0.3	1.8	0.3	60.7	0.1	3.4	0.1	4.3	0.5	1.5	1.3	1.6	0.3	0.4	0.7	0.2	0.4	0.2	2.0	0.3	3.2	1.0	0.5	0.2	0.0	0.2	0.3	39.0
IND	1.4	0.7	0.6	0.5	0.1	0.2	0.4	1.5	0.4	0.7	0.6	0.1	0.1	0.4	0.2	0.5	79.4	0.2	0.7	0.1	1.3	0.1	1.7	0.1	1.3	0.3	0.5	0.0	0.7	0.1	0.5	0.2	0.3	0.7	1.9	0.7	0.1	0.6	0.2	21.0
LEI	1.2	0.8	0.7	0.7	0.2	0.0	1.8	1.9	0.3	0.2	0.2	2.9	0.5	0.3	0.6	3.1	0.2	67.0	0.1	0.5	0.9	0.7	0.4	0.4	0.0	0.3	0.6	0.0	3.8	0.6	0.5	2.4	0.2	0.9	0.3	0.7	4.0	0.1	0.1	33.0
INF	1.4	0.1	0.1	0.1	0.2	0.1	0.5	0.2	0.1	0.4	0.5	0.2	0.6	0.0	0.0	0.9	0.1	0.6	56.9	0.5	0.1	0.6	0.8	4.8	0.0	1.0	1.6	0.2	0.2	0.8	0.3	0.0	7.4	17.9	0.0	0.1	0.1	0.1	0.6	43.0
RE	1.6	3.9	0.9	0.8	1.4	6.0	1.7	3.6	0.3	0.7	0.4	0.1	0.2	1.6	1.3	2.1	1.0	2.2	0.0	56.4	0.5	0.4	0.9	0.3	1.3	0.2	4.7	0.1	0.8	0.1	0.5	2.0	0.1	0.3	0.1	0.1	0.2	0.4	0.9	44.0
RT	0.5	0.5	0.0	0.5	0.6	0.1	0.2	0.9	0.1	0.8	0.1	0.1	0.4	0.4	0.1	0.4	0.4	0.6	3.6	0.9	81.9	0.0	0.5	0.2	0.1	0.1	1.3	0.3	0.0	0.9	0.0	0.7	0.4	0.9	0.8	0.1	0.2	0.2	0.2	18.0
RET	0.1	2.7	0.2	0.1	1.7	2.0	0.4	2.9	0.2	0.1	0.7	0.2	0.3	0.9	0.0	3.0	0.3	1.1	0.1	0.2	0.3	66.3	0.5	0.2	2.2	5.6	0.3	1.4	0.1	0.2	0.2	0.0	0.2	0.3	0.4	4.3	0.1	0.1	0.2	34.0
PC	0.6	2.3	0.5	0.6	0.3	1.0	4.9	0.9	0.9	0.0	0.1	1.0	1.2	1.8	0.1	1.4	0.8	2.2	3.2	1.3	0.4	0.4	65.5	1.7	0.2	1.1	0.7	0.1	0.3	1.1	0.3	0.1	0.2	1.0	0.2	1.2	0.2	0.2	0.3	35.0
OL	0.1	0.6	0.0	0.0	0.2	0.1	2.3	1.1	0.1	0.9	3.5	0.2	0.4	0.2	0.8	1.0	0.2	0.3	7.2	0.2	0.1	1.0	1.1	70.2	0.4	0.7	2.1	0.1	0.8	0.1	0.0	1.1	0.7	1.5	0.1	0.3	0.1	0.2	0.2	30.0
GS	1.3	0.2	0.3	0.6	0.2	0.3	0.1	0.3	0.1	0.3	0.4	0.1	0.3	0.6	0.0	0.1	0.3	0.1	0.0	0.4	0.8	1.4	1.3	0.1	76.1	0.0	0.9	0.7	0.5	1.2	0.1	4.6	0.0	0.0	5.3	0.4	0.1	0.2	0.2	24.0
MI	0.2	0.3	0.1	0.2	0.3	0.1	0.5	0.2	0.5	0.2	1.1	0.1	1.5	0.1	0.3	0.7	0.4	0.4	2.0	0.4	0.1	1.6	0.1	0.0	0.1	68.5	0.7	0.5	1.1	1.7	0.4	0.0	2.5	10.3	0.0	1.8	0.3	0.2	0.7	32.0
MC	3.0	0.9	0.3	0.2	0.1	0.1	1.0	2.7	0.3	0.6	1.8	0.5	0.5	1.2	1.4	0.3	1.1	3.7	0.0	4.9	0.9	0.3	0.2	0.7	2.5	0.3	65.4	0.2	0.1	0.6	0.4	2.2	0.0	0.1	0.6	0.1	0.2	0.2	0.3	35.0
LO	0.5	0.1	0.1	0.7	0.1	0.8	2.1	0.2	0.2	0.1	0.2	0.2	0.4	0.5	0.3	0.1	0.5	0.0	0.1	0.2	0.1	0.3	0.3	0.0	1.9	0.5	0.9	81.7	0.2	0.0	0.1	0.1	0.0	0.0	2.5	1.9	0.1	0.2	1.8	18.0
PB	1.8	0.2	0.3	1.5	0.4	1.5	1.0	3.1	0.6	0.2	0.3	0.3	0.5	0.4	0.0	1.4	0.2	0.8	0.4	0.5	0.8	0.3	0.9	0.5	0.1	0.1	0.9	0.5	59.6	1.6	0.3	11.9	0.2	2.0	0.1	1.2	0.3	2.7	0.6	40.0
PH	0.6	0.2	0.1	1.3	0.6	2.2	0.2	0.3	0.3	0.5	0.2	0.1	0.1	0.1	0.4	0.1	0.5	0.3	1.6	0.5	1.2	0.3	0.3	0.2	0.4	0.4	0.6	0.0	0.4	73.4	0.7	2.0	0.3	6.2	0.5	0.3	1.3	0.1	1.3	27.0
RL	0.1	1.0	1.0	1.5	0.6	0.2	4.5	0.7	3.3	0.8	2.3	0.8	0.1	2.5	0.3	2.7	2.8	1.8	0.0	5.2	0.3	0.2	0.9	1.8	0.2	0.4	2.8	0.1	0.3	0.3	55.9	0.1	1.4	0.2	1.0	0.8	0.4	0.1	0.5	44.0
RFD	0.6	0.0	3.2	0.2	1.9	0.1	0.5	0.9	0.1	0.8	0.7	0.3	0.6	0.0	0.0	0.0	0.3	0.1	0.5	0.1	7.0	0.3	0.7	0.1	1.6	0.5	0.1	0.1	0.9	0.7	0.2	74.4	0.2	0.0	0.3	0.3	0.9	0.4	0.4	26.0
OSV	0.1	0.4	0.0	0.4	2.7	0.1	0.6	4.0	0.1	0.2	0.1	0.1	1.3	0.3	0.6	0.4	0.1	0.0	0.4	0.6	0.1	6.6	0.4	0.5	0.0	0.3	0.1	0.1	0.0	1.1	0.7	0.1	74.1	0.5	1.7	0.1	0.3	0.0	0.8	26.0
OTL	2.4	0.3	1.6	1.3	0.6	0.8	1.0	0.3	0.4	0.2	0.0	0.0	0.3	0.4	0.1	0.8	0.5	0.6	3.1	0.3	0.3	0.3	0.5	1.5	0.1	0.7	0.5	0.2	1.0	2.7	0.1	0.0	2.1	73.3	0.9	0.2	0.1	0.2	0.2	27.0
TX	0.2	0.3	0.7	0.6	0.1	1.6	0.0	0.4	0.5	0.3	1.7	0.0	0.2	3.1	1.2	0.1	0.9	0.1	0.3	0.2	0.6	0.2	0.4	0.3	1.3	0.5	1.1	4.4	0.5	0.1	1.9	0.5	0.9	0.2	71.8	0.6	0.4	0.1	1.6	28.0
TO	0.1	0.2	1.7	0.1	0.6	0.1	1.6	0.1	0.4	0.2	0.4	0.5	1.6	0.2	0.0	1.0	1.3	2.4	0.1	0.4	0.2	1.6	0.2	0.1	0.2	1.5	0.5	2.3	1.1	0.3	0.8	0.4	0.1	0.3	0.3	69.4	0.0	7.5	0.3	31.0
OTR	0.3	0.0	0.8	4.0	2.6	0.3	0.6	0.4	0.0	0.3	0.2	0.4	3.9	0.2	0.1	0.0	0.7	0.4	0.2	0.2	0.3	0.1	0.1	0.3	0.1	0.3	0.2	0.1	3.6	0.2	0.9	1.0	0.3	0.2	0.2	0.4	75.0	1.4	0.1	25.0
UT	0.2	0.4	0.1	0.1	0.0	0.3	0.1	0.1	2.0	0.1	1.1	0.3	0.5	0.2	0.2	0.1	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.1	2.5	0.0	0.3	0.1	0.0	0.0	0.1	7.8	0.2	82.4	0.0	18.0
VH	0.4	0.8	0.4	2.5	0.8	0.0	0.1	0.7	0.2	0.2	1.9	1.3	0.2	0.3	0.2	0.1	0.1	1.0	0.2	0.1	0.1	0.2	0.1	0.1	0.0	0.1	0.2	0.6	0.2	0.6	2.3	0.2	1.6	0.3	1.2	0.6	0.0	0.0	80.0	20.0
Contributio n to others	32.0	41.0	21.0	35.0	29.0	32.0	44.0	50.0	18.0	14.0	30.0	14.0	23.0	32.0	19.0	35.0	21.0	43.0	31.0	43.0	28.0	29.0	21.0	28.0	21.0	23.0	35.0	17.0	28.0	25.0	25.0	38.0	32.0	53.0	32.0	30.0	19.0	21.0	24.0	1140.0
Net Contributio n	6.0	3.0	-4.0	2.0	7.0	-2.0	11.0	2.0	0.0	-1.0	-7.0	1.0	-7.0	5.0	-6.0	-4.0	0.0	10.0	-8.0	-1.0	10.0	-5.0	-14.0	-2.0	-3.0	-9.0	0.0	-1.0	12.0	-2.0	-19.0	12.0	6.0	26.0	4.0	-1.0	-6.0	3.0	4.0	29.20 %

Notes: Tickers are as follows- AR(Airline); BNK(Banking); BV(Beverage); BC(building Products); CB(Cable); CH(Chemical); CCM(Conglomerate/Diversified); CN(Container); CP(Consumer Products); EC(Electric Utility); ET(Electronics); OFI(Other Financial Services); FD(Food Processors); HL(Healthcare Facilities); HS(Healthcare Supply); HM(Home Builders); IND(Industrial); LEI(Leisure); INF(Information/Data Technology); RE(REITS); RT(Restaurants); RET(Retail Stores); PC(Property & Casualty Insurance); OL(Oil Field Machinery & Products); GS(Oil & Gas); MI(Metals/Mining); MC(Machinery); LO(Lodging); PB(Publishing); PH(Pharmaceuticals); RL(Railroads); RFD(Retail Stores Food & Drugs); OSV(Other Service Company); OTL(Other Telecommunications); TX(Textiles); TO(Tobacco); OTR(Other Transportation); UT(Utility Other); and VH(Vehicles Parts).

Table 94: CDS Spreads Volatility Sub-Sectoral Connectedness: US Static Analysis

FULL-SAMPLE PERIOD

	BKG	BV	OFI	LF	RET	OSV	OTL	From Others
BKG	89.0	1.4	4.2	1.9	1.4	0.8	1.4	11.0
BV	1.8	73.9	5.0	3.4	10.2	1.2	4.6	26.0
OFI	6.6	5.0	74.9	1.6	7.3	2.5	2.0	25.0
LF	0.4	2.7	4.6	87.1	2.4	0.9	1.9	13.0
RET	1.8	10.8	10.1	3.4	65.3	1.8	6.8	35.0
OSV	1.0	3.0	2.8	0.9	1.9	88.9	1.6	11.0
OTL	1.8	3.4	5.0	1.8	7.6	1.2	79.2	21.0
Contribution to others	13.0	26.0	32.0	13.0	31.0	8.0	18.0	142.0
Net Contribution	2.0	0.0	7.0	0.0	-4.0	-3.0	-3.0	20.2%

Notes: Tickers are as follows:- BKG(Banking); BV(Beverages); OFI(Other Financial Services); LF (Life Insurance); RET(Retail Stores); OSV(Other Service Company); and OTL(Other Telecommunications).

CRISIS PERIOD

	BKG	BV	OFI	LF	RET	OSV	OTL	From Others
BKG	52.6	8.2	8.4	6.2	10.2	1.6	12.8	47.0
BV	13.0	54.1	6.3	4.9	9.1	0.8	11.8	46.0
OFI	13.4	8.2	51.4	4.4	12.0	1.9	8.7	49.0
LF	8.3	3.8	9.0	69.0	3.0	1.1	5.8	31.0
RET	12.8	9.3	10.5	3.4	44.0	2.4	17.4	56.0
OSV	2.9	3.0	3.3	1.5	4.2	83.0	2.1	17.0
OTL	15.5	7.9	10.6	4.1	14.9	1.2	45.8	54.0
Contribution to others	66.0	40.0	48.0	24.0	54.0	9.0	59.0	300.0
Net Contribution	19.0	-6.0	-1.0	-7.0	-2.0	-8.0	5.0	43%

Notes: Tickers are as follows:- BKG(Banking); BV(Beverages); OFI(Other Financial Services); LF (Life Insurance); RET(Retail Stores); OSV(Other Service Company); and OTL(Other Telecommunications).

AFTER-CRISIS PERIOD

	BKG	BV	OFI	LF	RET	OSV	OTL	From Others
BKG	94.6	0.1	3.4	0.8	0.1	0.7	0.3	5.0
BV	0.1	86.5	2.1	0.5	5.3	2.0	3.4	13.0
OFI	6.2	0.9	86.8	0.3	2.6	2.6	0.6	13.0
LF	0.2	0.4	1.6	95.1	0.9	0.6	1.1	5.0
RET	0.3	5.1	7.1	1.9	81.7	0.3	3.6	18.0
OSV	0.8	1.2	1.9	0.5	0.2	94.0	1.5	6.0
OTL	0.4	1.4	2.7	0.9	4.1	1.6	88.8	11.0
Contribution to others	8.0	9.0	19.0	5.0	13.0	8.0	11.0	72.0
Net Contribution	3.0	-4.0	6.0	0.0	-5.0	2.0	0.0	10.4%

Notes: Tickers are as follows:- BKG(Banking); BV(Beverages); OFI(Other Financial Services); LF (Life Insurance); RET(Retail Stores); OSV(Other Service Company); and OTL(Other Telecommunications).

Table 95: CDS Spreads Volatility Sub-Sectoral Connectedness: UK Static Analysis

FULL-SAMPLE PERIOD

	BNK	BV	AU	BG	CB	CMG	CH	ET	OFI	LEI	MI	OL	OSV	OTL	UT	From Others
BNK	89.4	0.6	0.3	0.5	0.0	0.8	1.6	0.9	2.4	2.3	0.1	0.6	0.2	0.1	0.2	11.0
BV	0.5	60.7	5.7	4.2	2.0	4.1	5.4	4.2	0.9	0.4	0.2	6.9	2.8	1.9	0.2	39.0
AU	0.6	4.0	39.1	7.3	8.4	3.1	4.4	3.9	0.9	1.0	2.3	17.4	2.4	4.7	0.6	61.0
BG	1.4	4.0	13.4	45.9	2.7	4.3	6.4	3.8	1.4	0.6	0.8	7.7	4.5	2.8	0.2	54.0
CB	0.1	2.1	13.8	8.4	47.0	2.7	3.0	3.2	0.5	0.9	1.3	14.1	1.2	1.6	0.2	53.0
CMG	0.5	3.0	6.3	5.4	1.9	59.2	5.5	5.0	0.6	0.6	0.4	5.9	2.8	2.4	0.3	41.0
CH	0.8	5.2	7.6	9.1	1.7	8.7	42.8	5.9	0.7	0.8	0.5	10.6	2.8	2.6	0.2	57.0
ET	1.3	4.3	6.5	4.4	2.6	7.0	6.2	53.8	0.4	0.8	0.6	6.9	2.9	1.9	0.2	46.0
OFI	1.3	0.2	1.3	0.6	0.2	0.3	0.7	1.4	90.3	1.8	0.2	0.7	0.1	0.8	0.1	10.0
LEI	3.9	0.8	3.0	1.8	1.3	1.2	0.9	0.8	3.9	79.0	0.6	1.8	0.4	0.6	0.0	21.0
MI	0.1	0.6	7.1	1.6	1.9	0.9	0.8	0.9	0.1	0.3	75.5	5.9	2.2	1.9	0.2	25.0
OL	0.9	4.6	17.8	4.3	8.5	3.7	4.9	5.0	1.1	1.0	1.9	41.0	2.5	2.5	0.3	59.0
OSV	0.2	2.5	5.0	6.1	1.3	3.4	2.8	3.2	0.2	0.4	1.3	5.8	66.0	1.3	0.6	34.0
OTL	1.6	2.2	8.6	4.8	2.0	2.3	2.4	1.4	0.7	1.1	0.4	4.1	1.2	66.9	0.4	33.0
UT	0.1	0.9	1.4	0.6	1.0	0.4	0.5	0.5	0.0	0.0	0.3	1.5	1.7	4.3	86.7	13.0
Contribution to others	13.0	35.0	98.0	59.0	36.0	43.0	45.0	40.0	14.0	12.0	11.0	90.0	28.0	29.0	4.0	557.0
Net Contribution	2.0	-4.0	37.0	5.0	-17.0	2.0	-12.0	-6.0	4.0	-9.0	-14.0	31.0	-6.0	-4.0	-9.0	37.10%

Notes: Tickers are as follows:- BKG(Banking); BV(Beverages); AU (Automotive Manufacturer); BG(Building); CB(Cable); CMG(Conglomerate/Diversified Mfg); CH(Chemical); ET(Electronics); OFI(Other Financial Services); LEI (Leisure); MI(Metals/Mining); OL(Oil/Gas); OSV(Other Service Company); OTL(Other Telecommunications); and UT(Utility Other).

CRISIS PERIOD

	BNK	BV	AU	BG	CB	CMG	CH	ET	OFI	LEI	MI	OL	OSV	OTL	UT	From Others
BNK	47.4	4.3	4.1	5.6	1.8	2.9	4.4	3.5	9.0	0.9	2.7	6.7	2.1	4.2	0.3	53.0
BV	4.5	34.1	7.1	5.8	2.7	4.5	5.9	6.9	6.1	2.2	4.1	10.2	3.4	2.4	0.1	66.0
AU	3.6	7.6	27.1	10.5	5.1	5.1	6.5	4.8	6.2	2.1	5.3	11.1	1.6	2.8	0.5	73.0
BG	4.1	6.6	9.8	27.0	4.8	3.7	7.1	5.8	7.7	2.7	4.0	9.9	4.1	2.6	0.3	73.0
CB	2.7	3.2	9.3	9.2	35.3	5.7	5.9	6.2	6.0	2.4	4.0	6.7	1.6	1.7	0.1	65.0
CMG	2.9	3.5	7.5	3.8	2.8	51.0	3.3	3.7	4.3	3.3	4.3	6.0	2.0	1.4	0.2	49.0
CH	5.2	5.5	8.2	10.0	4.2	5.1	29.0	4.6	6.5	2.7	5.9	8.9	1.8	2.3	0.2	71.0
ET	4.0	6.6	7.7	6.3	3.2	4.6	3.6	40.6	5.6	2.0	4.3	7.0	2.5	1.9	0.2	59.0
OFI	9.2	4.8	5.6	7.8	3.1	4.0	4.9	5.0	39.6	2.0	3.3	6.1	1.8	2.7	0.2	60.0
LEI	2.4	3.2	5.7	5.7	4.7	4.4	4.3	3.3	6.1	49.3	3.0	4.8	0.8	2.2	0.1	51.0
MI	3.2	6.5	5.8	7.7	1.4	1.7	3.9	3.6	4.8	1.7	44.9	5.7	7.2	1.5	0.5	55.0
OL	5.5	9.6	9.8	6.7	4.0	3.8	5.3	5.2	6.1	2.6	5.2	31.8	2.4	2.1	0.1	68.0
OSV	1.7	4.2	3.3	8.6	1.6	2.3	1.9	3.2	3.4	1.1	1.6	4.9	60.9	0.8	0.4	39.0
OTL	5.0	1.7	5.2	3.3	1.5	1.3	2.3	1.6	3.3	1.7	2.4	2.8	0.8	66.4	0.7	34.0
UT	0.7	1.8	1.8	0.9	2.8	0.8	0.6	0.6	1.5	0.1	0.6	2.9	2.6	12.1	70.1	30.0
Contribution to others	55.0	69.0	91.0	92.0	44.0	50.0	60.0	58.0	77.0	28.0	51.0	94.0	35.0	41.0	4.0	846.0
Net Contribution	2.0	3.0	18.0	19.0	-21.0	1.0	-11.0	-1.0	17.0	-23.0	-4.0	26.0	-4.0	7.0	-26.0	56.4%

Notes: Tickers are as follows:- BKG(Banking); BV(Beverages); AU (Automotive Manufacturer); BG(Building); CB(Cable); CMG(Conglomerate/Diversified Mfg); CH(Chemical); ET(Electronics); OFI(Other Financial Services); LEI (Leisure); MI(Metals/Mining); OL(Oil/Gas); OSV(Other Service Company); OTL(Other Telecommunications); and UT(Utility Other).

AFTER-CRISIS PERIOD

	BNK	BV	AU	BG	CB	CMG	CH	ET	OFI	LEI	MI	OL	OSV	OTL	UT	From Others
BNK	90.6	0.1	0.5	0.1	0.1	0.6	1.7	0.2	1.7	2.4	0.7	0.1	0.4	0.4	0.4	9.0
BV	0.1	74.0	5.7	2.1	2.3	1.9	3.2	1.1	1.0	0.2	0.3	5.1	1.8	0.8	0.4	26.0
AU	0.3	2.6	37.9	4.5	9.4	1.9	3.3	3.4	0.9	0.8	2.1	19.3	5.7	7.5	0.6	62.0
BG	1.2	1.5	14.0	57.8	3.0	2.9	2.9	1.2	2.0	0.1	0.9	4.4	3.4	4.6	0.1	42.0
CB	0.1	1.8	14.1	7.2	43.0	2.8	3.2	3.0	0.3	0.7	1.1	17.3	3.1	2.2	0.3	57.0
CMG	0.3	2.1	5.4	6.0	3.2	56.5	5.7	5.5	1.6	0.2	0.7	5.2	2.4	4.4	0.9	44.0
CH	0.3	3.6	7.3	4.5	1.9	9.0	48.9	6.5	1.8	0.4	0.4	10.1	2.9	2.2	0.1	51.0
ET	1.3	1.6	5.3	1.5	3.5	7.1	9.8	57.7	0.6	0.8	0.6	6.1	2.3	1.8	0.1	42.0
OFI	0.5	0.2	1.6	0.5	0.1	0.2	2.5	2.3	88.7	1.8	0.0	0.7	0.1	0.6	0.3	11.0
LEI	4.5	0.3	2.7	1.5	0.9	0.7	0.5	0.6	3.9	81.9	0.5	1.1	0.7	0.2	0.1	18.0
MI	0.1	0.3	7.1	1.1	1.9	1.8	0.8	1.0	0.1	0.2	70.1	6.5	5.0	3.7	0.3	30.0
OL	0.3	2.5	21.0	2.1	11.1	2.9	3.8	4.3	1.1	0.7	1.9	41.4	4.1	2.6	0.4	59.0
OSV	0.1	0.9	9.2	2.7	3.1	3.9	3.1	2.2	0.3	0.4	4.6	7.8	57.9	2.6	1.3	42.0
OTL	2.1	1.8	14.9	7.3	2.5	3.5	1.8	1.3	1.0	0.7	0.8	4.9	3.1	54.2	0.2	46.0
UT	0.3	0.7	1.2	0.1	0.5	0.6	0.2	0.3	0.1	0.0	0.5	0.8	1.0	0.6	93.0	7.0
Contribution to others	12.0	20.0	110.0	41.0	44.0	40.0	42.0	33.0	16.0	10.0	15.0	89.0	36.0	34.0	5.0	547.0
Net Contribution	3.0	-6.0	48.0	-1.0	-13.0	-4.0	-9.0	-9.0	5.0	-8.0	-15.0	30.0	-6.0	-12.0	-2.0	36.40%

Notes: Tickers are as follows:- BKG(Banking); BV(Beverages); AU (Automotive Manufacturer); BG(Building); CB(Cable); CMG(Conglomerate/Diversified Mfg); CH(Chemical); ET(Electronics); OFI(Other Financial Services); LEI (Leisure); MI(Metals/Mining); OL(Oil/Gas); OSV(Other Service Company); OTL(Other Telecommunications); and UT(Utility Other).

Table 96: CDS Spreads Volatility Sub-Sectoral Connectedness: EU Static Analysis

FULL-SAMPLE PERIOD

	BNK	CH	AU	ET	IND	MI	RL	RET	OSV	OTL	OTR	UT	From Others
BNK	66.8	0.4	0.6	3.0	0.4	10.9	3.3	0.2	0.2	2.4	5.9	6.1	33.0
CH	1.0	80.0	0.7	1.5	2.0	3.9	0.5	1.9	1.9	1.6	1.2	3.9	20.0
AU	1.3	4.1	78.8	1.1	0.1	2.7	0.6	0.9	0.3	9.0	0.1	0.9	21.0
ET	2.4	1.5	0.9	72.0	1.7	5.8	2.6	0.7	3.6	1.9	3.5	3.3	28.0
IND	0.5	2.1	0.2	2.1	76.8	1.0	0.5	4.0	5.0	5.3	1.8	0.6	23.0
MI	8.3	1.4	2.1	4.6	0.8	59.8	4.5	3.7	2.3	1.9	4.3	6.4	40.0
RL	2.2	0.5	0.5	2.3	0.8	5.7	76.9	1.0	3.2	0.8	2.7	3.5	23.0
RET	1.2	3.0	0.4	0.7	3.8	4.8	1.1	63.5	20.4	0.1	0.5	0.6	37.0
OSV	0.3	2.0	0.1	2.0	2.2	2.2	1.6	13.6	74.3	0.3	0.2	1.2	26.0
OTL	2.9	3.0	4.3	1.1	0.8	2.0	0.8	0.1	0.6	81.0	1.5	1.8	19.0
OTR	9.0	0.2	0.9	2.9	1.1	7.8	2.8	0.4	0.6	0.8	72.5	1.1	28.0
UT	7.8	7.9	1.3	3.2	0.6	7.7	3.0	0.3	1.8	2.9	2.8	60.7	39.0
Contribution to others	37.0	26.0	12.0	25.0	14.0	54.0	21.0	27.0	40.0	27.0	25.0	29.0	337.0
Net Contribution	4.0	6.0	-9.0	-3.0	-9.0	14.0	-2.0	-10.0	14.0	8.0	-3.0	-10.0	28.10%

Notes: Tickers are as follows:- BKG(Banking); CH(Chemical); AU (Automotive Manufacturer); ET(Electronics); IND(Industrials); OFI(Other Financial Services); MI(Metals/Mining); RL(Railroads); RET(Retail Stores); OSV(Other Service Company); OTL(Other Telecommunications); OTR(Other Transportation); and UT(Utility Other).

CRISIS PERIOD

	BNK	CH	AU	ET	IND	MI	RL	RET	OSV	OTL	OTR	UT	From Others
BNK	38.3	1.2	9.3	3.9	1.6	13.6	3.4	1.0	3.8	8.7	5.7	9.5	62.0
CH	3.3	84.3	0.3	1.6	3.2	1.1	0.3	0.9	2.0	1.6	0.3	1.1	16.0
AU	10.9	0.1	42.3	2.2	0.4	16.2	2.7	0.5	2.7	4.2	9.1	8.5	58.0
ET	7.6	2.1	4.7	58.5	0.4	4.1	2.1	0.1	5.5	7.3	1.6	5.9	41.0
IND	2.8	1.5	0.8	0.8	87.7	0.1	1.7	0.8	1.9	0.5	0.6	0.8	12.0
MI	14.5	0.8	17.3	1.9	0.2	40.4	3.2	0.3	1.1	4.8	7.9	7.7	60.0
RL	3.7	0.7	3.9	2.1	0.1	5.7	71.8	0.1	1.7	2.0	2.9	5.3	28.0
RET	11.9	1.9	0.6	0.7	7.4	0.9	0.8	58.3	12.8	3.3	1.1	0.2	42.0
OSV	6.4	3.2	4.1	7.9	2.4	1.6	1.5	5.1	57.2	3.7	1.6	5.4	43.0
OTL	11.2	1.2	4.3	4.7	1.6	5.6	2.6	0.3	2.4	58.1	3.3	4.7	42.0
OTR	13.9	1.7	10.0	1.7	1.7	13.3	3.4	0.9	1.3	6.7	41.6	3.8	58.0
UT	15.0	1.6	8.9	3.7	0.7	7.1	3.7	1.0	6.2	8.7	5.6	37.8	62.0
Contribution to others	101.0	16.0	64.0	31.0	20.0	69.0	25.0	11.0	41.0	51.0	40.0	53.0	524.0
Net Contribution	39.0	0.0	6.0	-10.0	8.0	9.0	-3.0	-31.0	-2.0	9.0	-18.0	-9.0	43.6%

Notes: Tickers are as follows:- BKG(Banking); CH(Chemical); AU (Automotive Manufacturer); ET(Electronics); IND(Industrials); OFI(Other Financial Services); MI(Metals/Mining); RL(Railroads); RET(Retail Stores); OSV(Other Service Company); OTL(Other Telecommunications); OTR(Other Transportation); and UT(Utility Other).

AFTER-CRISIS PERIOD

	BNK	CH	AU	ET	IND	MI	RL	RET	OSV	OTL	OTR	UT	From Others
BNK	89.7	0.1	0.2	0.6	0.8	2.0	0.5	0.1	1.0	0.6	4.1	0.3	10.0
CH	0.3	70.1	0.4	1.4	1.2	8.2	2.3	1.4	1.4	1.5	1.2	10.6	30.0
AU	0.3	4.3	79.8	0.8	0.0	1.7	0.3	0.7	0.1	11.2	0.3	0.5	20.0
ET	0.2	1.4	0.5	74.1	2.2	7.3	3.8	0.8	3.4	0.3	4.4	1.6	26.0
IND	0.8	1.6	0.8	2.8	69.6	2.8	1.7	4.1	4.9	6.7	2.5	1.6	30.0
MI	0.7	3.9	0.9	7.3	1.9	63.9	4.0	9.2	4.7	0.4	1.0	2.1	36.0
RL	0.2	1.6	0.3	3.0	4.0	5.2	67.7	4.2	10.3	0.2	2.4	1.0	32.0
RET	0.4	2.6	0.2	0.6	3.2	9.8	4.8	58.3	18.3	0.1	0.3	1.4	42.0
OSV	0.3	1.5	0.2	1.2	2.0	3.9	4.6	13.3	70.6	0.4	0.5	1.6	29.0
OTL	0.1	4.0	5.3	0.2	0.4	0.7	0.2	0.1	0.7	86.3	0.8	1.5	14.0
OTR	2.0	0.3	0.3	3.6	2.2	2.0	1.8	0.3	0.3	0.6	84.9	1.7	15.0
UT	0.2	18.8	1.1	1.5	0.8	3.5	0.7	0.5	2.3	0.0	0.8	69.8	30.0
Contribution to others	5.0	40.0	10.0	23.0	19.0	47.0	25.0	35.0	47.0	22.0	18.0	24.0	315.0
Net Contribution	-5.0	10.0	-10.0	-3.0	-11.0	11.0	-7.0	-7.0	18.0	8.0	3.0	-6.0	26.30%

Notes: Tickers are as follows:- BKG(Banking); CH(Chemical); AU (Automotive Manufacturer); ET(Electronics); IND(Industrials); OFI(Other Financial Services); MI(Metals/Mining); RL(Railroads); RET(Retail Stores); OSV(Other Service Company); OTL(Other Telecommunications); OTR(Other Transportation); and UT(Utility Other).

Table 97: CDS Spreads Volatility Sub-Sectoral Connectedness: Japan Static Analysis

C.3 CDS Spreads Volatility Connectedness: Across Regions Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	90.9	0.6	4.3	4.2	9.0
EU	0.6	97.3	2.0	0.1	3.0
UK	3.1	8.4	85.8	2.7	14.0
JP	2.8	0.1	1.7	95.4	5.0
Contribution to others	7.0	9.0	8.0	7.0	31.0
Net Contribution	-2.0	6.0	-6.0	2.0	7.60%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	62.1	12.6	19.8	5.4	38.0
EU	5.1	72.4	17.6	4.9	28.0
UK	11.0	21.0	59.5	8.6	41.0
JP	4.3	3.6	6.3	85.8	14.0
Contribution to others	20.0	37.0	44.0	19.0	120.0
Net Contribution	-18.0	9.0	3.0	5.0	30.1%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	95.0	0.2	2.3	2.6	5.0
EU	0.4	96.3	1.8	1.4	4.0
UK	1.8	8.0	88.8	1.4	11.0
JP	1.5	1.1	1.3	96.1	4.0
Contribution to others	4.0	9.0	5.0	5.0	24.0
Net Contribution	-1.0	5.0	-6.0	1.0	5.90%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 98: CDS Spreads Volatility Regional Connectedness: Bank Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	90.7	1.0	4.2	4.2	9.0
EU	0.6	96.9	2.2	0.3	3.0
UK	3.0	8.1	86.4	2.4	14.0
JP	2.8	0.2	1.4	95.6	4.0
Contribution to others	6.0	9.0	8.0	7.0	30.0
Net Contribution	-3.0	6.0	-6.0	3.0	7.60%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	Others
US	**61.0**	**12.1**	**21.6**	**5.3**	**39.0**
EU	**3.7**	**75.7**	**16.2**	**4.5**	**24.0**
UK	**12.0**	**16.2**	**62.7**	**9.1**	**37.0**
JP	**3.8**	**7.0**	**6.3**	**83.0**	**17.0**
Contribution to others	**19.0**	**35.0**	**44.0**	**19.0**	**118.0**
Net Contribution	**-20.0**	**11.0**	**7.0**	**2.0**	**0.3**

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	Others
US	96.0	0.2	1.4	2.4	4.0
EU	0.4	96.3	1.9	1.4	4.0
UK	1.7	8.0	89.2	1.2	11.0
JP	1.3	1.1	1.0	96.6	3.0
Contribution to others	3.0	9.0	4.0	5.0	22.0
Net Contribution	-1.0	5.0	-7.0	2.0	5.50%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 99: CDS Spreads Volatility Regional Connectedness: Banking Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	From Others
US	96.6	1.0	2.4	3.0
EU	0.6	88.9	10.5	11.0
UK	1.5	9.4	89.2	11.0
Contribution to others	2.0	10.0	13.0	25.0
Net Contribution	-1.0	-1.0	2.0	8.40%

Notes: Tickers are as follows:- US(United States); EU(Europe); and UK(United Kingdom).

CRISIS PERIOD

	US	EU	UK	From Others
US	76.2	8.9	14.9	24.0
EU	3.1	74.1	22.8	26.0
UK	5.8	17.8	76.4	24.0
Contribution to others	9.0	27.0	38.0	73.0
Net Contribution	-15.0	1.0	14.0	24.40%

Notes: Tickers are as follows:- US(United States); EU(Europe); and UK(United Kingdom).

AFTER-CRISIS PERIOD

	US	EU	UK	From Others
US	99.5	0.1	0.4	1.0
EU	0.2	98.2	1.6	2.0
UK	0.3	2.2	97.4	3.0
Contribution to others	1.0	2.0	2.0	5.0
Net Contribution	0.0	0.0	-1.0	1.60%

Notes: Tickers are as follows:- US(United States); EU(Europe); and UK(United Kingdom).

Table 100: CDS Spreads Volatility Regional Connectedness: Beverage/Bottling Static Analysis

FULL-SAMPLE PERIOD

	US	EU	JP	From Others
US	98.2	0.9	0.8	2.0
EU	0.8	98.5	0.8	2.0
JP	1.3	1.1	97.6	2.0
Contribution to others	2.0	2.0	2.0	6.0
Net Contribution	0.0	0.0	0.0	1.90%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

CRISIS PERIOD

	US	EU	JP	From Others
US	89.0	9.8	1.2	11.0
EU	15.5	81.2	3.2	19.0
JP	7.0	0.3	92.7	7.0
Contribution to others	23.0	10.0	4.0	37.0
Net Contribution	12.0	-9.0	-3.0	12.3%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	JP	From Others
US	98.6	0.8	0.6	1.0
EU	0.0	98.4	1.6	2.0
JP	0.4	4.3	95.3	5.0
Contribution to others	0.0	5.0	2.0	8.0
Net Contribution	-1.0	3.0	-3.0	2.60%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

Table 101: CDS Spreads Volatility Regional Connectedness: Chemicals Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	From Others
US	94.6	2.0	3.5	5.0
EU	2.1	81.8	16.1	18.0
UK	2.1	12.7	85.2	15.0
Contribution to others	4.0	15.0	20.0	38.0
Net Contribution	-1.0	-3.0	5.0	12.80%

Notes: Tickers are as follows:- US(United States); EU(Europe); and UK(United Kingdom).

CRISIS PERIOD

	US	EU	UK	From Others
US	84.5	5.8	9.7	15.0
EU	5.8	61.4	32.8	39.0
UK	7.2	33.6	59.2	41.0
Contribution to others	13.0	39.0	42.0	95.0
Net Contribution	-2.0	0.0	1.0	31.60%

Notes: Tickers are as follows:- US(United States); EU(Europe); and UK(United Kingdom).

AFTER-CRISIS PERIOD

	US	EU	UK	From Others
US	98.7	0.6	0.7	1.0
EU	0.2	95.4	4.4	5.0
UK	0.1	2.4	97.4	3.0
Contribution to others	0.0	3.0	5.0	8.0
Net Contribution	-1.0	-2.0	2.0	2.80%

Notes: Tickers are as follows:- US(United States); EU(Europe); and UK(United Kingdom).

Table 102: CDS Spreads Volatility Regional Connectedness: Consumer Goods Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	98.7	1.0	0.1	0.1	1.0
EU	0.3	95.6	2.1	2.0	4.0
UK	0.1	0.4	99.2	0.3	1.0
JP	0	0.1	1.3	98.6	1.0
Contribution to others	0.0	2.0	3.0	2.0	8.0
Net Contribution	-1.0	-2.0	2.0	1.0	2.00%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	89.0	8.4	2.2	0.3	11.0
EU	5.0	89.1	3.8	2.1	11.0
UK	0.1	1.5	94.5	3.8	6.0
JP	0.1	0.1	7.2	92.6	7.0
Contribution to others	5.0	10.0	13.0	6.0	35.0
Net Contribution	-6.0	-1.0	7.0	-1.0	8.70%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	99.9	0.0	0.0	0.1	0.0
EU	0.0	96.5	1.4	2.0	3.0
UK	0.1	0.1	99.5	0.3	0.0
JP	0.1	0.1	0.1	99.8	0.0
Contribution to others	0.0	0.0	2.0	2.0	4.0
Net Contribution	0.0	-3.0	2.0	2.0	1.10%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 103: CDS Spreads Volatility Regional Connectedness: Electric Power Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	95.8	0.1	3.2	0.9	4.0
EU	0.1	99.4	0.5	0.0	1.0
UK	4.1	0.1	92.8	3.0	7.0
JP	0.6	0.3	5.8	93.3	7.0
Contribution to others	5.0	0.0	10.0	4.0	19.0
Net Contribution	1.0	-1.0	3.0	-3.0	4.70%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	60.3	21.9	9.1	8.7	40.0
EU	12.9	60.0	18.1	9.0	40.0
UK	6.5	21.5	61.6	10.4	38.0
JP	3.4	7.6	12.7	76.2	24.0
Contribution to others	23.0	51.0	40.0	28.0	142.0
Net Contribution	-17.0	11.0	2.0	4.0	35.5%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	97.1	0.1	2.7	0.1	3.0
EU	0.0	99.3	0.4	0.2	1.0
UK	4.1	0.2	95.5	0.2	4.0
JP	0.2	0.3	1.9	97.6	2.0
Contribution to others	4.0	1.0	5.0	0.0	10.0
Net Contribution	1.0	0.0	1.0	-2.0	2.60%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 104: CDS Spreads Volatility Regional Connectedness: Manufacturing Static Analysis

FULL-SAMPLE PERIOD

	US	EU	JP	From Others
US	98.5	0.8	0.7	2.0
EU	0.4	97.5	2.0	2.0
	1.2	0.2	98.5	1.0
Contribution to others	2.0	1.0	3.0	5.0
Net Contribution	0.0	-1.0	2.0	1.80%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

CRISIS PERIOD

	US	EU	JP	From Others
US	88.5	7.7	3.9	12.0
EU	8.6	86.2	5.2	14.0
JP	7.3	4.4	88.3	12.0
Contribution to others	16.0	12.0	9.0	37.0
Net Contribution	4.0	-2.0	-3.0	12.3%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	JP	From Others
US	98.0	0.4	1.6	2.0
EU	0.1	95.3	4.6	5.0
AS	2.0	0.8	97.2	3.0
Contribution to others	2.0	1.0	6.0	10.0
Net Contribution	0.0	-4.0	3.0	3.20%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

Table 105: CDS Spreads Volatility Regional Connectedness: Metals & Mining Static Analysis

FULL-SAMPLE PERIOD

	US	EU	Uk	JP	From Others
US	99.2	0.3	0.3	0.1	1.0
EU	0.0	92.9	6.8	0.3	7.0
UK	0.1	8.4	88.9	2.6	11.0
JP	0.3	0.5	5.6	93.7	6.0
Contribution to others	0.0	9.0	13.0	3.0	25.0
Net Contribution	-1.0	2.0	2.0	-3.0	6.30%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	96.1	2.2	1.5	0.3	4.0
EU	1.2	82.1	12.2	4.4	18.0
UK	1.7	16.7	73.2	8.4	27.0
JP	0.3	7.2	14.7	77.8	22.0
Contribution to others	3.0	26.0	28.0	13.0	71.0
Net Contribution	-1.0	8.0	1.0	-9.0	17.70%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	99.7	0.2	0	0.1	0.0
EU	0	91.5	8.2	0.3	9.0
UK	0.1	8.9	90.4	0.6	10.0
JP	0.5	0.4	1.9	97.2	3.0
Contribution to others	1.0	10.0	10.0	1.0	21.0
Net Contribution	1.0	1.0	0.0	-2.0	5.30%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 106: CDS Spreads Volatility Regional Connectedness: Financials Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	From Others
US	99.6	0.2	0.2	0.0
EU	0.1	94.5	5.4	5.0
UK	0.2	7.7	92.1	8.0
Contribution to others	0.0	8.0	6.0	14.0
Net Contribution	0.0	3.0	-2.0	4.60%

Notes: Tickers are as follows:- US(United States); EU(Europe); and UK(United Kingdom).

CRISIS PERIOD

	US	EU	UK	From Others
US	97.7	1.2	1.1	2.0
EU	0.8	88.8	10.4	11.0
UK	1.6	14.0	84.4	16.0
Contribution to others	2.0	15.0	12.0	29.0
Net Contribution	0.0	4.0	-4.0	9.70%

Notes: Tickers are as follows:- US(United States); EU(Europe); and UK(United Kingdom).

AFTER-CRISIS PERIOD

	US	EU	UK	From Others
US	99.9	0.0	0.1	0.0
EU	0.1	91.9	7.9	8.0
UK	0.2	9.4	90.4	10.0
Contribution to others	0.0	9.0	8.0	18.0
Net Contribution	0.0	1.0	-2.0	5.90%

Notes: Tickers are as follows:- US(United States); EU(Europe); and UK(United Kingdom).

Table 107: CDS Spreads Volatility Regional Connectedness: Other Financials Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	98.4	0.3	0.2	1.1	2.0
EU	0.6	92.2	7.2	0.1	8.0
UK	0.4	5.8	93.3	0.4	7.0
JP	0.0	0.1	0.2	99.7	0.0
Contribution to others	1.0	6.0	8.0	2.0	16.0
Net Contribution	-1.0	-2.0	1.0	2.0	4.10%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	82.0	5.6	9.2	3.2	18.0
EU	10.5	82.9	5.0	1.7	17.0
UK	9.2	4.8	75.1	10.9	25.0
JP	3.0	1.4	14.0	81.6	18.0
Contribution to others	23.0	12.0	28.0	16.0	78.0
Net Contribution	5.0	-5.0	3.0	-2.0	19.6%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	98.6	0.8	0.0	0.6	1.0
EU	0.6	88.5	10.8	0.2	12.0
UK	0.5	9.6	88.5	1.4	12.0
JP	0.1	0.4	0.1	99.3	1.0
Contribution to others	1.0	11.0	11.0	2.0	25.0
Net Contribution	0.0	-1.0	-1.0	1.0	6.30%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 108: CDS Spreads Volatility Regional Connectedness: Consumer Services Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	96.9	0.0	0.2	2.9	3.0
EU	0.0	97.2	1.3	1.5	3.0
UK	1.5	1.6	96.9	0.0	3.0
JP	0.2	0.8	0.2	98.8	1.0
Contribution to others	2.0	2.0	2.0	4.0	10.0
Net Contribution	-1.0	-1.0	-1.0	3.0	2.50%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	94.5	0.7	2.0	2.7	5.0
EU	4.5	79.8	0.6	15.1	20.0
UK	3.8	0.9	94.2	1.1	6.0
JP	6.7	11.7	0.3	81.3	19.0
Contribution to others	15.0	13.0	3.0	19.0	50.0
Net Contribution	10.0	-7.0	-3.0	0.0	0.1

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	Others
US	97.0	0.1	0.7	2.3	3.0
EU	0.2	96.5	2.1	1.2	3.0
UK	2.9	3.3	93.7	0.1	6.0
JP	0.4	0.2	0.2	99.3	1.0
Contribution to others	4.0	4.0	3.0	4.0	14.0
Net Contribution	1.0	1.0	-3.0	3.0	3.40%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 109: CDS Spreads Volatility Regional Connectedness: Other Services Static Analysis

FULL-SAMPLE PERIOD

	US	UK	JP	From Others
US	85.7	12.3	2.0	14.0
UK	18.2	81.7	0.1	18.0
JP	0.2	0.1	99.7	0.0
Contribution to others	18.0	12.0	2.0	33.0
Net Contribution	4.0	-6.0	2.0	11.00%

Notes: Tickers are as follows:- US(United States); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	UK	JP	From Others
US	95.7	1.5	2.8	4.0
UK	4.1	95.4	0.5	5.0
JP	0.4	0.4	99.2	1.0
Contribution to others	4.0	2.0	3.0	10.0
Net Contribution	0.0	-3.0	2.0	3.20%

Notes: Tickers are as follows:- US(United States); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	UK	JP	From Others
US	72.6	25.9	1.5	27.0
UK	32.7	66.7	0.5	33.0
JP	0.4	0.2	99.4	1.0
Contribution to others	33.0	26.0	2.0	61.0
Net Contribution	6.0	-7.0	1.0	20.40%

Notes: Tickers are as follows:- US(United States); UK(United Kingdom); and JP(Japan).

Table 110: CDS Spreads Volatility Regional Connectedness: Other Retail Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	95.5	2.2	2.1	0.2	5.0
EU	0.3	97.4	2.3	0.0	3.0
UK	1.3	2.5	95.5	0.7	5.0
JP	0.3	0.1	1.1	98.5	1.0
Contribution to others	2.0	5.0	5.0	1.0	13.0
Net Contribution	-3.0	2.0	0.0	0.0	3.30%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	84.6	2.8	6.5	6.0	15.0
EU	4.8	75.3	8.2	11.7	25.0
UK	5.6	6.7	80.5	7.3	20.0
JP	5.1	0.5	6.0	88.5	11.0
Contribution to others	15.0	10.0	21.0	25.0	71.0
Net Contribution	0.0	-15.0	1.0	14.0	17.8%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	97.5	1.0	1.0	0.4	2.0
EU	0.7	95.6	1.0	2.8	4.0
UK	0.4	1.1	98.3	0.1	2.0
AS	0.4	0.2	0.5	98.9	1.0
Contribution to others	2.0	2.0	3.0	3.0	10.0
Net Contribution	0.0	-2.0	1.0	2.0	2.40%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 111: CDS Spreads Volatility Regional Connectedness: Telecommunications Static Analysis

FULL-SAMPLE PERIOD

	US	UK	JP	From Others
US	97.60	2.00	0.40	2.00
UK	1.2	98.1	0.7	2.0
JP	0.5	1.1	98.4	2.0
Contribution to others	2.00	3.00	1.00	6.0
Net Contribution	0.0	1.0	-1.0	2.00%

Notes: Tickers are as follows:- US(United States); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	UK	JP	From Others
US	88.2	4.9	7.0	12.0
UK	4.1	87.9	8.1	12.0
JP	4.5	5.6	89.9	10.0
Contribution to others	9.0	11.0	15.0	34.0
Net Contribution	-3.0	-1.0	5.0	11.4%

Notes: Tickers are as follows:- US(United States); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	UK	JP	From Others
US	98.5	1.1	0.4	2.0
UK	0.5	99.4	0.1	1.0
JP	0.3	0.5	99.1	1.0
Contribution to others	1.0	2.0	1.0	3.0
Net Contribution	-1.0	1.0	0.0	1.00%

Notes: Tickers are as follows:- US(United States); UK(United Kingdom); and JP(Japan).

Table 112: CDS Spreads Volatility Regional Connectedness: Other Telecommunications Static Analysis

FULL-SAMPLE PERIOD

	US	EU	JP	From Others
US	99.5	0.4	0.1	1.0
EU	0.1	98.8	1.1	1.0
JP	0.3	0.9	98.8	1.0
Contribution to others	0.0	1.0	1.0	3.0
Net Contribution	-1.0	0.0	0.0	0.90%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

CRISIS PERIOD

	US	EU	JP	From Others
US	99.0	0.9	0.1	1.0
EU	0.2	98.5	1.4	2.0
JP	0.6	1.6	97.8	2.0
Contribution to others	1.0	2.0	1.0	5.0
Net Contribution	0.0	0.0	-1.0	1.60%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	JP	From Others
US	99.6	0.3	0.1	0.0
EU	0.5	98.0	1.5	2.0
JP	0.2	0.7	99.1	1.0
Contribution to others	1.0	1.0	2.0	3.0
Net Contribution	1.0	-1.0	1.0	1.10%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

Table 113: CDS Spreads Volatility Regional Connectedness: Transportation Static Analysis

FULL-SAMPLE PERIOD

	US	EU	JP	From Others
US	100	0.0	0.0	0.0
EU	0.0	97.7	2.2	2.0
JP	0.0	0.0	100	0.0
Contribution to others	0.0	0.0	2.0	2.0
Net Contribution	0.0	-2.0	2.0	0.80%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

CRISIS PERIOD

	US	EU	JP	From Others
US	95.9	2.2	1.9	4.0
EU	4.2	92.7	3.1	7.0
JP	5.2	0.1	94.7	5.0
Contribution to others	9.0	2.0	5.0	17.0
Net Contribution	5.0	-5.0	0.0	5.50%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	JP	From Others
US	100	0.0	0.0	0.0
EU	0.0	98.7	1.3	1.0
JP	0.1	0.1	99.8	0.0
Contribution to others	0.0	0.0	1.0	2.0
Net Contribution	0.0	-1.0	1.0	0.50%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

Table 114: CDS Spreads Volatility Regional Connectedness: Utility Static Analysis

C.4 Equity Volatility Sectoral Connectedness: Within Regions Static Analysis

FULL-SAMPLE PERIOD

	OG	BM	IN	CG	HL	CS	TL	UT	FN	TC	From Others
OG	18.8	11.6	9.0	9.4	9.4	8.6	8.8	8.2	8.4	7.7	81.0
BM	12.1	16.1	11.7	9.4	7.6	9.5	8.2	6.6	10.0	8.8	84.0
IN	8.9	10.6	14.6	10.7	8.4	11.5	8.3	5.6	11.7	9.6	85.0
CG	9.0	8.3	10.4	15.4	10.7	11.4	9.2	8.2	8.7	8.6	85.0
HL	9.0	7.6	9.5	12.0	18.3	10.9	8.3	7.4	8.0	8.9	82.0
CS	8.6	8.8	11.2	11.5	9.5	14.8	8.9	6.5	10.6	9.5	85.0
TL	9.6	8.1	8.3	10.7	8.3	9.7	18.4	9.6	8.9	8.3	82.0
UT	11.2	8.4	8.1	11.2	10.2	8.8	10.2	18.5	7.0	6.4	81.0
FN	7.8	9.5	12.4	8.7	6.8	11.6	8.1	4.6	21.7	8.8	78.0
TC	9.0	9.2	11.3	10.6	9.3	11.2	8.5	6.0	10.6	14.4	86.0
Contribution to others	85.0	82.0	92.0	94.0	80.0	93.0	79.0	63.0	84.0	76.0	829.0
Net Contribution	4.0	-2.0	7.0	9.0	-2.0	8.0	-3.0	-18.0	6.0	-10.0	82.9%

Notes: Tickers are as follows:- OG(Oil&Gas); BM(Basic Materials); IN(Industrial); CG(Consumer Goods); HL(Healthcare); CS(Consumer Services); TL(Telecommunications); UT(Utility); FN(Financials) and TC(Technology).

CRISIS PERIOD

	OG	BM	IN	CG	HL	CS	TL	UT	FN	TC	From Others
OG	17.2	10.5	8.5	9.5	11.0	7.9	9.7	9.9	7.9	7.8	83.0
BM	13.4	14.4	10.5	9.4	9.2	8.3	8.9	8.4	8.9	8.5	86.0
IN	10.2	9.3	13.4	10.6	9.7	10.4	9.1	7.0	11.0	9.2	87.0
CG	10.6	7.6	9.6	14.3	11.9	10.1	10.1	9.5	8.0	8.3	86.0
HL	10.6	7.6	9.0	11.6	16.5	9.5	10.1	8.9	7.7	8.5	83.0
CS	9.9	7.7	10.3	11.6	10.6	13.2	10.0	8.0	9.9	8.9	87.0
TL	11.1	7.4	7.8	10.4	10.0	8.8	17.4	10.3	8.2	8.5	83.0
UT	12.8	8.3	8.0	11.0	11.8	8.3	11.0	15.3	6.6	7.0	85.0
FN	8.7	8.3	11.8	8.5	7.8	10.8	8.8	5.2	21.6	8.6	78.0
TC	10.3	8.3	10.4	10.6	10.2	10.0	9.7	7.4	10.0	13.2	87.0
Contribution to others	97.0	75.0	86.0	93.0	92.0	84.0	87.0	75.0	78.0	75.0	843.0
Net Contribution	14.0	-11.0	-1.0	7.0	9.0	-3.0	4.0	-10.0	0.0	-12.0	84.3%

Notes: Tickers are as follows:- OG(Oil&Gas); BM(Basic Materials); IN(Industrial); CG(Consumer Goods); HL(Healthcare); CS(Consumer Services); TL(Telecommunications); UT(Utility); FN(Financials) and TC(Technology).

AFTER-CRISIS PERIOD

	OG	BM	IN	CG	HL	CS	TL	UT	FN	TC	From Others
OG	33.5	13.5	8.2	8.5	6.7	8.8	4.7	2.3	7.7	6.0	66.0
BM	10.5	21.9	13.2	10.2	7.9	10.9	4.5	1.3	11.0	8.7	78.0
IN	4.9	10.7	19.1	12.3	8.8	14.3	4.6	1.3	13.2	10.8	81.0
CG	3.9	7.3	11.7	21.6	9.7	15.2	5.8	3.8	11.7	9.2	78.0
HL	4.2	6.7	10.6	12.2	24.6	15.6	3.2	2.4	10.6	9.8	75.0
CS	4.0	7.3	12.4	12.5	10.7	23.5	4.1	1.4	11.9	12.1	76.0
TL	4.1	5.1	7.0	13.2	6.6	10.3	34.4	5.8	6.9	6.7	66.0
UT	4.1	2.5	3.7	12.0	6.4	5.3	3.7	57.4	2.7	2.1	43.0
FN	4.8	9.1	13.5	12.5	9.1	14.1	4.1	1.7	20.6	10.5	79.0
TC	5.1	7.9	11.9	11.1	9.9	14.9	3.6	1.5	11.3	22.7	77.0
Contribution to others	45.0	70.0	92.0	105.0	76.0	109.0	38.0	22.0	87.0	76.0	721.0
Net Contribution	-21.0	-8.0	11.0	27.0	1.0	33.0	-28.0	-21.0	8.0	-1.0	72.1%

Notes: Tickers are as follows:- OG(Oil&Gas); BM(Basic Materials); IN(Industrial); CG(Consumer Goods); HL(Healthcare); CS(Consumer Services); TL(Telecommunications); UT(Utility); FN(Financials) and TC(Technology).

Table 115: Equity Volatility Sectoral Connectedness: US Static Analysis

FULL-SAMPLE PERIOD

	OG	BM	IN	CG	HL	CS	TL	UT	FN	TC	From Others
OG	29.6	12.2	10.0	10.4	7.5	7.7	5.1	7.0	7.1	3.3	70.0
BM	13.3	29.8	10.7	7.7	6.4	7.2	5.3	5.3	10.5	3.8	70.0
IN	7.5	8.3	23.8	10.2	6.1	15.4	5.2	4.3	13.2	6.0	76.0
CG	7.7	7.0	11.3	27.0	10.1	11.1	5.7	8.2	7.9	4.0	73.0
HL	7.8	5.8	8.3	11.5	33.9	8.8	6.6	7.7	5.8	3.8	66.0
CS	6.0	6.0	15.2	11.1	6.5	24.0	6.8	6.0	13.1	5.5	76.0
TL	7.5	6.3	9.3	8.8	7.0	11.0	29.2	5.9	10.7	4.4	71.0
UT	8.4	6.4	7.8	12.5	11.8	8.0	6.8	28.4	6.9	3.0	72.0
FN	7.4	9.0	14.0	6.6	3.8	13.7	6.6	3.6	30.3	4.9	70.0
TC	5.4	6.7	13.1	7.3	4.9	11.6	4.6	3.6	10.1	32.5	67.0
Contribution	71.0	68.0	100.0	86.0	64.0	95.0	53.0	52.0	85.0	39.0	712.0
Net Contribution	1.0	-2.0	24.0	13.0	-2.0	19.0	-18.0	-20.0	15.0	-28.0	71.20%

Notes: Tickers are as follows:- OG(Oil&Gas); BM(Basic Materials); IN(Industrial); CG(Consumer Goods); HL(Healthcare); CS(Consumer Services); TL(Telecommunications); UT(Utility); FN(Financials) and TC(Technology).

CRISIS PERIOD

	OG	BM	IN	CG	HL	CS	TL	UT	FN	TC	From Others
OG	25.0	11.4	10.8	11.6	7.1	8.7	5.5	7.4	6.8	5.7	75.0
BM	14.0	23.5	10.8	9.1	7.3	7.4	6.3	5.9	9.3	6.4	76.0
IN	10.0	9.5	21.7	11.8	7.0	12.9	4.4	4.0	10.0	8.5	78.0
CG	10.2	8.7	10.7	25.0	10.5	10.2	5.2	7.6	6.5	5.5	75.0
HL	10.6	5.5	7.3	13.6	30.8	7.9	7.2	8.0	4.8	4.5	69.0
CS	8.0	6.7	13.4	12.9	8.2	21.6	6.2	5.8	10.1	7.0	78.0
TL	10.1	6.9	8.6	9.8	8.0	10.7	23.8	6.5	9.5	6.1	76.0
UT	10.7	6.5	6.2	13.9	15.1	6.5	7.3	24.1	5.3	4.4	76.0
FN	9.6	9.1	12.6	7.1	4.1	12.3	6.3	3.1	28.6	7.3	71.0
TC	9.6	9.7	13.4	9.3	6.0	10.9	4.5	3.8	8.4	24.4	76.0
Contribution to others	93.0	74.0	94.0	99.0	74.0	87.0	53.0	52.0	71.0	55.0	752.0
Net Contribution	18.0	-2.0	16.0	24.0	5.0	9.0	-23.0	-24.0	0.0	-21.0	**75.20%**

Notes: Tickers are as follows:- OG(Oil&Gas); BM(Basic Materials); IN(Industrial); CG(Consumer Goods); HL(Healthcare); CS(Consumer Services); TL(Telecommunications); UT(Utility); FN(Financials) and TC(Technology).

AFTER-CRISIS PERIOD

	OG	BM	IN	CG	HL	CS	TL	UT	FN	TC	From Others
OG	42.8	12.3	7.8	7.6	7.8	4.4	3.5	6.4	6.5	0.7	57.0
BM	15.7	52.8	8.1	4.0	3.9	4.0	1.8	2.7	6.3	0.7	47.0
IN	4.2	3.5	26.8	7.9	4.8	19.1	6.4	4.4	20.5	2.2	73.0
CG	4.4	2.1	12.1	33.4	9.1	11.9	5.7	8.8	10.9	1.6	67.0
HL	4.1	4.5	10.1	7.7	43.7	9.7	4.3	6.1	7.3	2.4	56.0
CS	2.9	2.1	17.7	8.0	4.0	28.6	7.8	5.5	20.7	2.7	71.0
TL	3.2	2.5	10.4	5.6	4.5	10.5	45.7	3.5	12.5	1.6	54.0
UT	6.9	3.4	10.0	9.0	6.1	9.4	4.3	40.4	9.8	0.7	60.0
FN	4.8	4.2	16.7	6.3	3.3	17.8	7.9	5.3	32.0	1.8	68.0
TC	0.6	0.9	9.5	3.3	2.3	10.2	3.7	2.8	11.9	54.8	45.0
Contribution to others	47.0	35.0	102.0	59.0	46.0	97.0	46.0	45.0	106.0	14.0	599.0
Net Contribution	-10.0	-12.0	29.0	-8.0	-10.0	26.0	-8.0	-15.0	38.0	-31.0	59.90%

Notes: Tickers are as follows:- OG(Oil&Gas); BM(Basic Materials); IN(Industrial); CG(Consumer Goods); HL(Healthcare); CS(Consumer Services); TL(Telecommunications); UT(Utility); FN(Financials) and TC(Technology).

Table 116: Equity Volatility Sectoral Connectedness: UK Static Analysis

FULL-SAMPLE PERIOD

	OG	BM	IN	CG	HL	CS	TL	UT	FN	TC	From Others
OG	15.9	11.6	10.0	9.0	8.2	9.4	8.7	10.5	9.1	7.6	84.0
BM	10.8	15.6	12.1	9.0	6.9	9.5	7.6	9.0	10.6	8.8	84.0
IN	9.1	11.7	13.6	9.4	7.2	10.8	8.4	9.3	11.1	9.4	86.0
CG	9.1	10.0	11.1	15.6	8.0	10.3	8.9	9.5	9.1	8.4	84.0
HL	9.3	9.0	9.5	9.9	16.6	9.8	9.7	10.0	8.0	8.1	83.0
CS	8.9	10.1	11.8	9.8	7.9	12.9	9.4	9.4	10.6	9.2	87.0
TL	9.5	9.2	10.2	9.4	8.6	10.7	13.8	10.1	10.2	8.3	86.0
UT	10.1	10.0	10.3	9.3	8.7	9.9	10.0	14.5	9.5	7.7	85.0
FN	9.1	11.1	12.3	8.8	6.2	10.9	8.8	8.9	14.8	9.0	85.0
TC	8.9	11.1	12.1	8.9	7.6	10.5	8.2	8.6	10.1	14.0	86.0
Contribution to others	85.0	94.0	99.0	83.0	69.0	92.0	80.0	85.0	89.0	77.0	853.0
Net Contribution	1.0	10.0	13.0	-1.0	-14.0	5.0	-6.0	0.0	4.0	-9.0	85.30%

Notes: Tickers are as follows:- OG(Oil&Gas); BM(Basic Materials); IN(Industrial); CG(Consumer Goods); HL(Healthcare); CS(Consumer Services); TL(Telecommunications); UT(Utility); FN(Financials) and TC(Technology).

CRISIS PERIOD

	OG	BM	IN	CG	HL	CS	TL	UT	FN	TC	From Others
OG	14.7	11.1	9.5	9.4	10.0	9.4	9.0	10.8	8.4	7.7	85.0
BM	12.0	14.4	11.2	8.9	8.5	9.4	8.0	9.3	9.9	8.3	86.0
IN	10.1	11.0	12.6	9.3	8.8	10.5	8.6	9.7	10.4	8.9	87.0
CG	10.2	9.3	10.4	16.3	9.0	9.8	9.2	9.7	8.4	7.7	84.0
HL	10.7	8.8	9.1	9.6	17.0	9.4	9.7	10.7	7.5	7.5	83.0
CS	9.8	9.8	11.1	9.7	9.5	12.4	9.3	9.7	9.9	8.8	88.0
TL	10.4	9.0	9.6	9.3	10.1	10.0	13.5	10.4	9.6	8.1	87.0
UT	10.8	9.3	9.5	9.0	10.8	9.5	10.5	14.5	8.7	7.4	85.0
FN	9.8	10.6	11.6	8.9	7.4	10.6	8.9	8.9	14.6	8.7	85.0
TC	10.3	10.4	11.2	8.6	9.0	10.3	8.5	8.7	9.4	13.5	86.0
Contribution to others	94.0	89.0	93.0	83.0	83.0	89.0	82.0	88.0	82.0	73.0	856.0
Net Contribution	9.0	3.0	6.0	-1.0	0.0	1.0	-5.0	3.0	-3.0	-13.0	85.60%

Notes: Tickers are as follows:- OG(Oil&Gas); BM(Basic Materials); IN(Industrial); CG(Consumer Goods); HL(Healthcare); CS(Consumer Services); TL(Telecommunications); UT(Utility); FN(Financials) and TC(Technology).

AFTER-CRISIS PERIOD

	OG	BM	IN	CG	HL	CS	TL	UT	FN	TC	From Others
OG	23.4	10.0	9.2	8.3	5.6	9.3	9.3	9.7	9.9	5.4	77.0
BM	9.6	16.5	11.5	10.5	5.9	10.7	9.1	8.0	10.2	7.9	83.0
IN	6.8	9.1	14.4	10.8	5.7	12.7	10.0	8.9	11.8	9.8	86.0
CG	6.6	8.4	10.7	16.3	7.8	12.4	9.9	9.0	9.7	9.2	84.0
HL	6.1	7.9	9.8	11.3	17.8	11.1	10.0	8.0	8.5	9.5	82.0
CS	6.8	7.8	11.7	11.3	6.2	15.2	10.9	9.1	11.8	9.3	85.0
TL	7.4	7.5	10.5	10.5	6.4	12.4	16.2	9.8	11.1	8.1	84.0
UT	8.5	8.1	10.4	11.2	5.7	11.2	10.8	16.4	10.7	7.0	84.0
FN	7.7	8.3	12.2	9.9	5.2	12.6	10.7	9.5	15.4	8.4	85.0
TC	5.3	7.9	11.9	11.0	6.4	12.2	9.7	8.0	10.7	16.9	83.0
Contribution to others	65.0	75.0	98.0	95.0	55.0	105.0	90.0	80.0	94.0	75.0	831.0
Net Contribution	-12.0	-8.0	12.0	11.0	-27.0	20.0	6.0	-4.0	9.0	-8.0	83.10%

Notes: Tickers are as follows:- OG(Oil&Gas); BM(Basic Materials); IN(Industrial); CG(Consumer Goods); HL(Healthcare); CS(Consumer Services); TL(Telecommunications); UT(Utility); FN(Financials) and TC(Technology).

Table 117: Equity Volatility Sectoral Connectedness: EU Static Analysis

FULL-SAMPLE PERIOD

	OG	BM	IN	CG	HL	CS	TL	UT	FN	TC	From Others
OG	18.2	11.9	12.5	10.7	8.8	8.1	4.3	3.8	10.5	11.3	82.0
BM	6.6	15.9	14.1	12.6	8.9	9.2	4.9	4.9	10.1	12.7	84.0
IN	6.5	13.8	15.7	13.1	8.9	9.0	5.0	4.1	10.7	13.2	84.0
CG	5.6	12.5	13.6	15.8	9.7	9.7	5.3	4.6	10.4	12.8	84.0
HL	4.4	10.5	10.6	11.4	18.9	12.9	6.9	6.2	8.2	10.1	81.0
CS	4.3	10.2	10.1	11.1	12.6	18.3	7.5	7.3	8.8	10.0	82.0
TL	4.4	9.9	9.2	10.0	12.0	11.5	19.0	6.1	8.7	9.1	81.0
UT	3.3	7.5	7.0	8.3	9.5	11.8	5.2	33.3	7.6	6.4	67.0
FN	5.9	11.7	12.5	12.0	9.2	9.5	5.4	3.9	18.2	11.8	82.0
TC	6.1	12.7	14.1	12.9	9.2	9.2	4.9	3.9	10.3	16.7	83.0
Contribution to others	47.0	101.0	104.0	102.0	89.0	91.0	49.0	45.0	85.0	97.0	810.0
Net Contribution	-35.0	17.0	20.0	18.0	8.0	9.0	-32.0	-22.0	3.0	14.0	81.00%

Notes: Tickers are as follows:- OG(Oil&Gas); BM(Basic Materials); IN(Industrial); CG(Consumer Goods); HL(Healthcare); CS(Consumer Services); TL(Telecommunications); UT(Utility); FN(Financials) and TC(Technology).

CRISIS PERIOD

	OG	BM	IN	CG	HL	CS	TL	UT	FN	TC	From Others
OG	16.4	11.3	12.0	10.1	11.4	9.8	4.8	3.4	9.6	11.1	84.0
BM	6.5	15.7	13.6	12.0	11.1	10.9	4.5	4.0	9.2	12.6	84.0
IN	6.7	13.8	15.6	12.7	10.8	10.0	4.5	3.0	10.0	13.0	84.0
CG	5.6	12.7	13.4	16.4	11.2	10.1	4.7	3.1	9.5	13.2	84.0
HL	4.9	10.8	10.5	10.8	20.6	13.1	6.1	4.8	8.1	10.4	79.0
CS	4.9	10.7	9.6	10.0	13.2	20.1	7.4	6.1	8.0	10.0	80.0
TL	4.8	10.6	9.0	9.1	12.8	12.0	18.2	5.0	9.1	9.5	82.0
UT	3.5	6.3	4.9	5.8	10.7	11.9	5.2	42.0	5.0	4.7	58.0
FN	6.2	11.1	11.9	11.2	11.6	10.2	6.0	2.6	17.9	11.3	82.0
TC	6.2	12.3	13.3	12.5	11.3	10.3	5.2	2.9	9.5	16.5	84.0
Contribution to others	49.0	100.0	98.0	94.0	104.0	98.0	48.0	35.0	78.0	96.0	801.0
Net Contribution	-35.0	16.0	14.0	10.0	25.0	18.0	-34.0	-23.0	-4.0	12.0	80.10%

Notes: Tickers are as follows:- OG(Oil&Gas); BM(Basic Materials); IN(Industrial); CG(Consumer Goods); HL(Healthcare); CS(Consumer Services); TL(Telecommunications); UT(Utility); FN(Financials) and TC(Technology).

AFTER-CRISIS PERIOD

	OG	BM	IN	CG	HL	CS	TL	UT	FN	TC	From Others
OG	21.1	11.0	10.6	10.5	8.5	9.0	4.3	6.6	9.6	8.8	79.0
BM	5.1	15.3	13.2	12.9	8.4	9.5	6.5	8.0	9.8	11.4	85.0
IN	4.5	12.5	14.4	13.2	9.0	10.3	6.6	7.7	9.9	11.9	86.0
CG	4.3	11.4	12.7	14.6	9.6	11.0	6.6	8.1	10.4	11.3	85.0
HL	3.8	10.4	11.5	12.2	16.0	11.8	6.8	7.9	8.6	10.9	84.0
CS	3.8	10.1	11.3	12.2	10.8	15.5	6.7	8.8	10.0	10.7	85.0
TL	3.8	9.4	10.0	11.6	10.4	10.4	18.6	7.8	8.4	9.6	81.0
UT	3.1	8.9	9.9	10.7	7.7	10.8	5.0	24.0	11.0	8.7	76.0
FN	3.7	11.1	11.4	12.4	8.6	11.3	5.5	8.4	17.2	10.4	83.0
TC	4.0	11.8	13.2	12.7	9.5	10.7	5.9	7.6	9.3	15.3	85.0
Contribution to others	36.0	97.0	104.0	108.0	83.0	95.0	54.0	71.0	87.0	94.0	828.0
Net Contribution	-43.0	12.0	18.0	23.0	-1.0	10.0	-27.0	-5.0	4.0	9.0	82.80%

Notes: Tickers are as follows:- OG(Oil&Gas); BM(Basic Materials); IN(Industrial); CG(Consumer Goods); HL(Healthcare); CS(Consumer Services); TL(Telecommunications); UT(Utility); FN(Financials) and TC(Technology).

Table 118: Equity Volatility Sectoral Connectedness: Japan Static Analysis

C.5 Equity Volatility Sub-Sectoral Connectedness: Within Regions Static Analysis

FULL-SAMPLE PERIOD

	AR	BNK	BV	BC	CB	CH	CGM	CP	CN	EC	ET	OFI	FD	HL	HS	HM	IND	INF	LEI	LO	MC	MI	OL	GS	PH	PC	PH	RL	RETT	RT	RFD	RET	OSV	OTL	TX	TO	OTR	UT	VH	From Others
AR	19.8	2.9	0.8	1.6	2.4	2.3	1.6	1.9	2.8	0.2	2.6	3.3	1.0	2.0	1.7	2.1	2.8	2.1	5.5	2.7	2.5	1.4	1.0	1.0	1.4	2.0	1.8	2.2	4.3	1.9	0.8	3.5	3.7	2.1	1.4	0.7	3.2	0.2	3.0	80.0
BNK	1.5	12.3	0.4	2.0	1.6	2.1	2.9	1.6	2.3	0.2	2.2	7.9	1.2	2.0	1.4	2.4	3.4	2.2	3.5	3.1	2.1	1.2	1.7	1.7	1.2	5.1	1.7	2.0	7.3	1.6	0.9	3.6	3.3	1.1	1.5	0.5	2.9	0.3	4.0	88.0
BV	0.9	0.9	7.8	1.9	3.1	2.4	2.2	4.7	2.8	2.9	2.9	1.9	4.2	4.0	2.4	0.5	3.1	2.0	2.3	1.3	2.6	1.6	2.4	2.5	3.7	2.9	2.1	1.2	1.7	1.9	2.1	2.9	3.9	2.8	2.8	2.1	1.8	3.1	1.3	92.0
BC	0.8	2.6	1.1	5.3	2.7	3.0	2.7	2.8	3.4	1.1	3.9	3.5	2.2	2.9	1.9	1.8	4.1	2.4	3.4	2.5	3.5	1.8	2.3	2.2	2.2	3.3	2.3	1.8	3.4	2.1	1.6	2.8	3.8	2.3	2.5	0.8	2.8	1.3	3.1	95.0
CB	0.9	1.9	1.4	2.2	6.6	2.9	2.4	2.9	2.9	1.1	3.6	3.4	2.5	3.6	2.2	0.6	3.8	3.0	3.0	2.3	2.9	1.8	2.3	2.2	2.6	3.3	2.9	1.5	2.9	2.0	1.9	3.2	5.0	2.3	2.7	0.8	2.4	1.3	2.5	93.0
CH	1.0	1.8	1.1	2.4	3.0	6.5	2.5	2.4	3.2	1.2	4.2	3.2	2.2	3.1	1.9	0.8	4.3	2.8	3.0	2.0	3.9	3.3	3.5	3.2	2.3	3.1	2.2	2.2	2.1	2.0	1.3	2.5	3.5	2.1	2.2	0.9	2.8	1.4	2.8	93.0
CGM	1.0	3.4	1.1	2.2	3.0	3.0	6.7	2.7	2.7	0.8	3.8	3.9	2.0	2.8	1.7	1.2	5.2	2.8	2.9	2.5	3.4	1.7	2.0	2.0	2.4	3.5	2.5	1.9	4.0	1.7	1.4	2.9	3.6	2.0	2.2	1.0	2.8	0.9	2.7	93.0
CP	0.8	1.2	2.3	2.2	3.5	2.4	2.2	5.9	2.8	2.0	3.2	2.7	3.3	3.6	2.4	0.8	3.4	2.5	2.7	1.5	2.7	1.6	2.2	2.3	3.5	3.1	2.6	1.2	2.2	2.2	2.1	3.5	4.4	2.6	3.6	2.5	2.0	2.2	2.0	94.0
CN	0.9	2.5	1.7	2.5	2.8	3.0	2.2	2.9	7.1	1.1	3.8	3.5	2.4	3.3	2.1	1.2	3.8	2.6	3.1	2.6	3.4	1.8	2.5	2.4	2.4	3.3	2.3	1.8	2.9	1.8	1.5	3.0	3.8	2.0	2.5	0.8	2.5	1.3	2.8	92.9
EC	0.5	0.7	2.3	1.6	3.5	2.7	1.7	3.0	3.0	9.0	2.9	1.9	3.4	3.4	2.2	0.3	2.9	1.7	1.4	0.6	2.4	1.9	3.4	3.5	4.0	2.8	2.1	1.2	2.1	1.4	2.0	2.2	3.1	3.5	2.0	1.8	1.8	9.0	1.1	91.0
ET	0.7	2.1	1.3	2.4	3.4	3.6	2.8	2.6	3.3	0.9	6.0	3.4	2.3	3.2	2.1	0.8	4.9	3.2	2.9	2.4	4.3	2.3	2.4	2.3	2.4	3.1	2.7	2.0	2.4	1.6	1.4	2.6	3.8	2.1	2.5	0.9	3.0	1.1	3.0	94.0
OFI	1.3	6.3	0.8	2.0	2.7	2.6	2.7	2.0	2.6	0.6	3.0	7.9	1.7	2.8	1.9	1.8	3.7	2.9	3.2	2.6	2.5	1.7	2.0	2.0	2.1	4.6	2.3	1.8	5.4	1.5	1.0	3.4	3.7	1.7	1.6	0.9	2.7	0.8	3.2	92.0
FD	0.5	1.0	2.5	2.2	3.6	2.4	1.9	4.2	3.1	2.1	3.6	2.5	6.9	3.9	2.7	0.7	3.4	2.8	2.4	1.5	2.6	1.6	2.2	2.2	4.2	2.8	2.4	1.3	1.9	1.9	2.4	3.1	4.0	2.9	3.2	1.7	2.0	2.3	1.7	93.0
HL	0.6	1.3	1.9	2.1	3.8	2.9	2.1	3.1	3.3	1.5	3.6	2.6	3.1	7.5	4.2	0.5	3.5	2.6	2.7	1.4	2.9	1.5	2.3	2.2	4.4	3.0	2.5	1.3	1.6	2.2	2.4	3.3	4.5	2.1	2.9	1.1	2.0	1.7	1.7	92.0
HS	0.4	1.3	1.6	2.3	3.5	2.8	2.2	3.0	3.4	1.3	3.8	2.6	3.1	5.6	7.8	0.6	3.6	3.2	2.5	1.5	3.0	1.2	2.2	2.0	4.4	2.8	2.6	1.4	1.4	2.0	2.1	3.3	4.2	2.0	3.0	1.1	2.1	1.5	1.5	92.0
HM	2.2	4.9	0.5	3.3	1.6	2.1	3.1	2.0	2.5	0.8	2.1	4.6	1.1	1.6	1.2	13.5	3.2	1.9	3.8	3.2	2.0	0.9	1.4	1.5	1.8	4.0	1.9	1.8	5.1	2.5	0.6	3.3	3.2	2.4	1.5	0.6	2.6	0.9	2.4	86.5
IND	0.9	2.3	1.3	2.4	3.3	3.3	3.4	2.8	3.0	0.9	4.4	3.4	2.2	3.2	1.9	1.0	5.1	2.9	3.2	2.5	4.0	2.0	2.2	2.2	2.3	3.1	2.6	2.2	2.7	1.8	1.5	2.9	4.0	2.1	2.5	0.9	3.3	1.1	3.0	95.0
INF	0.8	2.2	1.3	2.1	3.6	3.0	2.6	2.8	2.8	1.1	4.0	3.8	2.5	3.5	2.4	0.9	4.1	6.1	3.0	2.1	3.0	1.8	2.5	2.4	2.9	3.2	2.5	1.6	2.8	1.9	1.5	3.5	4.2	2.1	2.3	1.1	2.4	1.3	2.4	94.0
LEI	1.7	2.5	1.1	2.3	3.0	2.6	2.2	2.7	2.8	0.7	3.1	3.8	1.8	3.1	2.3	1.4	3.7	2.8	6.1	3.5	2.9	1.5	2.0	1.9	2.4	2.9	2.3	2.1	3.2	3.2	1.4	3.8	4.8	1.9	2.4	0.9	3.1	0.9	3.2	94.0
LO	1.4	2.6	1.2	2.3	2.9	2.8	2.7	2.3	2.7	0.7	3.2	3.5	1.5	2.5	2.0	1.6	4.0	2.6	4.9	8.0	2.9	1.6	1.9	1.7	1.6	2.9	2.4	2.6	4.4	2.3	0.9	3.1	4.0	1.8	2.1	0.6	3.5	0.8	3.4	92.0
MC	0.8	2.1	1.3	2.6	3.2	3.8	3.0	2.6	3.1	0.9	4.9	3.3	2.1	3.1	2.0	0.8	5.0	2.7	3.0	2.3	5.7	2.5	2.6	2.5	2.1	3.0	2.5	2.1	2.4	1.7	1.4	2.7	3.8	2.1	2.5	0.8	3.1	1.1	3.1	94.0
MI	0.8	1.8	1.3	2.1	2.8	4.6	2.5	2.4	2.8	1.8	3.8	3.1	2.4	3.1	1.8	0.7	4.0	2.3	2.4	2.1	3.6	6.6	4.0	3.8	2.4	2.8	2.2	2.5	2.3	1.4	1.5	2.2	3.0	2.7	1.8	1.1	3.1	1.9	2.5	93.0
OL	0.7	1.6	1.3	1.9	3.3	4.0	1.9	2.5	2.8	2.1	3.4	2.8	2.7	3.6	2.2	0.7	3.3	2.4	2.5	1.8	2.8	3.0	7.1	6.7	3.3	2.8	2.3	2.1	1.4	1.7	1.5	2.6	3.4	2.5	2.0	1.2	2.5	2.3	1.7	93.0
GS	0.6	1.5	1.3	1.8	3.2	3.8	1.9	2.7	2.8	2.2	3.4	2.8	2.8	3.6	2.3	0.6	3.3	2.4	2.4	1.7	2.8	3.0	6.9	7.0	3.3	2.8	2.3	2.0	1.3	1.6	1.5	2.6	3.4	2.6	2.0	1.3	2.5	2.4	1.7	93.0
PH	0.6	1.0	2.1	1.7	3.6	2.4	1.9	3.9	3.0	2.0	3.4	2.3	3.6	5.2	3.8	0.5	3.0	2.6	2.4	1.0	2.1	1.1	2.2	2.2	9.0	2.8	2.4	1.1	1.6	2.1	3.0	3.5	4.4	2.7	3.0	1.3	1.9	2.2	1.5	91.0
PC	1.1	4.9	1.2	2.0	2.8	2.7	2.8	2.5	2.9	1.2	3.3	5.2	2.0	3.1	1.8	1.2	3.7	2.4	2.6	2.1	2.5	1.7	2.0	2.0	2.5	7.4	2.3	1.4	5.3	1.7	1.3	3.5	3.8	2.4	2.0	1.0	2.2	1.3	2.4	93.0
PH	0.7	2.0	1.2	2.3	4.3	2.8	2.5	2.8	3.2	1.0	3.7	3.5	2.2	3.4	2.3	0.8	3.9	2.6	2.9	2.1	3.0	1.8	2.4	2.4	2.6	3.4	6.4	1.5	2.7	2.1	1.6	3.4	4.5	2.0	2.7	0.9	2.5	1.1	2.6	94.0
RL	1.3	2.9	1.0	2.1	2.8	2.9	1.9	2.1	2.4	0.8	3.5	3.7	1.5	2.5	1.4	1.2	4.2	2.4	3.6	2.8	3.1	2.0	2.1	1.9	1.9	2.5	2.2	8.8	2.8	2.0	1.4	2.9	3.7	1.9	2.0	0.7	7.2	0.9	3.0	91.0
RETT	1.7	5.8	1.0	2.0	2.2	1.8	3.0	2.3	2.3	1.3	2.3	5.2	1.7	1.9	1.2	1.9	3.3	1.7	2.8	3.1	1.8	1.4	1.3	1.4	1.6	4.8	2.0	1.6	13.7	1.5	0.9	3.3	3.1	2.5	1.5	0.9	2.8	1.4	4.0	86.3
RT	1.1	1.8	1.7	1.9	3.1	1.9	2.1	3.3	2.3	1.2	2.8	3.0	2.4	3.9	2.9	1.2	3.3	2.8	4.8	2.0	2.4	1.2	2.0	2.1	3.2	3.1	2.3	1.5	2.8	7.2	1.8	4.2	4.9	2.2	3.1	1.2	2.2	1.4	1.9	93.0
RFD	0.5	1.1	1.8	2.4	3.8	2.2	2.0	3.5	3.0	1.9	3.2	2.6	3.2	3.9	2.4	0.5	3.4	2.9	2.7	1.9	2.8	1.2	2.2	2.1	3.6	2.5	2.4	1.8	1.8	2.1	7.2	3.2	4.5	2.6	3.0	1.4	2.3	2.1	2.2	93.0
RET	1.2	1.7	1.5	2.0	3.2	2.3	1.8	3.3	2.7	1.2	2.7	3.6	2.3	3.4	2.3	1.4	3.3	2.8	3.7	2.4	2.4	1.3	1.8	1.8	3.0	3.1	2.6	1.7	2.8	2.4	1.9	7.5	6.3	2.4	2.7	1.2	2.5	1.3	2.5	92.0
OSV	1.1	1.8	1.4	2.3	4.1	2.6	2.1	3.2	2.8	1.1	3.2	3.4	2.4	3.6	2.3	1.0	3.7	2.9	3.9	2.4	2.8	1.5	2.0	1.9	2.8	3.1	2.7	1.6	2.7	2.5	2.1	4.8	5.7	2.2	2.8	1.0	2.5	1.2	2.6	94.0
OTL	0.9	1.6	2.0	1.9	3.7	2.3	2.1	3.4	2.4	2.8	3.1	3.3	2.9	2.9	1.7	0.9	3.2	2.7	2.3	1.4	2.3	2.0	2.5	2.5	3.0	3.0	2.5	1.2	3.2	2.0	1.5	3.4	3.9	8.5	2.2	1.9	1.9	3.1	1.7	91.0
TX	0.8	1.2	2.0	2.2	3.6	2.6	1.7	4.7	3.1	1.2	3.4	2.6	3.0	3.6	2.6	0.7	3.4	2.7	3.1	1.8	3.0	1.6	2.2	2.2	3.0	2.7	2.7	1.4	1.9	2.7	2.1	3.9	4.7	2.3	6.5	1.2	2.3	1.4	2.4	93.0
TO	0.5	1.2	2.5	1.4	2.8	2.1	2.2	5.7	1.9	2.7	2.7	2.7	3.8	3.6	2.4	0.5	3.0	2.4	2.3	1.5	2.1	1.5	2.4	2.5	3.6	2.8	2.1	1.3	1.7	1.9	1.9	3.1	3.7	2.8	2.0	10.9	1.6	2.9	1.5	89.0
OTR	1.5	2.6	1.1	2.3	3.0	3.0	2.2	2.4	2.8	0.9	3.7	3.6	1.7	2.7	1.5	1.3	4.5	2.5	3.6	2.7	3.3	2.0	2.0	1.9	2.0	2.7	2.3	5.2	3.0	1.9	1.4	3.0	3.9	2.1	2.2	0.7	6.5	1.0	3.2	93.0
UT	0.4	0.7	2.2	1.7	3.5	2.8	1.8	3.1	3.0	8.2	3.0	2.0	3.4	3.5	2.2	0.3	3.0	1.7	1.5	0.7	2.5	2.0	3.5	3.5	3.9	2.9	2.2	1.2	2.1	1.4	1.9	2.2	3.1	3.4	2.1	1.8	1.9	8.5	1.2	92.0
VH	1.1	2.9	1.0	2.6	2.6	3.2	2.6	2.6	3.1	0.7	3.8	4.0	1.9	2.3	1.6	1.2	4.5	2.7	3.5	3.1	3.7	2.2	2.0	1.9	1.6	3.0	2.4	2.1	3.6	1.9	1.1	3.0	3.7	1.9	2.5	0.8	3.3	0.8	7.7	92.0
Contribution to others	36.0	84.0	34.0	81.0	110.0	106.0	86.0	111.0	106.0	37.0	129.0	126.0	91.0	125.0	81.0	36.0	140.0	99.0	119.0	81.0	136.0	61.0	99.0	96.0	134.0	116.0	96.0	69.0	139.0	94.0	61.0	129.0	146.0	91.0	86.0	45.0	136.0	85.0	93.0	3590.0
Net Contribution	-64.0	-4.0	-58.0	-14.0	26.0	13.0	-5.0	17.0	13.0	-34.0	33.0	36.0	-5.0	31.0	-11.0	-68.0	45.0	3.0	21.0	-11.0	13.0	-36.0	-3.0	-4.0	13.0	26.0	-5.0	-35.0	23.0	-10.0	-32.0	26.0	36.0	-4.0	-3.0	-47.0	7.0	-39.0	1.0	92.10%

Notes: Tickers are as follows- AR(Airline); BNK(Banking); BV(Beverage); BC(Building Products); CB(Cable); CH(Chemical); CGM(Conglomerate/Diversified); CN(Container); CP(Consumer Products); EC(Electric Utility); ET(Electronics); OFI(Other Financial Services); FD(Food Processors); HL(Healthcare Facilities); HS(Healthcare Supply); HM(Home Builders); IND(Industrial); LEI(Leisure); INF(Information/Data Technology); RE(REITS); RT(Restaurants); RET(Retail Stores); PC(Property & Casualty Insurance); OL(Oil Field Machinery & Products); GS(Oil & Gas); MI(Metals/Mining); MC(Machinery); LO(Lodging); PH(Publishing); PH(Pharmaceuticals); RL(Railroads); RETD(Retail Stores-Food & Drugs); OSV(Other Service Company); OTL(Other Telecommunications); TX(Textiles); TO(Tobacco); OTR(Other Transportation); UT(Utility Other); and VH(Vehicles Parts).

CRISIS PERIOD

	AR	BNK	BV	BG	CB	CH	CCM	CP	CN	EC	ET	OFI	FD	HL	HS	HM	IND	INF	LEI	LO	MC	MI	OL	GS	PH	PC	PB	RL	REET	RT	RFD	RET	OSV	OTL	TX	TO	OTR	UT	VH	From Others
AR	14.0	2.8	1.3	2.5	2.7	2.2	2.3	2.5	3.0	0.8	2.2	3.1	1.8	1.7	1.8	2.2	2.8	1.9	4.1	2.5	2.5	1.6	1.5	1.3	1.7	2.5	2.2	2.2	3.0	1.9	1.6	3.0	3.2	1.9	2.0	0.8	3.6	0.9	2.4	85.0
BNK	1.5	8.7	0.5	3.3	2.8	2.2	3.4	2.3	3.0	0.7	2.3	5.8	1.9	1.9	1.5	3.4	3.3	2.1	3.1	3.0	2.5	1.8	1.9	1.8	1.4	4.1	2.1	2.2	5.3	1.8	1.6	2.6	3.0	1.8	2.0	0.9	3.0	0.8	2.4	91.0
BV	0.7	1.4	5.4	1.8	2.9	2.1	2.3	4.4	2.4	3.2	2.5	2.2	4.2	3.3	2.9	0.8	2.7	2.2	1.9	1.8	2.4	2.1	3.4	3.5	3.9	3.5	2.3	1.1	1.7	1.7	1.9	2.5	2.9	3.2	2.7	2.9	1.9	3.5	1.5	95.0
BG	1.1	2.9	1.1	4.8	3.0	2.7	2.8	3.1	3.2	1.6	3.2	3.4	2.4	2.2	1.8	2.2	3.6	2.3	3.1	2.9	3.4	2.2	2.6	2.5	2.0	3.3	2.7	2.0	3.2	1.9	1.7	2.5	3.2	2.2	2.5	1.3	3.0	1.8	2.6	95.0
CB	0.9	2.2	1.7	2.4	4.5	2.4	2.5	3.3	2.6	2.1	3.0	3.1	3.1	3.0	2.3	1.1	3.1	2.6	2.5	2.4	2.0	2.3	3.2	3.2	2.9	3.5	2.9	1.5	2.5	1.9	1.9	2.5	3.5	3.0	2.5	1.8	2.4	2.5	2.2	96.0
CH	0.8	1.9	1.3	2.6	2.8	4.7	2.7	3.0	3.0	2.0	3.5	3.0	3.0	2.6	2.1	1.2	3.6	2.7	2.5	2.2	3.4	3.4	3.9	3.7	2.6	3.2	2.5	2.2	2.3	1.8	1.6	2.1	2.8	2.4	2.2	1.8	2.7	2.3	2.1	95.0
CCM	0.9	3.4	1.1	2.9	3.3	2.6	5.5	3.0	2.9	1.4	3.1	3.6	2.5	2.2	1.7	1.8	4.2	2.7	2.7	2.5	3.2	2.2	2.7	2.6	2.4	3.3	2.7	1.9	3.4	1.7	1.8	2.4	3.0	2.6	2.3	1.3	2.8	1.7	2.2	94.0
CP	0.8	1.5	1.9	2.2	3.1	2.2	2.2	5.2	2.5	2.6	2.7	2.6	3.3	2.9	2.5	1.1	2.9	2.4	2.3	1.9	2.8	2.2	3.3	3.4	3.5	3.3	2.7	1.3	2.0	1.9	1.9	2.8	3.3	3.1	3.4	3.2	2.1	3.0	1.9	95.0
CN	0.9	2.5	1.3	2.9	2.7	2.9	2.8	3.2	5.0	1.7	3.2	3.2	2.7	2.6	2.1	1.5	3.5	2.5	2.7	2.6	3.3	2.4	3.0	2.9	2.5	3.1	2.5	2.0	2.8	1.7	1.8	2.6	3.1	2.5	2.5	1.5	2.7	2.0	2.4	95.0
EC	0.4	1.2	2.2	1.8	3.0	2.3	2.2	3.6	2.5	5.2	2.6	2.4	3.8	3.0	2.6	0.8	2.7	2.1	1.7	1.5	2.6	2.5	4.2	4.4	4.0	3.2	2.6	1.3	1.8	1.8	1.6	2.3	2.7	3.6	2.2	2.0	2.0	5.4	1.5	95.0
ET	0.6	2.2	1.4	2.6	3.1	3.0	2.8	3.1	3.0	1.7	4.4	3.1	2.9	2.7	2.2	1.2	3.9	2.9	2.5	2.5	3.7	2.6	3.2	3.1	2.7	3.2	2.9	1.8	2.4	1.6	1.6	2.3	3.0	2.6	2.5	1.6	2.8	2.0	2.5	96.0
OFI	1.2	4.8	1.0	2.7	3.1	2.4	3.0	2.7	2.8	1.4	2.6	5.7	2.4	2.5	2.1	2.6	3.2	2.6	2.8	2.7	2.6	2.1	2.5	2.5	2.2	4.1	2.5	1.8	4.0	1.6	1.6	2.7	3.2	2.4	2.0	1.6	2.6	1.6	2.1	94.0
FD	0.6	1.5	2.3	2.2	3.1	2.3	2.2	4.0	2.5	2.6	3.0	2.6	5.1	3.1	2.7	1.1	3.0	2.5	2.1	1.9	2.8	2.2	3.3	3.3	3.8	3.3	2.7	1.4	2.1	1.8	1.9	2.6	3.0	3.3	2.7	2.5	2.2	3.0	1.8	95.0
HL	0.6	1.8	1.9	2.0	3.2	2.6	2.3	3.6	2.6	2.2	2.9	2.8	3.5	5.1	4.0	0.9	3.0	2.5	2.2	1.8	2.8	2.2	3.4	3.3	4.0	3.5	2.6	1.4	1.9	1.8	2.0	2.5	3.1	2.8	2.6	2.4	2.2	2.5	1.7	95.0
HS	0.6	1.6	1.8	2.2	3.0	2.8	2.5	3.5	2.8	1.9	3.2	2.7	3.3	4.2	6.2	0.9	3.3	2.6	2.2	2.0	3.1	1.9	3.0	3.0	3.8	3.3	2.6	1.5	1.8	1.9	1.7	2.6	3.1	2.5	2.6	2.0	2.4	2.2	1.6	94.0
HM	2.4	4.4	0.7	3.9	2.6	2.0	2.8	2.6	2.6	1.1	2.0	4.2	1.7	1.5	1.5	9.7	2.9	1.8	3.7	3.3	2.2	1.5	1.6	1.5	1.7	3.5	2.5	1.9	4.1	2.3	1.4	3.4	3.4	2.3	2.1	1.0	3.0	1.2	1.9	90.0
IND	0.8	2.3	1.3	2.7	3.2	2.8	3.3	3.2	3.0	1.7	3.5	3.1	2.7	2.6	2.1	1.4	4.1	2.7	2.8	2.5	3.6	2.4	3.0	2.9	2.5	3.1	2.8	2.1	2.7	1.8	1.8	2.4	3.2	2.5	2.5	1.4	3.0	2.0	2.4	96.0
INF	0.8	2.2	1.5	2.3	3.3	2.6	2.7	3.3	2.7	1.9	3.4	3.3	2.9	2.7	2.3	1.4	3.4	4.3	2.6	2.2	3.0	2.4	3.2	3.1	2.8	3.2	2.6	1.6	2.6	1.8	1.8	2.8	3.3	2.9	2.5	1.7	2.4	2.2	2.1	96.0
LEI	1.5	2.4	1.2	2.7	2.9	2.4	2.5	3.1	2.8	1.4	2.7	3.3	2.3	2.4	2.2	1.9	3.3	2.6	4.7	3.4	2.9	2.0	2.5	2.4	2.3	3.1	2.5	2.0	3.1	2.8	1.8	3.1	3.8	2.3	2.6	1.5	3.0	1.7	2.7	95.0
LO	1.4	2.6	1.1	3.0	3.0	2.6	3.1	2.7	2.8	1.2	2.9	3.2	2.0	2.2	2.2	2.0	3.5	2.4	3.9	6.6	2.9	2.1	2.5	2.4	2.0	3.3	2.8	2.3	3.7	2.0	1.4	2.5	3.2	2.1	2.2	0.9	3.2	1.4	2.7	93.0
MC	0.9	2.2	1.3	2.8	3.0	3.0	3.0	3.1	2.9	1.6	3.7	2.9	2.8	2.7	2.3	1.2	3.9	2.6	2.6	2.5	4.5	2.5	3.2	3.1	2.6	3.3	2.8	2.1	2.5	1.7	1.7	2.2	3.0	2.5	2.6	1.5	3.0	1.9	2.5	96.0
MI	0.6	2.1	1.5	2.2	2.8	3.6	2.8	2.9	2.7	2.5	3.2	2.9	3.0	2.6	2.0	1.2	3.3	2.5	2.1	2.2	3.1	5.2	4.5	4.3	2.9	3.2	2.5	2.1	2.2	1.4	1.5	1.9	2.5	2.9	1.9	2.0	2.6	2.8	2.0	95.0
OL	0.5	1.7	1.6	1.9	3.0	2.9	2.3	3.2	2.5	2.8	2.9	2.9	3.1	3.0	2.7	1.0	2.9	2.5	1.9	2.0	2.8	3.4	5.8	5.8	3.6	3.3	2.5	1.6	1.8	1.4	1.4	2.0	2.6	3.0	2.1	2.6	2.1	3.2	1.6	94.0
GS	0.5	1.6	1.6	1.9	2.9	2.8	2.2	3.3	2.4	2.9	2.9	2.8	3.2	3.1	2.8	1.0	2.8	2.5	1.8	1.9	2.7	3.3	5.8	6.1	3.7	3.3	2.5	1.6	1.7	1.4	1.4	2.1	2.6	3.1	2.1	2.7	2.1	3.3	1.6	94.0
PH	0.5	1.5	2.0	1.8	3.2	2.4	2.1	3.9	2.6	2.7	2.8	2.6	3.6	3.7	3.5	0.9	2.8	2.5	1.9	1.7	2.6	2.1	3.5	3.5	6.0	3.4	2.5	1.1	1.9	1.6	2.1	2.6	3.0	3.5	2.5	2.7	2.0	3.1	1.6	94.0
PC	0.8	4.0	1.2	2.6	3.1	2.4	2.9	2.9	2.8	1.8	2.8	4.4	2.5	2.6	2.1	1.9	3.1	2.4	2.3	2.4	2.7	2.2	3.0	2.9	2.7	5.6	2.6	1.5	3.8	1.5	1.6	2.6	3.0	2.9	2.1	1.8	2.2	2.2	1.9	94.0
PB	0.7	2.2	1.5	2.7	3.5	2.4	2.8	3.3	2.8	2.0	3.0	3.2	2.8	2.7	2.2	1.3	3.3	2.4	2.4	2.4	2.9	2.2	3.2	3.2	2.8	3.5	4.7	1.5	2.8	1.8	1.8	2.7	3.3	2.8	2.5	1.7	2.4	2.3	2.2	95.0
RL	1.2	2.8	1.2	2.4	2.9	2.6	2.5	2.7	2.7	1.5	2.9	3.4	2.5	2.4	1.6	1.9	3.7	2.1	2.9	2.8	3.0	2.4	2.5	2.3	2.2	3.0	2.5	6.4	3.0	2.1	1.3	2.2	2.8	2.4	2.0	1.4	5.6	1.7	2.7	94.0
REET	1.5	4.4	0.8	3.0	3.0	2.2	3.4	2.8	2.7	1.4	2.4	4.3	2.4	1.7	1.5	2.6	3.3	1.9	2.9	3.2	2.5	2.2	2.2	2.1	1.8	3.7	2.6	2.0	7.2	1.9	1.6	2.5	2.9	2.7	2.0	1.2	2.9	1.6	2.7	93.0
RT	1.0	1.9	1.7	2.2	2.9	2.0	2.1	3.6	2.3	1.9	2.5	2.9	3.0	2.9	2.7	1.6	2.9	2.5	3.7	2.1	2.5	1.8	2.0	2.9	2.9	3.1	2.5	1.6	2.7	5.2	1.9	3.3	3.7	2.6	3.0	2.1	2.5	2.2	2.1	95.0
RFD	0.7	1.6	1.9	2.2	3.5	2.1	2.3	3.8	2.6	2.6	2.7	2.5	3.4	3.1	2.3	1.0	3.0	2.4	2.3	2.2	2.9	2.0	3.2	3.2	3.4	3.0	2.6	1.6	2.0	1.9	4.6	2.6	3.4	3.2	2.9	2.2	2.2	2.9	2.1	95.0
RET	1.1	1.8	1.7	2.3	3.1	2.1	2.2	3.8	2.8	2.1	2.5	3.2	2.9	2.6	2.4	1.8	3.0	2.6	3.0	2.6	2.6	1.8	2.5	2.5	3.0	3.2	2.7	1.6	2.5	2.2	2.1	4.8	4.4	3.0	2.9	2.1	2.5	2.3	2.2	95.0
OSV	1.0	1.9	1.6	2.4	3.5	2.3	2.4	3.6	2.8	2.0	2.8	3.1	2.9	2.8	2.4	1.5	3.1	2.6	3.1	2.5	2.8	2.0	2.8	2.8	2.8	3.2	2.8	1.6	2.5	2.2	2.2	3.6	4.0	2.8	2.8	1.9	2.5	2.3	2.3	96.0
OTL	0.7	1.8	2.0	1.8	3.4	2.1	2.3	3.9	2.3	3.0	2.6	2.9	3.5	2.7	2.2	1.3	2.7	2.7	2.9	1.9	2.5	2.4	3.6	3.7	3.5	3.2	2.6	1.1	2.4	1.8	1.7	2.7	3.0	6.0	2.5	2.7	1.9	3.3	1.6	94.0
TX	0.9	1.3	2.0	2.4	3.0	2.3	2.0	4.6	2.5	2.1	2.9	2.4	3.3	2.8	2.4	1.2	3.0	2.5	2.7	2.3	3.0	1.9	3.0	3.1	3.1	3.1	2.8	1.4	2.1	2.4	2.1	3.1	3.5	3.0	5.1	2.0	2.3	2.4	2.2	95.0
TO	0.4	1.6	2.0	1.3	2.7	2.0	2.1	5.2	2.2	3.2	2.2	2.7	3.7	3.2	3.0	0.8	2.4	2.3	1.6	1.6	2.1	2.3	4.0	4.2	4.3	3.5	2.2	1.2	1.5	1.4	1.6	2.2	2.6	3.3	2.1	8.0	1.5	3.6	1.2	91.0
OTR	1.4	2.5	1.2	2.6	3.0	2.6	2.6	3.0	2.8	1.6	3.0	3.3	2.6	2.4	1.8	1.8	3.7	2.3	3.1	2.6	3.1	2.4	2.6	2.4	2.4	3.0	2.6	4.1	2.8	2.0	1.4	2.5	3.1	2.4	2.2	1.4	5.1	1.9	2.7	95.0
UT	0.4	1.3	2.2	1.8	3.0	2.4	2.2	3.6	2.6	4.9	2.7	2.4	3.8	3.0	2.6	0.8	2.8	2.1	1.8	1.5	2.6	2.6	4.2	4.4	3.9	3.3	2.6	1.3	1.8	1.8	1.7	2.2	2.7	3.4	2.2	2.0	2.0	5.2	1.5	95.0
VH	1.2	2.7	1.0	3.0	2.7	2.8	3.0	3.1	3.1	1.3	3.1	3.3	2.5	2.1	1.9	1.8	3.8	2.6	3.0	3.2	3.4	2.4	2.7	2.5	2.1	3.1	2.7	2.2	3.1	1.8	1.5	2.4	3.0	2.1	2.5	1.4	3.2	1.5	5.3	95.0
Contribution to others	34.0	87.0	57.0	92.0	115.0	94.0	98.0	127.0	103.0	77.0	108.0	119.0	110.0	101.0	87.0	56.0	121.0	92.0	99.0	89.0	109.0	86.0	117.0	116.0	108.0	125.0	98.0	67.0	100.0	70.0	65.0	98.0	118.0	104.0	91.0	71.0	99.0	88.0	79.0	3874.0
Net Contribution	-51.0	-4.0	-38.0	-3.0	19.0	-1.0	4.0	32.0	8.0	-18.0	12.0	25.0	15.0	6.0	-7.0	-34.0	25.0	-4.0	4.0	-4.0	13.0	-9.0	23.0	22.0	14.0	31.0	3.0	-27.0	7.0	-25.0	-30.0	-3.0	22.0	10.0	-4.0	-20.0	4.0	-7.0	-16.0	94.39%

Notes: Tickers are as follows- AR(Airline); BNK(Banking); BV(Beverage); BG(building Products); CB(Cable); CH(Chemical); CCM(Conglomerate/Diversified); CN(Container); CP(Consumer Products); EC(Electric Utility); ET(Electronics); OFI(Other Financial Services); FD(Food Processors); HL(Healthcare Facilities); HS(Healthcare Supply); HM(Home Builders); IND(Industrial); LEI(Leisure); INF(Information/Data Technology); RE(REITS); RT(Restaurants); RST(Retail Stores); PC(Property & Casualty Insurance); OL(Oil Field Machinery & Products); GS(Oil & Gas); MI(Metals/Mining); MC(Machinery); LO(Lodging); PB(Publishing); PH(Pharmaceuticals); RL(Railroads); RFD(Retail Stores Food & Drugs); OSV(Other Service Company); OTL(Other Telecommunications); TX(Textiles); TO(Tobacco); OTR(Other Transportation); UT(Utility Other); and VH(Vehicle Parts).

AFTER-CRISIS PERIOD

	AIR	BNK	BV	BG	CH	CH	CCM	CP	CN	EC	ET	OFI	FD	HL	HS	HM	IND	INF	LEI	LO	MC	MI	OL	CH	PH	PC	PH	RL	REIT	RT	RFD	RET	OSV	OTL	TX	TO	OTR	UT	VH	From Others
AIR	20.4	1.7	0.6	2.2	2.1	2.7	2.3	1.8	2.1	0.0	4.3	3.0	1.0	1.8	1.6	1.4	3.9	2.8	8.4	3.3	3.6	1.6	1.2	1.2	1.0	1.5	1.6	2.6	0.4	2.3	0.8	1.8	3.9	0.8	1.6	0.2	2.9	0.0	3.6	80.0
BNK	0.7	8.4	1.9	2.1	3.0	3.1	2.8	2.8	2.0	0.4	3.4	6.6	2.3	2.9	2.3	0.9	4.1	3.4	3.4	2.1	3.1	1.5	2.0	1.9	2.4	3.3	2.2	2.0	1.6	2.5	1.8	2.8	3.9	1.1	2.7	0.5	3.2	0.4	2.9	92.0
BV	0.6	1.7	10.7	2.5	3.0	1.9	2.5	6.2	1.6	2.1	2.0	2.8	4.8	3.5	2.2	1.2	2.8	2.1	2.8	1.6	1.9	0.4	1.4	1.5	2.9	2.8	1.5	1.2	2.6	3.4	2.3	3.1	4.2	1.5	2.9	2.5	1.7	2.2	1.4	89.3
BG	0.6	1.7	1.7	8.3	2.9	3.4	2.9	2.9	3.1	0.5	4.5	3.7	2.3	2.9	2.3	2.4	4.3	3.2	3.6	2.5	3.0	1.0	1.7	1.8	2.4	2.0	1.7	2.2	1.9	3.1	1.9	2.7	4.1	1.7	2.4	0.6	2.8	0.6	2.7	92.0
CH	0.7	2.2	1.5	2.7	9.2	2.8	2.5	3.2	2.2	0.3	3.2	4.5	2.3	3.3	2.6	1.3	3.7	3.6	4.4	3.0	2.2	0.7	1.8	1.9	2.5	2.5	2.4	1.1	1.0	2.9	2.0	3.4	6.3	1.3	3.2	0.5	2.0	0.3	2.8	91.0
CH	0.7	2.6	1.4	2.7	3.5	8.0	2.9	2.6	2.7	0.3	4.2	4.0	2.0	2.7	2.2	1.1	4.4	3.4	3.5	2.3	3.5	2.5	3.5	3.3	2.0	2.2	2.1	2.5	1.1	2.4	1.1	2.5	3.8	1.4	2.4	0.3	3.2	0.3	2.9	92.0
CCM	0.8	2.3	1.9	2.6	3.4	2.9	7.7	3.6	2.1	0.5	3.7	3.8	2.5	3.0	2.2	1.3	5.6	3.4	3.4	2.1	3.5	0.7	1.6	1.8	2.7	2.5	2.1	2.1	1.8	2.6	1.6	2.9	4.2	1.4	2.8	0.8	2.9	0.5	2.3	92.0
CP	0.5	1.9	3.3	2.4	3.5	2.0	2.8	7.7	1.6	1.1	2.8	3.4	2.7	3.0	2.6	1.6	3.4	3.0	3.2	1.8	1.9	0.4	1.3	1.4	3.1	3.0	1.7	1.3	2.4	3.2	2.3	3.8	4.8	1.9	4.7	2.6	2.1	1.2	1.8	92.0
CN	0.9	2.5	2.0	2.9	3.2	3.5	2.4	2.9	9.7	0.6	4.3	3.8	2.2	2.6	2.1	1.4	4.1	2.8	3.4	3.4	3.4	1.4	2.4	2.3	1.7	2.8	2.3	1.8	2.1	2.4	1.2	2.0	3.6	1.1	2.5	0.5	2.6	0.7	2.4	90.0
EC	0.0	0.3	4.0	1.9	1.5	0.9	1.0	3.4	1.3	23.0	0.6	0.4	3.2	2.3	2.2	0.9	1.0	0.7	0.6	0.2	0.3	0.1	1.5	1.6	3.1	1.3	0.4	0.3	7.5	1.5	1.9	1.4	1.6	1.2	1.3	2.2	0.5	22.5	0.4	77.0
ET	0.7	2.4	1.5	2.9	3.3	3.4	3.5	3.1	2.5	0.2	6.5	4.6	2.2	2.8	2.4	1.1	5.4	3.8	3.6	2.6	4.2	1.3	1.8	1.9	2.1	2.6	2.2	2.2	1.1	2.2	1.5	2.7	4.2	1.4	2.7	0.5	3.3	0.3	3.3	93.5
OFI	0.8	4.2	1.5	2.5	3.6	3.3	2.7	2.9	2.2	0.2	4.2	7.2	2.2	3.0	2.4	1.1	4.4	3.9	4.1	2.4	3.1	1.1	1.5	1.5	2.4	2.9	2.3	1.8	1.4	2.7	1.7	3.2	4.7	1.1	2.9	0.4	2.9	0.3	3.0	93.0
FD	0.3	1.7	3.4	2.4	3.0	2.3	2.5	5.1	2.0	1.5	2.7	3.2	8.5	3.4	2.6	1.3	3.2	2.8	3.1	2.0	1.8	0.6	1.8	1.9	2.7	2.8	1.4	1.2	3.0	3.4	2.6	3.3	4.4	1.6	3.6	1.5	1.8	1.7	1.9	91.5
HL	0.7	1.8	1.6	2.5	3.3	2.5	2.6	3.2	2.1	0.7	3.2	3.4	2.8	9.0	5.4	1.1	3.6	3.0	3.8	2.6	2.0	0.6	1.6	1.8	4.6	2.4	2.2	1.4	1.7	3.3	2.3	3.1	4.5	1.0	2.9	0.5	2.1	0.9	2.0	91.0
HS	0.7	1.7	1.5	3.0	3.0	2.4	2.5	3.4	2.1	0.7	3.1	3.2	2.7	6.5	10.0	1.1	3.1	3.3	3.3	2.4	2.1	0.6	1.7	1.6	5.2	2.2	1.9	1.1	1.9	3.2	2.2	3.1	4.0	1.4	3.3	0.7	1.6	0.8	1.8	90.0
HM	0.7	1.9	1.7	5.4	2.2	1.8	2.6	3.5	3.0	1.0	2.8	3.1	2.1	1.7	1.2	20.3	2.9	2.6	2.5	2.0	1.8	0.5	1.0	1.0	1.7	2.7	1.3	1.7	4.6	2.6	1.0	2.3	3.2	1.4	2.0	1.0	1.7	1.1	2.3	80.0
IND	0.8	2.4	1.5	2.8	3.4	3.4	4.3	3.2	2.3	0.3	4.8	4.4	2.3	2.9	2.0	1.1	6.0	3.5	3.8	2.5	4.0	1.2	1.6	1.8	2.2	2.6	2.1	2.5	1.4	2.4	1.6	2.9	4.4	1.3	2.7	0.6	3.8	0.3	2.9	94.0
INF	0.7	2.5	1.4	2.4	3.6	2.8	3.0	3.2	2.2	0.4	3.9	4.0	2.7	3.4	2.7	1.0	4.1	7.8	4.3	2.3	2.6	0.8	1.7	1.7	2.7	2.2	2.1	1.5	1.3	3.3	1.7	4.0	5.2	1.3	2.7	0.7	2.4	0.5	2.7	92.0
LEI	2.4	2.1	1.2	2.4	3.8	2.7	2.7	2.7	2.2	0.3	3.7	4.2	1.9	2.7	2.4	1.0	3.9	4.0	8.1	3.5	2.5	0.8	1.6	1.6	2.1	2.2	2.2	2.0	1.1	4.5	1.4	3.4	5.8	1.2	2.9	0.4	2.6	0.3	3.2	92.0
LO	1.3	2.1	1.5	2.3	3.6	3.0	2.6	3.2	2.7	0.4	3.1	3.2	2.5	2.9	2.6	1.1	3.6	2.8	5.2	10.2	2.5	1.0	2.1	2.0	2.5	2.0	2.2	2.3	1.8	3.4	1.3	2.1	4.3	1.4	2.6	0.7	2.9	0.4	2.5	90.0
MC	0.7	2.6	1.5	3.1	3.3	4.0	4.0	2.8	2.7	0.3	5.4	4.4	2.3	2.4	1.9	1.0	5.9	3.1	3.1	2.2	6.9	1.8	2.4	2.4	1.8	2.5	2.3	2.4	1.0	1.9	1.2	2.2	3.7	1.5	2.3	0.5	3.4	0.3	2.9	93.0
MI	0.3	2.8	1.4	2.1	2.5	4.0	2.8	2.3	2.1	0.9	3.3	3.2	2.8	2.9	2.5	0.8	4.0	2.1	1.8	2.2	3.6	11.2	4.3	4.3	2.3	2.3	2.3	2.7	1.8	1.4	1.7	1.9	2.5	1.6	1.8	0.3	3.5	0.9	2.7	89.0
OL	0.5	2.1	1.9	2.1	3.3	4.6	2.0	2.4	1.9	0.8	2.5	2.5	2.5	2.7	1.9	0.5	2.8	1.8	2.5	2.3	2.3	2.5	12.4	11.5	2.0	1.5	1.7	2.6	1.1	2.3	1.4	2.2	3.1	1.5	1.8	0.4	3.0	0.9	2.1	88.0
GS	0.5	2.0	1.9	2.0	3.2	4.3	2.1	2.5	1.9	0.9	2.6	2.5	2.5	2.7	1.9	0.5	2.9	1.8	2.5	2.3	2.4	2.3	11.8	12.2	2.1	1.6	1.7	2.5	1.1	2.2	1.4	2.3	3.1	1.6	1.8	0.5	3.0	1.0	2.1	88.0
PH	0.5	1.6	2.0	2.2	3.2	2.1	2.7	4.1	1.4	0.8	2.5	3.4	2.9	5.8	4.9	1.4	3.1	3.0	3.5	1.7	1.5	0.3	1.5	1.7	9.9	2.1	1.7	1.3	1.9	3.4	3.5	3.8	4.9	1.0	3.4	0.5	1.7	0.8	2.1	90.0
PC	0.6	3.6	2.5	2.7	3.1	2.7	3.0	4.1	2.4	0.5	3.1	4.6	2.9	3.0	2.2	1.5	4.2	3.0	3.3	1.8	2.7	0.9	1.3	1.3	2.0	9.7	1.8	1.8	2.1	2.9	1.8	2.7	4.0	1.4	2.8	1.0	2.7	0.6	2.1	90.0
PH	0.6	3.1	0.9	2.1	4.5	2.8	2.4	2.3	2.5	0.1	3.6	4.8	1.7	3.4	2.9	0.8	3.9	3.2	3.9	2.3	2.7	1.2	2.0	2.2	2.0	2.9	10.4	1.8	1.1	3.0	1.6	2.9	4.6	1.2	2.6	0.3	2.7	0.1	2.5	90.0
RL	1.2	2.9	1.6	2.3	2.4	3.4	2.6	2.7	1.7	0.3	3.9	3.4	1.7	2.2	1.2	0.8	4.6	2.7	3.4	2.7	3.8	1.9	3.0	3.0	1.6	2.3	1.7	0.8	1.0	2.1	1.3	2.4	3.4	1.1	2.5	0.7	7.6	0.4	2.8	90.0
REIT	0.1	0.9	3.3	2.9	2.6	1.2	1.8	4.7	1.9	4.7	1.6	1.6	2.9	3.0	2.4	2.4	2.3	1.7	1.4	1.0	0.8	0.4	1.6	1.7	3.4	2.4	1.2	0.9	18.1	2.7	2.4	2.6	3.1	1.8	2.8	2.2	1.3	5.0	1.3	82.0
RT	0.9	1.8	1.6	1.9	3.3	1.6	2.9	3.4	1.5	0.9	2.5	3.4	2.5	3.4	3.0	1.2	3.3	3.8	5.8	2.1	1.9	0.4	1.3	1.5	2.9	2.6	1.8	1.6	1.8	11.1	1.9	4.0	5.4	1.8	3.4	0.7	2.1	1.0	1.7	90.0
RFD	0.5	1.3	1.9	2.6	2.7	1.5	2.2	3.6	1.8	0.7	2.6	2.7	3.3	4.0	3.5	1.0	3.0	3.2	3.9	2.3	1.5	0.1	1.1	1.1	4.3	2.2	1.7	1.5	1.6	4.2	11.4	4.5	5.4	1.4	3.6	1.0	2.3	0.8	1.9	90.0
RET	0.8	1.7	1.6	2.4	3.6	2.1	2.1	3.8	1.4	0.4	2.6	3.4	2.6	3.3	2.7	1.8	3.3	3.7	4.8	2.1	1.6	0.4	1.4	1.4	2.2	2.6	2.0	1.3	1.7	4.0	2.4	10.0	8.1	1.4	3.9	0.7	1.9	0.5	2.3	90.0
OSV	1.0	1.9	1.4	2.6	4.7	2.4	2.5	3.5	1.8	0.3	3.2	4.0	2.4	3.2	2.7	1.4	3.8	3.9	5.5	2.6	2.0	0.5	1.3	1.4	2.4	2.5	2.2	1.5	1.4	3.9	2.3	5.7	7.4	1.3	3.5	0.6	2.3	0.4	2.7	93.0
OTL	0.4	1.6	3.7	2.2	3.7	2.0	2.0	5.1	0.9	2.3	2.2	2.5	3.3	2.4	2.0	1.3	2.7	2.9	2.3	1.1	1.6	0.7	1.9	1.9	2.2	2.1	1.6	1.5	2.7	3.3	1.9	3.5	4.2	14.0	2.4	2.4	1.7	2.4	1.5	86.0
TX	0.5	2.3	2.3	1.9	3.9	2.4	2.3	5.7	2.0	0.4	2.9	4.0	3.1	3.1	2.9	1.4	3.2	3.2	3.8	2.3	2.0	0.7	1.6	1.8	2.4	2.5	2.1	1.3	1.6	3.7	2.1	3.9	5.2	1.3	8.8	0.8	2.1	0.5	2.1	91.2
TO	0.3	1.5	4.1	2.2	2.2	1.4	2.8	7.7	0.6	2.4	2.0	2.8	3.7	2.6	1.5	0.7	2.7	2.8	2.8	1.1	1.4	0.3	0.9	1.1	2.5	2.0	1.0	1.4	2.7	2.8	2.3	3.3	3.7	2.8	2.4	15.8	1.9	2.6	1.5	84.2
OTR	1.1	2.9	1.7	2.2	2.7	3.4	3.1	2.9	2.0	0.2	4.1	3.8	1.8	2.5	1.6	1.2	5.3	3.1	3.4	2.7	3.6	1.7	2.2	2.4	1.7	2.7	1.7	6.0	1.1	2.1	1.6	2.5	3.7	1.3	2.6	0.6	7.9	0.3	2.8	92.0
UT	0.0	0.3	4.1	1.9	1.6	1.0	1.1	3.6	1.5	20.8	0.7	0.5	3.4	2.4	2.4	0.9	1.1	0.7	0.6	0.3	0.4	0.1	1.7	1.8	3.2	1.5	0.4	0.4	7.6	1.6	2.0	1.5	1.7	1.3	1.5	2.3	0.6	21.3	0.4	79.2
VH	0.7	2.9	1.6	2.6	3.8	3.4	2.6	3.0	2.6	0.2	4.6	4.8	2.5	2.4	1.9	1.3	4.5	3.7	4.6	2.2	3.3	1.4	1.8	1.9	1.7	1.8	2.0	2.3	1.1	2.4	1.4	2.7	4.4	1.7	2.7	0.6	3.2	0.2	8.1	92.0
Contribution to others	26.0	80.0	76.0	95.0	119.0	101.0	96.0	133.0	77.0	50.0	128.0	153.0	96.0	115.0	92.0	45.0	138.0	111.0	132.0	82.0	92.0	37.0	78.0	80.0	95.0	90.0	69.0	70.0	75.0	107.0	69.0	111.0	128.0	53.0	103.0	34.0	95.0	54.0	86.0	3477.0
Net Contribution	-54.0	-12.0	-13.0	3.0	28.0	9.0	6.0	41.0	-13.0	-27.0	27.0	38.0	7.0	24.0	2.0	-35.0	-44.0	19.0	40.0	-8.0	-1.0	-52.0	-10.0	-8.0	5.0	0.0	-21.0	-20.0	-6.0	18.0	-20.0	21.0	66.0	-33.0	12.0	-50.0	4.0	-25.0	-6.0	80.10%

Notes: Tickers are as follows:- AIR(Airline); BNK(Banking); BV(Beverage); BG(building Products); CH(Cable); CH(Chemical); CCM(Conglomerate/Diversified); CN(Container); CP(Consumer Products); EC(Electric Utility); ET(Electronics); OFI(Other Financial Services); FD(food Processors); HL(Healthcare Facilities); HS(Healthcare Supply); HM(Home Builders); IND(Industrial); LEI(Leisure); INF(Information/Data Technology); RS(REITS); RT(Restaurants); RET(Retail Stores); PC(Property & Casualty Insurance); OL(Oil Field Machinery & Products); GS(Oil & Gas); MI(Metals/Mining); MC(Machinery); LO(Lodging); PB(Publishing); PH(Pharmaceuticals); RL(Railroads); RFD(Retail Stores Food & Drugs); OSV(Other Service Company); OTL(Other Telecommunications); TX(Textiles); TO(Tobacco); OTR(Other Transportation); UT(Utility Other); and VH(Vehicles Parts).

Table 119: Equity Volatility Sub-Sectoral Connectedness: US Static Analysis

FULL-SAMPLE PERIOD

	BNK	LF	OFI	BV	OTL	OSV	RET	From Others
BNK	35.0	19.4	14.9	5.4	5.9	11.6	7.9	65.0
LF	19.5	29.5	16.4	5.6	7.2	12.8	8.9	70.0
OFI	15.5	15.5	27.6	7.9	7.7	15.9	9.8	72.0
BV	7.7	8.4	14.1	44.5	6.6	11.8	6.9	55.0
OTL	10.4	11.4	13.2	8.7	34.1	13.0	9.2	66.0
OSV	10.8	11.4	16.4	8.5	7.5	26.0	19.5	74.0
RET	8.5	8.5	13.2	7.6	7.2	24.4	30.6	69.0
Contribution to others	72.0	74.0	88.0	44.0	42.0	89.0	62.0	473.0
Net Contribution	7.0	4.0	16.0	-11.0	-24.0	15.0	-7.0	67.5%

Notes: Tickers are as follows:- BKG(Banking); BV(Beverages); OFI(Other Financial Services); LF (Life Insurance); RET(Retail Stores); OSV(Other Service Company); and OTL(Other Telecommunications).

CRISIS PERIOD

	BNK	LF	OFI	BV	OTL	OSV	RET	From Others
BNK	34.7	18.9	14.0	7.3	5.9	11.3	7.8	65.0
LF	18.8	30.3	15.9	7.8	7.3	11.9	8.0	70.0
OFI	14.2	14.3	27.9	11.0	8.5	15.2	9.0	72.0
BV	7.8	9.5	15.8	35.4	6.3	14.9	10.2	65.0
OTL	9.8	11.2	13.6	11.5	29.9	13.8	10.3	70.0
OSV	9.2	9.8	14.9	12.2	7.5	26.0	20.3	74.0
RET	6.7	6.4	11.5	11.9	7.0	25.0	31.5	68.0
Contribution to others	66.0	70.0	86.0	62.0	42.0	92.0	66.0	484.0
Net Contribution	1.0	0.0	14.0	-3.0	-28.0	18.0	-2.0	69.2%

Notes: Tickers are as follows:- BKG(Banking); BV(Beverages); OFI(Other Financial Services); LF (Life Insurance); RET(Retail Stores); OSV(Other Service Company); and OTL(Other Telecommunications).

AFTER-CRISIS PERIOD

	BNK	LF	OFI	BV	OTL	OSV	RET	From Others
BNK	34.9	18.4	16.2	1.1	6.6	12.7	10.2	65.0
LF	17.5	27.2	16.6	1.4	7.4	16.2	13.6	73.0
OFI	16.0	17.5	26.8	2.5	6.5	17.9	12.7	73.0
BV	2.8	2.9	7.1	74.9	5.7	4.8	1.7	25.0
OTL	10.2	10.4	11.2	2.7	47.2	10.8	7.4	53.0
OSV	13.4	14.9	18.9	2.3	6.8	25.2	18.4	75.0
RET	12.2	13.9	16.3	1.5	6.3	21.4	28.4	72.0
Contribution to others	72.0	78.0	86.0	12.0	39.0	84.0	64.0	435.0
Net Contribution	7.0	5.0	13.0	-13.0	-14.0	9.0	-8.0	62.2%

Notes: Tickers are as follows:- BKG(Banking); BV(Beverages); OFI(Other Financial Services); LF (Life Insurance); RET(Retail Stores); OSV(Other Service Company); and OTL(Other Telecommunications).

Table 120: Equity Volatility Sub-Sectoral Connectedness: UK Static Analysis

FULL-SAMPLE PERIOD

	UT	CMG	AU	BV	BG	CH	OVS	OTL	CB	ET	LEI	BNK	OFI	MI	OL	From Others
UT	10.7	6.6	2.3	6.5	6.4	7.1	7.3	7.3	7.3	6.8	4.2	6.2	7.7	6.4	7.4	89.0
CMG	6.5	10.2	6.1	7.6	5.8	7.2	7.2	6.0	7.0	6.6	5.0	5.4	7.5	5.7	6.2	90.0
AU	4.9	10.3	23.3	5.8	4.7	6.2	4.7	4.3	5.2	5.7	4.4	4.6	5.9	4.6	5.4	77.0
BV	6.7	8.3	2.0	12.7	5.7	6.7	7.4	6.1	6.9	6.2	5.2	5.6	7.4	5.8	7.2	87.0
BG	6.3	6.1	2.6	5.2	11.2	7.7	7.0	5.3	7.1	7.6	5.5	7.0	8.0	7.0	6.4	89.0
CH	6.7	6.9	3.5	5.6	7.2	10.4	7.0	6.0	6.9	7.3	5.1	6.2	7.9	6.8	6.6	90.0
OVS	6.8	7.0	2.6	5.9	6.2	6.9	9.3	6.7	8.6	7.3	5.1	6.8	8.4	6.0	6.4	91.0
OTL	7.5	6.7	2.5	5.9	5.6	6.7	8.0	10.2	8.2	6.6	4.5	6.8	8.2	5.5	7.0	90.0
CB	6.9	6.3	2.2	5.6	6.4	6.9	8.7	6.7	10.0	7.2	5.1	6.8	8.3	6.3	6.5	90.0
ET	6.7	6.6	3.2	5.4	7.3	7.4	7.3	5.6	7.3	10.2	5.3	6.7	8.3	6.6	6.3	90.0
LEI	5.6	6.7	3.8	5.3	7.2	7.0	6.6	4.6	6.7	7.2	13.0	7.0	7.5	6.1	5.8	87.0
BNK	6.0	5.8	3.0	5.1	6.8	6.9	7.5	6.0	7.4	7.0	5.6	11.2	8.8	6.7	6.2	89.0
OFI	6.6	6.4	2.7	5.5	6.6	7.2	7.9	6.3	7.7	7.3	5.3	7.6	9.9	6.6	6.5	90.0
MI	6.3	5.6	2.5	5.5	7.2	7.5	6.4	5.1	6.5	6.9	5.2	6.9	8.0	12.2	8.0	88.0
OL	7.8	6.3	2.6	6.1	6.0	6.9	7.0	6.5	6.7	6.7	4.5	6.1	7.5	7.4	12.0	88.0
Contribution to others	91.0	95.0	42.0	81.0	89.0	98.0	100.0	82.0	100.0	96.0	70.0	90.0	109.0	88.0	92.0	1324
Net Contribution	2.0	5.0	-35.0	-6.0	0.0	8.0	9.0	-8.0	10.0	6.0	-17.0	1.0	19.0	0.0	4.0	88.20%

Notes: Tickers are as follows:- BKG(Banking); BV(Beverages); AU (Automotive Manufacturer); BG(Building); CB(Cable); CMG(Conglomerate/Diversified Mfg); CH(Chemical); ET(Electronics); OFI(Other Financial Services); LEI (Leisure); MI(Metals/Mining); OL(Oil/Gas); OSV(Other Service Company); OTL(Other Telecommunications); and UT(Utility Other).

CRISIS PERIOD

	UT	CMG	AU	BV	BG	CH	OVS	OTL	CB	ET	LEI	BNK	OFI	MI	OL	From Others
UT	10.7	6.2	1.6	7.2	6.1	7.0	7.1	7.6	7.5	6.5	4.1	5.8	7.8	6.8	8.1	89.0
CMG	6.5	10.3	6.2	8.3	5.4	7.0	6.9	6.0	7.0	6.3	5.1	5.1	7.3	5.8	6.8	90.0
AU	4.5	11.4	28.0	6.7	3.5	5.5	4.0	4.1	4.8	4.7	3.9	3.9	5.4	4.0	5.6	72.0
BV	6.8	7.7	1.7	12.0	5.6	6.7	7.4	6.3	7.1	6.0	5.4	5.6	7.4	6.2	8.1	88.0
BG	6.4	5.9	1.8	6.2	10.7	7.3	7.0	5.6	7.3	7.0	5.2	6.8	8.0	7.4	7.4	89.0
CH	6.9	6.7	2.8	6.6	6.8	10.0	6.9	6.2	7.1	6.9	4.8	6.0	7.7	7.2	7.6	90.0
OVS	7.0	6.8	2.0	7.0	6.0	6.9	9.0	6.7	8.4	7.0	5.1	6.4	8.2	6.3	7.1	91.0
OTL	7.7	6.3	1.9	7.1	5.5	6.7	7.6	9.9	8.0	6.5	4.7	6.5	8.2	5.8	7.8	90.0
CB	7.2	6.1	1.6	6.7	6.3	6.9	8.3	6.7	9.6	7.0	5.0	6.5	8.3	6.7	7.3	90.0
ET	7.0	6.4	2.5	6.3	7.0	7.2	7.1	5.8	7.4	9.8	5.0	6.2	8.3	6.9	7.2	90.0
LEI	5.6	6.8	3.3	6.6	6.8	6.6	6.5	4.9	6.8	6.7	12.4	7.0	7.2	5.9	6.8	88.0
BNK	5.8	5.6	2.3	6.2	6.4	6.8	7.4	6.0	7.6	6.6	5.8	11.3	8.8	7.0	6.5	89.0
OFI	6.7	6.2	2.0	6.5	6.4	7.1	7.5	6.4	7.6	7.0	5.1	7.3	9.7	7.0	7.3	90.0
MI	6.5	5.6	1.8	6.5	7.2	7.5	6.5	5.2	7.0	6.6	5.1	6.5	8.1	11.6	8.2	88.0
OL	8.0	6.2	2.0	7.2	5.9	7.2	7.0	6.6	7.0	6.5	4.8	5.6	7.7	7.3	11.0	89.0
Contribution to others	93.0	94.0	33.0	95.0	85.0	96.0	97.0	84.0	101.0	91.0	69.0	85.0	108.0	90.0	102.0	1324.0
Net Contribution	4.0	4.0	-39.0	7.0	-4.0	6.0	6.0	-6.0	11.0	1.0	-19.0	-4.0	18.0	2.0	13.0	88.3%

Notes: Tickers are as follows:- BKG(Banking); BV(Beverages); AU (Automotive Manufacturer); BG(Building); CB(Cable); CMG(Conglomerate/Diversified Mfg); CH(Chemical); ET(Electronics); OFI(Other Financial Services); LEI (Leisure); MI(Metals/Mining); OL(Oil/Gas); OSV(Other Service Company); OTL(Other Telecommunications); and UT(Utility Other).

AFTER-CRISIS PERIOD

	UT	CMG	AU	BV	BG	CH	OVS	OTL	CB	ET	LEI	BNK	OFI	MI	OL	From Others
UT	12.2	8.4	4.8	5.4	5.8	6.1	8.4	8.0	6.8	6.5	2.9	7.1	7.3	4.0	6.3	88.0
CMG	6.6	11.8	6.0	7.8	5.4	7.1	9.0	7.1	7.2	6.5	3.3	5.7	8.0	3.6	4.9	88.0
AU	5.0	8.7	14.8	5.0	6.9	7.3	7.4	5.5	6.1	6.7	2.9	6.6	7.4	4.5	5.1	85.0
BV	6.5	12.1	3.6	17.8	3.9	5.5	8.4	6.7	6.6	5.8	3.3	4.8	6.9	3.1	5.1	82.0
BG	6.3	7.4	6.2	3.7	13.2	7.6	7.9	6.6	6.8	8.5	3.2	6.8	7.6	3.8	4.4	87.0
CH	6.1	8.7	6.6	4.3	6.7	12.2	8.4	7.1	6.8	7.2	3.1	5.7	8.3	3.9	4.8	88.0
OVS	6.6	8.3	5.3	4.6	5.4	6.2	11.0	7.8	9.3	7.0	3.5	7.3	8.8	3.9	5.0	89.0
OTL	7.3	7.8	5.3	4.3	5.4	6.0	9.1	12.0	8.2	6.3	3.1	7.3	8.1	4.1	5.6	88.0
CB	6.5	7.6	5.3	4.1	5.4	6.0	10.5	7.9	11.9	6.9	3.5	7.1	8.3	4.0	5.0	88.0
ET	6.3	7.9	6.0	4.3	6.7	6.6	8.7	6.6	7.1	11.7	3.4	7.6	8.3	4.1	4.8	88.0
LEI	5.6	7.2	4.2	3.9	5.2	5.8	7.8	5.7	6.7	6.4	18.8	5.9	8.3	4.3	4.2	81.0
BNK	6.7	6.7	5.9	3.8	6.1	5.8	8.5	7.4	7.2	7.2	2.9	12.3	8.8	4.6	6.1	88.0
OFI	6.5	7.7	5.5	4.1	5.6	6.4	9.6	7.4	8.1	7.1	3.9	8.1	10.9	4.2	4.9	89.0
MI	5.8	6.1	4.9	4.0	4.7	5.7	6.7	6.7	5.1	5.6	2.0	7.6	7.6	17.1	10.4	83.0
OL	7.6	6.6	4.6	4.5	4.7	4.8	7.0	7.1	5.6	6.0	2.2	7.3	6.6	6.9	18.5	82.0
Contribution to others	89.0	111.0	74.0	64.0	78.0	87.0	117.0	98.0	98.0	94.0	43.0	95.0	110.0	59.0	76.0	1294.0
Net Contribution	1.0	23.0	-11.0	-18.0	-9.0	-1.0	28.0	10.0	10.0	6.0	-38.0	7.0	21.0	-24.0	-6.0	86.30%

Notes: Tickers are as follows:- BKG(Banking); BV(Beverages); AU (Automotive Manufacturer); BG(Building); CB(Cable); CMG(Conglomerate/Diversified Mfg); CH(Chemical); ET(Electronics); OFI(Other Financial Services); LEI (Leisure); MI(Metals/Mining); OL(Oil/Gas); OSV(Other Service Company); OTL(Other Telecommunications); and UT(Utility Other).

Table 121: Equity Volatility Sub-Sectoral Connectedness: EU Static Analysis

FULL-SAMPLE PERIOD

	AU	BNK	CH	ET	RL	IND	MI	OTL	OTR	UT	RET	OSV	Others
AU	15.0	7.1	9.6	10.3	11.0	10.1	8.4	3.7	8.3	3.3	6.8	6.4	85.0
BNK	7.9	16.6	8.5	8.0	9.6	8.2	8.2	4.5	8.6	3.6	8.0	8.3	83.0
CH	8.1	6.0	12.8	10.5	11.2	9.8	8.9	4.1	8.0	4.2	8.1	8.1	87.0
ET	8.6	6.0	10.2	13.1	11.9	10.5	8.6	4.1	7.9	3.8	7.7	7.6	87.0
RL	8.4	6.6	10.0	10.9	12.6	11.1	9.5	3.9	8.8	3.3	7.4	7.4	87.0
IND	8.7	6.3	10.1	10.8	12.6	12.9	9.2	3.7	8.4	3.0	7.4	7.0	87.0
MI	8.2	7.3	9.7	9.3	11.1	9.6	15.5	3.7	8.3	3.9	6.8	6.6	85.0
OTL	5.8	6.7	8.0	7.9	7.9	6.5	7.0	17.0	7.6	5.5	9.7	10.3	83.0
OTR	7.4	7.0	9.4	9.0	10.8	9.0	8.9	3.9	14.1	3.5	8.4	8.7	86.0
UT	5.4	5.4	6.6	6.1	6.1	4.9	4.7	4.8	5.9	30.8	8.3	10.8	69.0
RET	5.8	5.8	8.7	8.4	8.5	6.8	6.6	5.8	7.9	5.5	16.0	14.1	84.0
OSV	5.9	6.1	8.6	8.0	8.4	6.6	6.0	6.3	8.3	6.2	13.8	15.7	84.0
Contribution to others	80.0	70.0	99.0	99.0	109.0	93.0	86.0	49.0	88.0	46.0	92.0	95.0	1008.0
Net Contribution	-5.0	-13.0	12.0	12.0	22.0	6.0	1.0	-34.0	2.0	-23.0	8.0	11.0	84.00%

Notes: Tickers are as follows:- BKG(Banking); CH(Chemical); AU (Automotive Manufacturer); ET(Electronics); IND(Industrials); OFI(Other Financial Services); MI(Metals/Mining); RL(Railroads); RET(Retail Stores); OSV(Other Service Company); OTL(Other Telecommunications); OTR(Other Transportation); and UT(Utility Other).

CRISIS PERIOD

	AU	BNK	CH	ET	RL	IND	MI	OTL	OTR	UT	RET	OSV	From Others
AU	14.8	6.5	9.9	10.5	11.0	10.7	8.6	3.9	7.9	2.3	7.3	6.5	85.0
BNK	6.7	16.8	7.9	7.8	9.6	8.2	8.7	5.7	8.1	2.6	8.7	9.1	83.0
CH	6.9	5.5	12.7	10.9	11.1	10.0	9.3	4.1	7.7	3.4	9.2	9.3	87.0
ET	7.7	5.4	10.8	13.4	11.8	10.7	9.0	4.1	7.6	2.9	8.4	8.2	87.0
RL	7.5	6.5	10.1	11.0	12.6	11.2	10.0	3.9	8.6	2.5	8.1	8.1	87.0
IND	7.8	6.2	10.2	11.1	12.5	13.0	9.6	3.5	8.3	2.2	8.0	7.6	87.0

MI	7.1	6.8	9.9	9.5	11.1	9.7	14.3	3.8	8.2	3.2	8.2	8.1	86.0
OTL	4.7	6.9	8.6	7.8	8.1	6.8	8.3	16.0	7.5	4.7	9.7	10.8	84.0
OTR	6.7	6.9	9.5	9.2	10.9	9.2	9.6	3.8	13.9	2.6	8.8	9.0	86.0
UT	3.9	3.9	6.0	4.7	4.9	4.1	4.7	5.9	5.0	37.6	8.1	11.2	62.0
RET	5.0	5.4	9.2	8.4	8.4	6.8	7.2	6.1	7.5	4.3	16.8	15.0	83.0
OSV	5.2	5.7	9.0	7.8	8.2	6.7	7.0	6.6	7.6	5.0	14.4	16.7	83.0
Contribution to others	69.0	66.0	101.0	99.0	107.0	94.0	92.0	51.0	84.0	36.0	99.0	103.0	1001.0
Net Contribution	-16.0	-17.0	14.0	12.0	20.0	7.0	6.0	-33.0	-2.0	-26.0	16.0	20.0	83.4%

Notes: Tickers are as follows:- BKG(Banking); CH(Chemical); AU (Automotive Manufacturer); ET(Electronics); IND(Industrials); OFI(Other Financial Services); MI(Metals/Mining); RL(Railroads); RET(Retail Stores); OSV(Other Service Company); OTL(Other Telecommunications); OTR(Other Transportation); and UT(Utility Other).

AFTER-CRISIS PERIOD

	AU	**BNK**	**CH**	**ET**	**RL**	**IND**	**MI**	**OTL**	**OTR**	**UT**	**RET**	**OSV**	**From Others**
AU	14.1	7.5	9.1	9.7	10.5	8.6	7.2	4.5	8.6	6.2	6.5	7.6	86.0
BNK	9.5	15.6	9.0	8.2	9.2	7.8	6.8	3.7	8.9	6.1	7.1	8.1	84.0
CH	9.7	6.3	12.7	9.7	10.9	9.1	7.4	4.7	8.2	6.2	7.0	7.9	87.0
ET	9.6	6.5	9.2	12.7	11.7	9.8	7.4	4.6	8.0	6.0	6.8	7.6	87.0
RL	9.5	6.2	9.5	10.6	11.9	10.1	7.5	4.8	8.5	6.2	7.1	8.1	88.0
IND	9.4	6.0	9.7	10.1	11.7	11.8	7.2	4.8	8.2	5.9	7.1	7.9	88.0
MI	9.3	7.3	8.8	8.6	10.0	8.0	16.9	4.6	8.2	6.7	5.2	6.2	83.0
OTL	8.3	6.1	7.6	8.4	8.6	7.0	5.7	16.8	7.7	6.2	8.6	9.0	83.0
OTR	8.3	6.7	9.1	8.5	10.3	8.3	7.0	4.5	14.1	5.9	7.9	9.3	86.0
UT	7.5	7.1	7.4	7.8	8.6	7.1	5.7	3.6	7.4	21.6	7.4	8.8	78.0
RET	7.5	6.0	8.1	8.5	9.3	7.3	5.8	5.3	8.4	7.0	14.2	12.8	86.0
OSV	7.6	6.4	8.5	8.5	9.6	7.5	5.5	5.4	9.2	7.1	11.8	13.2	87.0
Contribution to others	96.0	72.0	96.0	98.0	110.0	91.0	73.0	51.0	91.0	70.0	83.0	93.0	1025.0
Net Contribution	10.0	-12.0	9.0	11.0	22.0	3.0	-10.0	-32.0	5.0	-8.0	-3.0	6.0	85.40%

Notes: Tickers are as follows:- BKG(Banking); CH(Chemical); AU (Automotive Manufacturer); ET(Electronics); IND(Industrials); OFI(Other Financial Services); MI(Metals/Mining); RL(Railroads); RET(Retail Stores); OSV(Other Service Company); OTL(Other Telecommunications); OTR(Other Transportation); and UT(Utility Other).

Table 122: Equity Volatility Sub-Sectoral Connectedness: Japan Static Analysis

C.6 Equity Volatility Connectedness: Across Regions Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	57.0	17.2	16.0	9.8	43
EU	23.1	40.7	27.4	8.8	59
UK	20.8	27.9	42.9	8.4	57
JP	10.1	5.2	7	77.7	22
Contribution to others	54.0	50.0	50.0	27.0	182
Net Contribution	11.0	-9.0	-7.0	5.0	45.40%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	56.8	14.1	17.5	11.7	43.0
EU	20.4	37.6	31.2	10.8	62.0
UK	21.7	28.7	40.3	9.3	60.0
JP	11.7	4.5	5.7	78.1	22.0
Contribution to others	54.0	47.0	54.0	32.0	187.0
Net Contribution	11.0	-15.0	-6.0	10.0	46.80%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	62.2	13.1	13.5	11.3	38.0
EU	13.3	54.4	24.8	7.5	46.0
UK	10.5	21.5	60.2	7.8	40.0
JP	4.2	3.8	7.6	84.5	16.0
Contribution to others	28.0	38.0	46.0	27.0	139.0
Net Contribution	-10.0	-8.0	6.0	11.0	34.70%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

Table 123: Equity Volatility Regional Connectedness: Basic Materials Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	79.5	0.7	19.0	0.9	21.0
EU	27.7	22.5	45.1	4.7	78.0
UK	31.1	0.3	64.8	3.8	35.0
JP	8.4	0.5	12.0	79.0	21.0
Contribution to others	67.0	1.0	76.0	9.0	154.0
Net Contribution	46.0	-77.0	41.0	-12.0	38.50%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	80.6	1.9	16.2	1.3	19.0
EU	27.5	21.0	44.8	6.7	79.0
UK	30.6	1.4	63.6	4.4	36.0
JP	10.2	1.0	9.1	79.7	20.0
Contribution to others	68.0	4.0	70.0	12.0	155.0
Net Contribution	49.0	-75.0	34.0	-8.0	38.8%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	67.8	0.1	28.1	4.0	32.0
EU	16.4	32.8	46.3	4.5	67.0
UK	16.7	0.4	76.6	6.3	23.0
JP	6.6	0.1	20.6	72.6	27.0
Contribution to others	40.0	1.0	95.0	15.0	150.0
Net Contribution	8.0	-66.0	72.0	-12.0	37.60%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 124: Equity Volatility Regional Connectedness: Banking Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	From Others
US	80.3	1.8	17.9	20.0
EU	21.5	35.3	43.2	65.0
UK	10.9	0.0	89.1	11.0
Contribution to others	32.0	2.0	61.0	95.0
Net Contribution	12.0	-63.0	50.0	31.80%

Notes: Tickers are as follows:- US(United States); EU(Europe); and UK(United Kingdom).

CRISIS PERIOD

	US	EU	UK	From Others
US	75.7	1.9	22.4	24.0
EU	21.9	32.8	45.3	67.0
UK	12.1	0.1	87.8	12.0
Contribution to others	34.0	2.0	68.0	104.0
Net Contribution	10.0	-65.0	56.0	34.60%

Notes: Tickers are as follows:- US(United States); EU(Europe); and UK(United Kingdom).

AFTER-CRISIS PERIOD

	US	EU	UK	From Others
US	93.7	0.2	6.0	6.0
EU	14.8	46.9	38.2	53.0
UK	5.2	1.8	93.0	7.0
Contribution to others	20.0	2.0	44.0	66.0
Net Contribution	14.0	-51.0	37.0	22.10%

Notes: Tickers are as follows:- US(United States); EU(Europe); and UK(United Kingdom).

Table 125: Equity Volatility Regional Connectedness: Beverage/Bottling Static Analysis

FULL-SAMPLE PERIOD

	US	EU	JP	From Others
US	94.7	2.0	3.3	5.0
EU	40.4	54.3	5.4	46.0
JP	15.6	0.2	84.1	16.0
Contribution to others	56.0	2.0	9.0	67.0
Net Contribution	51.0	-44.0	-7.0	22.3%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

CRISIS PERIOD

	US	EU	JP	From Others
US	94.9	1.0	4.0	5.0
EU	40.2	50.3	9.5	50.0
JP	19.0	0.2	80.8	19.0
Contribution to others	59.0	1.0	13.0	74.0
Net Contribution	54.0	-49.0	-6.0	24.6%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	JP	From Others
US	92.9	0.9	6.2	7.0
EU	15.6	80.7	3.7	19.0
JP	11.4	0.6	88.0	12.0
Contribution to others	27.0	1.0	10.0	38.0
Net Contribution	20.0	-18.0	-2.0	12.8%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

Table 126: Equity Volatility Regional Connectedness: Chemicals Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	62.4	15.9	16.6	5.1	38.0
EU	21.6	54.1	21.1	3.3	46.0
UK	19.8	18.6	58.7	2.9	41.0
JP	13.6	10	10.2	66.2	34.0
Contribution to others	55.0	44.0	48.0	11.0	158.0
Net Contribution	17.0	-2.0	7.0	-23.0	39.60%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	61.9	14.6	18.3	5.2	38.0
EU	22.3	52.2	21.5	4.0	48.0
UK	19.9	15.9	60.9	3.3	39.0
JP	12.8	10.3	13.3	63.6	36.0
Contribution to others	55.0	41.0	53.0	13.0	161.0
Net Contribution	17.0	-7.0	14.0	-23.0	40.30%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	71.0	10.9	10.4	7.6	29.0
EU	11.9	62.7	21.9	3.5	37.0
UK	14.4	22.9	60.2	2.5	40.0
JP	13.2	6.8	4.1	75.8	24.0
Contribution to others	40.0	41.0	36.0	14.0	130.0
Net Contribution	11.0	4.0	-4.0	-10.0	32.50%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 127: Equity Volatility Regional Connectedness: Consumer Goods Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	68.1	13.3	15.7	2.9	32.0
EU	19.2	49.3	29	2.4	51.0
UK	19.3	28	50.2	2.5	50.0
JP	8.0	4.9	9.3	77.8	22.0
Contribution to others	47.0	46.0	54.0	8.0	155
Net Contribution	15.0	-5.0	4.0	-14.0	38.60%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	65.0	12.3	16.7	6.0	35.0
EU	20.7	45.6	28.9	4.7	54.0
UK	20.7	24.2	51.4	3.8	49.0
JP	9.3	5.0	9.1	76.7	23.0
Contribution to others	51.0	41.0	55.0	15.0	161.0
Net Contribution	16.0	-13.0	6.0	-8.0	40.3%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	76.7	7.9	11.4	4.0	23.0
EU	6.5	58.9	30.4	4.1	41.0
UK	10.5	35.2	50.9	3.3	49.0
JP	11.4	8.8	11.5	68.3	32.0
Contribution to others	28.0	52.0	53.0	12.0	145.0
Net Contribution	5.0	11.0	4.0	-20.0	36.30%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 128: Equity Volatility Regional Connectedness: Consumer Services Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	71.4	11	16.1	1.5	29.0
EU	22.4	44	31	2.7	56.0
UK	24.2	28.4	43.8	3.5	56.0
JP	12.5	9.3	14.3	63.9	36.0
Contribution to others	59.0	49.0	61.0	8.0	177.0
Net Contribution	30.0	-7.0	5.0	-28.0	44.20%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	74.5	8.7	14.4	2.4	25.0
EU	22.7	42.8	30.7	3.8	57.0
UK	25.0	26.3	44.3	4.3	56.0
JP	13.9	8.0	12.5	65.6	34.0
Contribution to others	62.0	43.0	58.0	11.0	173.0
Net Contribution	37.0	-14.0	2.0	-23.0	**43.2%**

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	61.6	13.9	21.6	2.9	38.0
EU	11.6	52.1	33.6	2.6	48.0
UK	14.7	32.4	48.3	4.5	52.0
JP	9.4	7.5	15.0	68.1	32.0
Contribution to others	36.0	54.0	70.0	10.0	170.0
Net Contribution	-2.0	6.0	18.0	-22.0	42.50%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 129: Equity Volatility Regional Connectedness: Financials Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	68.3	14.1	13.6	3.9	32.0
EU	20.9	55.5	20.6	3.0	44.0
UK	16.1	24.0	57.9	2.0	42.0
JP	12.5	9.9	8.9	68.7	31.0
Contribution to others	49.0	48.0	43.0	9.0	150.0
Net Contribution	17.0	4.0	1.0	-22.0	37.40%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	68.4	13.1	12.8	5.8	32.0
EU	23.9	49.5	21.2	5.4	51.0
UK	17.6	22.8	54.9	4.7	45.0
JP	16.0	9.6	9.3	65.1	35.0
Contribution to others	57.0	46.0	43.0	16.0	162.0
Net Contribution	25.0	-5.0	-2.0	-19.0	40.50%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	71.9	10.8	13.6	3.8	28.0
EU	10.6	67.8	18.6	3.0	32.0
UK	10.3	21.3	67.7	0.7	32.0
JP	8.6	11.9	8.5	70.9	29.0
Contribution to others	30.0	44.0	41.0	7.0	122.0
Net Contribution	2.0	12.0	9.0	-22.0	30.40%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 130: Equity Volatility Regional Connectedness: Healthcare Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	64.1	16.0	16.4	3.6	36.0
EU	24.7	45.8	26.6	2.9	54.0
UK	20.9	26.9	48.2	3.9	52.0
JP	15.6	9.6	14.0	60.9	39.0
Contribution to others	61.0	52.0	57.0	10.0	181.0
Net Contribution	25.0	-2.0	5.0	-29.0	45.20%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	64.2	13.4	17.8	4.6	36.0
EU	24.4	42.1	29.2	4.4	58.0
UK	22.0	24.9	49.2	3.8	51.0
JP	15.6	9.2	14.7	60.6	39.0
Contribution to others	62.0	47.0	62.0	13.0	184.0
Net Contribution	26.0	-11.0	11.0	-26.0	46.00%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	69.1	10.2	15.9	4.8	31.0
EU	11.2	58.0	27.8	3.0	42.0
UK	14.2	29.0	51.0	5.8	49.0
JP	12.1	7.3	12.8	67.8	32.0
Contribution to others	38.0	47.0	56.0	14.0	154.0
Net Contribution	7.0	5.0	7.0	-18.0	38.50%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 131: Equity Volatility Regional Connectedness: Industrials Static Analysis

.

	US	EU	JP	From Others
US	87.2	5.4	7.4	13.0
EU	39.6	55.7	4.7	44.0
JP	14.8	2.0	83.2	17.0
Contribution to others	54.0	7.0	12.0	74.0
Net Contribution	41.0	-37.0	-5.0	24.6%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

CRISIS PERIOD

	US	EU	JP	From Others
US	87.3	4.2	8.5	13.0
EU	41.0	53.2	5.7	47.0
JP	21.5	2.0	76.5	23.0
Contribution to others	63.0	6.0	14.0	83.0
Net Contribution	50.0	-41.0	-9.0	27.7%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	JP	From Others
US	88.6	1.9	9.5	11.0
EU	22.2	69.0	8.8	31.0
JP	3.8	2.9	93.3	7.0
Contribution to others	26.0	5.0	18.0	49.0
Net Contribution	15.0	-26.0	11.0	16.4%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

Table 132: Equity Volatility Regional Connectedness: Metals&Mining Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	59.6	12.5	13.1	14.8	40.0
EU	21.6	41.4	27.0	10.0	59.0
UK	20.9	25.7	43.2	10.2	57.0
JP	15.6	5.8	8.3	70.3	30.0
Contribution to others	58.0	44.0	48.0	35.0	185.0
Net Contribution	18.0	-15.0	-9.0	5.0	46.40%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	61.3	9.7	13.2	15.8	39.0
EU	23.0	37.6	28.6	10.8	62.0
UK	22.8	25.1	41.2	10.9	59.0
JP	17.6	4.2	7.9	70.2	30.0
Contribution to others	63.0	39.0	50.0	38.0	190.0
Net Contribution	24.0	-23.0	-9.0	8.0	47.40%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	59.4	14.1	15.3	11.2	41.0
EU	12.6	50.8	30.2	6.4	49.0
UK	14.9	27.1	49.9	8.0	50.0
JP	7.6	4.3	7.8	80.2	20.0
Contribution to others	35.0	46.0	53.0	26.0	160.0
Net Contribution	-6.0	-3.0	3.0	6.0	39.90%

Notes: Tickers are as follows:- US(United States); EU(Europe); and JP(Japan).

Table 133: Equity Volatility Regional Connectedness: Oil&Gas Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	From Others
US	82.5	0.1	17.4	17.0
EU	30.6	22.5	47.0	78.0
UK	32.4	0.1	67.5	33.0
Contribution to others	63.0	0.0	64.0	128.0
Net Contribution	46.0	-78.0	31.0	42.50%

Notes: Tickers are as follows:- US(United States); EU(Europe); and UK(United Kingdom).

CRISIS PERIOD

	US	EU	UK	From Others
US	82.6	0.6	16.7	17.0
EU	30.4	20.0	49.6	80.0
UK	31.8	0.2	68.0	32.0
Contribution to others	62.0	1.0	66.0	129.0
Net Contribution	45.0	-79.0	34.0	43.10%

Notes: Tickers are as follows:- US(United States); EU(Europe); and UK(United Kingdom).

AFTER-CRISIS PERIOD

	US	EU	UK	From Others
US	73.8	0.2	26.0	26.0
EU	21.3	32.6	46.0	67.0
UK	27.7	1.3	71.0	29.0
Contribution to others	49.0	1.0	72.0	123.0
Net Contribution	23.0	-66.0	43.0	40.90%

Notes: Tickers are as follows:- US(United States); EU(Europe); and UK(United Kingdom).

Table 134: Equity Volatility Regional Connectedness: Other Financials Static Analysis

FULL-SAMPLE PERIOD

	US	UK	JP	From Others
US	81.6	15.3	3.1	18.0
UK	18.3	78.0	3.8	22.0
JP	10.0	9.3	80.7	19.0
Contribution to others	28.0	25.0	7.0	60.0
Net Contribution	10.0	3.0	-12.0	19.90%

Notes: Tickers are as follows:- US(United States); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	UK	JP	From Others
US	74.8	19.0	6.2	25.0
UK	19.8	75.9	4.3	24.0
JP	12.1	9.9	78.0	22.0
Contribution to others	32.0	29.0	10.0	71.0
Net Contribution	7.0	5.0	-12.0	23.80%

Notes: Tickers are as follows:- US(United States); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	UK	JP	From Others
US	91.8	5.1	3.0	8.0
UK	6.6	86.9	6.5	13.0
JP	9.9	10.7	79.5	21.0
Contribution to others	16.0	16.0	10.0	42.0
Net Contribution	8.0	3.0	-11.0	13.90%

Notes: Tickers are as follows:- US(United States); UK(United Kingdom); and JP(Japan).

Table 135: Equity Volatility Regional Connectedness: Other Retail Stores Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	78.2	0.2	18.2	3.4	22.0
EU	26.9	27.9	41.6	3.6	72.0
UK	27.2	0.0	69.4	3.4	31.0
JP	8.6	0.5	10.0	80.9	19.0
Contribution to others	63.0	1.0	70.0	10.0	144.0
Net Contribution	41.0	-71.0	39.0	-9.0	35.90%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	73.9	0.0	19.2	6.9	26.0
EU	29.1	24.4	39.9	6.6	76.0
UK	27.6	0.9	66.5	5.0	34.0
JP	9.6	0.4	9.9	80.2	20.0
Contribution to others	66.0	1.0	69.0	19.0	155.0
Net Contribution	40.0	-75.0	35.0	-1.0	38.8%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	82.1	0.3	13.0	4.7	18.0
EU	9.7	37.2	46.3	6.8	63.0
UK	15.3	2.7	76.5	5.5	24.0
JP	12.3	0.1	13.1	74.6	25.0
Contribution to others	37.0	3.0	72.0	17.0	130.0
Net Contribution	19.0	-60.0	48.0	-8.0	32.40%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 136: Equity Volatility Regional Connectedness: Other Services Static Analysis

FULL-SAMPLE PERIOD

	US	UK	JP	From Others
US	79.2	17.4	3.3	21.0
UK	24.0	71.0	4.9	29.0
JP	9.5	8.9	81.6	18.0
Contribution to others	33.0	26.0	8.0	68.0
Net Contribution	12.0	-3.0	-10.0	0.2

Notes: Tickers are as follows:- US(United States); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	UK	JP	From Others
US	72.2	19.2	8.6	28.0
UK	27.1	65.6	7.3	34.0
JP	17.3	8.2	74.5	26.0
Contribution to others	44.0	27.0	16.0	88.0
Net Contribution	16.0	-7.0	-10.0	29.2%

Notes: Tickers are as follows:- US(United States); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	UK	JP	From Others
US	89.2	8.2	2.6	11.0
UK	6.4	88.1	5.5	12.0
JP	3.9	12.7	83.4	17.0
Contribution to others	10.0	21.0	8.0	39.0
Net Contribution	-1.0	9.0	-9.0	0.1

Notes: Tickers are as follows:- US(United States); UK(United Kingdom); and JP(Japan).

Table 137: Equity Volatility Regional Connectedness: Other Telecommunications Static Analysis

FULL-SAMPLE PERIOD

	US	EU	JP	From Others
US	95.0	3.1	1.8	5.0
EU	31.3	65.7	2.9	34.0
JP	4.0	0.5	95.5	4.0
Contribution to others	35.0	4.0	5.0	44.0
Net Contribution	30.0	-30.0	1.0	14.6%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	JP	From Others
US	94.8	3.2	2.0	5.0
EU	41.5	55.2	3.3	45.0
JP	7.1	1.7	91.2	9.0
Contribution to others	49.0	5.0	5.0	59.0
Net Contribution	44.0	-40.0	-4.0	0.2

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	JP	From Others
US	98.1	0.1	1.8	2.0
EU	3.4	91.5	5.1	8.0
JP	0.3	1.0	98.6	1.0
Contribution to others	4.0	1.0	7.0	12.0
Net Contribution	2.0	-7.0	6.0	3.9%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 138: Equity Volatility Regional Connectedness: Other Utility Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	70.7	16.6	7.7	4.9	29.0
EU	24.0	55.8	14.9	5.3	44.0
UK	14.4	21.5	59.6	4.6	40.0
JP	17.1	9.7	5.9	67.4	33.0
Contribution to others	55.0	48.0	29.0	15.0	147.0
Net Contribution	26.0	4.0	-11.0	-18.0	36.60%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	67.7	14.7	12.2	5.4	32.0
EU	22.9	48.8	21.5	6.8	51.0
UK	16.7	22.9	54.8	5.6	45.0
JP	18.9	8.5	10.4	62.2	38.0
Contribution to others	58.0	46.0	44.0	18.0	166.0
Net Contribution	26.0	-5.0	-1.0	-20.0	41.6%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	83.3	9.1	3.0	4.6	17.0
EU	13.7	73.5	9.8	3.0	26.0
UK	7.9	16.6	72.1	3.5	28.0
JP	8.3	6.8	1.6	83.4	17.0
Contribution to others	300	32.0	14.0	11.0	88.0
Net Contribution	13.0	6.0	-14.0	-6.0	21.90%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 139: Equity Volatility Regional Connectedness: Technology Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	71.0	12.0	14.1	2.9	29.0
EU	16.2	59.7	22.3	1.8	40.0
UK	16.6	21.7	58.3	3.3	42.0
JP	8.7	6.8	7.4	77.2	23.0
Contribution to others	41.0	41.0	44.0	8.0	134.0
Net Contribution	12.0	1.0	2.0	-15.0	33.40%

otes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	65.4	13.3	15.2	6.1	35.0
EU	20.3	55.5	21.8	2.5	45.0
UK	19.9	19.0	55.8	5.3	44.0
JP	15.7	6.8	6.9	70.6	29.0
Contribution to others	56.0	39.0	44.0	14.0	153.0
Net Contribution	21.0	-6.0	0.0	-15.0	38.2%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	85.9	4.3	7.8	1.9	14.0
EU	3.8	71.0	22.1	3.0	29.0
UK	4.7	24.9	68.0	2.4	32.0
JP	3.1	9.4	9.3	78.1	22.0
Contribution to others	12.0	39.0	39.0	7.0	97.0
Net Contribution	-2.0	10.0	7.0	-15.0	24.20%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 140: Equity Volatility Regional Connectedness: Telecommunications Static Analysis

FULL-SAMPLE PERIOD

	US	EU	UK	JP	From Others
US	72.3	12.6	13.8	1.4	28.0
EU	20.6	58.5	19.4	1.5	42.0
UK	17.1	20.9	59.7	2.3	40.0
JP	2.8	2.0	3.2	92.0	8.0
Contribution to others	41.0	36.0	36.0	5.0	118.0
Net Contribution	13.0	-6.0	-4.0	-3.0	29.40%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

CRISIS PERIOD

	US	EU	UK	JP	From Others
US	67.7	14.0	16.8	1.6	32.0
EU	25.7	51.0	21.3	2.1	49.0
UK	20.1	19.3	58.9	1.7	41.0
JP	5.6	2.1	3.5	88.9	11.0
Contribution to others	51.0	35.0	42.0	5.0	134.0
Net Contribution	19.0	-14.0	1.0	-6.0	33.4%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

AFTER-CRISIS PERIOD

	US	EU	UK	JP	From Others
US	91.9	1.8	4.7	1.6	8.0
EU	2.7	79.3	15.6	2.4	21.0
UK	6.3	19.9	68.5	5.3	32.0
JP	0.3	3.5	3.9	92.3	8.0
Contribution to others	9.0	25.0	24.0	9.0	68.0
Net Contribution	1.0	4.0	-8.0	1.0	17.00%

Notes: Tickers are as follows:- US(United States); EU(Europe); UK(United Kingdom); and JP(Japan).

Table 141: Equity Volatility Regional Connectedness: Utility Static Analysis

C.7 CDS Spreads and Equity Volatility Sectors Connectedness: Within Regions Static Analysis

UNITED STATES

FULL-SAMPLE PERIOD

	CG_CDS	CG_EQ	FOOD_CDS	FOOD_EQ	BEV_CDS	BEV_EQ	CG_O_CDS	CG_O_EQ	TOB_CDS	TOB_EQ	TEX_CDS	TEX_EQ	VEH_CDS	VEH_EQ	HOME_CDS	HOME_EQ	Others
CG_CDS	46.5	0.1	39.2	0.1	2.1	0.4	5.0	0.6	1.5	0.3	0.1	0.6	0.3	0.0	3.2	0.0	54.0
CG_EQ	0.0	5.4	0.0	16.8	0.1	13.1	0.0	21.5	0.0	12.0	0.0	14.7	0.0	10.4	0.0	5.7	95.0
FOOD_CDS	40.7	0.1	51.1	0.1	0.7	0.1	1.1	0.2	1.0	0.0	0.1	0.3	0.2	0.0	4.3	0.1	49.0
FOOD_EQ	0.0	0.3	0.0	25.6	0.0	12.3	0.1	20.0	0.0	10.8	0.0	14.4	0.1	9.7	0.0	6.6	74.0
BEV_CDS	3.2	0.1	1.0	0.7	83.2	1.4	2.2	0.7	1.0	1.4	1.2	0.4	1.0	0.0	2.1	0.2	17.0
BEV_EQ	0.0	0.6	0.0	17.6	0.1	23.6	0.0	19.8	0.0	12.0	0.1	12.3	0.0	8.4	0.0	5.3	76.0
CG_O_CDS	5.1	0.0	0.6	0.3	0.5	0.6	89.6	0.2	0.0	0.3	1.2	0.1	0.4	0.2	0.8	0.1	10.0
CG_O_EQ	0.0	0.4	0.0	15.6	0.1	10.9	0.0	25.0	0.0	13.8	0.1	16.6	0.0	10.4	0.0	7.0	75.0
TOB_CDS	2.0	0.0	1.2	0.4	0.9	0.0	0.4	0.8	85.0	0.2	6.4	0.5	0.2	0.1	0.3	1.6	15.0
TOB_EQ	0.0	0.8	0.1	14.0	0.1	10.2	0.1	21.3	0.0	32.7	0.0	9.5	0.0	6.8	0.0	4.4	67.0
TEX_CDS	0.2	0.0	0.5	0.0	0.0	0.0	2.0	0.0	6.0	0.0	90.0	0.0	0.1	0.1	0.1	1.0	10.0
TEX_EQ	0.0	0.3	0.0	15.3	0.1	10.2	0.0	21.8	0.0	8.1	0.1	25.2	0.0	11.9	0.0	7.0	75.0
VEH_CDS	0.5	0.1	0.3	1.3	0.6	0.5	0.6	1.6	0.5	0.3	0.0	0.6	89.3	1.0	1.8	1.1	11.0
VEH_EQ	0.0	0.1	0.0	12.6	0.1	7.1	0.0	16.3	0.0	6.9	0.1	13.6	0.3	30.4	0.1	12.4	70.0
HOME_CDS	2.2	0.1	1.9	2.9	0.8	2.3	1.4	4.0	0.3	1.3	0.1	4.8	1.5	2.6	70.1	3.6	30.0
HOME_EQ	0.0	0.0	0.0	8.5	0.3	5.6	0.0	13.0	0.0	6.0	0.2	9.9	0.1	13.1	0.0	43.3	57.0
Contribution to others	54.0	3.0	45.0	106.0	7.0	75.0	13.0	142.0	10.0	73.0	10.0	98.0	4.0	75.0	13.0	56.0	784.0
Net Contribution	0.0	-92.0	-4.0	32.0	-10.0	-1.0	3.0	67.0	-5.0	6.0	0.0	23.0	-7.0	5.0	-17.0	-1.0	49.00%

Notes: Tickers are as follows:- CG_CDS(Consumer Goods_CDS); CG_EQ(Consumer Goods_EQ); FOOD_CDS(Food Processor_CDS); FOOD_EQ(Food Processor_EQ); BEV_CDS(Beverages_CDS); BEV_EQ(Beverages_EQ); CG_O_CDS(Other Consumer Goods_CDS); CG_O_EQ(Other Consumer Goods_EQ); TOB_CDS(Tobacco_CDS); TOB_EQ(Tobacco_EQ); TEX_CDS(Textiles_CDS); TEX_EQ(Textiles_EQ); VEH_CDS(Vehicles_CDS); VEH_EQ(Vehicle's); HOME_CDS(Home Builders_CDS); and HOME_EQ(Home Builder's).

CRISIS PERIOD

	CG_CDS	CG_EQ	FOOD_CDS	FOOD_EQ	BEV_CDS	BEV_EQ	CG_O_CDS	CG_O_EQ	TOB_CDS	TOB_EQ	TEX_CDS	TEX_EQ	VEH_CDS	VEH_EQ	HOME_CDS	HOME_EQ	From Others
CG_CDS	39.2	0.1	34.9	0.4	2.4	0.4	7.9	0.7	2.9	0.7	1.9	0.7	0.8	0.2	6.8	0.0	61.0
CG_EQ	0.0	5.7	0.0	16.9	0.0	13.0	0.0	20.9	0.1	13.9	0.1	14.1	0.0	10.2	0.0	5.1	94.0
FOOD_CDS	37.5	0.1	44.7	0.1	1.4	0.1	4.0	0.1	1.6	0.1	1.6	0.2	0.5	0.1	7.8	0.2	55.0
FOOD_EQ	0.0	0.5	0.0	24.1	0.1	12.3	0.0	19.9	0.0	12.9	0.1	14.0	0.1	9.7	0.0	6.3	76.0
BEV_CDS	5.4	0.1	2.9	2.0	59.1	2.0	1.9	2.9	2.2	3.5	3.7	2.3	5.5	0.5	4.4	1.7	41.0
BEV_EQ	0.1	0.9	0.1	18.3	0.1	22.0	0.1	19.3	0.0	13.5	0.1	12.4	0.0	8.3	0.0	4.7	78.0
CG_O_CDS	11.9	0.1	5.8	1.1	1.0	1.6	67.5	1.1	0.5	1.3	2.8	0.7	0.2	0.2	4.1	0.1	32.0
CG_O_EQ	0.0	0.7	0.0	16.1	0.1	10.5	0.0	24.2	0.1	15.5	0.1	16.1	0.0	10.1	0.0	6.3	76.0
TOB_CDS	2.7	0.2	0.4	0.7	0.7	0.4	1.0	1.9	77.0	4.7	6.0	0.4	0.8	0.1	1.1	2.0	23.0
TOB_EQ	0.1	1.3	0.1	14.9	0.0	9.7	0.1	21.0	0.1	31.8	0.3	9.7	0.0	6.6	0.0	4.4	68.0
TEX_CDS	4.7	0.1	2.9	0.3	5.3	0.7	3.8	0.5	7.3	1.5	68.4	0.7	1.5	0.1	1.4	0.8	32.0
TEX_EQ	0.2	0.4	0.1	16.2	0.1	10.5	0.1	21.6	0.1	10.3	0.0	23.2	0.0	11.2	0.0	6.0	77.0
VEH_CDS	1.9	0.1	1.3	2.2	4.3	1.0	0.5	2.4	0.5	1.0	1.1	0.9	75.2	0.6	5.9	1.2	25.0
VEH_EQ	0.1	0.1	0.1	13.9	0.0	7.2	0.0	17.2	0.0	8.8	0.1	13.3	0.2	27.7	0.2	11.1	72.0
HOME_CDS	5.3	0.1	4.1	2.3	2.7	2.3	3.2	3.2	1.7	1.7	3.6	3.3	2.6	1.6	59.0	3.1	41.0
HOME_EQ	0.2	0.0	0.3	9.4	0.1	5.5	0.1	13.8	0.1	7.0	0.1	10.4	0.1	11.1	0.0	41.7	58.0
Contribution to others	70.0	5.0	53.0	115.0	18.0	77.0	23.0	146.0	17.0	96.0	22.0	99.0	13.0	71.0	32.0	53.0	910.0
Net Contribution	9.0	-89.0	-2.0	39.0	-23.0	-1.0	-9.0	70.0	-6.0	28.0	-10.0	22.0	-12.0	-1.0	-9.0	-5.0	56.8%

Notes: Tickers are as follows:- CG_CDS(Consumer Goods_CDS); CG_EQ(Consumer Goods_EQ); FOOD_CDS(Food Processor_CDS); FOOD_EQ(Food Processor_EQ); BEV_CDS(Beverages_CDS); BEV_EQ(Beverages_EQ); CG_O_CDS(Other Consumer Goods_CDS); CG_O_EQ(Other Consumer Goods_EQ); TOB_CDS(Tobacco_CDS); TOB_EQ(Tobacco_EQ); TEX_CDS(Textiles_CDS); TEX_EQ(Textiles_EQ); VEH_CDS(Vehicles_CDS); VEH_EQ(Vehicles_EQ); HOME_CDS(Home Builders_CDS); and HOME_EQ(Home Builders_EQ).

AFTER-CRISIS PERIOD

	CG_CDS	CG_EQ	FOOD_CDS	FOOD_EQ	BEV_CDS	BEV_EQ	CG_O_CDS	CG_O_EQ	TOB_CDS	TOB_EQ	TEX_CDS	TEX_EQ	VEH_CDS	VEH_EQ	HOME_CDS	HOME_EQ	From Others
CG_CDS	50.2	0.0	40.9	0.1	2.2	0.0	3.1	0.3	0.9	0.1	0.0	0.4	0.1	0.4	0.7	0.6	50.0
CG_EQ	0.1	7.0	0.1	17.6	0.3	13.5	0.1	24.1	0.0	8.1	0.2	15.1	0.1	8.3	0.2	5.2	93.0
FOOD_CDS	40.0	0.0	55.6	0.0	0.4	0.0	0.1	0.2	1.0	0.3	0.1	0.6	0.1	0.1	1.2	0.3	44.0

FOOD_EQ	0.2	0.4	0.6	33.6	0.4	11.4	0.2	20.1	0.0	6.2	0.3	14.0	0.1	7.2	0.2	5.1	66.0
BEV_CDS	1.8	0.1	0.4	0.4	88.9	1.4	2.1	0.2	0.7	1.1	1.2	0.1	0.0	0.2	1.5	0.0	11.0
BEV_EQ	0.1	0.4	0.2	16.1	0.5	35.1	0.1	20.7	0.1	8.9	0.6	9.6	0.1	4.0	0.4	3.4	65.0
CG_O_CDS	1.9	0.1	0.7	0.5	0.3	0.1	89.3	0.4	0.3	0.0	3.0	0.1	0.6	2.2	0.0	0.4	11.0
CG_O_EQ	0.1	0.2	0.2	15.2	0.4	11.7	0.1	30.0	0.0	10.7	0.6	18.0	0.2	6.6	0.4	5.6	70.0
TOB_CDS	1.4	0.1	2.2	0.2	1.7	0.5	0.1	0.4	80.2	0.9	6.1	1.0	0.4	0.3	0.1	4.5	20.0
TOB_EQ	0.1	0.2	0.1	11.0	0.5	11.1	0.1	22.2	0.0	42.5	0.2	6.5	0.0	3.8	0.2	1.6	58.0
TEX_CDS	0.1	0.2	0.3	0.1	0.2	0.1	1.8	0.1	6.2	0.0	84.4	0.3	0.1	0.1	0.1	6.1	16.0
TEX_EQ	0.2	0.2	0.2	13.5	0.5	8.4	0.1	23.0	0.1	3.2	0.4	35.8	0.1	8.6	0.4	5.2	64.0
VEH_CDS	0.2	0.1	0.1	0.1	0.5	0.3	0.8	0.1	0.9	0.6	0.0	0.7	95.1	0.3	0.2	0.1	5.0
VEH_EQ	0.1	0.2	0.1	12.6	0.3	6.4	0.8	14.8	0.1	2.7	0.4	13.7	0.1	40.6	0.3	6.8	59.0
HOME_CDS	0.2	0.2	0.4	2.2	0.2	1.0	1.0	2.5	0.1	0.1	0.4	4.5	0.3	2.8	82.6	1.5	17.0
HOME_EQ	0.0	0.0	0.2	6.6	2.3	4.7	0.4	9.7	0.1	3.0	0.5	5.7	0.7	7.1	0.7	58.1	42.0
Contribution to others	47.0	2.0	47.0	96.0	11.0	71.0	11.0	139.0	11.0	46.0	14.0	90.0	3.0	52.0	7.0	46.0	691.0
Net Contribution	-3.0	-91.0	3.0	30.0	0.0	6.0	0.0	69.0	-9.0	-12.0	-2.0	26.0	-2.0	-7.0	-10.0	4.0	43.20%

Notes: Tickers are as follows:- CG_CDS(Consumer Goods_CDS); CG_EQ(Consumer Goods_EQ); FOOD_CDS(Food Processor_CDS); FOOD_EQ(Food Processor_EQ); BEV_CDS(Beverages_CDS); BEV_EQ(Beverages_EQ); CG_O_CDS(Other Consumer Goods); CG_O_EQ(Other Consumer Goods_EQ); TOB_CDS(Tobacco_CDS); TOB_EQ(Tobacco_EQ); TEX_CDS(Textiles_CDS); TEX_EQ(Textiles_EQ); VEH_CDS(Vehicles_CDS); VEH_EQ(Vehicles_EQ); HOME_CDS(Home Builders_CDS); and HOME_EQ(Home Builders_EQ).

Table 142: CDS Spreads and Equity Volatility Connectedness: US Consumer Goods Static Analysis

FULL-SAMPLE PERIOD

	BNK_CDS	BNK_EQ	OF_CDS	OF_EQ	OF_O_CDS	OF_O_EQ	REITS_CDS	REITS_EQ	PC_CDS	PC_EQ	From Others
BNK_CDS	55.6	8.2	0.5	0.3	1.3	13.4	4.8	6.1	1.0	8.9	44.0
BNK_EQ	0.2	35.5	0.1	0.1	0.0	25.1	0.3	22.0	0.1	16.6	65.0
OF_CDS	0.3	26.4	6.4	0.0	0.1	24.9	0.5	21.4	0.1	19.8	94.0
OF_EQ	0.2	0.0	0.0	83.4	15.3	0.0	0.7	0.1	0.2	0.1	17.0
OF_O_CDS	0.2	0.0	0.0	79.6	19.2	0.0	0.6	0.1	0.2	0.1	81.0
OF_O_EQ	0.1	24.4	0.1	0.0	0.1	31.1	0.7	21.7	0.2	21.6	69.0
REITS_CDS	3.5	1.9	0.4	0.8	1.8	3.1	76.6	5.4	3.0	3.6	23.0
REITS_EQ	0.5	19.5	0.3	0.0	0.1	20.5	0.4	40.0	0.2	18.4	60.0
PC_CDS	1.4	0.3	0.1	0.1	0.2	0.4	2.9	0.5	94.0	0.1	6.0
PC_EQ	0.1	19.9	0.1	0.0	0.1	24.6	1.1	22.1	0.2	31.8	68.0
Contribution to others	6.0	101.0	2.0	81.0	19.0	112.0	12.0	99.0	5.0	89.0	526.0
Net Contribution	-38.0	36.0	-92.0	64.0	-62.0	43.0	-11.0	39.0	-1.0	21.0	52.60%

Notes: Tickers are as follows:- BNK_CDS(Banking CDS); BNK_EQ(Banking EQ); OF_CDS(Other Financials CDS); OF_EQ(Other Financialise); OF_O_CDS(Other Financials II_CDS); OF_O_EQ(Other Financials II_EQ); REITS_CDS(Real Estate Investment Trusts_CDS); RETS_EQ(Real Estate Investment Trusts_EQ); PC_CDS(Property&Casualty Insurance CDS); and PC_EQ(Property&Casualty Insurance_EQ).

CRISIS PERIOD

	BNK_CDS	BNK_EQ	OF_CDS	OF_EQ	OF_O_CDS	OF_O_EQ	REITS_CDS	REITS_EQ	PC_CDS	PC_EQ	From Others
BNK_CDS	51.5	7.8	0.6	1.6	1.8	14.4	5.6	6.0	0.8	9.8	49.0
BNK_EQ	0.2	35.4	0.2	0.0	0.0	24.6	0.4	22.5	0.0	16.7	65.0
OF_CDS	0.3	26.3	6.6	0.1	0.1	24.3	0.7	21.8	0.1	19.9	93.0
OF_EQ	0.6	0.0	0.0	51.9	45.7	0.0	1.4	0.0	0.1	0.0	48.0
OF_O_CDS	0.6	0.0	0.0	51.2	46.5	0.0	1.4	0.0	0.1	0.0	53.0
OF_O_EQ	0.1	24.1	0.1	0.1	0.1	30.3	0.9	22.2	0.2	22.0	70.0
REITS_CDS	2.7	1.7	0.5	4.1	4.2	2.7	71.0	5.4	3.5	4.0	29.0
REITS_EQ	1.0	20.0	0.3	0.1	0.0	21.3	0.3	37.8	0.2	18.9	62.0
PC_CDS	1.0	0.0	0.1	0.2	0.2	0.1	3.3	0.1	95.0	0.0	5.0
PC_EQ	0.0	19.8	0.1	0.1	0.1	24.7	1.5	22.3	0.2	31.0	69.0
Contribution to others	7.0	100.0	2.0	58.0	52.0	112.0	15.0	100.0	5.0	91.0	543.0
Net Contribution	-42.0	35.0	-91.0	10.0	-1.0	42.0	-14.0	38.0	0.0	22.0	54.3%

Notes: Tickers are as follows:- BNK_CDS(Banking_CDS); BNK_EQ(Banking_EQ); OF_CDS(Other Financials_CDS); OF_EQ(Other Financials_EQ); OF_O_CDS(Other Financials II_CDS); OF_O_EQ(Other Financials II_EQ); REITS_CDS(Real Estate Investment Trusts_CDS); RETS_EQ(Real Estate Investment Trusts_EQ); PC_CDS(Property&Casualty Insurance_CDS); and PC_EQ(Property&Casualty Insurance).

AFTER-CRISIS PERIOD

	BNK_CDS	BNK_EQ	OF_CDS	OF_EQ	OF_O_CDS	OF_O_EQ	REITS_CDS	REITS_EQ	PC_CDS	PC_EQ	From Others
BNK_CDS	87.6	7.8	0.9	0.2	0.0	0.4	0.5	0.3	1.2	1.2	12.0
BNK_EQ	1.7	88.8	1.6	0.4	0.0	2.9	0.0	4.5	0.0	0.0	11.0
OF_CDS	1.3	53.2	21.1	0.4	0.0	16.0	0.0	6.5	0.0	1.5	79.0
OF_EQ	0.1	1.0	0.2	97.7	0.0	0.3	0.1	0.2	0.4	0.0	2.0
OF_O_CDS	0.1	1.0	0.2	97.8	0.0	0.2	0.1	0.2	0.4	0.0	100.0
OF_O_EQ	1.3	55.0	1.4	0.7	0.0	37.3	0.1	3.9	0.1	0.2	63.0

REITS_CDS	6.4	0.1	0.2	0.4	0.0	1.3	91.1	0.1	0.4	0.0	9.0
REITS_EQ	0.2	6.0	0.1	0.7	0.0	4.1	0.0	88.5	0.1	0.3	12.0
PC_CDS	2.9	1.2	0.2	1.1	0.0	2.8	0.8	1.4	89.4	0.2	11.0
PC_EQ	0.7	34.4	1.7	0.1	0.0	11.3	0.1	7.2	0.2	44.2	56.0
Contribution to others	15.0	160.0	6.0	102.0	0.0	39.0	2.0	24.0	3.0	3.0	354.0
Net Contribution	3.0	149.0	-73.0	100.0	-100.0	-24.0	-7.0	12.0	-8.0	-53.0	35.40%

Notes: Tickers are as follows:- BNK_CDS(Banking_CDS); BNK_EQ(Banking_EQ); OF_CDS(Other Financials_CDS); OF_EQ(Other Financials_EQ); OF_O_CDS(Other Financials II_CDS); OF_O_EQ(Other Financials II_EQ); REITS_CDS(Real Estate Investment Trusts_CDS); RETS_EQ(Real Estate Investment Trusts_EQ); PC_CDS(Property&Casualty Insurance_CDS); and PC_EQ(Property&Casualty Insurance_EQ).

Table 143: CDS Spreads and Equity Volatility Connectedness: US Financials Static Analysis

FULL-SAMPLE PERIOD

	SVS_ CDS	SVS_ EQ	SVS_O _CDS	SVS_O _EQ	RET_ CDS	RET_ EQ	RET_O _CDS	RET_O _EQ	REST_ CDS	REST _EQ	CAB_ CDS	CAB_ EQ	LOD_ CDS	LOD_ EQ	PUB_ CDS	PUB_ EQ	AIR_ CDS	AIR_ EQ	LEI_ CDS	LEI_ EQ	From Others
SVS_CDS	45.7	0.0	9.0	0.2	0.4	0.4	34.0	0.1	4.6	0.2	3.7	0.1	0.0	0.2	0.2	0.2	0.2	0.2	0.0	0.5	54.0
SVS_EQ	0.0	4.2	0.0	15.8	0.0	8.2	0.0	14.3	0.0	9.5	0.0	13.1	0.0	9.3	0.0	9.8	0.0	3.3	0.0	12.4	96.0
SVS_O_CDS	11.4	0.1	79.0	0.1	4.2	0.8	0.1	0.1	0.1	0.0	3.3	0.1	0.2	0.0	0.0	0.1	0.1	0.1	0.0	0.2	21.0
SVS_O_EQ	0.0	0.0	0.0	16.6	0.0	8.1	0.0	15.0	0.0	9.6	0.0	13.8	0.0	9.8	0.0	10.3	0.0	3.6	0.1	13.0	83.0
RET_CDS	0.2	0.0	0.4	0.2	93.4	0.0	0.1	0.1	0.1	0.3	2.0	0.2	1.3	0.2	0.0	0.2	0.2	0.3	0.5	0.3	7.0
RET_EQ	0.1	0.2	0.0	14.4	0.0	20.4	0.0	12.1	0.0	9.0	0.0	13.1	0.0	8.2	0.0	9.8	0.0	2.2	0.1	10.4	80.0
RET_O_CDS	39.9	0.0	0.0	0.1	0.1	0.1	51.9	0.1	5.3	0.1	1.2	0.0	0.0	0.1	0.2	0.1	0.2	0.1	0.0	0.3	48.0
RET_O_EQ	0.0	0.0	0.0	17.0	0.0	7.5	0.0	19.4	0.0	9.5	0.0	11.7	0.0	9.3	0.0	9.5	0.0	3.8	0.0	12.1	81.0
REST_CDS	2.2	0.0	0.0	0.3	0.0	0.0	2.4	0.3	90.9	0.5	0.2	0.2	0.2	0.3	0.1	0.1	0.5	0.4	0.6	0.7	9.0
REST_EQ	0.0	0.1	0.0	14.3	0.0	6.4	0.0	13.1	0.0	19.6	0.0	11.2	0.0	8.2	0.1	9.0	0.0	3.7	0.1	14.2	80.0
CAB_CDS	0.5	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	94.9	0.2	0.4	0.1	1.3	0.1	0.2	0.1	0.3	0.3	5.0
CAB_EQ	0.0	0.1	0.0	15.6	0.0	7.9	0.0	11.7	0.0	8.7	0.0	19.3	0.0	10.1	0.0	11.5	0.0	3.2	0.1	11.6	81.0
LOD_CDS	0.0	0.0	0.0	0.4	0.1	0.2	0.0	0.5	0.1	0.6	0.3	0.2	95.8	0.2	0.2	0.7	0.1	0.1	0.0	0.2	4.0
LOD_EQ	0.0	0.1	0.0	12.2	0.0	4.6	0.0	9.6	0.0	8.3	0.0	11.2	0.0	24.0	0.2	9.5	0.0	5.4	0.1	14.7	76.0
PUB_CDS	2.6	0.1	0.1	0.6	0.2	0.3	1.5	0.5	0.4	1.1	0.7	0.6	0.0	1.6	85.2	0.5	1.7	1.0	0.2	1.3	15.0
PUB_EQ	0.0	0.0	0.0	14.3	0.0	7.1	0.0	11.8	0.0	8.5	0.1	14.8	0.1	9.5	0.0	19.7	0.0	2.7	0.1	11.2	80.0
AIR_CDS	1.3	0.0	0.8	0.6	0.1	0.1	1.5	0.5	0.6	0.2	0.2	0.6	0.2	0.3	0.3	0.3	88.3	2.6	0.3	1.3	12.0
AIR_EQ	0.0	0.0	0.1	9.2	0.0	3.0	0.0	8.3	0.1	5.8	0.0	7.2	0.0	9.3	0.1	6.1	0.0	37.4	0.4	12.8	63.0
LEI_CDS	1.2	0.1	0.0	1.3	0.2	1.3	1.2	1.0	1.0	0.7	0.3	1.7	0.0	2.4	0.6	0.6	0.5	1.4	83.4	1.2	17.0
LEI_EQ	0.0	0.0	0.0	14.5	0.0	5.9	0.0	12.2	0.0	10.9	0.0	11.1	0.0	12.3	0.1	9.0	0.0	5.6	0.1	17.9	82.0
Contribution to others	59.0	1.0	11.0	131.0	6.0	62.0	41.0	111.0	13.0	84.0	12.0	111.0	3.0	92.0	4.0	87.0	4.0	40.0	3.0	119.0	993.0
Net Contribution	5.0	-95.0	-10.0	48.0	-1.0	-18.0	-7.0	30.0	4.0	4.0	7.0	30.0	-1.0	16.0	-11.0	7.0	-8.0	-23.0	-14.0	37.0	49.60%

Notes: Tickers are as follows:- SVS_CDS(Consumer Services_CDS); SVS_EQ(Consumer Services_EQ); SVS_O_CDS(Other Consumer Services_CDS); SVS_O_EQ(Other Consumer Services_EQ); RET_CDS(Retail Stores_CDS); RET_EQ(Retail Stores_EQ); RET_O_CDS(Other Retail Stores_CDS); RET_O_EQ(Other Retail Stores_EQ); REST_CDS(Restaurants_CDS); REST_EQ(Restaurants_EQ); CAB_CDS(Cable Media_CDS); CAB_EQ(Cable Media_EQ); LOD_CDS(Lodging_CDS); LOD_EQ(Lodging_EQ); PUB_CDS(Publishing_CDS); PUB_EQ(Publishing_EQ); AIR_CDS(Airlines_CDS); and AIR_EQ(Airlines_EQ).

CRISIS PERIOD

	SVS_ CDS	SVS_ EQ	SVS_O _CDS	SVS_O _EQ	RET_ CDS	RET_ EQ	RET_O _CDS	RET_O _EQ	REST_ CDS	REST _EQ	CAB_ CDS	CAB_ EQ	LOD_ CDS	LOD_ EQ	PUB_ CDS	PUB_ EQ	AIR_ CDS	AIR_ EQ	LEI_C DS	LEI_ EQ	From Others
SVS_CDS	38.4	0.2	11.9	2.0	0.6	0.9	11.6	1.7	3.4	1.5	11.3	1.6	1.4	2.0	5.5	1.0	0.6	0.7	1.2	2.6	62.0
SVS_EQ	0.0	4.6	0.4	15.0	0.0	9.6	0.1	14.2	0.0	9.0	0.0	12.8	0.2	8.8	0.0	10.6	0.0	2.9	0.1	11.6	95.0
SVS_O_CDS	11.2	0.1	41.5	4.6	0.1	2.1	4.8	3.7	4.0	4.6	3.0	4.7	1.3	3.2	1.4	2.7	1.3	0.6	0.4	4.5	59.0
SVS_O_EQ	0.1	0.0	0.4	15.9	0.0	9.5	0.1	15.0	0.0	9.1	0.1	13.6	0.2	9.2	0.0	11.2	0.0	3.1	0.1	12.2	84.0
RET_CDS	1.2	0.2	1.2	0.6	85.0	0.2	0.5	0.4	0.1	1.3	0.7	0.7	0.1	1.3	0.8	0.6	1.5	1.0	1.1	1.4	15.0
RET_EQ	0.0	0.2	0.7	14.4	0.1	18.9	0.1	12.1	0.0	8.2	0.0	14.1	0.1	7.7	0.0	11.1	0.0	2.1	0.2	10.0	81.0
RET_O_CDS	14.7	0.1	7.1	2.5	0.7	0.9	46.0	2.6	3.6	2.0	4.5	2.1	3.1	2.1	1.2	1.7	1.3	0.7	0.3	2.5	54.0
RET_O_EQ	0.0	0.0	0.4	16.4	0.0	8.6	0.1	18.8	0.1	9.0	0.0	11.5	0.2	8.9	0.0	10.6	0.1	3.6	0.1	11.6	81.0
REST_CDS	4.4	0.1	4.3	0.8	0.2	0.4	6.0	1.0	70.9	1.6	1.3	0.4	4.5	0.5	0.5	0.1	0.6	0.3	1.1	1.0	29.0
REST_EQ	0.0	0.1	0.3	14.2	0.0	7.7	0.0	13.8	0.0	17.7	0.0	11.2	0.2	7.6	0.1	10.1	0.1	3.4	0.1	13.3	82.0
CAB_CDS	21.0	0.5	3.8	0.7	0.2	0.4	7.3	0.6	1.3	0.6	54.6	0.8	0.5	1.4	4.1	0.4	0.1	0.3	0.2	1.1	45.0
CAB_EQ	0.1	0.1	0.4	15.1	0.1	9.3	0.1	12.0	0.0	8.5	0.1	18.0	0.2	9.4	0.0	12.5	0.0	2.7	0.2	11.0	82.0
LOD_CDS	2.4	0.9	3.1	1.0	0.0	0.3	4.9	1.1	4.5	1.6	0.5	0.6	72.9	0.7	0.3	0.5	1.8	1.0	0.6	1.0	27.0
LOD_EQ	0.0	0.1	0.2	12.0	0.1	5.6	0.1	10.1	0.0	7.7	0.1	11.1	0.2	22.8	0.1	10.5	0.0	4.9	0.2	14.3	77.0
PUB_CDS	10.4	0.1	1.4	0.1	1.9	0.1	1.8	0.1	0.9	1.0	2.4	0.1	0.5	0.3	75.2	0.2	2.4	0.6	0.1	0.5	25.0
PUB_EQ	0.1	0.1	0.2	14.4	0.0	8.5	0.1	12.5	0.0	8.0	0.0	14.7	0.2	9.3	0.0	18.4	0.0	2.5	0.1	10.6	82.0
AIR_CDS	2.6	0.2	2.3	1.2	0.0	0.5	2.5	1.3	0.9	1.2	0.7	0.8	3.3	1.1	0.5	0.5	70.5	6.5	0.2	3.1	30.0
AIR_EQ	0.1	0.0	0.3	8.9	0.1	3.9	0.2	9.3	0.0	5.3	0.0	6.7	0.1	7.9	0.1	6.5	0.1	38.4	0.6	11.4	62.0
LEI_CDS	3.1	0.1	1.9	1.1	0.1	1.3	0.8	0.9	1.1	0.6	1.2	1.7	0.8	2.3	0.3	0.8	0.2	1.3	79.4	1.1	21.0
LEI_EQ	0.0	0.0	0.2	14.3	0.0	7.4	0.0	12.9	0.0	10.4	0.1	11.0	0.2	11.6	0.1	9.8	0.1	4.8	0.2	16.9	83.0
Contribution to others	72.0	3.0	40.0	139.0	4.0	77.0	41.0	125.0	20.0	91.0	26.0	120.0	17.0	95.0	15.0	101.0	10.0	43.0	7.0	125.0	1175.0

Net Contribution	10.0	-92.0	-19.0	55.0	-11.0	-4.0	-13.0	44.0	-9.0	9.0	-19.0	38.0	-10.0	18.0	-10.0	19.0	-20.0	-19.0	-14.0	42.0	58.8%

Notes: Tickers are as follows:- SVS_CDS(Consumer Services_CDS); SVS_EQ(Consumer Services_EQ); SVS_O_CDS(Other Consumer Services_CDS); SVS_O_EQ(Other Consumer Services_EQ); RET_CDS(Retail Stores_CDS); RET_EQ(Retail Stores_EQ); RET_O_CDS(Other Retail Stores_CDS); RET_O_EQ(Other Retail Stores_EQ); REST_CDS(Restaurants_CDS); REST_EQ(Restaurants_EQ); CAB_CDS(Cable Media_CDS); CAB_EQ(Cable Media_EQ); LOD_CDS(Lodging_CDS); LOD_EQ(Lodging_EQ); PUB_CDS(Publishing_CDS); PUB_EQ(Publishing_EQ); AIR_CDS(Airlines_CDS); and AIR_EQ(Airlines_EQ).

AFTER-CRISIS PERIOD

	SVS_ CDS	SVS_ EQ	SVS_O _CDS	SVS_O _EQ	RET_ CDS	RET_ EQ	RET_O _CDS	RET_O _EQ	REST_ CDS	REST _EQ	CAB_ CDS	CAB_ EQ	LOD_ CDS	LOD_ EQ	PUB_ CDS	PUB_ EQ	AIR_ CDS	AIR_ EQ	LEI_ CDS	LEI_ EQ	From Others
SVS_CDS	45.0	0.1	8.8	0.2	0.4	0.5	33.8	0.1	4.6	0.2	3.3	0.3	0.0	0.2	1.2	0.1	0.3	0.2	0.0	0.7	55.0
SVS_EQ	0.1	4.9	0.0	19.8	0.1	5.2	0.2	15.4	0.0	10.7	0.1	13.1	0.3	6.9	0.1	6.2	0.0	2.4	0.2	14.4	95.0
SVS_O_CDS	10.5	0.2	77.2	0.2	4.8	1.3	0.2	0.1	0.0	0.0	3.1	0.4	0.1	0.2	0.2	0.2	0.2	0.5	0.0	0.6	23.0
SVS_O_EQ	0.1	0.2	0.0	21.0	0.1	5.4	0.2	16.3	0.0	11.0	0.2	13.4	0.4	7.5	0.1	6.2	0.1	2.6	0.1	15.2	79.0
RET_CDS	0.1	0.0	0.6	0.4	91.3	0.0	0.0	0.1	0.3	0.5	2.0	0.4	1.3	0.5	0.1	0.4	0.1	0.6	0.8	0.5	9.0
RET_EQ	0.5	0.3	0.1	14.3	0.2	30.5	0.4	12.0	0.1	10.4	0.3	7.3	0.3	7.1	0.3	4.2	0.2	1.0	0.1	10.5	69.0
RET_O_CDS	39.6	0.2	0.1	0.2	0.1	0.3	50.6	0.1	5.2	0.2	1.2	0.2	0.1	0.1	0.9	0.0	0.3	0.1	0.0	0.4	49.0
RET_O_EQ	0.1	0.1	0.0	21.3	0.1	5.1	0.2	26.2	0.0	10.8	0.3	9.8	0.6	5.8	0.0	5.0	0.1	1.9	0.1	12.4	74.0
REST_CDS	0.7	0.2	0.1	0.1	0.0	0.4	0.9	0.1	94.9	0.4	0.5	0.1	0.1	0.1	0.2	0.1	0.5	0.1	0.4	0.1	5.0
REST_EQ	0.1	0.1	0.0	15.0	0.3	3.9	0.1	11.1	0.2	30.7	0.0	9.1	0.5	6.0	0.2	4.5	0.1	1.9	0.2	15.9	69.0
CAB_CDS	0.4	0.0	0.2	0.3	0.4	0.2	0.6	0.3	0.1	0.2	94.1	0.6	0.3	0.3	0.2	0.4	0.3	0.2	0.4	0.3	6.0
CAB_EQ	0.1	0.2	0.1	18.5	0.0	5.0	0.1	10.4	0.0	8.4	0.1	26.4	0.3	8.4	0.1	7.1	0.1	2.0	0.2	12.5	74.0
LOD_CDS	0.0	0.1	0.1	2.2	0.1	0.4	0.0	2.6	0.0	2.2	0.2	1.8	83.6	2.5	0.1	2.2	0.2	0.1	0.0	1.4	16.0
LOD_EQ	0.0	0.1	0.2	12.7	0.2	3.4	0.0	6.6	0.2	10.8	0.0	9.6	0.3	29.6	0.1	6.2	0.1	3.8	0.1	15.9	70.0
PUB_CDS	8.7	0.1	0.4	1.8	0.3	7.3	10.9	0.7	0.9	0.2	0.6	0.8	0.2	1.3	61.5	0.5	1.8	0.1	0.5	1.4	38.0
PUB_EQ	0.0	0.2	0.1	13.8	0.0	3.8	0.0	8.9	0.1	8.5	0.4	13.7	1.2	6.6	0.0	29.7	0.1	1.5	0.1	11.3	70.0
AIR_CDS	1.0	0.1	1.5	0.1	0.1	0.0	1.4	0.0	0.4	0.3	0.3	0.2	0.2	0.2	0.4	0.2	92.7	0.2	0.5	0.2	7.0
AIR_EQ	0.1	0.1	0.7	8.1	0.5	1.2	0.2	3.7	1.0	4.4	0.0	4.3	0.3	7.7	0.7	3.1	0.3	45.4	0.7	17.7	55.0
LEI_CDS	2.6	0.5	0.4	0.8	0.4	0.2	3.5	0.2	0.9	1.3	0.1	0.2	0.2	1.2	3.0	0.2	1.0	0.2	82.5	0.7	18.0
LEI_EQ	0.2	0.1	0.0	16.4	0.0	3.4	0.2	9.8	0.3	12.8	0.1	10.8	0.4	10.2	0.3	5.9	0.1	6.2	0.2	22.7	77.0
Contribution to others	65.0	3.0	13.0	146.0	8.0	47.0	53.0	99.0	14.0	93.0	13.0	96.0	7.0	73.0	8.0	53.0	6.0	25.0	5.0	132.0	959.0
Net Contribution	10.0	-92.0	-10.0	67.0	-1.0	-22.0	4.0	25.0	9.0	24.0	7.0	22.0	-9.0	3.0	-30.0	-17.0	-1.0	-30.0	-13.0	55.0	48.00%

Notes: Tickers are as follows:- SVS_CDS(Consumer Services_CDS); SVS_EQ(Consumer Services_EQ); SVS_O_CDS(Other Consumer Services_CDS); SVS_O_EQ(Other Consumer Services_EQ); RET_CDS(Retail Stores_CDS); RET_EQ(Retail Stores_EQ); RET_O_CDS(Other Retail Stores_CDS); RET_O_EQ(Other Retail Stores_EQ); REST_CDS(Restaurants_CDS); REST_EQ(Restaurants_EQ); CAB_CDS(Cable Media_CDS); CAB_EQ(Cable Media_EQ); LOD_CDS(Lodging_CDS); LOD_EQ(Lodging_EQ); PUB_CDS(Publishing_CDS); PUB_EQ(Publishing_EQ); AIR_CDS(Airlines_CDS); and AIR_EQ(Airlines_EQ).

Table 144: CDS Spreads and Equity Volatility Connectedness: US Consumer Services Static Analysis

FULL-SAMPLE PERIOD

	TRSP_ CDS	TRSP _EQ	BLD_ CDS	BLD_ EQ	CON_ CDS	CON_ EQ	ELTN_ CDS	ELTN _EQ	IND_ CDS	IND_ EQ	RAIL_ CDS	RAIL _EQ	CGM_ CDS	CGM _EQ	MACH _CDS	MACH _EQ	From Others
TRSP_CDS	95.9	0.0	1.5	0.0	0.1	0.2	0.5	0.0	0.4	0.0	0.8	0.1	0.1	0.0	0.1	0.2	4.0
TRSP_EQ	0.0	18.3	0.0	9.2	0.0	10.3	0.0	11.7	0.0	14.1	0.0	14.0	0.0	10.8	0.0	11.6	82.0
BLD_CDS	1.3	0.8	79.9	1.1	0.7	3.3	0.1	2.7	0.3	2.5	0.4	0.6	1.2	1.6	0.2	3.2	20.0
BLD_EQ	0.0	11.5	0.0	17.6	0.1	12.4	0.0	12.8	0.1	13.8	0.0	7.6	0.0	11.4	0.0	12.7	82.0
CON_CDS	0.0	0.3	1.2	0.8	83.6	1.3	2.0	0.4	0.8	0.7	1.2	0.2	3.6	1.0	1.9	1.1	16.0
CON_EQ	0.0	10.9	0.0	10.8	0.0	19.9	0.0	12.7	0.0	13.9	0.0	7.6	0.0	11.3	0.0	12.6	80.0
ELTN_CDS	0.3	0.0	0.2	0.1	2.7	0.0	93.7	0.1	0.5	0.2	0.7	0.2	0.1	0.2	0.8	0.1	6.0
ELTN_EQ	0.0	11.3	0.1	10.2	0.0	11.7	0.0	17.0	0.0	15.6	0.0	7.4	0.0	12.1	0.0	14.6	83.0
IND_CDS	0.1	0.4	0.4	1.1	0.6	0.6	0.6	0.4	92.4	0.5	0.3	0.5	0.7	0.5	0.4	0.5	8.0
IND_EQ	0.0	12.3	0.0	10.5	0.0	11.4	0.0	13.8	0.0	16.3	0.0	8.1	0.0	13.6	0.0	13.8	84.0
RAIL_CDS	1.0	1.0	1.4	1.1	1.6	1.6	0.5	0.9	1.6	1.3	79.9	0.7	2.0	1.2	2.9	1.1	20.0
RAIL_EQ	0.0	18.3	0.0	8.2	0.0	9.2	0.0	10.8	0.0	12.8	0.0	20.0	0.0	9.7	0.0	10.7	80.0
CGM_CDS	0.1	1.4	1.2	1.1	3.3	0.9	0.3	1.1	0.5	1.7	0.9	0.7	84.3	1.3	0.3	1.1	16.0
CGM_EQ	0.0	11.2	0.0	10.5	0.0	10.9	0.0	12.0	0.0	15.7	0.0	7.4	0.0	20.3	0.0	11.8	80.0
MACH_CDS	0.4	0.0	0.3	0.2	1.6	0.1	0.6	0.0	0.3	0.0	0.2	0.0	0.5	0.0	95.8	0.0	4.0
MACH_EQ	0.0	11.4	0.1	10.4	0.0	11.0	0.0	14.4	0.0	15.4	0.0	7.8	0.0	12.4	0.0	17.1	83.0
Contribution to others	3.0	91.0	6.0	75.0	11.0	85.0	5.0	94.0	5.0	108.0	5.0	63.0	8.0	87.0	7.0	95.0	748.0
Net Contribution	-1.0	9.0	-14.0	-7.0	-5.0	5.0	-1.0	11.0	-3.0	24.0	-15.0	-17.0	-8.0	7.0	3.0	12.0	46.70%

Notes: Tickers are as follows:- TRSP_CDS(Transportation_CDS); TRSP_EQ(Transportation_EQ); BLD_CDS(Buildings Products_CDS); BLD_EQ(Buildings Products_EQ); CON_CDS(Containers_CDS); CON_EQ(Containers_EQ); ELTN_CDS(Electronics_CDS); ELTN_EQ(Electronics_EQ); IND_CDS(Industrials_CDS); IND_EQ(Industrials_EQ); RAIL_CDS(Railroads_CDS); RAIL_EQ(Railroads_EQ); CGM_CDS(Consumer Goods_CDS); CGM_EQ(Consumer Goods_EQ); MACH_CDS(Machinery_CDS); and MACH_EQ(Machinery_EQ).

CRISIS PERIOD

	TRSP_ CDS	TRSP _EQ	BLD_ CDS	BLD_ EQ	CON_ CDS	CON_ EQ	ELTN_ CDS	ELTN _EQ	IND_ CDS	IND_ EQ	RAIL_ CDS	RAIL _EQ	CGM_ CDS	CGM _EQ	MACH _CDS	MACH _EQ	From Others
TRSP_CDS	96.1	0.1	0.9	0.4	0.0	0.0	0.4	0.0	0.3	0.1	1.0	0.1	0.2	0.1	0.3	0.0	4.0
TRSP_EQ	0.1	17.8	0.0	9.7	0.0	11.4	0.0	11.2	0.1	13.6	0.0	14.2	0.1	10.3	0.0	11.4	82.0
BLD_CDS	0.7	1.1	76.0	1.3	0.5	5.0	0.2	2.3	0.2	3.0	0.3	0.8	2.2	2.0	1.1	3.1	24.0
BLD_EQ	0.1	11.7	0.1	17.1	0.1	13.3	0.0	12.3	0.0	13.5	0.1	7.9	0.0	11.0	0.2	12.8	83.0
CON_CDS	0.1	0.0	1.0	0.4	81.6	0.7	4.0	0.1	0.6	0.1	3.0	0.1	3.6	0.4	3.6	0.7	18.0
CON_EQ	0.1	11.0	0.1	11.2	0.0	19.3	0.0	12.3	0.0	13.9	0.0	8.0	0.0	11.3	0.2	12.6	81.0
ELTN_CDS	0.4	0.2	0.4	0.1	6.4	0.1	84.5	0.1	0.7	0.1	0.9	0.2	0.4	0.1	5.3	0.1	15.0
ELTN_EQ	0.0	11.1	0.2	10.3	0.0	12.9	0.0	16.3	0.0	15.0	0.0	7.8	0.0	11.6	0.1	14.4	84.0
IND_CDS	0.4	0.6	0.4	1.4	0.5	0.6	0.2	0.6	89.7	0.5	1.2	0.6	1.2	1.0	0.2	0.9	10.0
IND_EQ	0.0	12.1	0.1	10.6	0.0	12.6	0.0	13.3	0.0	15.7	0.0	8.5	0.0	13.1	0.1	13.7	84.0
RAIL_CDS	1.7	1.7	0.8	2.0	2.9	3.4	0.4	1.3	0.7	2.3	68.6	1.2	1.4	2.2	7.0	2.4	31.0
RAIL_EQ	0.1	17.9	0.1	8.5	0.0	10.5	0.0	10.5	0.2	12.6	0.0	19.7	0.1	9.5	0.0	10.5	80.0
CGM_CDS	0.2	0.4	2.3	0.4	3.3	0.5	3.0	0.4	0.6	0.6	1.2	0.2	83.5	0.5	2.6	0.5	16.0
CGM_EQ	0.1	10.9	0.0	10.7	0.0	12.0	0.0	11.5	0.1	15.2	0.0	7.6	0.1	20.1	0.1	11.4	80.0
MACH_CDS	0.3	3.4	0.8	2.3	2.5	4.2	0.8	4.9	0.1	6.0	4.4	2.9	1.5	5.4	54.6	5.8	45.0
MACH_EQ	0.1	11.5	0.2	10.6	0.0	12.0	0.0	13.7	0.0	14.9	0.0	8.4	0.0	11.9	0.1	16.5	83.0
Contribution to others	4.0	94.0	8.0	80.0	16.0	99.0	9.0	94.0	4.0	111.0	12.0	68.0	11.0	90.0	21.0	100.0	823.0
Net Contribution	0.0	12.0	-16.0	-3.0	-2.0	18.0	-6.0	10.0	-6.0	27.0	-19.0	-12.0	-5.0	10.0	-24.0	17.0	51.4%

Notes: Tickers are as follows:- TRSP_CDS(Transportation_CDS); TRSP_EQ(Transportation_EQ); BLD_CDS(Buildings Products_CDS); BLD_EQ(Buildings Products_EQ); CON_CDS(Containers_CDS); CON_EQ(Containers_EQ); ELTN_CDS(Electronics_CDS); ELTN_EQ(Electronics_EQ); IND_CDS(Industrials_CDS); IND_EQ(Industrials_EQ); RAIL_CDS(Railroads_CDS); RAIL_EQ(Railroads_EQ); CGM_CDS(Consumer Goods_CDS); CGM_EQ(Consumer Goods_EQ); MACH_CDS(Machinery_CDS); and MACH_EQ(Machinery_EQ).

AFTER-CRISIS PERIOD

	TRSP_ CDS	TRSP _EQ	BLD_ CDS	BLD_ EQ	CON_ CDS	CON_ EQ	ELTN_ CDS	ELTN _EQ	IND_ CDS	IND_ EQ	RAIL_ CDS	RAIL _EQ	CGM_ CDS	CGM _EQ	MACH _CDS	MACH _EQ	From Others
TRSP_CDS	90.0	0.2	2.3	0.4	0.4	1.3	0.6	0.3	0.7	0.5	0.6	0.2	0.8	0.3	0.2	1.3	10.0
TRSP_EQ	0.1	22.6	0.1	6.1	0.1	6.8	0.0	12.3	0.3	14.9	0.0	16.8	0.4	9.3	0.3	9.9	77.0

BLD_CDS	2.2	0.3	83.5	0.6	1.2	0.6	0.1	3.6	0.9	1.4	0.6	0.2	0.3	1.1	0.3	3.2	17.0
BLD_EQ	0.4	9.1	0.2	25.7	0.1	10.5	0.3	13.5	0.2	13.4	0.2	7.0	0.3	9.5	0.1	9.6	74.0
CON_CDS	0.1	0.9	2.1	0.3	79.5	0.9	0.3	1.1	1.2	1.5	0.3	0.2	4.9	1.9	4.4	0.5	20.0
CON_EQ	0.1	9.0	0.2	8.5	0.2	30.1	0.1	13.3	0.1	13.0	0.3	6.4	0.3	8.3	0.1	10.3	70.0
ELTN_CDS	0.3	0.0	0.1	0.5	0.3	0.2	94.0	0.4	0.3	0.6	0.9	0.4	0.2	0.6	0.7	0.4	6.0
ELTN_EQ	0.1	11.1	0.2	8.8	0.1	8.5	0.1	21.2	0.0	17.3	0.2	7.2	0.3	11.6	0.1	13.4	79.0
IND_CDS	0.1	0.7	0.6	1.6	1.5	1.1	1.0	0.3	89.4	0.7	0.1	1.3	0.3	0.4	0.8	0.2	11.0
IND_EQ	0.2	12.7	0.2	8.6	0.1	8.1	0.1	15.3	0.1	19.3	0.2	8.1	0.3	14.3	0.2	12.5	81.0
RAIL_CDS	0.6	0.3	2.9	0.5	0.6	1.0	0.7	0.7	3.0	0.8	78.3	0.2	4.8	0.7	4.3	0.6	22.0
RAIL_EQ	0.1	20.4	0.0	5.9	0.0	5.5	0.0	11.0	0.1	12.5	0.0	25.8	0.6	7.6	0.3	10.1	74.0
CGM_CDS	0.6	4.9	0.2	3.2	4.2	2.0	0.5	3.5	1.0	4.5	0.5	2.1	66.4	3.2	0.7	2.3	34.0
CGM_EQ	0.2	10.2	0.2	8.0	0.1	7.7	0.2	12.0	0.1	17.9	0.3	7.0	0.4	24.5	0.1	10.9	75.0
MACH_CDS	0.6	0.2	0.3	0.5	3.5	0.3	0.8	0.3	0.7	0.1	0.2	0.1	1.4	0.0	90.8	0.1	9.0
MACH_EQ	0.1	10.1	0.2	8.5	0.1	8.4	0.3	15.8	0.1	17.3	0.1	6.9	0.1	12.2	0.0	19.9	80.0
Contribution to others	6.0	90.0	10.0	62.0	12.0	63.0	5.0	103.0	9.0	116.0	5.0	64.0	16.0	81.0	13.0	85.0	739.0
Net Contribution	-4.0	13.0	-7.0	-12.0	-8.0	-7.0	-1.0	24.0	-2.0	35.0	-17.0	-10.0	-18.0	6.0	4.0	5.0	46.20%

Notes: Tickers are as follows:- TRSP_CDS(Transportation_CDS); TRSP_EQ(Transportation_EQ); BLD_CDS(Buildings Products_CDS); BLD_EQ(Buildings Products_EQ); CON_CDS(Containers_CDS); CON_EQ(Containers_EQ); ELTN_CDS(Electronics_CDS); ELTN_EQ(Electronics_EQ); IND_CDS(Industrials_CDS); IND_EQ(Industrials_EQ); RAIL_CDS(Railroads_CDS); RAIL_EQ(Railroads_EQ); CGM_CDS(Consumer Goods_CDS); CGM_EQ(Consumer Goods_EQ); MACH_CDS(Machinery_CDS); and MACH_EQ(Machinery_EQ).

Table 145: CDS Spreads and Equity Volatility Connectedness: US Industrials Static Analysis

FULL-SAMPLE PERIOD

	HLT_CDS	HLT_EQ	SUP_CDS	SUP_EQ	PHARMA_CDS	PHARMA_EQ	From Others
HLT_CDS	95.5	0.5	2.3	0.8	0.3	0.5	4.0
HLT_EQ	0.3	41.1	0.1	30.2	0.1	28.2	59.0
SUP_CDS	1.7	0.0	94.5	0.0	3.3	0.4	5.0
SUP_EQ	0.1	31.1	0.2	42.7	0.2	25.6	57.0
PHARMA_CDS	1.5	0.4	2.3	0.4	94.0	1.5	6.0
PHARMA_EQ	0.4	29.4	0.2	25.4	0.1	44.6	55.0
Contribution to others	4.0	62.0	5.0	57.0	4.0	56.0	188.0
Net Contribution	0.0	3.0	0.0	0.0	-2.0	1.0	31.30%

Notes: Tickers are as follows:- HLT_CDS(Healthcare Facilities_CDS); HLT_EQ(Healthcare Facilities_Equity); SUP_CDS(Healthcare Supplies_CDS); SUP_EQ(Healthcare Supplies_EQ); PHARMA_CDS(Pharmaceuticals_CDS); and PHARMA_EQ(Pharmaceuticals_EQ);

CRISIS PERIOD

	HLT_CDS	HLT_EQ	SUP_CDS	SUP_EQ	PHARMA_CDS	PHARMA_EQ	From Others
HLT_CDS	77.7	6.4	5.4	5.0	2.3	3.3	22.0
HLT_EQ	2.0	37.2	0.0	30.6	0.3	29.9	63.0
SUP_CDS	7.2	0.2	85.3	0.2	6.6	0.6	15.0
SUP_EQ	1.1	29.7	0.2	42.1	0.3	26.7	58.0
PHARMA_CDS	4.8	0.2	6.8	0.3	87.3	0.7	13.0
PHARMA_EQ	1.6	28.0	0.1	26.2	0.3	43.8	56.0
Contribution to others	17.0	64.0	12.0	62.0	10.0	61.0	227.0
Net Contribution	-5.0	1.0	-3.0	4.0	-3.0	5.0	38%

Notes: Tickers are as follows:- HLT_CDS(Healthcare Facilities_CDS); HLT_EQ(Healthcare Facilities_Equity); SUP_CDS(Healthcare Supplies_CDS); SUP_EQ(Healthcare Supplies_EQ); PHARMA_CDS(Pharmaceuticals_CDS); and PHARMA_EQ(Pharmaceuticals_EQ);

AFTER-CRISIS PERIOD

	HLT_CDS	HLT_EQ	SUP_CDS	SUP_EQ	PHARMA_CDS	PHARMA_EQ	From Others
HLT_CDS	96.7	0.1	2.0	0.5	0.2	0.4	3.0
HLT_EQ	0.2	47.9	0.4	27.3	0.2	24.0	52.0
SUP_CDS	0.1	0.8	95.2	2.6	1.2	0.1	5.0
SUP_EQ	0.0	29.7	0.4	45.8	1.2	22.9	54.0
PHARMA_CDS	0.4	4.7	0.3	2.4	86.9	5.3	13.0
PHARMA_EQ	0.3	28.6	0.3	22.6	0.1	48.2	52.0
Contribution to others	1.0	64.0	3.0	55.0	3.0	53.0	179.0
Net Contribution	-2.0	12.0	-2.0	1.0	-10.0	1.0	29.90%

Notes: Tickers are as follows:- HLT_CDS(Healthcare Facilities_CDS); HLT_EQ(Healthcare Facilities_Equity); SUP_CDS(Healthcare Supplies_CDS); SUP_EQ(Healthcare Supplies_EQ); PHARMA_CDS(Pharmaceuticals_CDS); and PHARMA_EQ(Pharmaceuticals_EQ).

Table 146: CDS Spreads and Equity Volatility Connectedness: US Healthcare Static Analysis

FULL-SAMPLE PERIOD

	OIL_CDS	OIL_EQ	OILP_CDS	OILP_EQ	From Others
OIL_CDS	93.7	1.0	2.9	2.5	6.0
OIL_EQ	0.6	99.1	0.1	0.1	1.0
OILP_CDS	0.0	0.0	50.2	49.7	50.0
OILP_EQ	0.0	0.0	49.2	50.8	49.0
Contribution to others	1.0	1.0	52.0	52.0	106.0
Net Contribution	-5.0	0.0	2.0	3.0	26.50%

Notes: Tickers are as follows:- OIL_CDS(Oil&Gas_CDS); OIL_EQ(Oil&Gas_Equity); OILP_CDS(Oil&Gas Production_CDS); and OIL_EQ(Oil&Gas Production_EQ).

CRISIS PERIOD

	OIL_CDS	OIL_EQ	OILP_CDS	OILP_EQ	From Others
OIL_CDS	76.7	2.3	10.9	10.2	23.0
OIL_EQ	2.5	96.8	0.3	0.4	3.0
OILP_CDS	0.4	0.0	49.5	50.0	50.0
OILP_EQ	0.5	0.0	48.8	50.7	49.0
Contribution to others	3.0	2.0	60.0	61.0	126.0
Net Contribution	-20.0	-1.0	10.0	12.0	31.6%

Notes: Tickers are as follows:- OIL_CDS(Oil&Gas_CDS); OIL_EQ(Oil&Gas_Equity); OILP_CDS(Oil&Gas Production_CDS); and OIL_EQ(Oil&Gas Production_EQ).

AFTER-CRISIS PERIOD

	OIL_CDS	OIL_EQ	OILP_CDS	OILP_EQ	From Others
OIL_CDS	90.4	0.1	5.1	4.4	10.0
OIL_EQ	0.0	96.6	1.8	1.6	3.0
OILP_CDS	0.0	0.2	51.8	47.9	48.0
OILP_EQ	0.0	0.3	49.2	50.5	49.0
Contribution to others	0.0	1.0	56.0	54.0	111.0
Net Contribution	-10.0	-2.0	8.0	5.0	27.70%

Notes: Tickers are as follows:- OIL_CDS(Oil&Gas_CDS); OIL_EQ(Oil&Gas_Equity); OILP_CDS(Oil&Gas Production_CDS); and OIL_EQ(Oil&Gas Production_EQ).

Table 147: CDS Spreads and Equity Volatility Connectedness: US Oil&Gas Static Analysis

FULL-SAMPLE PERIOD

	CHEM_CDS	CHEM_EQ	MT_CDS	MT_EQ	From Others
CHEM_CDS	99.6	0.0	0.1	0.3	0.0
CHEM_EQ	0.0	58.1	0.0	41.8	42.0
MT_CDS	1.2	0.1	98.7	0.0	1.0
MT_EQ	0.0	40.4	0.1	59.5	40.0
Contribution to others	1.0	40.0	0.0	42.0	84.0
Net Contribution	1.0	-2.0	-1.0	2.0	21.00%

Notes: Tickers are as follows:- CHEM_CDS(Chemicals_CDS); CHEM_EQ(Chemicals_Equity); MT_CDS(Metals&Mining_CDS); and MT_EQ(Metals&Mining_EQ).

CRISIS PERIOD

	CHEM_CDS	CHEM_EQ	MT_CDS	MT_EQ	From Others
CHEM_CDS	80.0	6.2	7.8	5.9	20.0
CHEM_EQ	0.0	54.2	1.7	44.1	46.0
MT_CDS	7.5	6.2	82.9	3.4	17.0
MT_EQ	0.2	40.7	1.1	58.0	42.0
Contribution to others	8.0	53.0	11.0	53.0	125.0
Net Contribution	-12.0	7.0	-6.0	11.0	31.2%

Notes: Tickers are as follows:- CHEM_CDS(Chemicals_CDS); CHEM_EQ(Chemicals_Equity); MT_CDS(Metals&Mining_CDS); and MT_EQ(Metals&Mining_EQ).

AFTER-CRISIS PERIOD

	CHEM_CDS	CHEM_EQ	MT_CDS	MT_EQ	From Others
CHEM_CDS	99.2	0.6	0.1	0.1	1.0
CHEM_EQ	0.0	73.9	0.8	25.3	26.0
MT_CDS	0.7	2.8	95.3	1.2	5.0
MT_EQ	0.9	25.7	1.4	72.0	28.0
Contribution to others	2.0	29.0	2.0	27.0	60.0
Net Contribution	1.0	3.0	-3.0	-1.0	14.90%

Notes: Tickers are as follows:- CHEM_CDS(Chemicals_CDS); CHEM_EQ(Chemicals_Equity); MT_CDS(Metals&Mining_CDS); and MT_EQ(Metals&Mining_EQ).

Table 148: CDS Spreads and Equity Volatility Connectedness: US Basic Materials Static Analysis

FULL-SAMPLE PERIOD

	TELE_CDS	TELE_EQ	TELE_O_CDS	TELE_O_EQ	From Others
TELE_CDS	54.3	0.0	1.4	44.3	46.0
TELE_EQ	0.1	17.9	81.9	0.1	82.0
TELE_O_CDS	0.1	0.1	99.7	0.1	0.0
TELE_O_EQ	46.3	0.0	1.0	52.7	47.0
Contribution to others	47.0	0.0	84.0	45.0	176.0
Net Contribution	1.0	-82.0	84.0	-2.0	0.4

Notes: Tickers are as follows:- TELE_CDS(Telecommunications_CDS); TELE_EQ(Telecommunications_Equity); TELE_O_CDS(Other Telecommunications_CDS); and TELE_O_EQ(Other Telecommunications_EQ).

CRISIS PERIOD

	TELE_CDS	TELE_EQ	TELE_O_CDS	TELE_O_EQ	From Others
TELE_CDS	59.6	0.1	2.5	37.8	40.0
TELE_EQ	0.3	18.6	81.0	0.1	81.0
TELE_O_CDS	0.4	0.1	99.2	0.3	1.0
TELE_O_EQ	38.9	0.0	1.1	59.9	40.0
Contribution to others	40.0	0.0	85.0	38.0	163.0
Net Contribution	0.0	-81.0	84.0	-2.0	40.7%

Notes: Tickers are as follows:- TELE_CDS(Telecommunications_CDS); TELE_EQ(Telecommunications_Equity); TELE_O_CDS(Other Telecommunications_CDS); and TELE_O_EQ(Other Telecommunications_EQ).

AFTER-CRISIS PERIOD

	TELE_CDS	TELE_EQ	TELE_O_CDS	TELE_O_EQ	From Others
TELE_CDS	49.2	0.1	1.4	49.2	51.0
TELE_EQ	0.6	25.1	73.6	0.6	75.0
TELE_O_CDS	0.5	1.7	97.3	0.5	3.0
TELE_O_EQ	49.1	0.1	1.4	49.3	51.0
Contribution to others	50.0	2.0	77.0	50.0	179.0
Net Contribution	-1.0	-73.0	74.0	-1.0	44.80%

Notes: Tickers are as follows:- TELE_CDS(Telecommunications_CDS); TELE_EQ(Telecommunications_Equity); TELE_O_CDS(Other Telecommunications_CDS); and TELE_EQ(Other Telecommunications_EQ).

Table 149: CDS Spreads and Equity Volatility Connectedness: US Telecommunications Static Analysis

FULL-SAMPLE PERIOD

	UT_CDS	UT_EQ	ELUT_CDS	ELUT_EQ	From Others
UT_CDS	99.9	0.0	0.0	0.0	0.0
UT_EQ	0.0	51.2	0.0	48.8	49.0
ELUT_CDS	0.0	0.5	98.9	0.6	1.0
ELUT_EQ	0.0	50.5	0.0	49.4	51.0
Contribution to others	0.0	51.0	0.0	49.0	101.0
Net Contribution	0.0	2.0	-1.0	-2.0	25.10%

Notes: Tickers are as follows:- UT_CDS(Utilities_CDS); UT_EQ(Utilities_Equity); ELUT_CDS(Electric Utility_CDS); and ELUT_EQ(Electric Utility_EQ).

CRISIS PERIOD

	UT_CDS	UT_EQ	ELUT_CDS	ELUT_EQ	From Others
UT_CDS	94.5	1.1	3.4	1.0	6.0
UT_EQ	0.0	51.2	0.1	48.7	49.0
ELUT_CDS	2.1	1.1	95.5	1.2	4.0
ELUT_EQ	0.0	50.7	0.1	49.3	51.0
Contribution to others	2.0	53.0	4.0	51.0	110.0
Net Contribution	-4.0	4.0	0.0	0.0	27.4%

Notes: Tickers are as follows:- UT_CDS(Utilities_CDS); UT_EQ(Utilities_Equity); ELUT_CDS(Electric Utility_CDS); and ELUT_EQ(Electric Utility_EQ).

AFTER-CRISIS PERIOD

	UT_CDS	UT_EQ	ELUT_CDS	ELUT_EQ	From Others
UT_CDS	99.9	0.0	0.1	0.0	0.0
UT_EQ	0.1	50.6	0.1	49.3	49.0
ELUT_CDS	0.1	0.3	99.2	0.4	1.0
ELUT_EQ	0.1	49.5	0.1	50.3	50.0
Contribution to others	0.0	50.0	0.0	50.0	100.0
Net Contribution	0.0	1.0	-1.0	0.0	25.00%

Notes: Tickers are as follows:- UT_CDS(Utilities_CDS); UT_EQ(Utilities_Equity); ELUT_CDS(Electric Utility_CDS); and ELUT_EQ(Electric Utility_EQ).

Table 150: CDS Spreads and Equity Volatility Connectedness: US Utility Static Analysis

FULL-SAMPLE PERIOD

	INFT_CDS	INFT_EQ	From Others
INFT_CDS	99.5	0.5	1.0
INFT_EQ	0.1	99.9	0.0
Contribution to others	0.0	1.0	1.0
Net Contribution	-1.0	1.0	0.30%

Notes: Tickers are as follows:- INFT_CDS(Information Technology_CDS); and INFT_EQ(Information Technology_EQ).

CRISIS PERIOD

	INFT_CDS	INFT_EQ	From Others
INFT_CDS	98.8	1.2	1.0
INFT_EQ	0.1	99.9	0.0
Contribution to others	0.0	1.0	1.0
Net Contribution	-1.0	1.0	0.60%

Notes: Tickers are as follows:- INFT_CDS(Information Technology_CDS); and INFT_EQ(Information Technology_EQ).

AFTER-CRISIS PERIOD

	INFT_CDS	INFT_EQ	From Others
INFT_CDS	96.8	3.2	3.0
INFT_EQ	0.2	99.8	0.0
Contribution to others	0.0	3.0	3.0
Net Contribution	-3.0	3.0	1.70%

Notes: Tickers are as follows:- INFT_CDS(Information Technology_CDS); and INFT_EQ(Information Technology_EQ).

Table 151: CDS Spreads and Equity Volatility Connectedness: US Information/ Data Technology Static Analysis

UNITED KINGDOM

FULL-SAMPLE PERIOD

	BNK_CDS	BNK_EQ	OF_CDS	OF_EQ	LIFE_CDS	LIFE_EQ	From Others
BNK_CDS	86.5	2.0	3.8	4.7	1.8	1.1	13.0
BNK_EQ	0.1	49.6	22.0	0.2	28.1	0.1	50.0
OF_CDS	0.0	26.4	46.6	0.3	26.6	0.0	53.0
OF_EQ	7.9	4.4	4.9	77.3	2.2	3.3	23.0
LIFE_CDS	0.0	29.8	25.7	0.1	44.4	0.0	56.0
LIFE_EQ	0.4	2.9	4.1	4.7	2.7	85.2	15.0
Contribution to others	8.0	65.0	61.0	10.0	61.0	5.0	210.0
Net Contribution	-5.0	15.0	8.0	-13.0	5.0	-10.0	35.10%

Notes: Tickers are as follows:- BNK_CDS(Banks_CDS); BNK_EQ(Banks_Equity); OF_CDS(Other Financials_CDS); OF_EQ(Other Financials_EQ); LIFE_CDS(Life Insurance_CDS); and LIFE_EQ(Life Insurance_EQ).

CRISIS PERIOD

	BNK_CDS	BNK_EQ	OF_CDS	OF_EQ	LIFE_CDS	LIFE_EQ	From Others
BNK_CDS	52.0	12.3	15.6	8.4	6.6	5.1	48.0
BNK_EQ	1.0	48.5	21.5	0.6	28.2	0.3	52.0
OF_CDS	1.0	25.1	47.1	1.2	25.2	0.3	53.0
OF_EQ	12.4	10.9	13.8	50.7	6.2	5.9	49.0
LIFE_CDS	0.5	28.9	25.5	0.3	44.8	0.1	55.0
LIFE_EQ	5.5	2.8	4.9	8.4	3.2	75.1	25.0
Contribution to others	20.0	80.0	81.0	19.0	69.0	12.0	282.0
Net Contribution	-28.0	28.0	28.0	-30.0	14.0	-13.0	46.90%

Notes: Tickers are as follows:- BNK_CDS(Banks_CDS); BNK_EQ(Banks_Equity); OF_CDS(Other Financials_CDS); OF_EQ(Other Financials_EQ); LIFE_CDS(Life Insurance_CDS); and LIFE_EQ(Life Insurance_EQ).

AFTER-CRISIS PERIOD

	BNK_CDS	BNK_EQ	OF_CDS	OF_EQ	LIFE_CDS	LIFE_EQ	From Others
BNK_CDS	85.1	2.5	4.3	4.1	3.5	0.5	15.0
BNK_EQ	0.1	50.1	23.3	0.0	26.4	0.1	50.0
OF_CDS	0.0	26.3	44.4	0.1	29.0	0.1	56.0
OF_EQ	7.5	1.6	2.0	86.5	0.7	1.7	14.0
LIFE_CDS	0.0	28.2	27.2	0.0	44.4	0.2	56.0
LIFE_EQ	0.9	4.4	3.4	2.7	3.2	85.4	15.0
Contribution to others	9.0	63.0	60.0	7.0	63.0	3.0	204.0
Net Contribution	-6.0	13.0	4.0	-7.0	7.0	-12.0	34.00%

Notes: Tickers are as follows:- BNK_CDS(Banks_CDS); BNK_EQ(Banks_Equity); OF_CDS(Other Financials_CDS); OF_EQ(Other Financials_EQ); LIFE_CDS(Life Insurance_CDS); and LIFE_EQ(Life Insurance_EQ).

Table 152: CDS Spreads and Equity Volatility Connectedness: UK Financials Static Analysis

FULL-SAMPLE PERIOD

	SVS_CDS	SVS_EQ	RET_CDS	RET_EQ	RET_O_CDS	RET_O_EQ	From Others
SVS_CDS	61.2	0.6	15.6	6.5	8.9	7.2	39.0
SVS_EQ	0.2	9.8	0.4	0.1	50.9	38.6	90.0
RET_CDS	17.4	1.4	67.0	1.1	7.5	5.6	33.0
RET_EQ	7.6	0.0	1.1	85.0	2.5	3.7	15.0
RET_O_CDS	0.0	0.1	0.2	0.2	56.8	42.7	43.0
RET_O_EQ	0.1	0.0	0.0	0.0	45.3	54.6	45.0
Contribution to others	25.0	2.0	17.0	8.0	115.0	98.0	265.0
Net Contribution	-14.0	-88.0	-16.0	-7.0	72.0	53.0	44.2%

Notes: Tickers are as follows:- SVS_CDS(Consumer Services_CDS); SVS_EQ(Consumer Services_Equity); RET_CDS(Retail Stores_CDS); RET_EQ(Retail Stores_EQ); RET_O_CDS(Other Retail_CDS); and RET_O_EQ(Other Retail_EQ).

CRISIS PERIOD

	SVS_CDS	SVS_EQ	RET_CDS	RET_EQ	RET_O_CDS	RET_O_EQ	From Others
SVS_CDS	62.9	0.4	18.4	7.3	6.3	4.7	37.0
SVS_EQ	0.1	10.2	0.4	0.0	50.1	39.2	90.0
RET_CDS	22.0	1.9	58.0	2.5	8.7	6.8	42.0
RET_EQ	9.6	0.0	3.1	83.7	1.3	2.3	16.0

RET_O_CDS	0.0	0.0	0.1	0.1	56.2	43.6	44.0
RET_O_EQ	0.2	0.0	0.0	0.0	45.0	54.8	45.0
Contribution to others	32.0	2.0	22.0	10.0	111.0	97.0	274.0
Net Contribution	-5.0	-88.0	-20.0	-6.0	67.0	52.0	45.7%

Notes: Tickers are as follows:- SVS_CDS(Consumer Services_CDS); SVS_EQ(Consumer Services_Equity); RET_CDS(Retail Stores_CDS); RET_EQ(Retail Stores_EQ); RET_O_CDS(Other Retail_CDS); and RET_O_EQ(Other Retail_EQ).

AFTER-CRISIS PERIOD

	SVS_CDS	SVS_EQ	RET_CDS	RET_EQ	RET_O_CDS	RET_O_EQ	From Others
SVS_CDS	54.9	1.3	11.3	5.1	13.9	13.4	45.0
SVS_EQ	0.3	11.2	0.2	0.3	50.2	37.7	89.0
RET_CDS	9.8	0.4	83.3	0.1	3.7	2.8	17.0
RET_EQ	4.3	0.1	0.3	85.3	4.0	5.9	15.0
RET_O_CDS	0.0	0.8	0.1	0.7	56.3	42.1	44.0
RET_O_EQ	0.0	0.5	0.0	0.1	43.4	56.0	44.0
Contribution to others	14.0	3.0	12.0	6.0	115.0	102.0	253.0
Net Contribution	-31.0	-86.0	-5.0	-9.0	71.0	58.0	42.20%

Notes: Tickers are as follows:- SVS_CDS(Consumer Services_CDS); SVS_EQ(Consumer Services_Equity); RET_CDS(Retail Stores_CDS); RET_EQ(Retail Stores_EQ); RET_O_CDS(Other Retail_CDS); and RET_O_EQ(Other Retail_EQ).

Table 153: CDS Spreads and Equity Volatility Connectedness: UK Consumer Services Static Analysis

FULL-SAMPLE PERIOD

	CG_CDS	CG_EQ	BEV_CDS	BEV_EQ	From Others
CG_CDS	77.7	0.4	19.2	2.7	22.0
CG_EQ	1.2	35.4	1.2	62.2	65.0
BEV_CDS	20.0	0.3	75.9	3.8	24.0
BEV_EQ	0.1	0.1	1.0	98.8	1.0
Contribution to others	21.0	1.0	21.0	69.0	112.0
Net Contribution	-1.0	-64.0	-3.0	68.0	28.00%

Notes: Tickers are as follows:- CG_CDS(Consumer Goods_CDS); CG_EQ(Consumer Goods_Equity); BEV_CDS(Beverages_CDS); and BEV_EQ(Beverages_EQ).

CRISIS PERIOD

	CG_CDS	CG_EQ	BEV_CDS	BEV_EQ	From Others
CG_CDS	62.3	0.2	28.7	8.8	38.0
CG_EQ	0.2	30.0	0.6	69.2	70.0
BEV_CDS	26.1	0.4	70.1	3.3	30.0
BEV_EQ	0.2	0.7	0.6	98.4	2.0
Contribution to others	27.0	1.0	30.0	81.0	139.0
Net Contribution	-11.0	-69.0	0.0	79.0	34.8%

Notes: Tickers are as follows:- CG_CDS(Consumer Goods_CDS); CG_EQ(Consumer Goods_Equity); BEV_CDS(Beverages_CDS); and BEV_EQ(Beverages_EQ).

AFTER-CRISIS PERIOD

	CG_CDS	CG_EQ	BEV_CDS	BEV_EQ	From Others
CG_CDS	88.6	0.5	10.8	0.1	11.0
CG_EQ	3.3	50.7	2.2	43.8	49.0
BEV_CDS	20.0	0.3	79.1	0.6	21.0
BEV_EQ	0.1	1.6	0.3	98.1	2.0
Contribution to others	23.0	2.0	13.0	44.0	83.0
Net Contribution	12.0	-47.0	-8.0	42.0	20.90%

Notes: Tickers are as follows:- CG_CDS(Consumer Goods_CDS); CG_EQ(Consumer Goods_Equity); BEV_CDS(Beverages_CDS); and BEV_EQ(Beverages_EQ).

Table 154: CDS Spreads and Equity Volatility Connectedness: UK Consumer Goods Static Analysis

FULL-SAMPLE PERIOD

	TEL_CDS	TEL_EQ	TEL_O_CDS	TEL_O_EQ	From Others
TEL_CDS	49.2	0.2	49.1	1.5	51.0
TEL_EQ	0.1	16.8	0.1	82.9	83.0
TEL_O_CDS	49.1	0.2	49.1	1.5	51.0
TEL_O_EQ	0.0	0.7	0.0	99.3	1.0
Contribution to others	49.0	1.0	49.0	86.0	186.0
Net Contribution	-2.0	-82.0	-2.0	85.0	46.40%

Notes: Tickers are as follows:- TEL_CDS(Telecommunications_CDS); TEL_EQ(Telecommunications_Equity); TEL_O_CDS(Other Telecommunications_CDS); and TEL_O_EQ(Other Telecommunications_EQ).

CRISIS PERIOD

	TEL_CDS	TEL_EQ	TEL_O_CDS	TEL_O_EQ	From Others
TEL_CDS	48.0	0.1	47.7	4.1	52.0
TEL_EQ	0.3	16.3	0.3	83.1	84.0
TEL_O_CDS	47.9	0.1	47.8	4.2	52.0
TEL_O_EQ	0.1	0.5	0.1	99.3	1.0
Contribution to others	48.0	1.0	48.0	91.0	189.0
Net Contribution	-4.0	-83.0	-4.0	90.0	47.1%

Notes: Tickers are as follows:- TEL_CDS(Telecommunications_CDS); TEL_EQ(Telecommunications_Equity); TEL_O_CDS(Other Telecommunications_CDS); and TEL_O_EQ(Other Telecommunications_EQ).

AFTER-CRISIS PERIOD

	TEL_CDS	TEL_EQ	TEL_O_CDS	TEL_O_EQ	From Others
TEL_CDS	49.0	0.5	49.0	1.6	51.0
TEL_EQ	0.4	21.9	0.4	77.3	78.0
TEL_O_CDS	49.0	0.5	49.0	1.6	51.0
TEL_O_EQ	0.2	1.9	0.2	97.7	2.0
Contribution to others	50.0	3.0	50.0	80.0	182.0
Net Contribution	-1.0	-75.0	-1.0	78.0	45.60%

Notes: Tickers are as follows:- TEL_CDS(Telecommunications_CDS); TEL_EQ(Telecommunications_Equity); TEL_O_CDS(Other Telecommunications_CDS); and TEL_O_EQ(Other Telecommunications_EQ).

Table 155: CDS Spreads and Equity Volatility Connectedness: UK Telecommunications Static Analysis

EUROPE

FULL-SAMPLE PERIOD

	CG_CDS	CG_EQ	AUTO_CDS	AUTO_EQ	BEV_CDS	BEV_EQ	From Others
CG_CDS	48.8	0.0	10.3	1.5	34.4	5.0	51.0
CG_EQ	0.7	7.3	0.0	37.0	0.4	54.7	93.0
AUTO_CDS	14.3	0.3	67.0	4.0	5.7	8.7	33.0
AUTO_EQ	1.6	0.6	0.1	75.7	0.6	21.3	24.0
BEV_CDS	37.1	0.0	3.6	1.0	54.6	3.7	45.0
BEV_EQ	0.7	0.0	0.1	13.4	0.6	85.2	15.0
Contribution to others	54.0	1.0	14.0	57.0	42.0	93.0	261.0
Net Contribution	3.0	-92.0	-19.0	33.0	-3.0	78.0	43.60%

Notes: Tickers are as follows:- CG_CDS(Consumer Goods_CDS); CG_EQ(Consumer Goods_Equity); AUTO_CDS(Automotive Manufacturer_CDS); AUTO_EQ(Automotive Manufacturer_EQ); BEV_CDS(Beverages_CDS); and BEV_EQ(Beverages_EQ).

CRISIS PERIOD

	CG_CDS	CG_EQ	AUTO_CDS	AUTO_EQ	BEV_CDS	BEV_EQ	From Others
CG_CDS	46.6	0.2	9.0	1.4	36.2	6.6	53.0
CG_EQ	0.9	7.2	0.4	36.7	0.5	54.3	93.0
AUTO_CDS	17.0	0.4	49.4	5.2	12.4	15.6	51.0
AUTO_EQ	2.9	1.8	0.4	74.5	1.2	19.3	26.0
BEV_CDS	41.6	0.3	6.3	0.9	44.5	6.4	56.0
BEV_EQ	0.7	0.1	0.4	11.3	0.6	86.9	13.0
Contribution to others	63.0	3.0	16.0	56.0	51.0	102.0	291.0
Net Contribution	10.0	-90.0	-35.0	30.0	-5.0	89.0	48.5%

Notes: Tickers are as follows:- CG_CDS(Consumer Goods_CDS); CG_EQ(Consumer Goods_Equity); AUTO_CDS(Automotive Manufacturer_CDS); AUTO_EQ(Automotive Manufacturer_EQ); BEV_CDS(Beverages_CDS); and BEV_EQ(Beverages_EQ).

AFTER-CRISIS PERIOD

	CG_CDS	CG_EQ	AUTO_CDS	AUTO_EQ	BEV_CDS	BEV_EQ	From Others
CG_CDS	50.4	0.1	12.1	3.9	31.0	2.6	50.0

CG_EQ	0.3	10.4	0.4	36.6	0.4	51.9	90.0
AUTO_CDS	12.5	1.5	64.0	11.4	2.6	7.9	36.0
AUTO_EQ	0.1	0.0	0.1	74.1	0.2	25.6	26.0
BEV_CDS	32.0	0.1	2.6	5.5	58.0	1.8	42.0
BEV_EQ	0.7	0.3	0.2	17.9	1.0	80.0	20.0
Contribution to others	46.0	2.0	15.0	75.0	35.0	90.0	263.0
Net Contribution	-4.0	-88.0	-21.0	49.0	-7.0	70.0	43.90%

Notes: Tickers are as follows:- CG_CDS(Consumer Goods_CDS); CG_EQ(Consumer Goods_Equity); AUTO_CDS(Automotive Manufacturer_CDS); AUTO_EQ(Automotive Manufacturer_EQ); BEV_CDS(Beverages_CDS); and BEV_EQ(Beverages_EQ).

Table 156: CDS Spreads and Equity Volatility Connectedness: EU Consumer Goods Static Analysis

FULL-SAMPLE PERIOD

	BNK_CDS	BNK_EQ	OF_CDS	OF_EQ	OF_O_CDS	OF_O_EQ	From Others
BNK_CDS	94.6	0.6	1.6	0.0	2.0	1.1	5.0
BNK_EQ	0.1	55.5	0.0	0.0	0.0	44.3	45.0
OF_CDS	0.3	0.0	50.6	0.0	49.0	0.1	49.0
OF_EQ	0.1	52.7	0.0	0.4	0.0	46.8	100.0
OF_O_CDS	0.4	0.0	48.7	0.0	50.8	0.1	49.0
OF_O_EQ	0.1	43.9	0.1	0.0	0.1	55.7	44.0
Contribution to others	1.0	97.0	50.0	0.0	51.0	92.0	292.0
Net Contribution	-4.0	52.0	1.0	-100.0	2.0	48.0	48.70%

Notes: Tickers are as follows:- BNK_CDS(Banks_CDS); BNK_EQ(Banks_Equity); OF_CDS(Other Financials_CDS); OF_EQ(Other Financials_EQ); OF_O_CDS(Other Financial II_CDS); and OF_O_EQ(Other Financials II_EQ).

CRISIS PERIOD

	BNK_CDS	BNK_EQ	OF_CDS	OF_EQ	OF_O_CDS	OF_O_EQ	From Others
BNK_CDS	72.7	4.7	7.8	0.0	7.7	7.0	27.0
BNK_EQ	1.8	53.3	0.9	0.0	1.2	42.8	47.0
OF_CDS	3.5	4.7	43.2	0.0	42.4	6.2	57.0
OF_EQ	1.6	50.9	0.9	0.3	1.2	45.2	100.0
OF_O_CDS	3.3	4.3	41.0	0.0	45.8	5.7	54.0
OF_O_EQ	1.0	42.4	0.7	0.0	0.9	54.9	45.0

Contribution to others	11.0	107.0	51.0	0.0	53.0	107.0	330.0
Net Contribution	-16.0	60.0	-6.0	-100.0	-1.0	62.0	55.0%

Notes: Tickers are as follows:- BNK_CDS(Banks_CDS); BNK_EQ(Banks_Equity); OF_CDS(Other Financials_CDS); OF_EQ(Other Financials_EQ); OF_O_CDS(Other Financial II_CDS); and OF_O_EQ(Other Financials II_EQ).

AFTER-CRISIS PERIOD

	BNK_CDS	BNK_EQ	OF_CDS	OF_EQ	OF_O_CDS	OF_O_EQ	From Others
BNK_CDS	95.0	0.9	1.1	0.0	1.4	1.7	5.0
BNK_EQ	0.0	57.1	0.4	0.0	0.4	42.1	43.0
OF_CDS	0.1	0.4	50.3	0.0	48.5	0.6	50.0
OF_EQ	0.1	52.4	0.1	0.7	0.1	46.6	99.0
OF_O_CDS	0.2	0.4	48.4	0.0	50.4	0.6	50.0
OF_O_EQ	0.7	42.3	0.0	0.0	0.0	56.9	43.0
Contribution to others	1.0	96.0	50.0	0.0	50.0	92.0	290.0
Net Contribution	-4.0	53.0	0.0	-99.0	0.0	49.0	48.30%

Notes: Tickers are as follows:- BNK_CDS(Banks_CDS); BNK_EQ(Banks_Equity); OF_CDS(Other Financials_CDS); OF_EQ(Other Financials_EQ); OF_O_CDS(Other Financial II_CDS); and OF_O_EQ(Other Financials II_EQ).

Table 157: CDS Spreads and Equity Volatility Connectedness: EU Financials Static Analysis

FULL-SAMPLE PERIOD

	ELTN_CDS	ELTN_EQ	CMG_CDS	CMG_EQ	BLD_CDS	BLD_EQ	From Others
ELTN_CDS	97.3	0.9	0.5	0.4	0.7	0.2	3.0
ELTN_EQ	0.0	41.1	0.3	28.1	0.5	30.1	59.0
CMG_CDS	0.5	7.4	69.9	9.6	4.7	7.9	30.0
CMG_EQ	0.1	28.2	0.3	45.6	0.7	25.1	54.0
BLD_CDS	0.4	6.1	4.6	8.9	77.0	2.9	23.0
BLD_EQ	0.0	30.1	0.4	24.5	0.4	44.6	55.0
Contribution to others	1.0	73.0	6.0	72.0	7.0	66.0	225.0
Net Contribution	-2.0	14.0	-24.0	18.0	-16.0	11.0	37.40%

Notes: Tickers are as follows:- ELTN_CDS(Eletronics_CDS); ELTN_EQ(Electronics_Equity); CMG _CDS(Conglomerate Diversified_CDS); CMG_EQ(Conglomerate Diversified_EQ); BLD_CDS(Bulding Products_CDS); and BLD_EQ(Building Products_EQ).

CRISIS PERIOD

	ELTN_CDS	ELTN_EQ	CMG_CDS	CMG_EQ	BLD_CDS	BLD_EQ	From Others
ELTN_CDS	93.5	1.6	1.9	0.3	2.5	0.1	6.0
ELTN_EQ	0.0	40.4	0.3	28.3	1.3	29.6	60.0
CMG_CDS	0.6	6.8	70.7	10.1	3.5	8.3	29.0
CMG_EQ	0.1	27.0	0.6	46.6	1.6	24.1	53.0
BLD_CDS	1.3	11.4	5.4	13.8	62.2	5.9	38.0
BLD_EQ	0.2	28.7	0.6	24.4	1.6	44.5	55.0
Contribution to others	2.0	75.0	9.0	77.0	10.0	68.0	242.0
Net Contribution	-4.0	15.0	-20.0	24.0	-28.0	13.0	40.4%

Notes: Tickers are as follows:- ELTN_CDS(Eletronics_CDS); ELTN_EQ(Electronics_Equity); CMG _CDS(Conglomerate Diversified_CDS); CMG_EQ(Conglomerate Diversified_EQ); BLD_CDS(Bulding Products_CDS); and BLD_EQ(Building Products_EQ).

AFTER-CRISIS PERIOD

	ELTN_CDS	ELTN_EQ	CMG_CDS	CMG_EQ	BLD_CDS	BLD_EQ	From Others
ELTN_CDS	97.2	0.7	0.7	0.8	0.1	0.5	3.0
ELTN_EQ	0.1	44.3	0.1	30.1	0.3	25.1	56.0
CMG_CDS	1.1	8.9	66.3	9.4	7.3	7.0	34.0
CMG_EQ	0.1	27.4	0.0	49.5	0.5	22.5	50.0
BLD_CDS	0.1	4.3	3.6	7.3	82.5	2.2	17.0
BLD_EQ	0.0	28.9	0.1	25.6	0.2	45.2	55.0
Contribution to others	1.0	70.0	5.0	73.0	8.0	57.0	215.0
Net Contribution	-2.0	14.0	-29.0	23.0	-9.0	2.0	35.80%

Notes: Tickers are as follows:- ELTN_CDS(Eletronics_CDS); ELTN_EQ(Electronics_Equity); CMG _CDS(Conglomerate Diversified_CDS); CMG_EQ(Conglomerate Diversified_EQ); BLD_CDS(Bulding Products_CDS); and BLD_EQ(Building Products_EQ).

Table 158: CDS Spreads and Equity Volatility Connectedness: EU Industrials Static Analysis

FULL-SAMPLE PERIOD

	CHEM_CDS	CHEM_EQ	MT_CDS	MT_EQ	From Others
CHEM_CDS	78	11.6	1.2	9.2	22
CHEM_EQ	0.7	58.5	0.4	40.5	42
MT_CDS	1.1	0.2	98.3	0.4	2
MT_EQ	0.8	37.8	0.2	61.2	39
Contribution to others	2	50	2	50	104
Net Contribution	-20	8	0	11	26.0%

Notes: Tickers are as follows:- CHEM_CDS(Chemicals_CDS); CHEM_EQ(Chemicals_Equity); MT_CDS(Metals&Mining_CDS); and MT_EQ(Metals&Mining_EQ).

CRISIS PERIOD

	CHEM_CDS	CHEM_EQ	MT_CDS	MT_EQ	From Others
CHEM_CDS	73.2	9.6	11.2	5.9	27.0
CHEM_EQ	0.7	55.4	1.4	42.5	45.0
MT_CDS	6.2	7.5	77.4	8.9	23.0
MT_EQ	0.8	38.2	1.7	59.3	41.0
Contribution to others	8.0	55.0	14.0	57.0	135.0
Net Contribution	-19.0	10.0	-9.0	16.0	33.7%

Notes: Tickers are as follows:- CHEM_CDS(Chemicals_CDS); CHEM_EQ(Chemicals_Equity); MT_CDS(Metals&Mining_CDS); and MT_EQ(Metals&Mining_EQ).

AFTER-CRISIS PERIOD

	CHEM_CDS	CHEM_EQ	MT_CDS	MT_EQ	From Others
CHEM_CDS	76.2	9.0	0.8	14.0	24.0
CHEM_EQ	0.6	73.3	2.0	24.0	27.0
MT_CDS	0.9	0.9	97.0	1.2	3.0
MT_EQ	0.3	24.1	1.0	74.6	25.0
Contribution to others	2.0	34.0	4.0	39.0	79.0
Net Contribution	-22.0	7.0	1.0	14.0	19.70%

Notes: Tickers are as follows:- CHEM_CDS(Chemicals_CDS); CHEM_EQ(Chemicals_Equity); MT_CDS(Metals&Mining_CDS); and MT_EQ(Metals&Mining_EQ)

Table 159: CDS Spreads and Equity Volatility Connectedness: EU Basic Materials Static Analysis

FULL-SAMPLE PERIOD

	TEL_CDS	TEL_EQ	TEL_O_CDS	TEL_O_EQ	From Others
TEL_CDS	95.5	0.0	0.2	4.3	4.0
TEL_EQ	0.0	0.0	0.3	99.7	100.0
TEL_O_CDS	1.0	0.0	97.3	1.6	3.0
TEL_O_EQ	0.0	0.0	0.3	99.7	0.0
Contribution to others	1.0	0.0	1.0	106.0	107.0
Net Contribution	-3.0	-100.0	-2.0	106.0	26.90%

Notes: Tickers are as follows:- TEL_CDS(Telecommunications_CDS); TEL_EQ(Telecommunications_Equity); TEL_O_CDS(Other Telecommunications_CDS); and TEL_O_EQ(Other Telecommunications_EQ).

CRISIS PERIOD

	TEL_CDS	TEL_EQ	TEL_O_CDS	TEL_O_EQ	From Others
TEL_CDS	92.6	0.0	0.0	7.4	7.0
TEL_EQ	0.5	0.0	1.0	98.5	100.0
TEL_O_CDS	1.9	0.0	97.6	0.6	2.0
TEL_O_EQ	0.6	0.0	0.9	98.5	2.0
Contribution to others	3.0	0.0	2.0	106.0	111.0
Net Contribution	-4.0	-100.0	0.0	104.0	27.8%

Notes: Tickers are as follows:- TEL_CDS(Telecommunications_CDS); TEL_EQ(Telecommunications_Equity); TEL_O_CDS(Other Telecommunications_CDS); and TEL_O_EQ(Other Telecommunications_EQ).

AFTER-CRISIS PERIOD

	TEL_CDS	TEL_EQ	TEL_O_CDS	TEL_O_EQ	From Others
TEL_CDS	94.5	0.0	0.3	5.3	6.0
TEL_EQ	0.4	0.0	0.4	99.2	100.0
TEL_O_CDS	0.3	0.0	93.0	6.7	7.0

TEL_O_EQ	0.5	0.0	0.6	98.9	1.0
Contribution to others	1.0	0.0	1.0	111.0	114.0
Net Contribution	-5.0	-100.0	-6.0	110.0	28.40%

Notes: Tickers are as follows:- TEL_CDS(Telecommunications_CDS); TEL_EQ(Telecommunications_Equity); TEL_O_CDS(Other Telecommunications_CDS); and TEL_O_EQ(Other Telecommunications_EQ).

Table 6.72: CDS Spreads and Equity Volatility Connectedness: EU Telecommunications Static Analysis

FULL-SAMPLE PERIOD

	OIL_CDS	OIL_EQ	From Others
OIL_CDS	95.2	4.8	5.0
OIL_EQ	2.5	97.5	2.0
Contribution to others	2.0	5.0	7.0
Net Contribution	-3.0	3.0	3.60%

Notes: Tickers are as follows:- OIL_CDS(Oil&Gas_CDS); and OIL_EQ(Oil&Gas_EQ).

CRISIS PERIOD

	OIL_CDS	OIL_EQ	From Others
OIL_CDS	89.7	10.3	10.0
OIL_EQ	5.0	95.0	5.0
Contribution to others	5.0	10.0	15.0
Net Contribution	-5.0	5.0	7.6%

Notes: Tickers are as follows:- OIL_CDS(Oil&Gas_CDS); and OIL_EQ(Oil&Gas_EQ).

AFTER-CRISIS PERIOD

	OIL_CDS	OIL_EQ	From Others
OIL_CDS	99.1	0.9	1.0
OIL_EQ	0.8	99.2	1.0
Contribution to others	1.0	1.0	2.0
Net Contribution	0.0	0.0	0.90%

Notes: Tickers are as follows:- OIL_CDS(Oil&Gas_CDS); and OIL_EQ(Oil&Gas_EQ).

Table 160: CDS Spreads and Equity Volatility Connectedness: EU Oil&Gas Static Analysis

FULL-SAMPLE PERIOD

	UT_CDS	UT_EQ	From Others
UT_CDS	99.8	0.2	0.0
UT_EQ	0.0	100.0	0.0
Contribution to others	0.0	0.0	0.0
Net Contribution	0.0	0.0	0.10%

Notes: Tickers are as follows:- UT_CDS(Utilities_CDS); and UT_EQ(Utilities_EQ).

CRISIS PERIOD

	UT_CDS	UT_EQ	From Others
UT_CDS	99.7	0.3	0.0
UT_EQ	0.1	99.9	0.0
Contribution to others	0.0	0.0	0.0
Net Contribution	0.0	0.0	0.20%

Notes: Tickers are as follows:- UT_CDS(Utilities_CDS); and UT_EQ(Utilities_EQ).

AFTER-CRISIS PERIOD

	UT_CDS	UT_EQ	From Others
UT_CDS	99.9	0.1	0.0
UT_EQ	0.0	100.0	0.0
Contribution to others	0.0	0.0	0.0
Net Contribution	0.0	0.0	0.10%

Notes: Tickers are as follows:- UT_CDS(Utilities_CDS); and UT_EQ(Utilities_EQ).

Table 161: CDS Spreads and Equity Volatility Connectedness: EU Utility Static Analysis

FULL-SAMPLE PERIOD

	CS_CDS	CS_EQ	CS_O_CDS	CS_O_EQ	CAB_CDS	CAB_EQ	LEI_CDS	LEI_EQ	From Others
CS_CDS	94.8	0.0	0.0	3.0	0.2	0.3	1.7	0.0	5.0
CS_EQ	0.7	0.0	0.1	95.8	0.1	1.2	0.2	1.9	100.0
CS_O_CDS	8.7	0.0	87.2	3.4	0.1	0.0	0.0	0.5	13.0
CS_O_EQ	0.7	0.0	0.1	94.7	0.2	1.5	0.2	2.6	5.0
CAB_CDS	3.3	0.0	0.6	3.9	92.0	0.1	0.1	0.0	8.0
CAB_EQ	0.8	0.0	0.1	83.2	0.3	12.7	0.3	2.7	87.0
LEI_CDS	9.1	0.0	0.2	0.5	0.6	0.1	89.5	0.0	11.0
LEI_EQ	0.4	0.0	0.2	49.9	0.3	2.6	0.4	46.2	54.0
Contribution to others	24.0	0.0	1.0	240.0	2.0	6.0	3.0	8.0	283.0
Net Contribution	19.0	-100.0	-12.0	235.0	-6.0	-81.0	-8.0	-46.0	35.40%

Notes: Tickers are as follows:- CS_CDS(Consumer Services_CDS); CS_EQ(Consumer Services_Equity); CS_O_CDS(Other Consumer Services_CDS); CS_O_EQ(Other Conusmer Services_EQ); CAB_CDS(Cable_CDS); CAB_EQ(Cable_EQ); LEI_CDS(Leisure_CDS); and LEI_EQ(Leisure_EQ).

CRISIS PERIOD

	CS_CDS	CS_EQ	CS_O_CDS	CS_O_EQ	CAB_CDS	CAB_EQ	LEI_CDS	LEI_EQ	From Others
CS_CDS	96.8	0.0	0.0	1.9	0.0	1.0	0.3	0.0	3.0
CS_EQ	0.6	0.0	0.1	96.1	0.1	1.8	0.0	1.2	100.0
CS_O_CDS	7.7	0.0	88.9	3.0	0.1	0.0	0.0	0.2	11.0
CS_O_EQ	0.7	0.0	0.2	95.2	0.2	2.2	0.0	1.5	5.0
CAB_CDS	3.1	0.0	1.7	14.3	78.8	0.2	0.0	1.9	21.0
CAB_EQ	0.8	0.0	0.1	83.3	0.0	14.2	0.0	1.6	86.0
LEI_CDS	2.9	0.0	0.6	5.3	5.0	0.4	85.0	0.7	15.0
LEI_EQ	0.4	0.0	0.1	53.0	0.5	3.7	0.5	41.8	58.0
Contribution to others	16.0	0.0	3.0	257.0	6.0	9.0	1.0	7.0	299.0
Contribution including own	13.0	-100.0	-8.0	252.0	-15.0	-77.0	-14.0	-51.0	37.4%

Notes: Tickers are as follows:- CS_CDS(Consumer Services_CDS); CS_EQ(Consumer Services_Equity); CS_O_CDS(Other Consumer Services_CDS); CS_O_EQ(Other Conusmer Services_EQ); CAB_CDS(Cable_CDS); CAB_EQ(Cable_EQ); LEI_CDS(Leisure_CDS); and LEI_EQ(Leisure_EQ).

AFTER-CRISIS PERIOD

	CS_CDS	CS_EQ	CS_O_CDS	CS_O_EQ	CAB_CDS	CAB_EQ	LEI_CDS	LEI_EQ	From Others
CS_CDS	90.4	0.0	0.0	3.8	0.1	0.2	5.2	0.1	10.0
CS_EQ	0.1	0.0	0.8	98.2	0.1	0.1	0.7	0.0	100.0
CS_O_CDS	14.1	0.0	82.8	2.0	0.1	0.3	0.0	0.7	17.0
CS_O_EQ	0.1	0.0	0.9	97.9	0.1	0.1	0.8	0.0	2.0
CAB_CDS	15.3	0.0	0.7	4.1	79.4	0.4	0.2	0.0	21.0
CAB_EQ	0.0	0.0	0.9	85.7	0.1	12.6	0.6	0.1	87.0
LEI_CDS	49.3	0.0	4.9	0.2	2.4	0.3	42.8	0.1	57.0
LEI_EQ	0.2	0.0	0.1	43.4	0.0	0.1	0.2	56.1	44.0
Contribution to others	79.0	0.0	8.0	237.0	3.0	2.0	8.0	1.0	338.0
Contribution including	69.0	-100.0	-9.0	235.0	-18.0	-85.0	-49.0	-43.0	42.30%

Notes: Tickers are as follows:- CS_CDS(Consumer Services_CDS); CS_EQ(Consumer Services_Equity); CS_O_CDS(Other Consumer Services_CDS); CS_O_EQ(Other Conusmer Services_EQ); CAB_CDS(Cable_CDS); CAB_EQ(Cable_EQ); LEI_CDS(Leisure_CDS); and LEI_EQ(Leisure_EQ).

Table 162: CDS Spreads and Equity Volatility Connectedness: EU Consumer Services Static Analysis

JAPAN

FULL-SAMPLE PERIOD

	SVS_CDS	SVS_EQ	SVS_O_CDS	SVS_O_EQ	RET_CDS	RET_EQ	From Others
SVS_CDS	45.7	0.0	17.8	0.2	36.2	0.1	54.0
SVS_EQ	0.1	8.8	0.0	47.7	0.1	43.4	91.0
SVS_O_CDS	19.4	0.1	67.1	0.3	12.9	0.2	33.0
SVS_O_EQ	0.1	0.7	0.1	51.7	0.2	47.3	48.0
RET_CDS	38.8	0.1	15.0	0.2	45.8	0.1	54.0
RET_EQ	0.1	0.5	0.2	45.8	0.1	53.4	47.0
Contribution to others	58.0	1.0	33.0	94.0	50.0	91.0	328.0
Net Contribution	4.0	-90.0	0.0	46.0	-4.0	44.0	54.60%

Notes: Tickers are as follows:- SVS_CDS(Consumer Services_CDS); SVS_EQ(Consumer Services_Equity); SVS_O_CDS(Other Consumer Services_CDS); SVS_O_EQ(Other Conusmer Services_EQ); RET_CDS(Retails Stores_CDS); and RET_EQ(Retails Stores_EQ).

CRISIS PERIOD

	SVS_CDS	SVS_EQ	SVS_O_CDS	SVS_O_EQ	RET_CDS	RET_EQ	From Others
SVS_CDS	64.6	0.1	22.0	0.6	11.5	1.2	35.0
SVS_EQ	0.0	8.2	0.1	48.2	0.1	43.3	92.0
SVS_O_CDS	28.2	0.1	63.4	0.9	5.3	2.0	37.0
SVS_O_EQ	0.0	1.7	0.2	51.6	0.1	46.4	48.0
RET_CDS	35.1	0.1	9.8	0.4	54.2	0.3	46.0
RET_EQ	0.1	1.3	0.1	46.1	0.1	52.4	48.0
Contribution to others	63.0	3.0	32.0	96.0	17.0	93.0	306.0
Net Contribution	28.0	-89.0	-5.0	48.0	-29.0	45.0	50.90%

Notes: Tickers are as follows:- SVS_CDS(Consumer Services_CDS); SVS_EQ(Consumer Services_Equity); SVS_O_CDS(Other Consumer Services_CDS); SVS_O_EQ(Other Conusmer Services_EQ); RET_CDS(Retails Stores_CDS); and RET_EQ(Retails Stores_EQ).

AFTER-CRISIS PERIOD

	SVS_CDS	SVS_EQ	SVS_O_CDS	SVS_O_EQ	RET_CDS	RET_EQ	From Others
SVS_CDS	45.6	0.1	17.1	0.1	37.0	0.0	54.0
SVS_EQ	0.2	10.1	0.1	46.3	0.5	42.7	90.0
SVS_O_CDS	18.7	0.3	67.5	0.4	12.8	0.3	32.0
SVS_O_EQ	0.4	0.2	0.3	51.0	0.7	47.5	49.0
RET_CDS	39.5	0.2	14.6	0.2	45.5	0.1	54.0
RET_EQ	0.3	0.1	0.4	46.4	0.6	52.3	48.0
Contribution to others	59.0	1.0	32.0	93.0	52.0	91.0	328.0
Net Contribution	5.0	-89.0	0.0	44.0	-2.0	43.0	54.70%

Notes: Tickers are as follows:- SVS_CDS(Consumer Services_CDS); SVS_EQ(Consumer Services_Equity); SVS_O_CDS(Other Consumer Services_CDS); SVS_O_EQ(Other Conusmer Services_EQ); RET_CDS(Retails Stores_CDS); and RET_EQ(Retails Stores_EQ).

Table 163: CDS Spreads and Equity Volatility Connectedness: Japan Consumer Services Static Analysis

FULL-SAMPLE PERIOD

	IND_CDS	IND_EQ	ELTN_CDS	ELTN_EQ	TRSP_CDS	TRSP_EQ	From Others
IND_CDS	95.7	0.1	2.4	0.2	1.6	0.0	4.0
IND_EQ	0.0	13.2	0.0	47.2	0.3	39.3	87.0
ELTN_CDS	2.1	0.3	92.9	0.5	4.1	0.1	7.0
ELTN_EQ	0.0	0.4	0.1	60.9	0.4	38.2	39.0
TRSP_CDS	1.3	0.4	3.0	3.3	88.5	3.4	11.0
TRSP_EQ	0.0	0.2	0.1	39.5	0.4	59.8	40.0
Contribution to others	3.0	1.0	6.0	91.0	7.0	81.0	189.0
Net Contribution	-1.0	-86.0	-1.0	52.0	-4.0	41.0	31.50%

Notes: Tickers are as follows:- CG_CDS(Consumer Goods_CDS); CG_EQ(Consumer Goods_Equity); AUTO_CDS(Automotive Manufacturer_CDS); AUTO_EQ(Automotive Manufacturer_EQ); BEV_CDS(Beverages_CDS); and BEV_EQ(Beverages_EQ).

CRISIS PERIOD

	IND_CDS	IND_EQ	ELTN_CDS	ELTN_EQ	TRSP_CDS	TRSP_EQ	From Others
IND_CDS	97.8	0.0	0.8	0.5	0.8	0.1	2.0
IND_EQ	0.3	12.9	0.1	46.9	1.3	38.5	87.0
ELTN_CDS	0.5	0.3	90.7	4.4	1.9	2.1	9.0
ELTN_EQ	0.1	0.9	0.1	61.5	0.9	36.6	39.0
TRSP_CDS	1.5	0.6	1.8	8.7	77.9	9.5	22.0
TRSP_EQ	0.3	0.5	0.1	39.7	1.1	58.5	42.0
Contribution to others	3.0	2.0	3.0	100.0	6.0	87.0	201.0
Net Contribution	1.0	-85.0	-6.0	61.0	-16.0	45.0	33.5%

Notes: Tickers are as follows:- CG_CDS(Consumer Goods_CDS); CG_EQ(Consumer Goods_Equity); AUTO_CDS(Automotive Manufacturer_CDS); AUTO_EQ(Automotive Manufacturer_EQ); BEV_CDS(Beverages_CDS); and BEV_EQ(Beverages_EQ).

AFTER-CRISIS PERIOD

	IND_CDS	IND_EQ	ELTN_CDS	ELTN_EQ	TRSP_CDS	TRSP_EQ	From Others
IND_CDS	94.8	0.1	3.1	0.8	1.2	0.1	5.0
IND_EQ	0.1	15.5	0.1	46.4	0.2	37.8	85.0
ELTN_CDS	2.5	0.2	91.9	0.2	4.6	0.7	8.0
ELTN_EQ	0.0	0.7	0.1	60.2	0.4	38.5	40.0
TRSP_CDS	1.6	0.6	3.3	1.5	92.2	0.8	8.0
TRSP_EQ	0.2	0.3	0.3	38.1	0.2	60.9	39.0
Contribution to others	4.0	2.0	7.0	87.0	7.0	78.0	185.0
Net Contribution	-1.0	-83.0	-1.0	47.0	-1.0	39.0	30.80%

Notes: Tickers are as follows:- CG_CDS(Consumer Goods_CDS); CG_EQ(Consumer Goods_Equity); AUTO_CDS(Automotive Manufacturer_CDS); AUTO_EQ(Automotive Manufacturer_EQ); BEV_CDS(Beverages_CDS); and BEV_EQ(Beverages_EQ).

Table 164: CDS Spreads and Equity Volatility Connectedness: Japan Industrials Static Analysis

Table 165: CDS Spreads and Equity Volatility Connectedness: Japan Financials Static Analysis

FULL-SAMPLE PERIOD

	BNK_CDS	BNK_EQ	OF_CDS	OF_EQ	From Others
BNK_CDS	87.3	4.3	8.1	0.3	13.0
BNK_EQ	2.2	97.1	0.5	0.2	3.0
OF_CDS	11.8	6.4	81.6	0.1	18.0
OF_EQ	2.8	73.9	1.1	22.1	78.0
Contribution to others	17.0	85.0	10.0	1.0	112.0
Net Contribution	4.0	82.0	-8.0	-77.0	28.00%

Notes: Tickers are as follows:- BNK_CDS(Banks_CDS); BNK_EQ(Banks_Equity); OF_CDS(Other Financials_CDS); OF_EQ(Other Financials_EQ).

CRISIS PERIOD

	BNK_CDS	BNK_EQ	OF_CDS	OF_EQ	From Others
BNK_CDS	74.7	7.8	17.3	0.3	25.0
BNK_EQ	2.9	96.0	0.9	0.2	4.0
OF_CDS	19.1	11.2	69.5	0.3	30.0
OF_EQ	2.7	75.2	1.8	20.3	80.0
Contribution to others	25.0	94.0	20.0	1.0	140.0
Net Contribution	0.0	90.0	-10.0	-79.0	34.9%

Notes: Tickers are as follows:- BNK_CDS(Banks_CDS); BNK_EQ(Banks_Equity); OF_CDS(Other Financials_CDS); OF_EQ(Other Financials_EQ).

AFTER-CRISIS PERIOD

	BNK_CDS	BNK_EQ	OF_CDS	OF_EQ	From Others
BNK_CDS	97.6	0.6	1.1	0.7	2.0
BNK_EQ	1.1	97.5	0.8	0.6	3.0
OF_CDS	2.4	0.3	97.0	0.4	3.0
OF_EQ	2.6	69.6	0.4	27.5	73.0
Contribution to others	6.0	70.0	2.0	2.0	80.0
Net Contribution	4.0	67.0	-1.0	-71.0	20.10%

Notes: Tickers are as follows:- BNK_CDS(Banks_CDS); BNK_EQ(Banks_Equity); OF_CDS(Other Financials_CDS); and OF_EQ(Other Financials_EQ).

FULL-SAMPLE PERIOD

	CHEM_CDS	CHEM_EQ	MT_CDS	MT_EQ	From Others
CHEM_CDS	94.6	4.7	0.4	0.3	5.0
CHEM_EQ	2.3	79.5	8.0	10.2	21.0
MT_CDS	0.3	0.2	57.9	41.5	42.0
MT_EQ	0.3	0.3	38.5	60.9	39.0
Contribution to others	3.0	5.0	47.0	52.0	107.0
Net Contribution	-2.0	-16.0	5.0	13.0	26.80%

Notes: Tickers are as follows:- CHEM_CDS(Chemicals_CDS); CHEM_EQ(Chemicals_Equity); MT_CDS(Metals&Mining_CDS); and MT_EQ(Metals&Mining_EQ).

CRISIS PERIOD

	CHEM_CDS	CHEM_EQ	MT_CDS	MT_EQ	From Others
CHEM_CDS	92.9	0.0	3.4	3.6	7.0
CHEM_EQ	0.5	69.0	11.7	18.8	31.0
MT_CDS	0.3	0.7	56.5	42.4	43.0
MT_EQ	0.3	0.4	41.1	58.2	42.0
Contribution to others	1.0	1.0	56.0	65.0	123.0
Net Contribution	-6.0	-30.0	13.0	23.0	30.8%

Notes: Tickers are as follows:- CHEM_CDS(Chemicals_CDS); CHEM_EQ(Chemicals_Equity); MT_CDS(Metals&Mining_CDS); and MT_EQ(Metals&Mining_EQ)

AFTER-CRISIS PERIOD

	CHEM_CDS	CHEM_EQ	MT_CDS	MT_EQ	From Others
CHEM_CDS	89.1	10.3	0.3	0.4	11.0
CHEM_EQ	5.7	90.6	2.6	1.1	9.0
MT_CDS	1.1	0.2	60.6	38.1	39.0
MT_EQ	1.5	0.0	33.9	64.6	35.0
Contribution to others	8.0	11.0	37.0	40.0	95.0
Net Contribution	-3.0	2.0	-2.0	5.0	23.80%

Notes: Tickers are as follows:- CHEM_CDS(Chemicals_CDS); CHEM_EQ(Chemicals_Equity); MT_CDS(Metals&Mining_CDS); and MT_EQ(Metals&Mining_EQ)

Table 166: CDS Spreads and Equity Volatility Connectedness: Japan Basic Materials Static Analysis

FULL-SAMPLE PERIOD

	TEL_CDS	TEL_EQ	TEL_O_CDS	TEL_O_EQ	From Others
TEL_CDS	49.8	0.0	49.8	0.3	50.0
TEL_EQ	0.0	16.0	0.0	83.9	84.0
TEL_O_CDS	49.8	0.0	49.9	0.3	50.0
TEL_O_EQ	0.0	0.4	0.0	99.6	0.0
Contribution to others	50.0	0.0	50.0	85.0	185.0
Net Contribution	0.0	-84.0	0.0	85.0	46.20%

Notes: Tickers are as follows:- TEL_CDS(Telecommunications_CDS); TEL_EQ(Telecommunications_Equity); TEL_O_CDS(Other Telecommunications_CDS); and TEL_O_EQ(Other Telecommunications_EQ).

CRISIS PERIOD

	TEL_CDS	TEL_EQ	TEL_O_CDS	TEL_O_EQ	From Others
TEL_CDS	49.6	0.1	49.7	0.6	50.0
TEL_EQ	0.4	14.3	0.4	84.9	86.0
TEL_O_CDS	49.6	0.1	49.7	0.6	50.0
TEL_O_EQ	0.5	2.9	0.6	96.0	4.0
Contribution to others	50.0	3.0	51.0	86.0	190.0
Net Contribution	0.0	-83.0	1.0	82.0	47.60%

Notes: Tickers are as follows:- TEL_CDS(Telecommunications_CDS); TEL_EQ(Telecommunications_Equity); TEL_O_CDS(Other Telecommunications_CDS); and TEL_O_EQ(Other Telecommunications_EQ).

AFTER-CRISIS PERIOD

	TEL_CDS	TEL_EQ	TEL_O_CDS	TEL_O_EQ	From Others
TEL_CDS	49.9	0.0	49.9	0.2	50.0
TEL_EQ	0.2	21.2	0.2	78.4	79.0
TEL_O_CDS	49.9	0.0	49.9	0.2	50.0
TEL_O_EQ	0.3	0.8	0.3	98.6	1.0
Contribution to others	50.0	1.0	50.0	79.0	180.0
Net Contribution	0.0	-78.0	0.0	78.0	45.10%

Notes: Tickers are as follows:- TEL_CDS(Telecommunications_CDS); TEL_EQ(Telecommunications_Equity); TEL_O_CDS(Other Telecommunications_CDS); and TEL_O_EQ(Other Telecommunications_EQ).

Table 167: CDS Spreads and Equity Volatility Connectedness: Japan Basic Materials Static Analysis

FULL-SAMPLE PERIOD

	UT_CDS	UT_EQ	From Others
UT_CDS	99.2	0.8	1.0
UT_EQ	0.4	99.6	0.0
Contribution to others	0.0	1.0	1.0
Net Contribution	-1.0	1.0	0.60%
Notes: Tickers are as follows:- UT_CDS(Utilities_CDS); and UT_EQ(Utilities_EQ).			

CRISIS PERIOD

	UT_CDS	UT_EQ	From Others
UT_CDS	97.3	2.7	3.0
UT_EQ	0.7	99.3	1.0
Contribution to others	1.0	3.0	3.0
Net Contribution	-2.0	3.0	1.7%
Notes: Tickers are as follows:- UT_CDS(Utilities_CDS); and UT_EQ(Utilities_EQ).			

AFTER-CRISIS PERIOD

	UT_CDS	UT_EQ	From Others
UT_CDS	99.9	0.1	0.0
UT_EQ	0.6	99.4	1.0
Contribution to others	1.0	0.0	1.0
Net Contribution	1.0	0.0	0.30%
Notes: Tickers are as follows:- UT_CDS(Utilities_CDS); and UT_EQ(Utilities_EQ).			

Table 168: CDS Spreads and Equity Volatility Connectedness: Japan Utility Static Analysis

C.8 CDS Spreads and Equity Volatility Sectors Connectedness: Across Regions Static Analysis

FULL-SAMPLE PERIOD

	US_LEI_CDS	US_LEI_EQ	EU_LEI_CDS	EU_LEI_EQ	From Others
US_LEI_CDS	93.9	2.6	0.2	3.3	6.0
US_LEI_EQ	0.8	97.0	0.3	1.9	3.0
EU_LEI_CDS	0.2	0.6	99.1	0.1	1.0
EU_LEI_EQ	0.2	27.1	0.8	71.8	28.0
Contribution to others	1.0	30.0	1.0	5.0	38.0
Net Contribution	-5.0	27.0	0.0	-23.0	9.50%

Notes: Tickers are as follows:- US_LEI_CDS(US_Leisure_CDS); US_LEI_EQ(US_Leisure_EQ); EU_LEI_CDS(EU_Leisure_CDS); and EU_LEI_EQ(EU_Leisure_EQ).

CRISIS PERIOD

	US_LEI_CDS	US_LEI_EQ	EU_LEI_CDS	EU_LEI_EQ	From Others
US_LEI_CDS	91.6	3.5	0.4	4.5	8.0
US_LEI_EQ	1.6	97.6	0.1	0.7	2.0
EU_LEI_CDS	0.6	2.8	94.8	1.9	5.0
EU_LEI_EQ	0.5	27.0	0.4	72.1	28.0
Contribution to others	3.0	33.0	1.0	7.0	44.0
Net Contribution	-5.0	31.0	-4.0	-21.0	11.0%

Notes: Tickers are as follows:- US_LEI_CDS(US_Leisure_CDS); US_LEI_EQ(US_Leisure_EQ); EU_LEI_CDS(EU_Leisure_CDS); and EU_LEI_EQ(EU_Leisure_EQ).

AFTER-CRISIS PERIOD

	US_LEI_CDS	US_LEI_EQ	EU_LEI_CDS	EU_LEI_EQ	From Others
US_LEI_CDS	98.4	0.8	0.1	0.7	2.0
US_LEI_EQ	0.8	97.9	0.3	1.0	2.0
EU_LEI_CDS	0.4	2.3	97.2	0.2	3.0
EU_LEI_EQ	0.8	11.5	1.0	86.7	13.0
Contribution to others	2.0	15.0	2.0	2.0	20.0
Net Contribution	0.0	13.0	-1.0	-11.0	5.00%

Notes: Tickers are as follows:- US_LEI_CDS(US_Leisure_CDS); US_LEI_EQ(US_Leisure_EQ); EU_LEI_CDS(EU_Leisure_CDS); and EU_LEI_EQ(EU_Leisure_EQ).

Table 169: CDS Spreads and Equity Volatility Regional Connectedness: Leisure Static Analysis

FULL-SAMPLE PERIOD

	US_IND_CDS	US_IND_EQ	JP_IND_CDS	JP_IND_EQ	From Others
US_IND_CDS	99.3	0.4	0.2	0.0	1.0
US_IND_EQ	0.1	97.7	0.6	1.6	2.0
JP_IND_CDS	0.5	0.5	99.0	0.0	1.0
JP_IND_EQ	0.0	18.3	0.3	81.4	19.0
Contribution to others	1.0	19.0	1.0	2.0	22.0
Net Contribution	0.0	17.0	0.0	-17.0	5.60%

Notes: Tickers are as follows:- US_IND_CDS(US_Industrials_CDS); US_IND_EQ(US_Industrials_EQ); JP_IND_CDS(JP_Industrials_CDS); and JP_IND_EQ(JP_Industrials_EQ).

CRISIS PERIOD

	US_IND_CDS	US_IND_EQ	JP_IND_CDS	JP_IND_EQ	From Others
US_IND_CDS	98.1	1.2	0.7	0.1	2.0
US_IND_EQ	0.1	97.3	0.2	2.4	3.0
JP_IND_CDS	1.3	0.1	98.6	0.1	1.0
JP_IND_EQ	0.1	19.1	0.7	80.1	20.0
Contribution to others	1.0	20.0	2.0	3.0	26.0
Net Contribution	-1.0	17.0	1.0	-17.0	6.50%

Notes: Tickers are as follows:- US_IND_CDS(US_Industrials_CDS); US_IND_EQ(US_Industrials_EQ); JP_IND_CDS(JP_Industrials_CDS); and JP_IND_EQ(JP_Industrials_EQ).

AFTER-CRISIS PERIOD

	US_IND_CDS	US_IND_EQ	JP_IND_CDS	JP_IND_EQ	From Others
US_IND_CDS	98.8	0.8	0.2	0.3	1.0
US_IND_EQ	0.3	97.3	1.5	0.9	3.0
JP_IND_CDS	0.3	0.7	98.9	0.2	1.0
JP_IND_EQ	0.1	19.4	0.2	80.3	20.0
Contribution to others	1.0	21.0	2.0	1.0	25.0
Net Contribution	0.0	18.0	1.0	-19.0	6.20%

Notes: Tickers are as follows:- US_IND_CDS(US_Industrials_CDS); US_IND_EQ(US_Industrials_EQ); JP_IND_CDS(JP_Industrials_CDS); and JP_IND_EQ(JP_Industrials_EQ).

Table 170: CDS Spreads and Equity Volatility Regional Connectedness: Industrial Static Analysis

FULL-SAMPLE PERIOD

	US_OIL_CDS	US_OIL_EQ	EU_OIL_CDS	EU_OIL_EQ	Others
US_OIL_CDS	94.7	1.1	1.6	2.6	5.0
US_OIL_EQ	0.7	98.6	0.1	0.6	1.0
EU_OIL_CDS	2.2	1.0	92.3	4.5	8.0
EU_OIL_EQ	1.2	0.1	2.4	96.3	4.0
Contribution to others	4.0	2.0	4.0	8.0	18.0
Net Contribution	-1.0	1.0	-4.0	4.0	4.50%

Notes: Tickers are as follows:- US_OIL_CDS(US_Oil&Gas_CDS); US_OIL_EQ(US_Oil&Gas_EQ); EU_OIL_CDS(EU_Oil&Gas_CDS); and EU_OIL_EQ(EU_Oil&Gas_EQ).

CRISIS PERIOD

	US_OIL_CDS	US_OIL_EQ	EU_OIL_CDS	EU_OIL_EQ	From Others
US_OIL_CDS	80.6	2.0	7.9	9.5	19.0
US_OIL_EQ	2.1	92.9	2.7	2.2	7.0
EU_OIL_CDS	11.2	6.3	74.7	7.7	25.0
EU_OIL_EQ	7.3	0.2	3.9	88.6	11.0
Contribution to others	21.0	9.0	15.0	19.0	63.0
Net Contribution	2.0	2.0	-10.0	8.0	15.8%

Notes: Tickers are as follows:- US_OIL_CDS(US_Oil&Gas_CDS); US_OIL_EQ(US_Oil&Gas_EQ); EU_OIL_CDS(EU_Oil&Gas_CDS); and EU_OIL_EQ(EU_Oil&Gas_EQ).

AFTER-CRISIS PERIOD

	US_OIL_CDS	US_OIL_EQ	EU_OIL_CDS	EU_OIL_EQ	From Others
US_OIL_CDS	94.7	1.1	1.6	2.6	5.0
US_OIL_EQ	0.7	98.6	0.1	0.6	1.0
EU_OIL_CDS	2.2	1.0	92.3	4.5	8.0
EU_OIL_EQ	1.2	0.1	2.4	96.3	4.0
Contribution to others	4.0	2.0	4.0	8.0	18.0
Net Contribution	-1.0	1.0	-4.0	4.0	4.50%

Notes: Tickers are as follows:- US_OIL_CDS(US_Oil&Gas_CDS); US_OIL_EQ(US_Oil&Gas_EQ); EU_OIL_CDS(EU_Oil&Gas_CDS); and EU_OIL_EQ(EU_Oil&Gas_EQ).

Table 171: CDS Spreads and Equity Volatility Regional Connectedness: Oil&Gas Static Analysis

FULL-SAMPLE PERIOD

	US_CAB_CDS	US_CAB_EQ	EU_CAB_CDS	EU_CAB_EQ	From Others
US_CAB_CDS	99.1	0.2	0.4	0.3	1.0
US_CAB_EQ	0.2	97.4	0.0	2.4	3.0
EU_CAB_CDS	0.0	0.3	97.1	2.6	3.0
EU_CAB_EQ	0.1	30.7	0.2	69.1	31.0
Contribution to others	0.0	31.0	1.0	5.0	37.0
Net Contribution	-1.0	28.0	-2.0	-26.0	9.30%

Notes: Tickers are as follows:- US_CAB_CDS(US_Cable Media_CDS); US_CAB_EQ(US_Cable Media_EQ); EU_CAB_CDS(EU_Cable Media_CDS); and EU_CAB_EQ(EU_Cable Media_EQ).

CRISIS PERIOD

	US_CAB_CDS	US_CAB_EQ	EU_CAB_CDS	EU_CAB_EQ	From Others
US_CAB_CDS	95.4	1.9	2.1	0.7	5.0
US_CAB_EQ	1.1	96.8	0.2	2.0	3.0
EU_CAB_CDS	3.0	4.0	87.1	5.9	13.0
EU_CAB_EQ	0.2	35.1	0.1	64.5	35.0
Contribution to others	4.0	41.0	2.0	9.0	56.0
Net Contribution	-1.0	38.0	-11.0	-26.0	14.0%

Notes: Tickers are as follows:- US_CAB_CDS(US_Cable Media_CDS); US_CAB_EQ(US_Cable Media_EQ); EU_CAB_CDS(EU_Cable Media_CDS); and EU_CAB_EQ(EU_Cable Media_EQ).

AFTER-CRISIS PERIOD

	US_CAB_CDS	US_CAB_EQ	EU_CAB_CDS	EU_CAB_EQ	From Others
US_CAB_CDS	98.3	0.5	0.1	1.1	2.0
US_CAB_EQ	0.3	99.1	0.0	0.6	1.0
EU_CAB_CDS	0.3	0.5	94.9	4.3	5.0
EU_CAB_EQ	0.1	11.9	0.2	87.8	12.0
Contribution to others	1.0	13.0	0.0	6.0	20.0
Net Contribution	-1.0	12.0	-5.0	-6.0	5.00%

Notes: Tickers are as follows:- US_CAB_CDS(US_Cable Media_CDS); US_CAB_EQ(US_Cable Media_EQ); EU_CAB_CDS(EU_Cable Media_CDS); and EU_CAB_EQ(EU_Cable Media_EQ).

Table 172: CDS Spreads and Equity Volatility Regional Connectedness: Cable Media Static Analysis

FULL-SAMPLE PERIOD

	US_CGM_CDS	US_CGM_EQ	EU_CGM_CDS	EU_CGM_EQ	From Others
US_CGM_CDS	95.8	1.9	1.6	0.7	4.0
US_CGM_EQ	0.1	99.3	0.1	0.6	1.0
EU_CGM_CDS	1.5	7.5	86.4	4.5	14.0
EU_CGM_EQ	0.1	30.6	0.2	69.1	31.0
Contribution to others	2.0	40.0	2.0	6.0	49.0
Net Contribution	-2.0	39.0	-12.0	-25.0	12.40%

Notes: Tickers are as follows:- US_CGM_CDS(US_Conglomerate/Diversified_CDS); US_CGM_EQ(US_Conglomerate/Diversified_EQ); EU_CGM_CDS(EU_Conglomerate/Diversified_CDS); and EU_CGM_EQ(EU_Conglomerate/Diversified_EQ).

CRISIS PERIOD

	US_CGM_CDS	US_CGM_EQ	EU_CGM_CDS	EU_CGM_EQ	From Others
US_CGM_CDS	97.7	0.9	1.2	0.2	2.0
US_CGM_EQ	0.6	99.1	0.1	0.3	1.0
EU_CGM_CDS	1.5	9.1	85.4	4.0	15.0
EU_CGM_EQ	0.0	30.4	0.3	69.3	31.0
Contribution to others	2.0	40.0	2.0	4.0	48.0
Net Contribution	0.0	39.0	-13.0	-27.0	12.10%

Notes: Tickers are as follows:- US_CGM_CDS(US_Conglomerate/Diversified_CDS); US_CGM_EQ(US_Conglomerate/Diversified_EQ); EU_CGM_CDS(EU_Conglomerate/Diversified_CDS); and EU_CGM_EQ(EU_Conglomerate/Diversified_EQ).

AFTER-CRISIS PERIOD

	US_CGM_CDS	US_CGM_EQ	EU_CGM_CDS	EU_CGM_EQ	From Others
US_CGM_CDS	88.5	4.4	3.3	3.8	11.0
US_CGM_EQ	1.7	96.6	0.2	1.6	3.0
EU_CGM_CDS	2.9	3.8	85.7	7.6	14.0
EU_CGM_EQ	0.3	15.8	0.0	83.9	16.0
Contribution to others	5.0	24.0	4.0	13.0	45.0
Net Contribution	-6.0	21.0	-10.0	-3.0	11.30%

Notes: Tickers are as follows:- US_CGM_CDS(US_Conglomerate/Diversified_CDS); US_CGM_EQ(US_Conglomerate/Diversified_EQ); EU_CGM_CDS(EU_Conglomerate/Diversified_CDS); and EU_CGM_EQ(EU_Conglomerate/Diversified_EQ).

Table 173: CDS Spreads and Equity Volatility Regional Connectedness: Conglomerate/Diversified Mfg Static Analysis

FULL-SAMPLE PERIOD

	US_OF_O_CDS	US_OF_O_EQ	EU_OF_O_CDS	EU_OF_O_EQ	From Others
US_OF_O_CDS	99.7	0.1	0.2	0.0	0.0
US_OF_O_EQ	0.2	98.5	0.1	1.2	2.0
EU_OF_O_CDS	0.1	0.0	99.8	0.1	0.0
EU_OF_O_EQ	0.1	36.0	0.2	63.6	36.0
Contribution to others	0.0	36.0	0.0	1.0	38.0
Net Contribution	0.0	34.0	0.0	-35.0	9.60%

Notes: Tickers are as follows:- US_OFII_CDS(US_Other Financials II_CDS); US_OFII_EQ(US_Other Financials II_EQ); EU_OFII_CDS(EU_Other Financials II_CDS); and EU_OFII_EQ(EU_Other Financials II_EQ).

CRISIS PERIOD

	US_OF_O_CDS	US_OF_O_EQ	EU_OF_O_CDS	EU_OF_O_EQ	From Others
US_OF_O_CDS	98.7	0.0	1.2	0.0	1.0
US_OF_O_EQ	0.1	98.9	0.1	0.9	1.0
EU_OF_O_CDS	1.0	1.0	92.8	5.2	7.0
EU_OF_O_EQ	0.9	37.1	1.4	60.6	39.0
Contribution to others	2.0	38.0	3.0	6.0	49.0
Net Contribution	1.0	37.0	-4.0	-33.0	12.20%

Notes: Tickers are as follows:- US_OFII_CDS(US_Other Financials II_CDS); US_OFII_EQ(US_Other Financials II_EQ); EU_OFII_CDS(EU_Other Financials II_CDS); and EU_OFII_EQ(EU_Other Financials II_EQ).

AFTER-CRISIS PERIOD

	US_OF_O_CDS	US_OF_O_EQ	EU_OF_O_CDS	EU_OF_O_EQ	From Others
US_OF_O_CDS	99.8	0.2	0.0	0.0	0.0
US_OF_O_EQ	0.7	96.8	0.8	1.7	3.0
EU_OF_O_CDS	0.2	4.0	95.6	0.3	4.0
EU_OF_O_EQ	0.2	25.8	0.3	73.7	26.0
Contribution to others	1.0	30.0	1.0	2.0	34.0
Net Contribution	1.0	27.0	-3.0	-24.0	0.1

Notes: Tickers are as follows:- US_OFII_CDS(US_Other Financials II_CDS); US_OFII_EQ(US_Other Financials II_EQ); EU_OFII_CDS(EU_Other Financials II_CDS); and EU_OFII_EQ(EU_Other Financials II_EQ).

Table 174: CDS Spreads and Equity Volatility Regional Connectedness: Other Financials Static Analysis

FULL-SAMPLE PERIOD

	US_TRSP_CDS	US_TRSP_EQ	JP_TRSP_CDS	JP_TRSP_EQ	From Others
US_TRSP_CDS	99.7	0.1	0.1	0.1	0.0
US_TRSP_EQ	0.1	93.7	0.0	6.2	6.0
JP_TRSP_CDS	0.3	0.2	95.1	4.4	5.0
JP_TRSP_EQ	0.2	12.8	0.9	86.2	14.0
Contribution to others	1.0	13.0	1.0	11.0	25.0
Net Contribution	1.0	7.0	-4.0	-3.0	6.30%

Notes: Tickers are as follows:- US_TRSP_CDS(US_Transportation_CDS); US_TRSP_EQ(US_Transportation_EQ); JP_TRSP_CDS(Japan_Transportation_CDS); and JP_TRSP_EQ(Japan_Transportation_EQ).

CRISIS PERIOD

	US_TRSP_CDS	US_TRSP_EQ	JP_TRSP_CDS	JP_TRSP_EQ	From Others
US_TRSP_CDS	99.1	0.1	0.2	0.6	1.0
US_TRSP_EQ	0.3	91.8	0.6	7.3	8.0
JP_TRSP_CDS	1.1	2.1	87.5	9.3	12.0
JP_TRSP_EQ	0.0	14.7	1.5	83.8	16.0
Contribution to others	1.0	17.0	2.0	17.0	38.0
Net Contribution	0.0	9.0	-10.0	1.0	9.4%

Notes: Tickers are as follows:- US_TRSP_CDS(US_Transportation_CDS); US_TRSP_EQ(US_Transportation_EQ); JP_TRSP_CDS(Japan_Transportation_CDS); and JP_TRSP_EQ(Japan_Transportation_EQ).

AFTER-CRISIS PERIOD

	US_TRSP_CDS	US_TRSP_EQ	JP_TRSP_CDS	JP_TRSP_EQ	From Others
US_TRSP_CDS	97.8	0.3	0.2	1.7	2.0
US_TRSP_EQ	0.3	92.8	0.1	6.8	7.0
JP_TRSP_CDS	0.2	0.0	98.7	1.1	1.0
JP_TRSP_EQ	0.4	7.1	0.4	92.1	8.0
Contribution to others	1.0	7.0	1.0	10.0	19.0
Net Contribution	-1.0	0.0	0.0	2.0	4.70%

Notes: Tickers are as follows:- US_TRSP_CDS(US_Transportation_CDS); US_TRSP_EQ(US_Transportation_EQ); JP_TRSP_CDS(Japan_Transportation_CDS); and JP_TRSP_EQ(Japan_Transportation_EQ).

Table 175: CDS Spreads and Equity Volatility Regional Connectedness: Transportation Static Analysis

FULL-SAMPLE PERIOD

	US_UT_CDS	US_UT_EQ	EU_UT_CDS	EU_UT_EQ	JP_UT_CDS	JP_UT_EQ	From Others
US_UT_CDS	99.8	0.0	0.0	0.0	0.0	0.1	0.0
US_UT_EQ	0.0	94.8	0.1	1.5	1.4	2.2	5.0
EU_UT_CDS	0.0	0.1	97.6	0.2	2.1	0.0	2.0
EU_UT_EQ	0.0	29.5	0.0	64.9	2.5	3.1	35.0
JP_UT_CDS	0.0	3.1	0.0	2.2	94.2	0.5	6.0
JP_UT_EQ	0.1	3.4	0.0	0.3	0.4	95.8	4.0
Contribution to others	0.0	36.0	0.0	4.0	6.0	6.0	53.0
Net Contribution	0.0	31.0	-2.0	-31.0	0.0	2.0	8.80%

Notes: Tickers are as follows:- US_RET_CDS(US Utility_CDS); US_RET_EQ(US Utility_EQ); EU_RET_CDS(EU Utility_CDS); EU_RET_EQ(EU Utility_EQ); JP_RET_CDS(Japan_Utility_CDS); and JP_RET_EQ(Japan Utility_EQ).

CRISIS PERIOD

	US_UT_CDS	US_UT_EQ	EU_UT_CDS	EU_UT_EQ	JP_UT_CDS	JP_UT_EQ	From Others
US_UT_CDS	92.8	0.8	2.2	0.4	1.3	2.5	7.0
US_UT_EQ	0.1	93.0	0.1	1.0	3.3	2.6	7.0
EU_UT_CDS	4.2	0.1	91.6	0.1	3.0	1.0	8.0
EU_UT_EQ	0.5	38.4	0.0	53.7	3.9	3.4	46.0
JP_UT_CDS	4.0	6.3	0.1	3.1	85.2	1.3	15.0
JP_UT_EQ	1.1	5.4	0.0	0.2	0.5	92.8	7.0
Contribution to others	10.0	51.0	2.0	5.0	12.0	11.0	91.0
Net Contribution	3.0	44.0	-6.0	-41.0	-3.0	4.0	15.1%

Notes: Tickers are as follows:- US_RET_CDS(US Utility_CDS); US_RET_EQ(US Utility_EQ); EU_RET_CDS(EU Utility_CDS); EU_RET_EQ(EU Utility_EQ); JP_RET_CDS(Japan_Utility_CDS); and JP_RET_EQ(Japan Utility_EQ).

AFTER-CRISIS PERIOD

	US_UT_CDS	US_UT_EQ	EU_UT_CDS	EU_UT_EQ	JP_UT_CDS	JP_UT_EQ	From Others
US_UT_CDS	99.5	0.0	0.0	0.4	0.0	0.1	0.0
US_UT_EQ	0.1	96.1	0.4	0.1	1.6	1.6	4.0
EU_UT_CDS	0.0	0.1	98.0	0.2	1.2	0.5	2.0
EU_UT_EQ	0.3	3.5	0.1	90.7	0.1	5.4	9.0
JP_UT_CDS	0.1	0.1	0.1	0.3	99.3	0.1	1.0
JP_UT_EQ	0.6	0.3	0.0	0.8	0.6	97.7	2.0
Contribution to others	1.0	4.0	1.0	2.0	4.0	8.0	19.0
Net Contribution	1.0	0.0	-1.0	-7.0	3.0	6.0	3.10%

Notes: Tickers are as follows:- US_RET_CDS(US Utility_CDS); US_RET_EQ(US Utility_EQ); EU_RET_CDS(EU Utility_CDS); EU_RET_EQ(EU Utility_EQ); JP_RET_CDS(Japan_Utility_CDS); and JP_RET_EQ(Japan Utility_EQ).

Table 176: CDS Spreads and Equity Volatility Regional Connectedness: Utility Static Analysis

ULL-SAMPLE PERIOD

	US_RET_CDS	US_RET_EQ	UK_RET_CDS	UK_RET_EQ	JP_RET_CDS	JP_RET_EQ	From Others
US_RET_CDS	85.9	0.1	11.5	0.5	2.0	0.1	14.0
US_RET_EQ	0.1	84.9	0.1	11.3	0.1	3.4	15.0
UK_RET_CDS	18.2	2.5	72.4	5.3	0.1	1.6	28.0
UK_RET_EQ	0.1	10.0	0.0	84.8	0.5	4.5	15.0
JP_RET_CDS	0.2	0.1	0.1	0.2	99.2	0.1	1.0
JP_RET_EQ	0.0	9.1	0.0	10.2	0.4	80.3	20.0
Contribution to others	19.0	22.0	12.0	28.0	3.0	10.0	92.0
Net Contribution	5.0	7.0	-16.0	13.0	2.0	-10.0	15.40%

Notes: Tickers are as follows:- US_RET_CDS(US Retail Stores_CDS); US_RET_EQ(US Retail Stores_EQ); EU_RET_CDS(EU Retail Stores_CDS); EU_RET_EQ(EU Retail Stores_EQ); JP_RET_CDS(Japan_Retail Stores_CDS); and JP_RET_EQ(Japan Retail Stores_EQ).

CRISIS PERIOD

	US_RET_CDS	US_RET_EQ	UK_RET_CDS	UK_RET_EQ	JP_RET_CDS	JP_RET_EQ	From Others
US_RET_CDS	94.2	1.3	1.1	0.4	2.6	0.4	6.0
US_RET_EQ	0.3	80.9	0.8	11.3	0.1	6.6	19.0
UK_RET_CDS	3.0	3.8	83.8	7.1	0.4	2.0	16.0
UK_RET_EQ	0.1	10.5	0.0	83.2	0.1	6.1	17.0

JP_RET_CDS	0.4	0.3	0.2	0.5	98.4	0.1	2.0
JP_RET_EQ	0.4	9.1	0.1	11.2	0.2	79.0	21.0
Contribution to others	4.0	25.0	2.0	31.0	3.0	15.0	81.0
Net Contribution	-2.0	6.0	-14.0	14.0	1.0	-6.0	13.4%

Notes: Tickers are as follows:- US_RET_CDS(US Retail Stores_CDS); US_RET_EQ(US Retail Stores_EQ); EU_RET_CDS(EU Retail Stores_CDS); EU_RET_EQ(EU Retail Stores_EQ); JP_RET_CDS(Japan_Retail Stores_CDS); and JP_RET_EQ(Japan Retail Stores_EQ).

AFTER-CRISIS PERIOD

	US_RET_CDS	**US_RET_EQ**	**UK_RET_CDS**	**UK_RET_EQ**	**JP_RET_CDS**	**JP_RET_EQ**	**From Others**
US_RET_CDS	72.0	0.0	25.0	1.3	1.3	0.3	28.0
US_RET_EQ	0.7	91.5	0.2	6.1	0.0	1.5	8.0
UK_RET_CDS	31.8	0.3	62.9	2.3	0.3	2.3	37.0
UK_RET_EQ	0.2	4.4	0.1	89.5	0.5	5.3	10.0
JP_RET_CDS	0.4	0.0	0.2	1.4	97.9	0.0	2.0
JP_RET_EQ	0.1	9.1	0.6	9.8	1.9	78.6	21.0
Contribution to others	33.0	14.0	26.0	21.0	4.0	9.0	107.0
Net Contribution	5.0	6.0	-11.0	11.0	2.0	-12.0	17.90%

Notes: Tickers are as follows:- US_RET_CDS(US Retail Stores_CDS); US_RET_EQ(US Retail Stores_EQ); EU_RET_CDS(EU Retail Stores_CDS); EU_RET_EQ(EU Retail Stores_EQ); JP_RET_CDS(Japan_Retail Stores_CDS); and JP_RET_EQ(Japan Retail Stores_EQ).

Table 177: CDS Spreads and Equity Volatility Regional Connectedness: Other Retail Static Analysis

FULL-SAMPLE PERIOD

	US_MM_CDS	US_MM_EQ	EU_MM_CDS	EU_MM_EQ	JP_MM_CDS	JP_MM_EQ	From Others
US_MM_CDS	97.6	0.1	0.8	0.3	0.4	0.8	2.0
US_MM_EQ	0.0	86.0	0.6	3.8	0.8	8.7	14.0
EU_MM_CDS	0.5	0.2	97.3	0.1	1.8	0.1	3.0
EU_MM_EQ	0.1	38.9	0.5	51.1	0.0	9.3	49.0
JP_MM_CDS	0.9	9.1	0.3	1.9	82.1	5.7	18.0
JP_MM_EQ	0.1	18.7	0.1	2.0	0.1	79.1	21.0
Contribution to others	2.0	67.0	2.0	8.0	3.0	25.0	107.0
Net Contribution	0.0	53.0	-1.0	-41.0	-15.0	4.0	0.2

Notes: Tickers are as follows:- US_MM_CDS(US Metals&Mining_CDS); US_MM_EQ(US Metals&Mining_EQ); EU_MM_CDS(EU Metals&Mining_CDS); EU_MM_EQ(EU Metals&Mining_EQ); JP_MM_CDS(Japan_Metals&Mining_CDS); and JP_MM_EQ(Japan Metals&Mining_EQ).

CRISIS PERIOD

	US_MM_CDS	US_MM_EQ	EU_MM_CDS	EU_MM_EQ	JP_MM_CDS	JP_MM_EQ	From Others
US_MM_CDS	87.4	2.3	5.8	1.4	0.9	2.2	13.0
US_MM_EQ	1.3	85.2	0.4	2.3	1.0	9.8	15.0
EU_MM_CDS	6.2	3.7	85.6	2.5	0.9	1.1	14.0
EU_MM_EQ	3.9	38.3	0.7	46.1	0.2	10.7	54.0
JP_MM_CDS	3.4	14.5	1.4	2.2	67.8	10.7	32.0
JP_MM_EQ	0.6	23.4	0.5	1.2	0.1	74.1	26.0
Contribution to others	15.0	82.0	9.0	10.0	3.0	34.0	154.0
Net Contribution	2.0	67.0	-5.0	-44.0	-29.0	8.0	25.6%

Notes: Tickers are as follows:- US_MM_CDS(US Metals&Mining_CDS); US_MM_EQ(US Metals&Mining_EQ); EU_MM_CDS(EU Metals&Mining_CDS); EU_MM_EQ(EU Metals&Mining_EQ); JP_MM_CDS(Japan_Metals&Mining_CDS); and JP_MM_EQ(Japan Metals&Mining_EQ).

AFTER-CRISIS PERIOD

	US_MM_CDS	US_MM_EQ	EU_MM_CDS	EU_MM_EQ	JP_MM_CDS	JP_MM_EQ	From Others
US_MM_CDS	91.2	0.6	0.4	4.9	1.2	1.7	9.0
US_MM_EQ	1.1	87.1	0.9	2.2	0.1	8.6	13.0
EU_MM_CDS	0.0	0.7	93.6	0.8	4.4	0.4	6.0
EU_MM_EQ	0.4	19.4	1.0	68.7	0.4	10.1	31.0
JP_MM_CDS	1.4	0.3	0.8	0.3	96.1	1.1	4.0
JP_MM_EQ	0.5	6.1	0.2	2.4	0.1	90.7	9.0
Contribution to others	3.0	27.0	3.0	11.0	6.0	22.0	73.0
Net Contribution	-6.0	14.0	-3.0	-20.0	2.0	13.0	12.10%

Notes: Tickers are as follows:- US_MM_CDS(US Metals&Mining_CDS); US_MM_EQ(US Metals&Mining_EQ); EU_MM_CDS(EU Metals&Mining_CDS); EU_MM_EQ(EU Metals&Mining_EQ); JP_MM_CDS(Japan_Metals&Mining_CDS); and JP_MM_EQ(Japan Metals&Mining_EQ).

Table 178: CDS Spreads and Equity Volatility Regional Connectedness: Metals & Mining Static Analysis

FULL-SAMPLE PERIOD

	US_ELEC_CDS	US_ELEC_EQ	EU_ELEC_CDS	EU_ELEC_EQ	JP_ELEC_CDS	JP_ELEC_EQ	From Others
US_ELEC_CDS	98.3	0.1	0.1	0.1	1.3	0.0	2.0
US_ELEC_EQ	0.0	93.9	0.1	1.6	0.3	4.2	6.0
EU_ELEC_CDS	0.2	0.1	98.4	1.1	0.1	0.1	2.0
EU_ELEC_EQ	0.0	37.1	0.1	55.6	0.1	7.0	44.0
JP_ELEC_CDS	0.9	0.1	0.1	0.8	97.9	0.2	2.0
JP_ELEC_EQ	0.1	16.1	0.0	1.2	0.1	82.5	18.0
Contribution to others	1.0	54.0	0.0	5.0	2.0	12.0	73.0
Net Contribution	-1.0	48.0	-2.0	-39.0	0.0	-6.0	12.20%

Notes: Tickers are as follows:- US_ELEC_CDS(US Electronics_CDS); US_ELEC_EQ(US Electronics_EQ); EU_ELEC_CDS(EU Electronics_CDS); EU_ELEC_EQ(EU Electronics_EQ); JP_ELEC_CDS(Japan_Electronics_CDS); and JP_ELEC_EQ(Japan Electronics_EQ).

CRISIS PERIOD

	US_ELEC_ CDS	US_ELEC _EQ	EU_ELEC_ CDS	EU_ELEC _EQ	JP_ELEC_ CDS	JP_ELEC _EQ	From Others
US_ELEC_CDS	98.4	0.1	0.2	0.1	1.1	0.2	2.0
US_ELEC_EQ	0.1	94.0	0.2	0.3	0.0	5.4	6.0
EU_ELEC_CDS	0.2	0.2	97.1	1.7	0.1	0.8	3.0
EU_ELEC_EQ	0.1	36.3	0.1	51.8	0.7	11.1	48.0
JP_ELEC_CDS	0.9	0.6	0.2	4.3	91.9	2.2	8.0
JP_ELEC_EQ	0.2	17.2	0.2	1.4	0.2	80.8	19.0
Contribution to others	1.0	54.0	1.0	8.0	2.0	20.0	86.0
Net Contribution	-1.0	48.0	-2.0	-40.0	-6.0	1.0	14.3%

Notes: Tickers are as follows:- US_ELEC_CDS(US Electronics_CDS); US_ELEC_EQ(US Electronics_EQ); EU_ELEC_CDS(EU Electronics_CDS); EU_ELEC_EQ(EU Electronics_EQ); JP_ELEC_CDS(Japan_Electronics_CDS); and JP_ELEC_EQ(Japan Electronics_EQ).

AFTER-CRISIS PERIOD

	US_ELEC_ CDS	US_ELEC _EQ	EU_ELEC_ CDS	EU_ELEC _EQ	JP_ELEC_ CDS	JP_ELEC _EQ	From Others
US_ELEC_CDS	97.3	0.4	0.1	0.7	1.4	0.1	3.0
US_ELEC_EQ	0.3	91.1	0.2	0.4	1.2	6.8	9.0
EU_ELEC_CDS	0.2	0.3	98.5	0.4	0.3	0.3	2.0
EU_ELEC_EQ	0.3	17.0	0.1	75.7	0.3	6.7	24.0
JP_ELEC_CDS	1.0	0.6	0.3	0.3	97.2	0.5	3.0
JP_ELEC_EQ	0.8	15.2	0.1	0.4	0.1	83.4	17.0
Contribution to others	3.0	34.0	1.0	2.0	3.0	14.0	57.0
Net Contribution	0.0	25.0	-1.0	-22.0	0.0	-3.0	9.50%

Notes: Tickers are as follows:- US_ELEC_CDS(US Electronics_CDS); US_ELEC_EQ(US Electronics_EQ); EU_ELEC_CDS(EU Electronics_CDS); EU_ELEC_EQ(EU Electronics_EQ); JP_ELEC_CDS(Japan_Electronics_CDS); and JP_ELEC_EQ(Japan Electronics_EQ).

Table 179: CDS Spreads and Equity Volatility Regional Connectedness: Electronics Static Analysis

FULL-SAMPLE PERIOD

	US_CHEM_CDS	US_CHEM_EQ	EU_CHEM_CDS	EU_CHEM_EQ	JP_CHEM_CDS	JP_CHEM_EQ	From Others
US_CHEM_CDS	97.6	0.0	0.7	0.2	0.8	0.6	2.0
US_CHEM_EQ	0.1	95.5	0.2	0.7	0.2	3.3	4.0
EU_CHEM_CDS	0.7	4.9	83.3	5.3	0.7	5.1	17.0
EU_CHEM_EQ	0.2	39.1	0.6	54.6	0.2	5.4	45.0
JP_CHEM_CDS	1.2	0.4	1.2	0.0	96.7	0.4	3.0
JP_CHEM_EQ	0.2	16.3	0.2	0.3	0.6	82.3	18.0
Contribution to others	2.0	61.0	3.0	7.0	2.0	15.0	90.0
Net Contribution	0.0	57.0	-14.0	-38.0	-1.0	-3.0	15.00%

Notes: Tickers are as follows:- US_CHEM_CDS(US Chemicals_CDS); US_CHEM_EQ(US Chemicals_EQ); EU_CHEM_CDS(EU Chemicals_CDS); EU_CHEM_EQ(EU Chemicals_EQ); JP_CHEM_CDS(Japan_Chemicals_CDS); and JP_CHEM_EQ(Japan Chemicals_EQ).

CRISIS PERIOD

	US_CHEM_CDS	US_CHEM_EQ	EU_CHEM_CDS	EU_CHEM_EQ	JP_CHEM_CDS	JP_CHEM_EQ	From Others
US_CHEM_CDS	84.6	6.3	6.8	0.1	0.5	1.7	15.0
US_CHEM_EQ	0.1	94.4	0.1	0.0	1.3	4.1	6.0
EU_CHEM_CDS	9.7	2.6	78.4	3.5	1.0	4.9	22.0
EU_CHEM_EQ	0.1	39.6	0.7	50.9	0.0	8.7	49.0
JP_CHEM_CDS	3.9	4.4	0.3	1.1	88.2	2.1	12.0
JP_CHEM_EQ	0.3	19.6	0.2	0.2	0.2	79.4	21.0
Contribution to others	14.0	73.0	8.0	5.0	3.0	22.0	124.0
Net Contribution	-1.0	67.0	-14.0	-44.0	-9.0	1.0	20.7%

Notes: Tickers are as follows:- US_CHEM_CDS(US Chemicals_CDS); US_CHEM_EQ(US Chemicals_EQ); EU_CHEM_CDS(EU Chemicals_CDS); EU_CHEM_EQ(EU Chemicals_EQ); JP_CHEM_CDS(Japan_Chemicals_CDS); and JP_CHEM_EQ(Japan Chemicals_EQ).

AFTER-CRISIS PERIOD

	US_CHEM_CDS	US_CHEM_EQ	EU_CHEM_CDS	EU_CHEM_EQ	JP_CHEM_CDS	JP_CHEM_EQ	From Others
US_CHEM_CDS	97.2	0.5	1.0	0.1	0.6	0.6	3.0
US_CHEM_EQ	0.1	92.9	0.5	0.7	0.8	5.1	7.0
EU_CHEM_CDS	0.1	5.8	79.9	6.2	1.7	6.3	20.0
EU_CHEM_EQ	0.2	15.3	0.8	79.8	0.2	3.7	20.0
JP_CHEM_CDS	0.4	0.3	5.4	0.1	93.6	0.2	6.0
JP_CHEM_EQ	0.6	9.3	1.6	0.5	0.9	87.1	13.0
Contribution to others	1.0	31.0	9.0	8.0	4.0	16.0	69.0
Net Contribution	-2.0	24.0	-11.0	-12.0	-2.0	3.0	11.60%

Notes: Tickers are as follows:- US_CHEM_CDS(US Chemicals_CDS); US_CHEM_EQ(US Chemicals_EQ); EU_CHEM_CDS(EU Chemicals_CDS); EU_CHEM_EQ(EU Chemicals_EQ); JP_CHEM_CDS(Japan_Chemicals_CDS); and JP_CHEM_EQ(Japan Chemicals_EQ).

Table 180: CDS Spreads and Equity Volatility Regional Connectedness: Chemicals Static Analysis

FULL-SAMPLE PERIOD

	US_CG_CDS	US_CG_EQ	EU_CG_CDS	EU_CG_EQ	UK_CG_CDS	UK_CG_EQ	From Others
US_CG_CDS	94.4	0.5	1.7	0.0	3.1	0.2	6.0
US_CG_EQ	0.2	62.5	2.6	16.1	1.9	16.7	37.0
EU_CG_CDS	1.8	1.6	76.3	3.4	14.1	2.7	24.0
EU_CG_EQ	0.1	21.4	2.4	52.6	3.1	20.4	47.0
UK_CG_CDS	1.9	1.9	11.5	1.7	81.6	1.5	18.0
UK_CG_EQ	0.0	19.3	3.0	18.3	1.9	57.5	43.0
Contribution to others	4.0	45.0	21.0	40.0	24.0	42.0	175.0
Net Contribution	-2.0	8.0	-3.0	-7.0	6.0	-1.0	29.20%

Notes: Tickers are as follows:- US_CG_CDS(US Consumer Goods_CDS); US_CG_EQ(US Consumer Goods_EQ); EU_CG_CDS(EU Consumer Goods_CDS); EU_CG_EQ(EU Consumer Goods_EQ); UK_CG_CDS(UK Consumer Goods_CDS); and UK_CG_EQ(UK Consumer Goods_EQ).

CRISIS PERIOD

	US_CG_CDS	US_CG_EQ	EU_CG_CDS	EU_CG_EQ	UK_CG_CDS	UK_CG_EQ	From Others
US_CG_CDS	84.4	1.5	4.6	0.4	8.2	0.9	16.0
US_CG_EQ	0.3	60.3	4.5	15.1	1.5	18.3	40.0
EU_CG_CDS	4.7	1.5	57.4	2.7	29.6	4.2	43.0
EU_CG_EQ	0.1	22.9	2.4	50.9	2.8	21.0	49.0
UK_CG_CDS	6.1	2.2	30.5	2.3	56.1	2.8	44.0
UK_CG_EQ	0.1	19.3	3.6	16.0	2.0	59.0	41.0
Contribution to others	11.0	47.0	46.0	37.0	44.0	47.0	232.0
Net Contribution	-5.0	7.0	3.0	-12.0	0.0	6.0	38.70%

Notes: Tickers are as follows:- US_CG_CDS(US Consumer Goods_CDS); US_CG_EQ(US Consumer Goods_EQ); EU_CG_CDS(EU Consumer Goods_CDS); EU_CG_EQ(EU Consumer Goods_EQ); UK_CG_CDS(UK Consumer Goods_CDS); and UK_CG_EQ(UK Consumer Goods_EQ).

AFTER-CRISIS PERIOD

	US_CG_CDS	US_CG_EQ	EU_CG_CDS	EU_CG_EQ	UK_CG_CDS	UK_CG_EQ	From Others
US_CG_CDS	98.6	0.0	0.6	0.1	0.7	0.0	1.0
US_CG_EQ	0.2	72.5	1.3	11.7	2.6	11.7	28.0
EU_CG_CDS	0.1	1.8	90.0	3.5	4.0	0.5	10.0
EU_CG_EQ	0.4	11.4	3.2	58.6	5.0	21.4	41.0
UK_CG_CDS	0.1	1.1	2.4	1.0	94.9	0.5	5.0
UK_CG_EQ	0.0	14.3	2.5	22.4	1.5	59.3	41.0
Contribution to others	1.0	29.0	10.0	39.0	14.0	34.0	126.0
Net Contribution	0.0	1.0	0.0	-2.0	9.0	-7.0	21.00%

Notes: Tickers are as follows:- US_CG_CDS(US Consumer Goods_CDS); US_CG_EQ(US Consumer Goods_EQ); EU_CG_CDS(EU Consumer Goods_CDS); EU_CG_EQ(EU Consumer Goods_EQ); UK_CG_CDS(UK Consumer Goods_CDS); and UK_CG_EQ(UK Consumer Goods_EQ).

Table 181: CDS Spreads and Equity Volatility Regional Connectedness: Consumer Goods Static Analysis

FULL-SAMPLE PERIOD

	US_BEV_ CDS	US_BEV_ EQ	EU_BEV_ CDS	EU_BEV_ EQ	UK_BEV_ CDS	UK_BEV_ EQ	From Others
US_BEV_CDS	95.8	1.4	0.7	0.0	1.8	0.2	4.0
US_BEV_EQ	0.4	79.6	0.5	1.7	0.4	17.5	20.0
EU_BEV_CDS	0.5	1.9	84.7	2.0	7.7	3.2	15.0
EU_BEV_EQ	0.3	21.3	0.1	35.0	0.5	42.8	65.0
UK_BEV_CDS	1.2	1.7	7.0	1.7	85.2	3.2	15.0
UK_BEV_EQ	0.3	10.5	0.5	0.1	0.7	87.9	12.0
Contribution to others	3.0	37.0	9.0	6.0	11.0	67.0	132.0
Net Contribution	-1.0	17.0	-6.0	-59.0	-4.0	55.0	22.00%

Notes: Tickers are as follows:- US_BEV_CDS(US Beverages_CDS); US_BEV_EQ(US Beverages_EQ); EU_BEV_CDS(EU Beverages_CDS); EU_BEV_EQ(EU Beverages_EQ); UK_BEV_CDS(UK Beverages_CDS); and UK_BEV_EQ(UK Beverages_EQ).

CRISIS PERIOD

	US_BEV_ CDS	US_BEV_ EQ	EU_BEV_ CDS	EU_BEV_ EQ	UK_BEV_ CDS	UK_BEV_ EQ	From Others
US_BEV_CDS	76.0	3.8	6.2	0.5	12.6	1.0	24.0
US_BEV_EQ	0.4	73.8	1.6	1.8	0.5	22.0	26.0
EU_BEV_CDS	1.7	2.7	66.8	1.5	19.1	8.2	33.0
EU_BEV_EQ	0.8	22.4	0.1	31.6	0.1	45.1	68.0
UK_BEV_CDS	4.4	1.0	14.0	1.0	76.8	2.8	23.0
UK_BEV_EQ	0.4	11.6	1.2	0.1	0.4	86.2	14.0
Contribution to others	8.0	42.0	23.0	5.0	33.0	79.0	189.0
Net Contribution	-16.0	16.0	-10.0	-63.0	10.0	65.0	31.5%

Notes: Tickers are as follows:- US_BEV_CDS(US Beverages_CDS); US_BEV_EQ(US Beverages_EQ); EU_BEV_CDS(EU Beverages_CDS); EU_BEV_EQ(EU Beverages_EQ); UK_BEV_CDS(UK Beverages_CDS); and UK_BEV_EQ(UK Beverages_EQ).

AFTER-CRISIS PERIOD

	US_BEV_ CDS	US_BEV_ EQ	EU_BEV_ CDS	EU_BEV_ EQ	UK_BEV_ CDS	UK_BEV_ EQ	From Others
US_BEV_CDS	97.3	1.0	0.1	0.1	0.4	1.1	3.0
US_BEV_EQ	1.8	90.3	0.1	0.3	1.7	5.7	10.0
EU_BEV_CDS	0.2	2.4	93.3	2.0	1.0	1.1	7.0
EU_BEV_EQ	1.8	13.7	0.8	46.2	0.8	36.8	54.0

UK_BEV_CDS	0.3	2.1	1.5	2.8	92.3	0.9	8.0
UK_BEV_EQ	1.0	4.7	0.8	1.9	0.2	91.4	9.0
Contribution to others	5.0	24.0	3.0	7.0	4.0	46.0	89.0
Net Contribution	2.0	14.0	-4.0	-47.0	-4.0	37.0	14.90%

Notes: Tickers are as follows:- US_BEV_CDS(US Beverages_CDS); US_BEV_EQ(US Beverages_EQ); EU_BEV_CDS(EU Beverages_CDS); EU_BEV_EQ(EU Beverages_EQ); UK_BEV_CDS(UK Beverages_CDS); and UK_BEV_EQ(UK Beverages_EQ).

Table 182: CDS Spreads and Equity Volatility Regional Connectedness: Beverages/Bottling Static Analysis

FULL-SAMPLE PERIOD

	US_BNK_CDS	US_BNK_EQ	EU_BNK_CDS	EU_BNK_EQ	UK_BNK_CDS	UK_BNK_EQ	JP_BNK_CDS	JP_BNK_EQ	From Others
US_BNK_CDS	72.7	9.2	0.5	3.3	2.1	7.1	1.7	3.4	27.0
US_BNK_EQ	0.4	79.5	0.1	0.7	0.0	19.0	0.2	0.1	20.0
EU_BNK_CDS	0.5	0.0	96.4	0.5	1.8	0.4	0.1	0.2	4.0
EU_BNK_EQ	0.8	28.5	0.2	23.0	0.1	46.5	0.5	0.3	77.0
UK_BNK_CDS	1.3	1.4	8.3	1.0	83.3	2.7	1.6	0.4	17.0
UK_BNK_EQ	0.7	31.9	0.1	0.3	0.1	66.5	0.4	0.1	34.0
JP_BNK_CDS	0.9	1.0	0.1	0.3	1.2	2.9	85.7	8.0	14.0
JP_BNK_EQ	2.5	1.8	1.1	1.0	0.7	3.0	11.4	78.6	21.0
Contribution to others	7.0	74.0	10.0	7.0	6.0	82.0	16.0	12.0	214.0
Net Contribution	-20.0	54.0	6.0	-70.0	-11.0	48.0	2.0	-9.0	26.80%

Notes: Tickers are as follows:- US_BNK_CDS(US Banks_CDS); US_BNK_EQ(US Banks_EQ); EU_BNK_CDS(EU Banks_CDS); EU_BNK_EQ(EU Banks_EQ); UK_BNK_CDS(UK Banks_CDS); UK_BNK_EQ(UK Banks_EQ); JP_BNK_CDS(JP Banks_CDS); JP_BNK_EQ(JP Banks_EQ);

CRISIS PERIOD

	US_BNK_CDS	US_BNK_EQ	EU_BNK_CDS	EU_BNK_EQ	UK_BNK_CDS	UK_BNK_EQ	JP_BNK_CDS	JP_BNK_EQ	From Others
US_BNK_CDS	55.8	7.9	10.0	2.7	11.9	5.2	2.1	4.5	44.0
US_BNK_EQ	0.3	79.7	0.2	2.1	0.2	16.3	0.9	0.3	20.0
EU_BNK_CDS	3.6	1.1	69.9	2.7	14.3	3.5	3.5	1.4	30.0
EU_BNK_EQ	0.5	28.3	2.1	19.6	0.6	44.4	2.7	1.9	80.0
UK_BNK_CDS	6.2	4.6	17.0	1.9	53.3	8.4	4.9	3.7	47.0
UK_BNK_EQ	0.4	30.8	1.3	1.5	1.2	62.6	1.8	0.5	37.0
JP_BNK_CDS	1.6	1.9	2.4	0.6	3.0	6.1	68.1	16.4	32.0
JP_BNK_EQ	3.5	2.2	3.1	1.7	5.5	4.6	17.6	61.8	38.0
Contribution to others	16.0	77.0	36.0	13.0	37.0	89.0	34.0	29.0	329.0
Net Contribution	-28.0	57.0	6.0	-67.0	-10.0	52.0	2.0	-9.0	41.2%

Notes: Tickers are as follows:- US_BNK_CDS(US Banks_CDS); US_BNK_EQ(US Banks_EQ); EU_BNK_CDS(EU Banks_CDS); EU_BNK_EQ(EU Banks_EQ); UK_BNK_CDS(UK Banks_CDS); UK_BNK_EQ(UK Banks_EQ); JP_BNK_CDS(JP Banks_CDS); JP_BNK_EQ(JP Banks_EQ);

AFTER-CRISIS PERIOD

	US_BNK_CDS	US_BNK_EQ	EU_BNK_CDS	EU_BNK_EQ	UK_BNK_CDS	UK_BNK_EQ	JP_BNK_CDS	JP_BNK_EQ	From Others
US_BNK_CDS	81.8	6.0	0.2	1.6	1.0	5.5	2.4	1.5	18.0
US_BNK_EQ	0.5	68.8	0.1	0.2	1.3	28.8	0.1	0.2	31.0
EU_BNK_CDS	0.3	0.2	95.1	0.5	1.5	0.6	1.7	0.2	5.0
EU_BNK_EQ	1.7	16.3	0.2	33.7	0.1	47.6	0.0	0.4	66.0
UK_BNK_CDS	0.8	2.3	7.4	1.3	84.0	2.9	1.0	0.4	16.0
UK_BNK_EQ	1.5	17.0	0.1	0.6	0.1	80.4	0.2	0.0	20.0
JP_BNK_CDS	1.4	0.6	1.2	0.1	1.0	0.3	94.4	1.0	6.0
JP_BNK_EQ	0.6	0.1	0.8	0.5	0.2	0.1	2.3	95.3	5.0
Contribution to others	7.0	43.0	10.0	5.0	5.0	86.0	8.0	4.0	167.0
Net Contribution	-11.0	12.0	5.0	-61.0	-11.0	66.0	2.0	-1.0	20.80%

Notes: Tickers are as follows:- US_BNK_CDS(US Banks_CDS); US_BNK_EQ(US Banks_EQ); EU_BNK_CDS(EU Banks_CDS); EU_BNK_EQ(EU Banks_EQ); UK_BNK_CDS(UK Banks_CDS); UK_BNK_EQ(UK Banks_EQ); JP_BNK_CDS(JP Banks_CDS); JP_BNK_EQ(JP Banks_EQ);

Table 183: CDS Spreads and Equity Volatility Regional Connectedness: Banking Static Analysis

FULL-SAMPLE PERIOD

	US_CS_CDS	US_CS_EQ	EU_CS_CDS	EU_CS_EQ	UK_CS_CDS	UK_CS_EQ	JP_CS_CDS	JP_CS_EQ	From Others
US_CS_CDS	90.2	0.6	3.7	0.4	4.5	0.1	0.4	0.3	10.0
US_CS_EQ	0.2	66.9	0.3	13.1	1.1	15.6	0.0	2.8	33.0
EU_CS_CDS	4.5	2.2	84.5	2.0	5.5	0.7	0.1	0.5	15.0
EU_CS_EQ	0.1	18.4	0.8	46.9	3.4	27.6	0.3	2.4	53.0
UK_CS_CDS	2.6	3.7	4.1	6.8	75.6	6.0	0.5	0.7	24.0
UK_CS_EQ	0.1	18.6	0.5	26.7	3.1	48.3	0.3	2.5	52.0
JP_CS_CDS	0.7	0.2	0.1	0.4	0.3	0.1	97.9	0.3	2.0
JP_CS_EQ	0.3	8.0	0.1	5.2	0.3	9.6	0.3	76.1	24.0
Contribution to others	8.0	52.0	10.0	54.0	18.0	60.0	2.0	10.0	214.0
Net Contribution	-2.0	19.0	-5.0	1.0	-6.0	8.0	0.0	-14.0	26.70%

Notes: Tickers are as follows:- US_CS_CDS(US Consumer Services_CDS); US_CS_EQ(US Consumer Services_EQ); EU_CS_CDS(EU Consumer Services_CDS); EU_CS_EQ(EU Consumer Services_EQ); UK_CS_CDS(UK Consumer Services_CDS); UK_CS_EQ(UK Consumer Services_EQ); JP_CS_CDS(JP Consumer Services_CDS); JP_CS_EQ(JP Consumer Services_EQ);

CRISIS PERIOD

	US_CS_ CDS	US_CS _EQ	EU_CS_ CDS	EU_CS _EQ	UK_CS _CDS	UK_CS _EQ	JP_CS_ CDS	JP_CS _EQ	From Others
US_CS_CDS	75.6	1.8	6.6	1.3	7.2	0.5	6.4	0.7	24.0
US_CS_EQ	0.4	63.6	0.2	12.1	0.6	16.7	0.5	5.9	36.0
EU_CS_CDS	9.3	1.1	81.5	1.1	4.2	0.1	1.8	0.8	19.0
EU_CS_EQ	0.4	19.8	0.7	43.7	2.0	27.7	1.1	4.7	56.0
UK_CS_CDS	5.2	2.0	3.9	2.5	71.8	2.6	10.6	1.4	28.0
UK_CS_EQ	0.1	20.0	0.4	23.2	2.3	49.6	0.6	3.8	50.0
JP_CS_CDS	5.8	0.3	1.3	0.3	13.8	0.5	77.7	0.3	22.0
JP_CS_EQ	0.2	9.3	0.1	5.1	0.5	9.4	0.4	74.9	25.0
Contribution to others	22.0	54.0	13.0	46.0	31.0	57.0	21.0	18.0	262.0
Net Contribution	-2.0	18.0	-6.0	-10.0	3.0	7.0	-1.0	-7.0	32.70%

Notes: Tickers are as follows:- US_CS_CDS(US Consumer Services_CDS); US_CS_EQ(US Consumer Services_EQ); EU_CS_CDS(EU Consumer Services_CDS); EU_CS_EQ(EU Consumer Services_EQ); UK_CS_CDS(UK Consumer Services_CDS); UK_CS_EQ(UK Consumer Services_EQ); JP_CS_CDS(JP Consumer Services_CDS); JP_CS_EQ(JP Consumer Services_EQ);

AFTER-CRISIS PERIOD

	US_CS_ CDS	US_CS _EQ	EU_CS_ CDS	EU_CS _EQ	UK_CS _CDS	UK_CS _EQ	JP_CS_ CDS	JP_CS _EQ	From Others
US_CS_CDS	96.4	0.2	0.9	0.4	1.7	0.1	0.0	0.2	4.0
US_CS_EQ	0.2	73.1	1.1	8.0	1.0	11.4	0.9	4.3	27.0
EU_CS_CDS	0.3	4.8	78.0	3.2	8.8	3.8	0.2	1.0	22.0
EU_CS_EQ	0.1	6.3	1.9	53.6	4.4	28.2	1.6	3.9	46.0
UK_CS_CDS	0.7	2.7	7.7	12.2	61.0	13.1	1.2	1.4	39.0
UK_CS_EQ	0.1	9.8	1.8	32.4	4.0	47.4	1.1	3.4	53.0
JP_CS_CDS	0.1	0.2	0.5	1.7	0.2	0.2	96.8	0.4	3.0
JP_CS_EQ	0.7	10.9	1.2	9.0	0.3	11.7	0.3	65.9	34.0
Contribution to others	2.0	35.0	15.0	67.0	20.0	68.0	5.0	15.0	228.0
Net Contribution	-2.0	8.0	-7.0	21.0	-19.0	15.0	2.0	-19.0	28.50%

Notes: Tickers are as follows:- US_CS_CDS(US Consumer Services_CDS); US_CS_EQ(US Consumer Services_EQ); EU_CS_CDS(EU Consumer Services_CDS); EU_CS_EQ(EU Consumer Services_EQ); UK_CS_CDS(UK Consumer Services_CDS); UK_CS_EQ(UK Consumer Services_EQ); JP_CS_CDS(JP Consumer Services_CDS); JP_CS_EQ(JP Consumer Services_EQ);

Table 184: CDS Spreads and Equity Volatility Regional Connectedness: Consumer Services Static Analysis

FULL-SAMPLE PERIOD

	US_O_CS_CDS	US_O_CS_EQ	EU_O_CS_CDS	EU_O_CS_EQ	UK_O_CS_CDS	UK_O_CS_EQ	JP_O_CS_CDS	JP_O_CS_EQ	From Others
US_O_CS_CDS	96.8	0.0	0.0	0.0	0.2	0.0	2.8	0.0	3.0
US_O_CS_EQ	0.0	77.9	0.3	0.2	0.1	17.8	0.1	3.6	22.0
EU_O_CS_CDS	0.0	1.0	92.8	1.6	0.8	1.7	1.6	0.5	7.0
EU_O_CS_EQ	0.1	26.6	0.0	27.9	0.4	41.3	0.2	3.5	72.0
UK_O_CS_CDS	1.5	0.4	1.0	0.5	94.1	2.4	0.0	0.0	6.0
UK_O_CS_EQ	0.0	26.7	0.3	0.0	0.3	69.1	0.2	3.5	31.0
JP_O_CS_CDS	0.2	0.1	0.8	0.1	0.2	0.7	97.4	0.5	3.0
JP_O_CS_EQ	0.0	8.7	0.3	0.6	0.1	9.9	0.1	80.3	20.0
Contribution to others	2.0	64.0	3.0	3.0	2.0	74.0	5.0	12.0	164.0
Net Contribution	-1.0	42.0	-4.0	-69.0	-4.0	43.0	2.0	-8.0	20.50%

Notes: Tickers are as follows:- US_O_CS_CDS(US Other Consumer Services_CDS); US_O_CS_EQ(US Other Consumer Services_EQ); EU_O_CS_CDS(EU Other Consumer Services_CDS); EU_O_CS_EQ(EU Other Consumer Services_EQ); UK_O_CS_CDS(UK Other Consumer Services_CDS); UK_O_CS_EQ(UK Other Consumer Services_EQ); JP_O_CS_CDS(JP Other Consumer Services_CDS); and JP_O_CS_EQ(JP Other Consumer Services_EQ).

CRISIS PERIOD

	US_O_CS_CDS	US_O_CS_EQ	EU_O_CS_CDS	EU_O_CS_EQ	UK_O_CS_CDS	UK_O_CS_EQ	JP_O_CS_CDS	JP_O_CS_EQ	From Others
US_O_CS_CDS	76.7	8.4	0.6	1.1	1.8	7.0	2.5	2.0	23.0
US_O_CS_EQ	1.4	72.2	0.2	0.0	0.1	18.9	0.1	7.0	28.0
EU_O_CS_CDS	2.3	0.3	79.2	1.0	0.5	1.6	14.7	0.5	21.0
EU_O_CS_EQ	0.8	28.3	0.1	24.2	0.2	39.9	0.1	6.5	76.0
UK_O_CS_CDS	2.8	0.3	0.8	0.3	93.3	1.3	1.2	0.0	7.0
UK_O_CS_EQ	0.0	27.4	0.5	0.7	0.2	65.9	0.0	5.3	34.0

JP_O_CS_CDS	5.0	0.2	11.4	0.3	0.3	0.5	81.9	0.5	18.0
JP_O_CS_EQ	0.1	9.8	0.2	0.4	0.0	9.8	0.2	79.6	20.0
Contribution to others	12.0	75.0	14.0	4.0	3.0	79.0	19.0	22.0	227.0
Net Contribution	-11.0	47.0	-7.0	-72.0	-4.0	45.0	1.0	2.0	28.40%

Notes: Tickers are as follows:- US_O_CS_CDS(US Other Consumer Services_CDS); US_O_CS_EQ(US Other Consumer Services_EQ); EU_O_CS_CDS(EU Other Consumer Services_CDS); EU_O_CS_EQ(EU Other Consumer Services_EQ); UK_O_CS_CDS(UK Other Consumer Services_CDS); UK_O_CS_EQ(UK Other Consumer Services_EQ); JP_O_CS_CDS(JP Other Consumer Services_CDS); and JP_O_CS_EQ(JP Other Consumer Services_EQ).

AFTER-CRISIS PERIOD

	US_O_CS_CDS	US_O_CS_EQ	EU_O_CS_CDS	EU_O_CS_EQ	UK_O_CS_CDS	UK_O_CS_EQ	JP_O_CS_CDS	JP_O_CS_EQ	From Others
US_O_CS_CDS	96.1	0.4	0.1	0.1	0.9	0.0	2.4	0.1	4.0
US_O_CS_EQ	0.0	81.7	0.6	0.3	0.1	12.7	0.1	4.4	18.0
EU_O_CS_CDS	0.2	1.0	92.9	0.6	1.5	0.8	1.2	1.8	7.0
EU_O_CS_EQ	0.1	9.6	0.5	36.1	0.6	45.7	1.1	6.3	64.0
UK_O_CS_CDS	3.1	1.5	2.9	1.8	86.9	3.5	0.0	0.1	13.0
UK_O_CS_EQ	0.1	15.4	0.2	2.4	0.6	75.6	0.9	4.9	24.0
JP_O_CS_CDS	0.4	0.6	0.2	1.1	0.2	2.0	95.1	0.4	5.0
JP_O_CS_EQ	0.1	11.8	0.4	0.2	0.8	12.6	0.4	73.8	26.0
Contribution to others	4.0	40.0	5.0	6.0	5.0	77.0	6.0	18.0	162.0
Net Contribution	0.0	22.0	-2.0	-58.0	-8.0	53.0	1.0	-8.0	20.20%

Notes: Tickers are as follows:- US_O_CS_CDS(US Other Consumer Services_CDS); US_O_CS_EQ(US Other Consumer Services_EQ); EU_O_CS_CDS(EU Other Consumer Services_CDS); EU_O_CS_EQ(EU Other Consumer Services_EQ); UK_O_CS_CDS(UK Other Consumer Services_CDS); UK_O_CS_EQ(UK Other Consumer Services_EQ); JP_O_CS_CDS(JP Other Consumer Services_CDS); and JP_O_CS_EQ(JP Other Consumer Services_EQ).

Table 185: CDS Spreads and Equity Volatility Regional Connectedness: Other Consumer Services Static Analysis

FULL-SAMPLE PERIOD

	US_OF_CDS	US_OF_EQ	EU_OF_CDS	EU_OF_EQ	UK_OF_CDS	UK_OF_EQ	JP_OF_CDS	JP_OF_EQ	From Others
US_OF_CDS	67.6	0.1	1.3	0.1	30.6	0.1	0.1	0.2	32.0
US_OF_EQ	0.1	98.0	0.4	0.3	0.1	0.4	0.1	0.5	2.0
EU_OF_CDS	9.7	0.1	40.9	0.1	47.7	0.7	0.0	0.7	59.0
EU_OF_EQ	0.2	0.0	0.0	92.6	0.6	6.3	0.2	0.1	7.0
UK_OF_CDS	5.2	0.1	0.1	0.1	93.6	0.5	0.5	0.0	6.0
UK_OF_EQ	0.3	0.1	0.9	8.0	5.6	83.9	0.9	0.4	16.0
JP_OF_CDS	0.2	0.4	0.2	0.3	13.9	2.6	82.1	0.3	18.0
JP_OF_EQ	2.9	0.2	1.6	0.0	26.8	1.2	1.0	66.4	34.0
Contribution to others	18.0	1.0	4.0	9.0	125.0	12.0	3.0	2.0	175.0
Net Contribution	-14.0	-1.0	-55.0	2.0	119.0	-4.0	-15.0	-32.0	21.80%

Notes: Tickers are as follows:- US_OF_CDS(US Other Financials_CDS); US_OF_EQ(US Other Financials_EQ); EU_OF_CDS(EU Other Financials_CDS); EU_OF_EQ(EU Other Financials_EQ); UK_OF_CDS(UK Other Financials_CDS); UK_OF_EQ(UK Other Financials_EQ); JP_OF_CDS(JP Other Financials_CDS); and JP_OF_EQ(JP Other Financials_EQ).

CRISIS PERIOD

	US_OF_CDS	US_OF_EQ	EU_OF_CDS	EU_OF_EQ	UK_OF_CDS	UK_OF_EQ	JP_OF_CDS	JP_OF_EQ	From Others
US_OF_CDS	67.7	0.2	1.3	0.3	30.2	0.2	0.1	0.1	32.0
US_OF_EQ	0.0	93.7	1.2	2.6	0.1	1.8	0.4	0.2	6.0
EU_OF_CDS	10.1	1.3	41.3	2.6	41.8	1.8	0.6	0.5	59.0
EU_OF_EQ	0.1	1.9	1.6	75.0	10.8	8.5	1.7	0.4	25.0
UK_OF_CDS	5.4	0.8	0.1	0.3	89.1	2.2	1.8	0.2	11.0
UK_OF_EQ	0.9	2.6	2.0	11.7	16.2	61.9	2.6	2.2	38.0

JP_OF_CDS	0.3	0.9	0.3	2.9	22.5	5.8	66.0	1.2	34.0
JP_OF_EQ	3.6	0.1	2.1	0.5	28.4	3.5	2.2	59.5	41.0
Contribution to others	20.0	8.0	9.0	21.0	150.0	24.0	9.0	5.0	246.0
Net Contribution	-12.0	2.0	-50.0	-4.0	139.0	-14.0	-25.0	-36.0	30.7%

Notes: Tickers are as follows:- US_OF_CDS(US Other Financials_CDS); US_OF_EQ(US Other Financials_EQ); EU_OF_CDS(EU Other Financials_CDS); EU_OF_EQ(EU Other Financials_EQ); UK_OF_CDS(UK Other Financials_CDS); UK_OF_EQ(UK Other Financials_EQ); JP_OF_CDS(JP Other Financials_CDS); and JP_OF_EQ(JP Other Financials_EQ).

AFTER-CRISIS PERIOD

	US_OF_CDS	US_OF_EQ	EU_OF_CDS	EU_OF_EQ	UK_OF_CDS	UK_OF_EQ	JP_OF_CDS	JP_OF_EQ	From Others
US_OF_CDS	50.8	0.2	3.7	2.5	41.7	0.2	0.1	0.7	49.0
US_OF_EQ	0.2	96.9	0.4	0.2	0.6	0.1	0.1	1.7	3.0
EU_OF_CDS	4.1	0.1	38.4	0.1	55.7	0.4	0.7	0.6	62.0
EU_OF_EQ	0.1	0.1	0.1	90.5	1.1	7.8	0.3	0.0	10.0
UK_OF_CDS	0.8	0.1	0.6	0.0	97.6	0.3	0.5	0.0	2.0
UK_OF_EQ	0.4	0.2	0.4	8.5	1.7	88.3	0.6	0.0	12.0
JP_OF_CDS	0.4	0.5	0.1	0.4	1.4	1.7	94.6	0.9	5.0
JP_OF_EQ	3.7	0.9	1.2	0.1	18.3	0.2	0.1	75.6	24.0
Contribution to others	10.0	2.0	6.0	12.0	120.0	11.0	2.0	4.0	167.0
Net Contribution	-39.0	-1.0	-56.0	2.0	118.0	-1.0	-3.0	-20.0	20.90%

Notes: Tickers are as follows:- US_OF_CDS(US Other Financials_CDS); US_OF_EQ(US Other Financials_EQ); EU_OF_CDS(EU Other Financials_CDS); EU_OF_EQ(EU Other Financials_EQ); UK_OF_CDS(UK Other Financials_CDS); UK_OF_EQ(UK Other Financials_EQ); JP_OF_CDS(JP Other Financials_CDS); and JP_OF_EQ(JP Other Financials_EQ).

Table 186: CDS Spreads and Equity Volatility Regional Connectedness: Financials Static Analysis

FULL-SAMPLE PERIOD

	US_TELE_CDS	US_TELE_EQ	EU_TELE_CDS	EU_TELE_EQ	UK_TELE_CDS	UK_TELE_EQ	JP_TELE_CDS	JP_TELE_EQ	From Others
US_TELE_CDS	91.1	1.6	1.7	1.7	1.8	1.8	0.2	0.2	9.0
US_TELE_EQ	0.9	81.0	0.0	13.6	0.2	0.2	0.1	3.9	19.0
EU_TELE_CDS	0.2	1.2	91.8	2.6	2.0	2.0	0.0	0.2	8.0
EU_TELE_EQ	1.7	19.0	0.8	68.1	3.9	4.0	0.4	2.0	32.0
UK_TELE_CDS	0.5	0.7	1.1	3.6	46.6	46.6	0.3	0.5	53.0
UK_TELE_EQ	0.5	0.7	1.1	3.6	46.6	46.6	0.3	0.5	53.0
JP_TELE_CDS	0.3	0.7	0.1	0.8	0.9	0.9	95.9	0.3	4.0
JP_TELE_EQ	2.2	9.7	0.0	6.9	1.4	1.4	0.1	78.3	22.0
Contribution to others	6.0	34.0	5.0	33.0	57.0	57.0	1.0	8.0	201.0
Net Contribution	-3.0	15.0	-3.0	1.0	4.0	4.0	-3.0	-14.0	25.10%

Notes: Tickers are as follows:- US_TELE___CDS(US Telecommunications_CDS); US_TELE___EQ(US Telecommunications_EQ); EU_TELE___CDS(EU Telecommunications_CDS); EU_TELE___EQ(EU Telecommunications_EQ); UK_TELE___CDS(UK Telecommunications_CDS); UK_TELE___EQ(UK Telecommunications_EQ); JP_TELE___CDS(JP Telecommunications_CDS); and JP_TELE___EQ(JP Telecommunications_EQ).

CRISIS PERIOD

	US_TELE_CDS	US_TELE_EQ	EU_TELE_CDS	EU_TELE_EQ	UK_TELE_CDS	UK_TELE_EQ	JP_TELE_CDS	JP_TELE_EQ	From Others
US_TELE_CDS	77.7	2.9	2.0	1.2	5.4	5.2	4.9	0.7	22.0
US_TELE_EQ	1.7	71.9	0.1	14.3	1.5	1.5	1.5	7.6	28.0
EU_TELE_CDS	3.3	3.3	67.9	1.6	6.6	6.8	9.5	0.9	32.0
EU_TELE_EQ	2.5	21.3	0.3	58.8	5.3	5.5	3.5	2.9	41.0
UK_TELE_CDS	2.5	1.9	3.0	4.8	41.8	41.6	3.5	0.8	58.0
UK_TELE_EQ	2.5	1.9	3.1	4.8	41.7	41.7	3.6	0.8	58.0
JP_TELE_CDS	4.1	3.3	0.4	1.1	5.1	5.2	80.3	0.6	20.0
JP_TELE_EQ	0.8	16.8	0.1	6.5	2.0	2.0	0.4	71.5	28.0
Contribution to others	17.0	51.0	9.0	34.0	67.0	68.0	27.0	14.0	288.0

Net Contribution	-5.0	23.0	-23.0	-7.0	9.0	10.0	7.0	-14.0	36.1%

Notes: Tickers are as follows:- US_TELE___CDS(US Telecommunications_CDS); US_TELE___EQ(US Telecommunications_EQ); EU_TELE___CDS(EU Telecommunications_CDS); EU_TELE___EQ(EU Telecommunications_EQ); UK_TELE___CDS(UK Telecommunications_CDS); UK_TELE___EQ(UK Telecommunications_EQ); JP_TELE___CDS(JP Telecommunications_CDS); and JP_TELE___EQ(JP Telecommunications_EQ).

AFTER-CRISIS PERIOD

	US_TELE_CDS	US_TELE_EQ	EU_TELE_CDS	EU_TELE_EQ	UK_TELE_CDS	UK_TELE_EQ	JP_TELE_CDS	JP_TELE_EQ	From Others
US_TELE_CDS	93.7	1.0	0.8	2.1	1.0	1.0	0.4	0.0	6.0
US_TELE_EQ	2.1	90.2	0.1	4.5	0.5	0.5	0.1	2.1	10.0
EU_TELE_CDS	0.7	0.5	89.9	4.2	1.0	1.0	2.6	0.1	10.0
EU_TELE_EQ	1.8	4.3	2.8	74.5	6.4	6.4	0.4	3.4	26.0
UK_TELE_CDS	0.2	1.3	0.5	4.9	46.3	46.3	0.1	0.4	54.0
UK_TELE_EQ	0.2	1.3	0.5	4.9	46.3	46.3	0.1	0.4	54.0
JP_TELE_CDS	0.6	0.2	0.2	2.1	0.4	0.4	96.1	0.0	4.0
JP_TELE_EQ	3.7	2.9	0.1	9.5	1.5	1.5	0.1	80.7	19.0
Contribution to others	9.0	12.0	5.0	32.0	57.0	57.0	4.0	6.0	182.0
Net Contribution	3.0	2.0	-5.0	6.0	3.0	3.0	0.0	-13.0	22.80%

Notes: Tickers are as follows:- US_TELE___CDS(US Telecommunications_CDS); US_TELE___EQ(US Telecommunications_EQ); EU_TELE___CDS(EU Telecommunications_CDS); EU_TELE___EQ(EU Telecommunications_EQ); UK_TELE___CDS(UK Telecommunications_CDS); UK_TELE___EQ(UK Telecommunications_EQ); JP_TELE___CDS(JP Telecommunications_CDS); and JP_TELE___EQ(JP Telecommunications_EQ).

Table 187: CDS Spreads and Equity Volatility Regional Connectedness: Telecommunications Static Analysis

FULL-SAMPLE PERIOD

	US_O_TELE_CDS	US_O_TELE_EQ	EU_O_TELE_CDS	EU_O_TELE_EQ	UK_O_TELE_CDS	UK_O_TELE_EQ	JP_O_TELE_CDS	JP_O_TELE_EQ	From Others
US_O_TELE_CDS	80.3	0.0	0.1	0.2	0.1	15.9	0.0	3.3	20.0
US_O_TELE_EQ	1.2	94.0	0.5	1.8	0.5	0.6	0.3	1.0	6.0
EU_O_TELE_CDS	0.0	0.4	48.3	1.3	48.3	0.5	1.0	0.2	52.0
EU_O_TELE_EQ	21.0	0.1	0.3	47.1	0.3	27.3	0.3	3.6	53.0
UK_O_TELE_CDS	0.0	0.4	48.3	1.3	48.3	0.5	1.0	0.2	52.0
UK_O_TELE_EQ	21.7	0.1	0.1	0.1	0.1	73.5	0.1	4.4	26.0
JP_O_TELE_CDS	0.3	0.3	4.6	0.1	4.6	0.3	89.4	0.4	11.0
JP_O_TELE_EQ	9.4	0.3	0.2	0.4	0.2	7.7	0.0	81.9	18.0
Contribution to others	54.0	2.0	54.0	5.0	54.0	53.0	3.0	13.0	237.0
Net Contribution	34.0	-4.0	2.0	-48.0	2.0	27.0	-8.0	-5.0	29.60%

Notes: Tickers are as follows:- US_O_TELE_CDS(US Other Telecommunications_CDS); US_O_TELE_EQ(US Other Telecommunications_EQ); EU_O_TELE_CDS(EU Other Telecommunications_CDS); EU_O_TELE_EQ(EU Other Telecommunications_EQ); UK_O_TELE_CDS(UK Other Telecommunications_CDS); UK_O_TELE_EQ(UK Other Telecommunications_EQ); JP_O_TELE_CDS(JP Other Telecommunications_CDS); and JP_O_TELE_EQ(JP Other Telecommunications_EQ).

CRISIS PERIOD

	US_O_TELE_CDS	US_O_TELE_EQ	EU_O_TELE_CDS	EU_O_TELE_EQ	UK_O_TELE_CDS	UK_O_TELE_EQ	JP_O_TELE_CDS	JP_O_TELE_EQ	From Others
US_O_TELE_CDS	74.8	0.1	0.1	0.1	0.1	17.5	0.0	7.3	25.0
US_O_TELE_EQ	1.6	88.4	1.7	0.8	1.7	0.5	4.7	0.6	12.0
EU_O_TELE_CDS	0.0	1.1	48.7	0.8	48.7	0.1	0.6	0.0	51.0
EU_O_TELE_EQ	26.5	0.3	0.8	41.9	0.8	25.0	1.0	3.7	58.0
UK_O_TELE_CDS	0.0	1.1	48.7	0.8	48.7	0.1	0.6	0.0	51.0
UK_O_TELE_EQ	25.1	0.2	0.1	0.2	0.1	67.7	0.1	6.5	32.0
JP_O_TELE_CDS	3.5	3.0	4.8	0.7	4.8	1.0	82.0	0.1	18.0
JP_O_TELE_EQ	16.6	0.1	0.1	0.2	0.1	6.7	0.1	76.1	24.0
Contribution to others	73.0	6.0	56.0	4.0	56.0	51.0	7.0	18.0	272.0

Net Contribution	48.0	-6.0	5.0	-54.0	5.0	19.0	-11.0	-6.0	34.0%

Notes: Tickers are as follows:- US_O_TELE_CDS(US Other Telecommunications_CDS); US_O_TELE_EQ(US Other Telecommunications_EQ); EU_O_TELE_CDS(EU Other Telecommunications_CDS); EU_O_TELE_EQ(EU Other Telecommunications_EQ); UK_O_TELE_CDS(UK Other Telecommunications_CDS); UK_O_TELE_EQ(UK Other Telecommunications_EQ); JP_O_TELE_CDS(JP Other Telecommunications_CDS); and JP_O_TELE_EQ(JP Other Telecommunications_EQ).

AFTER-CRISIS PERIOD

	US_O_TELE_CDS	US_O_TELE_EQ	EU_O_TELE_CDS	EU_O_TELE_EQ	UK_O_TELE_CDS	UK_O_TELE_EQ	JP_O_TELE_CDS	JP_O_TELE_EQ	From Others
US_O_TELE_CDS	88.8	0.4	0.3	0.3	0.3	8.1	0.0	1.8	11.0
US_O_TELE_EQ	2.5	90.4	0.2	3.3	0.2	1.6	0.4	1.5	10.0
EU_O_TELE_CDS	0.1	0.0	46.7	2.0	46.7	2.2	1.7	0.6	53.0
EU_O_TELE_EQ	5.7	0.1	0.1	58.3	0.1	28.7	0.5	6.5	42.0
UK_O_TELE_CDS	0.1	0.0	46.7	2.0	46.7	2.2	1.7	0.6	53.0
UK_O_TELE_EQ	6.0	1.6	0.1	1.3	0.1	87.6	0.2	3.0	12.0
JP_O_TELE_CDS	0.0	0.6	4.5	0.3	4.5	0.5	89.3	0.3	11.0
JP_O_TELE_EQ	3.2	2.3	0.3	1.8	0.3	9.9	0.2	82.0	18.0
Contribution to others	18.0	5.0	52.0	11.0	52.0	53.0	5.0	14.0	210.0
Net Contribution	7.0	-5.0	-1.0	-31.0	-1.0	41.0	-6.0	-4.0	26.30%

Notes: Tickers are as follows:- US_O_TELE_CDS(US Other Telecommunications_CDS); US_O_TELE_EQ(US Other Telecommunications_EQ); EU_O_TELE_CDS(EU Other Telecommunications_CDS); EU_O_TELE_EQ(EU Other Telecommunications_EQ); UK_O_TELE_CDS(UK Other Telecommunications_CDS); UK_O_TELE_EQ(UK Other Telecommunications_EQ); JP_O_TELE_CDS(JP Other Telecommunications_CDS); and JP_O_TELE_EQ(JP Other Telecommunications_EQ).

Table 188: CDS Spreads and Equity Volatility Regional Connectedness: Telecommunications Static Analysis

Appendix D

D.1 The Sectoral CDS Network

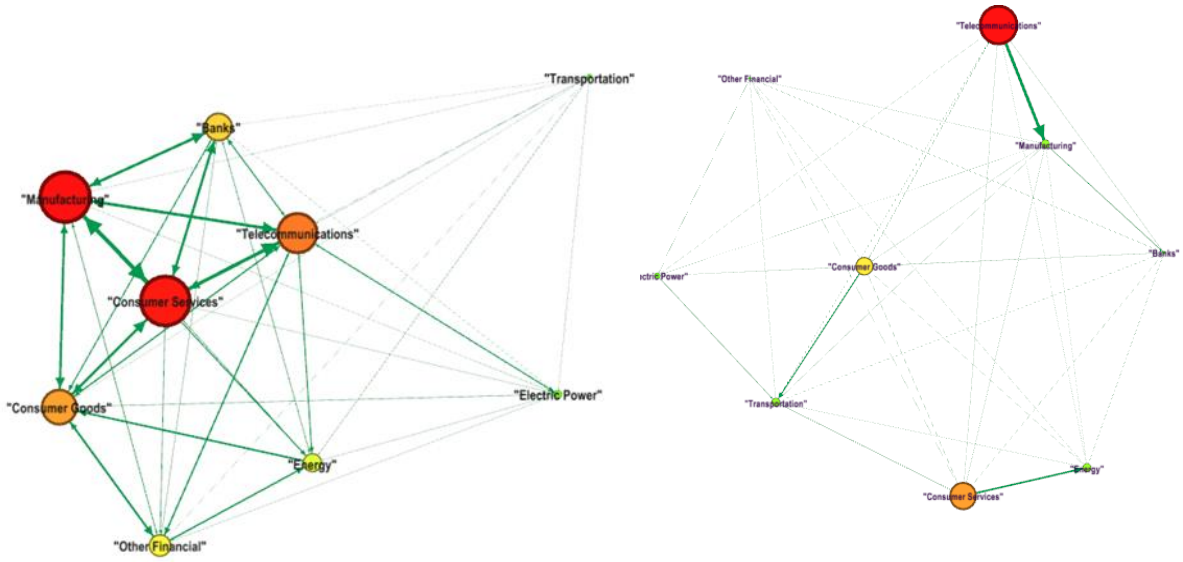


Figure 10: US Sectoral CDS Network in the Crisis and After-Crisis Period

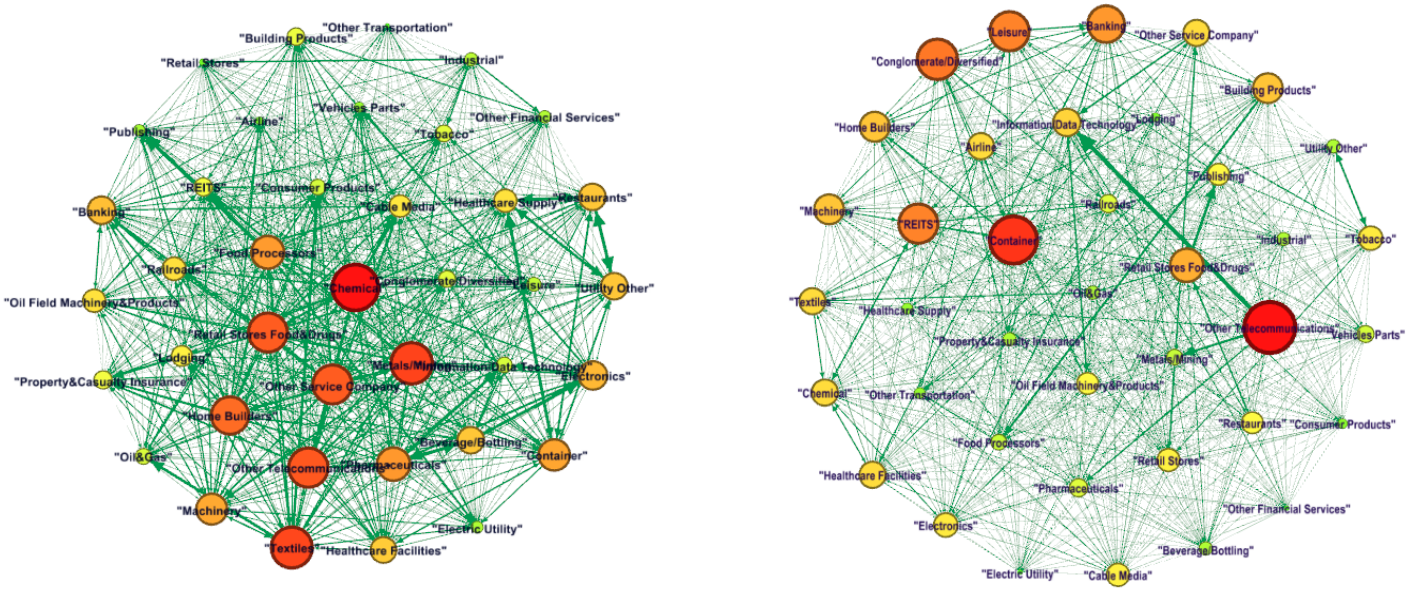


Figure 11: US Sub-Sectoral CDS Network in the Crisis and After-Crisis Period

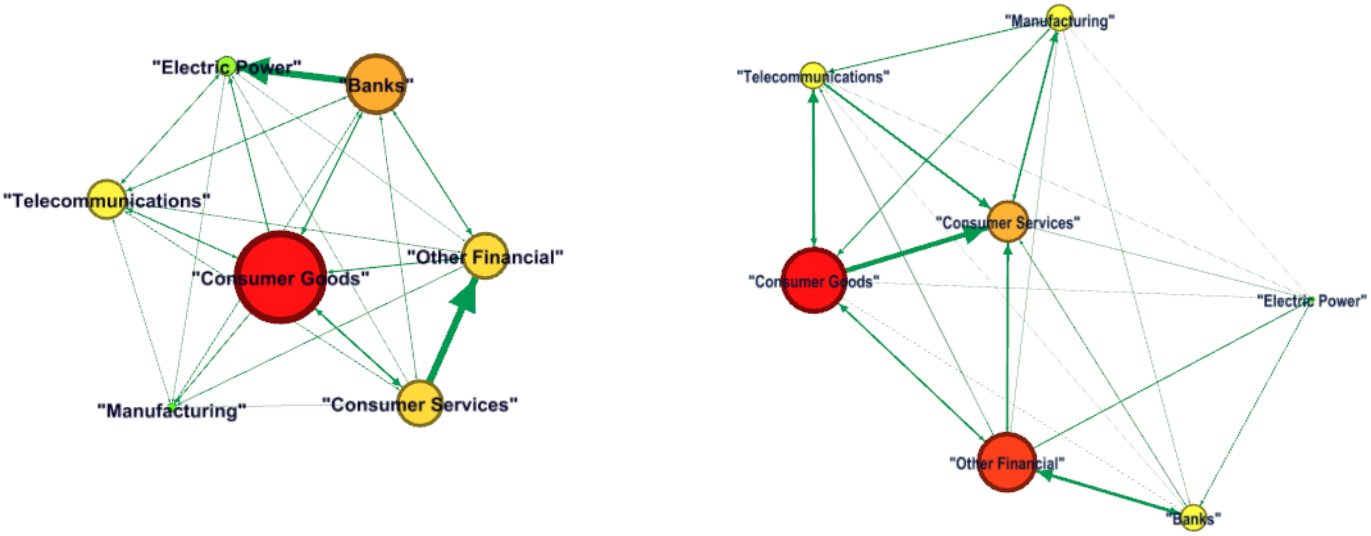


Figure 12: UK Sectoral CDS Network in the Crisis and After-Crisis Period

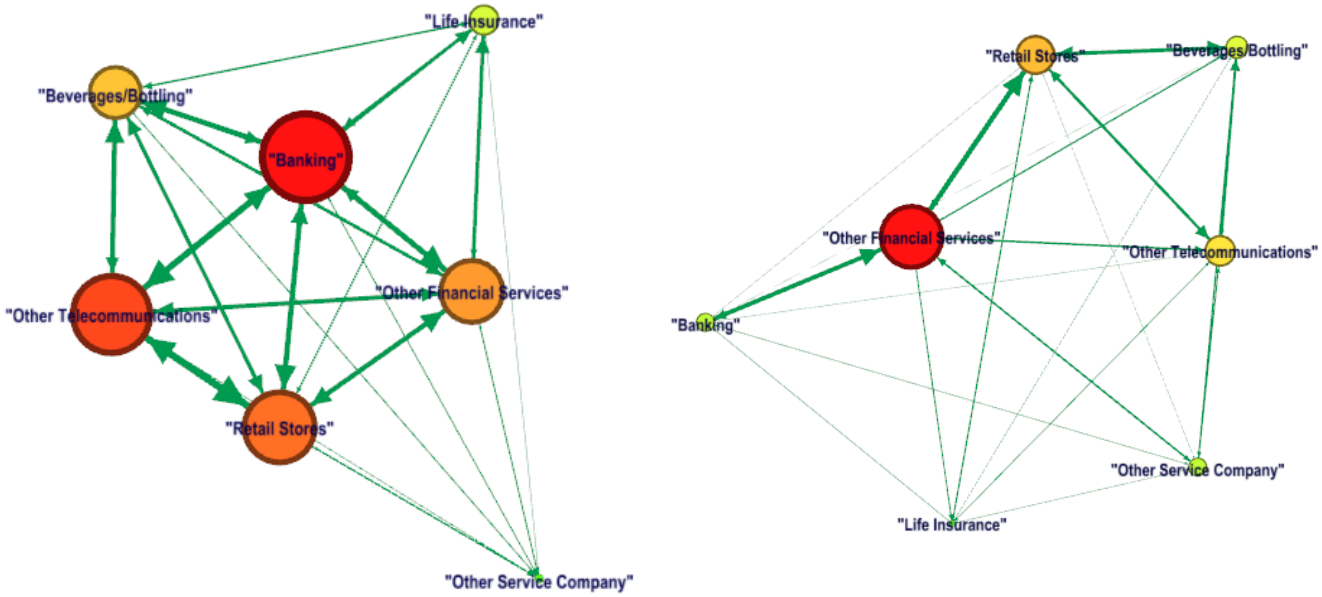


Figure 13: UK Sub-Sectoral CDS Network in the Crisis and After-Crisis Period

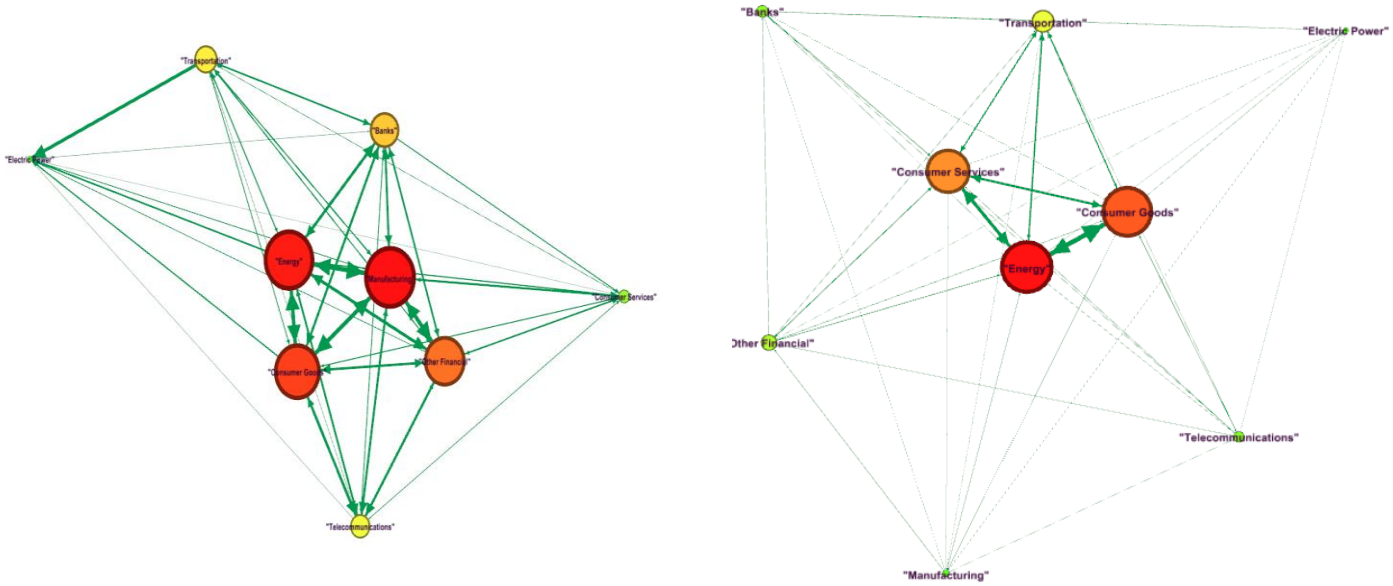


Figure 14: EU Sectoral CDS Network in the Crisis and After-Crisis Period

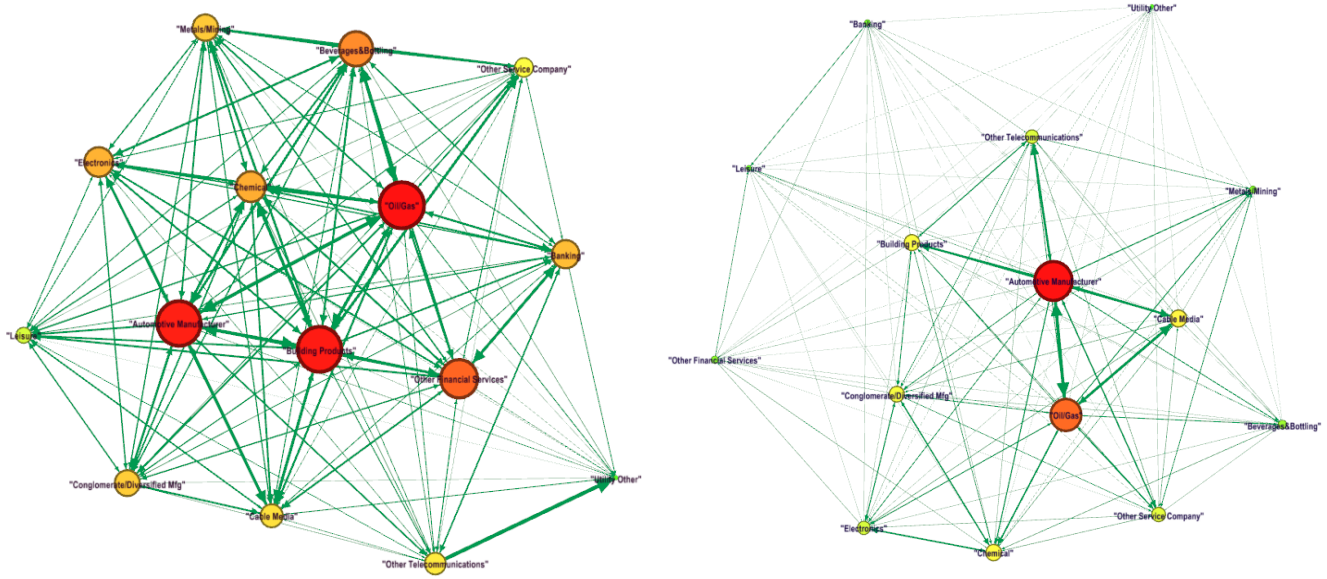


Figure 15: EU Sub-Sectoral CDS Network in the Crisis and After-Crisis Period

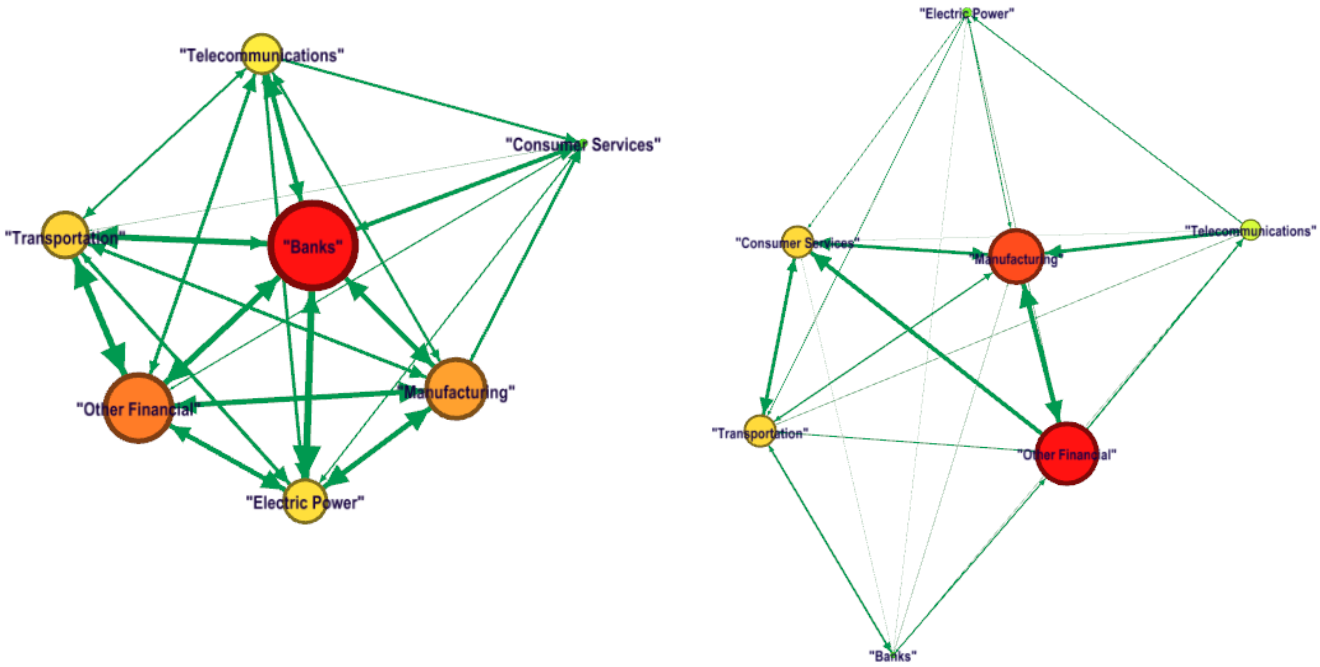


Figure 16: Japan Sectoral CDS Network in the Crisis and After-Crisis Period

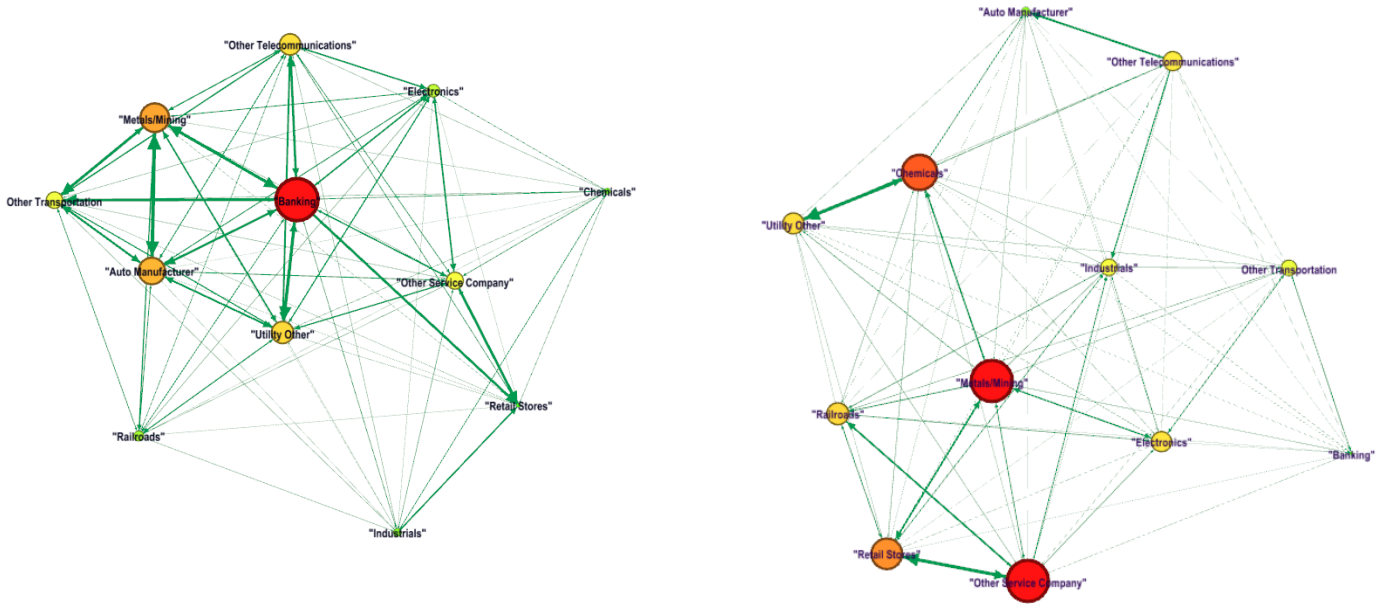


Figure 17: Japan Sub-Sectoral CDS Network in the Crisis and After-Crisis Period

D.2 The Sectoral Equity Network

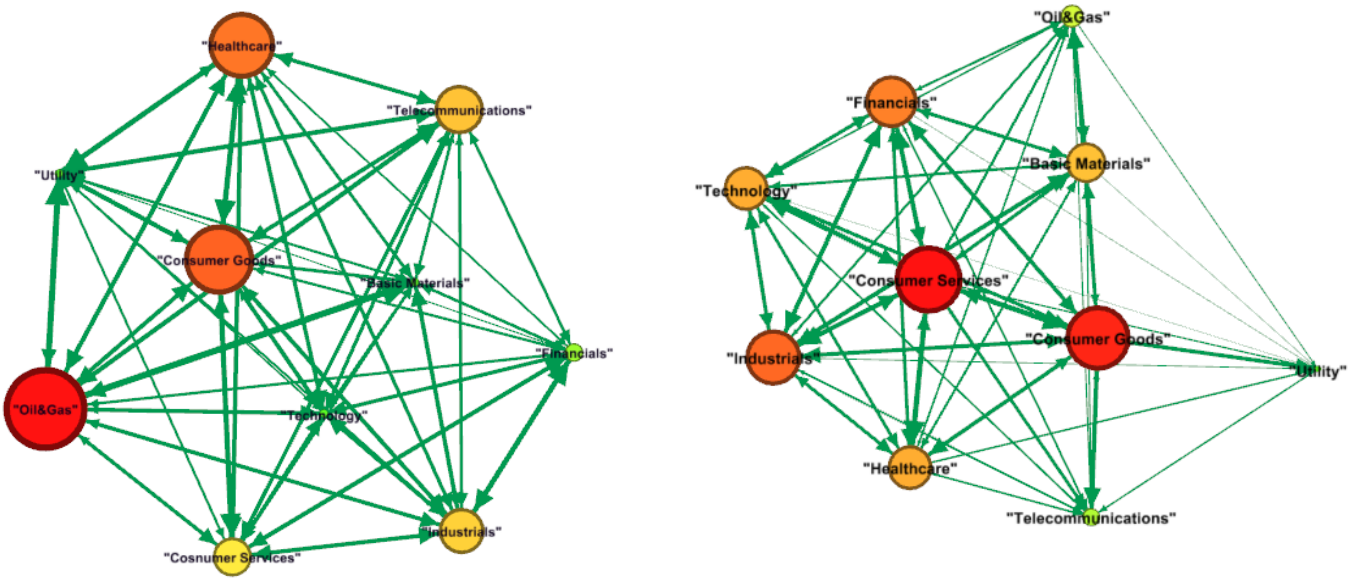


Figure 18: US Sectoral Equity Network in the Crisis and After-Crisis Period

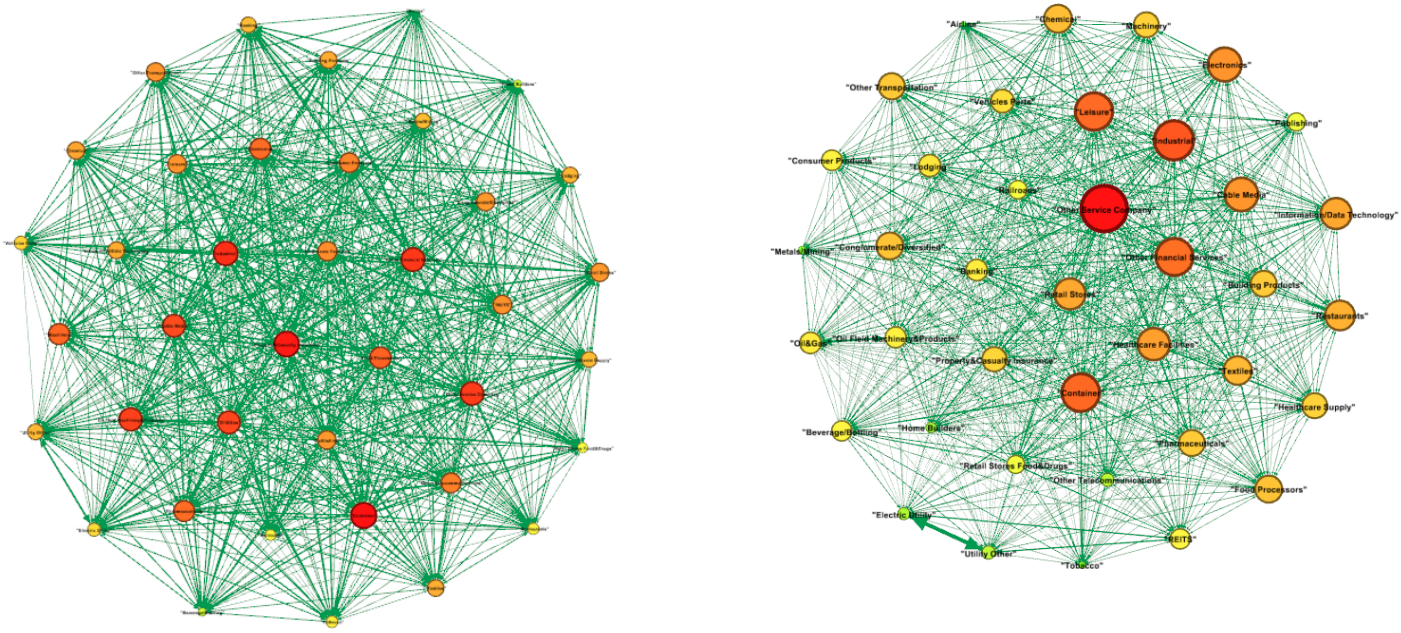


Figure 19: US Sub-Sectoral Equity Network in the Crisis and After-Crisis Period

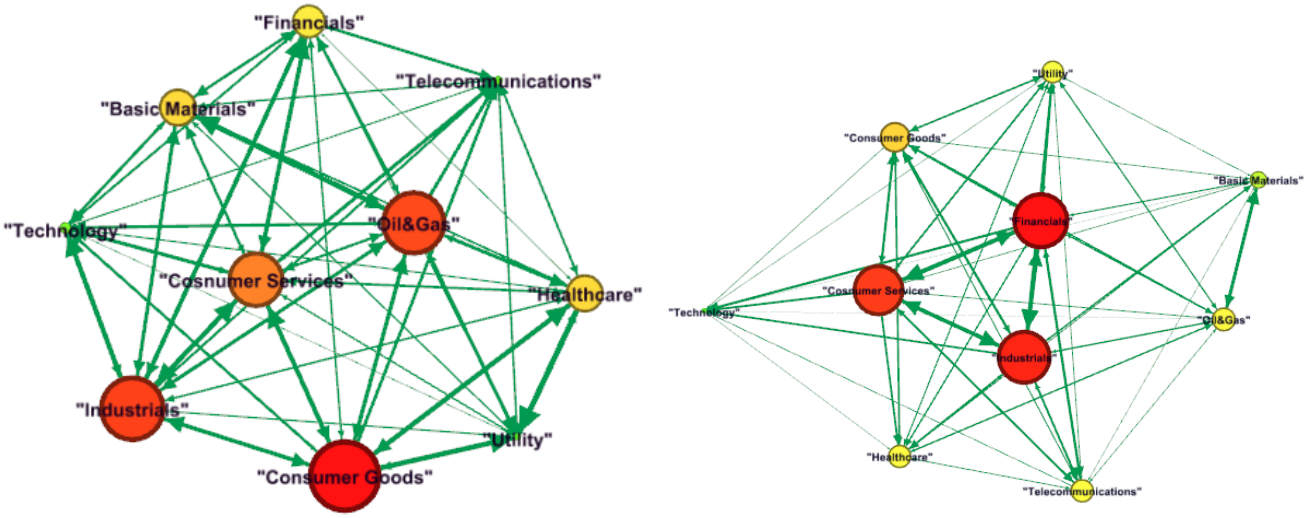


Figure 20: UK Sectoral Equity Network in the Crisis and After-Crisis Period

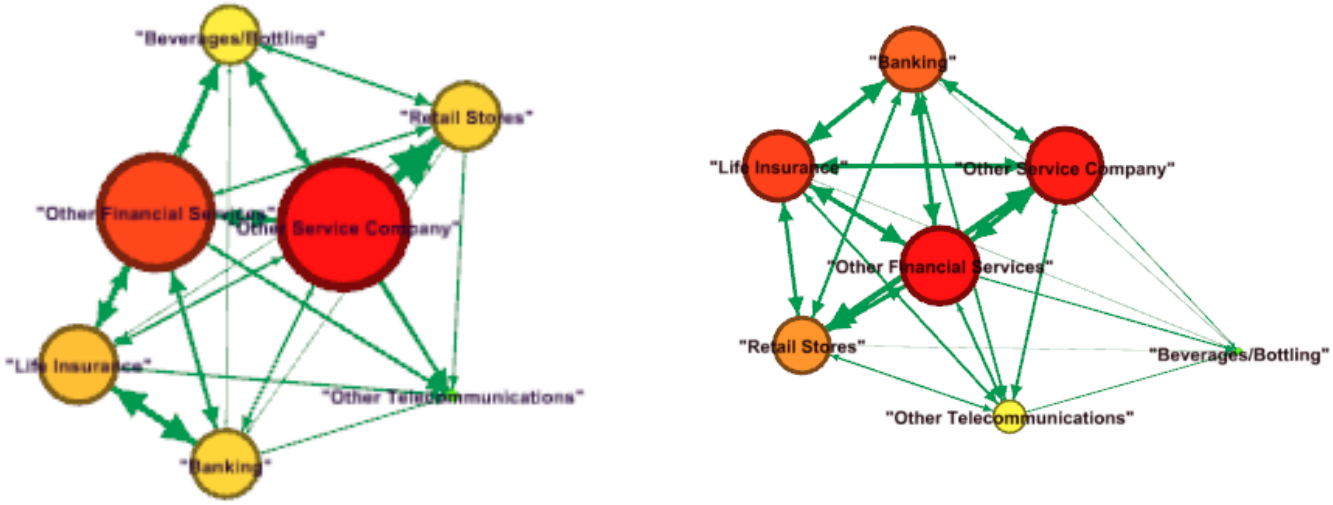


Figure 21: UK Sub-Sectoral Equity Network in the Crisis and After-Crisis Period

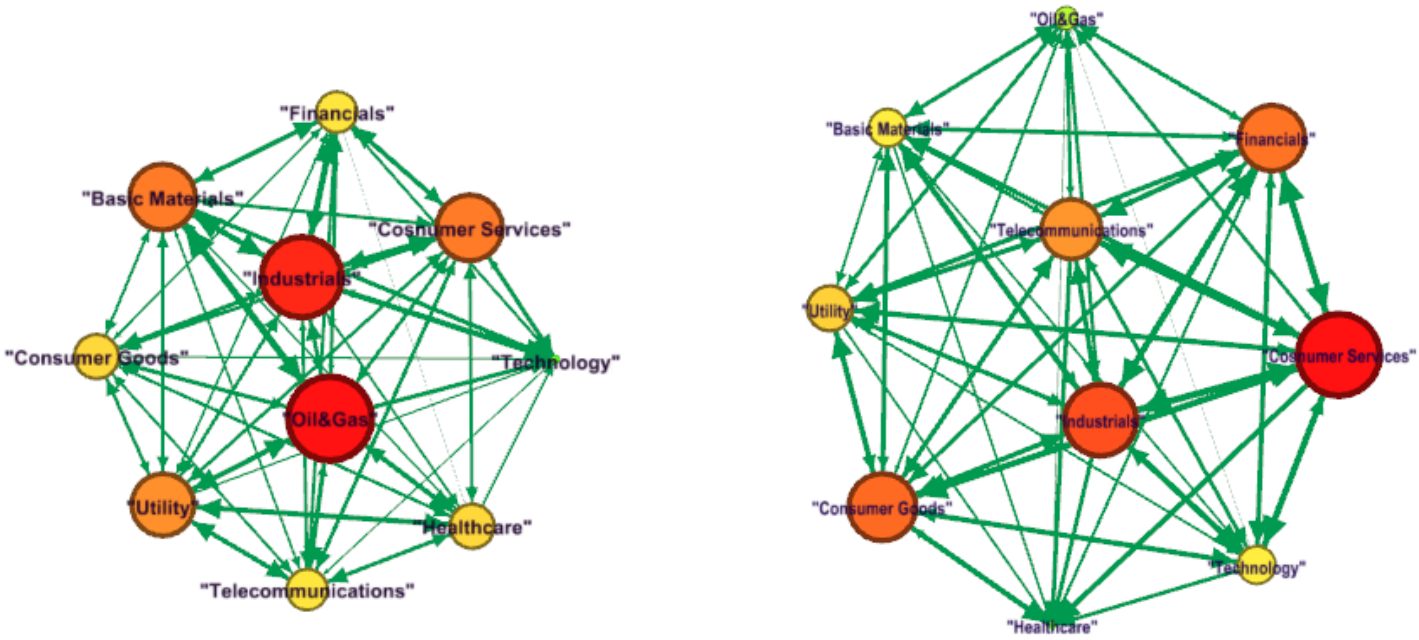


Figure 22: EU Sectoral Equity Network in the Crisis and After-Crisis Period

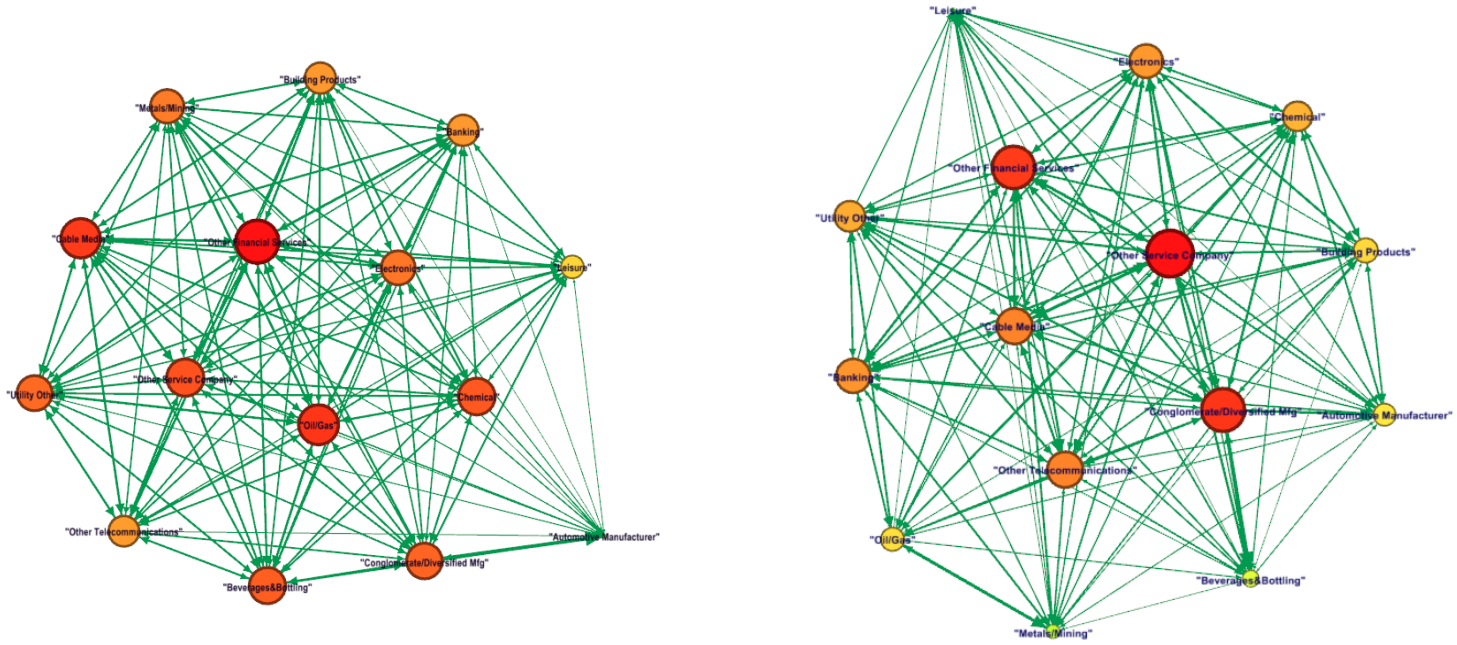


Figure 23: EU Sub-Sectoral Equity Network in the Crisis and After-Crisis Period

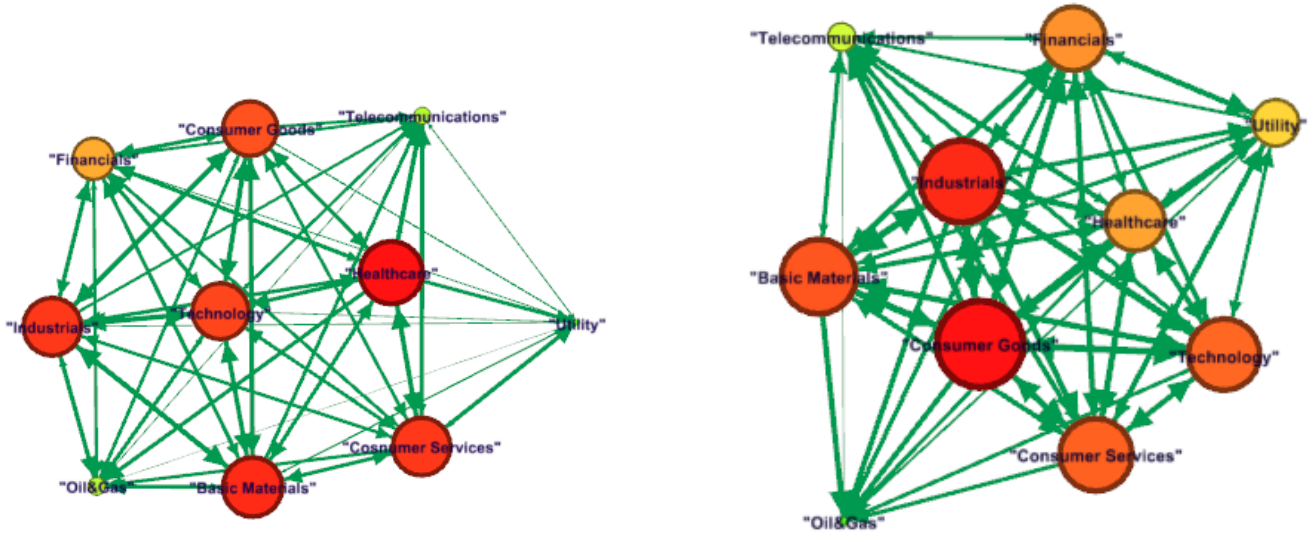


Figure 24: Japan Sectoral Equity Network in the Crisis and After-Crisis Period

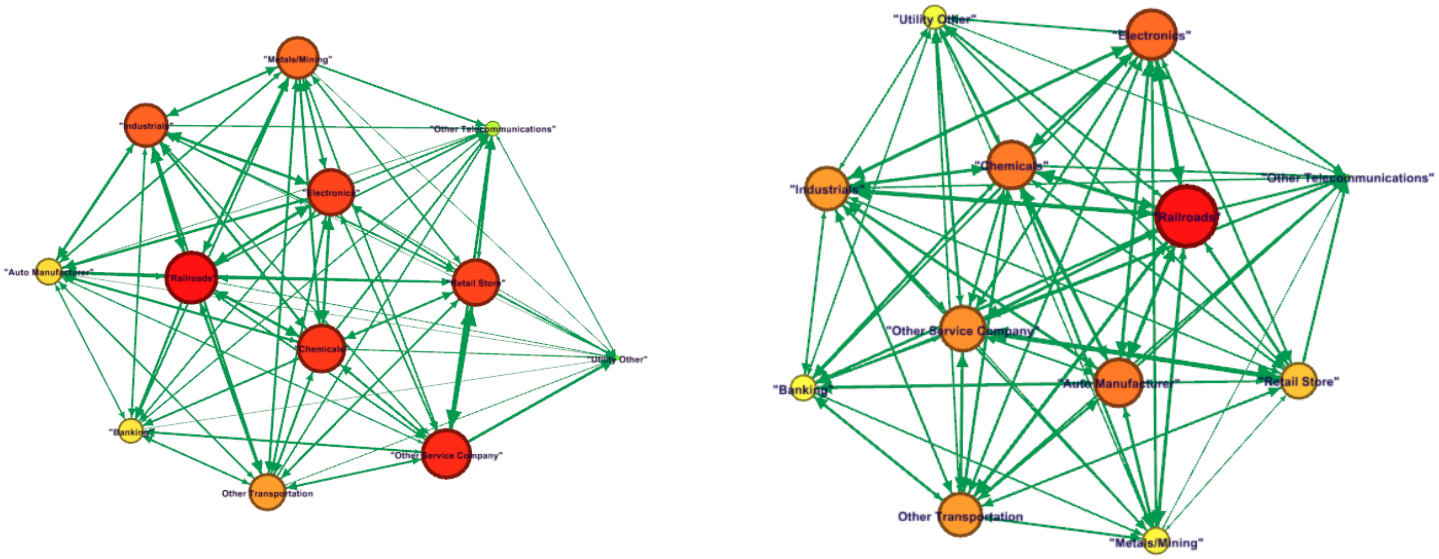


Figure 25: Japan Sub-Sectoral Equity Network in the Crisis and After-Crisis Period

D.3 The Sectoral Volatility Connectedness between CDS Spreads and Equity

UNITED STATES

Figure 26: CDS Spreads and Equity Volatility Connectedness for the Basic Materials Sector in the Crisis and After-Crisis Periods

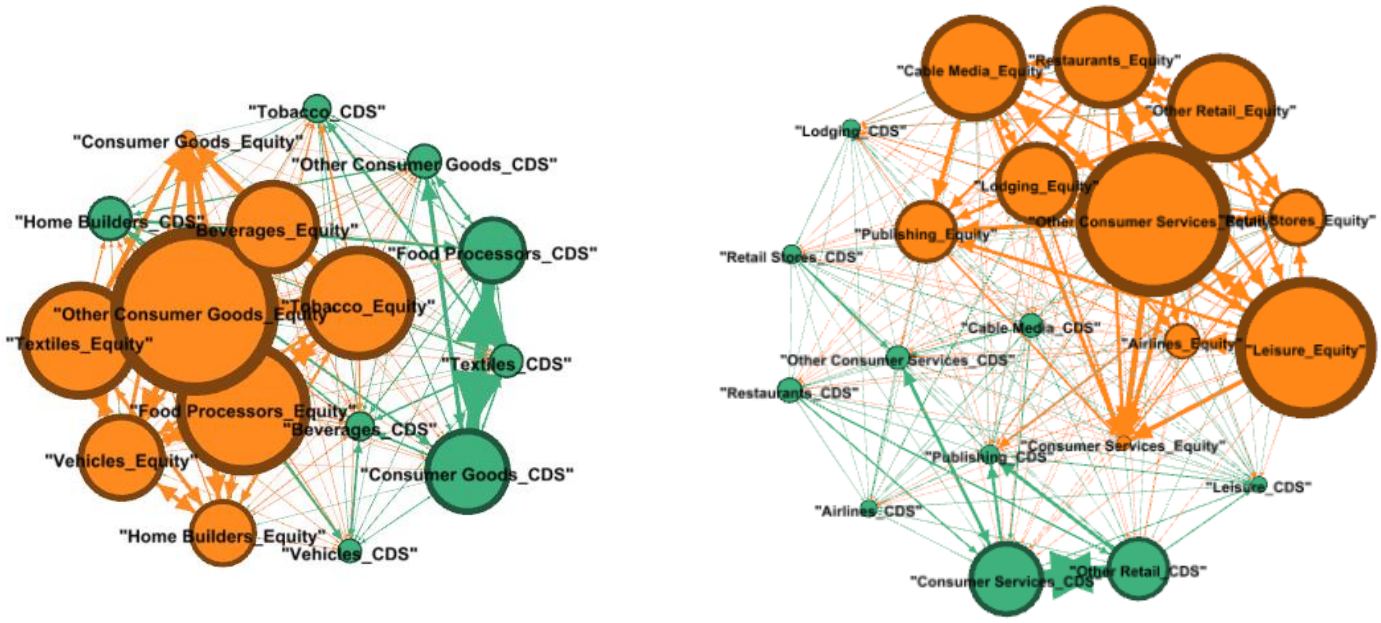


Figure 27: CDS Spreads and Equity Volatility Connectedness for the Consumer Goods Sector in the Crisis and After-Crisis Periods

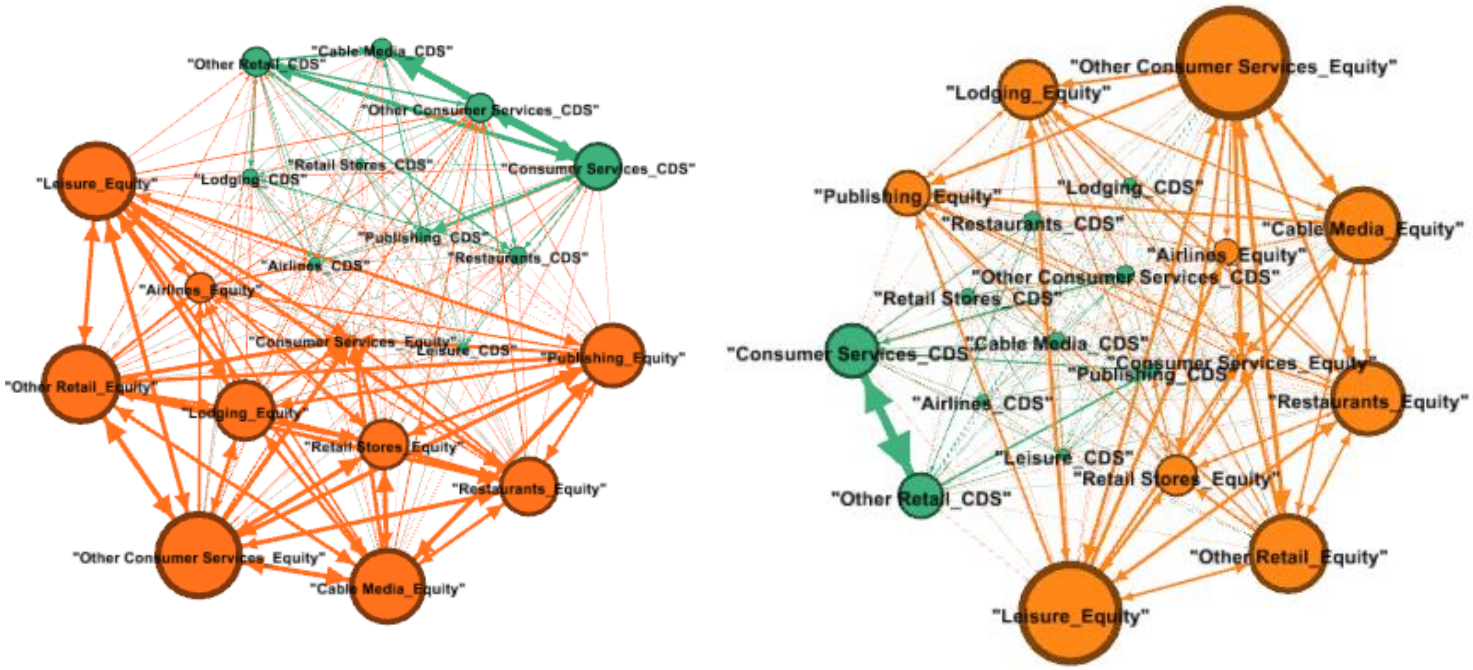


Figure 28: CDS Spreads and Equity Volatility Connectedness for the Consumer Services Sector in the Crisis and After-Crisis Periods

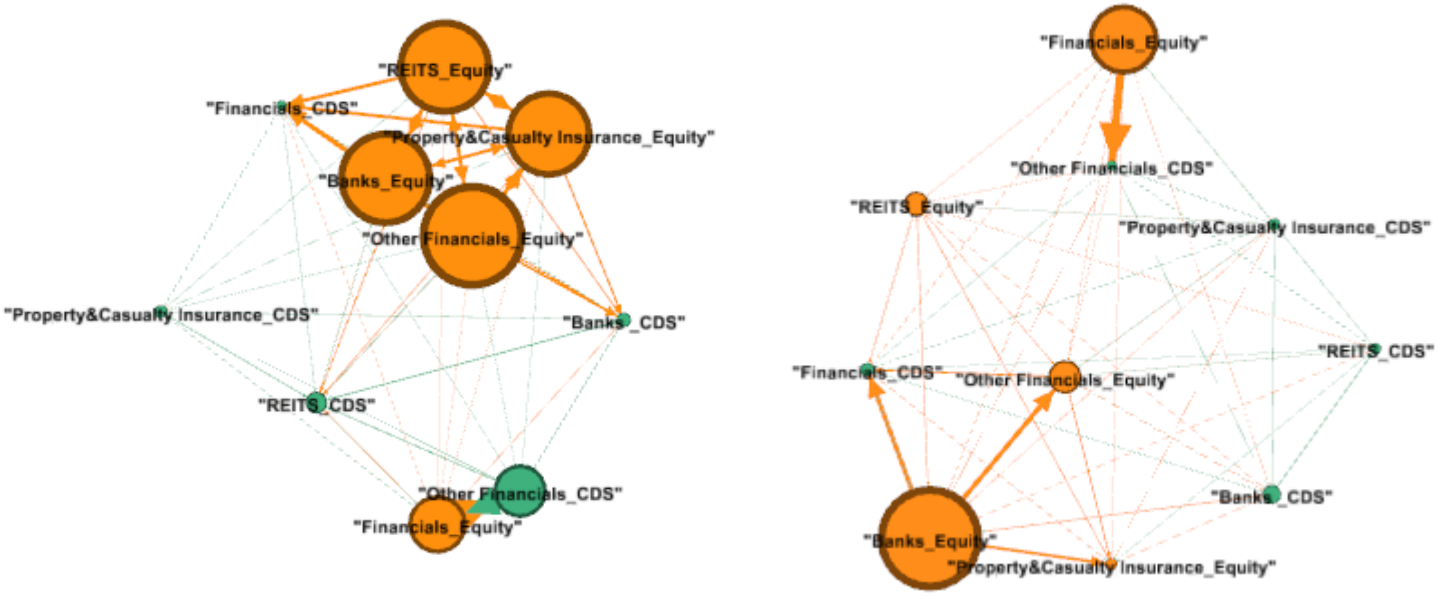


Figure 29: CDS Spreads and Equity Volatility Connectedness for the Financials Sector in the Crisis and After-Crisis Periods

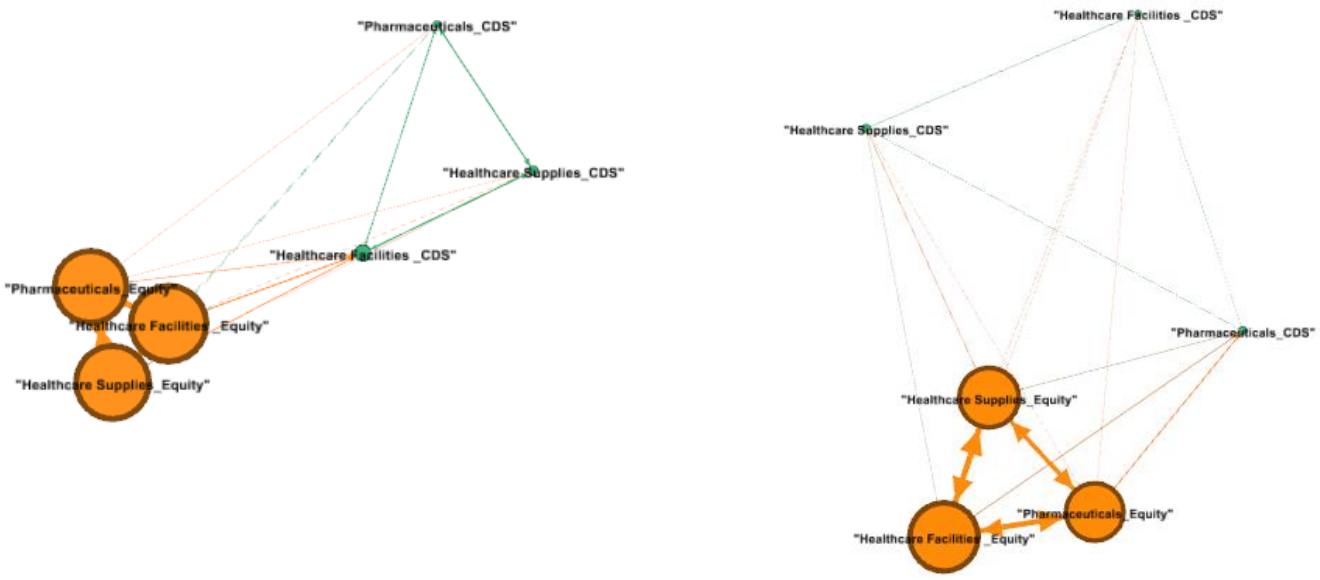


Figure 30: CDS Spreads and Equity Volatility Connectedness for the Healthcare Services Sector in the Crisis and After-Crisis Periods

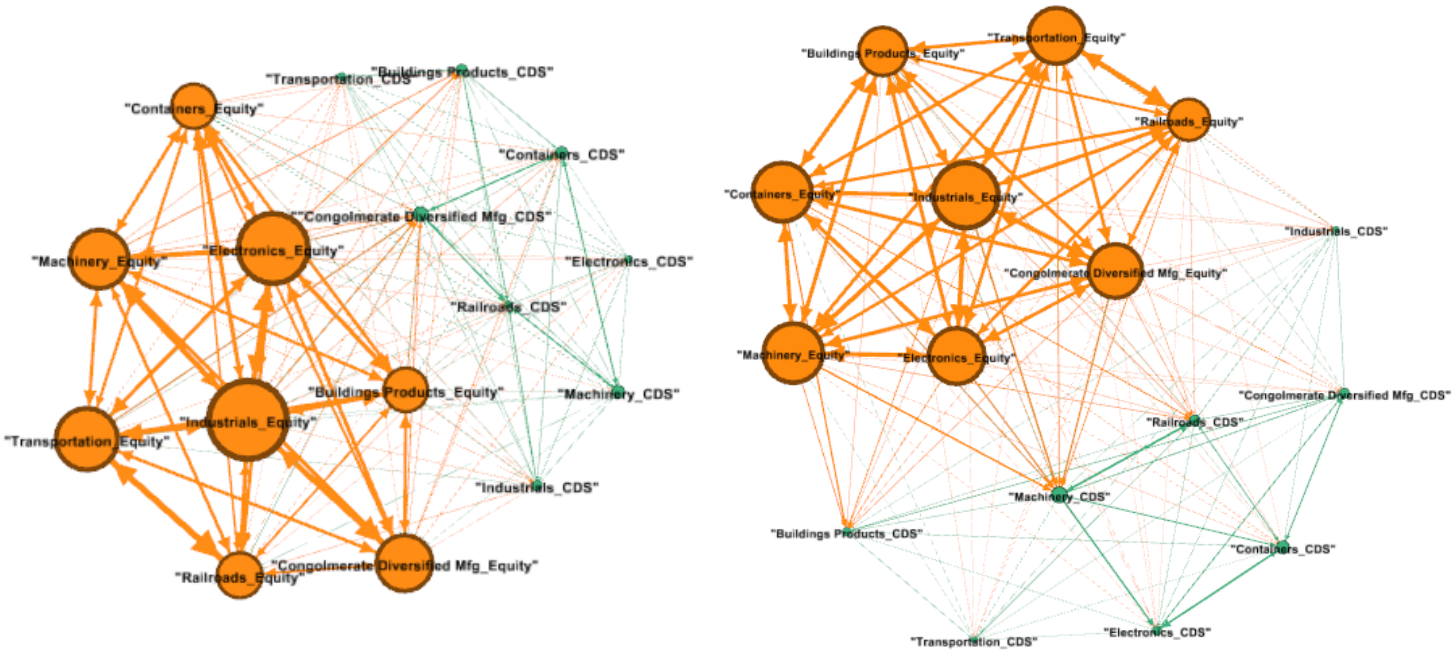


Figure 31: CDS Spreads and Equity Volatility Connectedness for the Industrials Sector in the Crisis and After-Crisis Periods

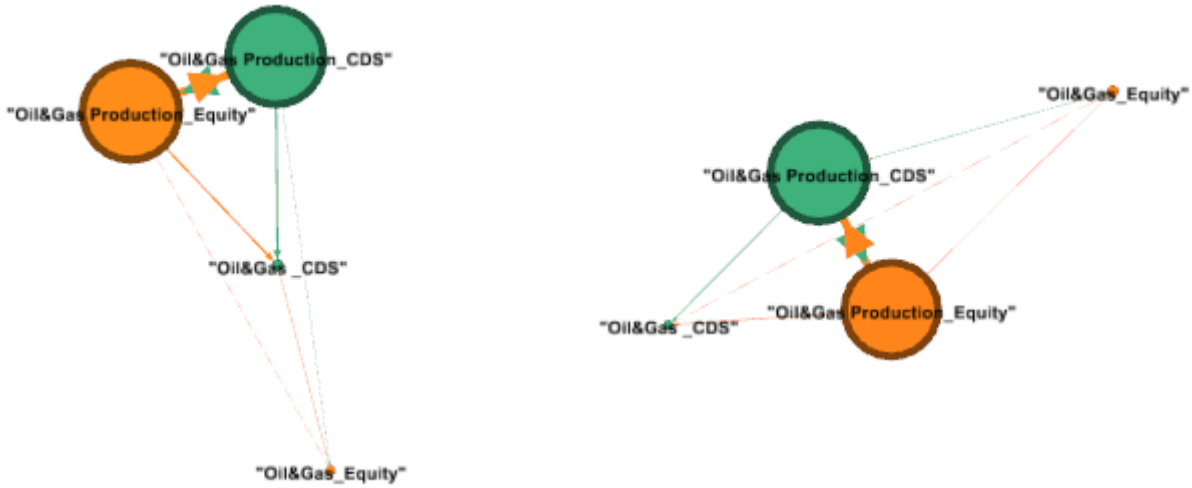


Figure 32: CDS Spreads and Equity Volatility Connectedness for the Oil & Gas Sector in the Crisis and After-Crisis Periods

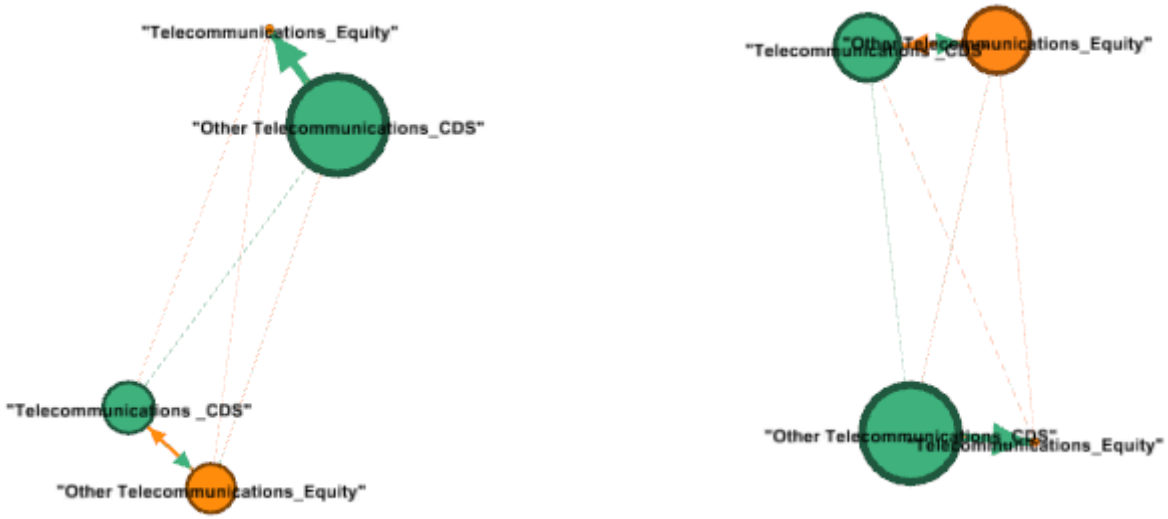


Figure 33: CDS Spreads and Equity Volatility Connectedness for the Telecommunications Sector in the Crisis and After-Crisis Periods

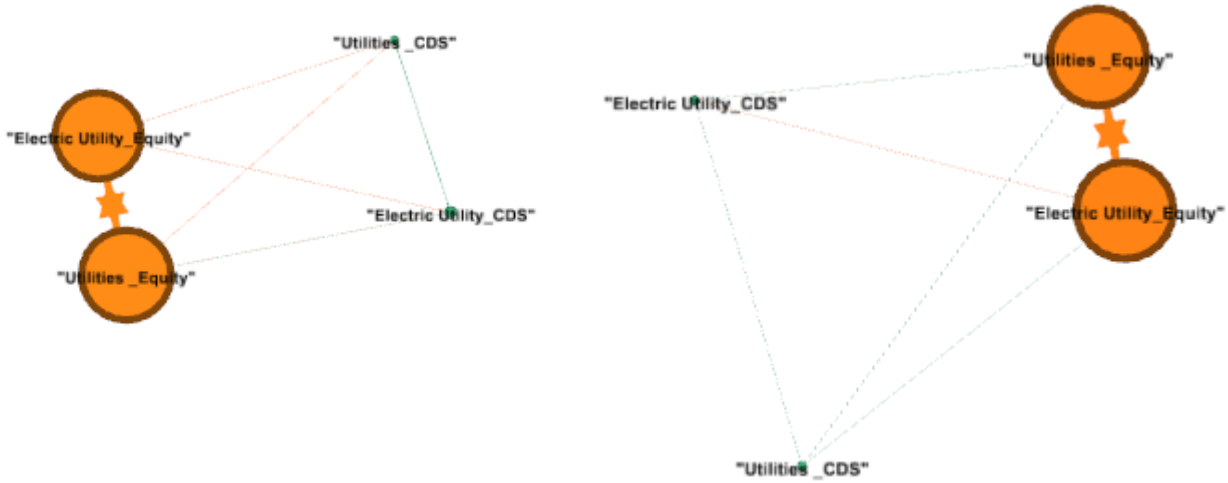


Figure 34: CDS Spreads and Equity Volatility Connectedness for the Utility Sector in the Crisis and After-Crisis Periods

UNITED KINGDOM

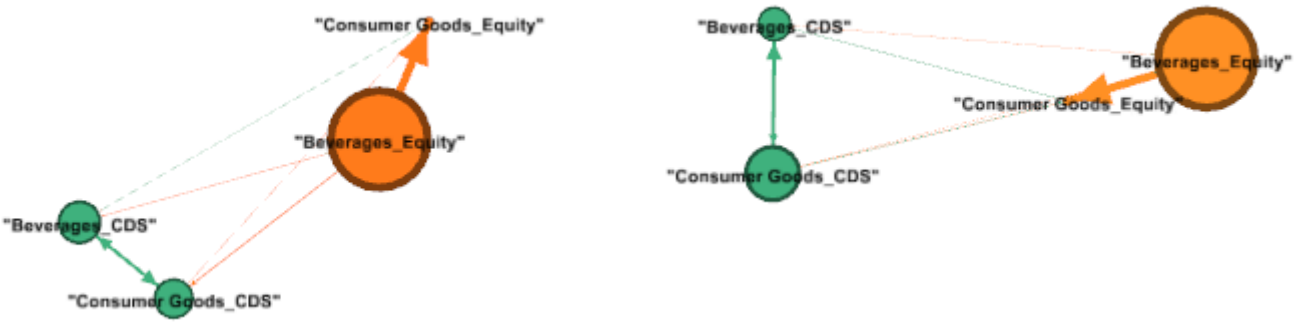


Figure 35: CDS Spreads and Equity Volatility Connectedness for the Consumer Goods Sector in the Crisis and After-Crisis Periods

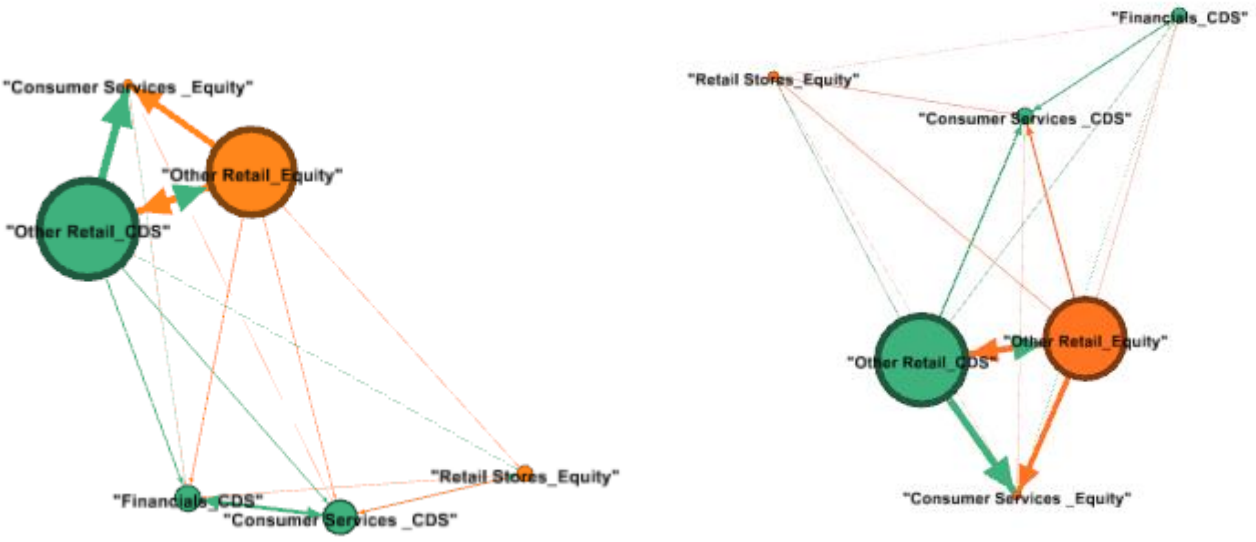


Figure 36: CDS Spreads and Equity Volatility Connectedness for the Consumer Services Sector in the Crisis and After-Crisis Periods

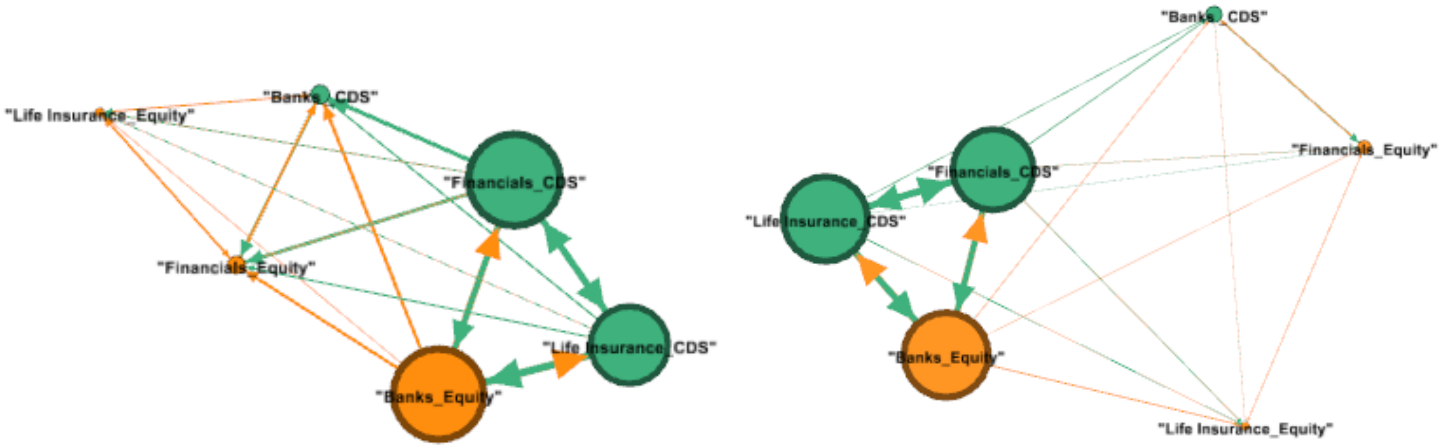


Figure 37: CDS Spreads and Equity Volatility Connectedness for the Financials Services Sector in the Crisis and After-Crisis Periods

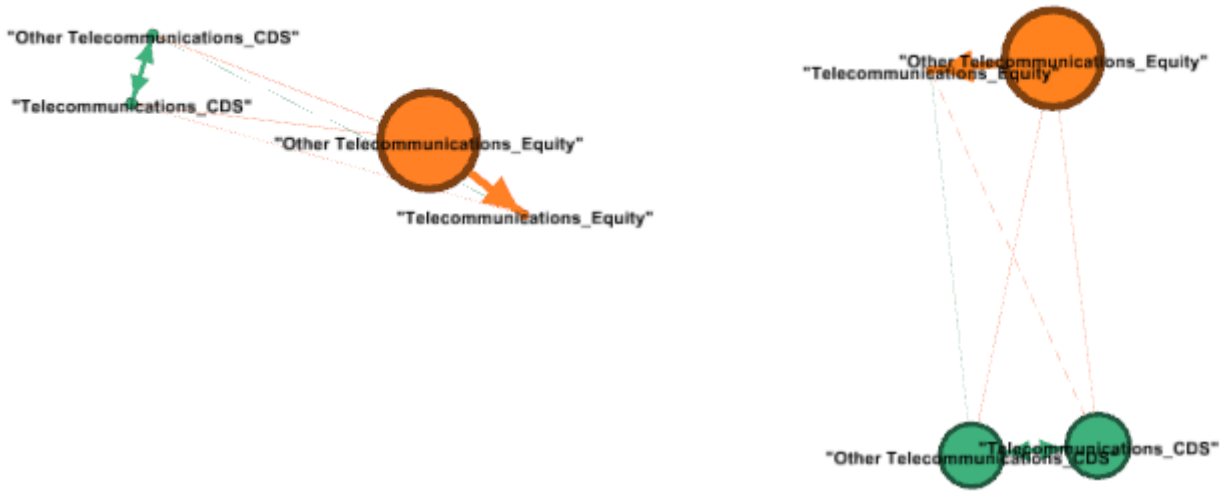


Figure 38: CDS Spreads and Equity Volatility Connectedness for the Telecommunications Services Sector in the Crisis and After-Crisis Periods

Europe

Figure 39: CDS Spreads and Equity Volatility Connectedness for the Basic Materials Sector in the Crisis and After-Crisis Periods

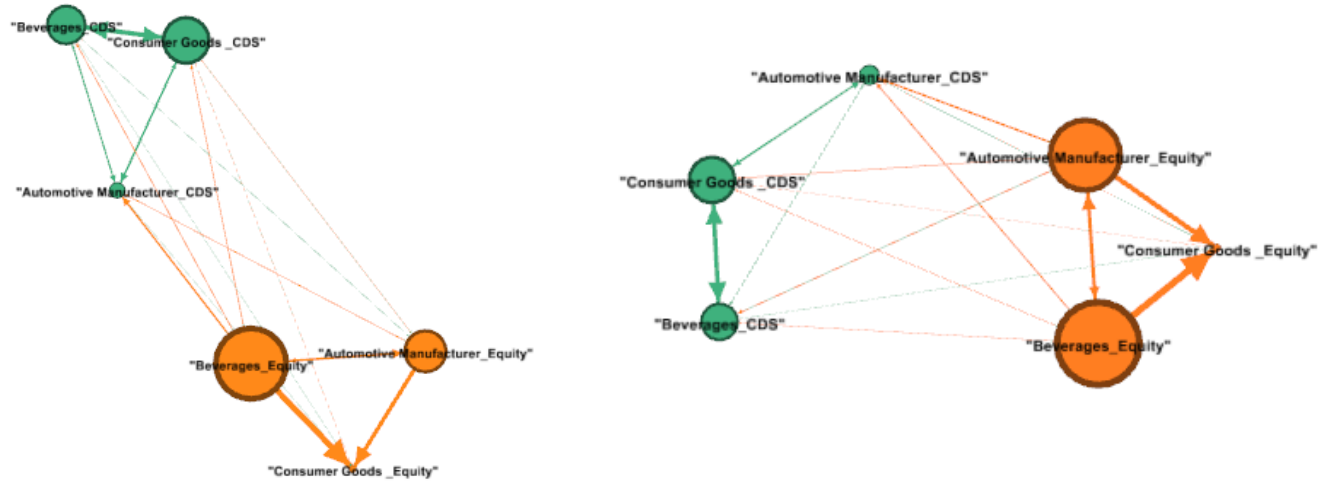


Figure 40: CDS Spreads and Equity Volatility Connectedness for the Consumer Goods Sector in the Crisis and After-Crisis Periods

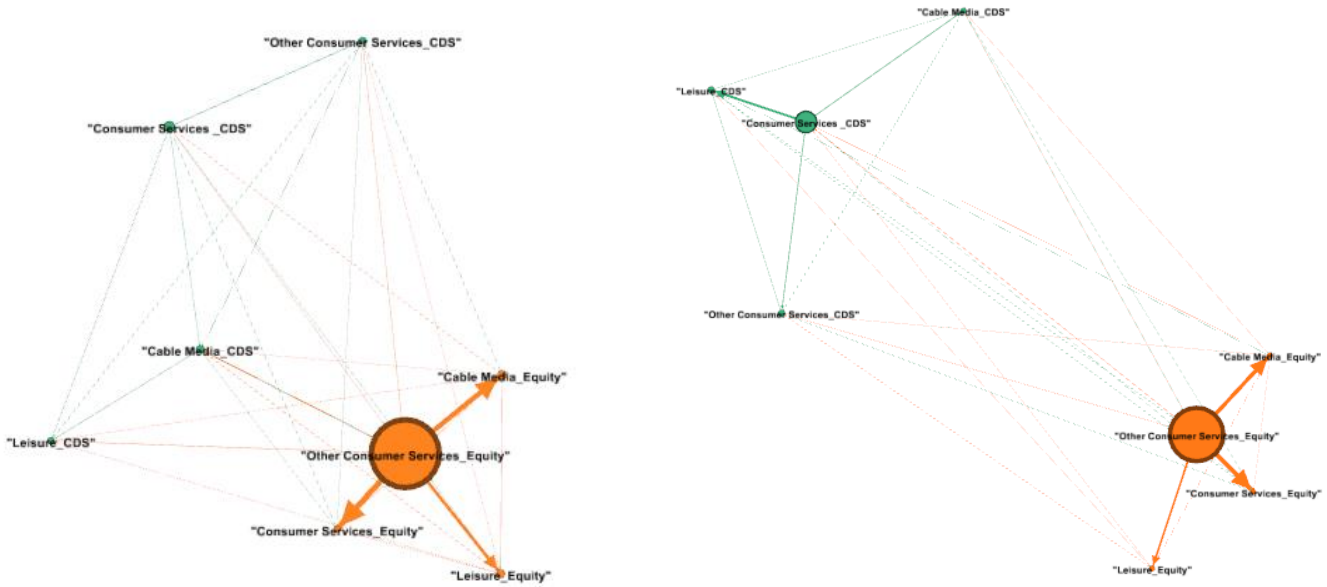


Figure 41: CDS Spreads and Equity Volatility Connectedness for the Consumer Services Sector in the Crisis and After-Crisis Periods

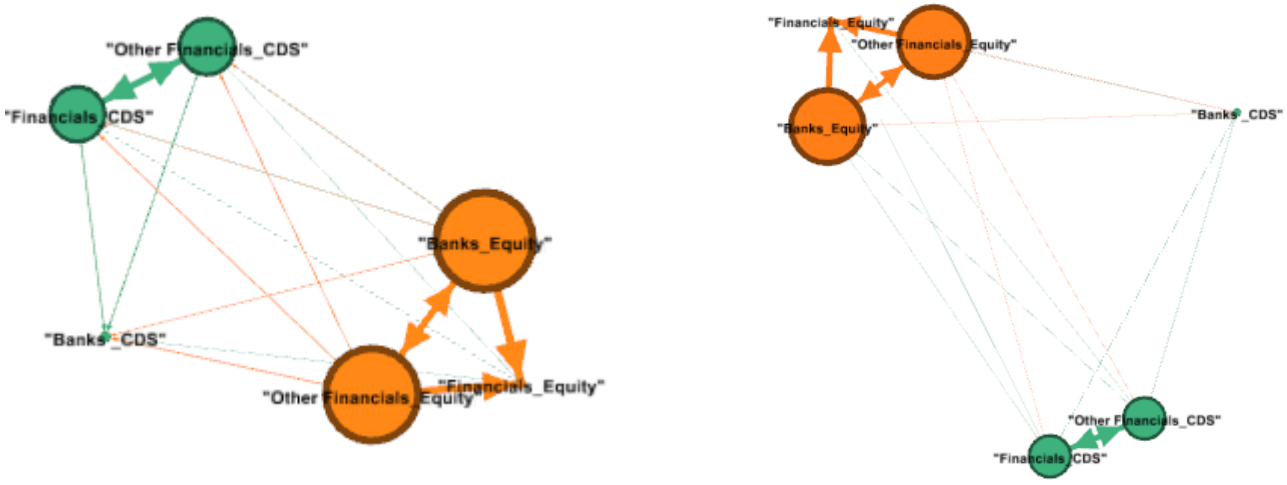


Figure 42: CDS Spreads and Equity Volatility Connectedness for the Financials Sector in the Crisis and After-Crisis Periods

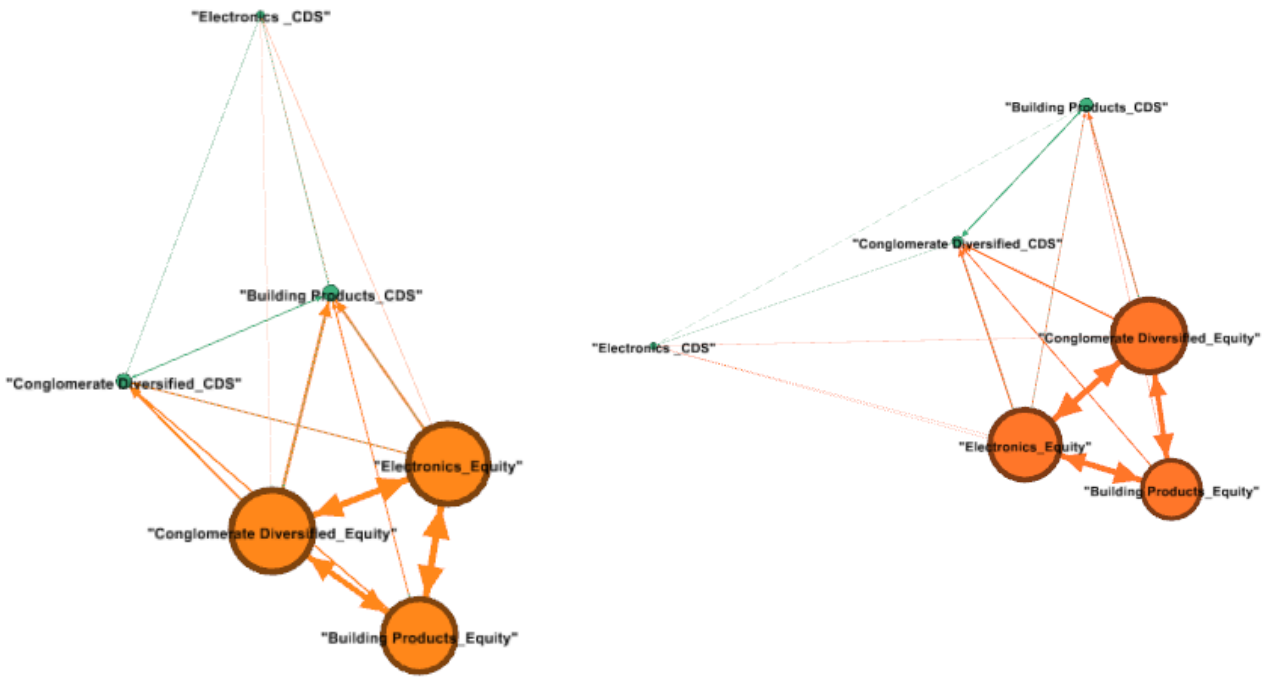


Figure 43: CDS Spreads and Equity Volatility Connectedness for the Industrials Sector in the Crisis and After-Crisis Periods

Figure 44: CDS Spreads and Equity Volatility Connectedness for the Telecommunications Sector in the Crisis and After-Crisis Periods

JAPAN

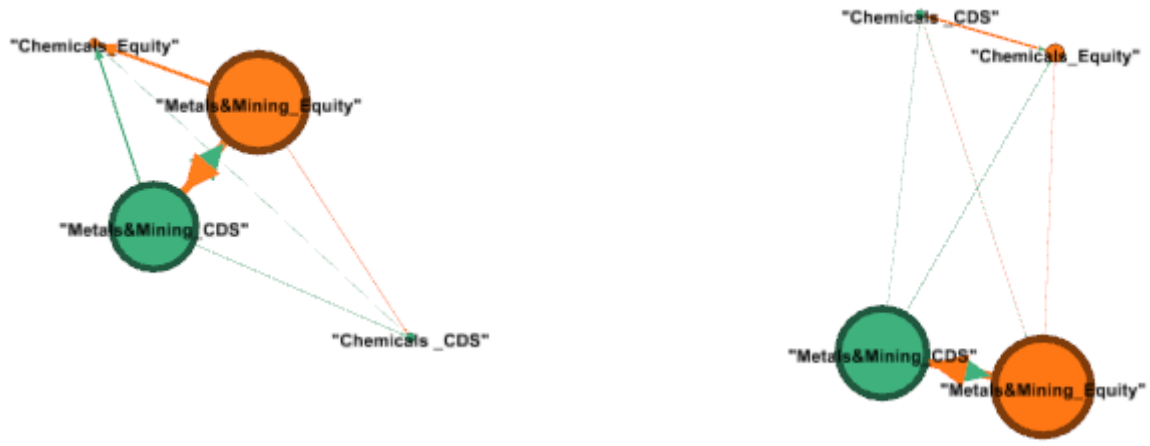


Figure 45: CDS Spreads and Equity Volatility Connectedness for the Basic Materials Sector in the Crisis and After-Crisis Periods

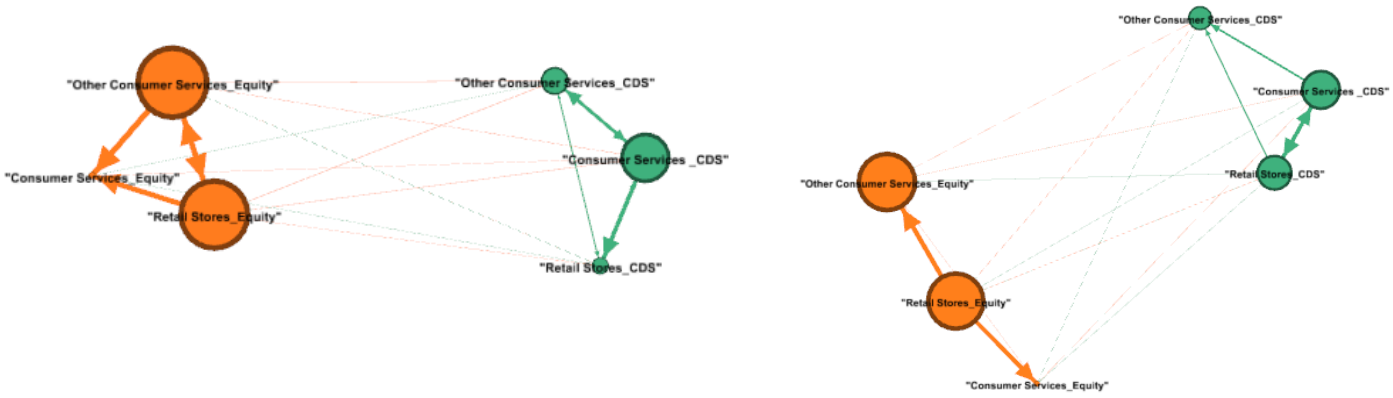


Figure 46: CDS Spreads and Equity Volatility Connectedness for the Consumer Services Sector in the Crisis and After-Crisis Periods

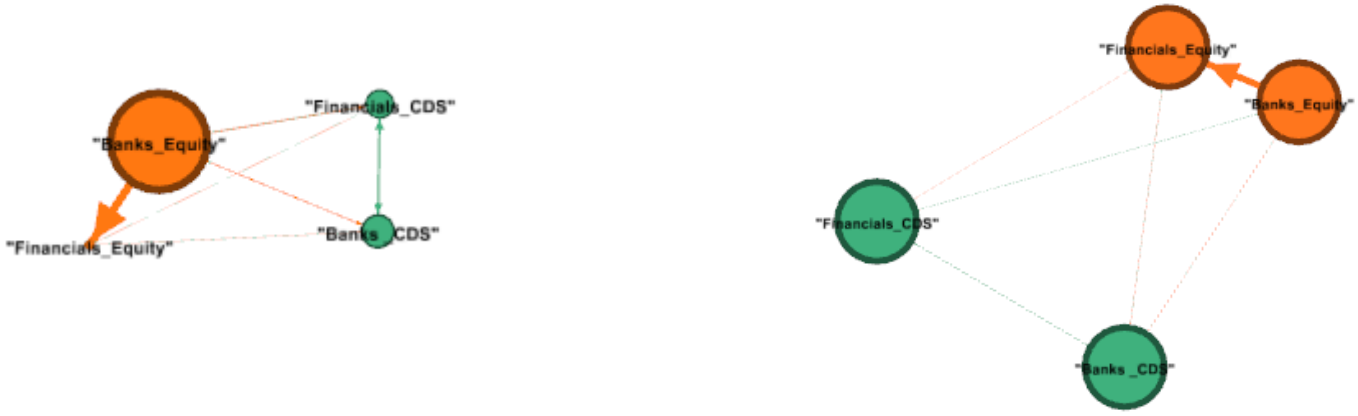


Figure 47: CDS Spreads and Equity Volatility Connectedness for the Financials Sector in the Crisis and After-Crisis Periods

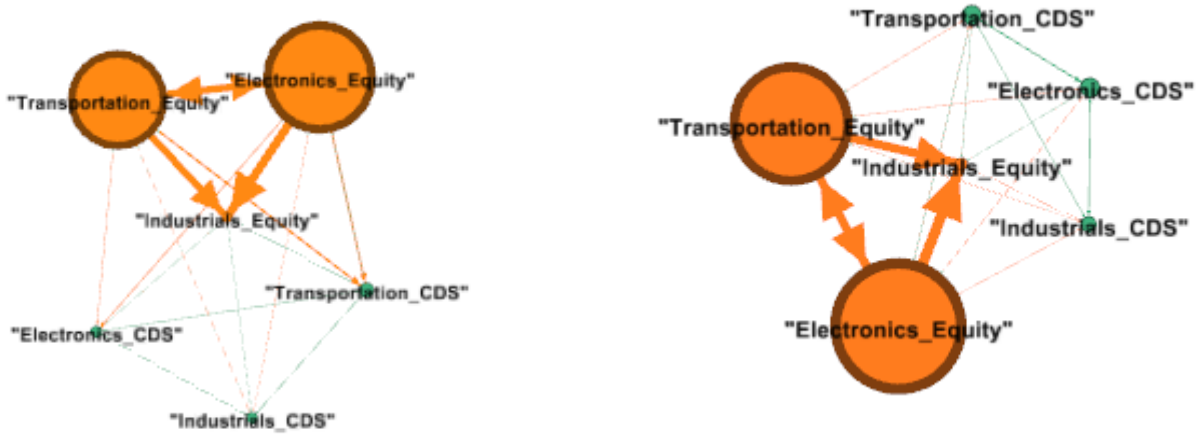


Figure 48: CDS Spreads and Equity Volatility Connectedness for the Industrials Sector in the Crisis and After-Crisis Periods

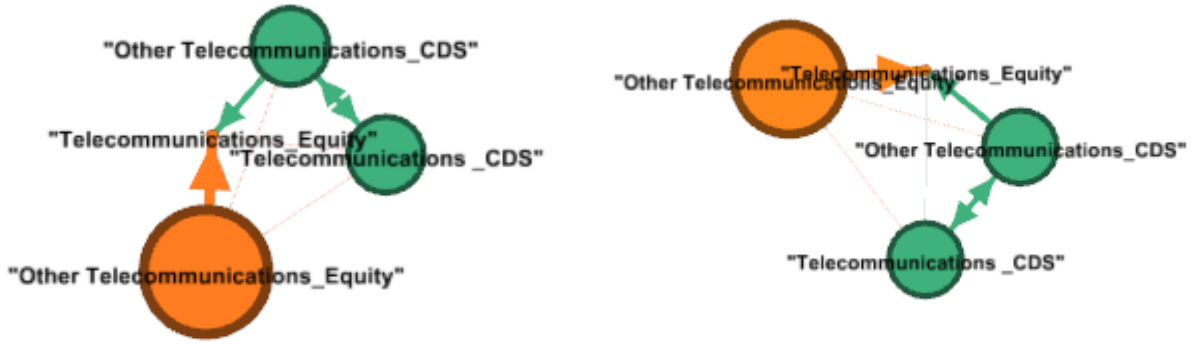


Figure 49: CDS Spreads and Equity Volatility Connectedness for the Telecommunications Sector in the Crisis and After-Crisis Periods

D.4 The Regional CDS Network

Credit Default Swap Spreads

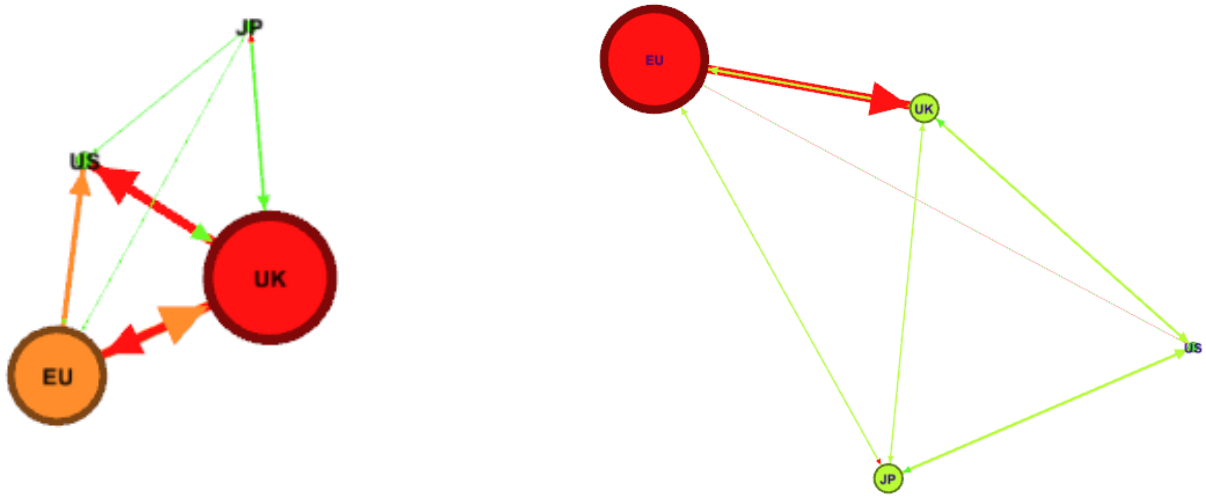


Figure 50: Regional Volatility Connectedness for the Banks Sector in the Crisis and After-Crisis Periods

Figure 51: Regional Volatility Connectedness for the Beverages Sector in the Crisis and After-Crisis Periods

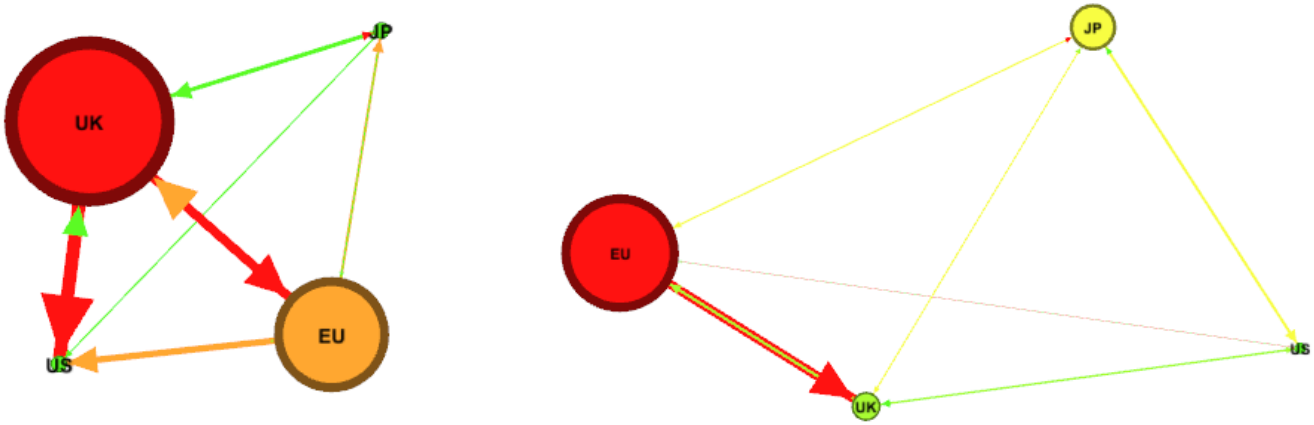


Figure 52: Regional Volatility Connectedness for the Banking Sector in the Crisis and After-Crisis Periods

CHEM

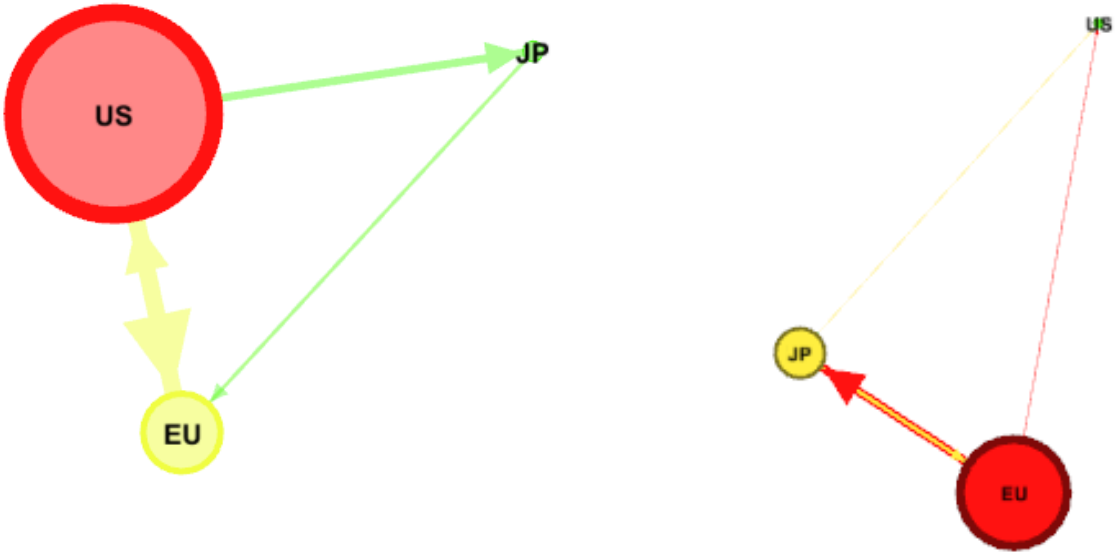


Figure 53: Regional Volatility Connectedness for the Chemicals Sector in the Crisis and After-Crisis Periods

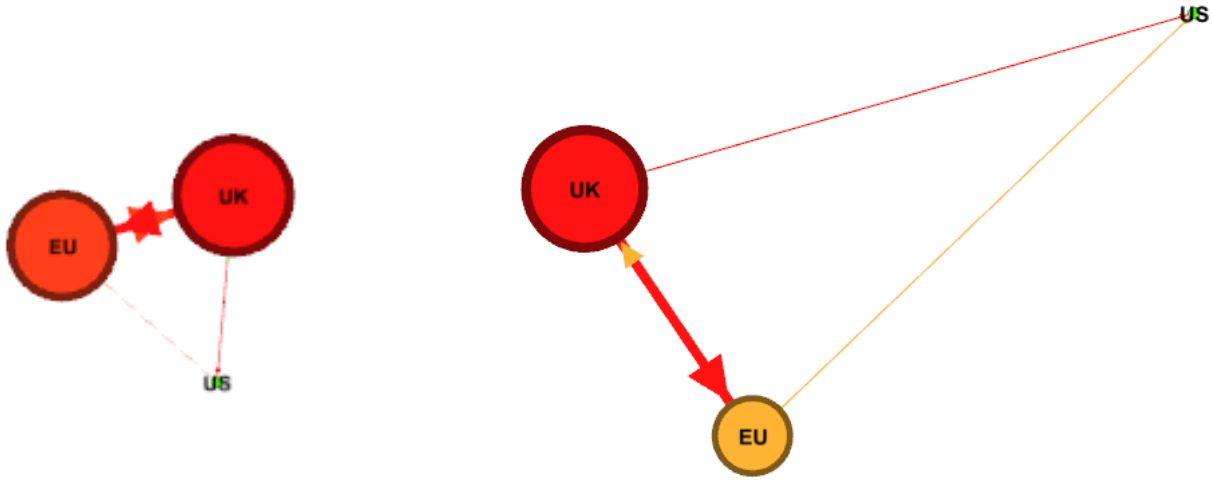


Figure 54: Regional Volatility Connectedness for the Consumer Goods Sector in the Crisis and After-Crisis Periods

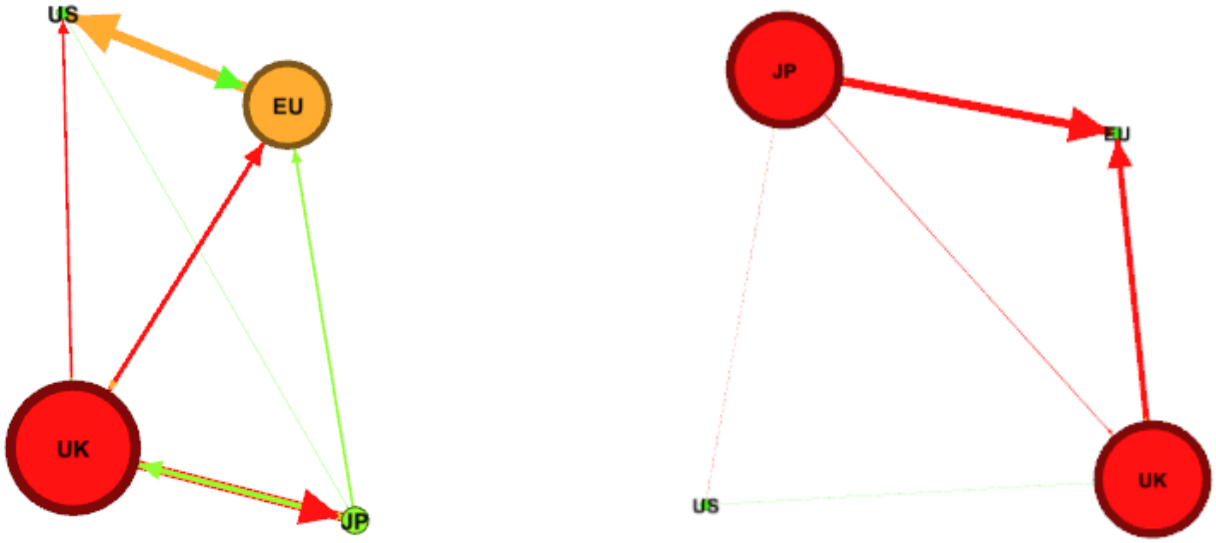


Figure 55: Regional Volatility Connectedness for the Chemicals Sector in the Crisis and After-Crisis Periods

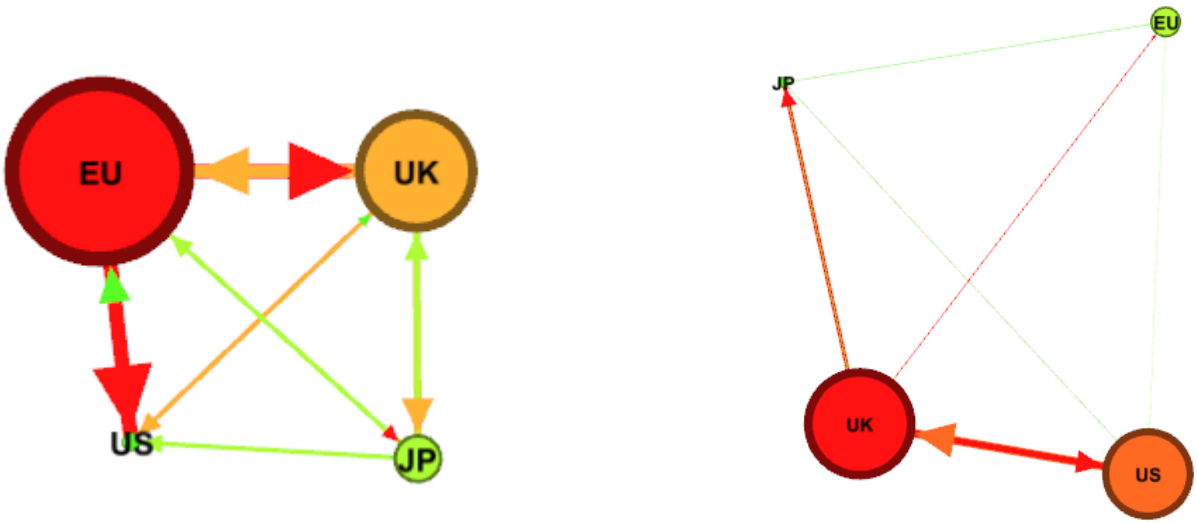


Figure 56: Regional Volatility Connectedness for the Manufacturing Sector in the Crisis and After-Crisis Periods

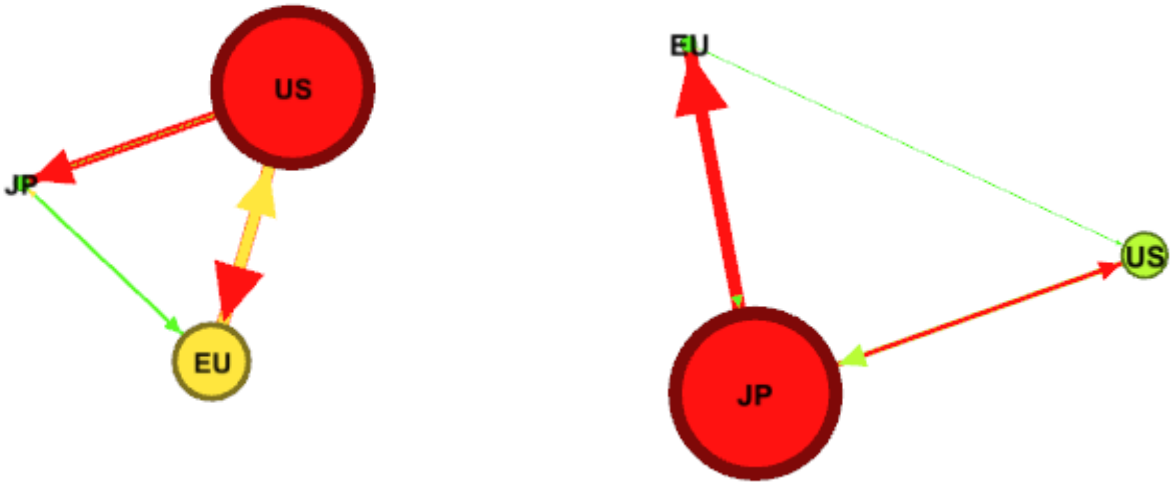


Figure 57: Regional Volatility Connectedness for the Metals & Mining Sector in the Crisis and After-Crisis Periods

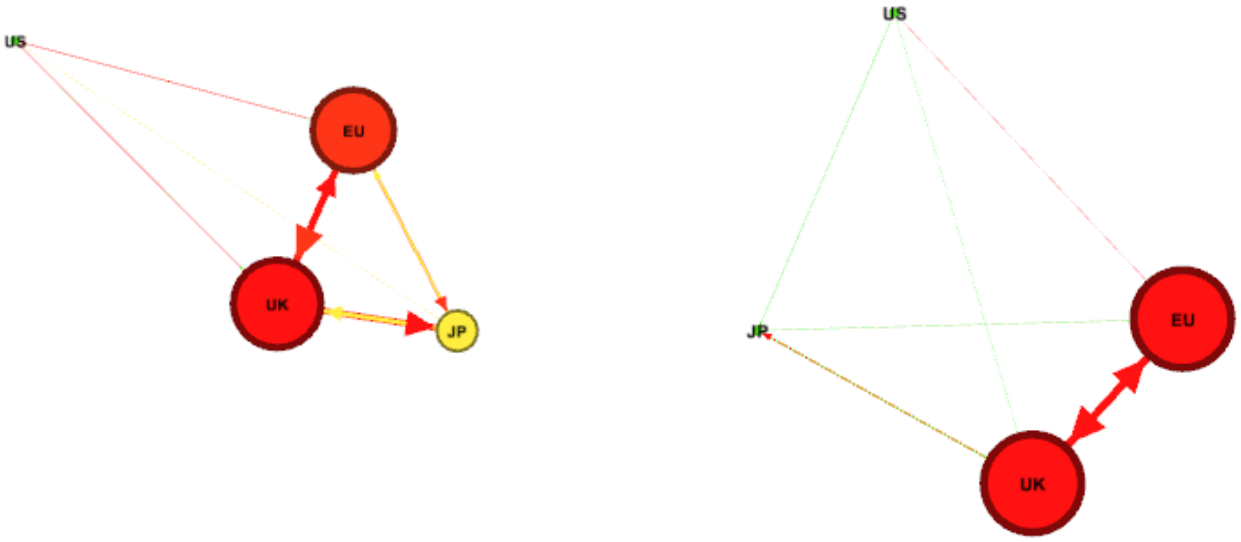


Figure 58: Regional Volatility Connectedness for the Other Financials Sector in the Crisis and After-Crisis Periods

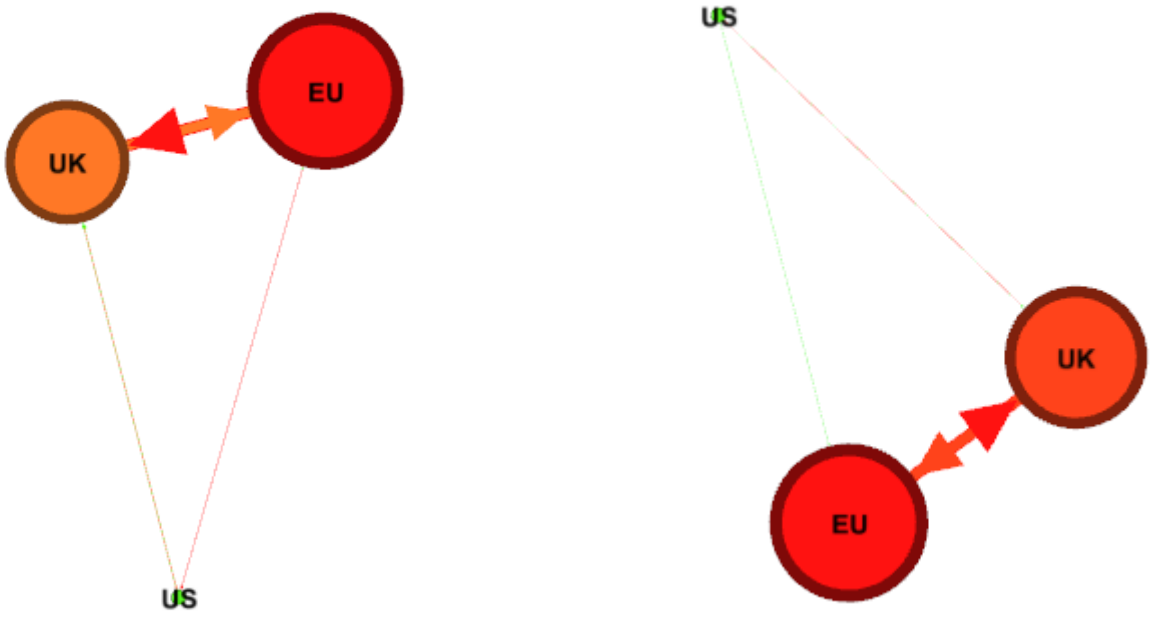


Figure 59: Regional Volatility Connectedness for the Other Financials II Sector in the Crisis and After-Crisis Periods

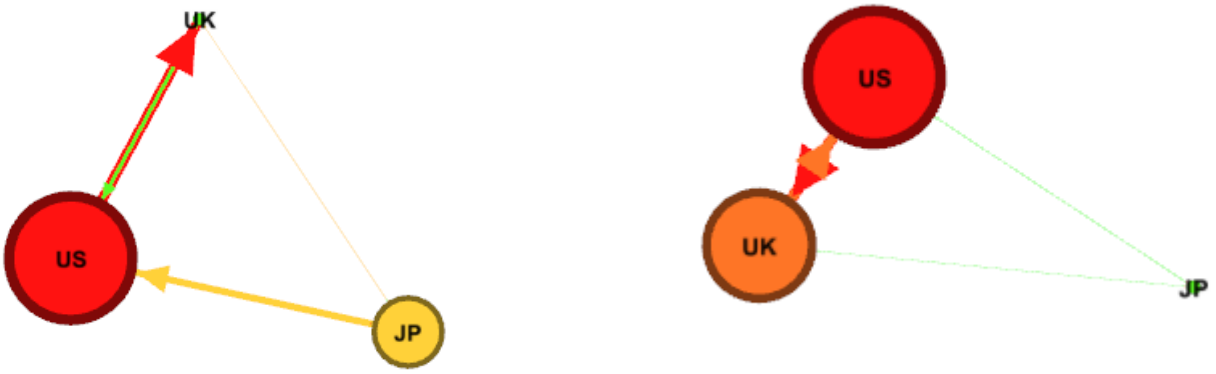


Figure 60: Regional Volatility Connectedness for the Retail Stores Other Sector in the Crisis and After-Crisis Periods

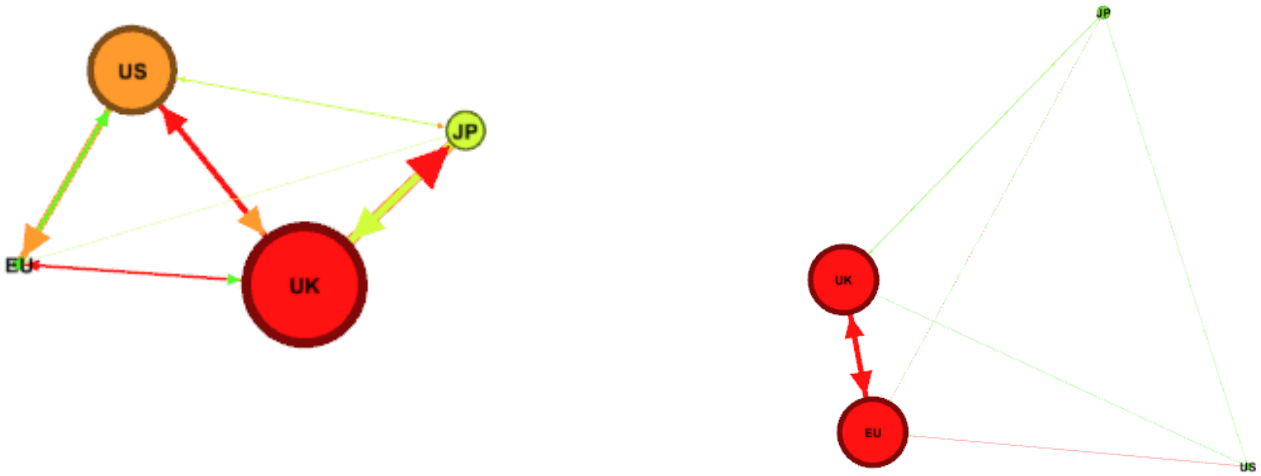


Figure 61: Regional Volatility Connectedness for the Consumer Services Sector in the Crisis and After-Crisis Periods

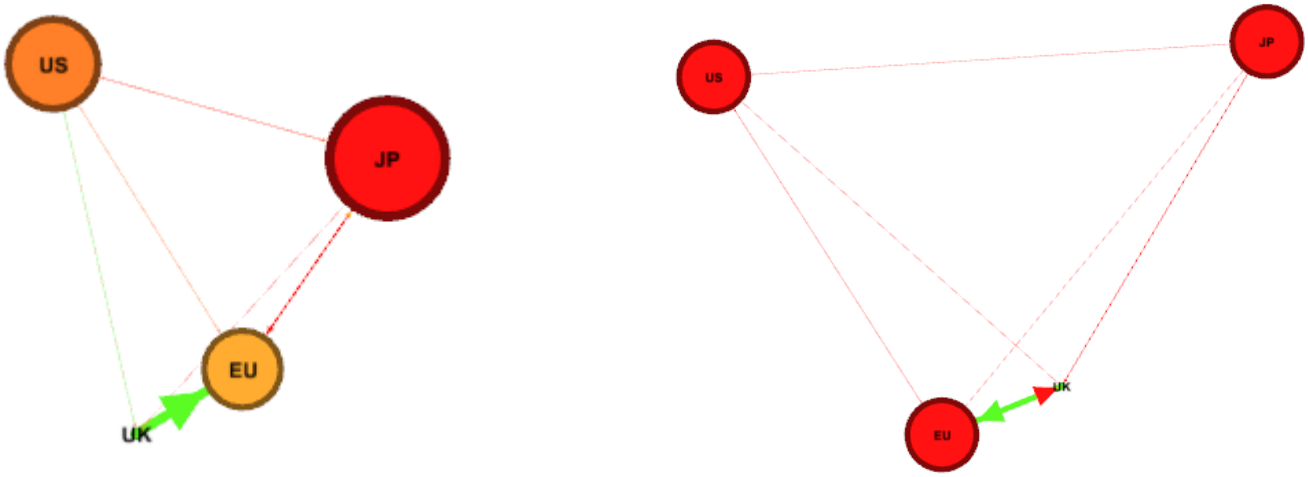


Figure 62: Regional Volatility Connectedness for the Other Consumer Services Sector in the Crisis and After-Crisis Periods

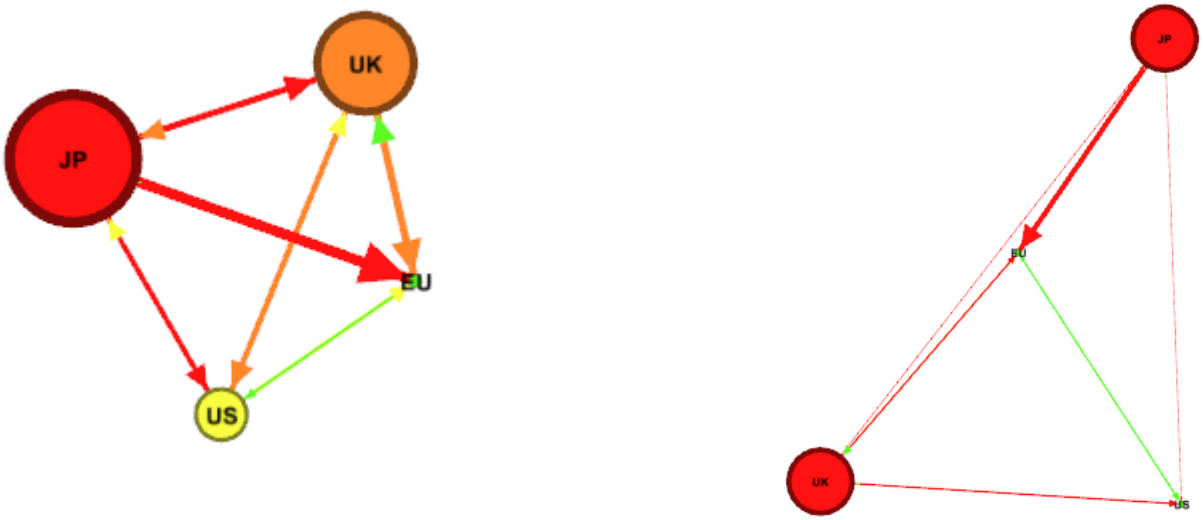


Figure 63: Regional Volatility Connectedness for the Telecommunications Services Sector in the Crisis and After-Crisis Periods

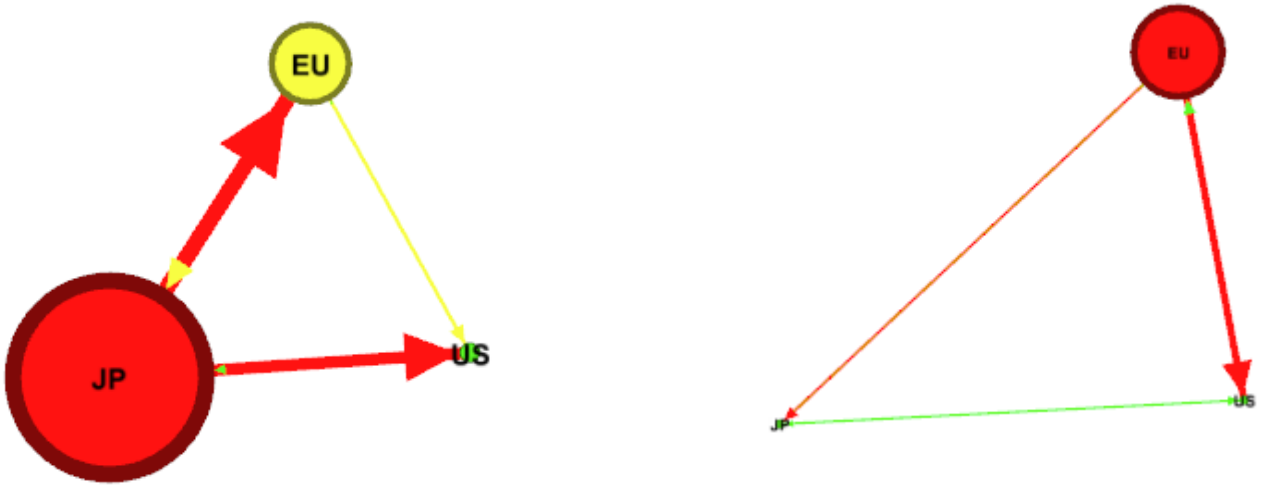


Figure 64: Regional Volatility Connectedness for the Other Telecommunications Services Sector in the Crisis and After-Crisis Periods

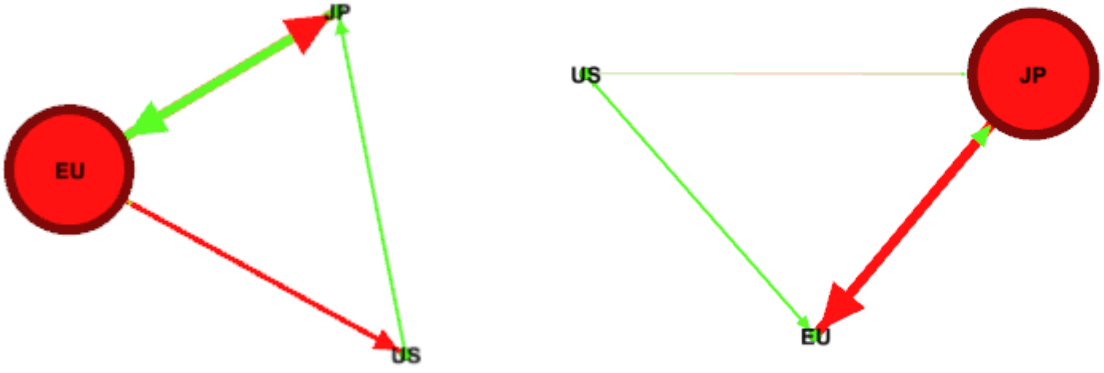


Figure 65: Regional Volatility Connectedness for the Other Transportation Services Sector in the Crisis and After-Crisis Periods

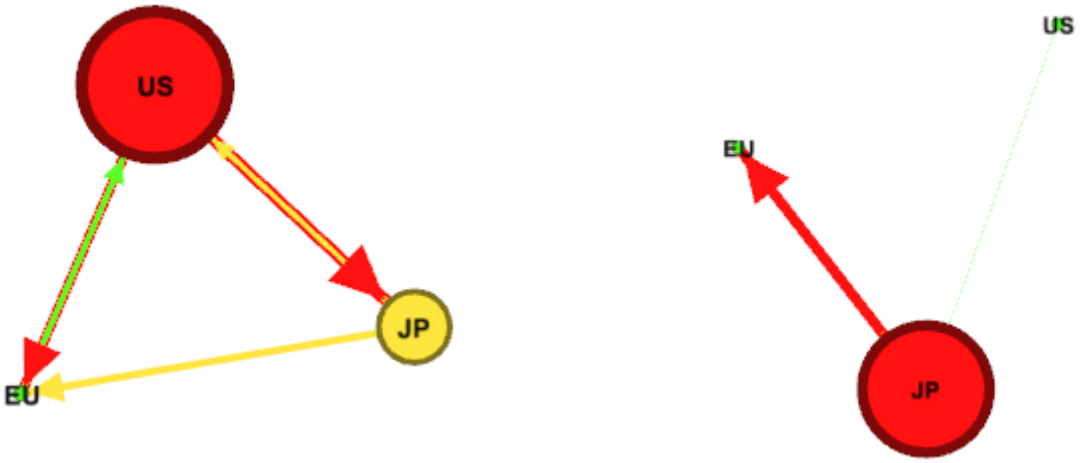


Figure 66: Regional Volatility Connectedness for the Utility Services Sector in the Crisis and After-Crisis Periods

D.5 The Regional Equity Network

EQUITY

Figure 67: Regional Volatility Connectedness for the Beverages & Bottling Sector in the Crisis and After-Crisis Periods

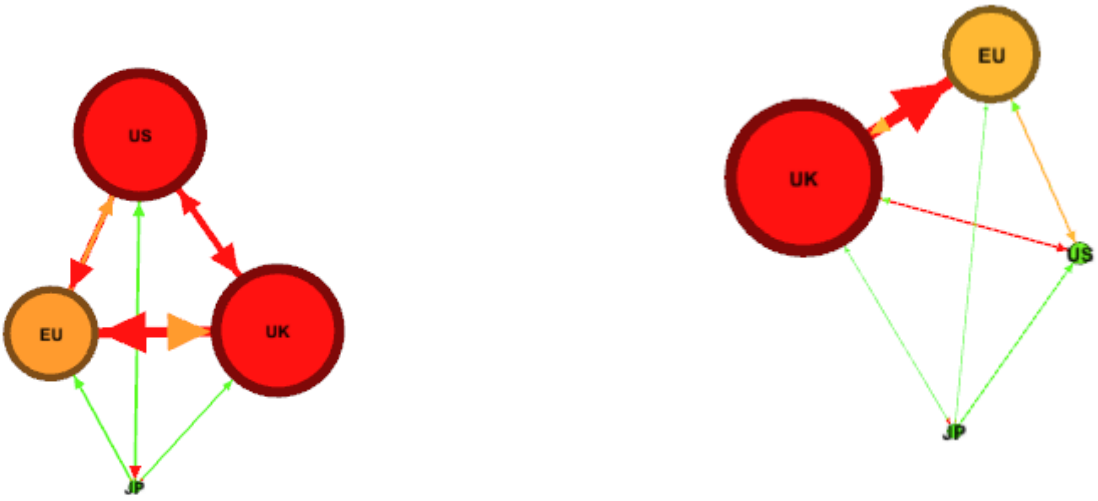


Figure 68: Regional Volatility Connectedness for the Basic Materials Sector in the Crisis and After-Crisis Periods

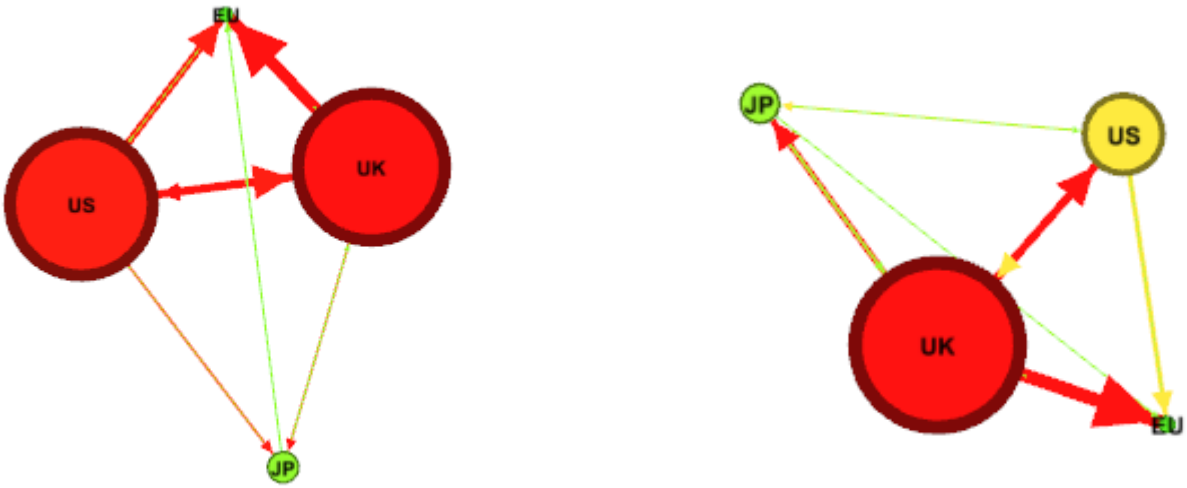


Figure 69: Regional Volatility Connectedness for the Banking Sector in the Crisis and After-Crisis Periods

Figure 70: Regional Volatility Connectedness for the Chemicals Sector in the Crisis and After-Crisis Periods

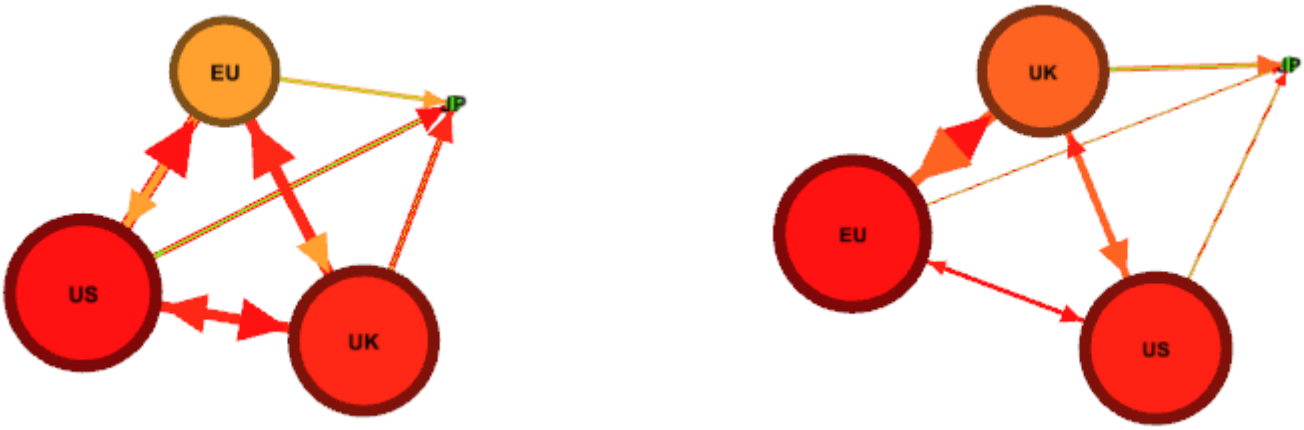


Figure 71: Regional Volatility Connectedness for the Consumer Goods Sector in the Crisis and After-Crisis Periods

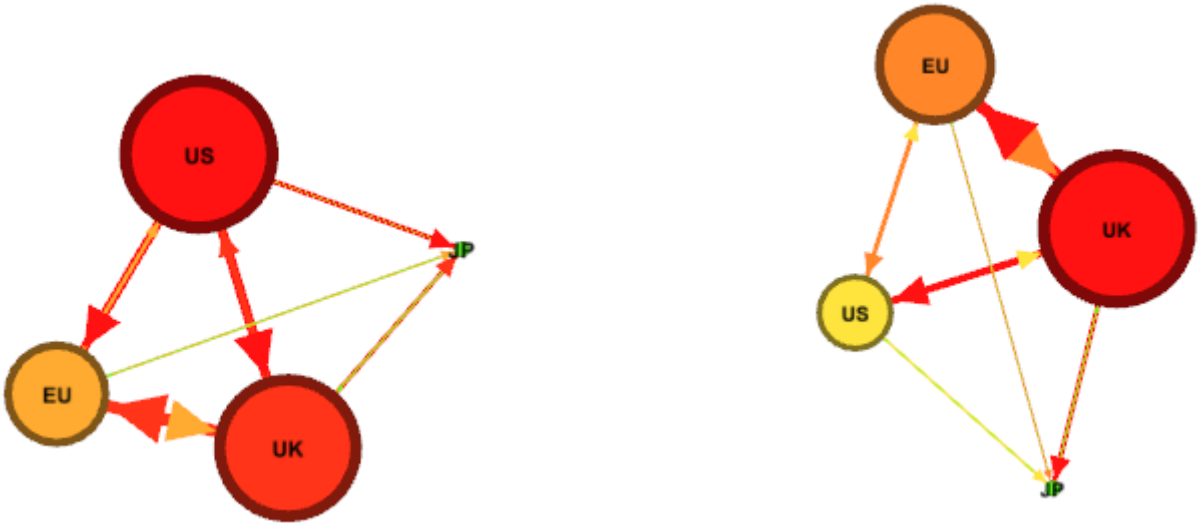


Figure 72: Regional Volatility Connectedness for the Financials Sector in the Crisis and After-Crisis Periods

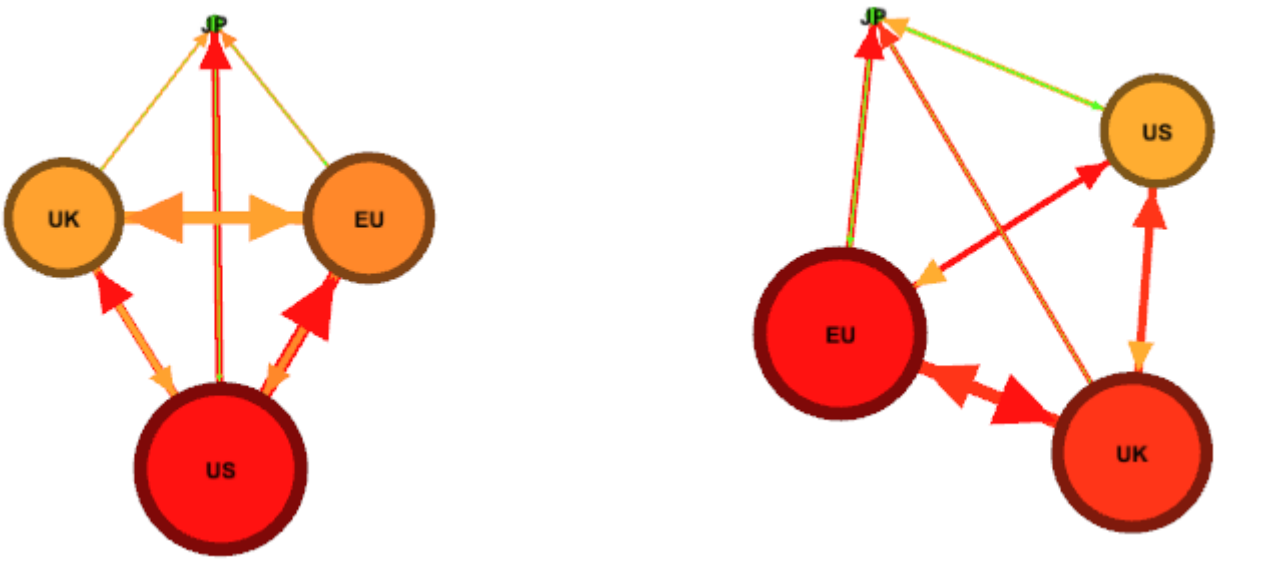


Figure 73: Regional Volatility Connectedness for the Healthcare Services Sector in the Crisis and After-Crisis Periods

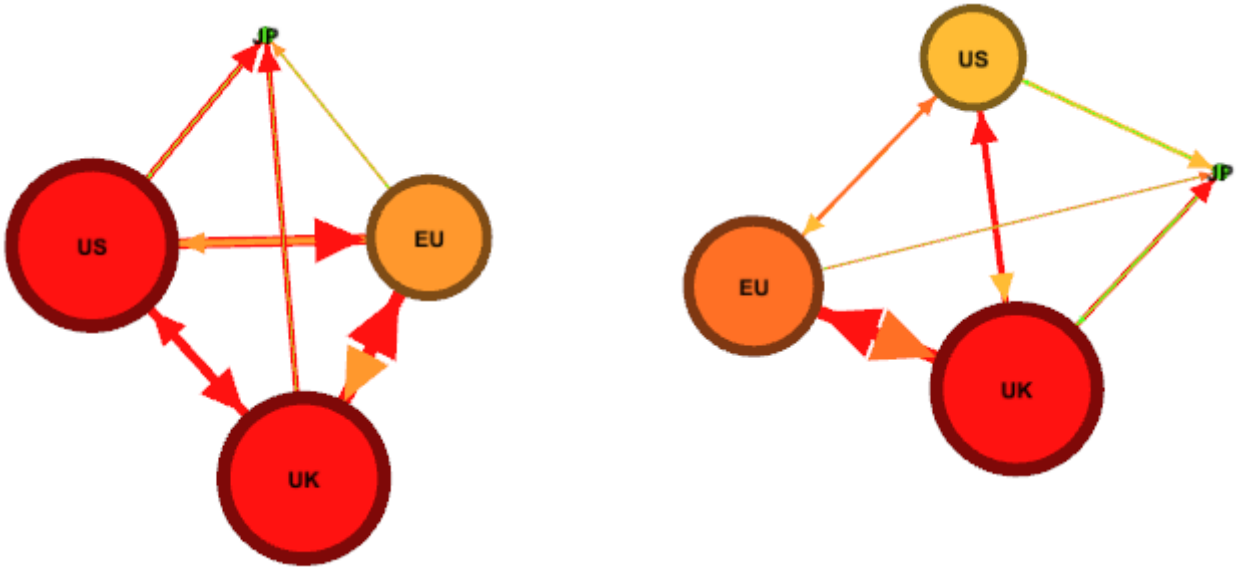


Figure 74: Regional Volatility Connectedness for the Industrials Sector in the Crisis and After-Crisis Periods

Figure 75: Regional Volatility Connectedness for the Metals & Mining Sector in the Crisis and After-Crisis Periods

Figure 76: Regional Volatility Connectedness for the Other Financials Sector in the Crisis and After-Crisis Periods

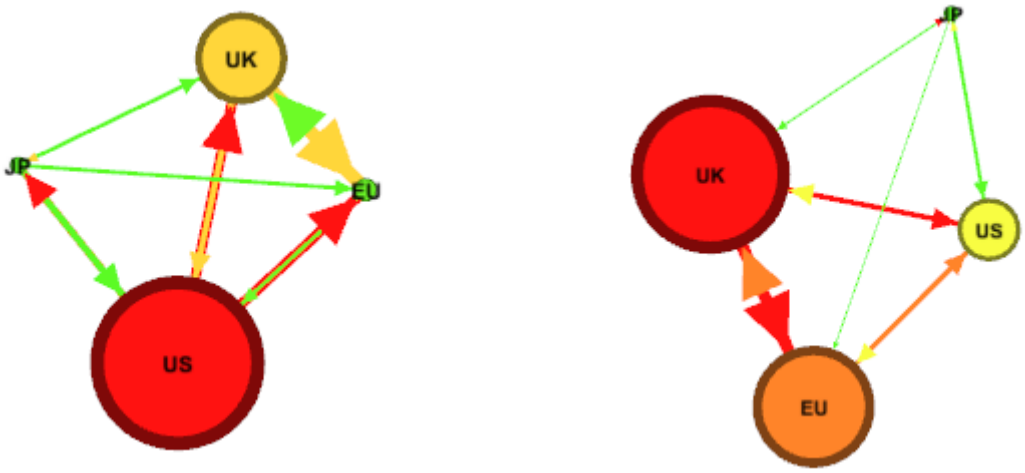


Figure 77: Regional Volatility Connectedness for the Oil & Gas Sector in the Crisis and After-Crisis Periods

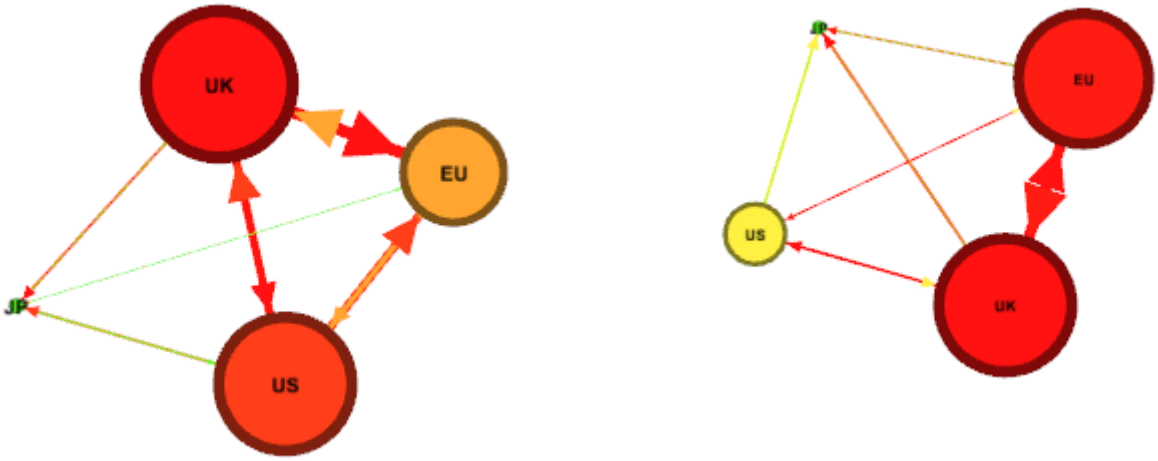


Figure 78: Regional Volatility Connectedness for the Consumer Services Sector in the Crisis and After-Crisis Periods

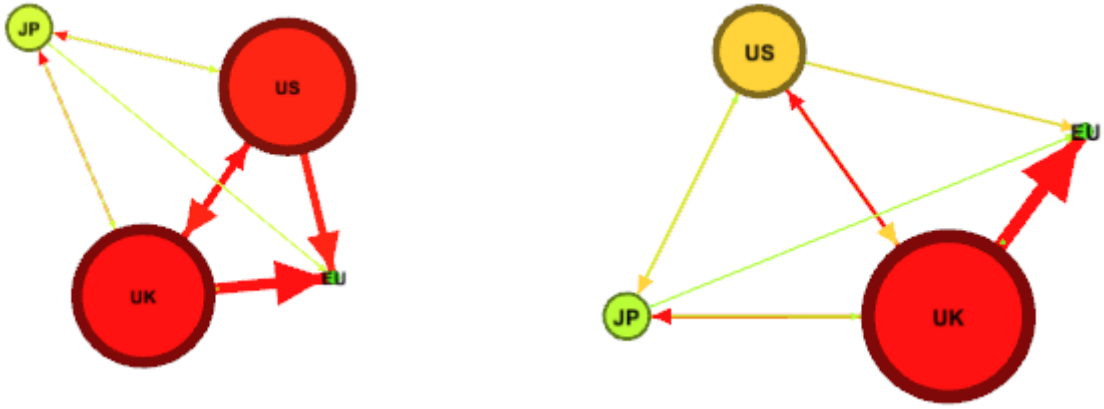


Figure 79: Regional Volatility Connectedness for the Other Consumer Services Sector in the Crisis and After-Crisis Periods

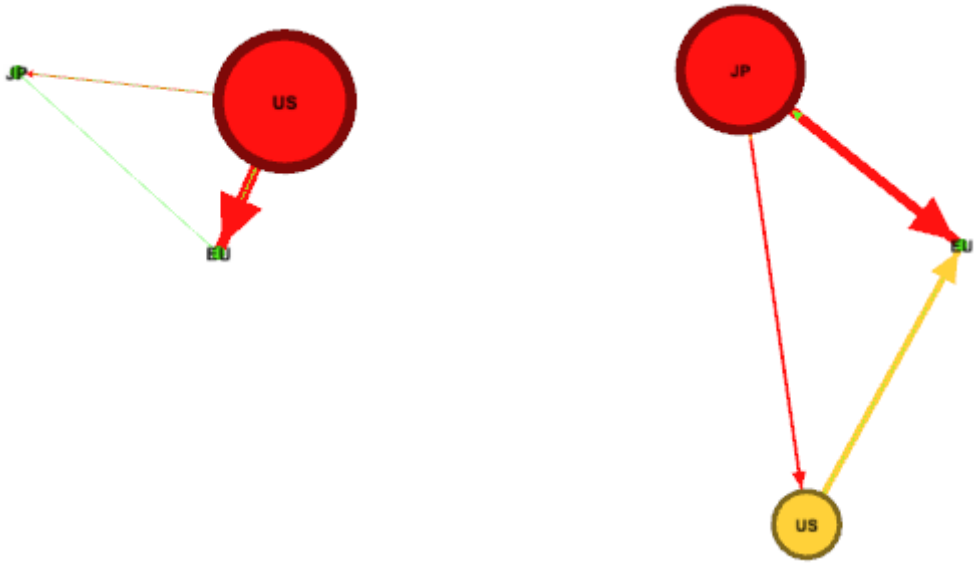


Figure 80: Regional Volatility Connectedness for the Utilities Sector in the Crisis and After-Crisis Periods

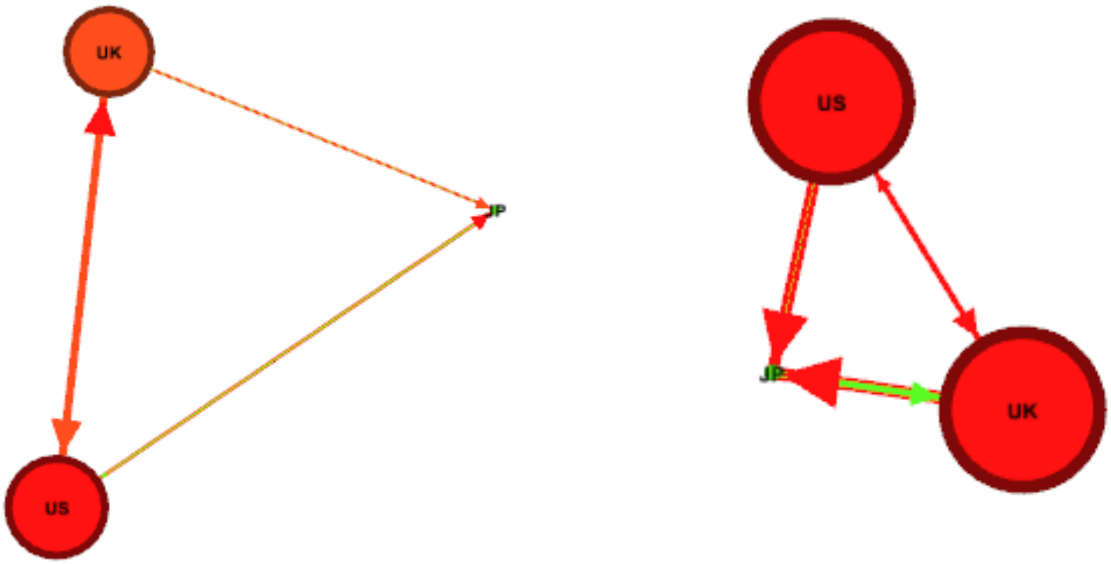


Figure 81: Regional Volatility Connectedness for the Other Retail Sector in the Crisis and After-Crisis Periods

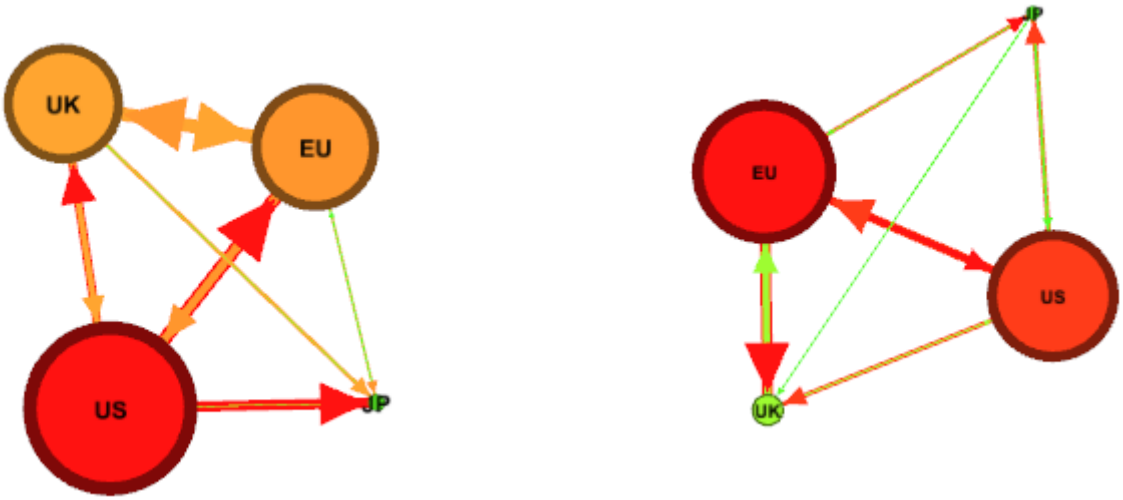


Figure 82: Regional Volatility Connectedness for the Technology Sector in the Crisis and After-Crisis Periods

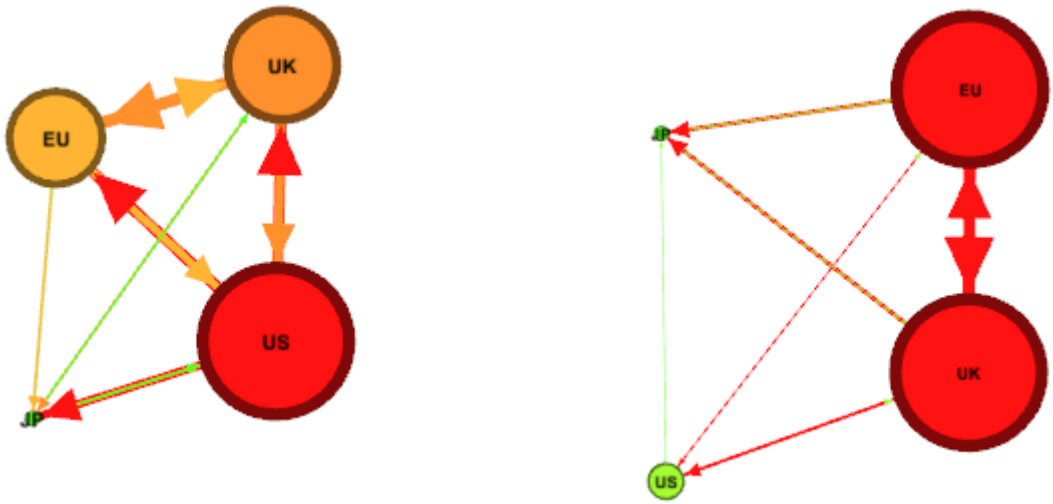


Figure 83: Regional Volatility Connectedness for Telecommunication Services Sector in the Crisis and After-Crisis Periods

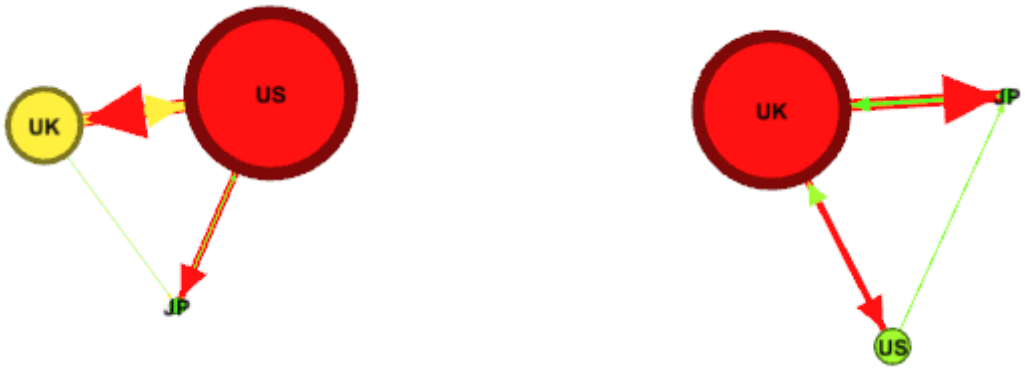


Figure 84: Regional Volatility Connectedness for the Other Telecommunications Services Sector in the Crisis and After-Crisis Periods

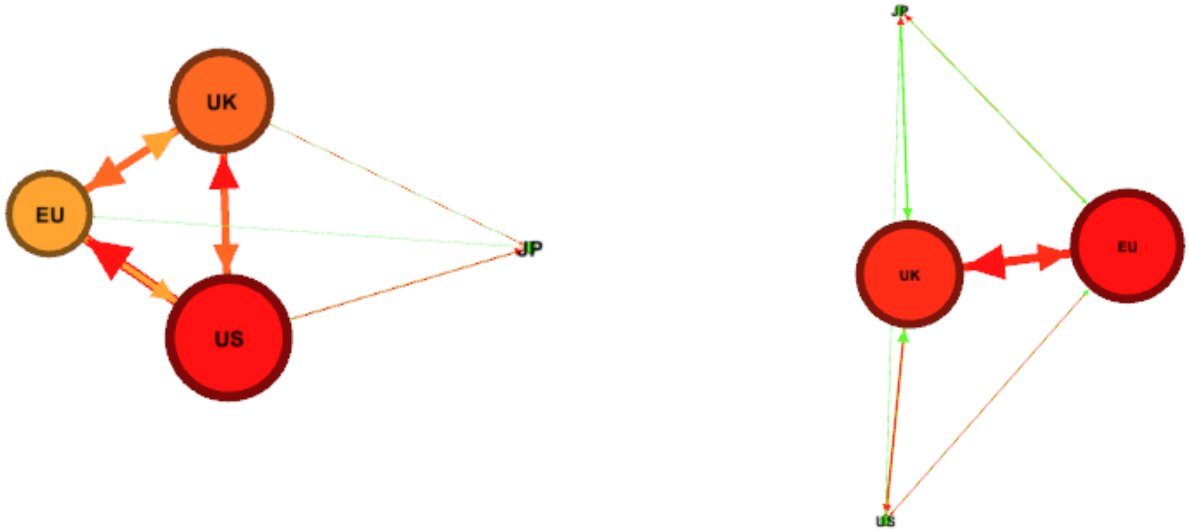


Figure 85: Regional Volatility Connectedness for the Utility Sector in the Crisis and After-Crisis Periods

D.6 The Regional Network between CDS Spreads and Equity Volatility

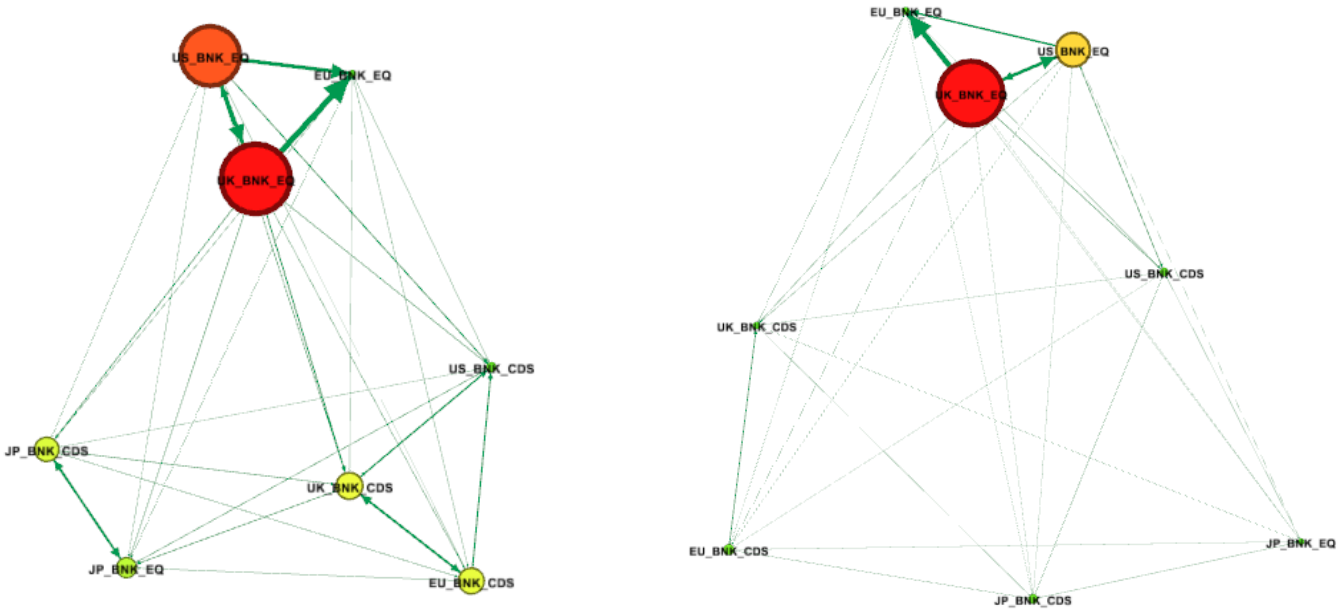


Figure 86: CDS Spreads and Equity Volatility Regional Connectedness for the Banks Sector in the Crisis and After-Crisis Periods

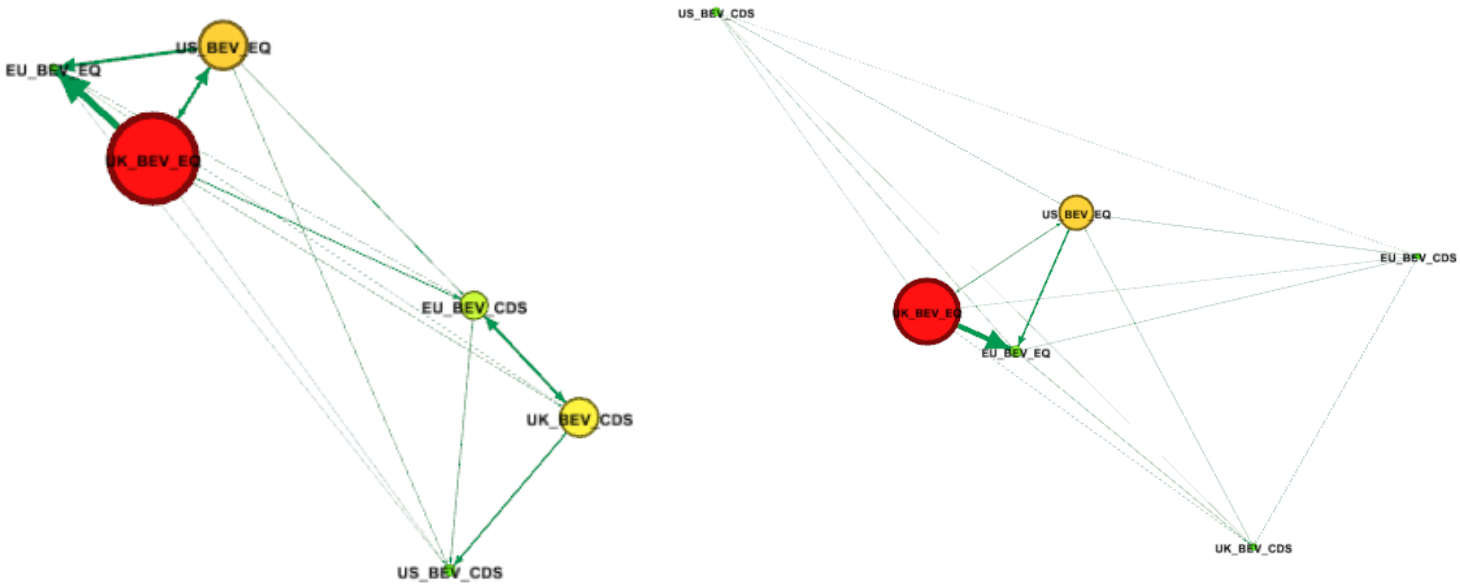


Figure 87: CDS Spreads and Equity Volatility Regional Connectedness for the Beverages & Bottling Sector in the Crisis and After-Crisis Periods

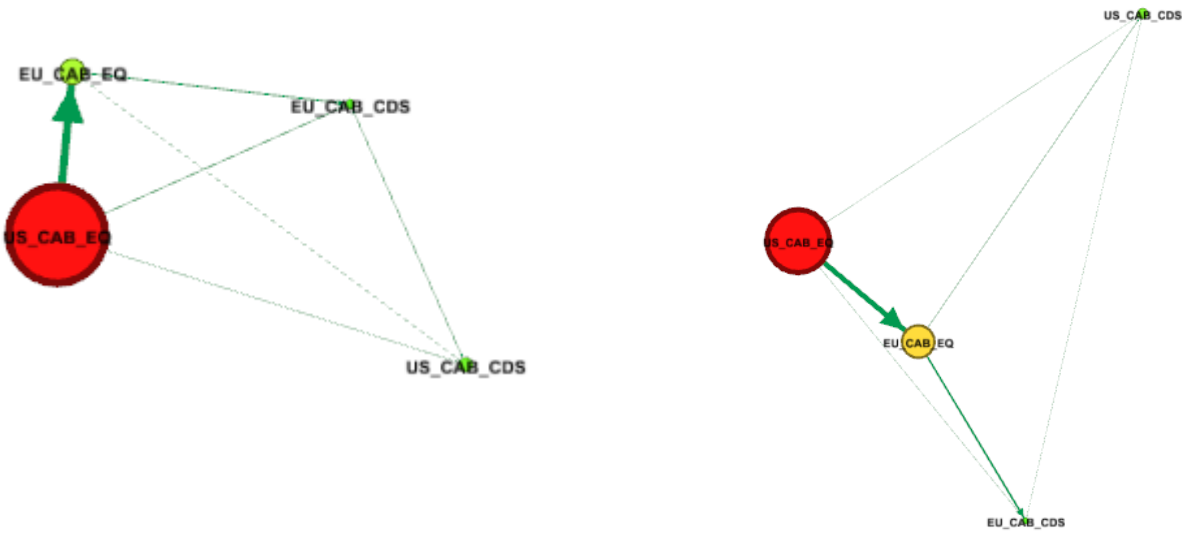


Figure 88: CDS Spreads and Equity Volatility Regional Connectedness for the Cable Media Sector in the Crisis and After-Crisis Periods

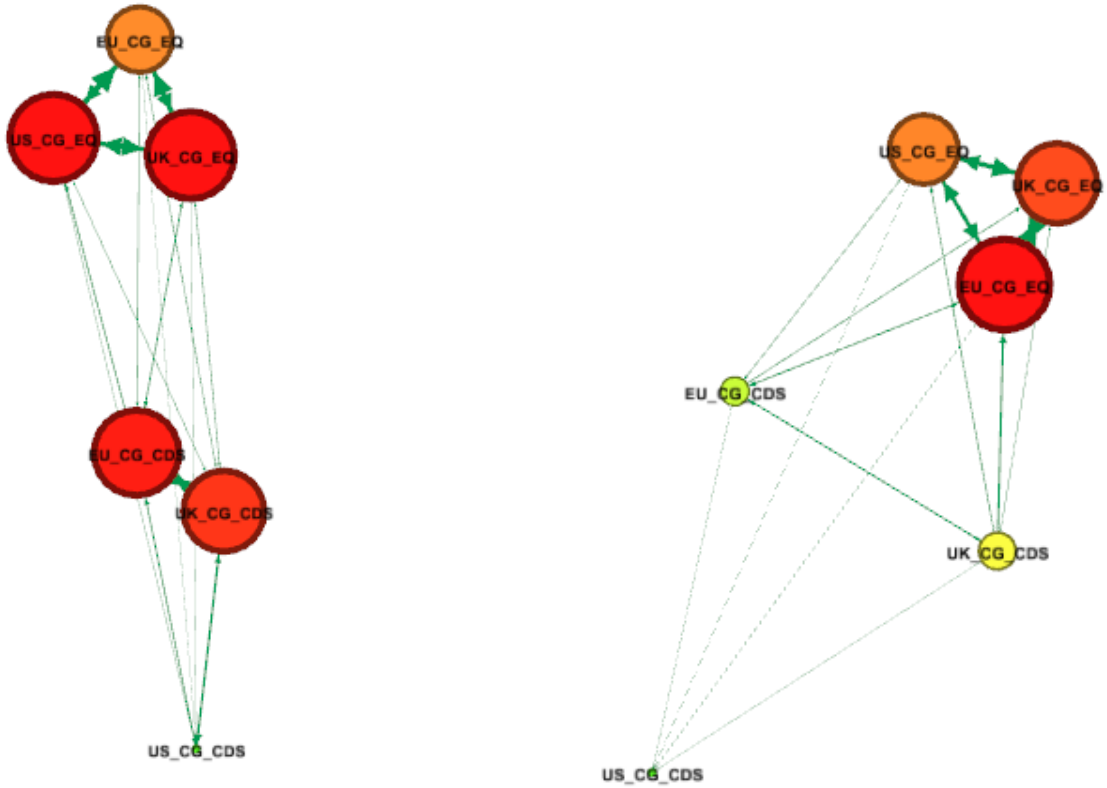


Figure 89: CDS Spreads and Equity Volatility Regional Connectedness for the Consumer Goods Sector in the Crisis and After-Crisis Periods

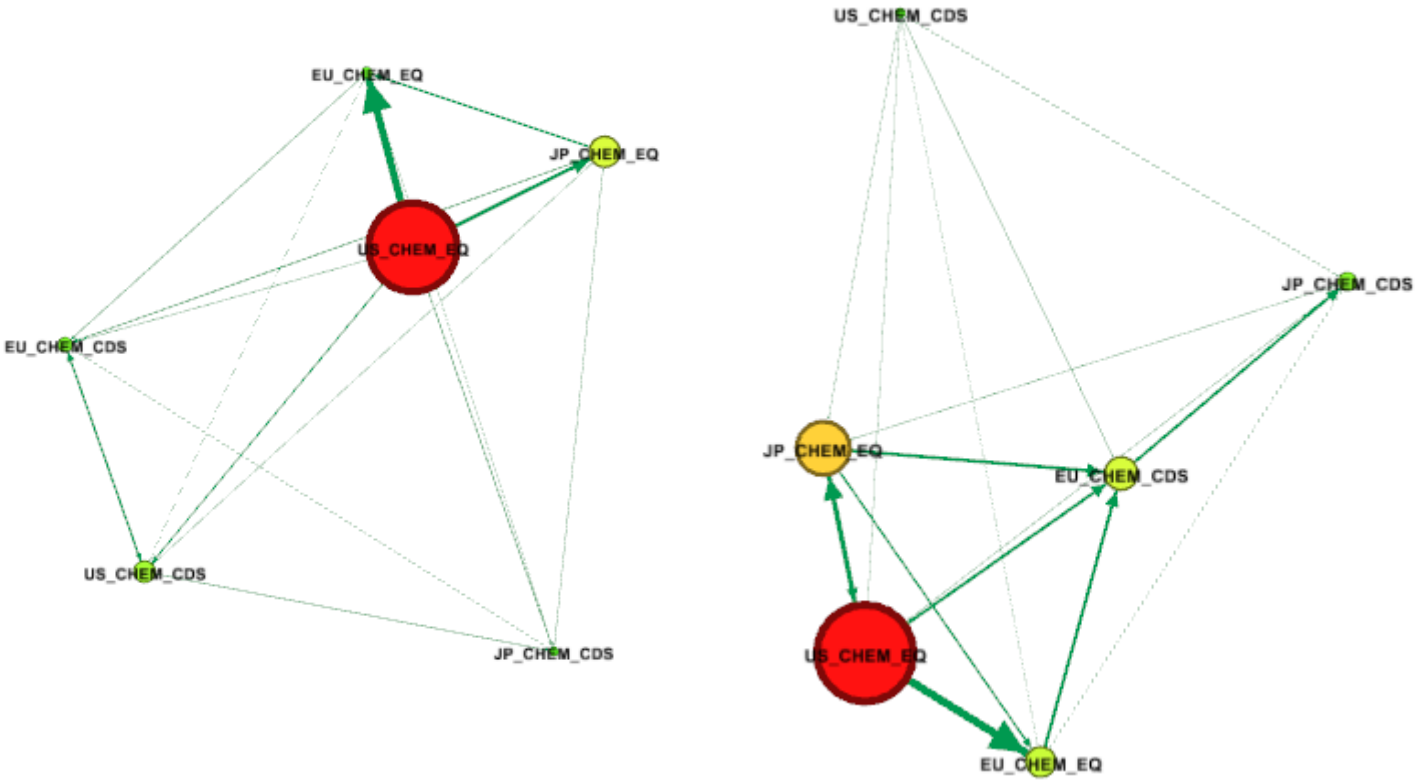


Figure 90: CDS Spreads and Equity Volatility Regional Connectedness for the Chemicals Sector in the Crisis and After-Crisis Periods

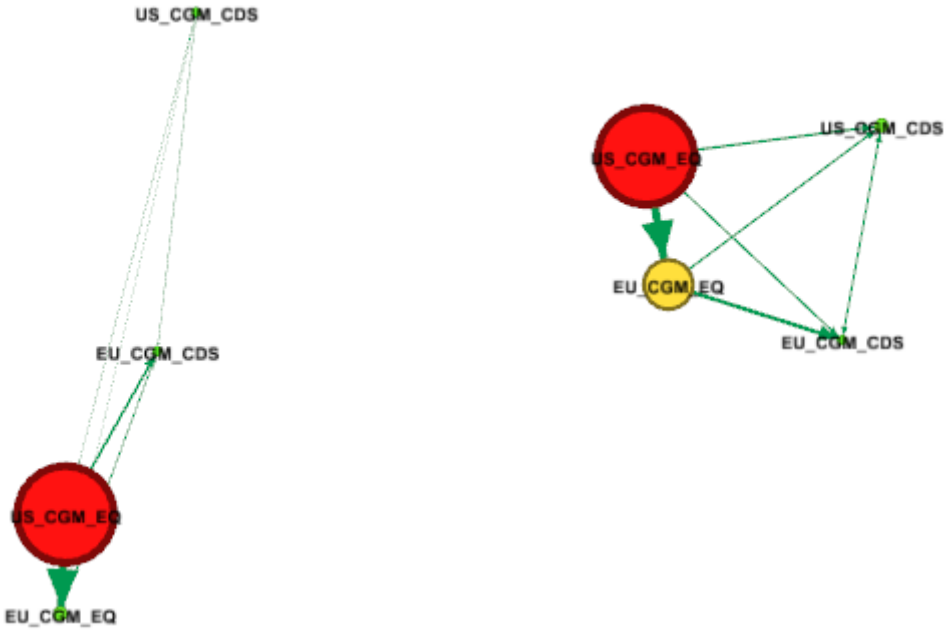


Figure 91: CDS Spreads and Equity Volatility Regional Connectedness for the Conglomerate Diversified Mfg Sector in the Crisis and After-Crisis Periods

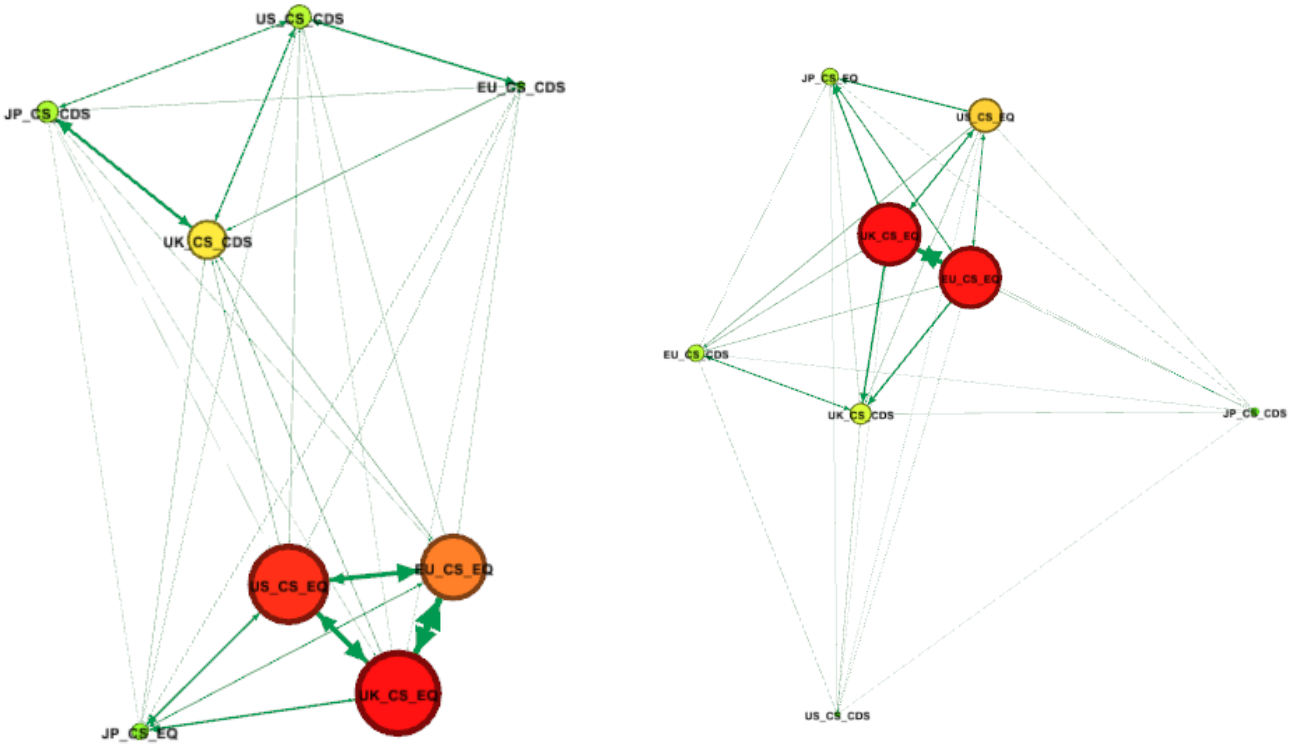


Figure 92: CDS Spreads and Equity Volatility Regional Connectedness for the Consumer Services Sector in the Crisis and After-Crisis Periods

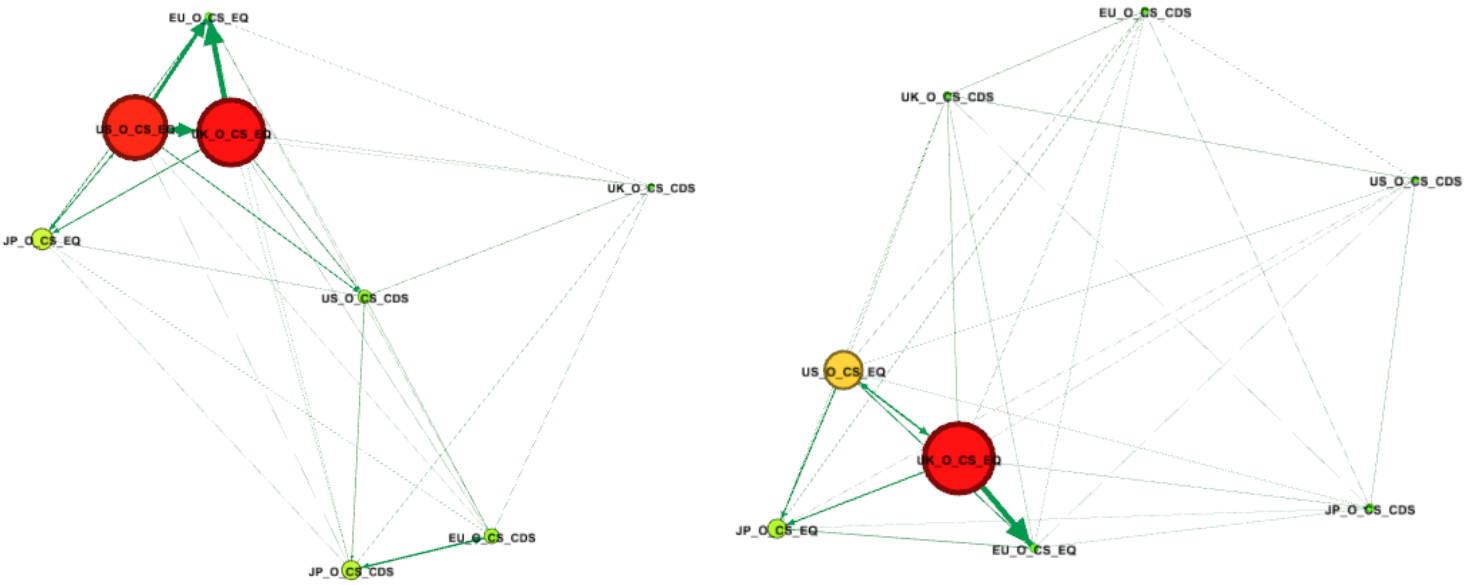


Figure 93: CDS Spreads and Equity Volatility Regional Connectedness for the Other Consumer Services Sector in the Crisis and After-Crisis Periods

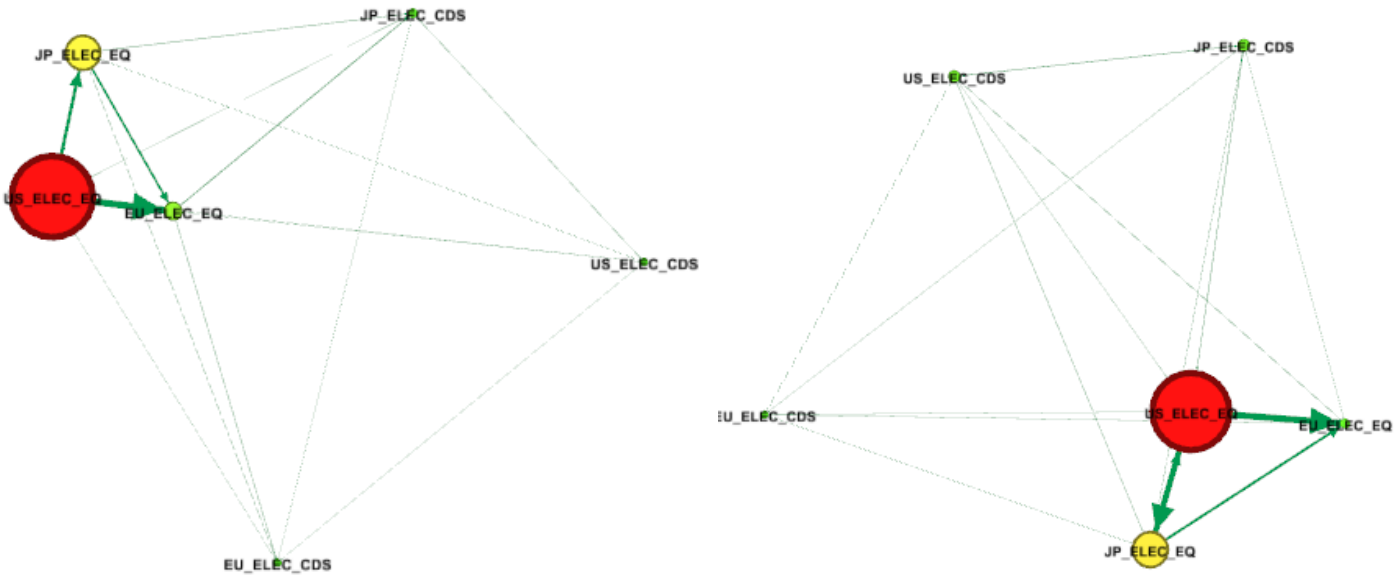


Figure 94: CDS Spreads and Equity Volatility Regional Connectedness for the Electricity Sector in the Crisis and After-Crisis Periods

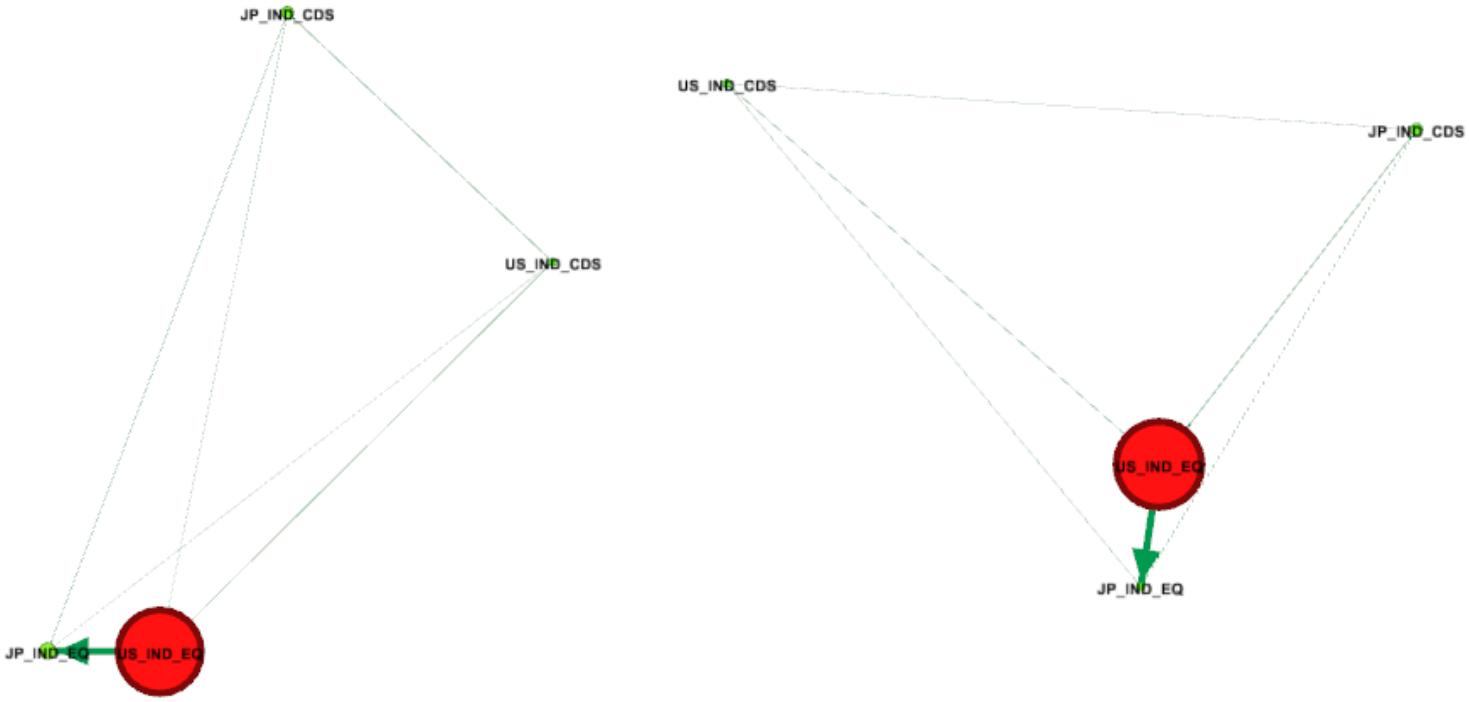


Figure 95: CDS Spreads and Equity Volatility Regional Connectedness for the Industrials Sector in the Crisis and After-Crisis Periods

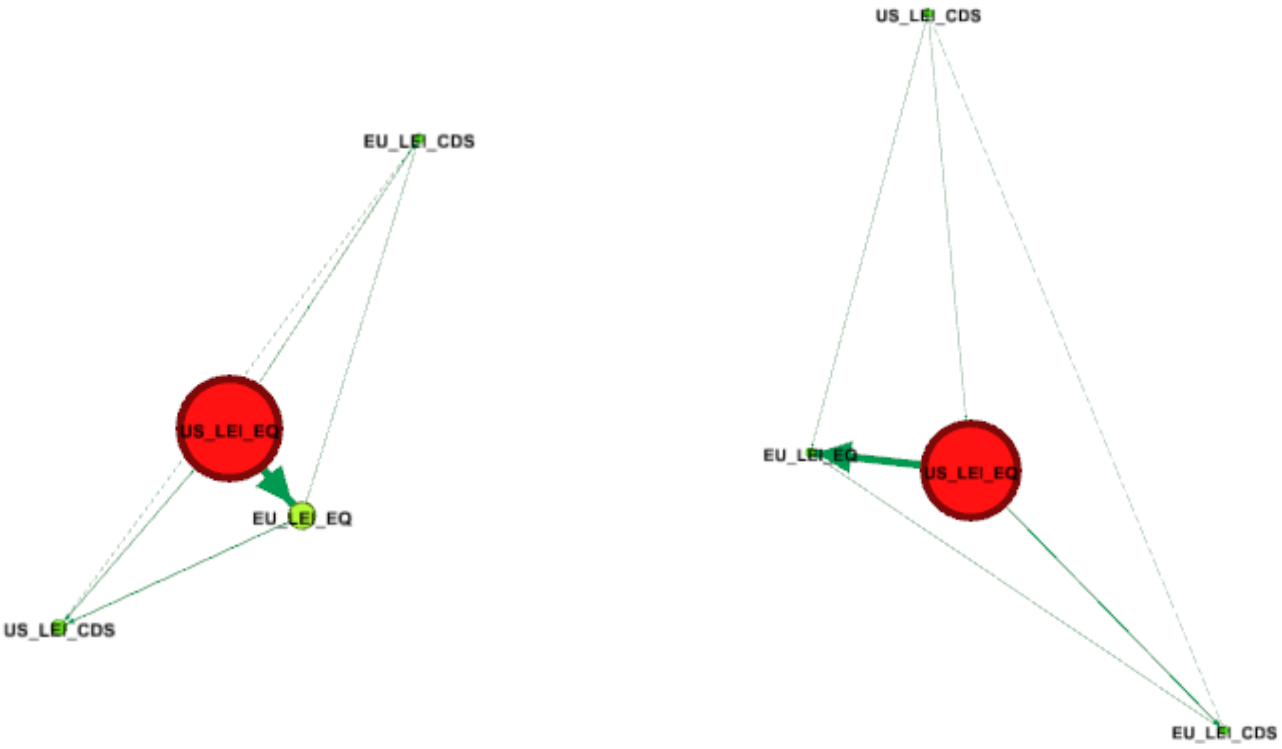


Figure 96: CDS Spreads and Equity Volatility Regional Connectedness for the Leisure Sector in the Crisis and After-Crisis Periods

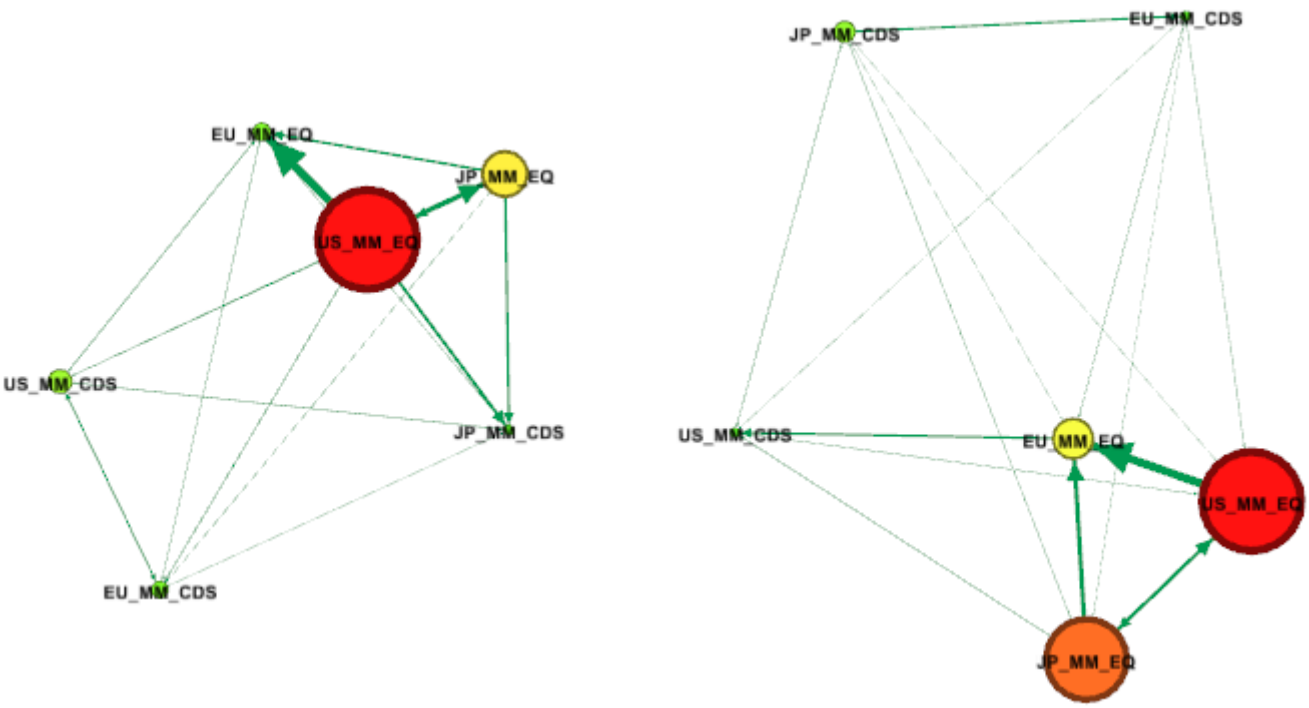


Figure 97: CDS Spreads and Equity Volatility Regional Connectedness for the Metals & Mining Sector in the Crisis and After-Crisis Periods

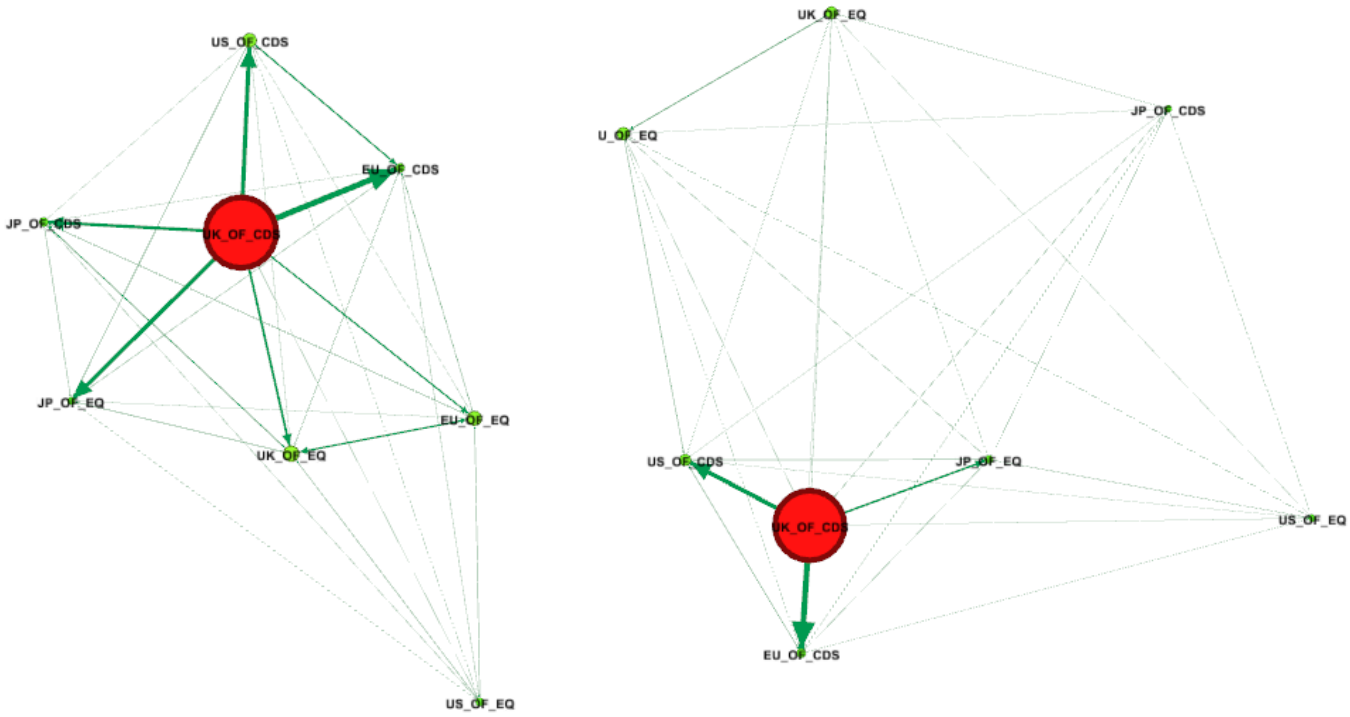


Figure 98: CDS Spreads and Equity Volatility Regional Connectedness for the Other Financials Sector in the Crisis and After-Crisis Periods

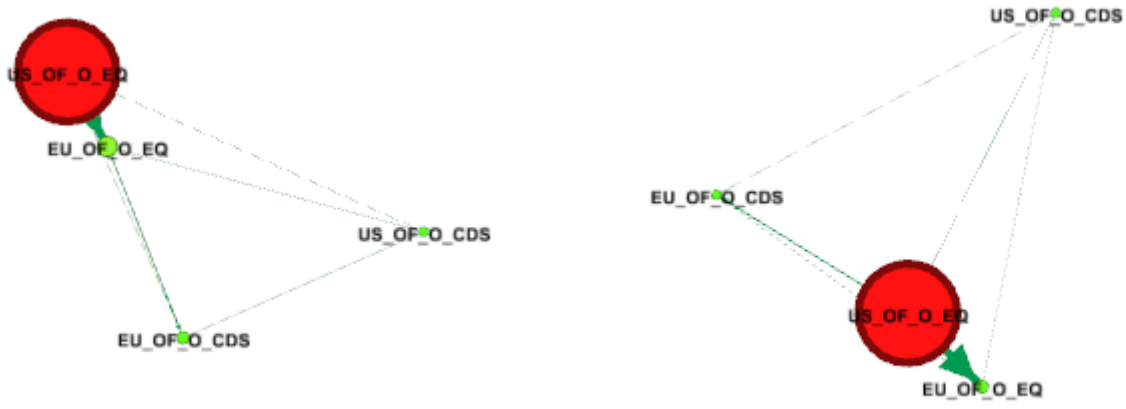


Figure 99: CDS Spreads and Equity Volatility Regional Connectedness for the Other Financials II Sector in the Crisis and After-Crisis Periods

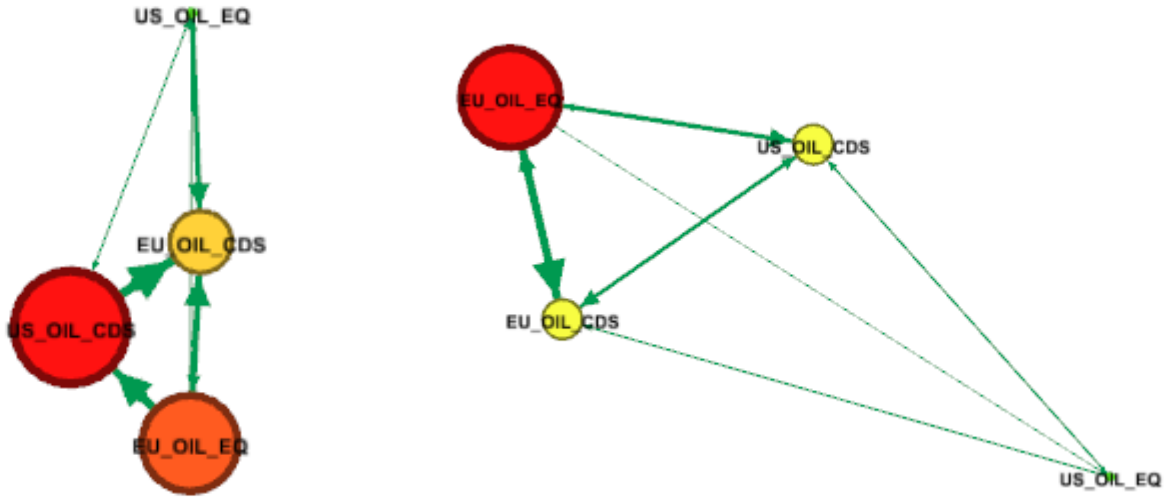


Figure 100: CDS Spreads and Equity Volatility Regional Connectedness for the Oil & Gas Sector in the Crisis and After-Crisis Periods

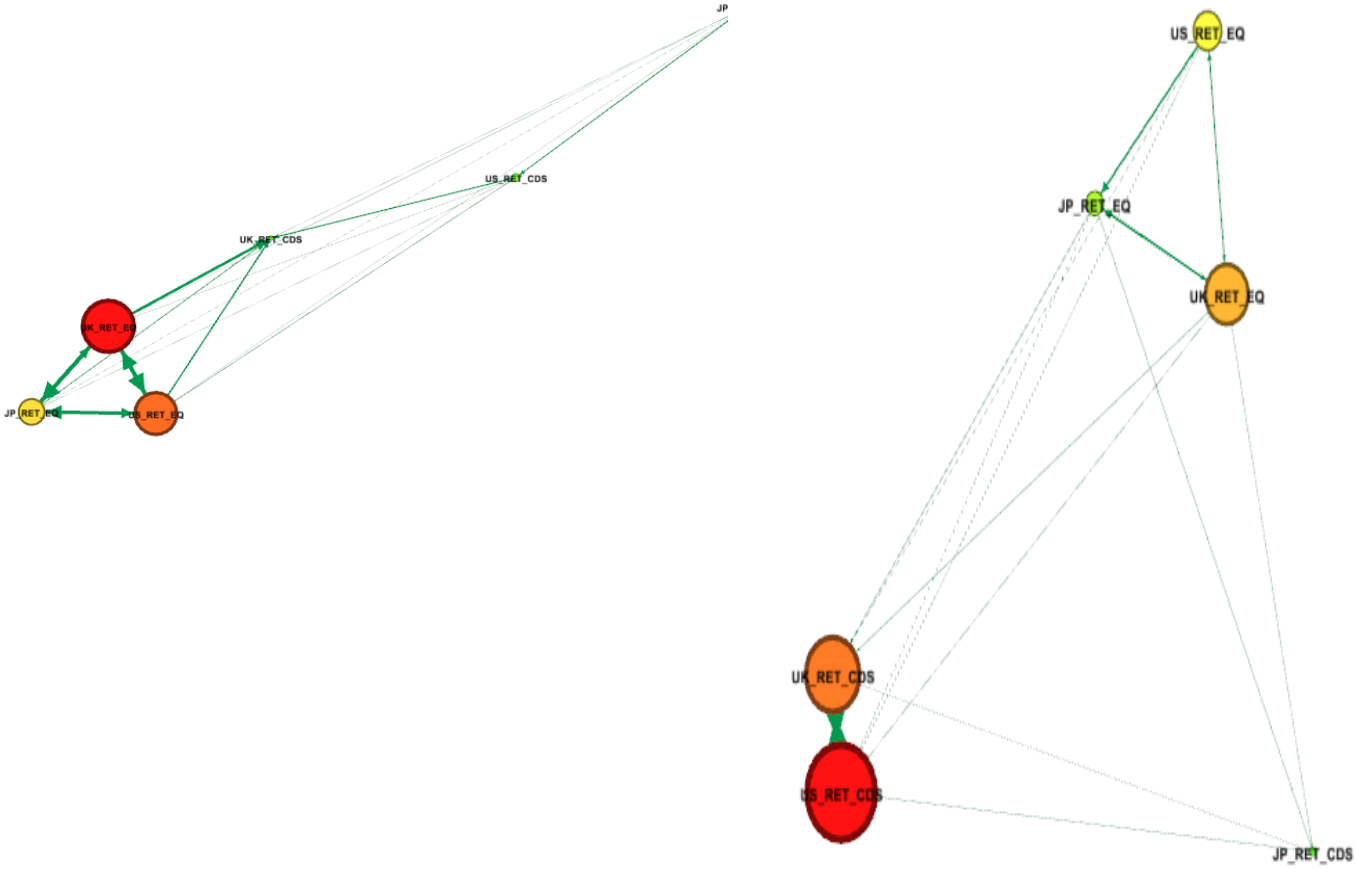


Figure 101: CDS Spreads and Equity Volatility Regional Connectedness for the Oil & Gas Sector in the Crisis and After-Crisis Periods

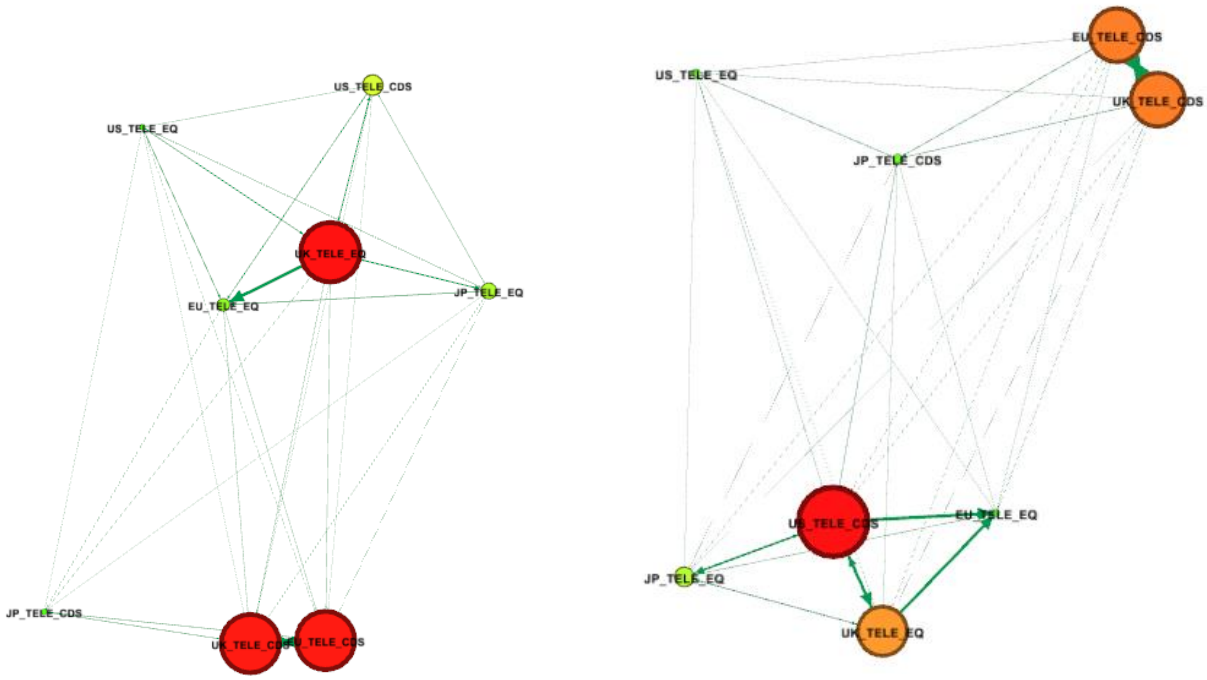


Figure 102: CDS Spreads and Equity Volatility Regional Connectedness for the Telecommunications Sector in the Crisis and After-Crisis Periods

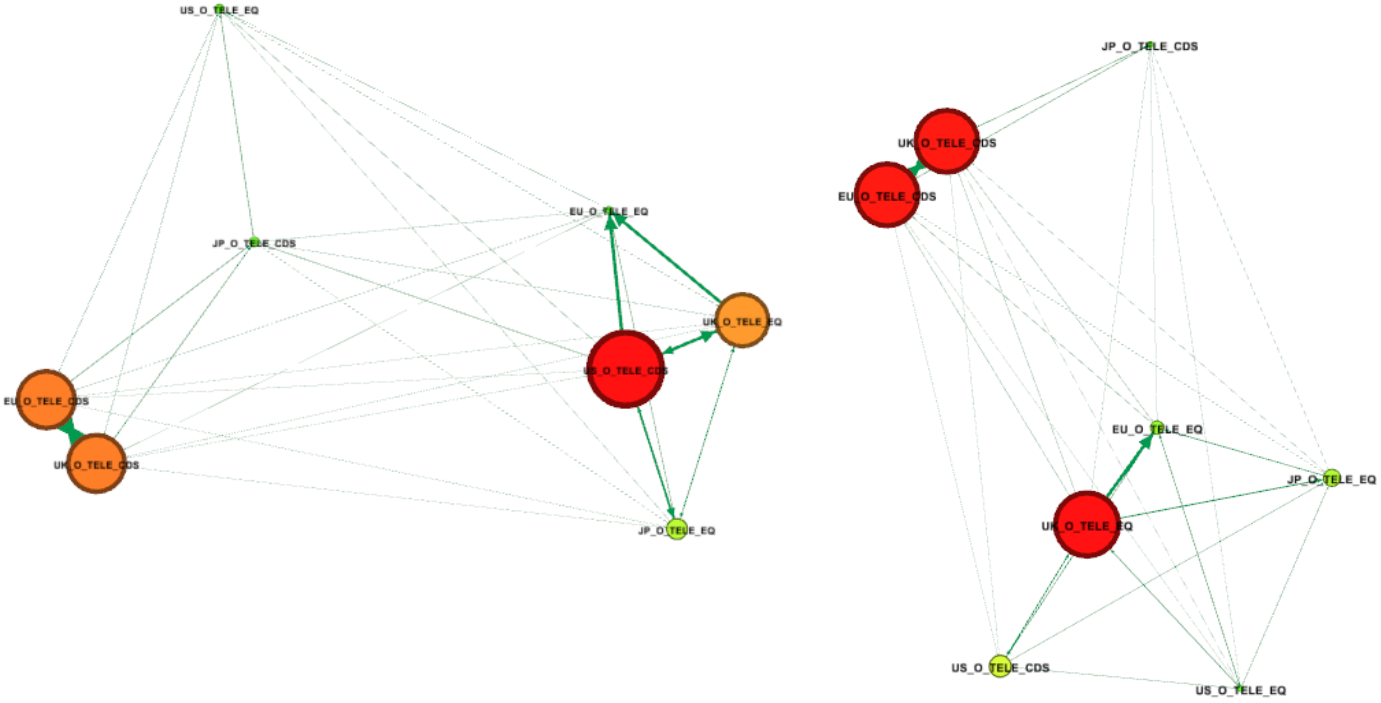


Figure 103: CDS Spreads and Equity Volatility Regional Connectedness for the Other Telecommunications Sector in the Crisis and After-Crisis Periods

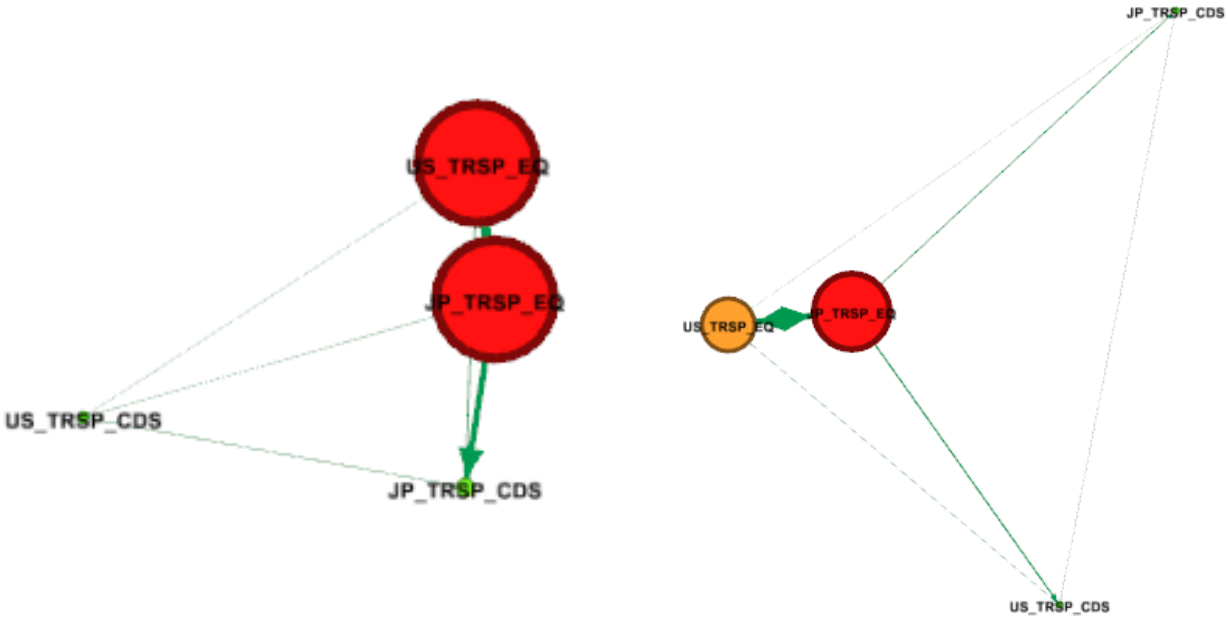


Figure 104: CDS Spreads and Equity Volatility Regional Connectedness for the Transportation Sector in the Crisis and After-Crisis Periods

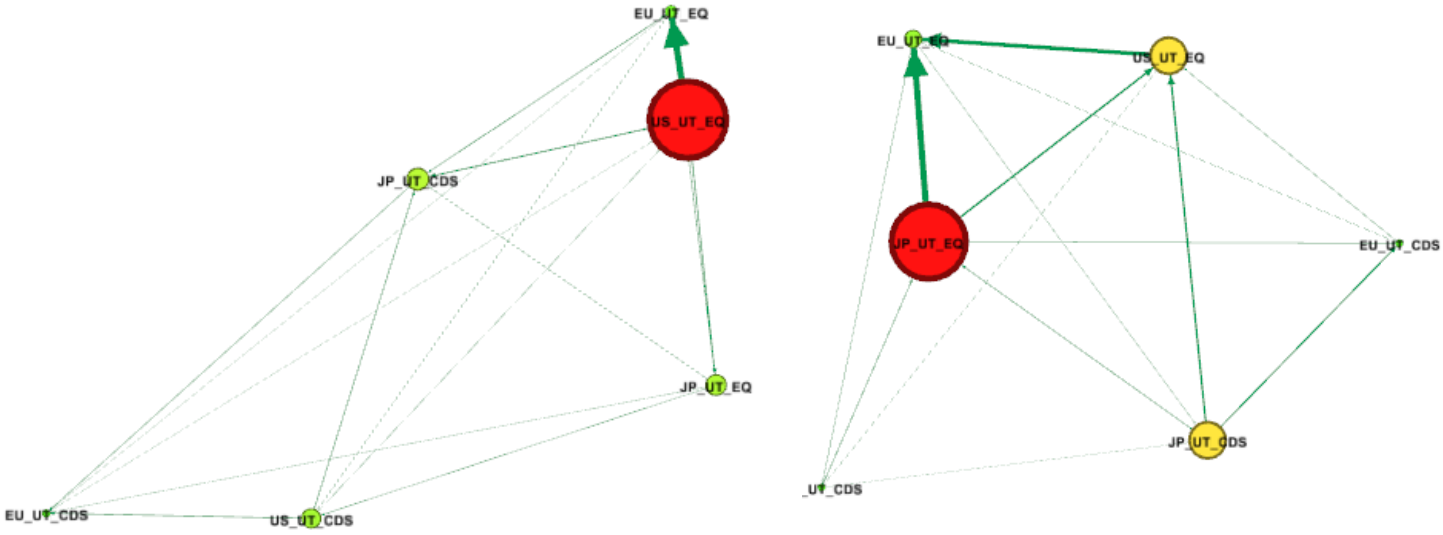


Figure 105: CDS Spreads and Equity Volatility Regional Connectedness for the Utility Sector in the Crisis and After-Crisis Periods

Appendix E

E.1 CDS Spreads Volatility Sectoral and Sub-Sectoral Connectedness: Within Regions Dynamic Analysis

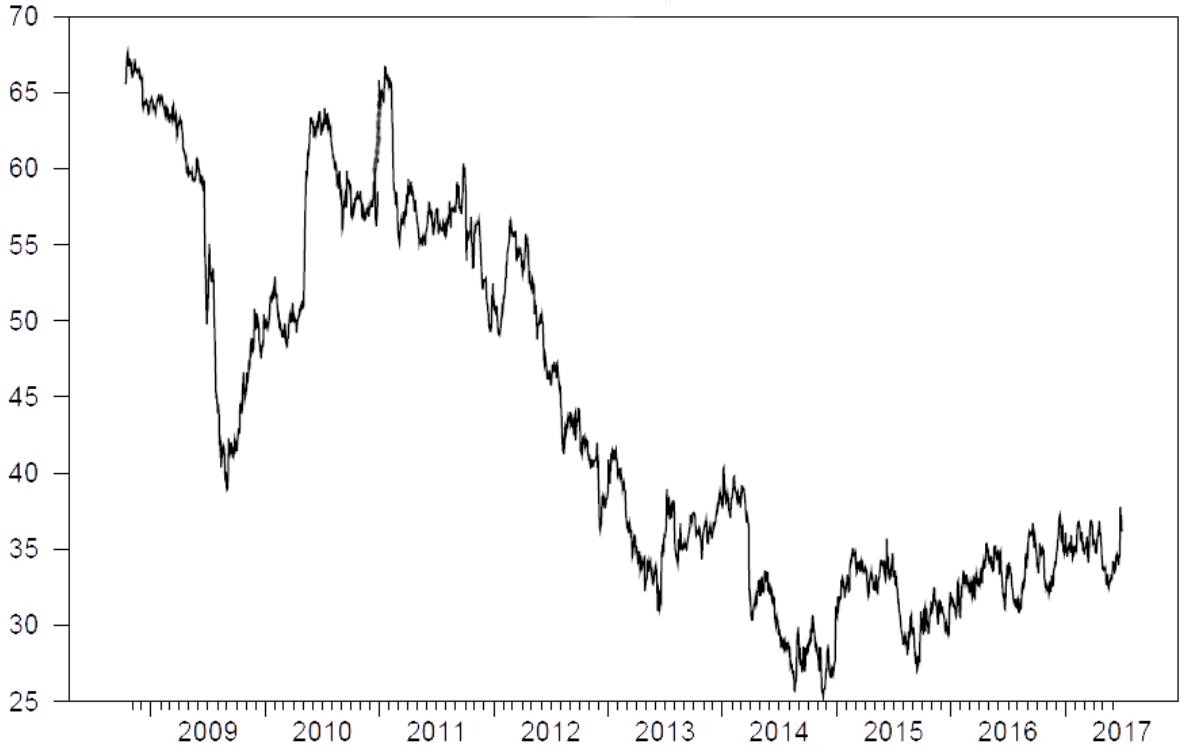


Figure 106: Total Sectoral CDS spreads Volatility Spillovers for the US Region

Figure 107: Total Sub-Sectoral CDS spreads Volatility Spillovers for the US region

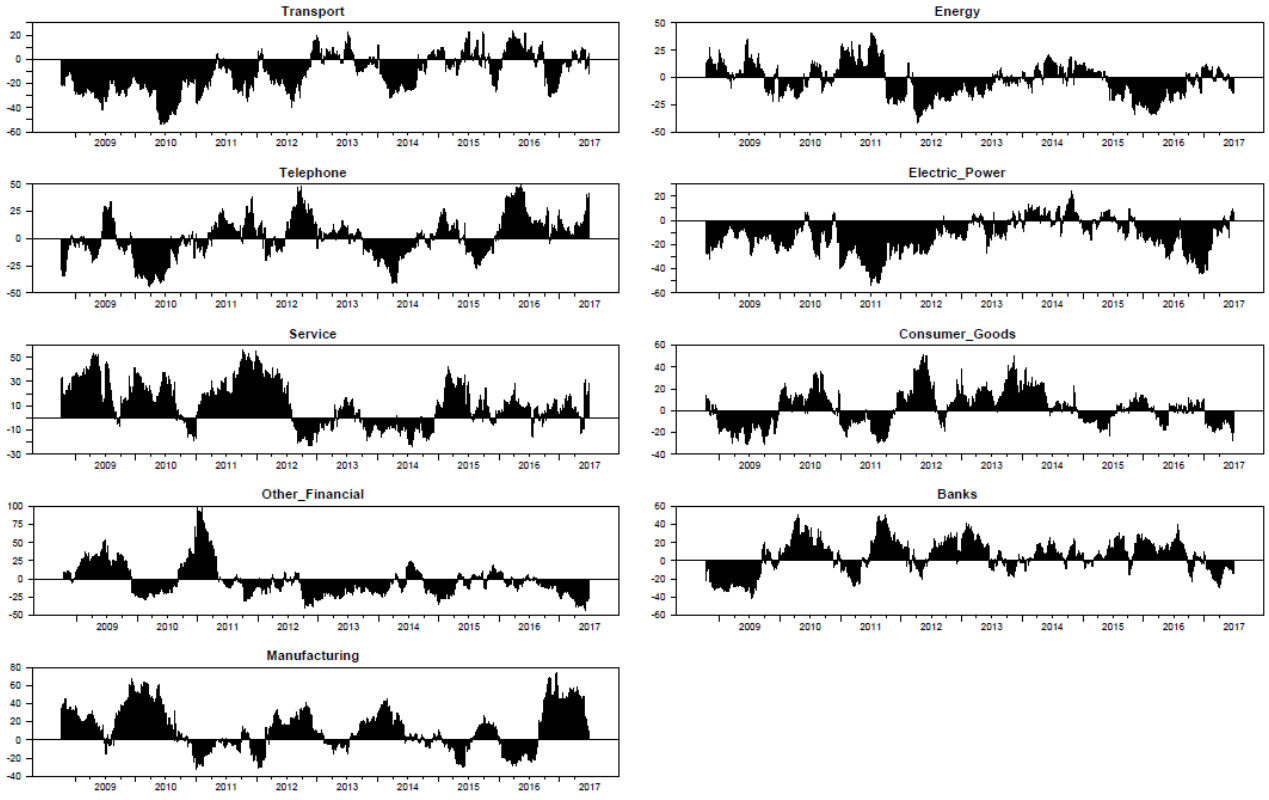


Figure 108: Net Sectoral CDS spreads Volatility Spillovers for the US region

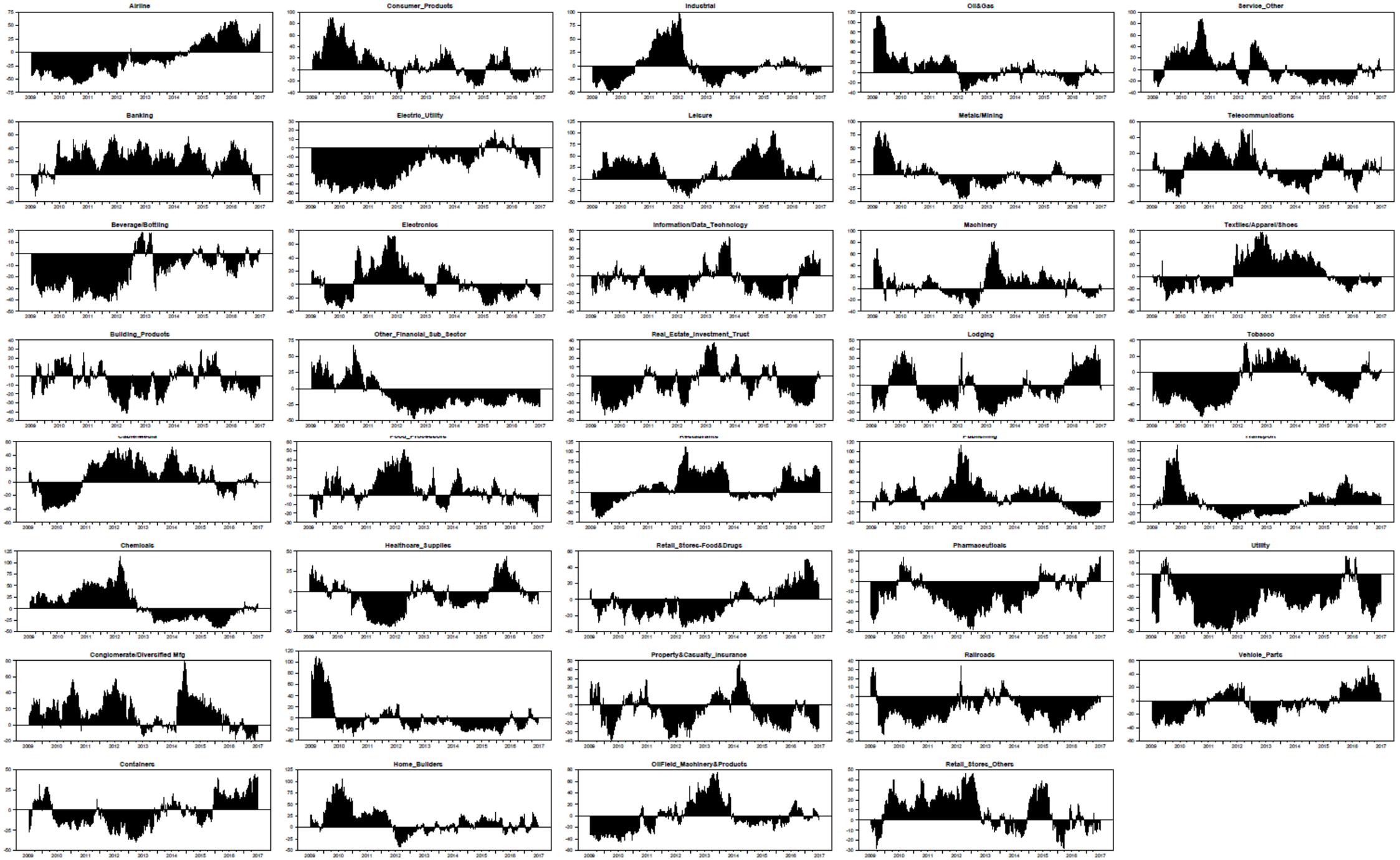


Figure 109: Net Sub-Sectoral CDS spreads Volatility Spillovers for the US region

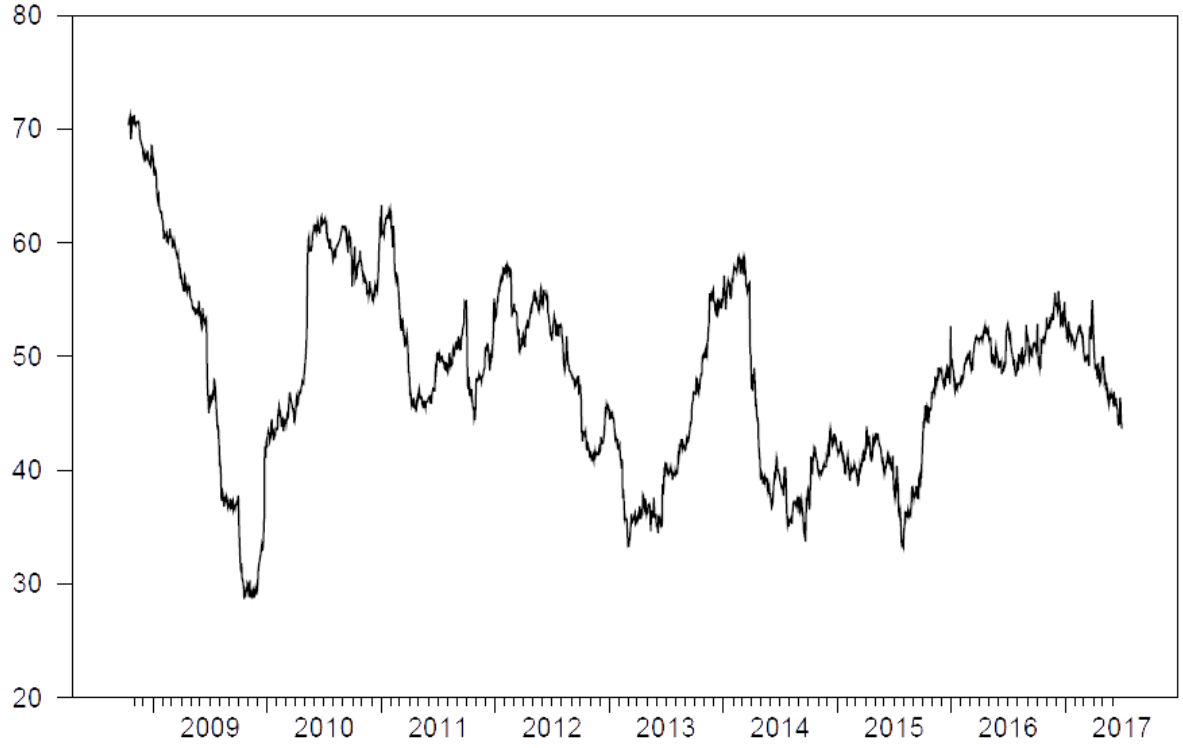


Figure 110: Total Sectoral CDS spreads Volatility Spillovers for the UK region

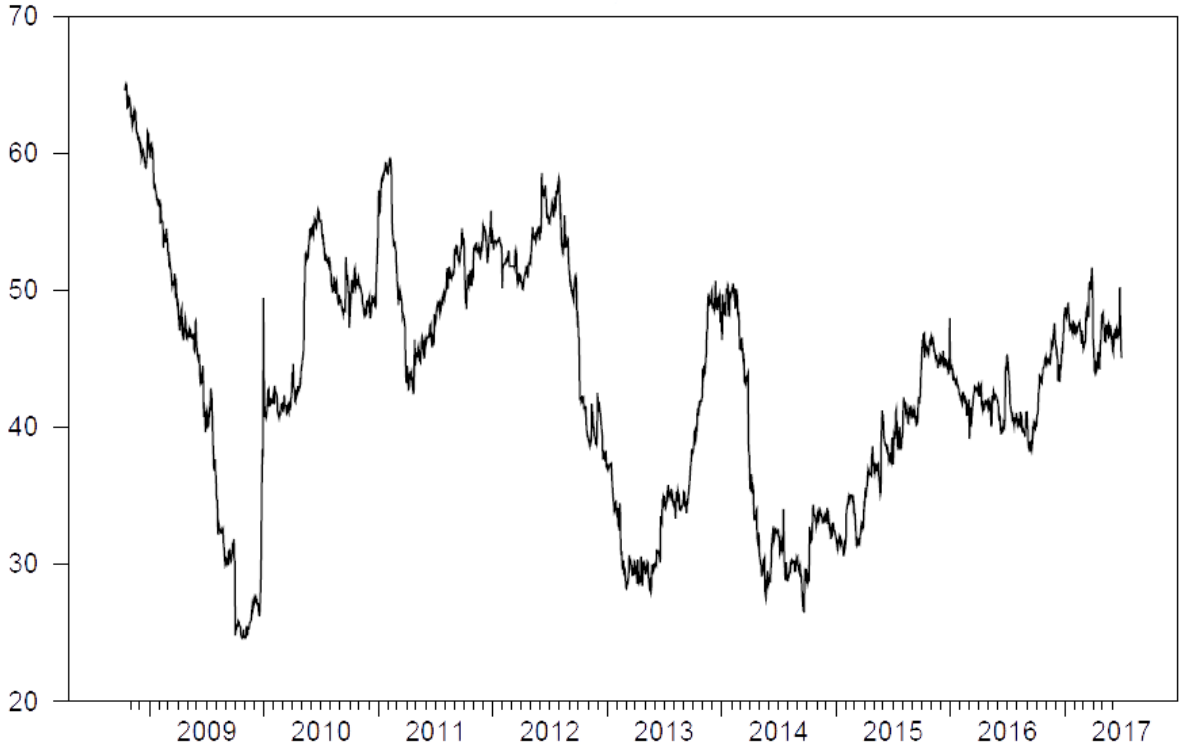


Figure 111: Total Sub-Sectoral CDS spreads Volatility Spillovers for the UK region

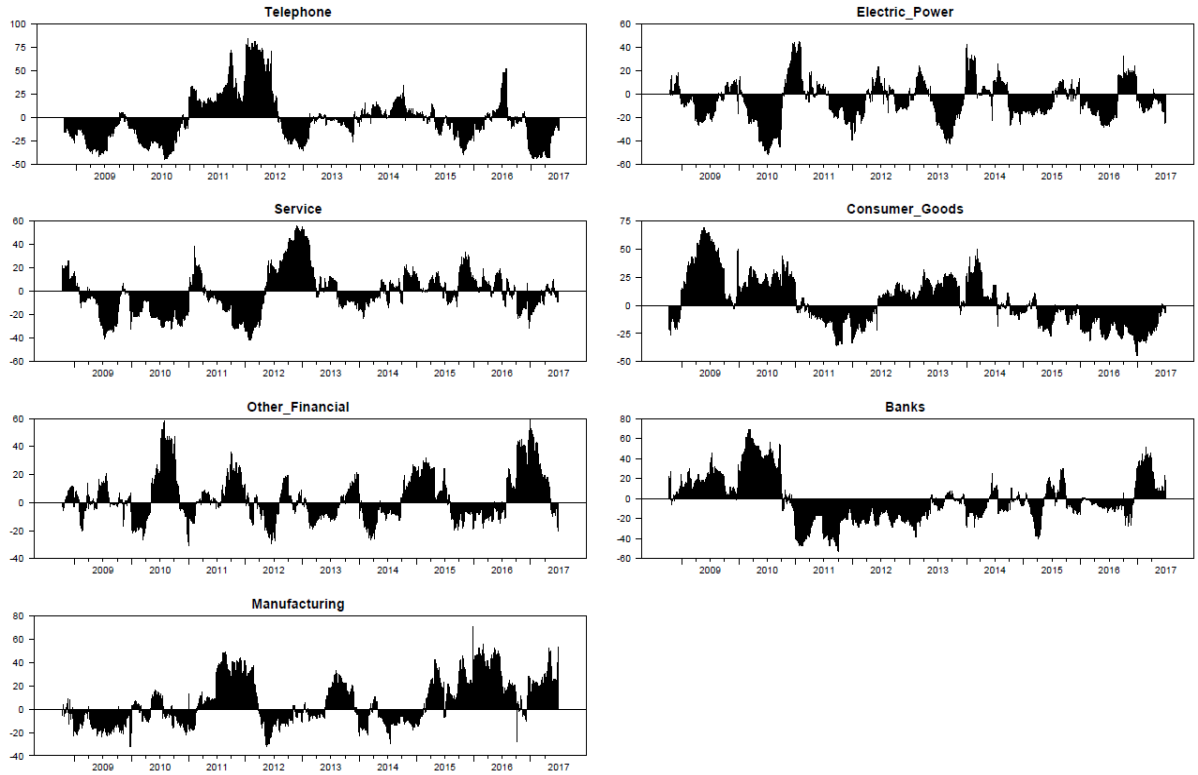


Figure 112: Net Sectoral CDS spreads Volatility Spillovers for the UK region

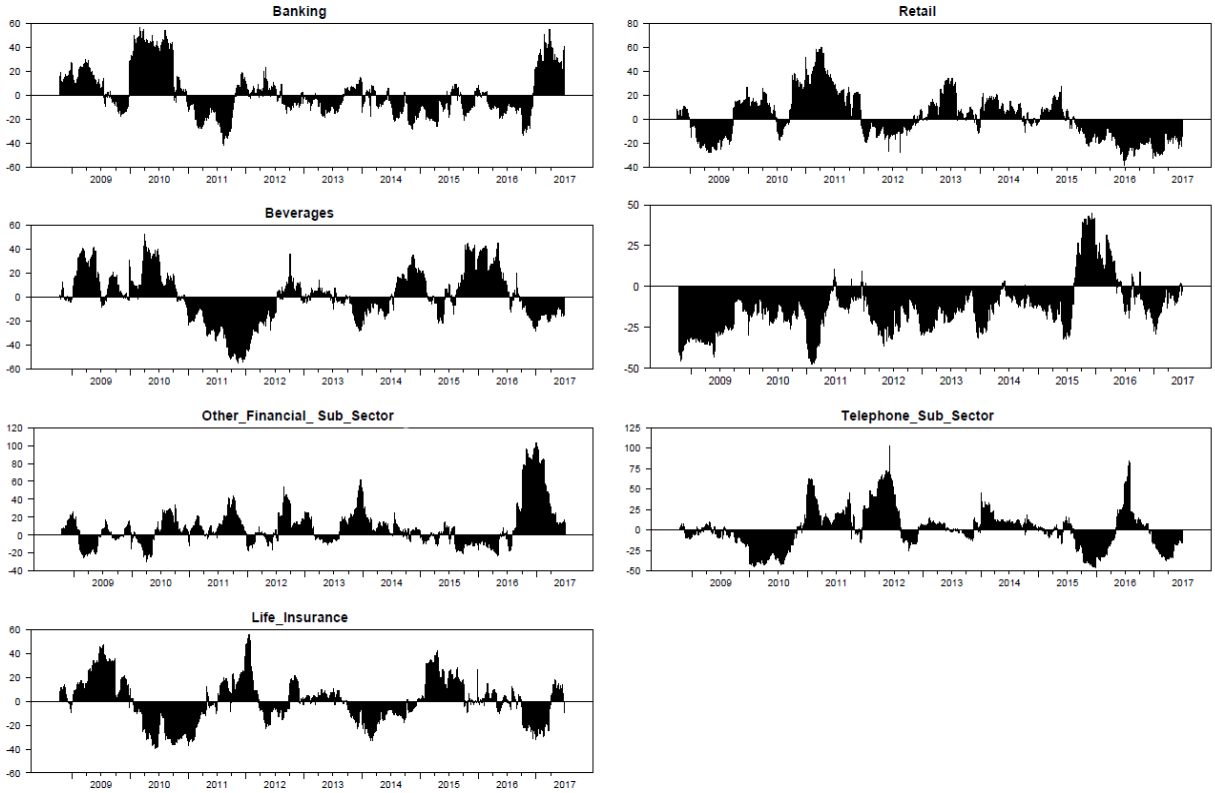


Figure 113: Net Sub-Sectoral CDS spreads Volatility Spillovers for the UK region

Figure 114: Total Sectoral CDS spreads Volatility Spillovers for the EU region

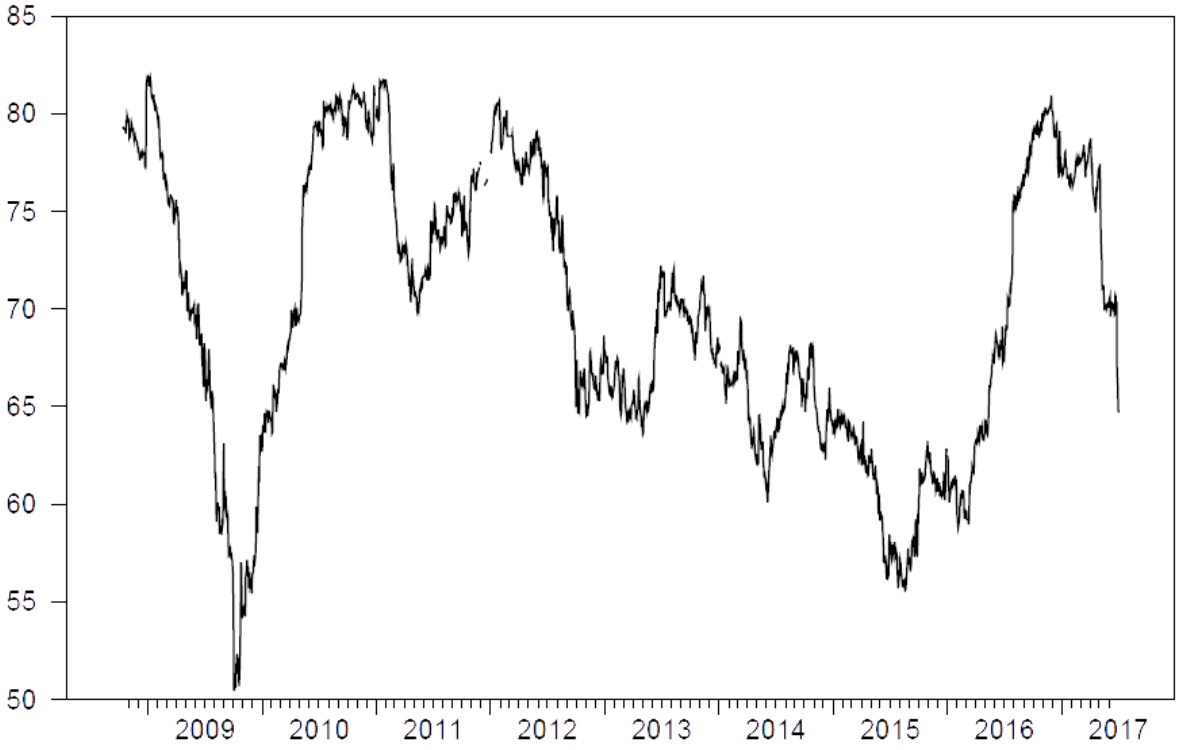


Figure 115: Total Sub-Sectoral CDS spreads Volatility Spillovers for the EU region

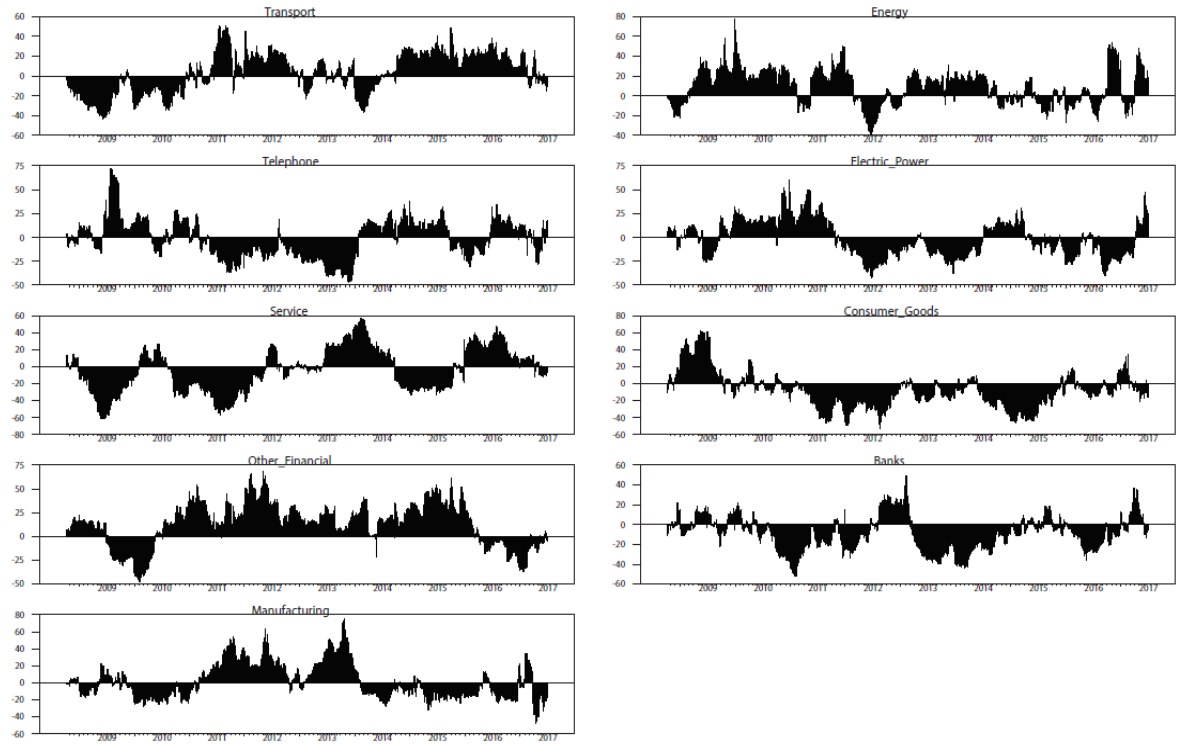


Figure 116: Net Sectoral CDS spreads Volatility Spillovers for the EU region

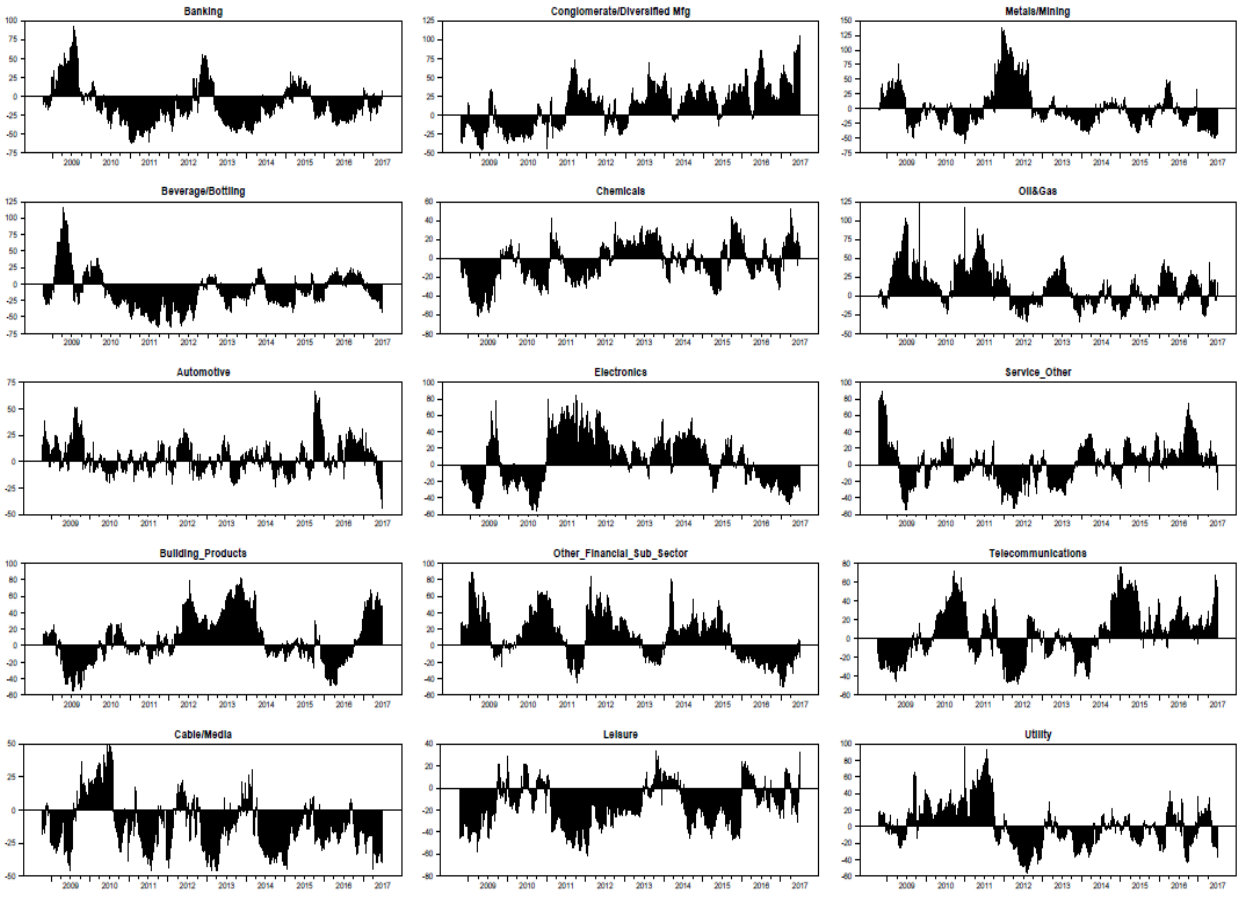


Figure 117: Net Sub-Sectoral CDS spreads Volatility Spillovers for the EU region

Figure 118: Total Sectoral CDS spreads Volatility Spillovers for the Japan region

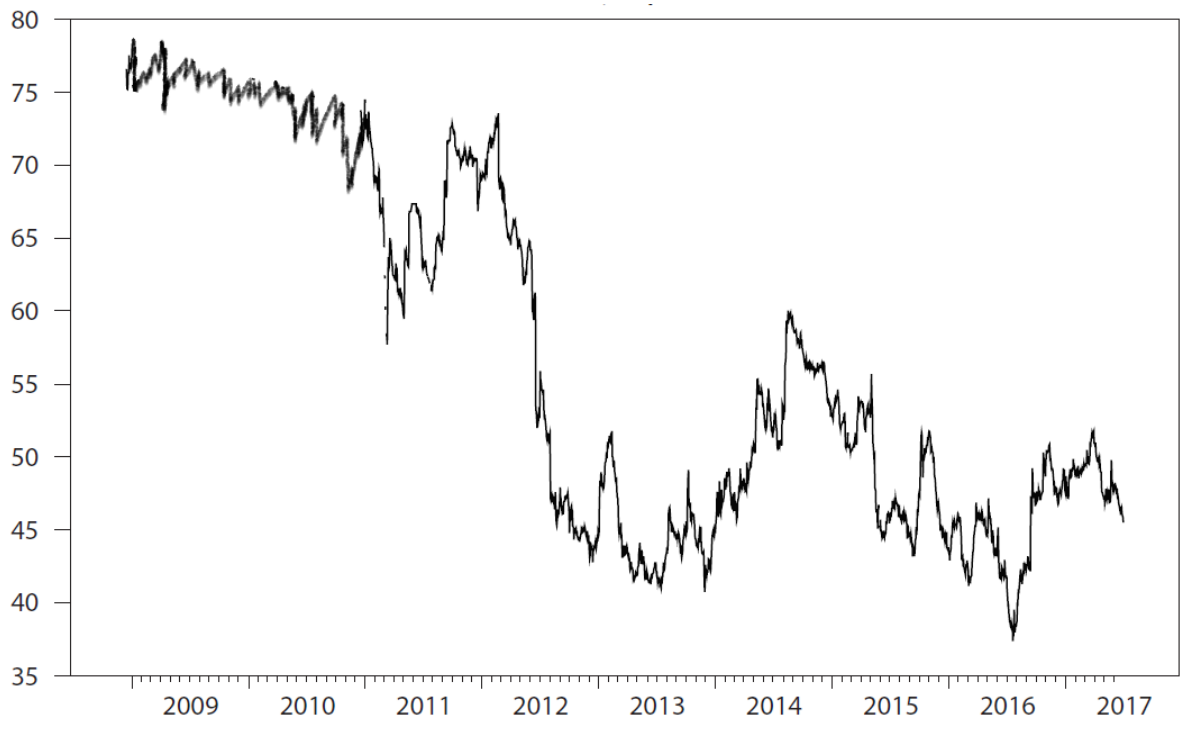


Figure 119: Total Sectoral CDS spreads Volatility Spillovers for the Japan region

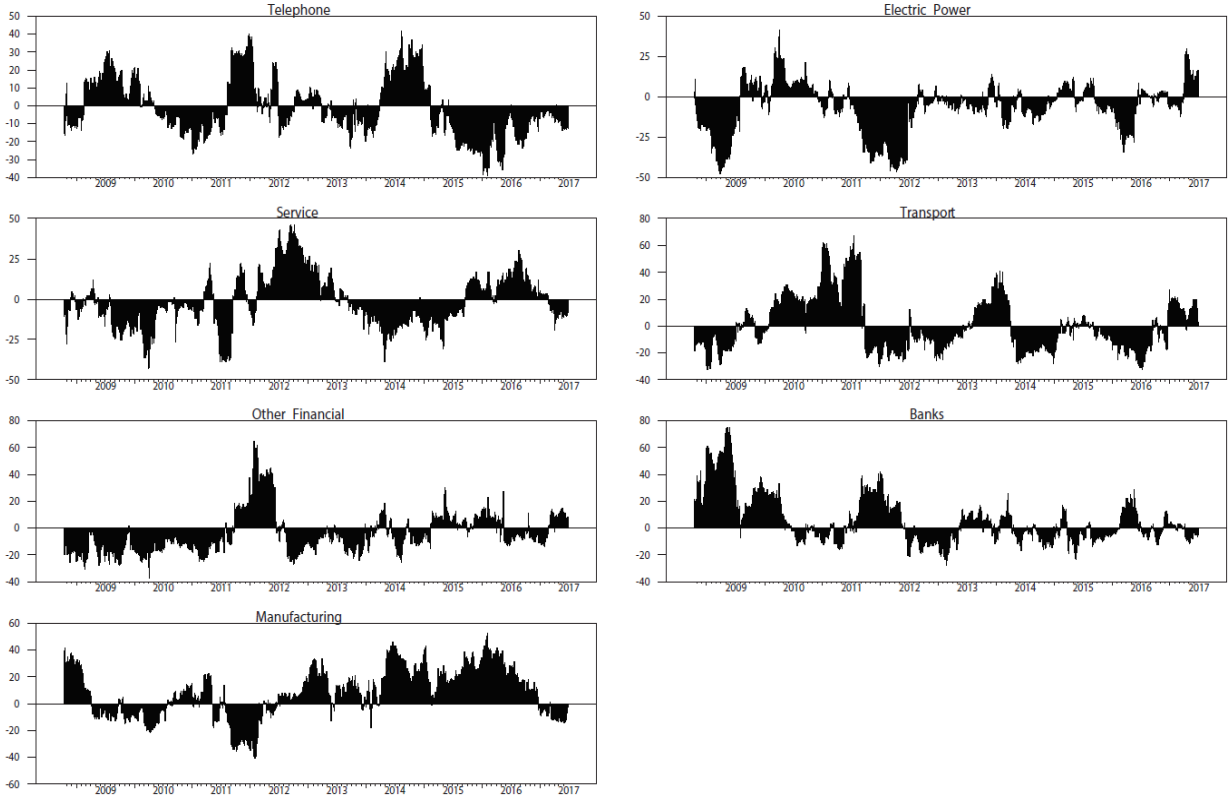


Figure 120: Net Sectoral Volatility CDS spreads Spillovers for the Japan region

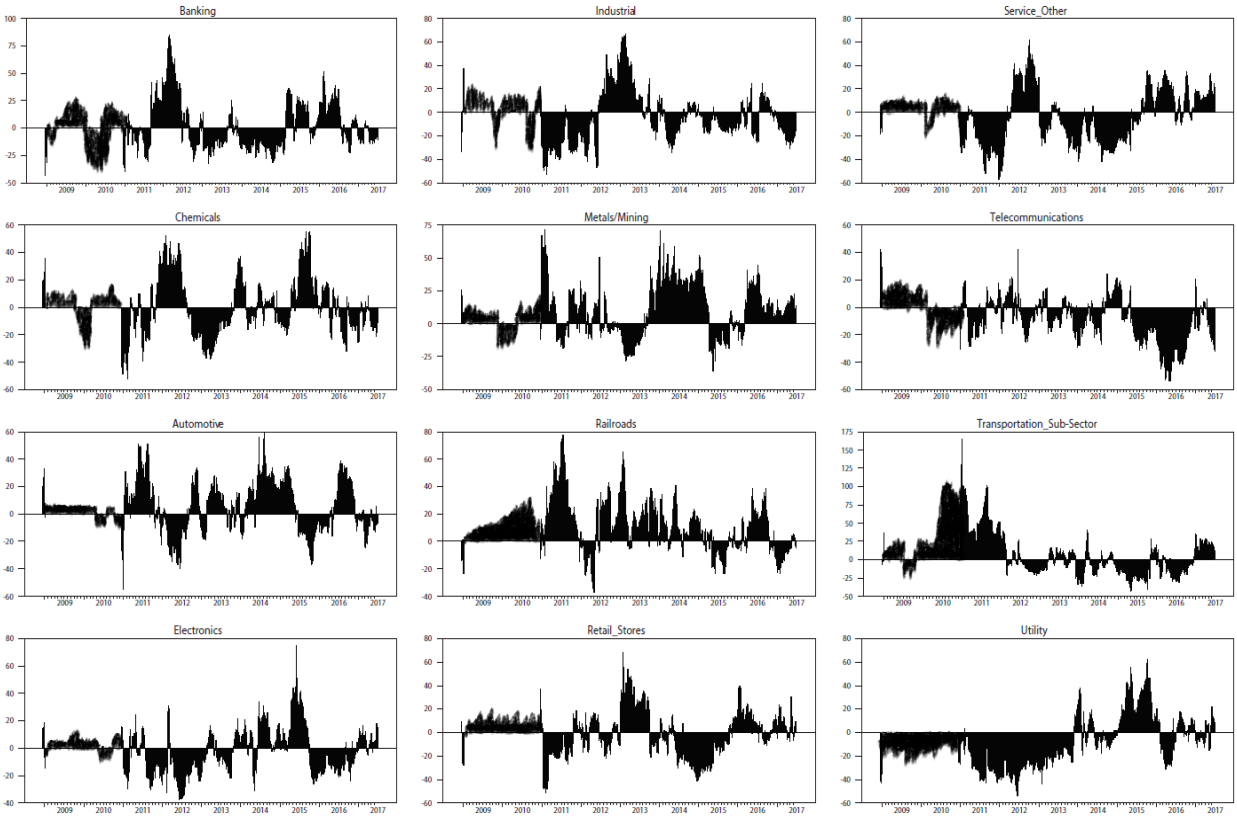


Figure 121: Net Sub-Sectoral CDS spreads Volatility Spillovers for the Japan region

E.2 CDS Spreads Volatility Sectoral and Sub-Sectoral Connectedness: Across Regions Dynamic Analysis

Figure 122: Total Regional CDS Spreads Volatility Spillovers for the Banking Sector

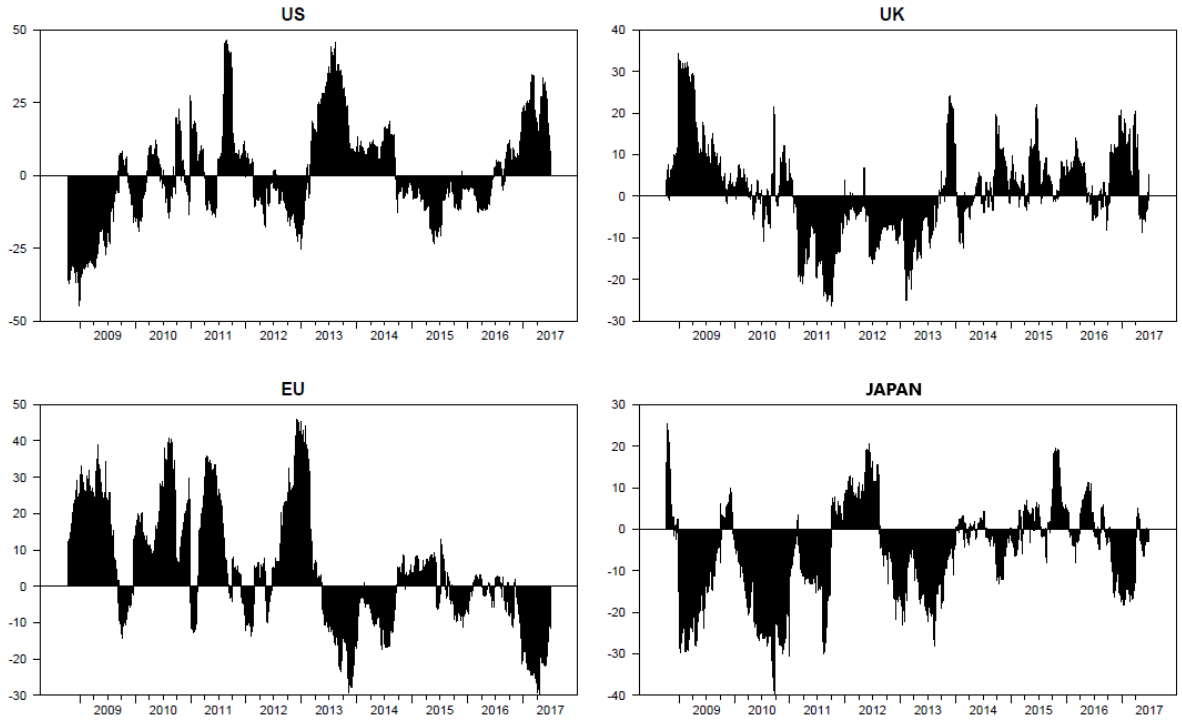


Figure 123: Net Regional CDS Spreads Volatility Spillovers for the Banking Sector

Figure 124: Total Regional CDS Spreads Volatility Spillovers for the Banks Sector

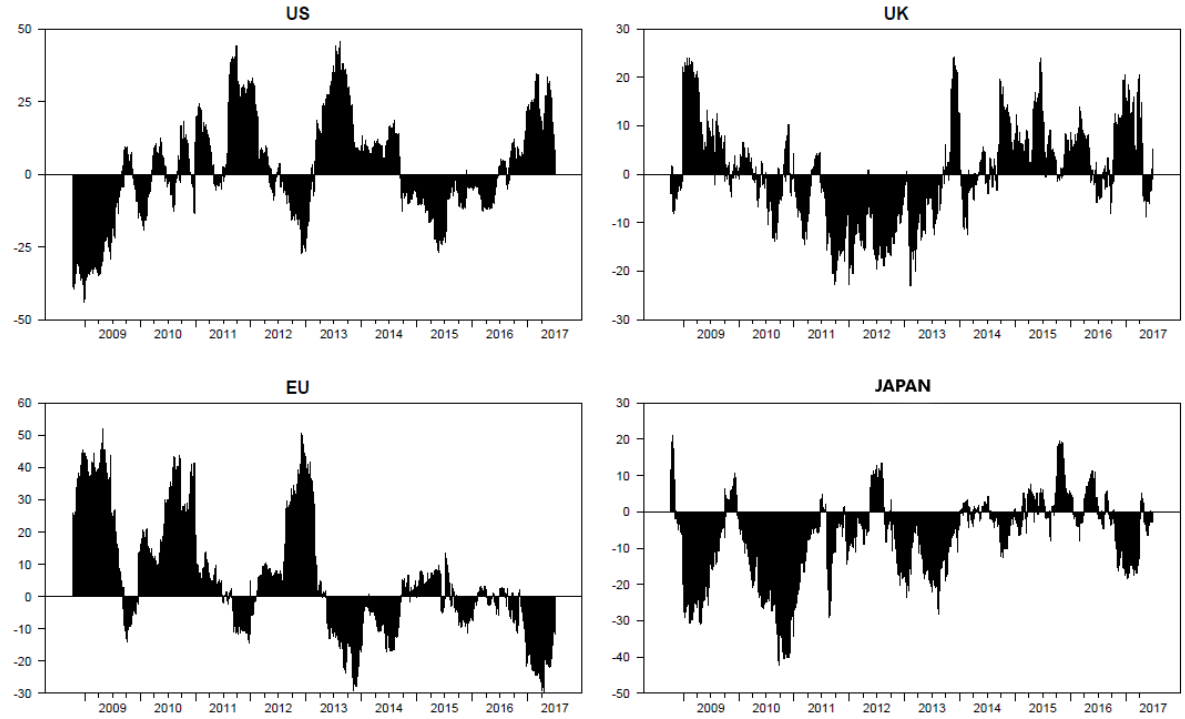


Figure 125: Net Regional CDS Spreads Volatility Spillovers for the Banks Sector

Figure 126: Total Regional CDS Spreads Volatility Spillovers for the Beverages/Bottling Sector

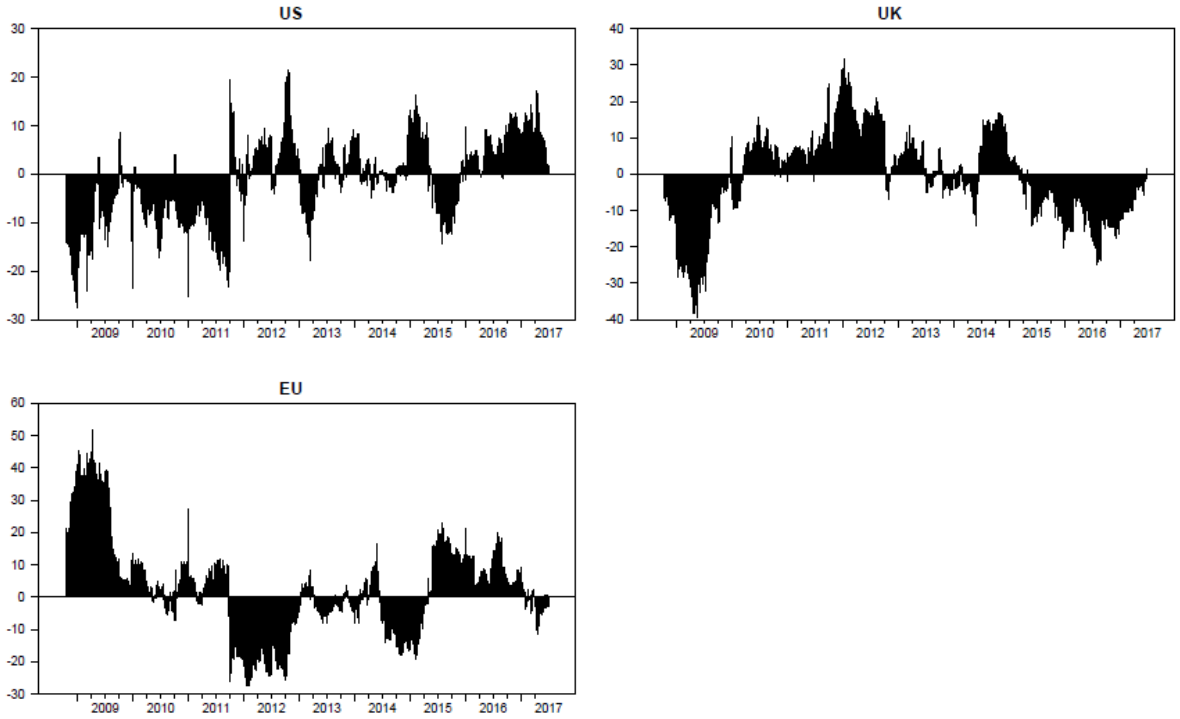


Figure 127: Net Regional CDS Spreads Volatility Spillovers for the Beverages/Bottling Sector

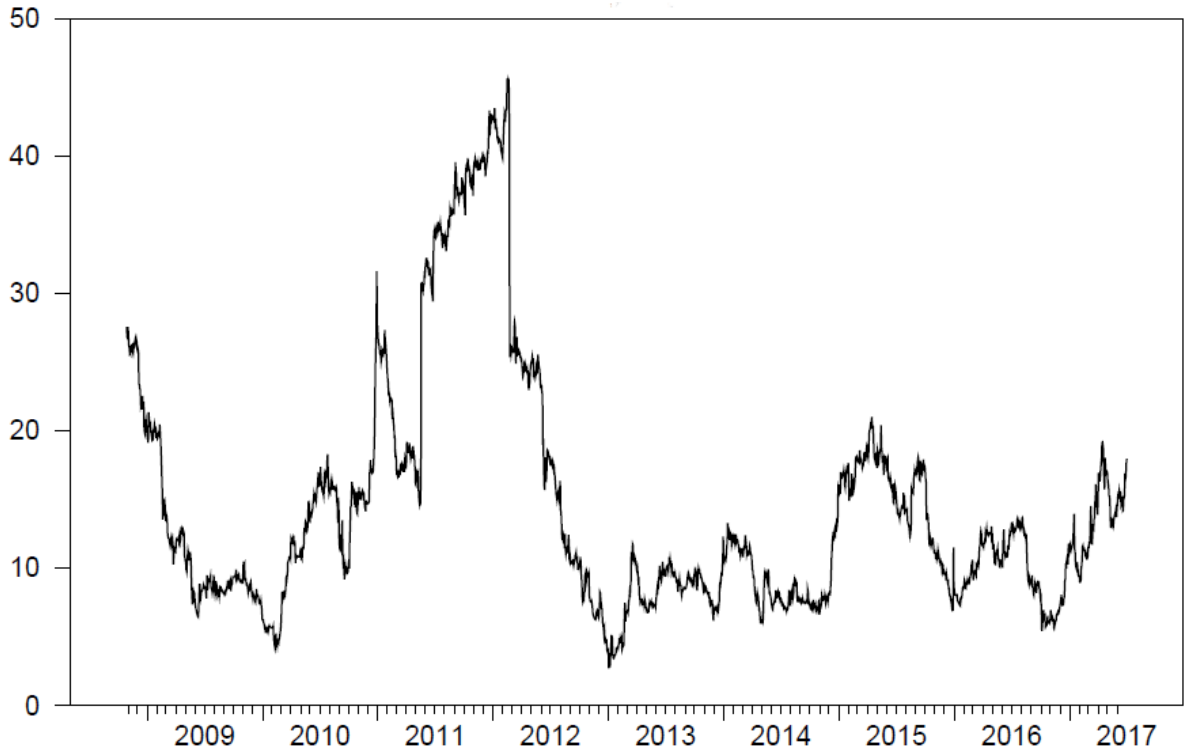


Figure 128: Total Regional CDS Spreads Volatility Spillovers for the Chemicals Sector

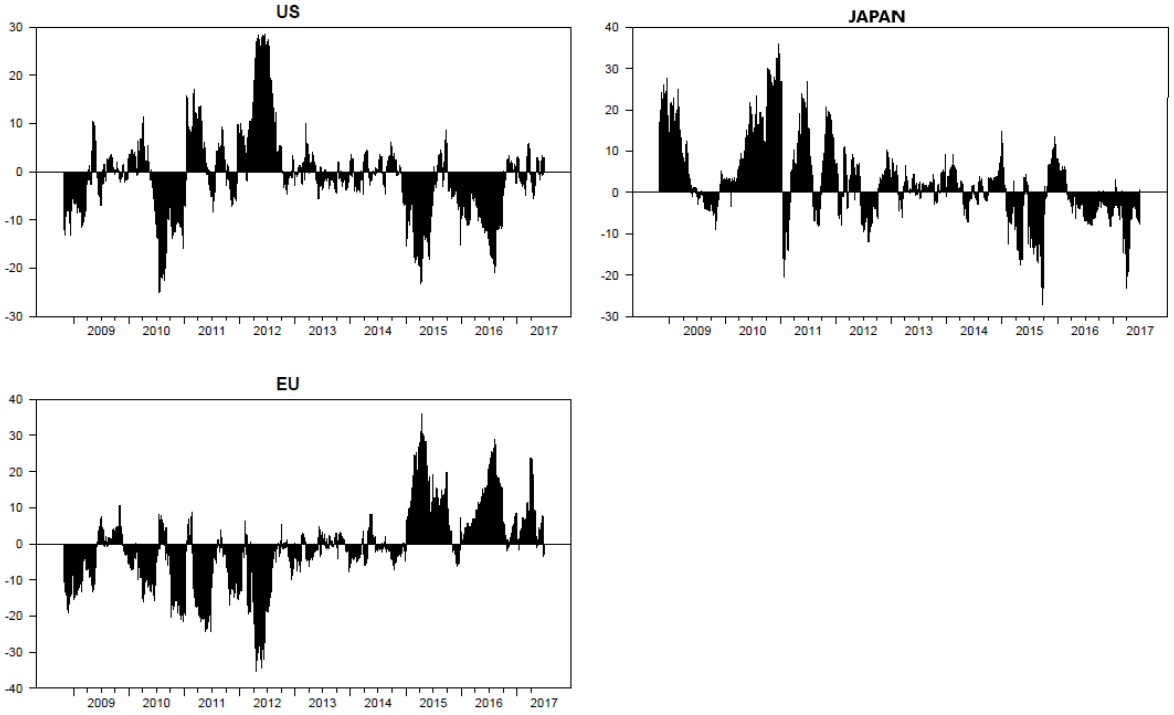


Figure 129: Net Regional CDS Spreads Volatility Spillovers for the Chemicals Sector

Figure 130: Total Regional CDS Spreads Volatility Spillovers for the Consumer Goods Sector

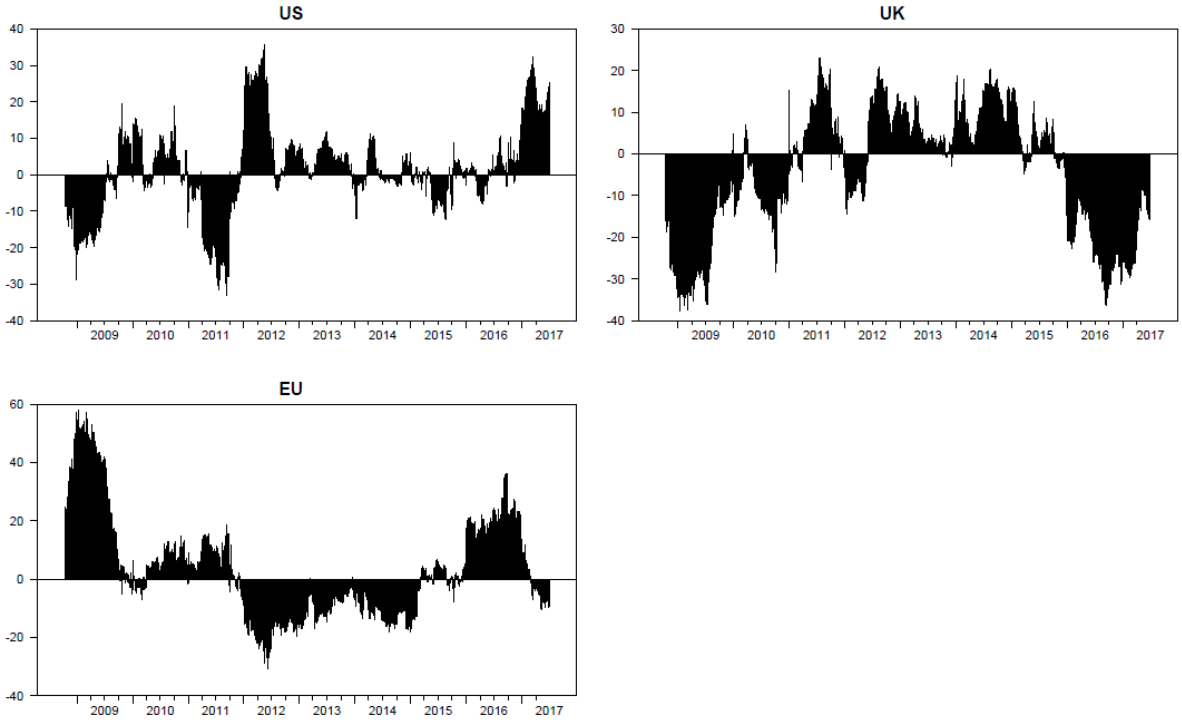


Figure 131: Net Regional CDS Spreads Volatility Spillovers for the Consumer Goods Sector

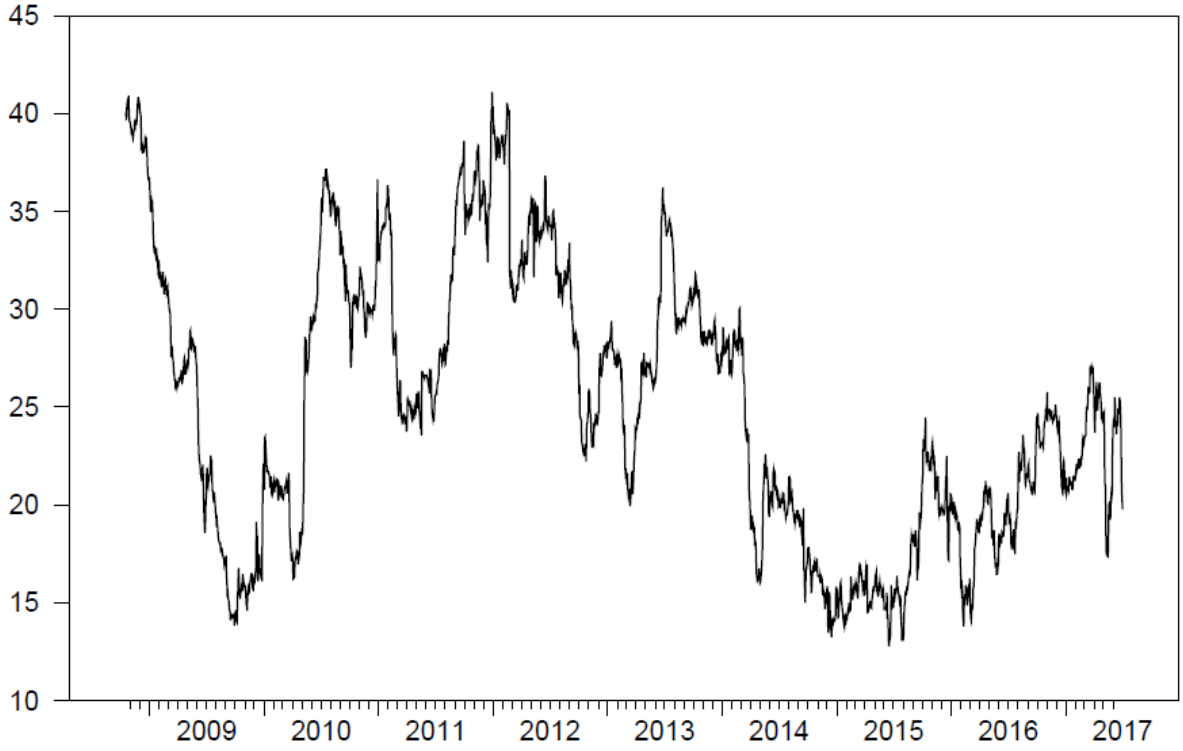


Figure 132: Total Regional CDS Spreads Volatility Spillovers for the Consumer Services Sector

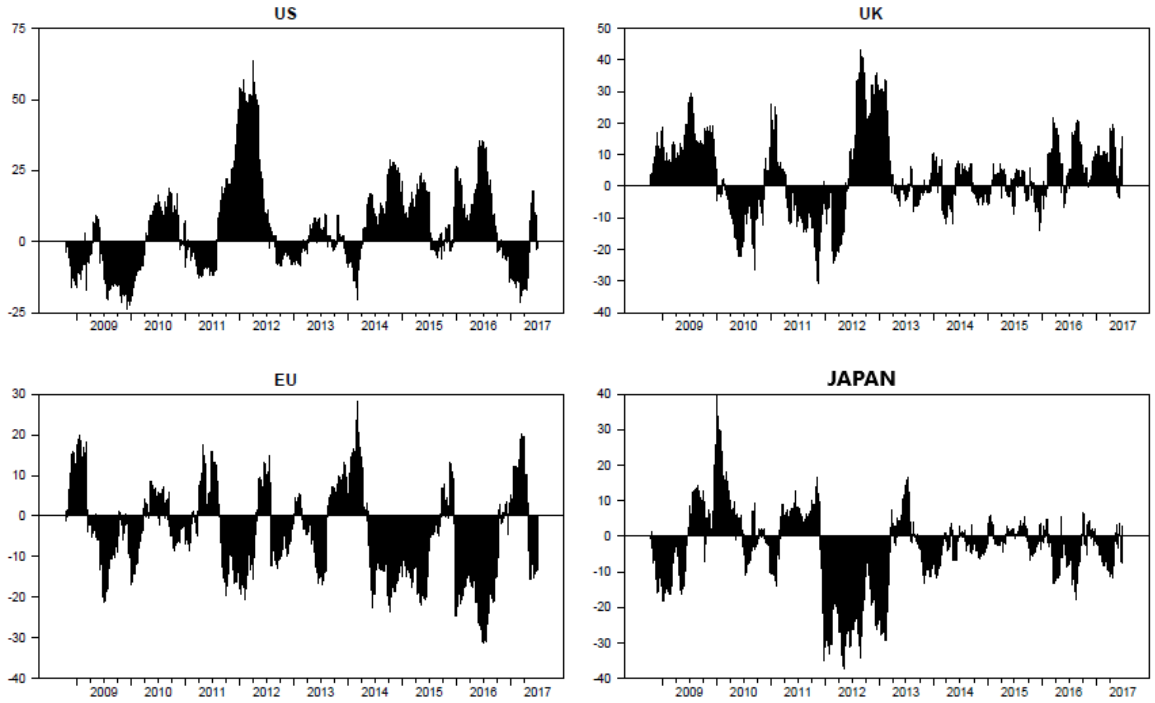


Figure 133: Net Regional CDS Spreads Volatility Spillovers for the Consumer Services Sector

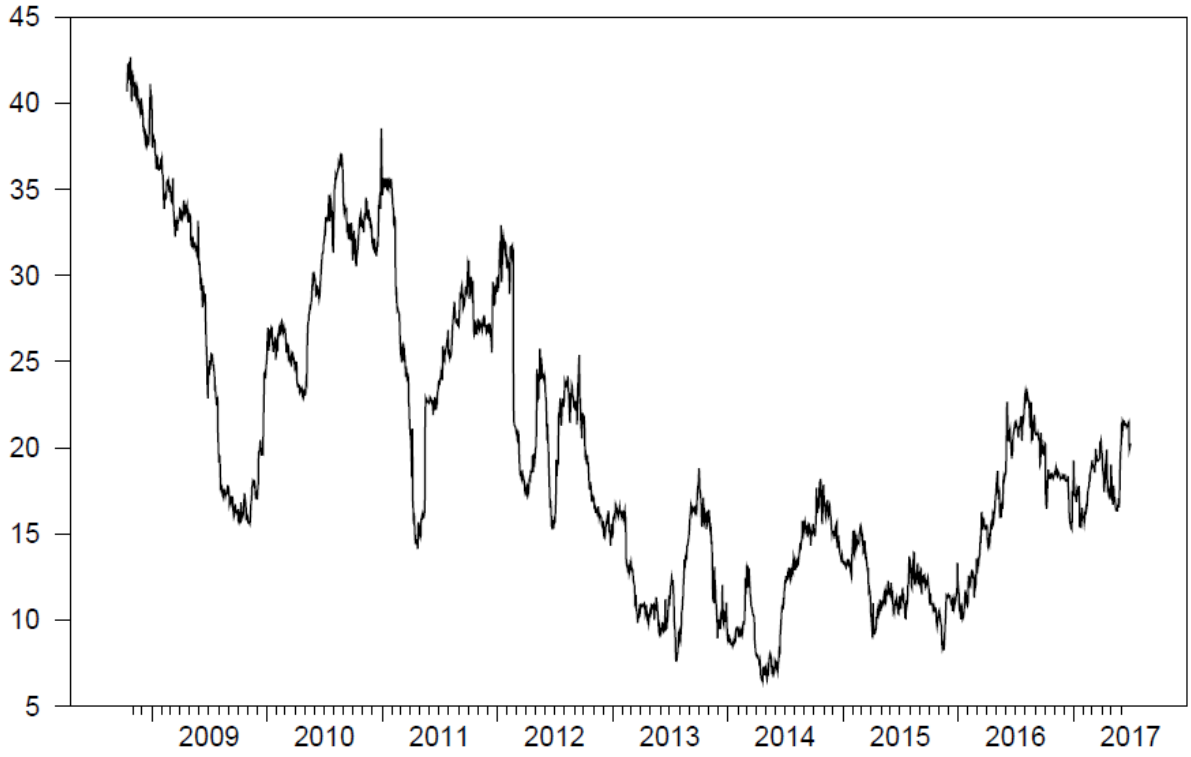


Figure 134: Total Regional CDS Spreads Volatility Spillovers for the Electric Power Sector

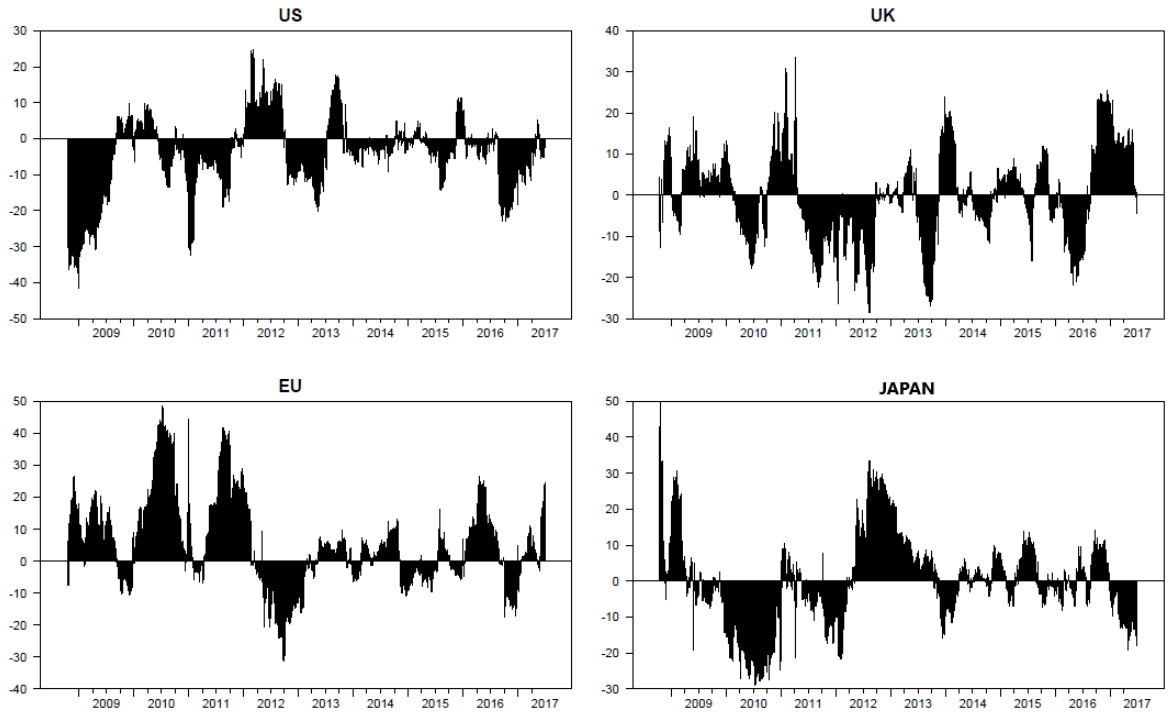


Figure 135: Net Regional CDS Spreads Volatility Spillovers for the Electric Power Sector

Figure 136: Total Regional CDS Spreads Volatility Spillovers for the Manufacturing Sector

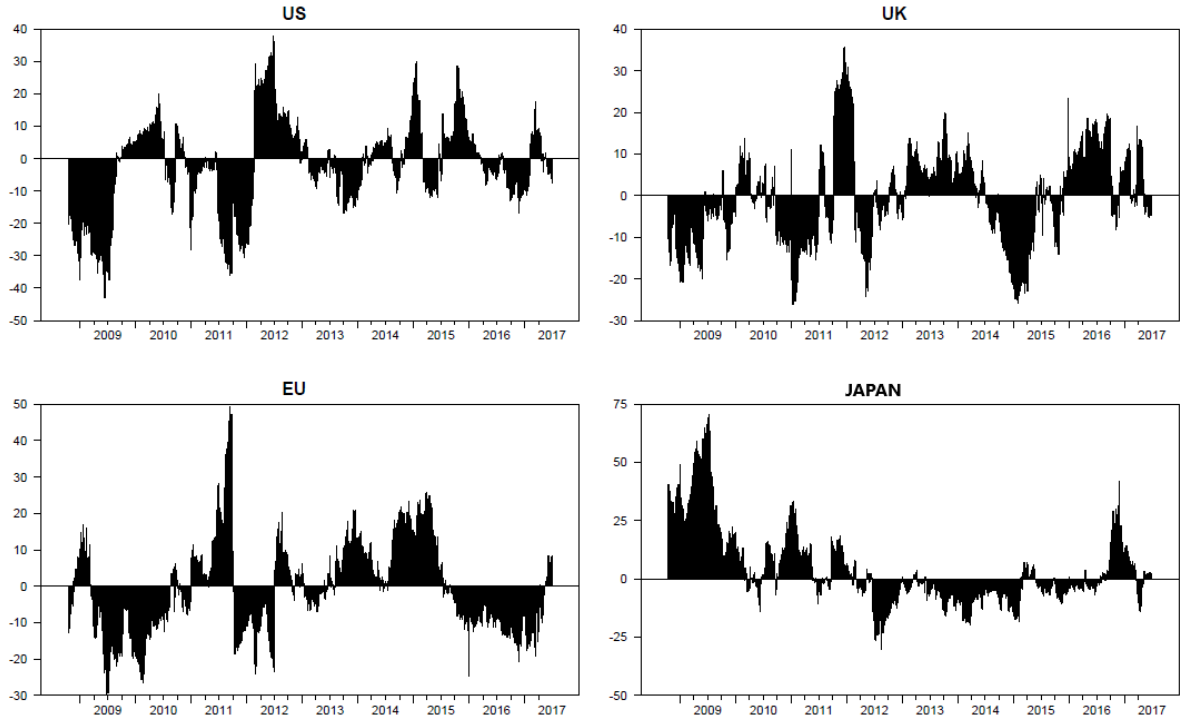


Figure 137: Net Regional CDS Spreads Volatility Spillovers for the Manufacturing Sector

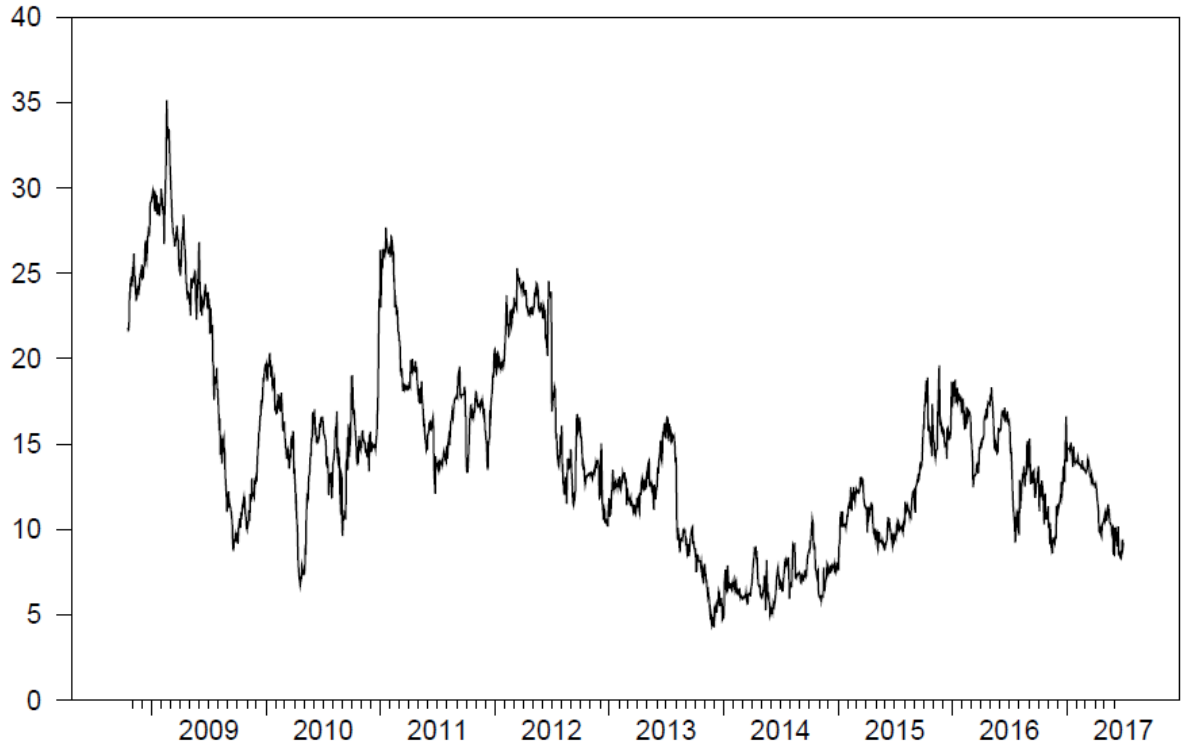


Figure 138: Total Regional CDS Spreads Volatility Spillovers for the Metals & Mining Sector

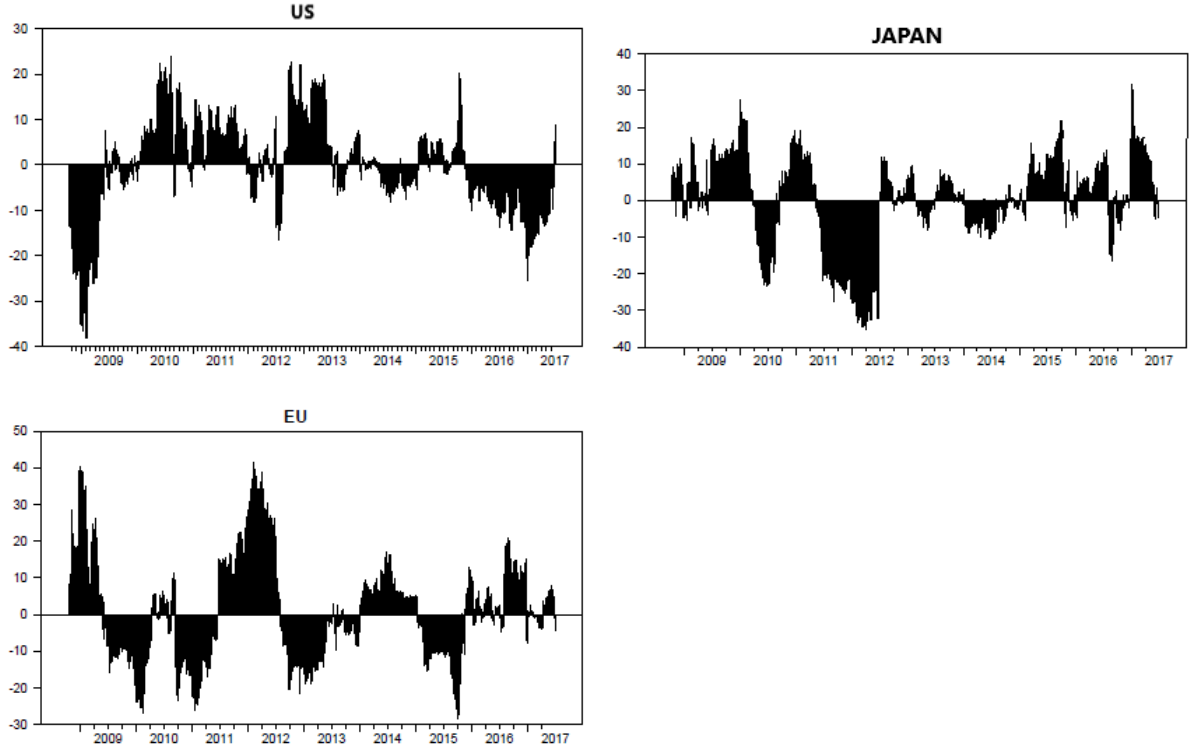


Figure 139: Net Regional CDS Spreads Volatility Spillovers for the Metals & Mining Sector

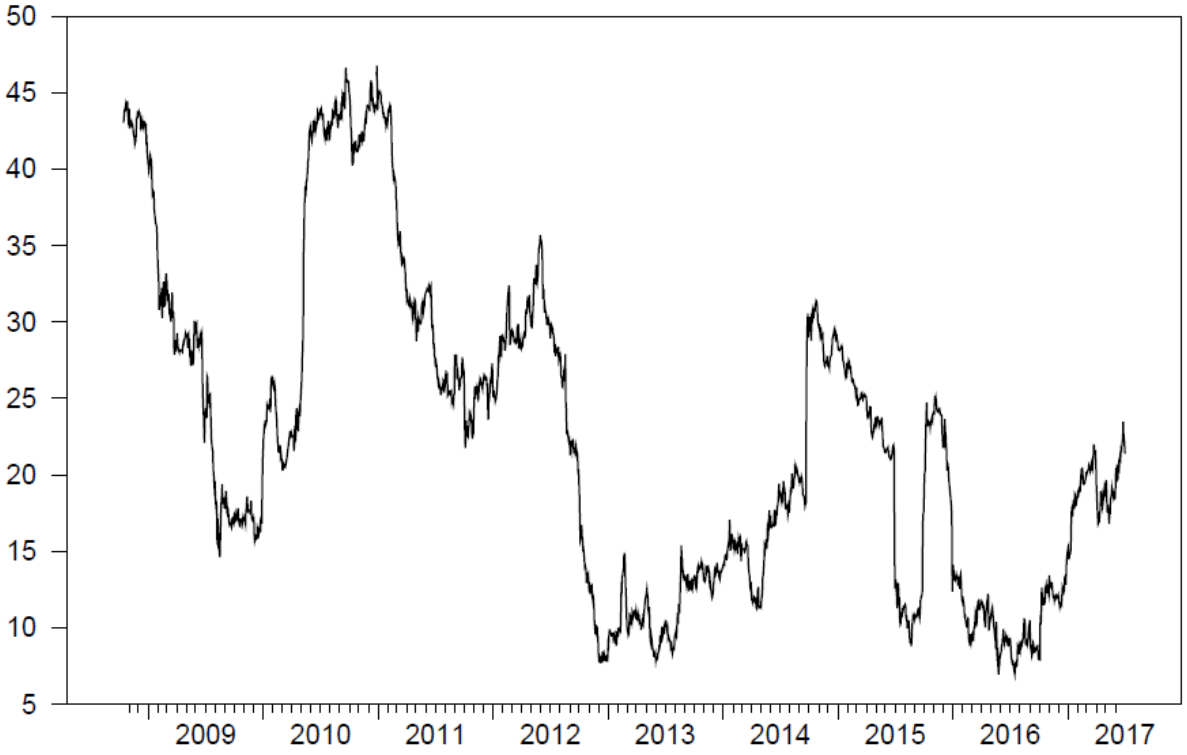


Figure 140: Total Regional CDS Spreads Volatility Spillovers for the Financials Sector

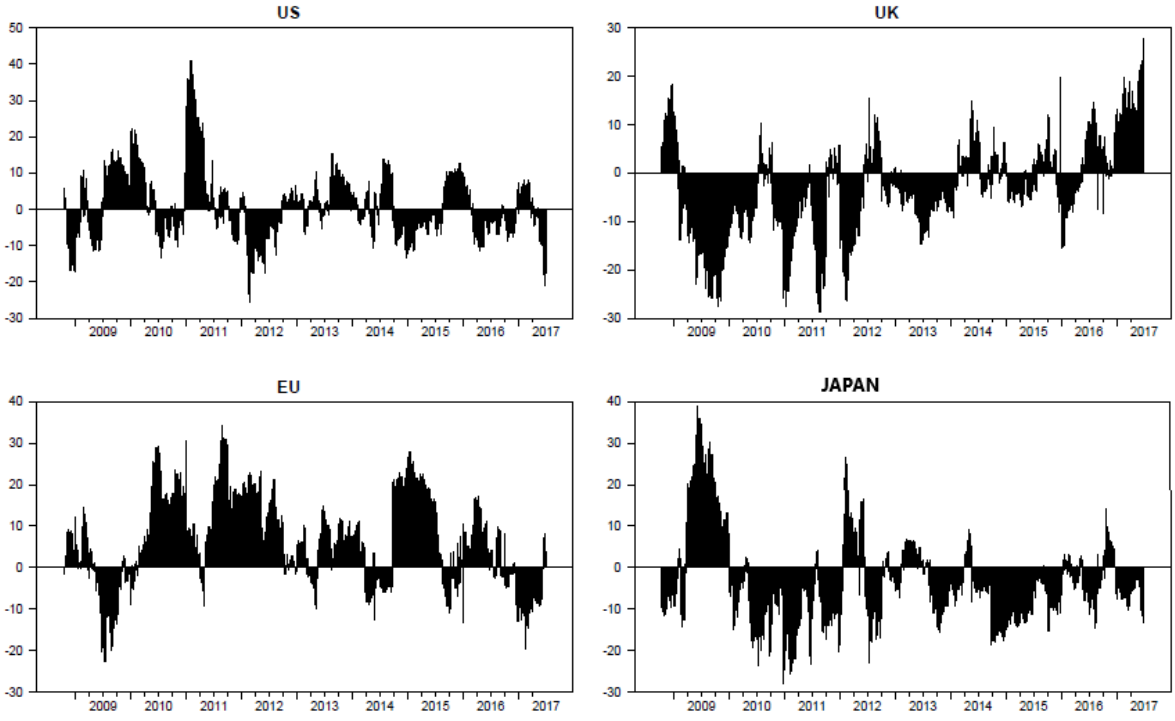


Figure 141: Net Regional CDS Spreads Volatility Spillovers for the Financials Sector

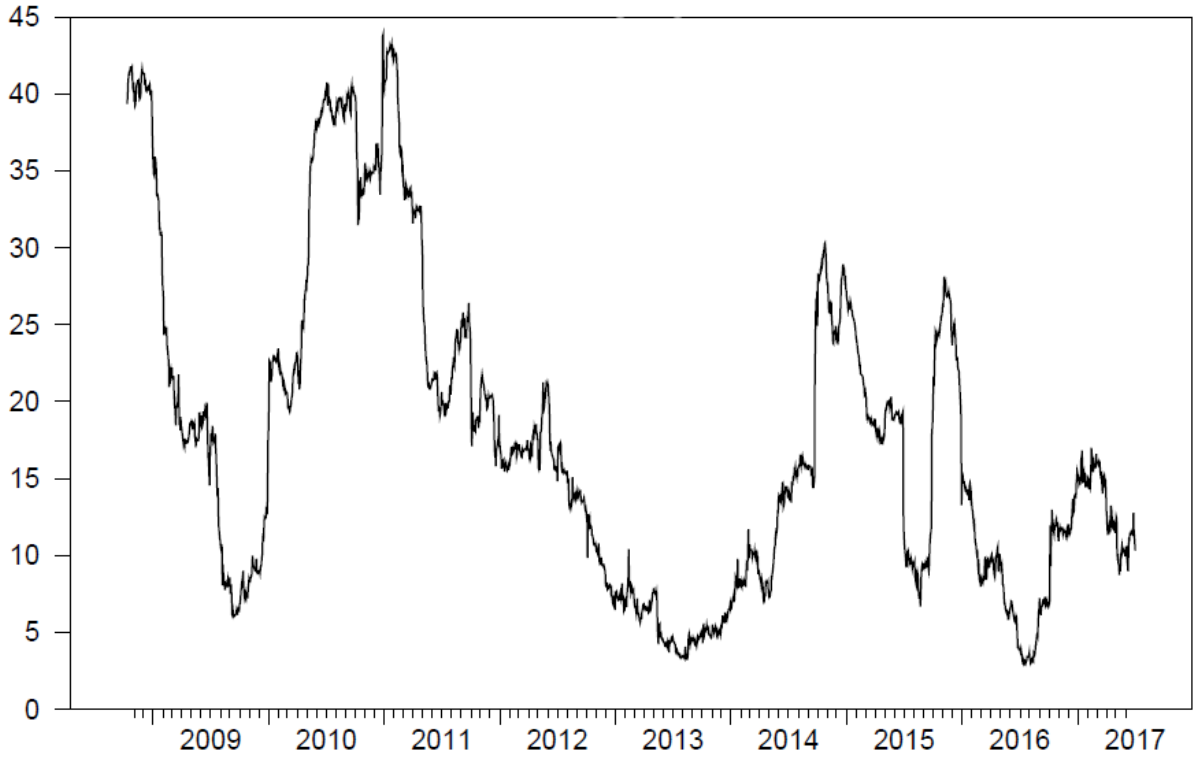


Figure 142: Total Regional CDS Spreads Volatility Spillovers for the Other Financials Sector

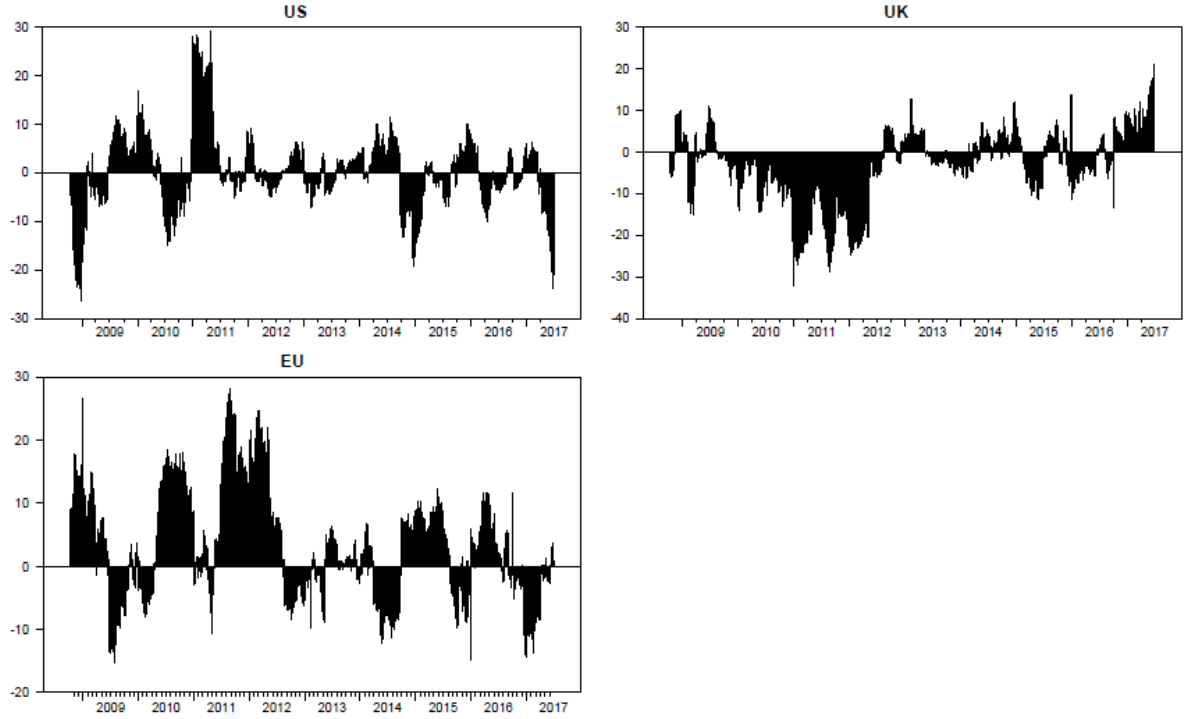


Figure 143: Net Regional CDS Spreads Volatility Spillovers for the Other Financials Sector

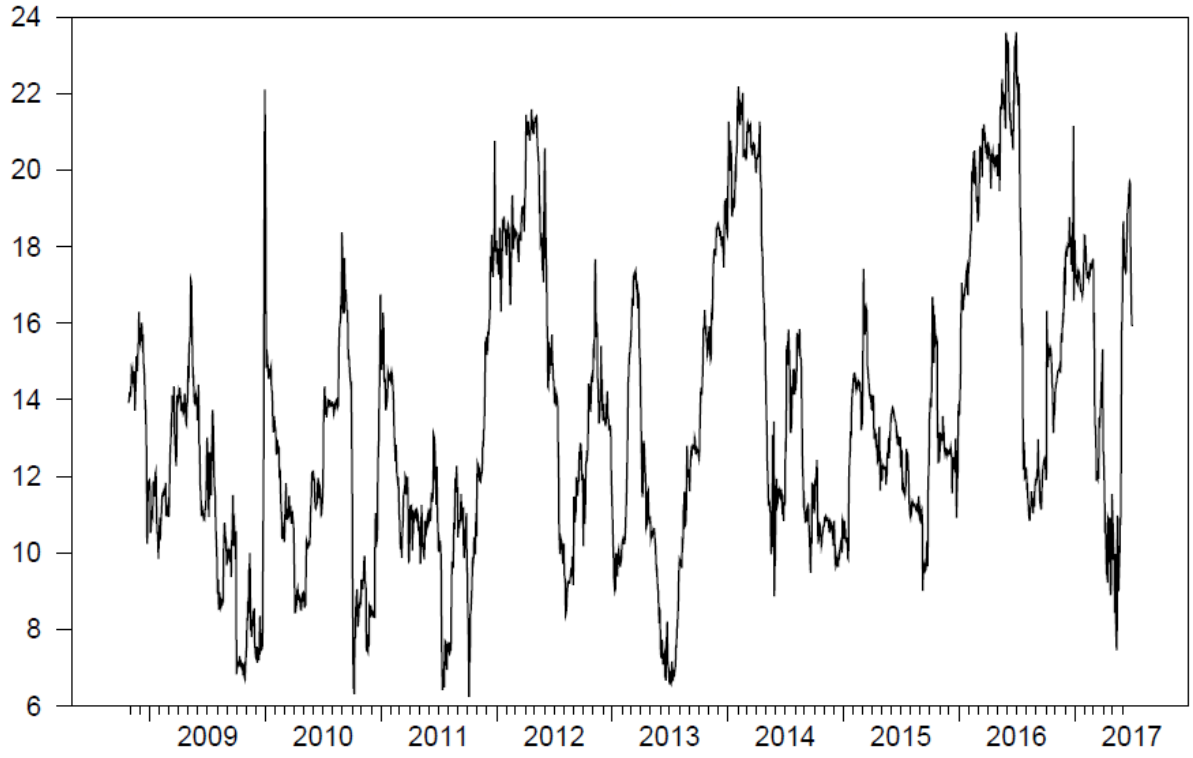


Figure 144: Total Regional CDS Spreads Volatility Spillovers for the Other Retail Sector

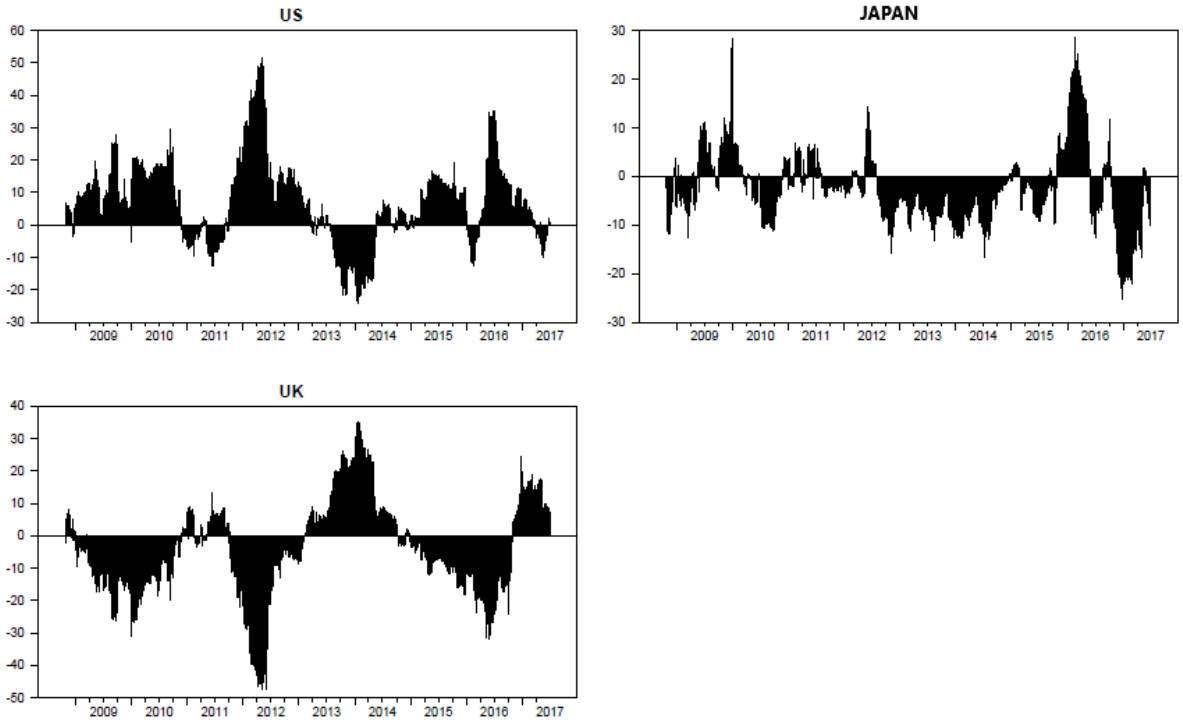


Figure 145: Net Regional CDS Spreads Volatility Spillovers for the Other Retail Sector

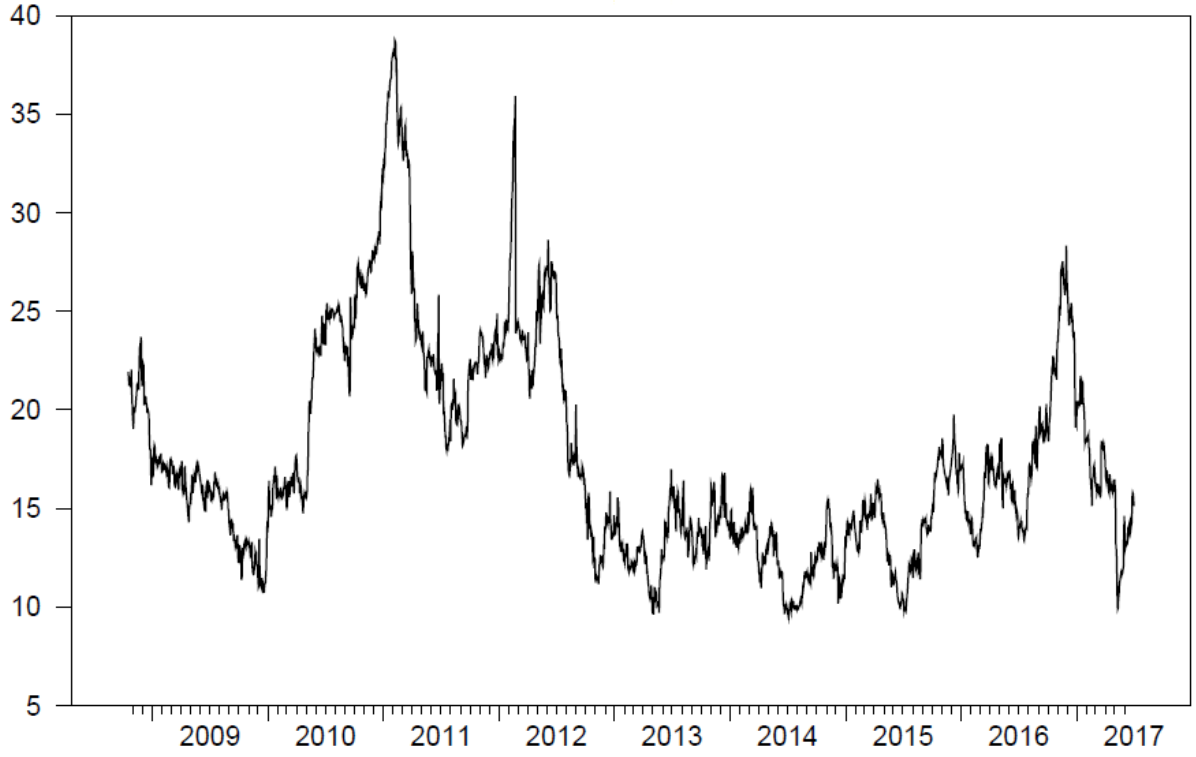


Figure 146: Total Regional CDS Spreads Volatility Spillovers for the Other Services Sector

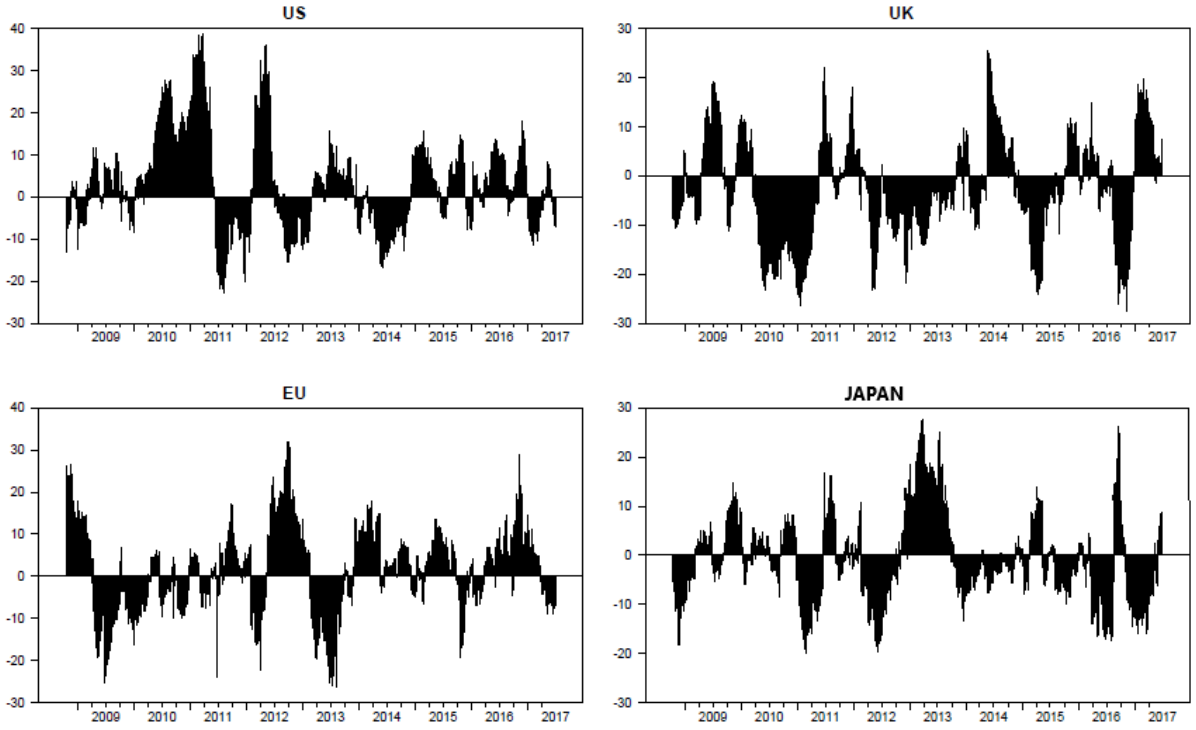


Figure 147: Net Regional CDS Spreads Volatility Spillovers for the Other Services Sector

Figure 148: Total Regional CDS Spreads Volatility Spillovers for the Telecommunications Sector

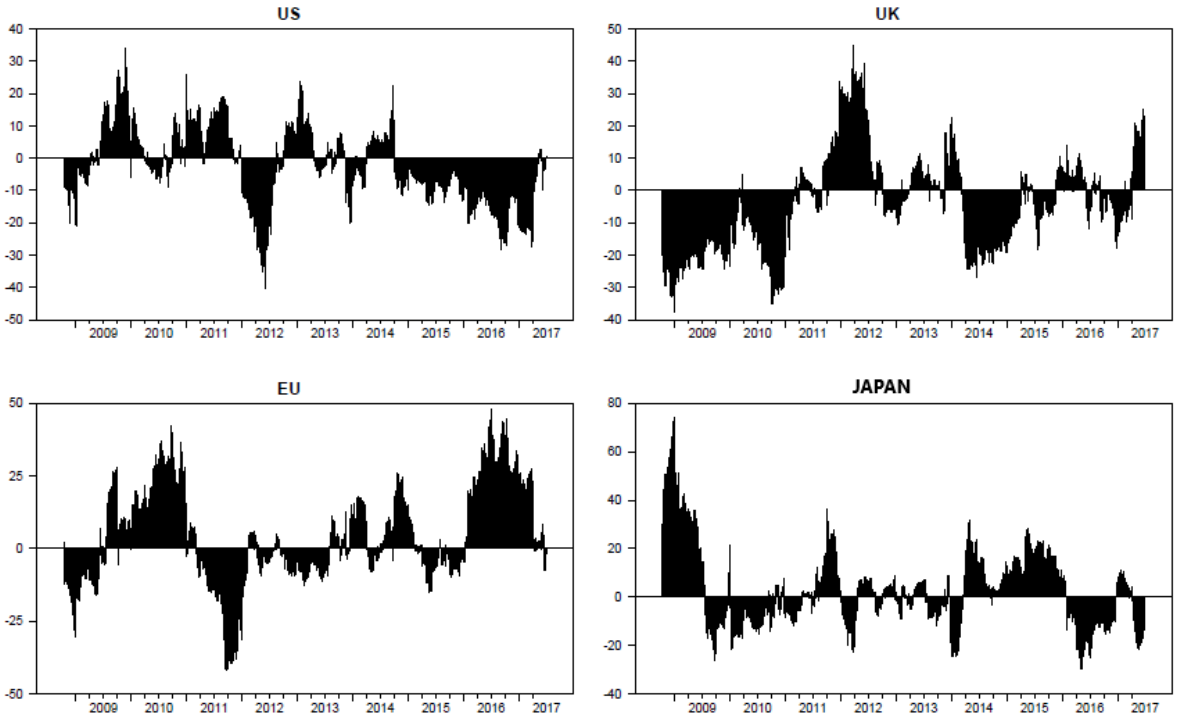


Figure 149: Net Regional CDS Spreads Volatility Spillovers for the Telecommunications Sector

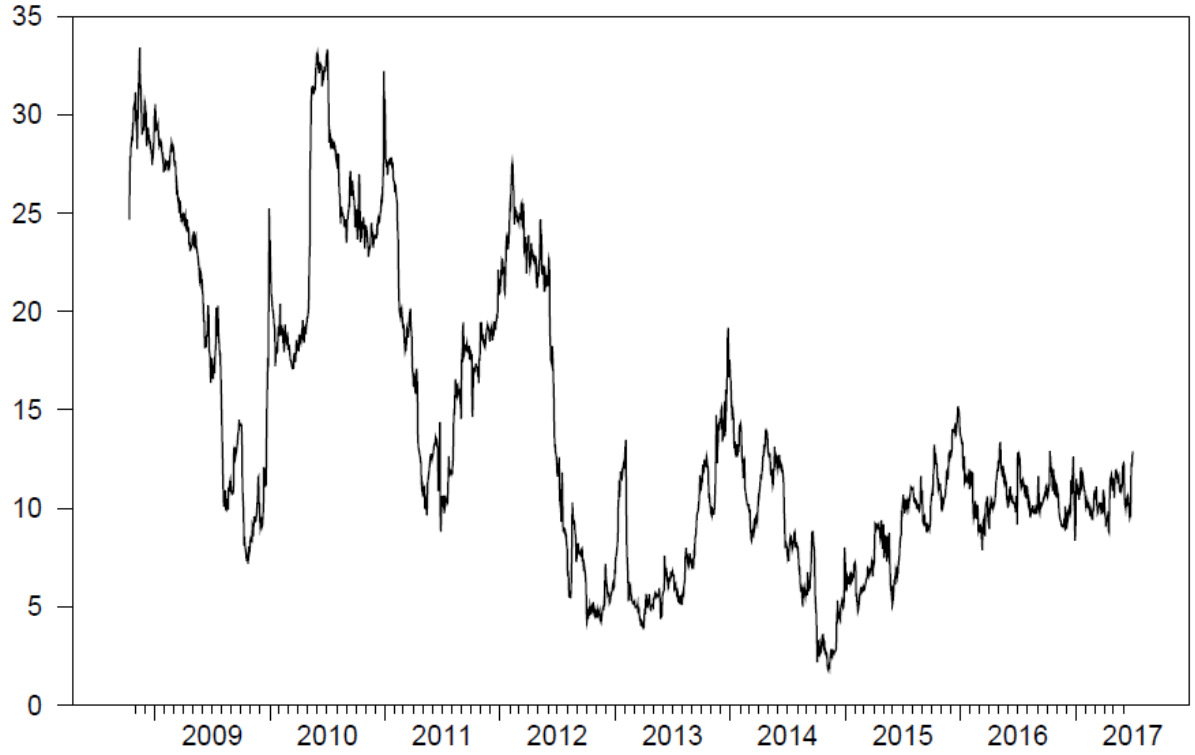


Figure 150: Total Regional Volatility CDS Spreads Spillovers for the Other Telecommunications Sector

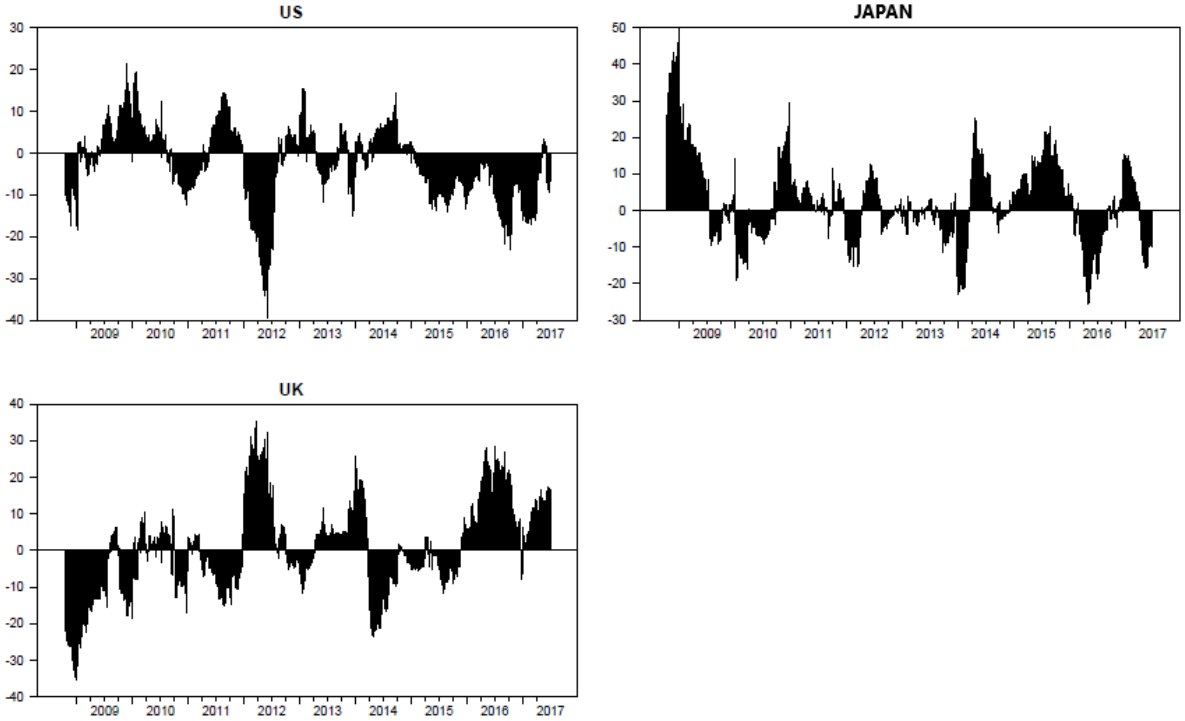


Figure 151: Net Regional CDS Spreads Volatility Spillovers for the Other Telecommunications Sector

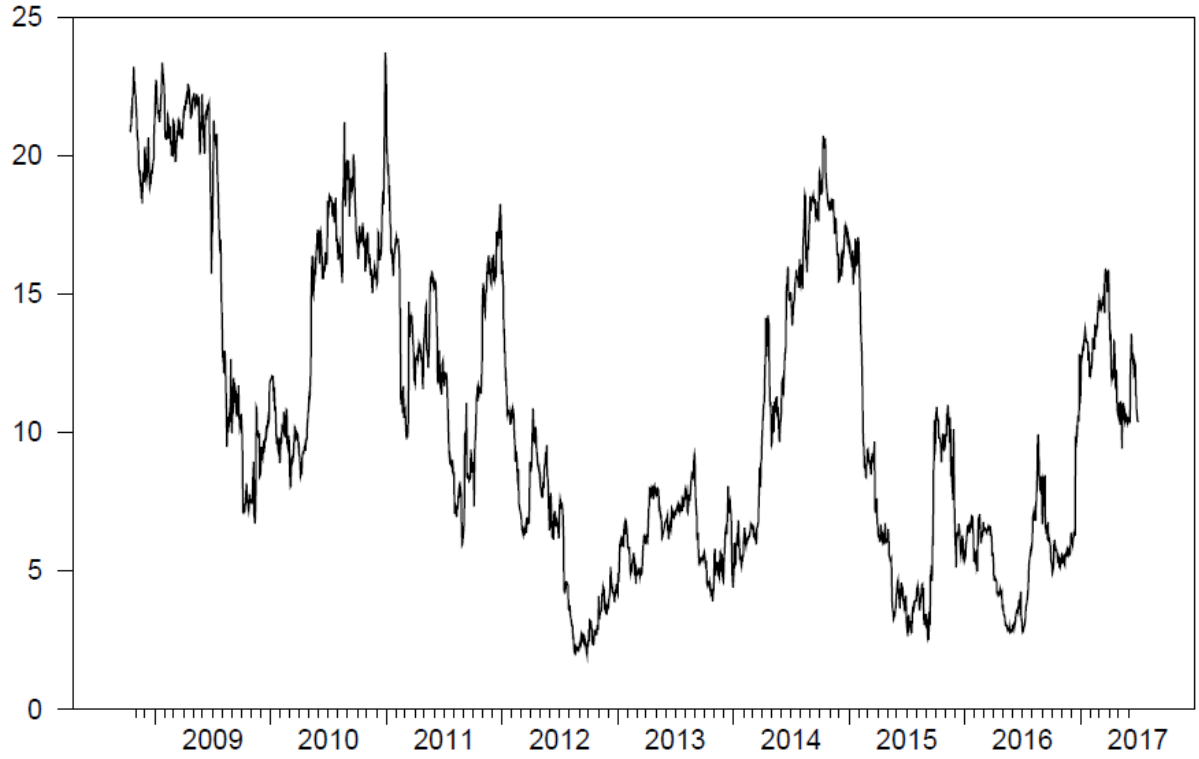


Figure 152: Total Regional CDS Spreads Volatility Spillovers for the Transportation Sector

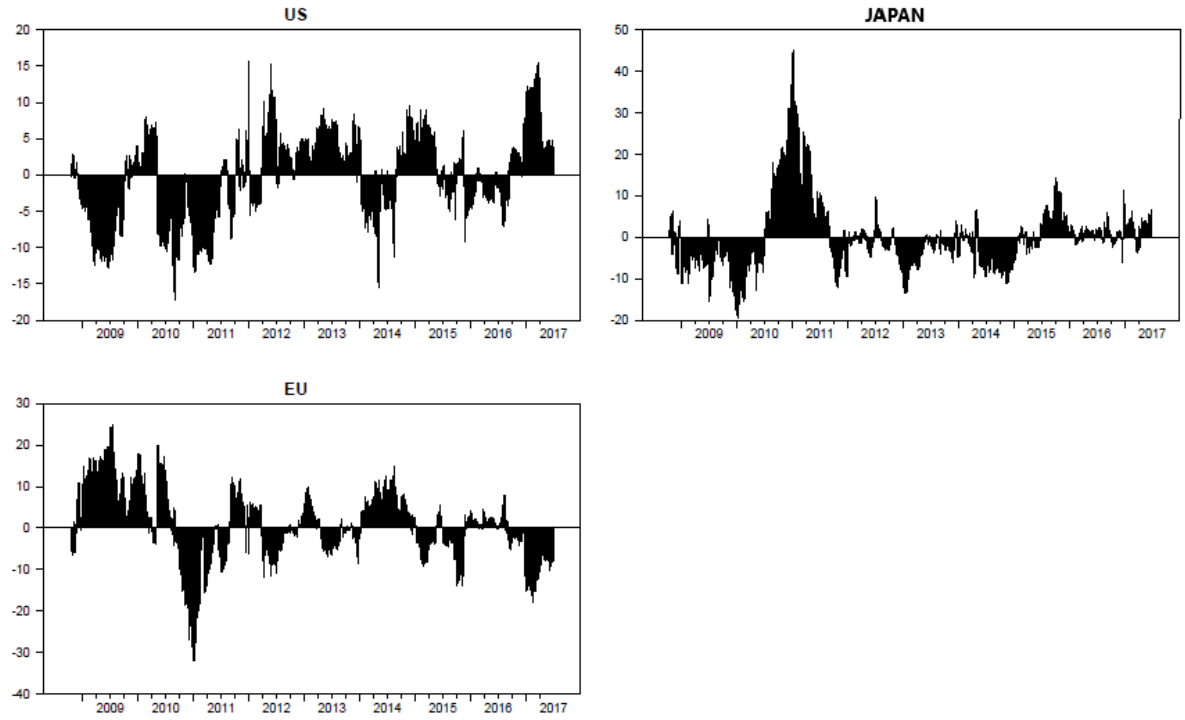


Figure 153: Net Regional CDS Spreads Volatility Spillovers for the Transportation Sector

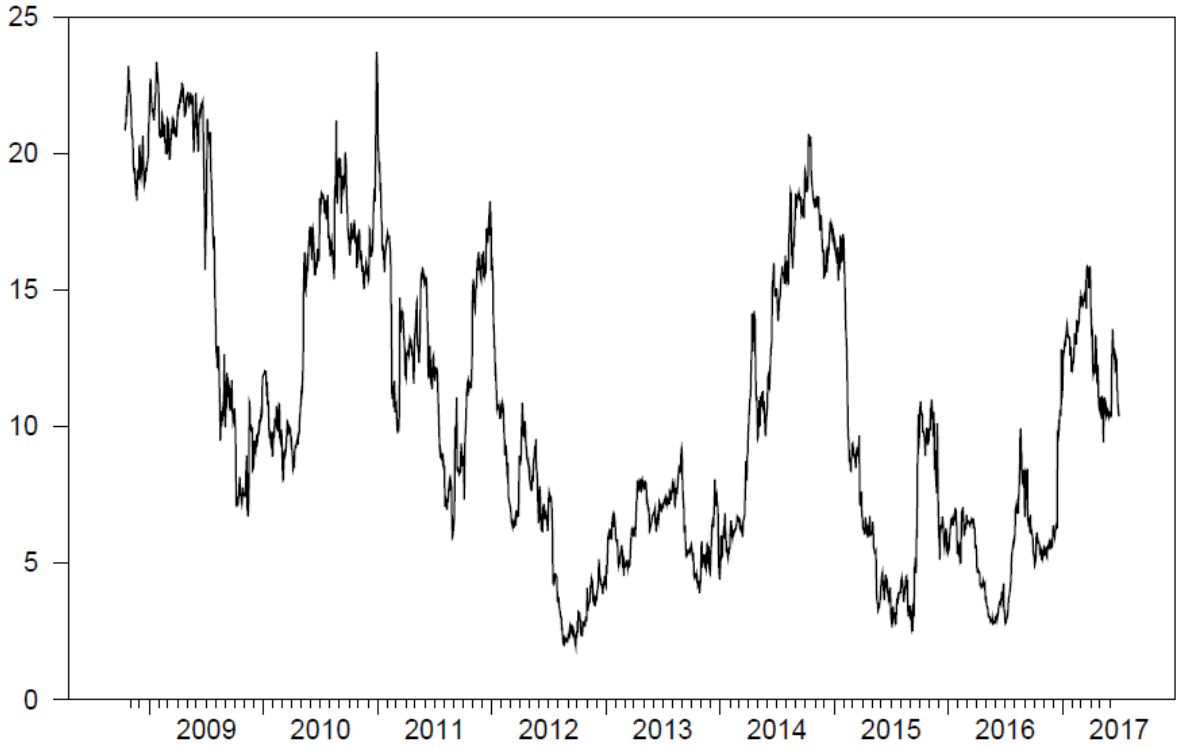


Figure 154: Total Regional CDS Spreads Volatility Spillovers for the Utility Sector

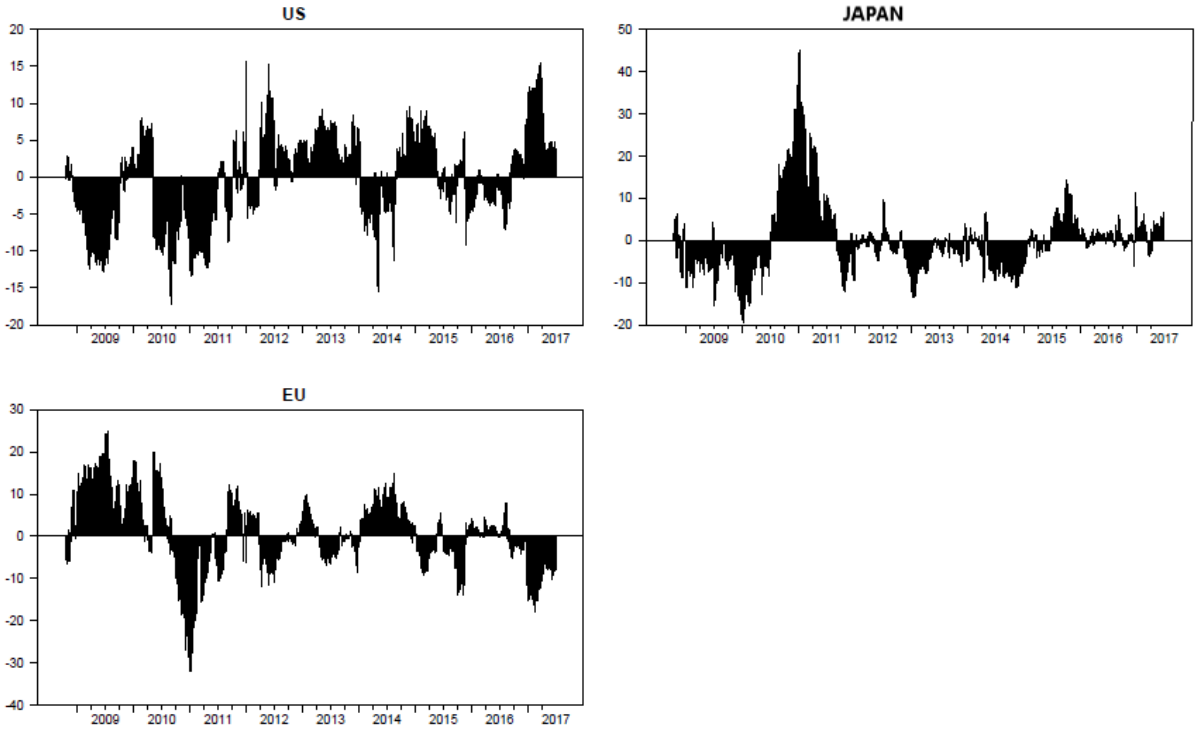


Figure 155: Net Regional CDS Spreads Volatility Spillovers for the Utility Sector

E.3 Equity Volatility Sectoral and Sub-Sectoral Connectedness: Within Regions Dynamic Analysis

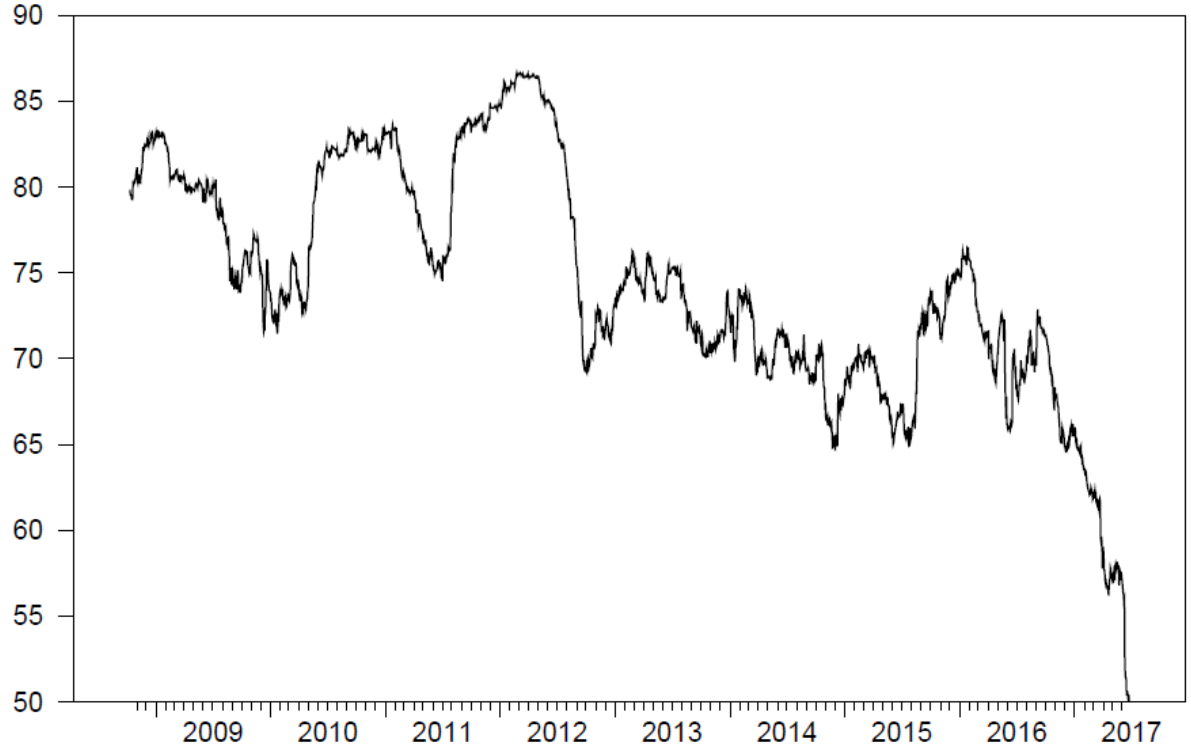


Figure 156: Total Sectoral Equity Volatility Spillovers for the US region

Figure 157: Total Sub-Sectoral Equity Volatility Spillovers for the US region

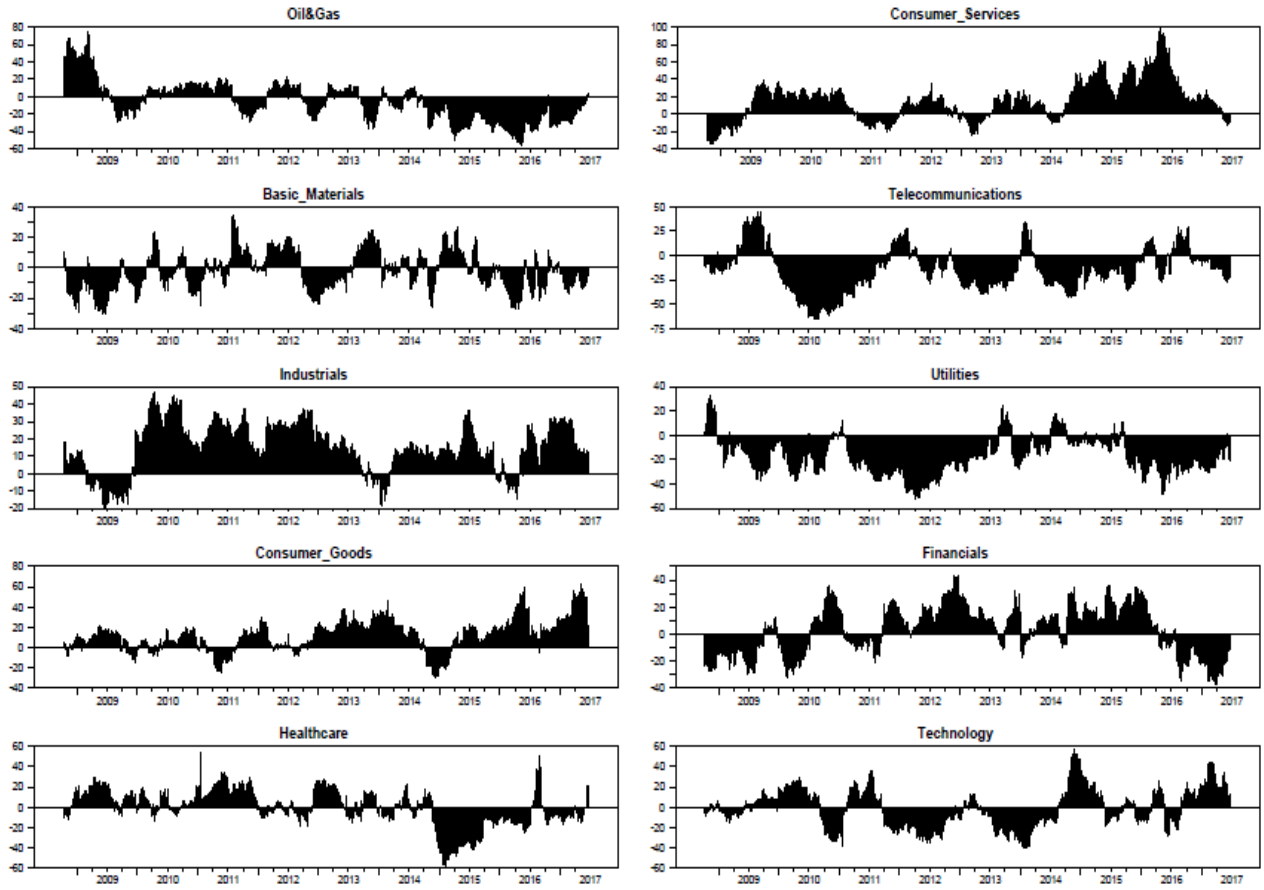


Figure 158: Net Sectoral Equity Volatility Spillovers for the US region

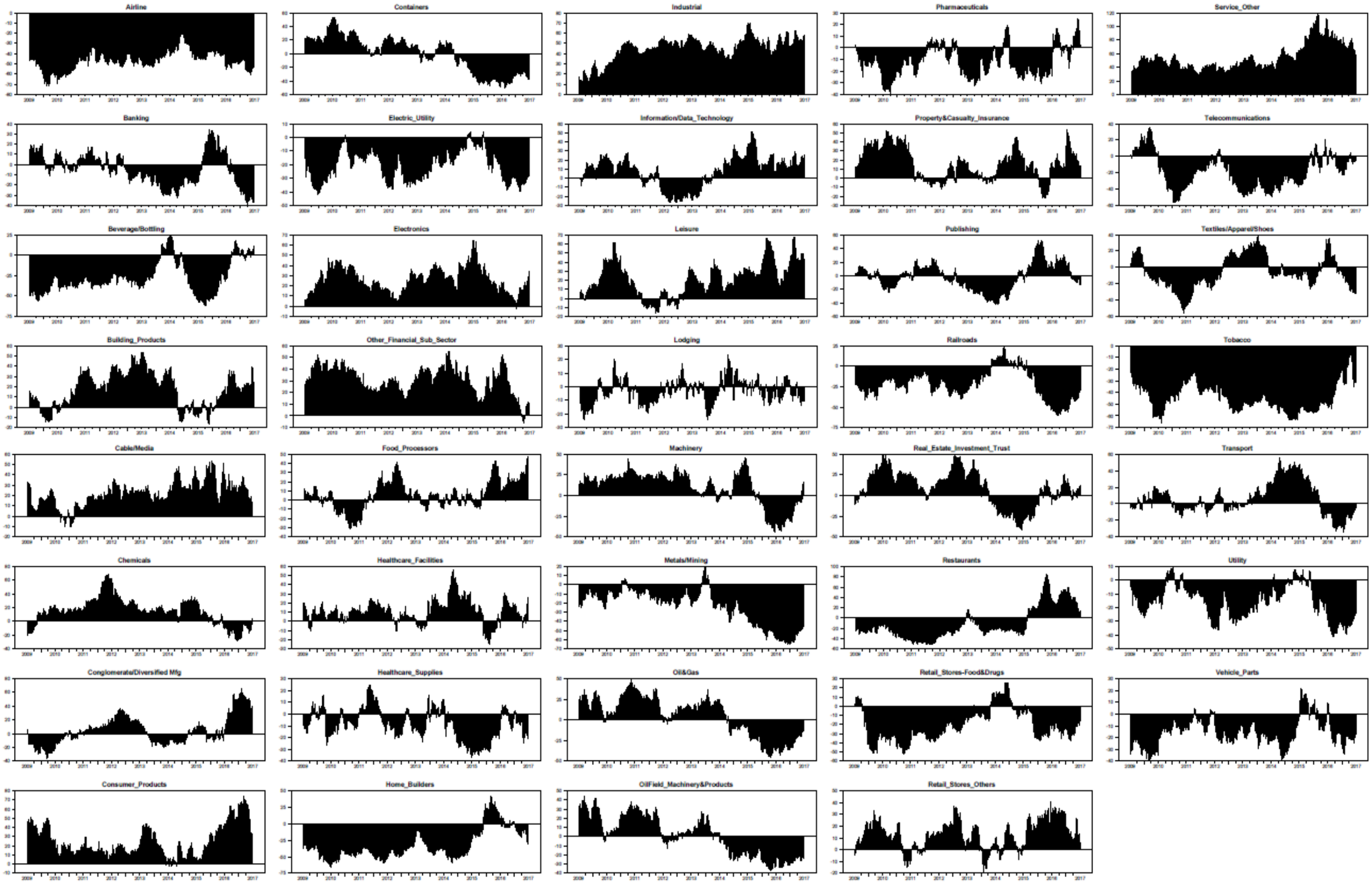


Figure 159: Net Sub-Sectoral Equity Volatility Spillovers for the US region

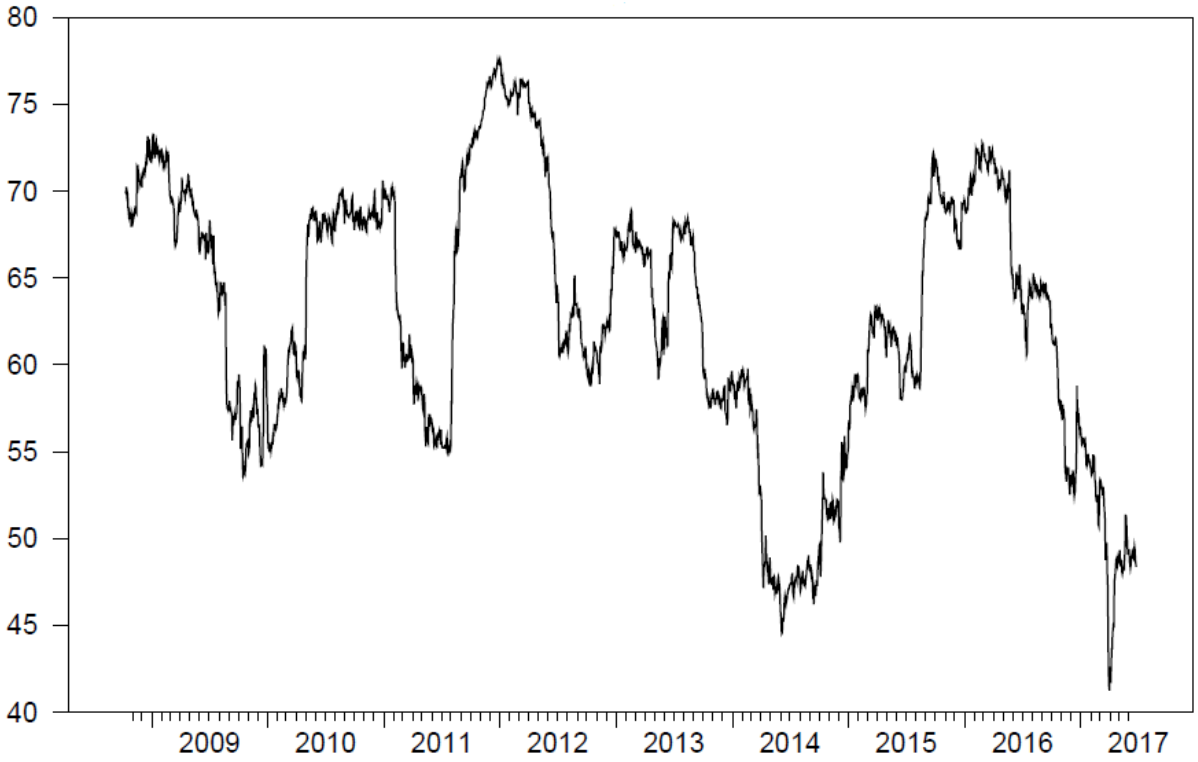


Figure 160: Total Sectoral Equity Volatility Spillovers for the UK region

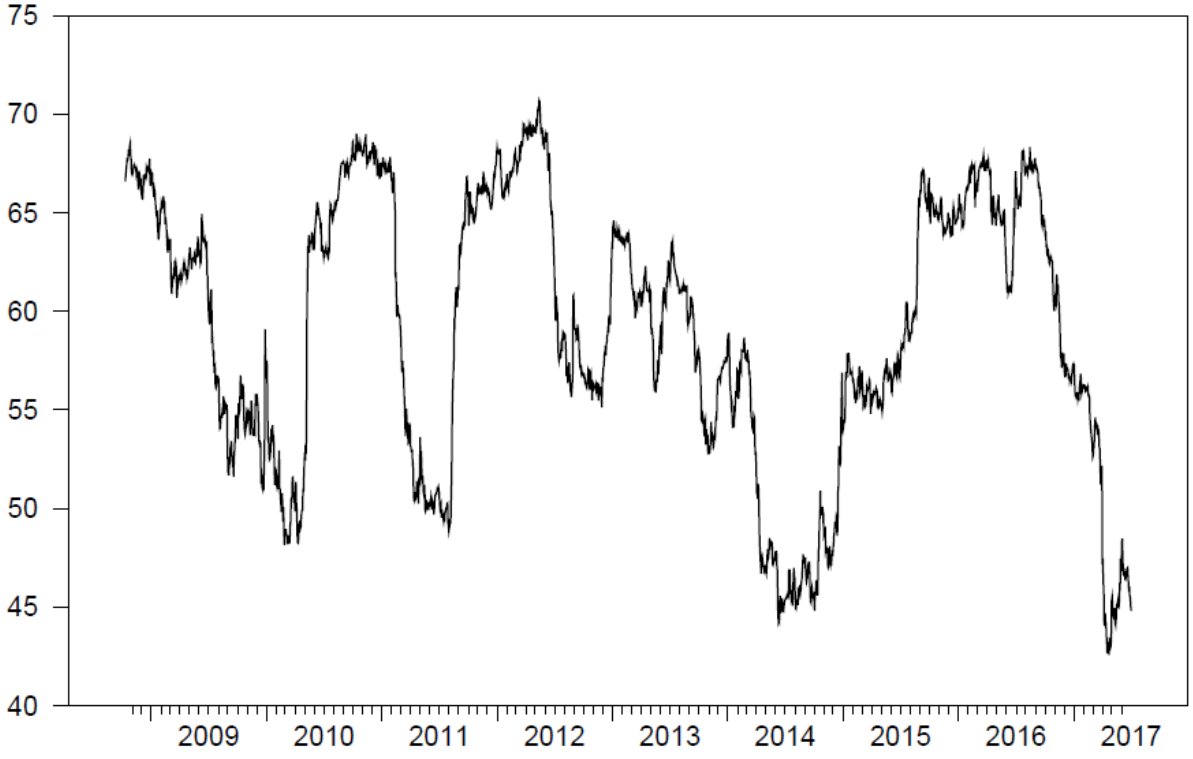


Figure 161: Total Sub-Sectoral Equity Volatility Spillovers for the UK region

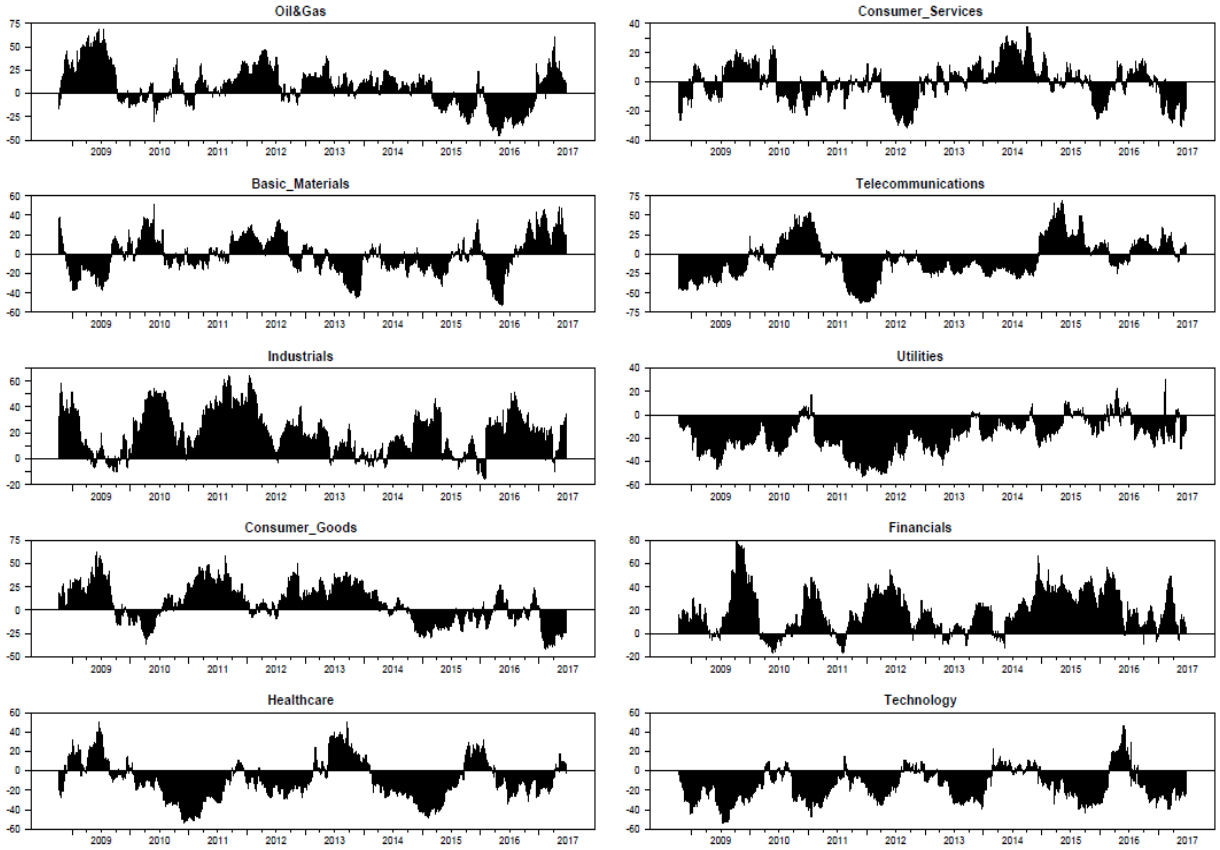


Figure 162: Net Sectoral Equity Volatility Spillovers for the UK region

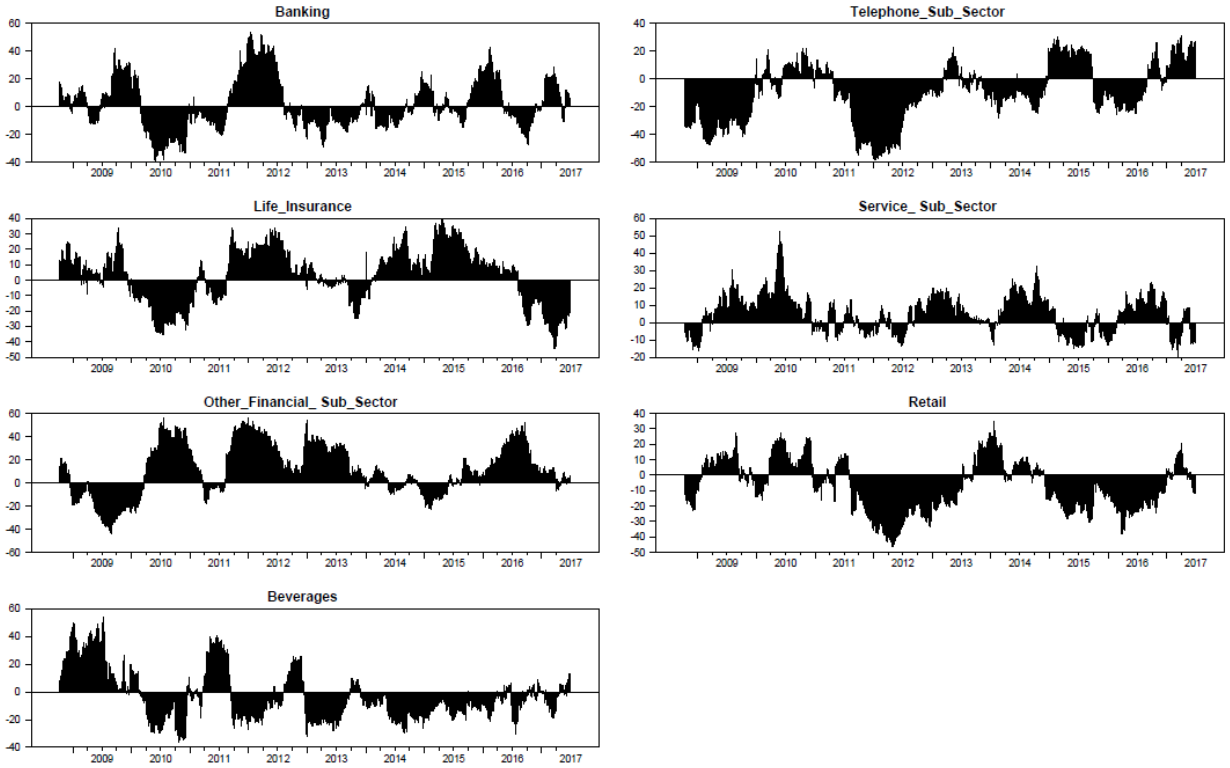


Figure 163: Net Sub-Sectoral Equity Volatility Spillovers for the UK region

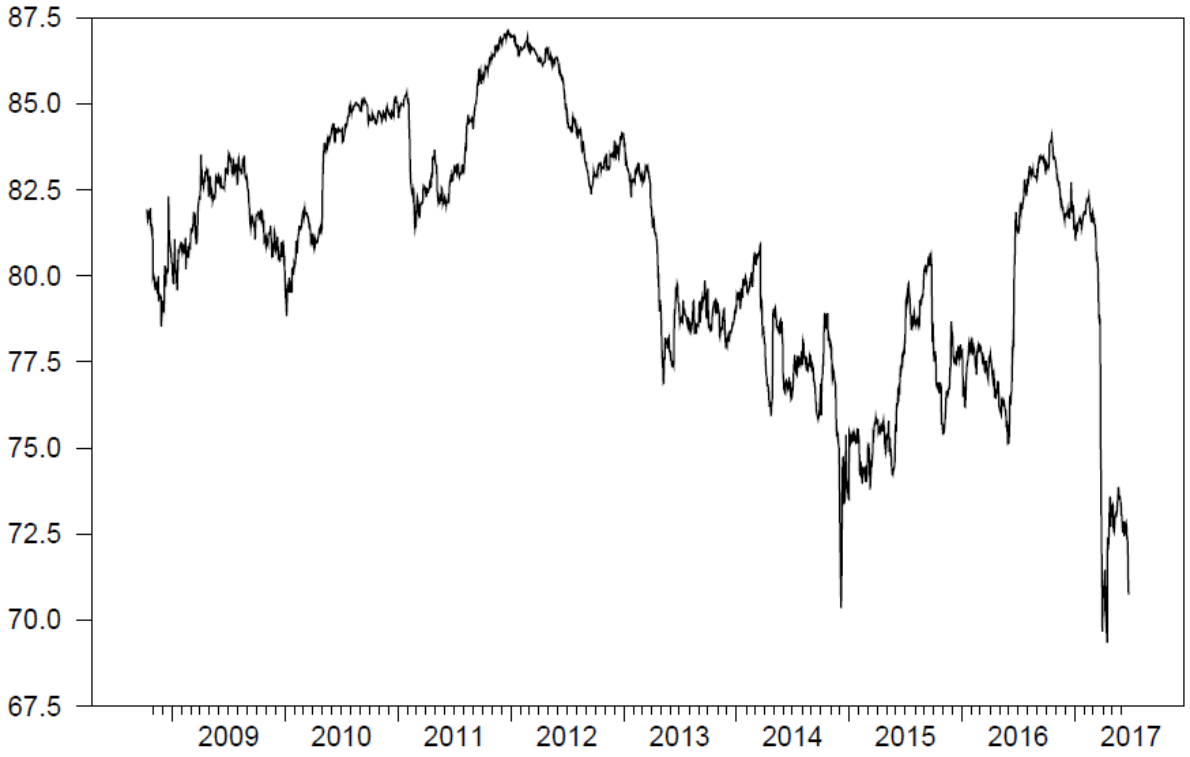


Figure 164: Total Sectoral Equity Volatility Spillovers for the EU region

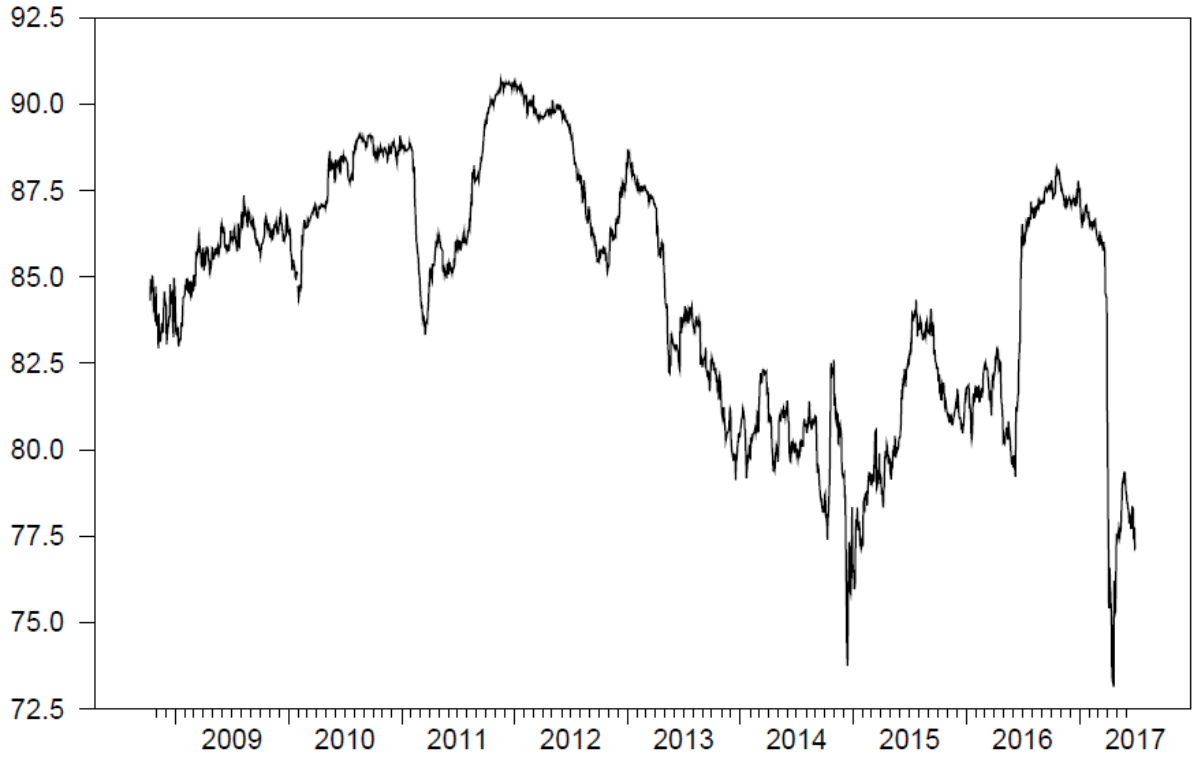


Figure 165: Total Sub-Sectoral Equity Volatility Spillovers for the EU region

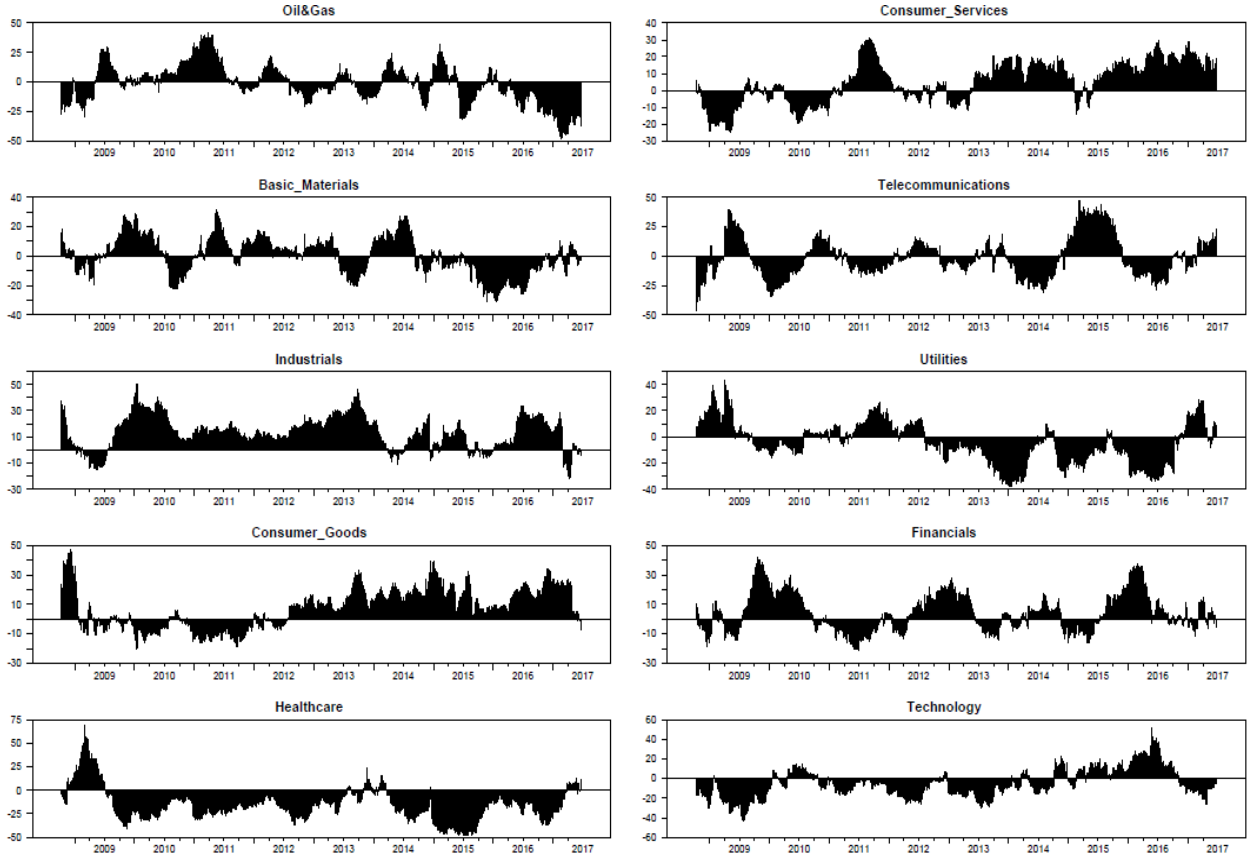


Figure 166: Net Sectoral Equity Volatility Spillovers for the EU region

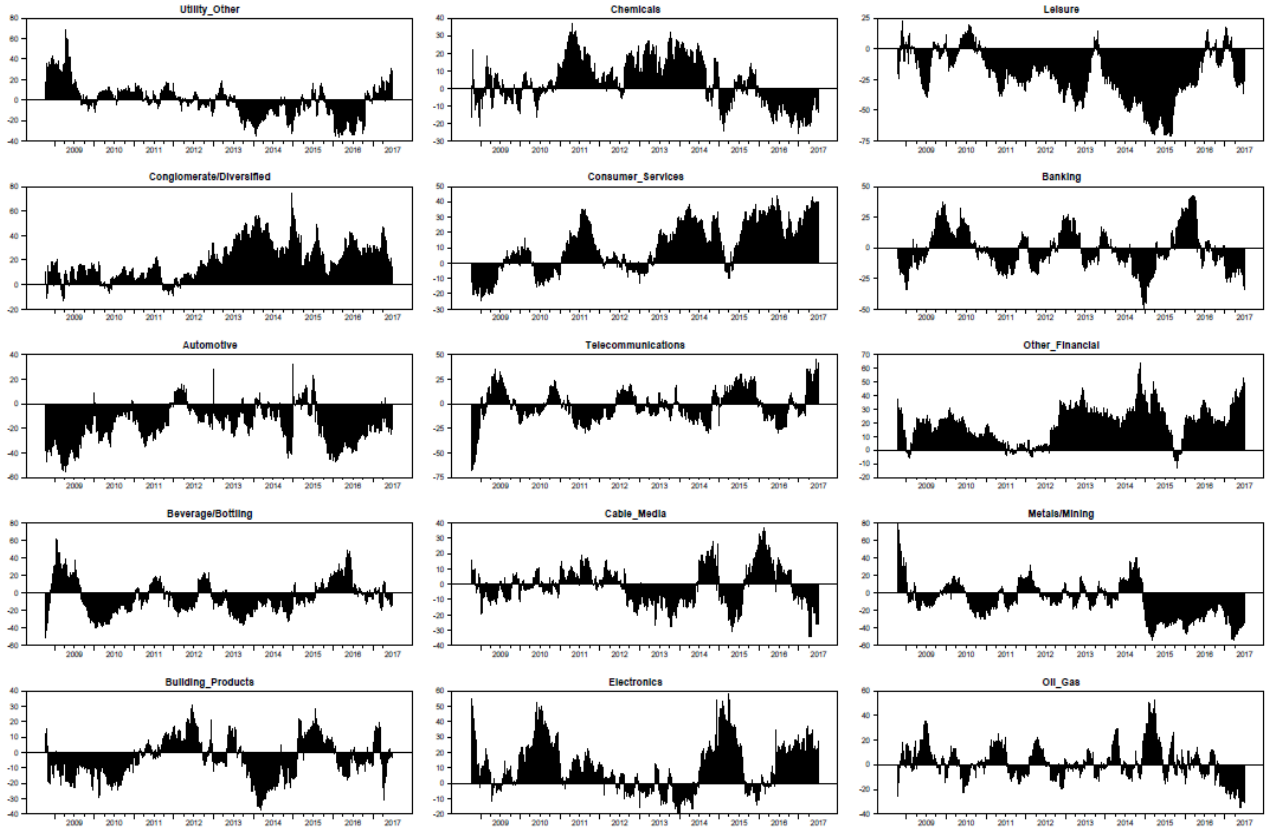


Figure 167: Net Sub-Sectoral Equity Volatility Spillovers for the EU region

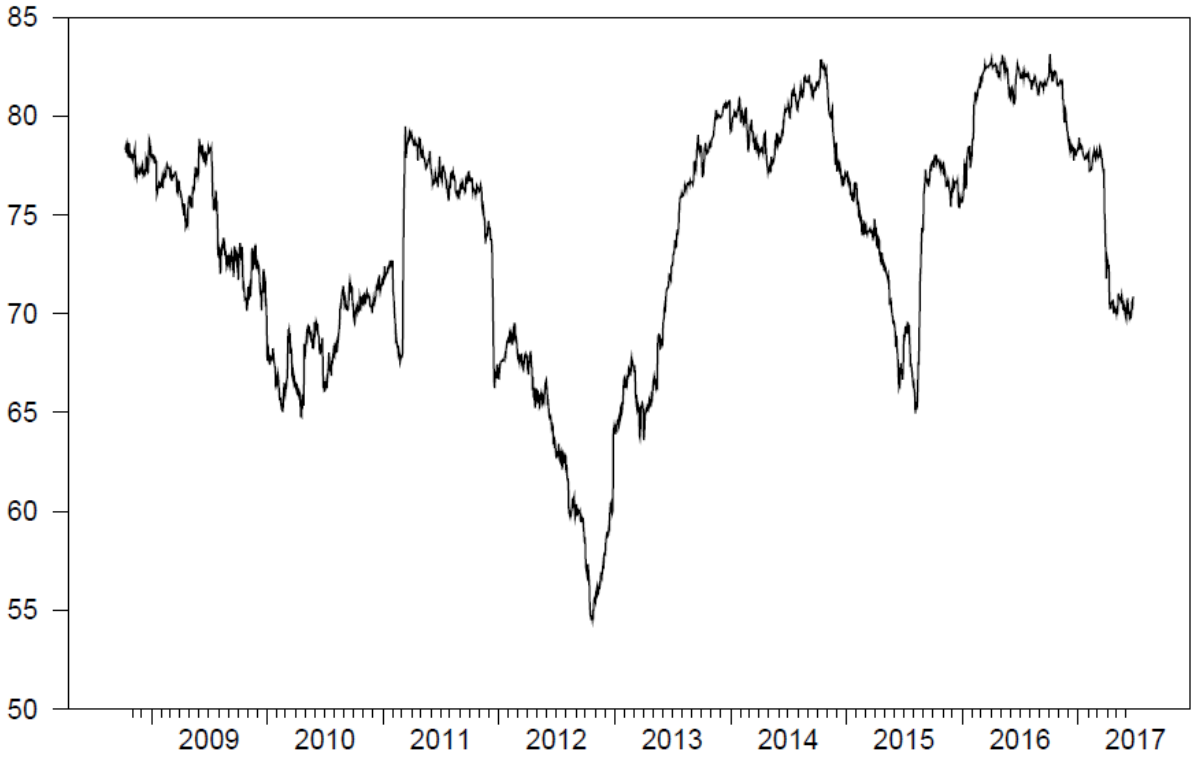


Figure 168: Total Sectoral Equity Volatility Spillovers for the Japan region

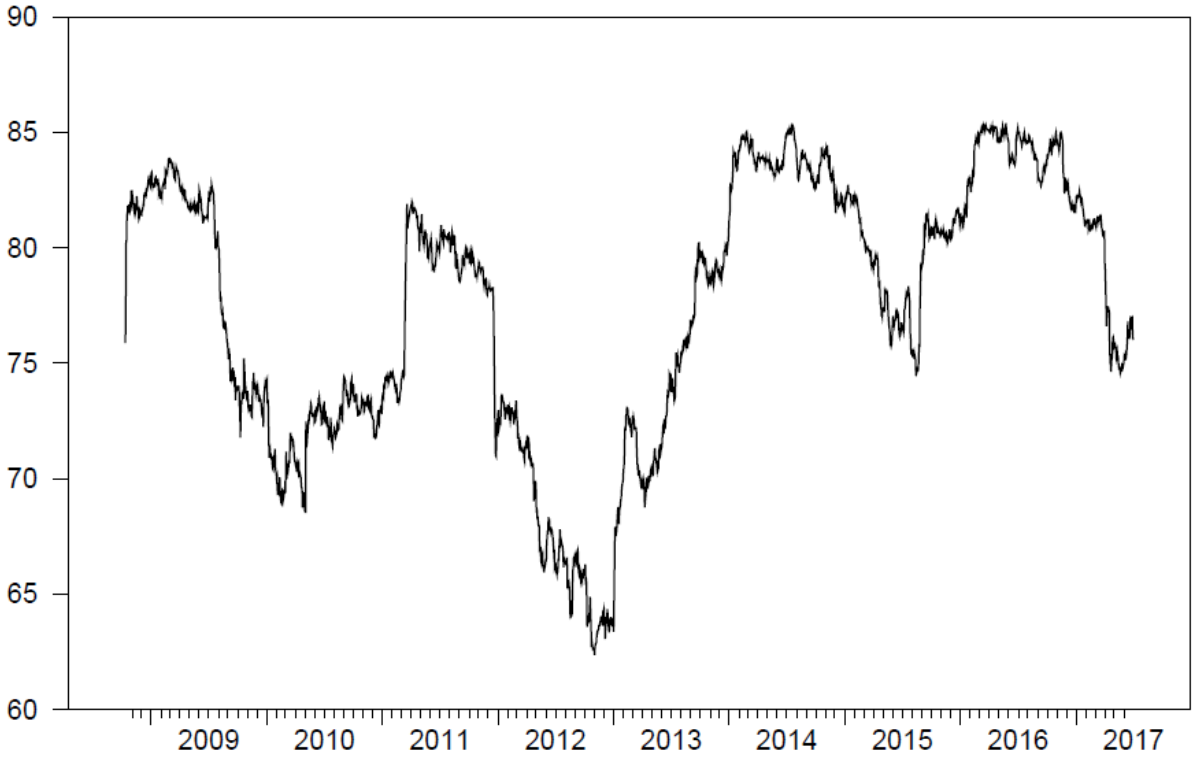


Figure 169: Total Sub-Sectoral Equity Volatility Spillovers for the Japan region

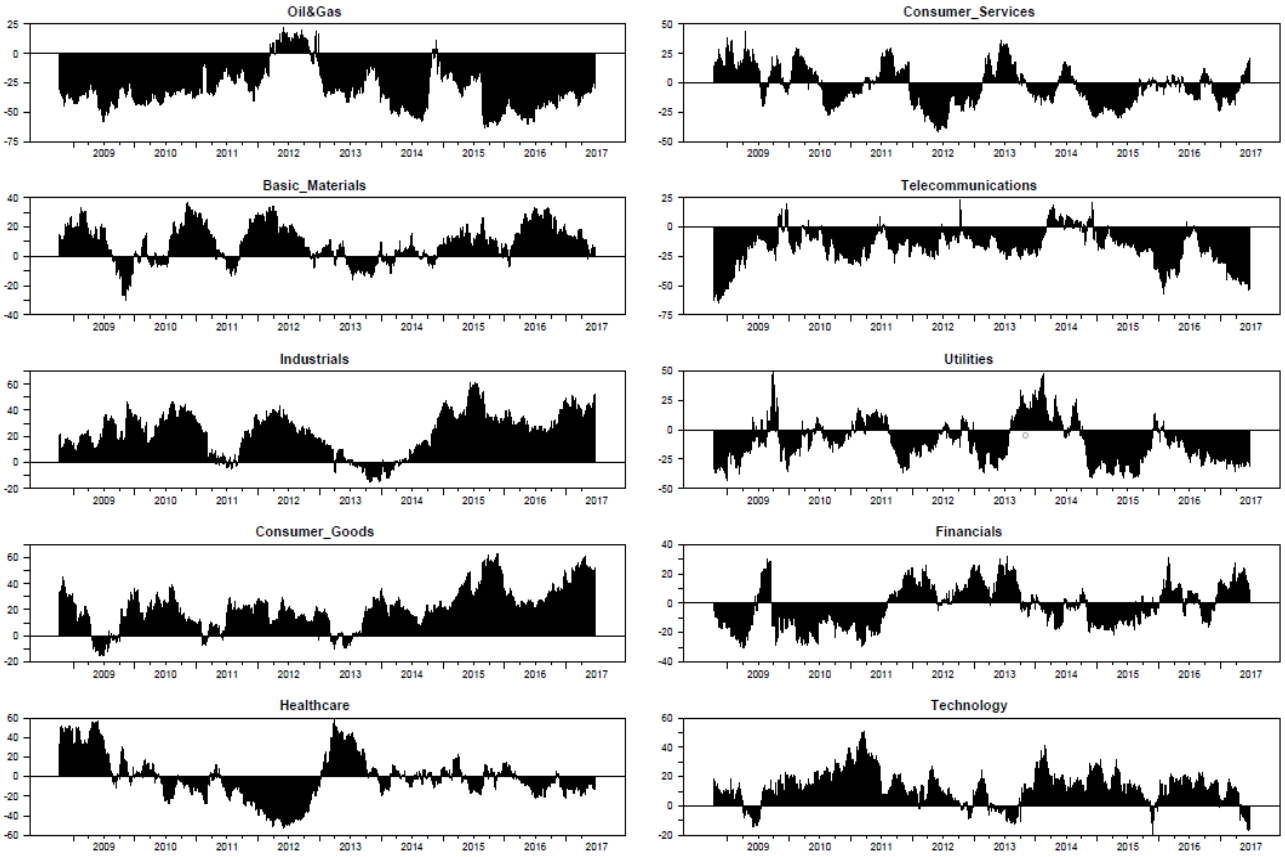


Figure 170: Net Sectoral Equity Volatility Spillovers for the Japan region

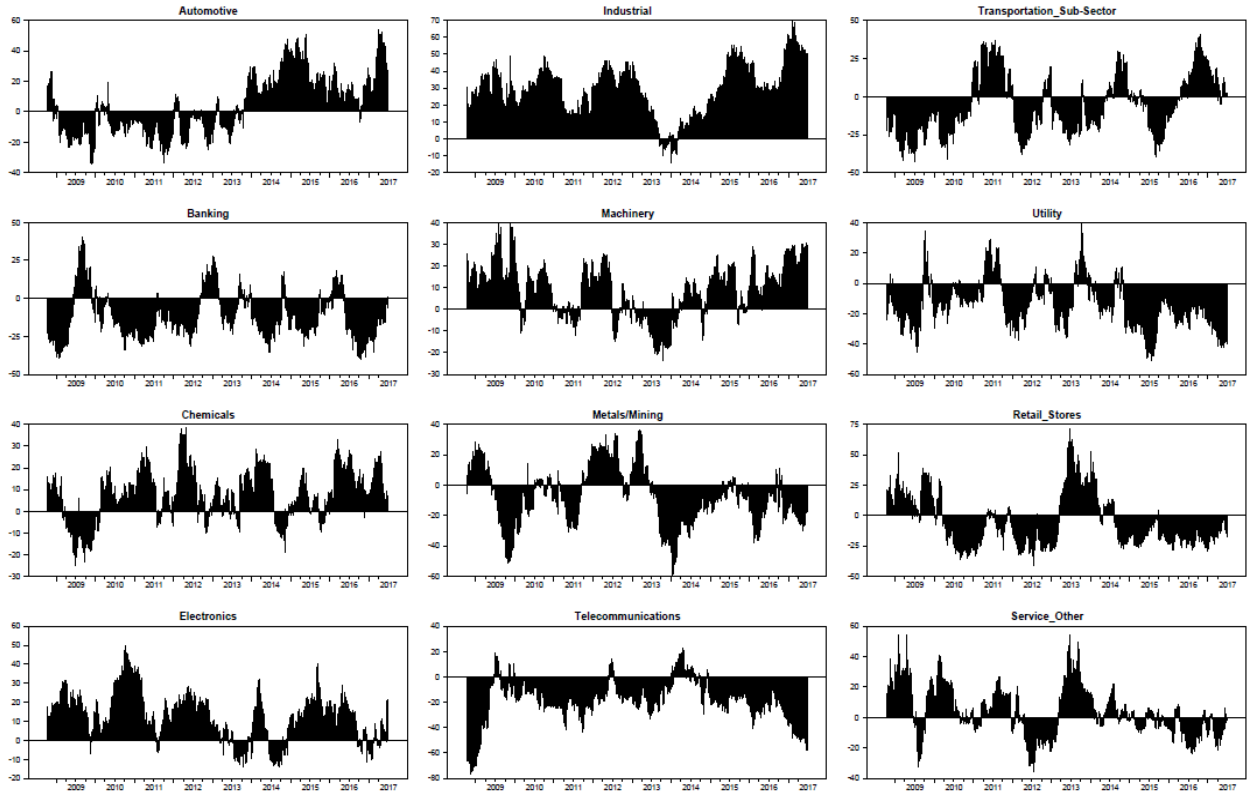


Figure 171: Net Sub-Sectoral Equity Volatility Spillovers for the Japan region

E.4 Equity Volatility Sectoral and Sub-Sectoral Connectedness: Across Regions Dynamic Analysis

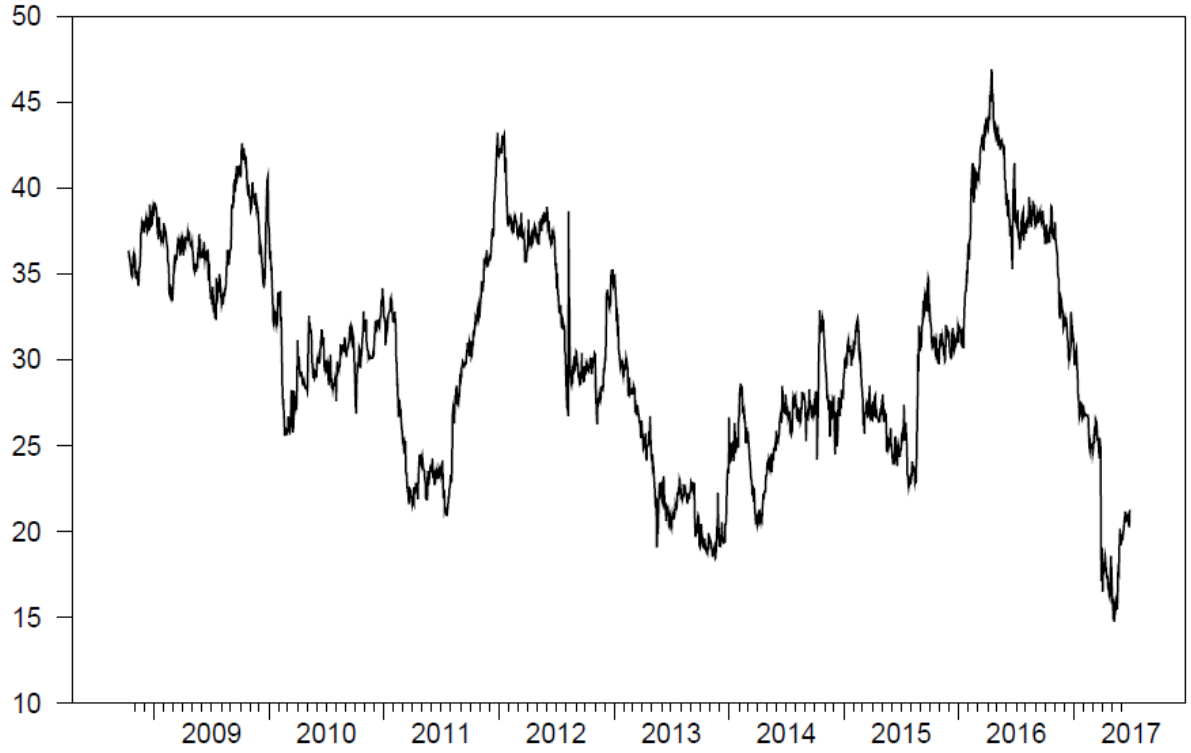


Figure 172: Total Equity Regional Volatility Spillovers for the Banking Sector

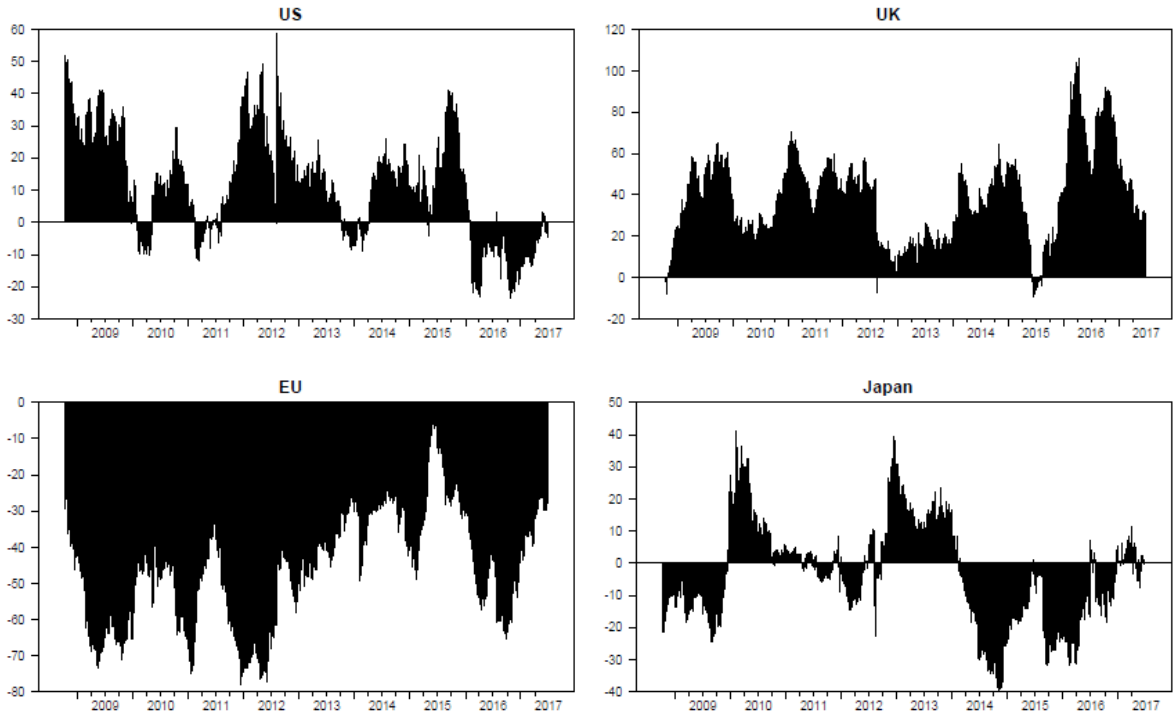


Figure 173: Net Equity Regional Volatility Spillovers for the Banking Sector

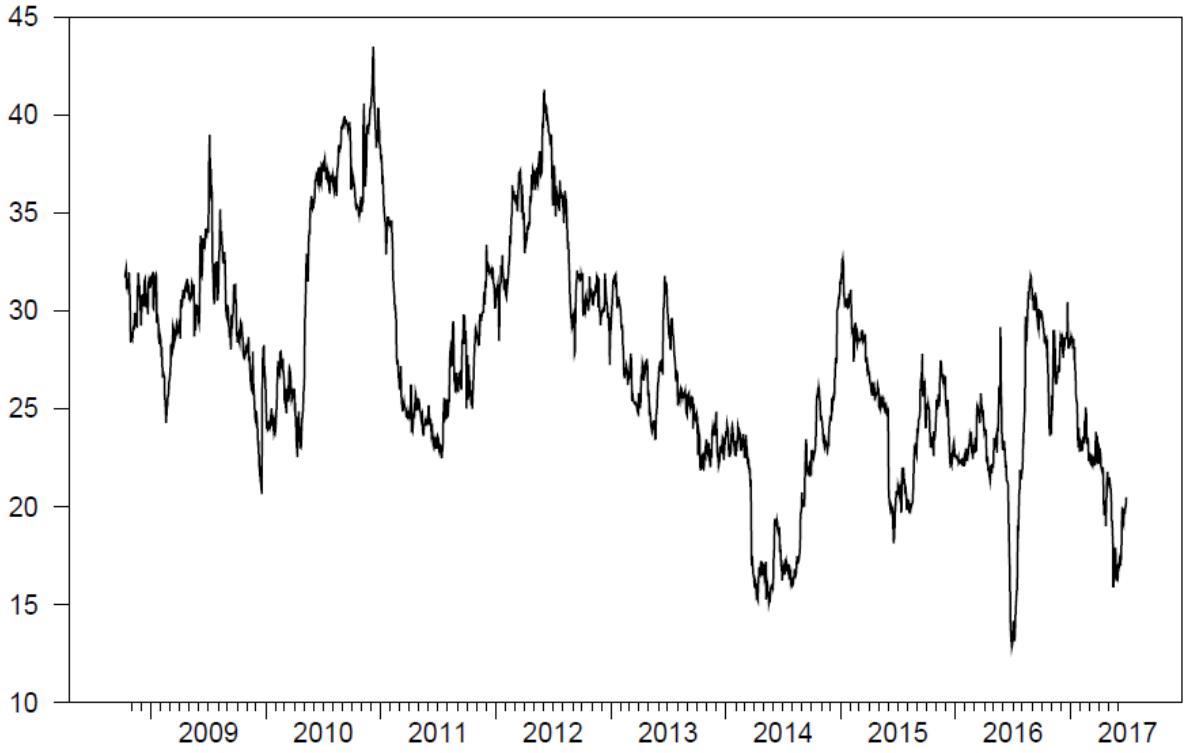


Figure 174: Total Equity Regional Volatility Spillovers for the Beverages/Bottling Sector

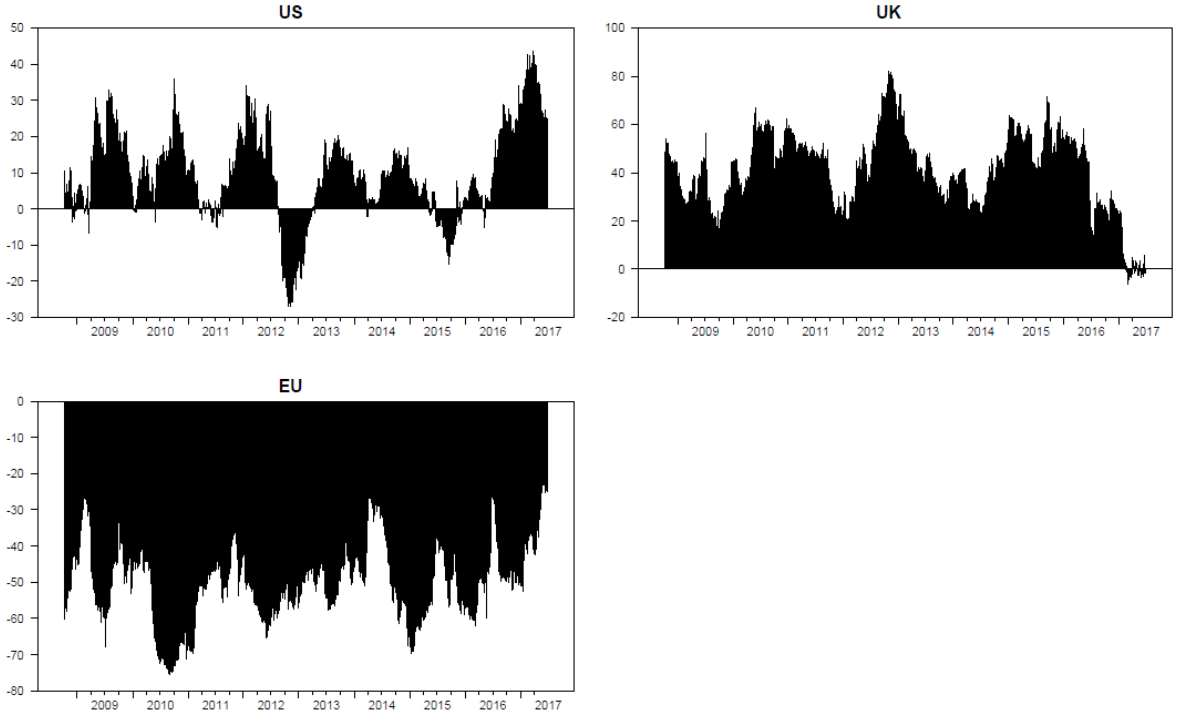


Figure 175: Net Equity Regional Volatility Spillovers for the Beverages/Bottling Sector

Figure 176: Total Equity Regional Volatility Spillovers for the Basic Materials Sector

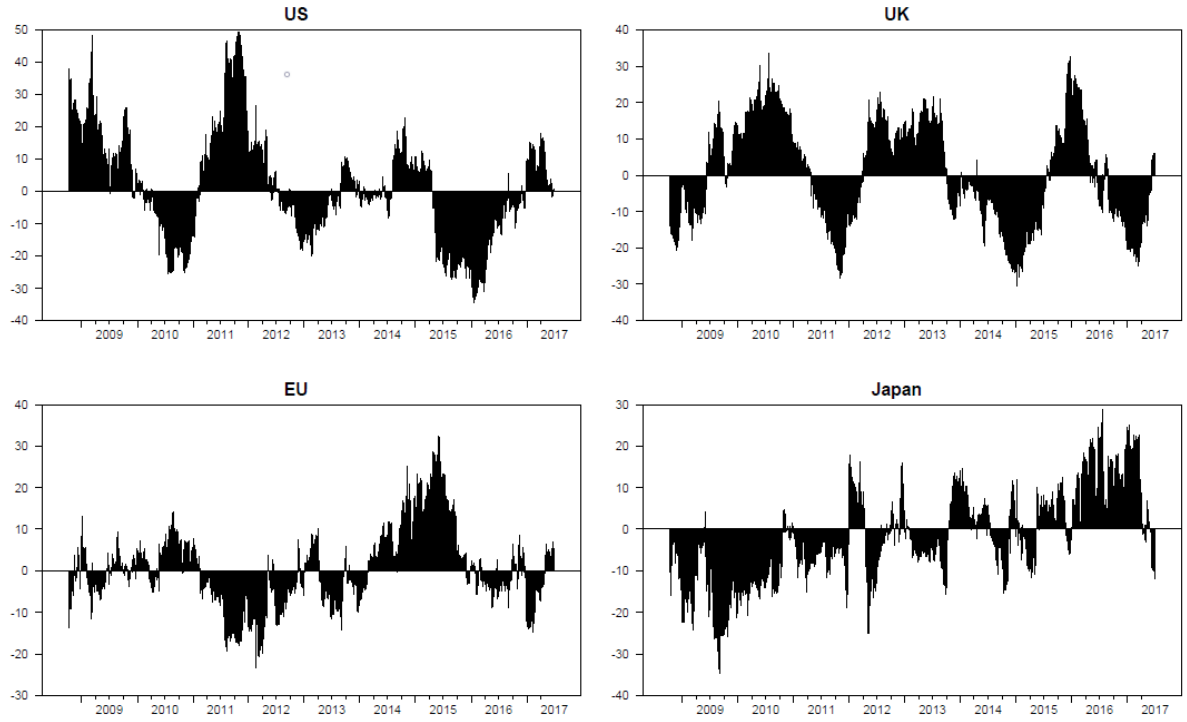


Figure 177: Net Equity Regional Volatility Spillovers for the Basic Materials Sector

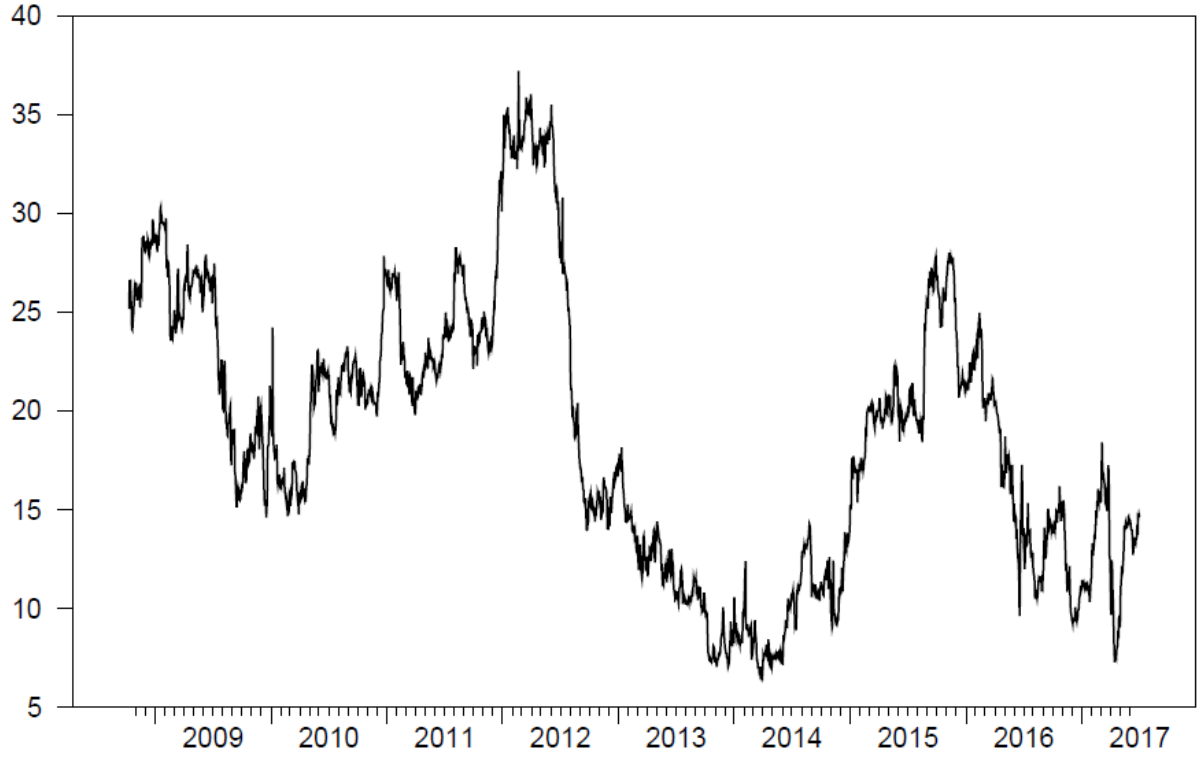


Figure 178: Total Equity Regional Volatility Spillovers for the Chemicals Sector

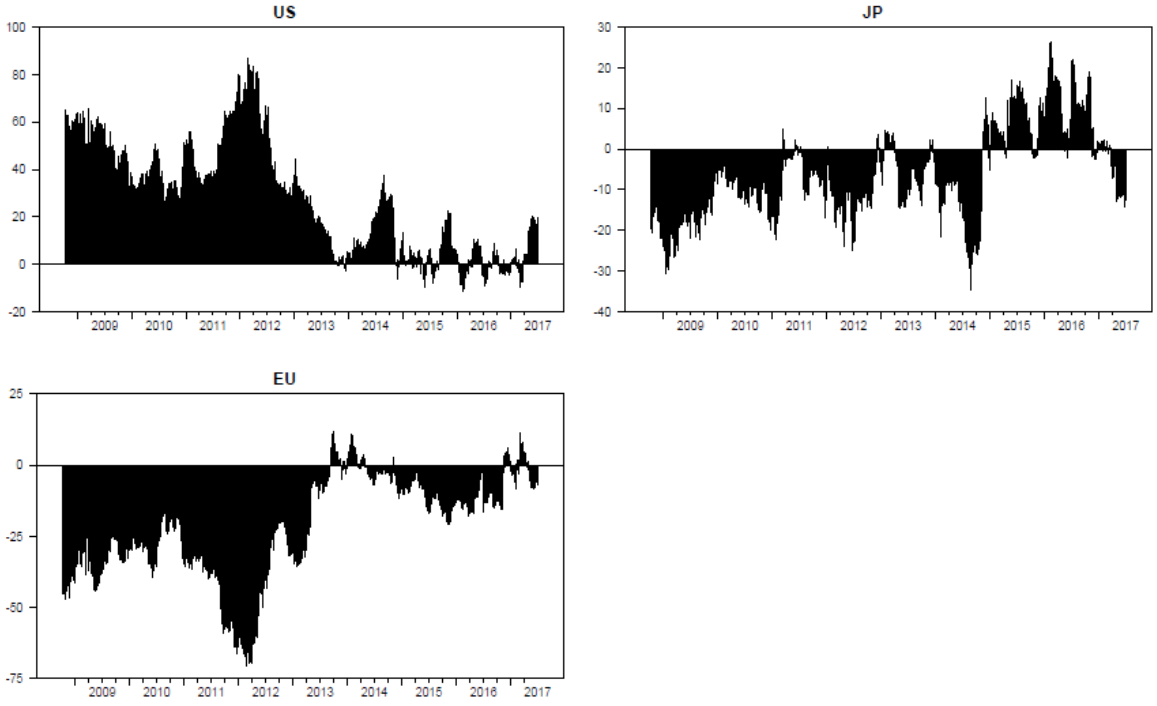


Figure 179: Net Equity Regional Volatility Spillovers for the Chemicals Sector

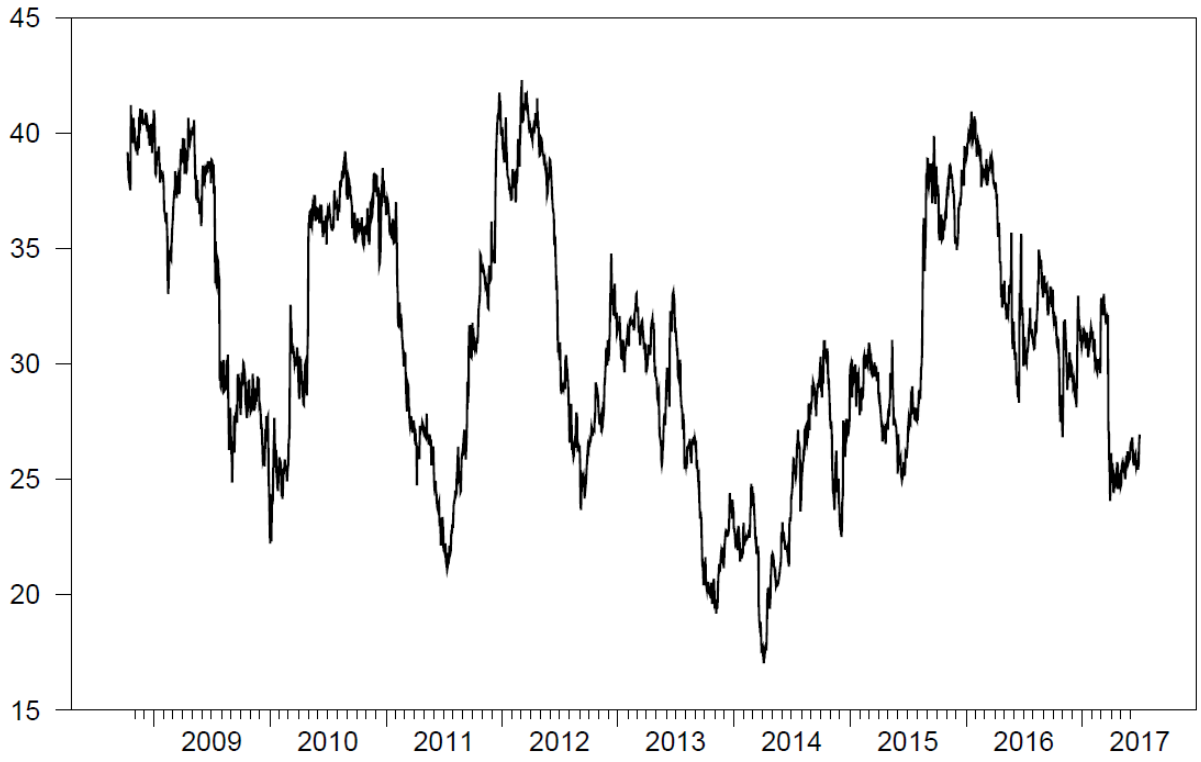


Figure 180: Total Equity Volatility Regional Spillovers for the Consumer Goods Sector

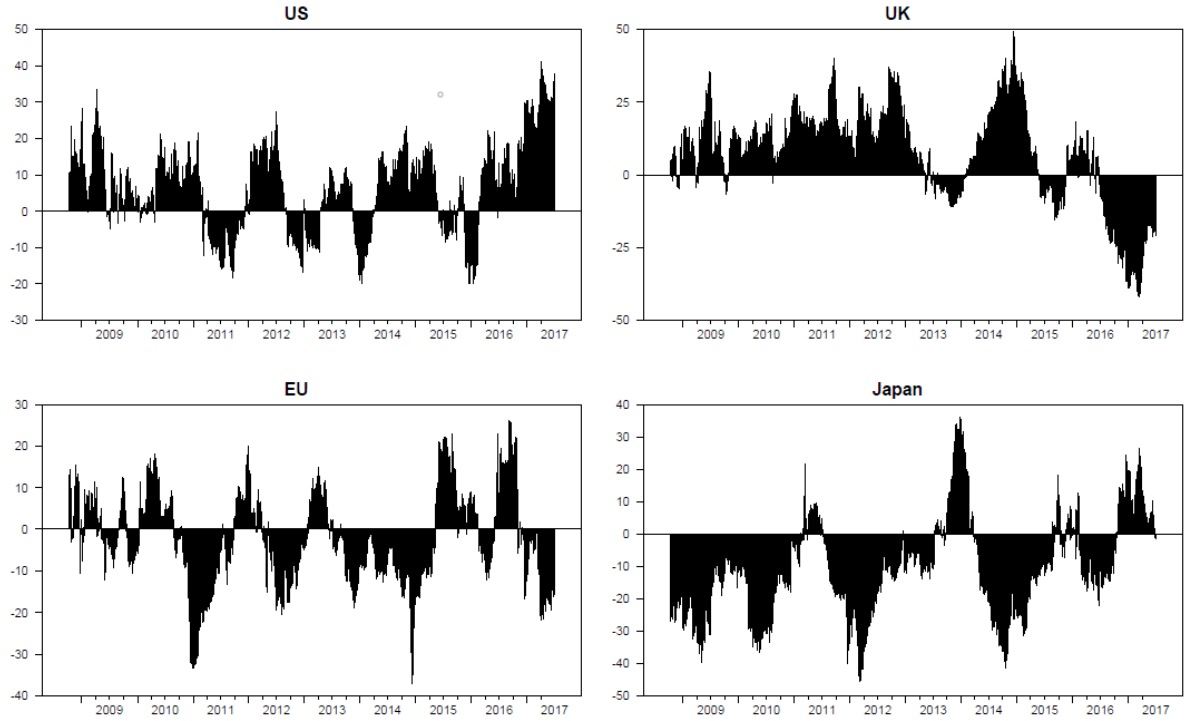


Figure 181: Net Equity Volatility Regional Spillovers for the Consumer Goods Sector

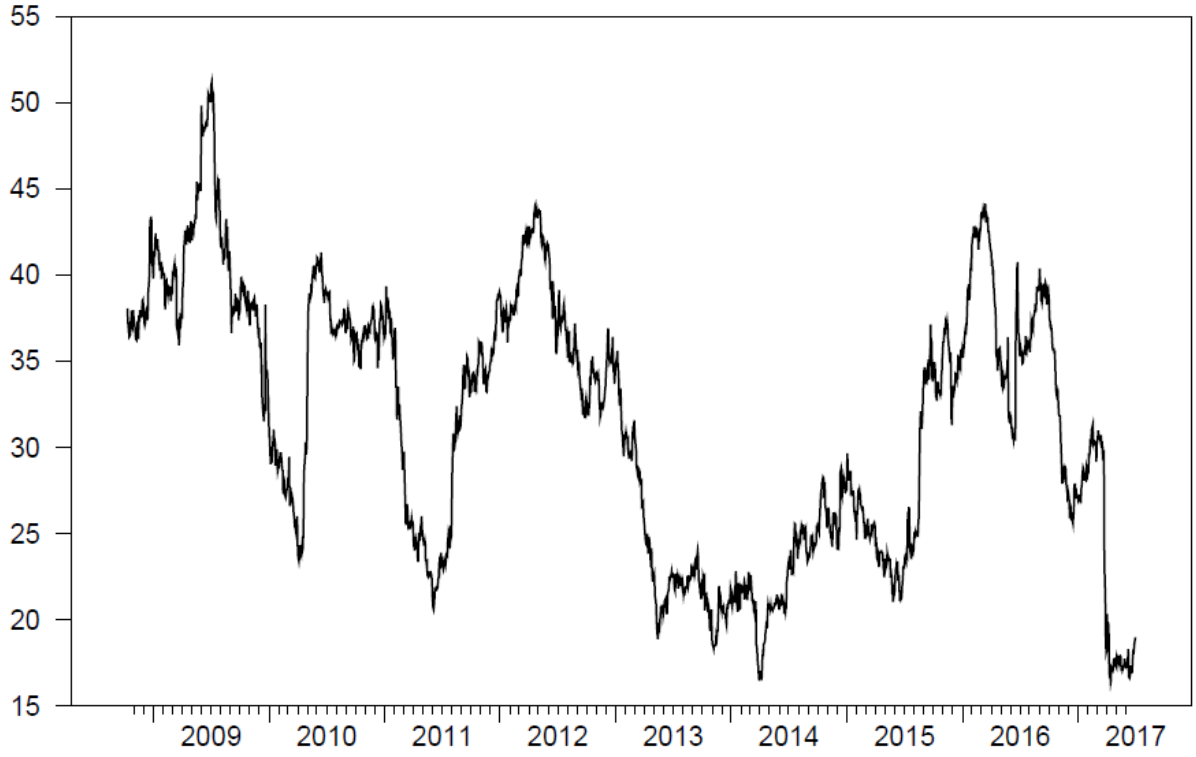


Figure 182: Total Equity Regional Volatility Spillovers for the Consumer Services Sector

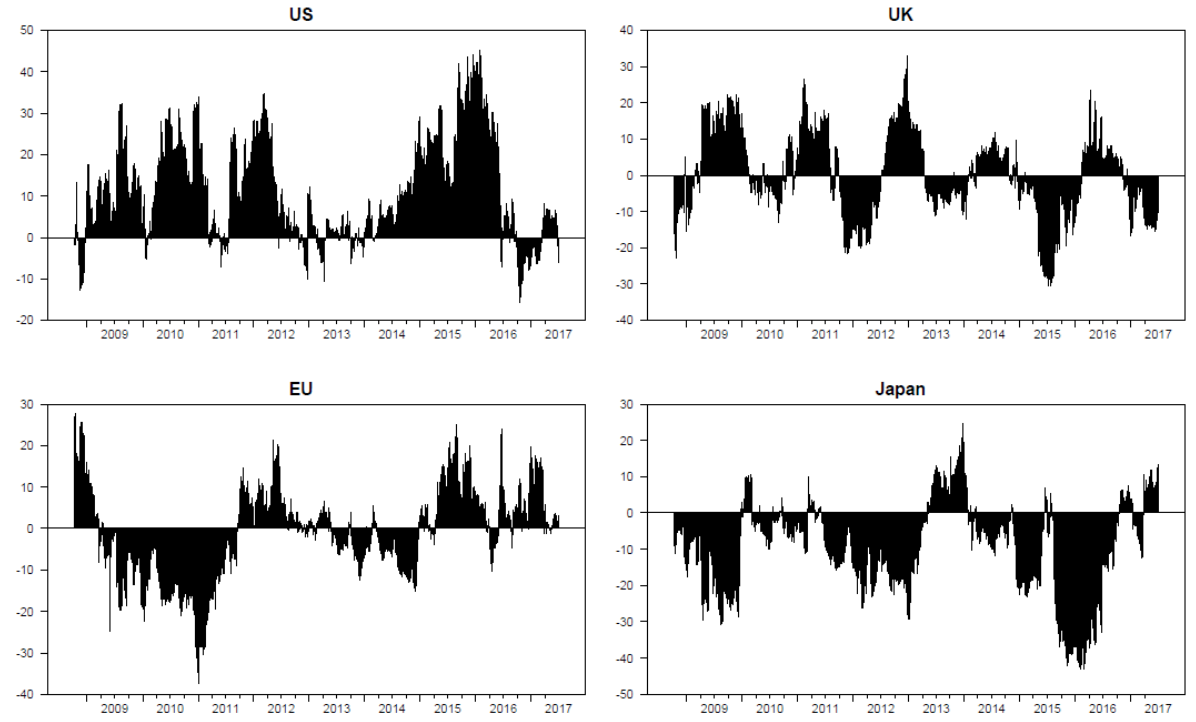


Figure 183: Net Equity Regional Volatility Spillovers for the Consumer Services Sector

Figure 184: Total Equity Regional Volatility Spillovers for the Financials Sector

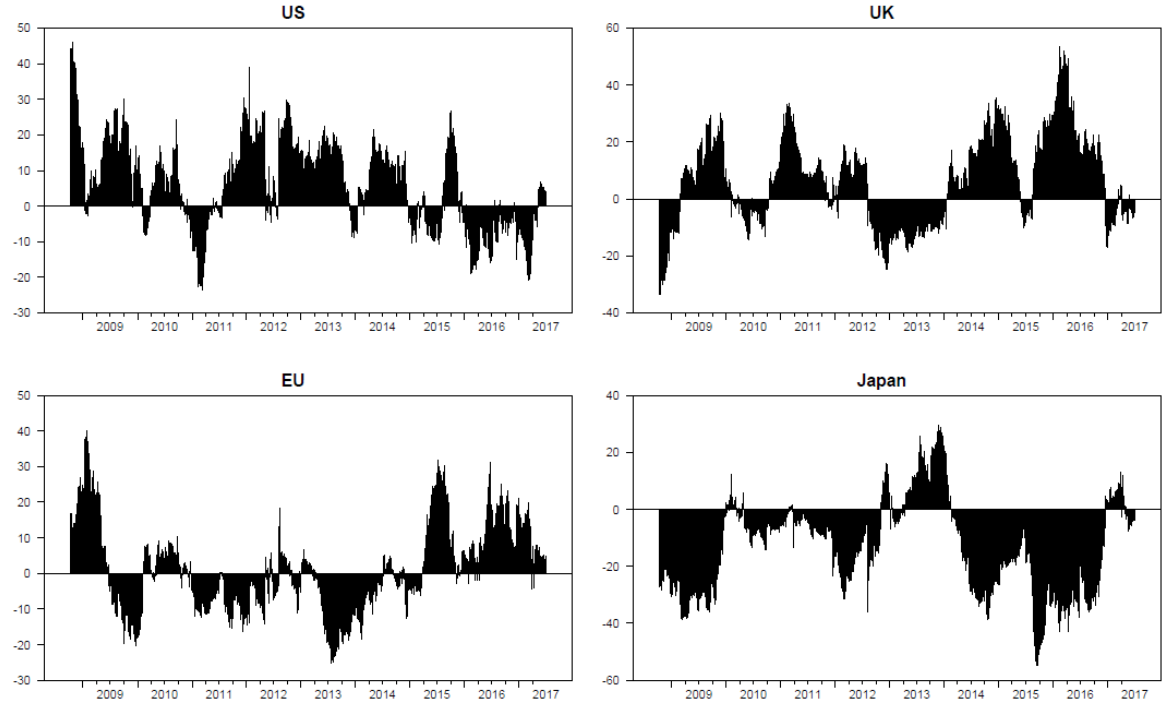


Figure 185: Net Equity Regional Volatility Spillovers for the Financials Sector

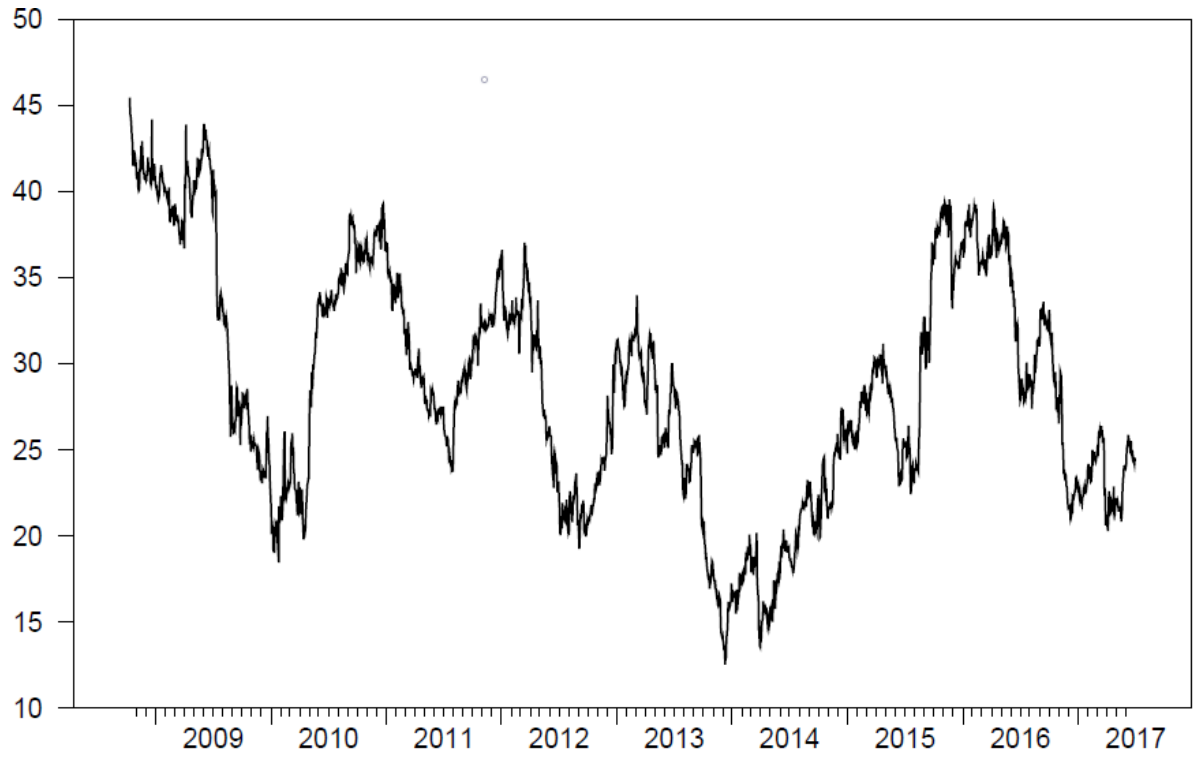


Figure 186: Total Equity Regional Volatility Spillovers for the Healthcare Sector

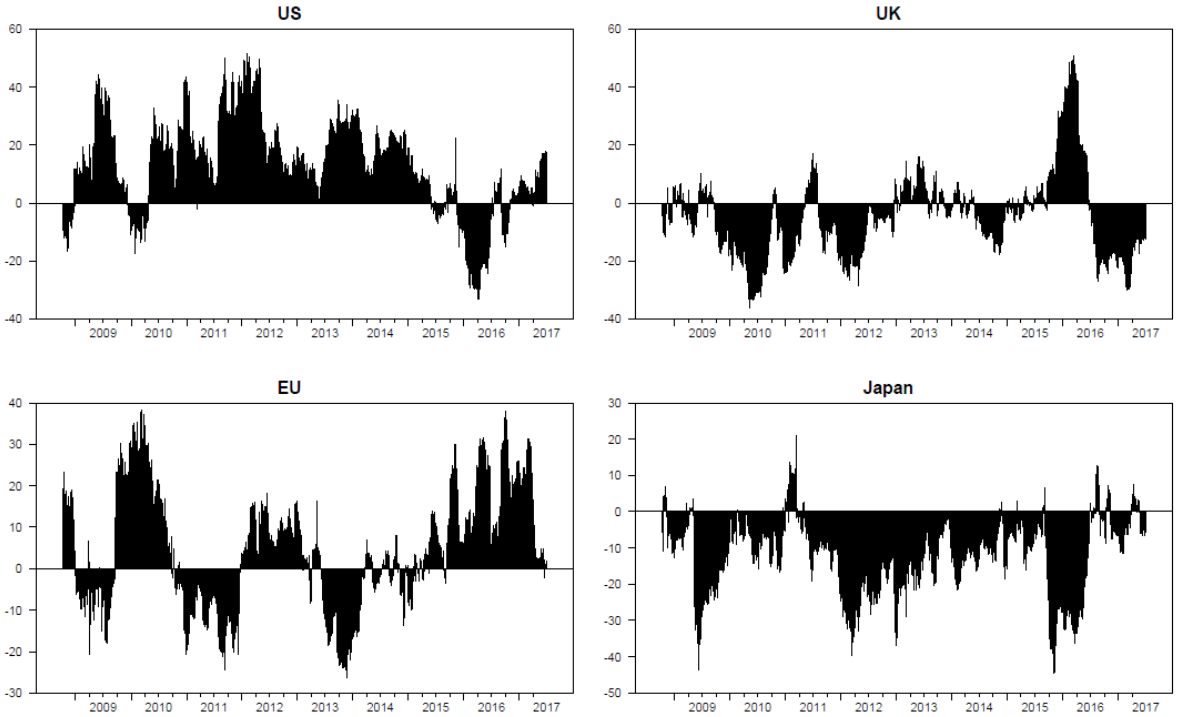


Figure 187: Net Equity Regional Volatility Spillovers for the Healthcare Sector

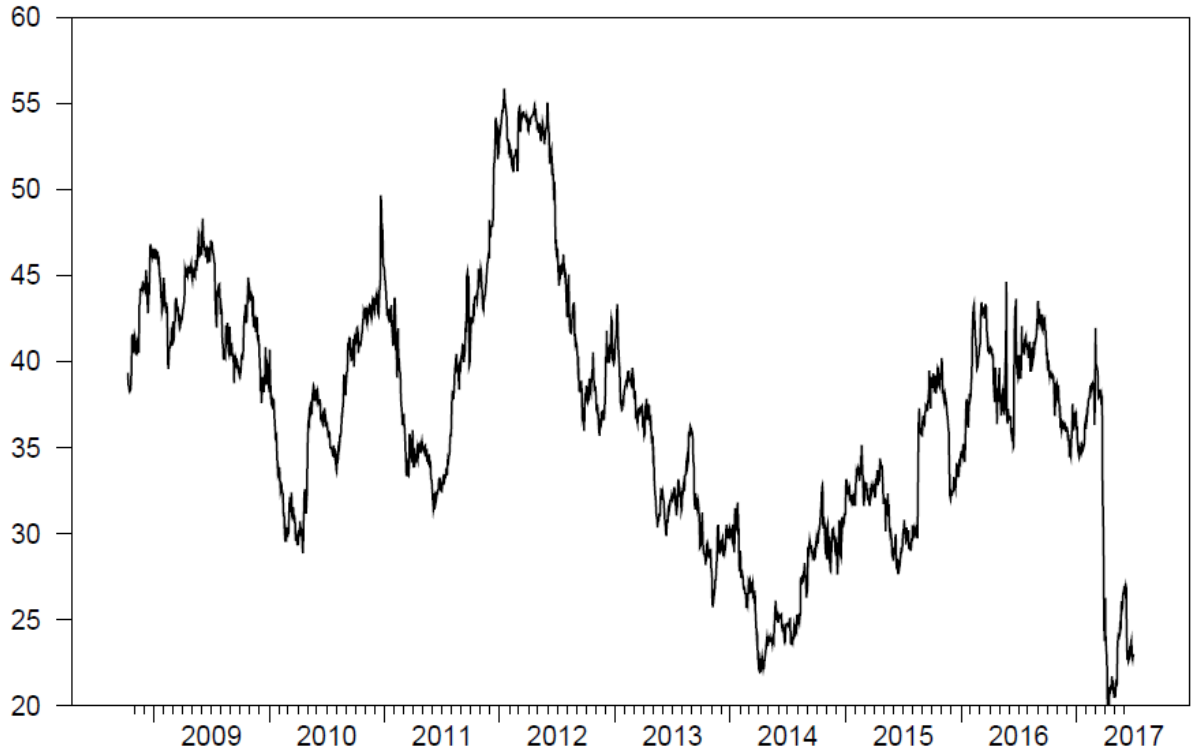


Figure 188: Total Equity Regional Volatility Spillovers for the Industrials Sector

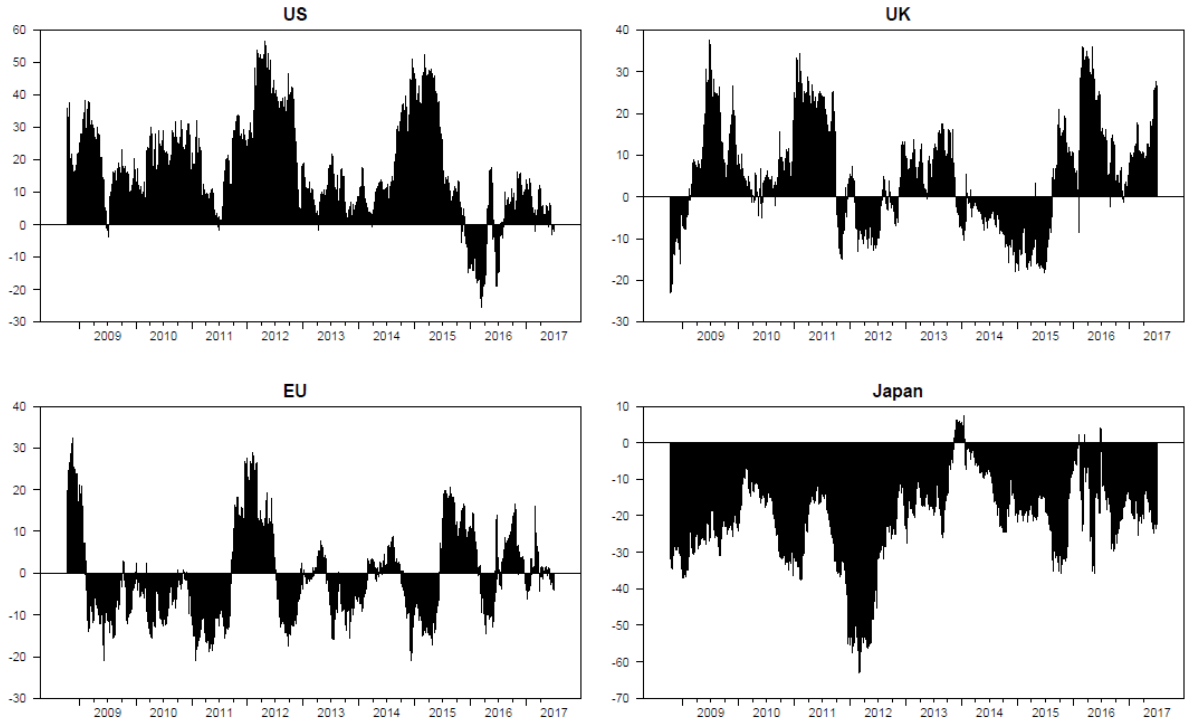


Figure 189: Net Equity Regional Volatility Spillovers for the Industrials Sector

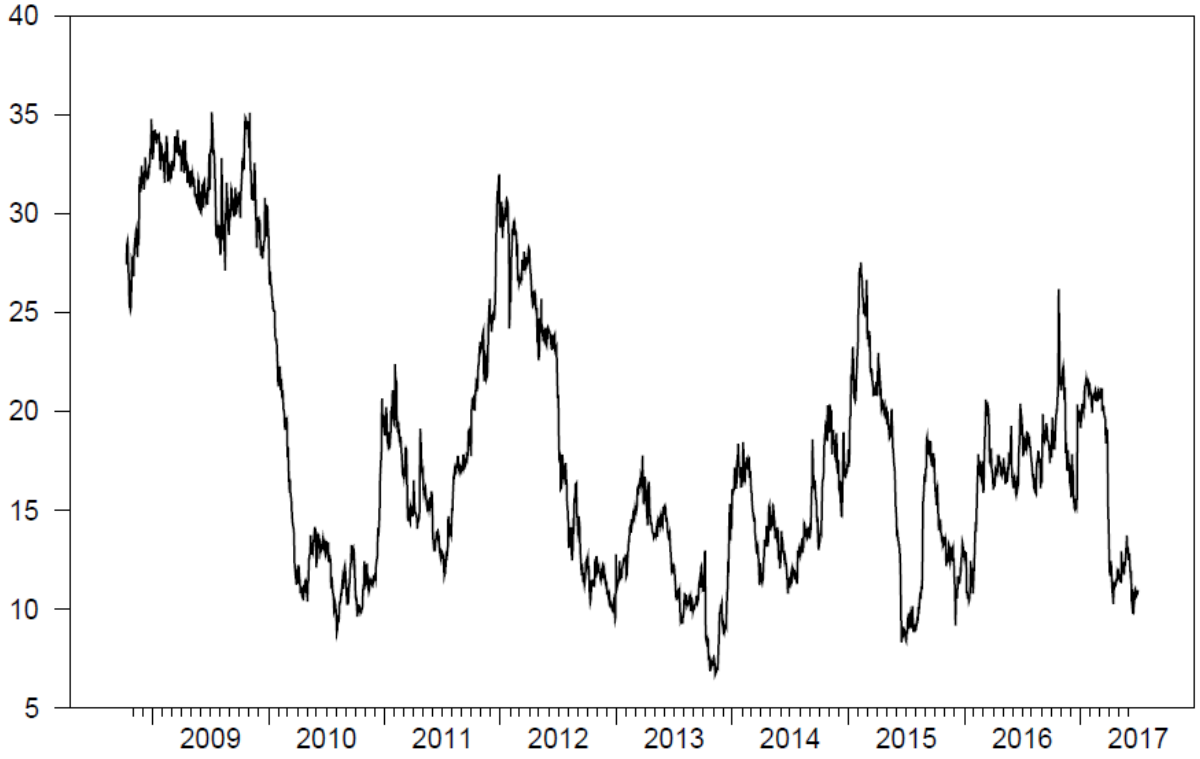


Figure 190: Total Equity Regional Volatility Spillovers for the Metals & Mining Sector

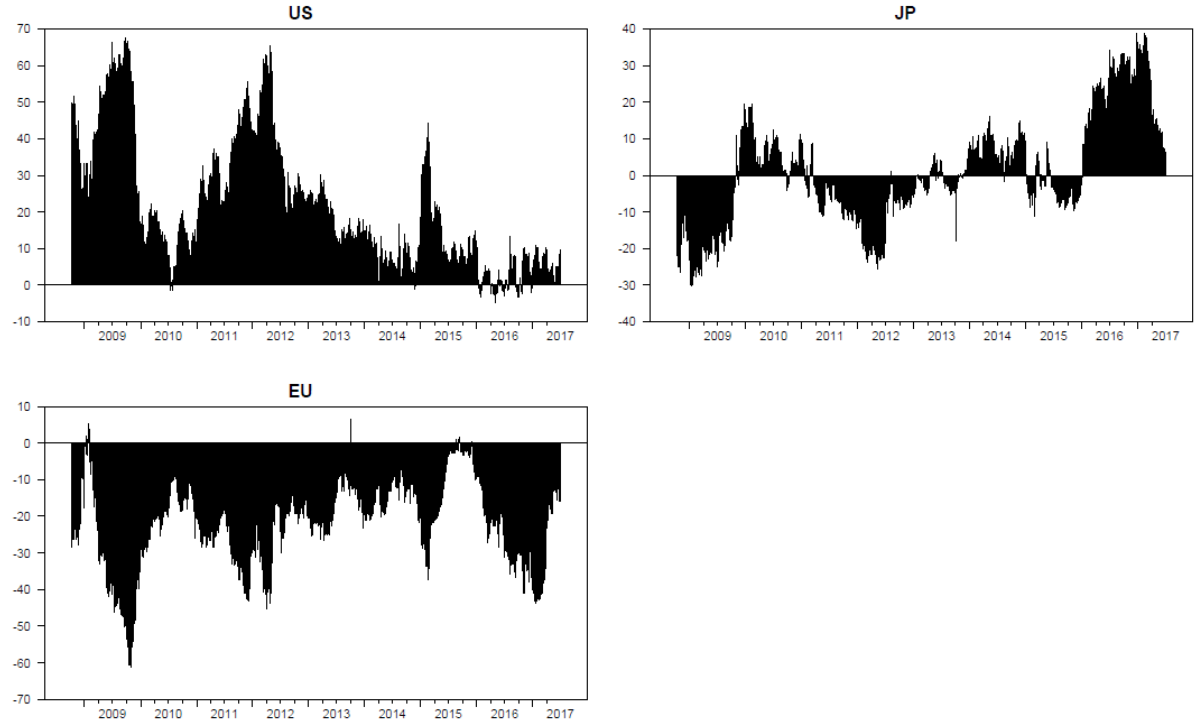


Figure 191: Net Equity Regional Volatility Spillovers for the Metals & Mining Sector

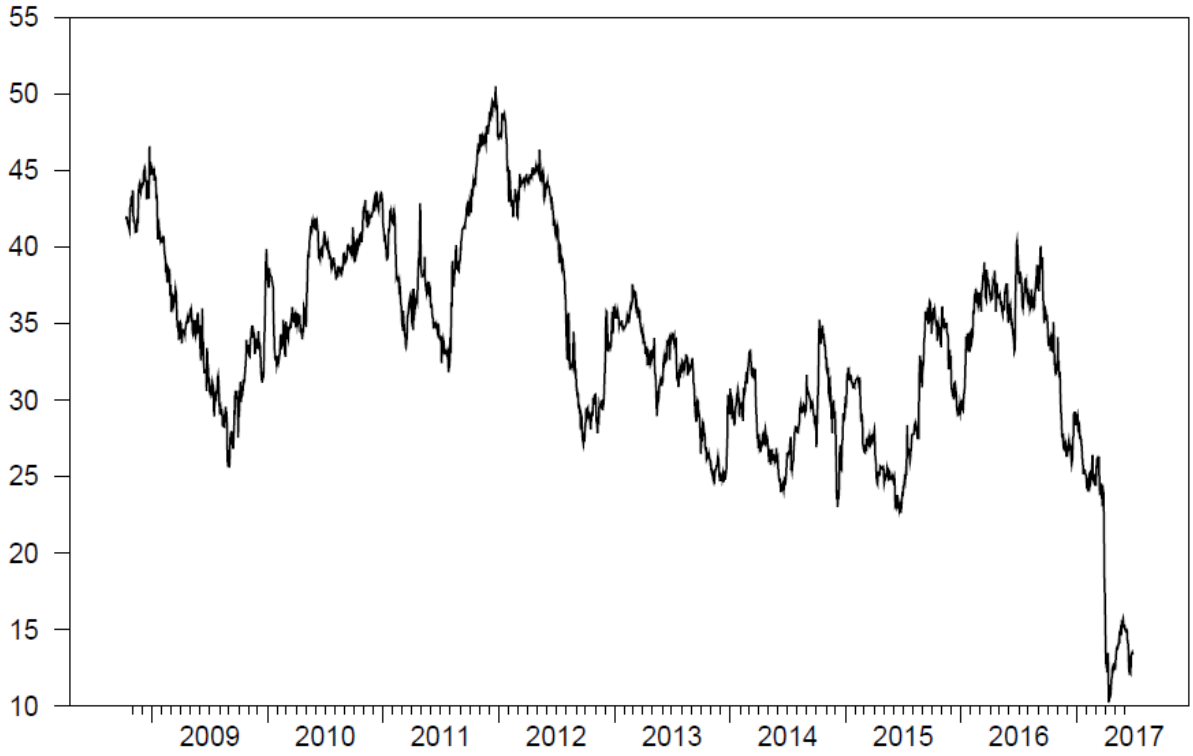


Figure 192: Total Equity Regional Volatility Spillovers for the Other Financials Sector

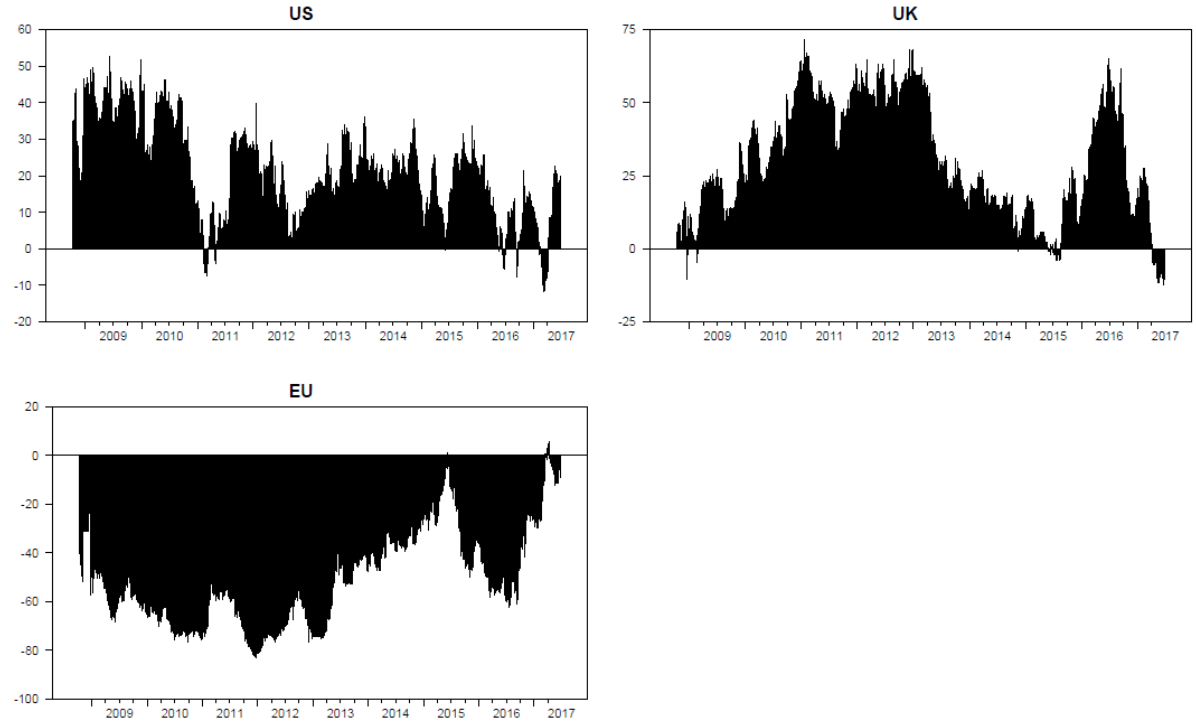


Figure 193: Net Equity Regional Volatility Spillovers for the Other Financials Sector

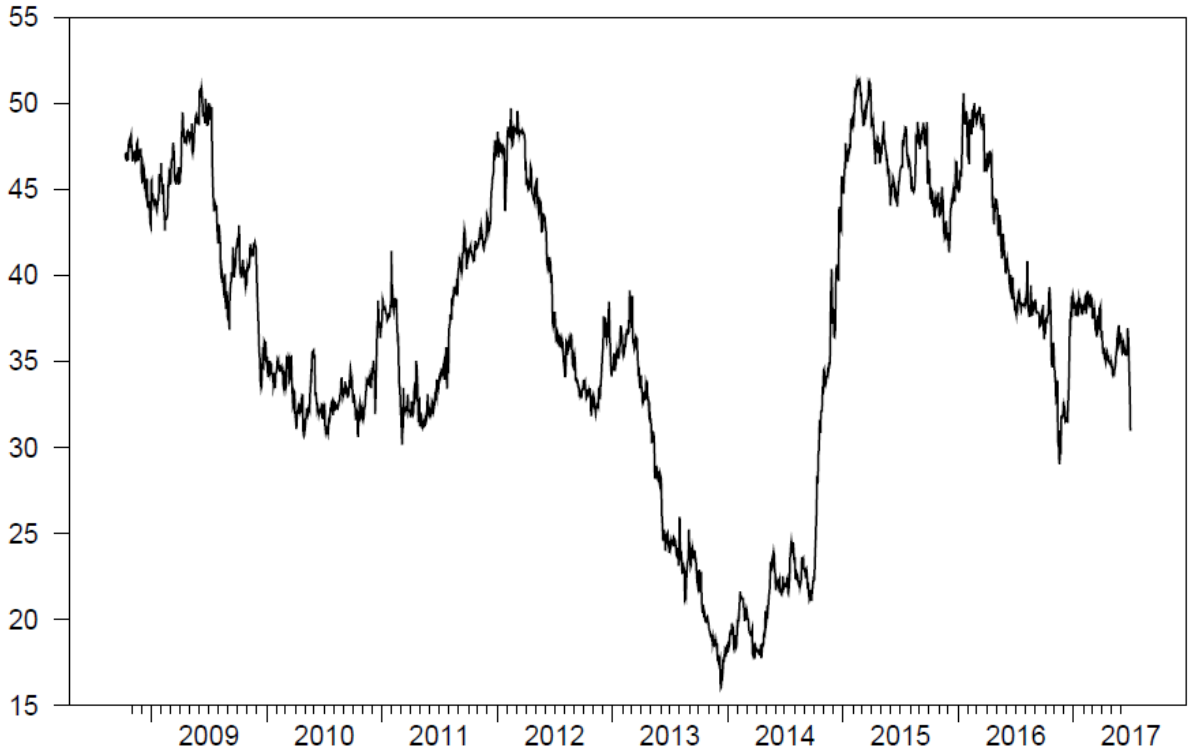


Figure 194: Total Equity Regional Volatility Spillovers for the Oil & Gas Sector

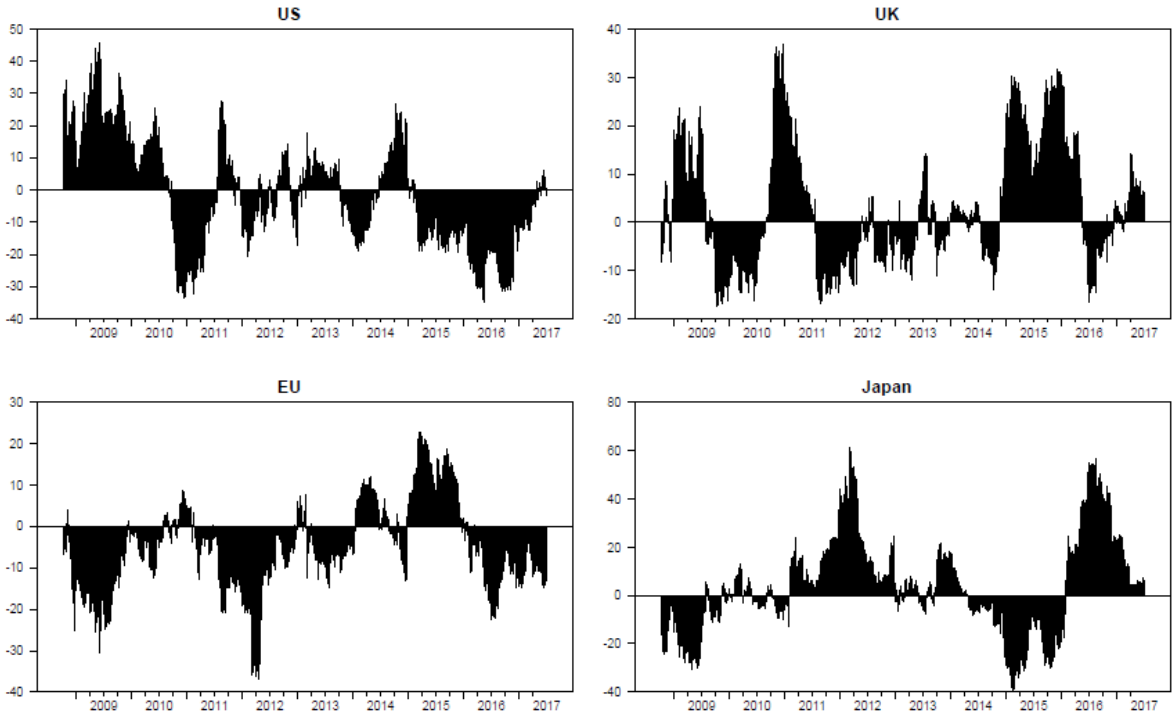


Figure 195: Net Equity Regional Volatility Spillovers for the Oil & Gas Sector

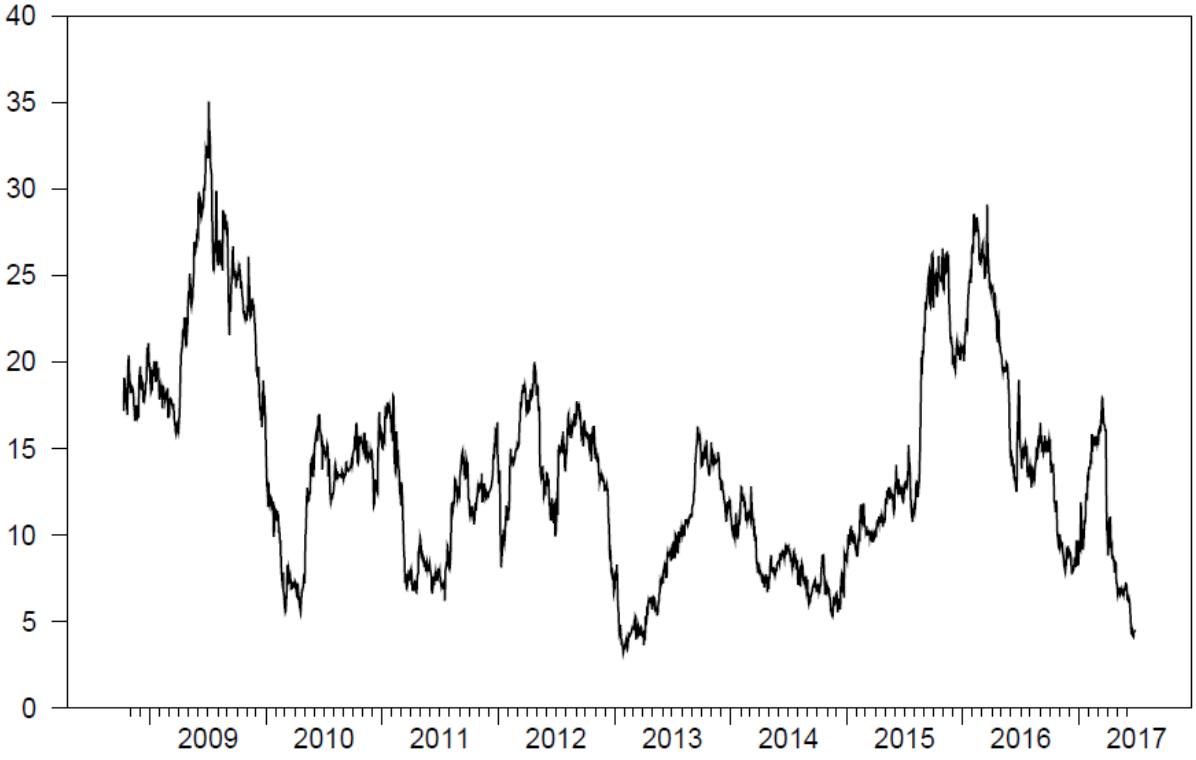


Figure 196: Total Equity Regional Volatility Spillovers for the Other Retail Sector

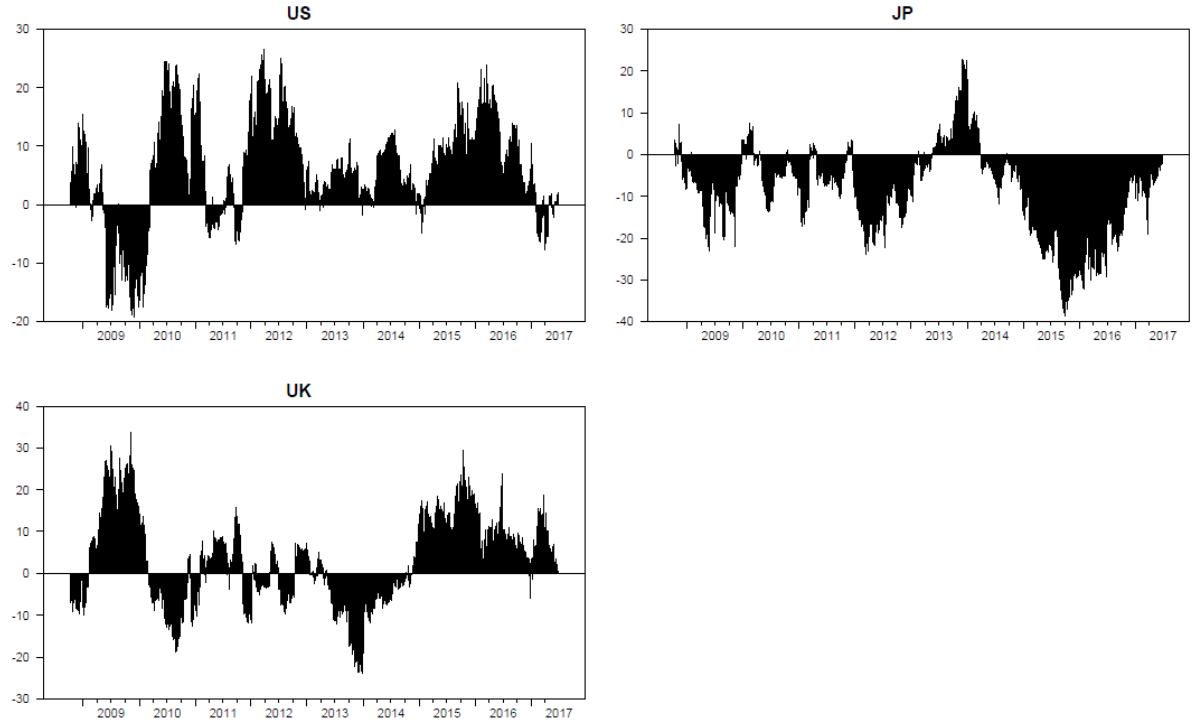


Figure 197: Net Equity Regional Volatility Spillovers for the Other Retail Sector

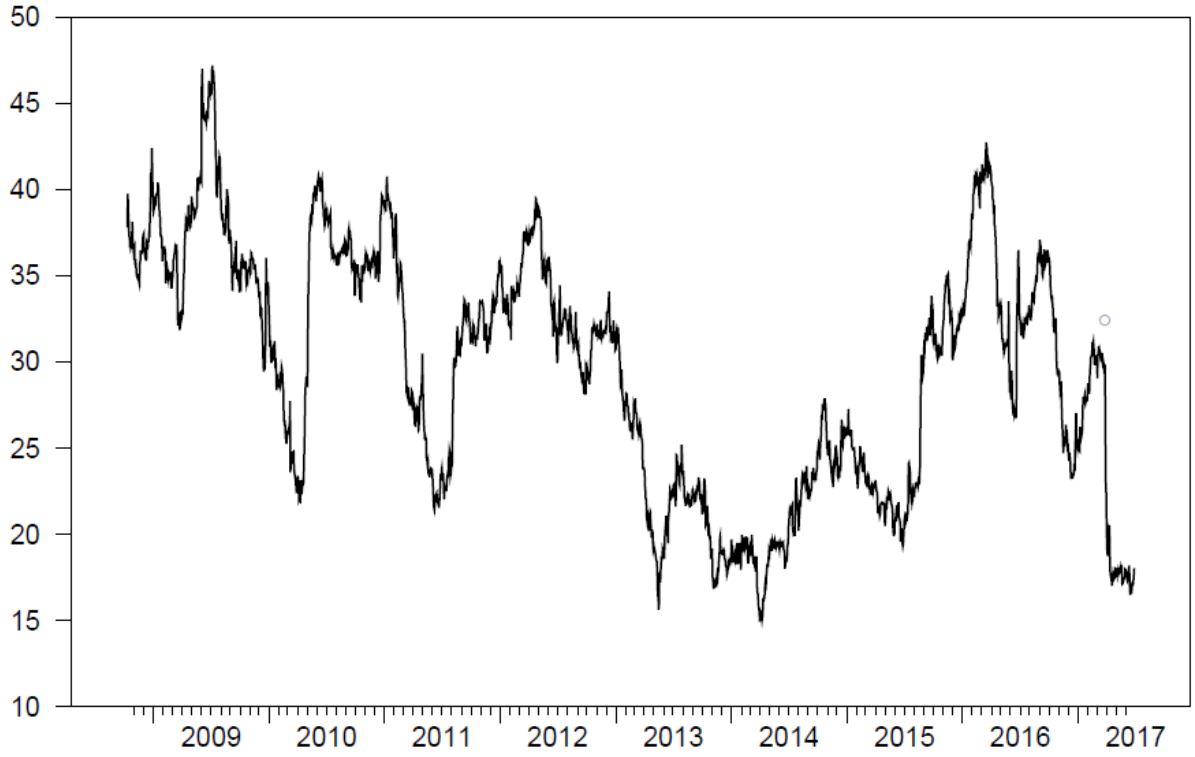


Figure 198: Total Equity Regional Volatility Spillovers for the Other Services Sector

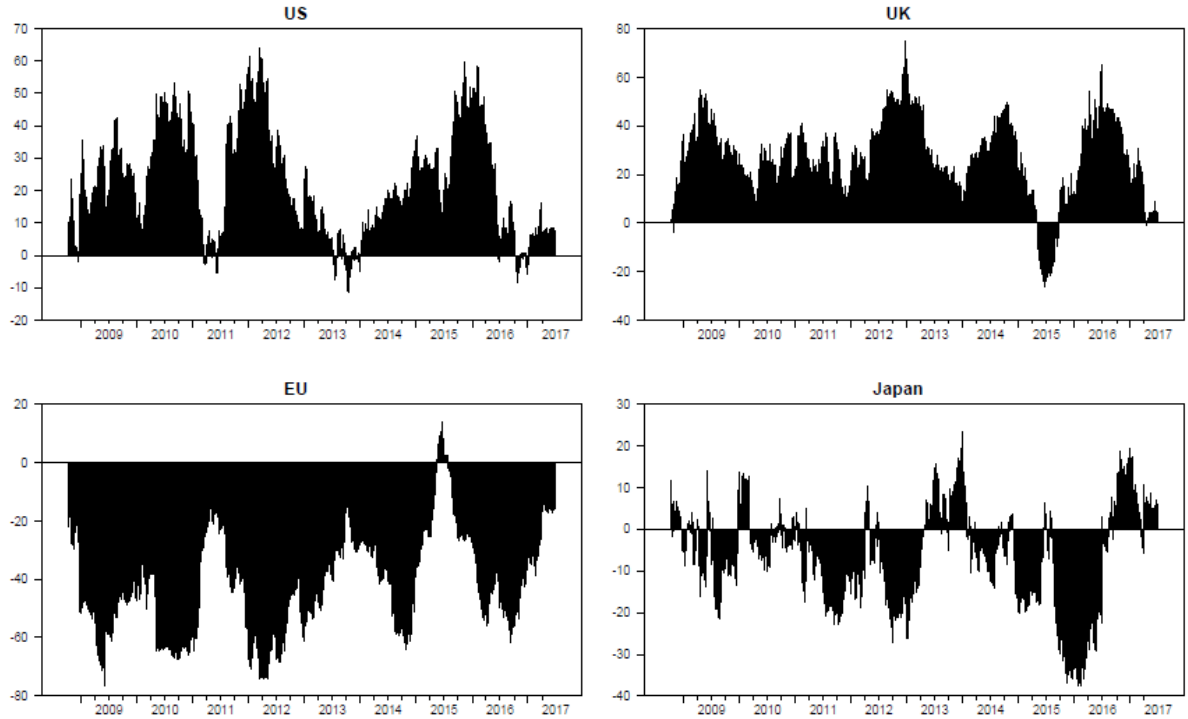


Figure 199: Net Equity Regional Volatility Spillovers for the Other Services Sector

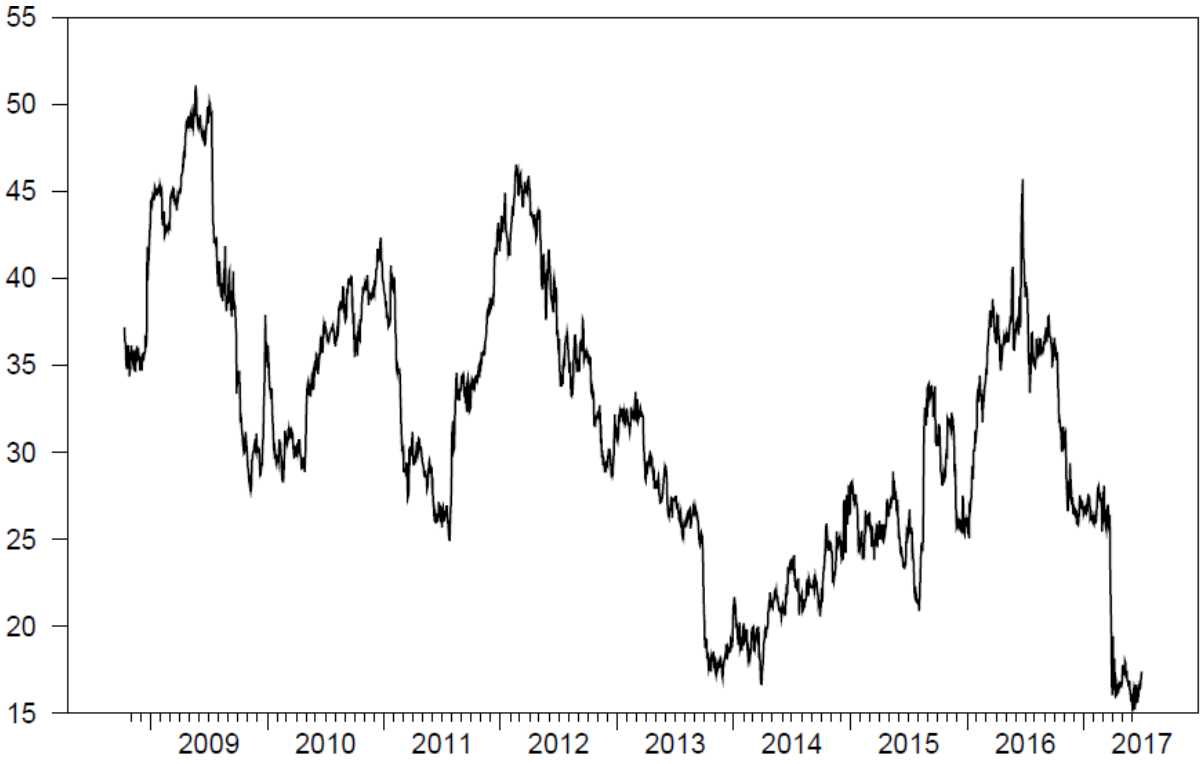


Figure 200: Total Equity Regional Volatility Spillovers for the Technology Sector

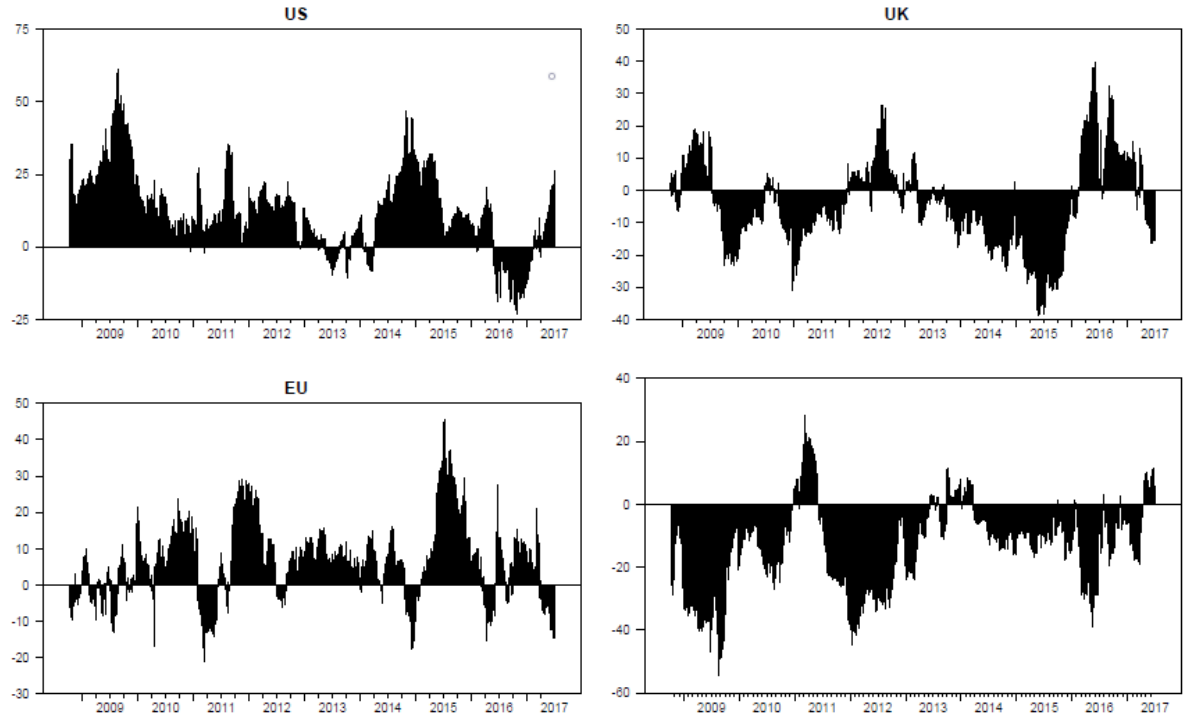


Figure 201: Net Equity Regional Volatility Spillovers for the Technology Sector

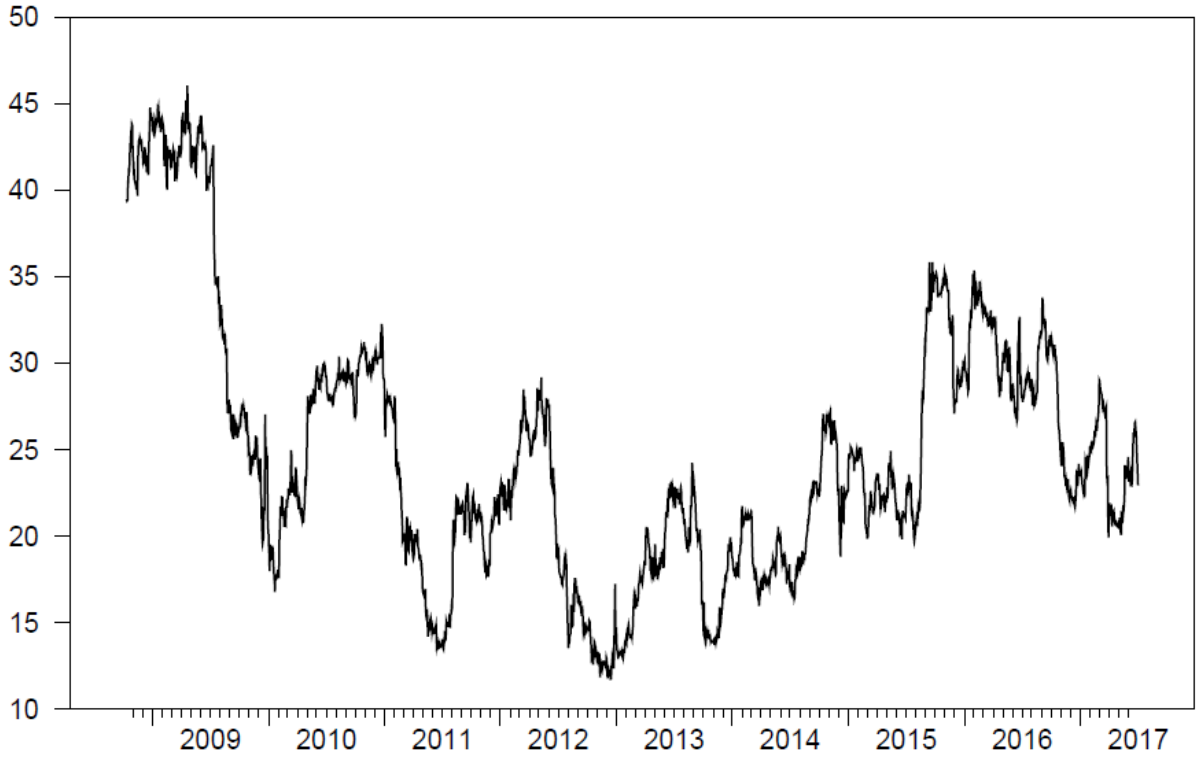


Figure 202: Total Equity Regional Volatility Spillovers for the Telecommunications Sector

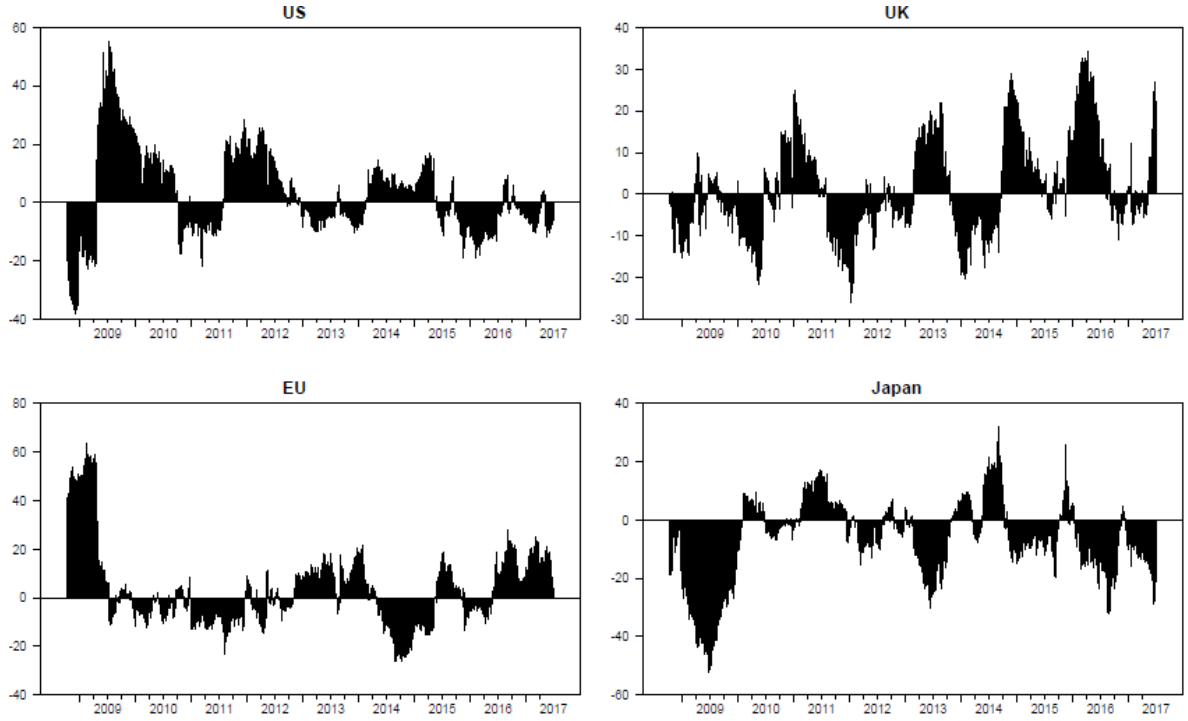


Figure 203: Net Equity Regional Volatility Spillovers for the Telecommunications Sector

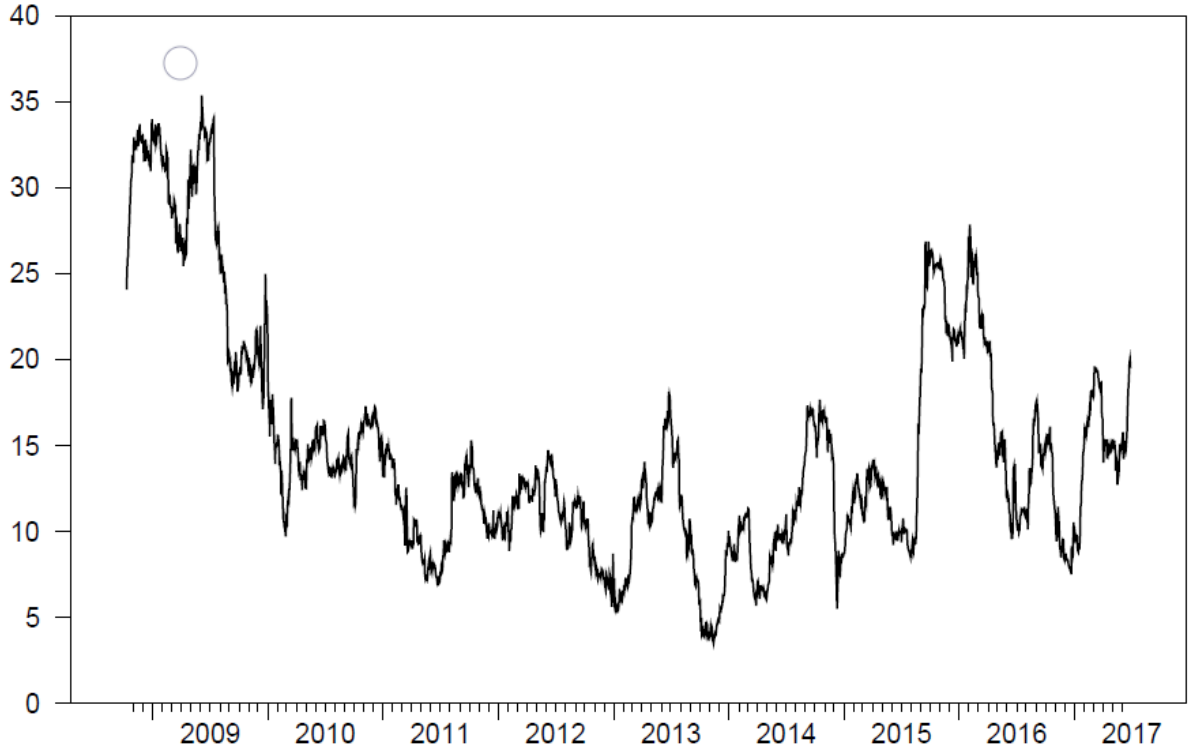


Figure 204: Total Equity Regional Volatility Spillovers for the Other Telecommunications Sector

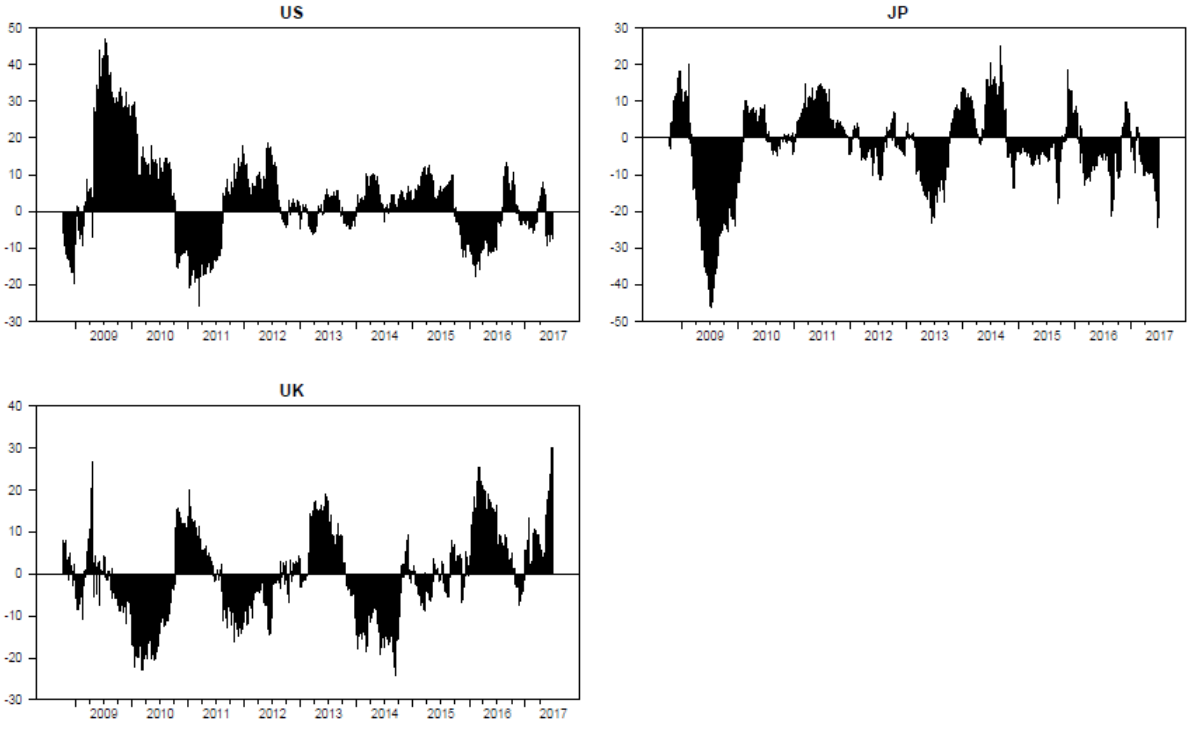


Figure 205: Net Equity Regional Volatility Spillovers for the Other Telecommunications Sector

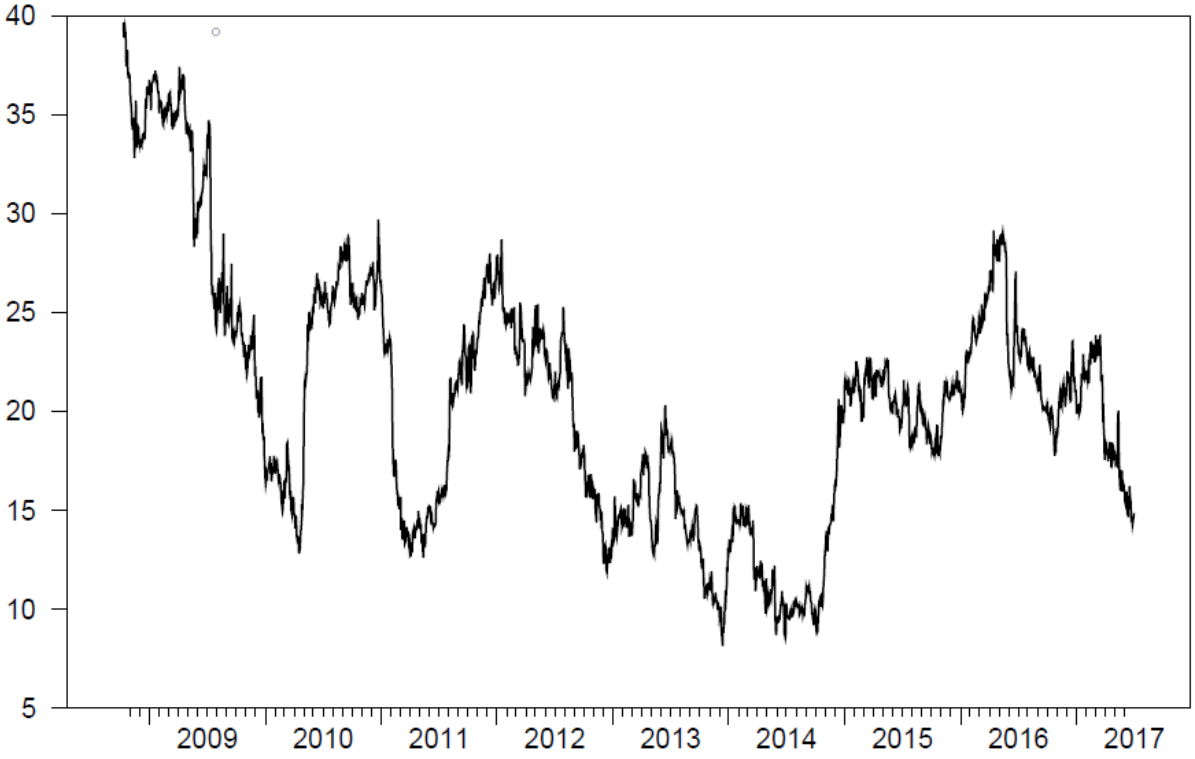


Figure 206: Total Equity Regional Volatility Spillovers for the Utility Sector

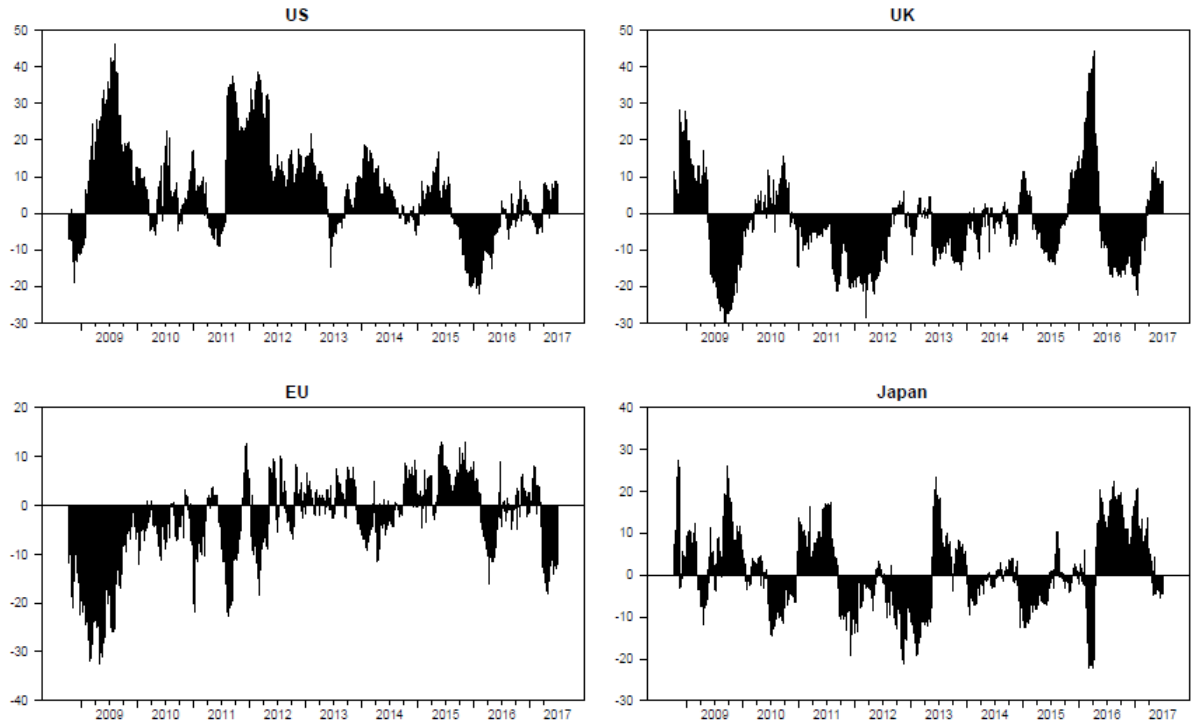


Figure 207: Net Equity Regional Volatility Spillovers for the Utility Sector

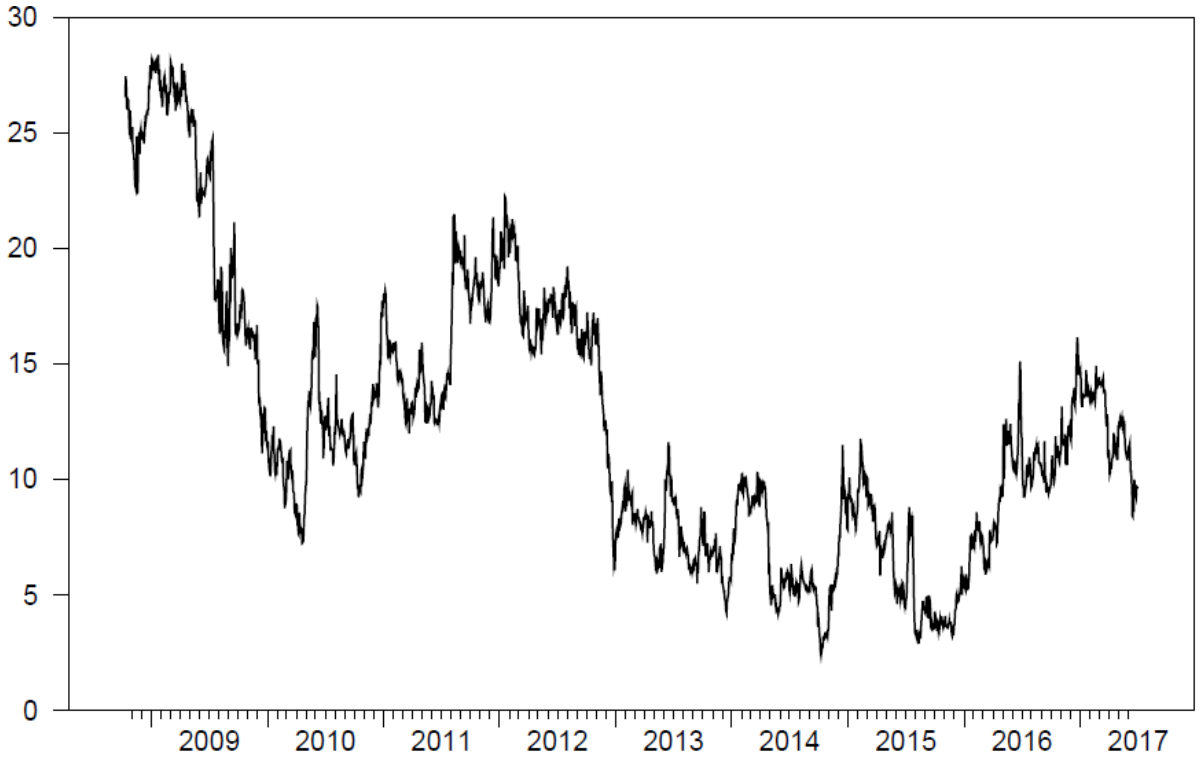


Figure 208: Total Equity Regional Volatility Spillovers for the Utility Other Sector

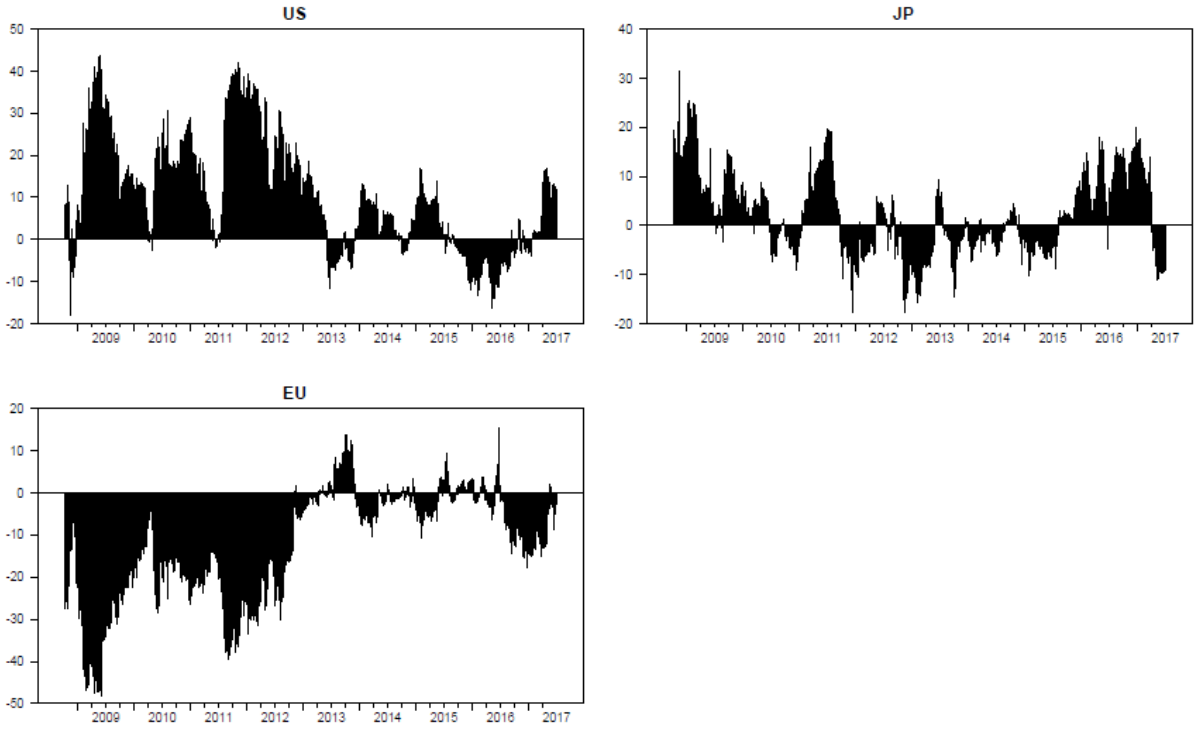


Figure 209: Net Equity Regional Volatility Spillovers for the Utility Other Sector

E.5 CDS Spreads and Equity Volatility Sectors Connectedness: Within Regions Dynamic Analysis

UNITED STATES

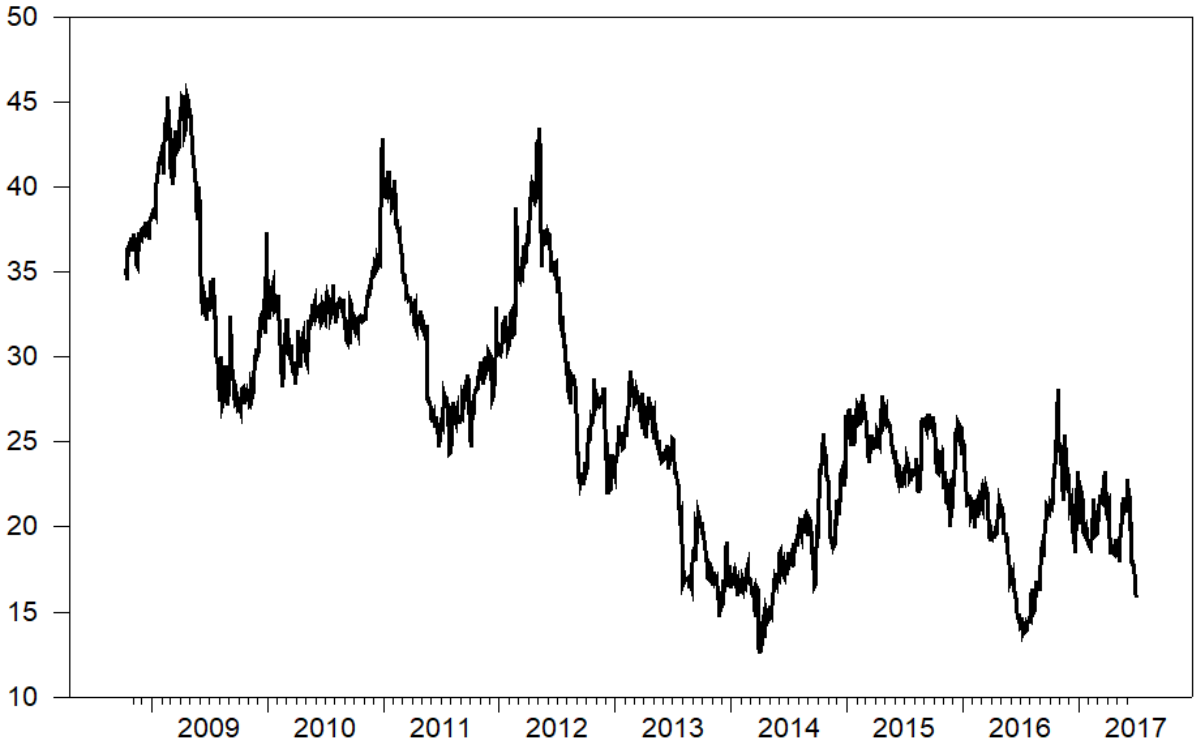


Figure 210: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Basic Materials Sector

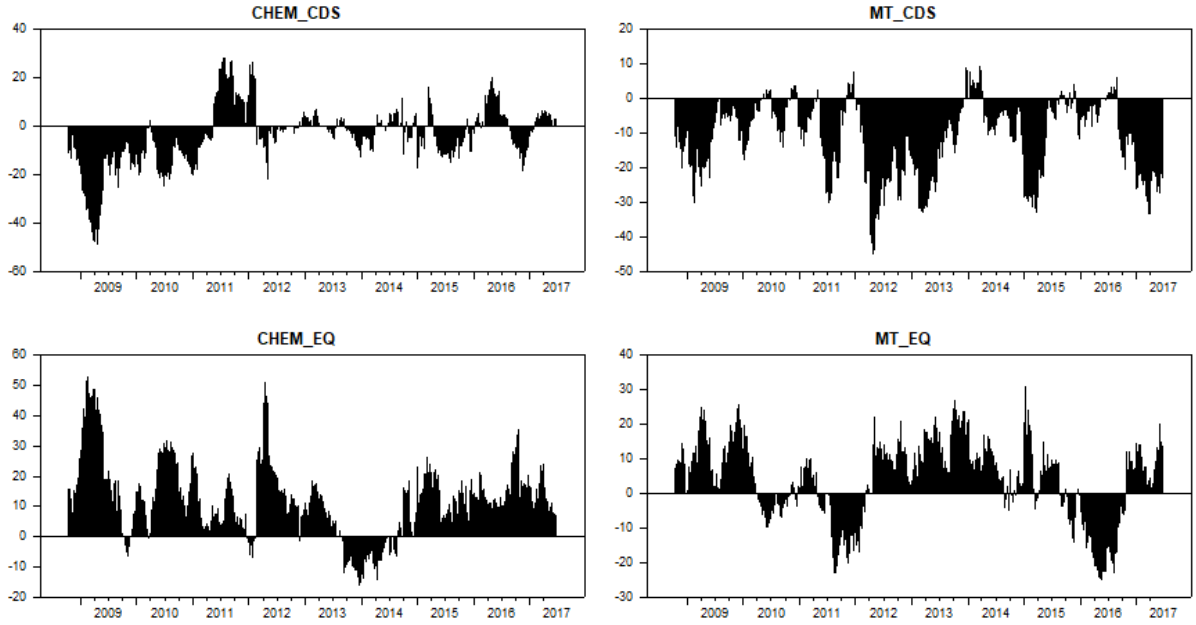


Figure 211: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Basic Materials Sector

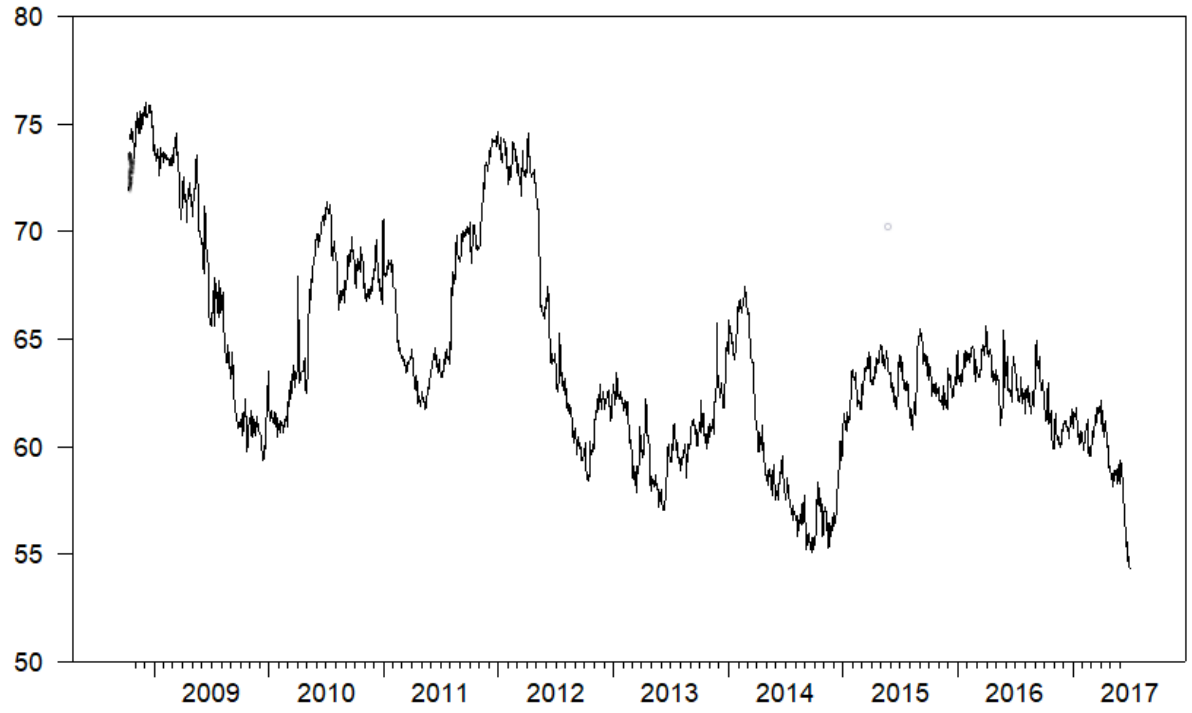


Figure 212: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Goods Sector

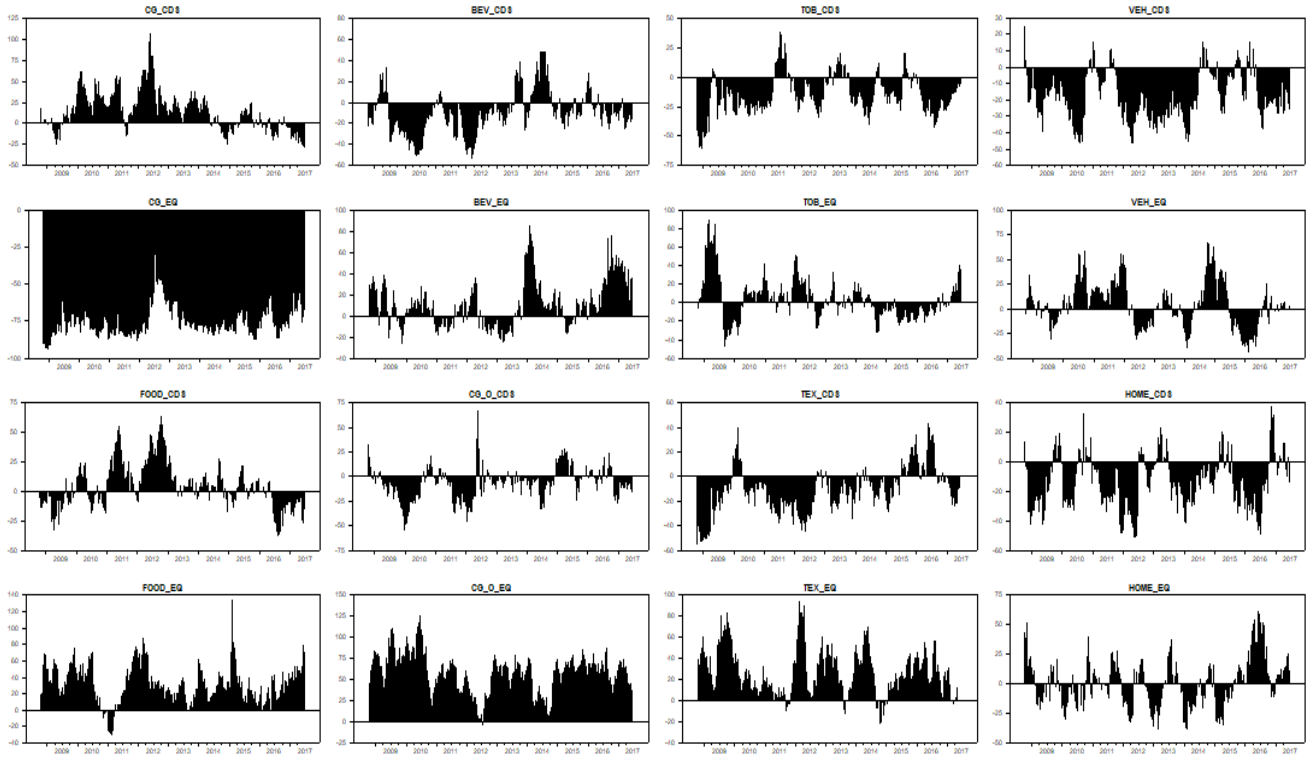


Figure 213: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Goods Sector

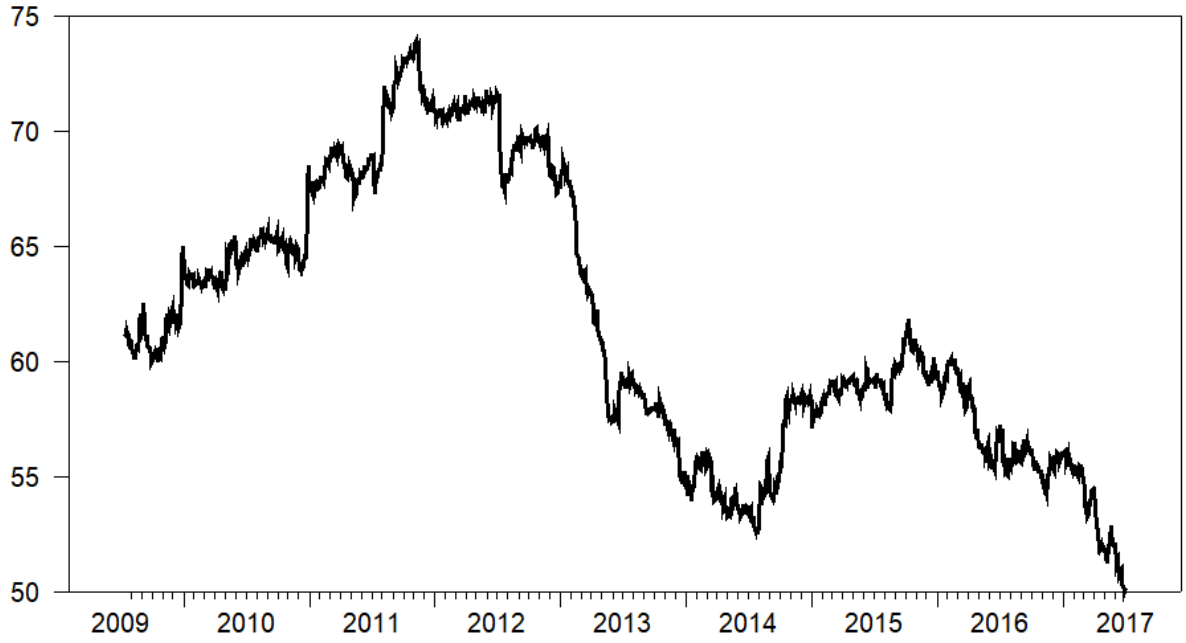


Figure 214: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Services Sector

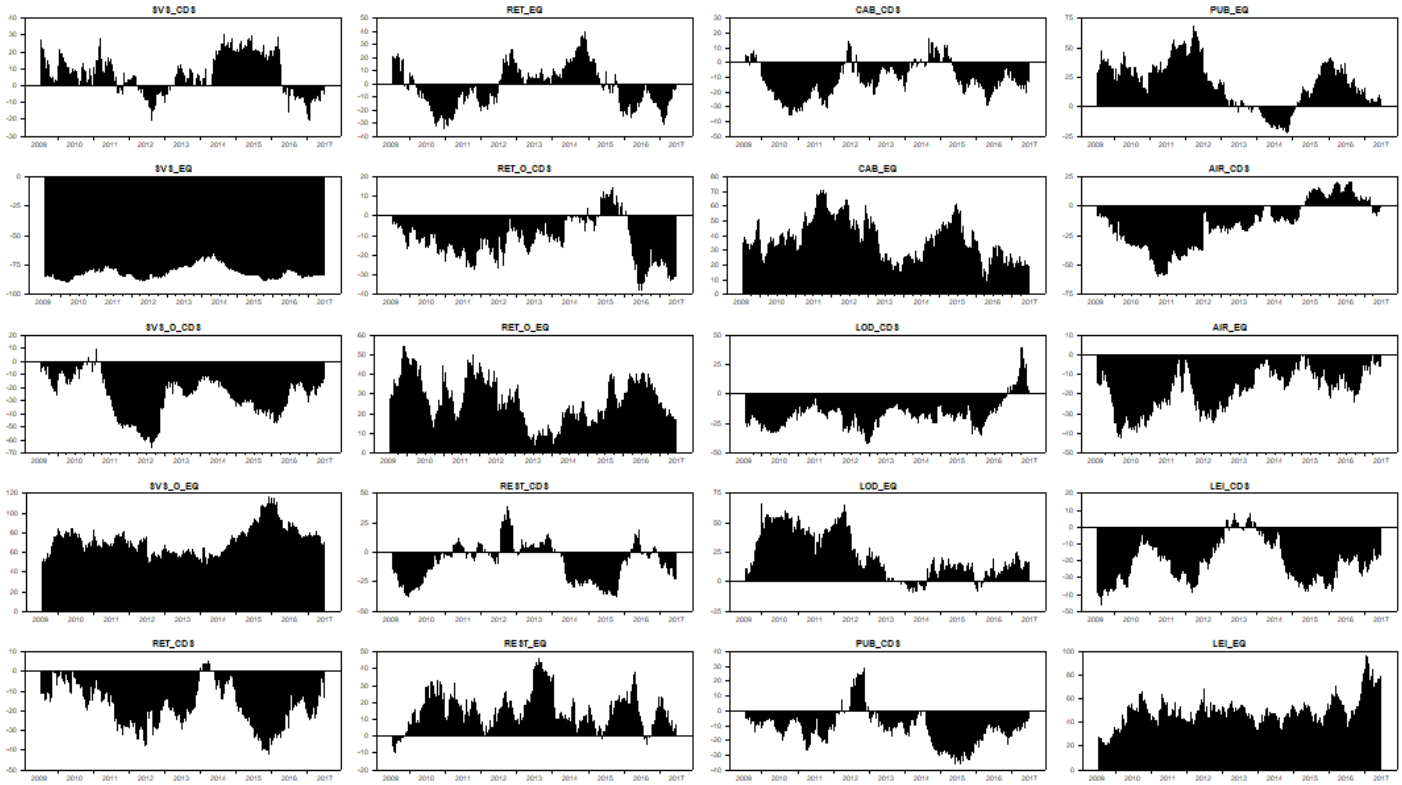


Figure 215: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Services Sector

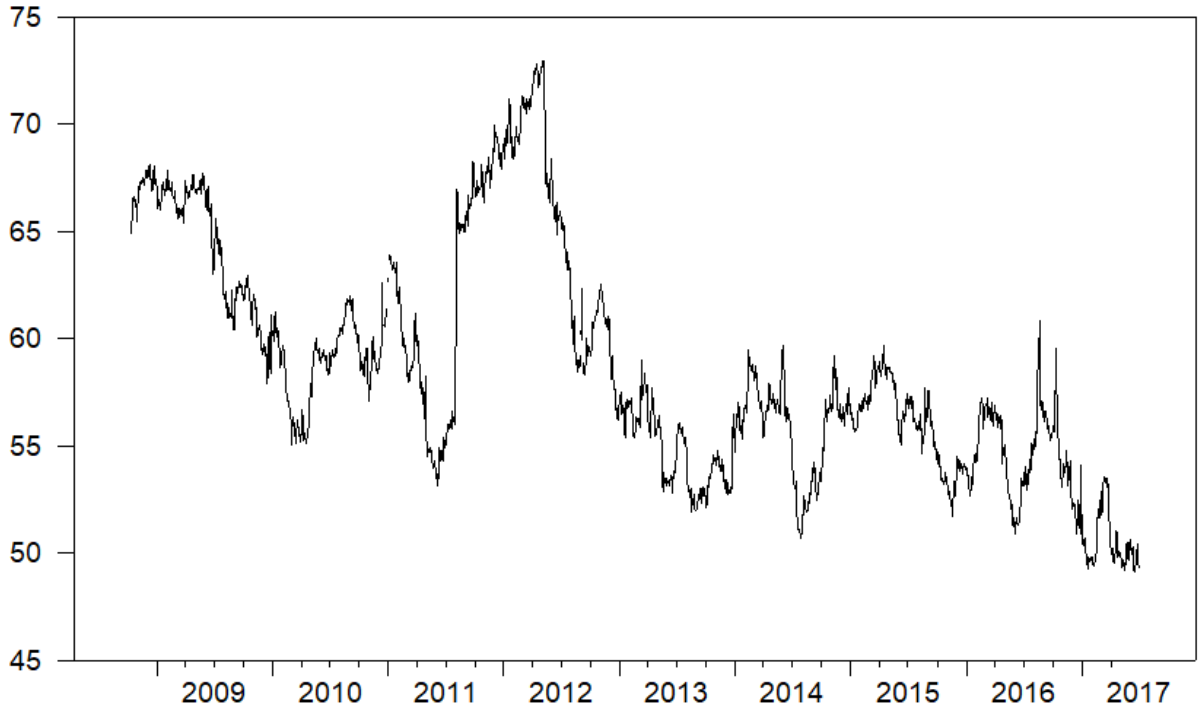


Figure 216: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Financials Sector

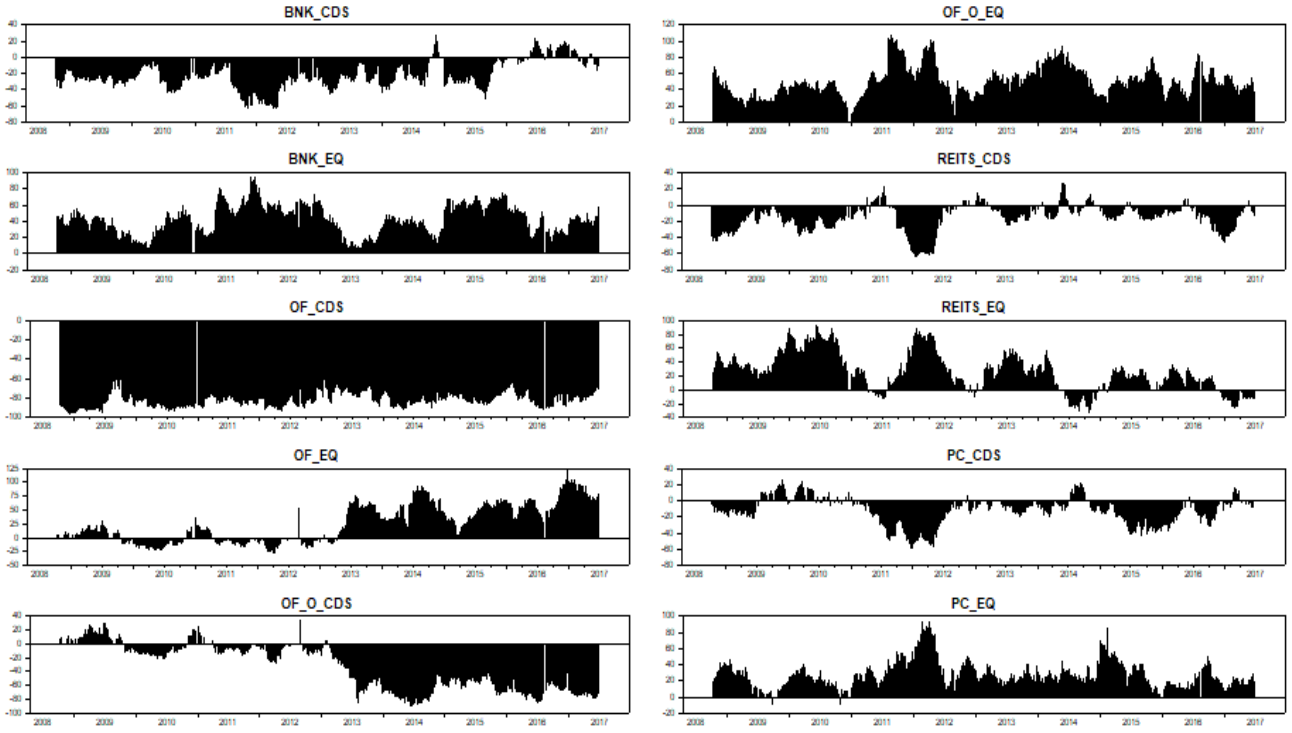


Figure 217: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Financials Sector

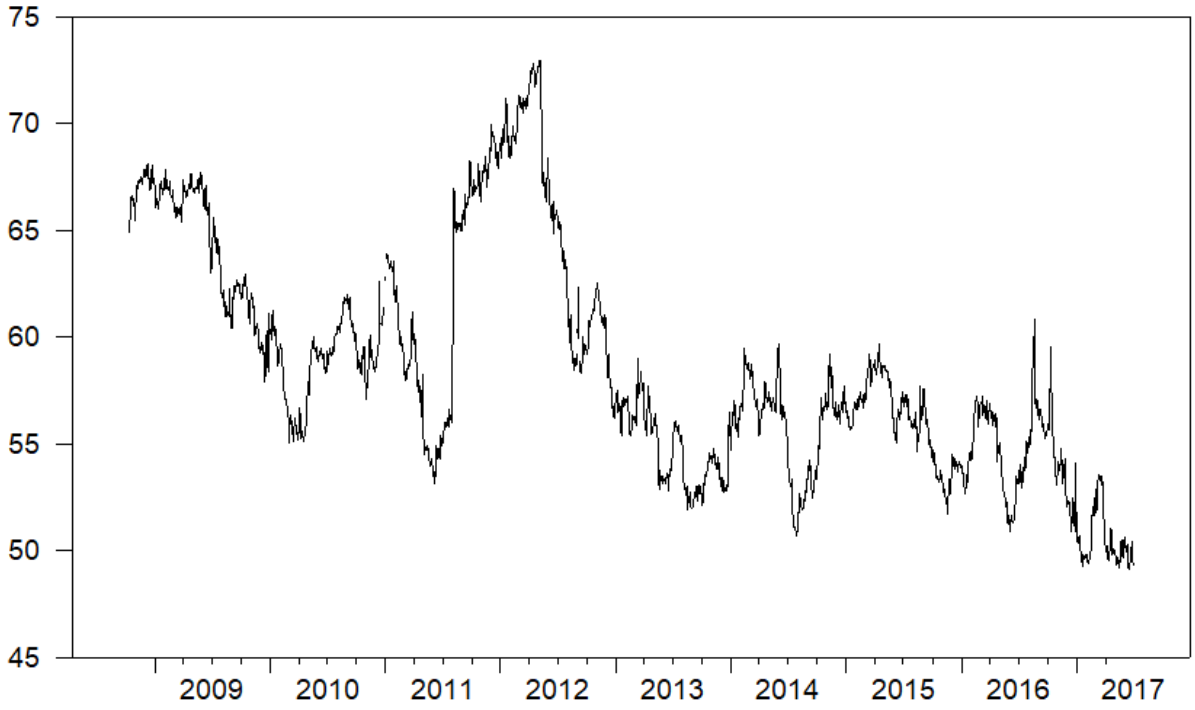


Figure 218: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Healthcare Sector

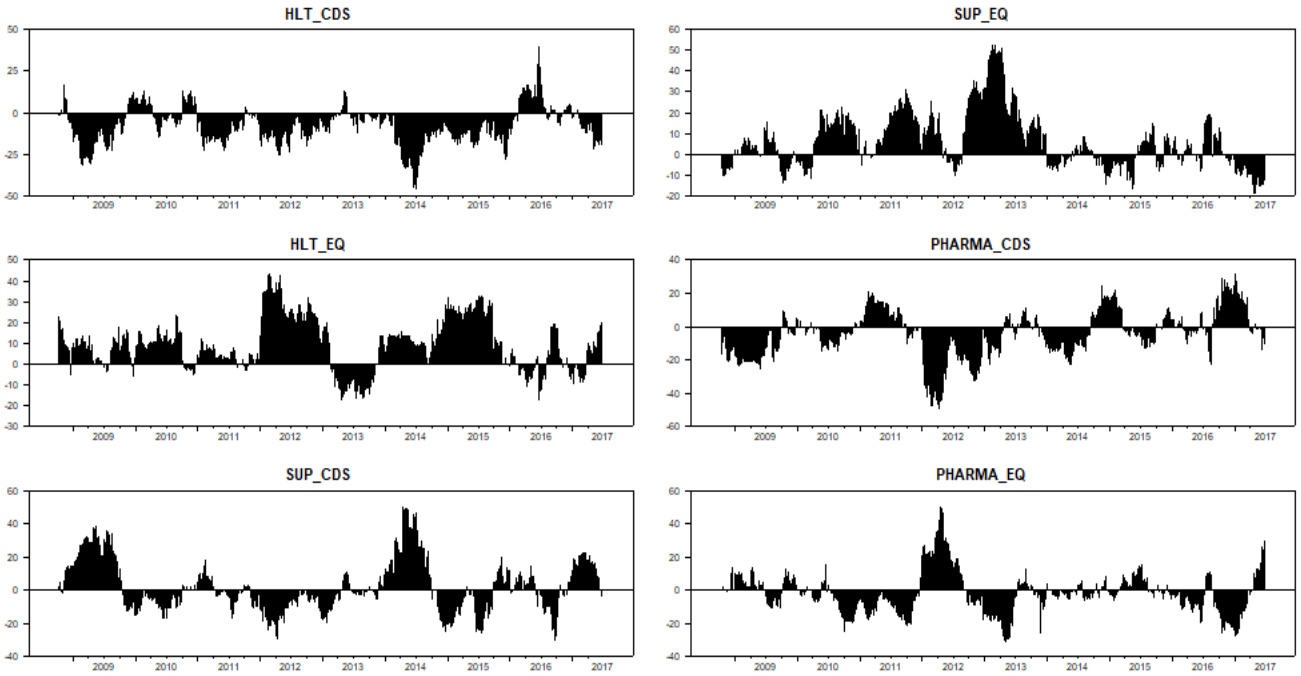


Figure 219: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Healthcare Sector

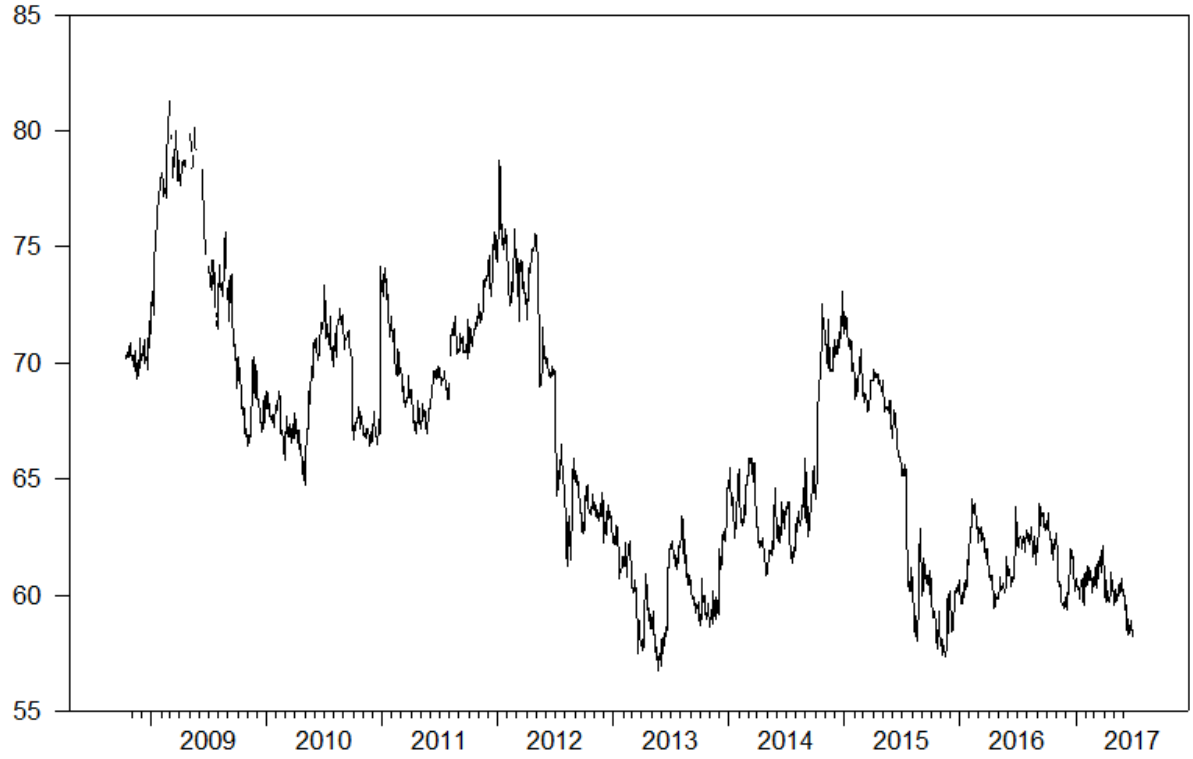


Figure 220: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Industrials Sector

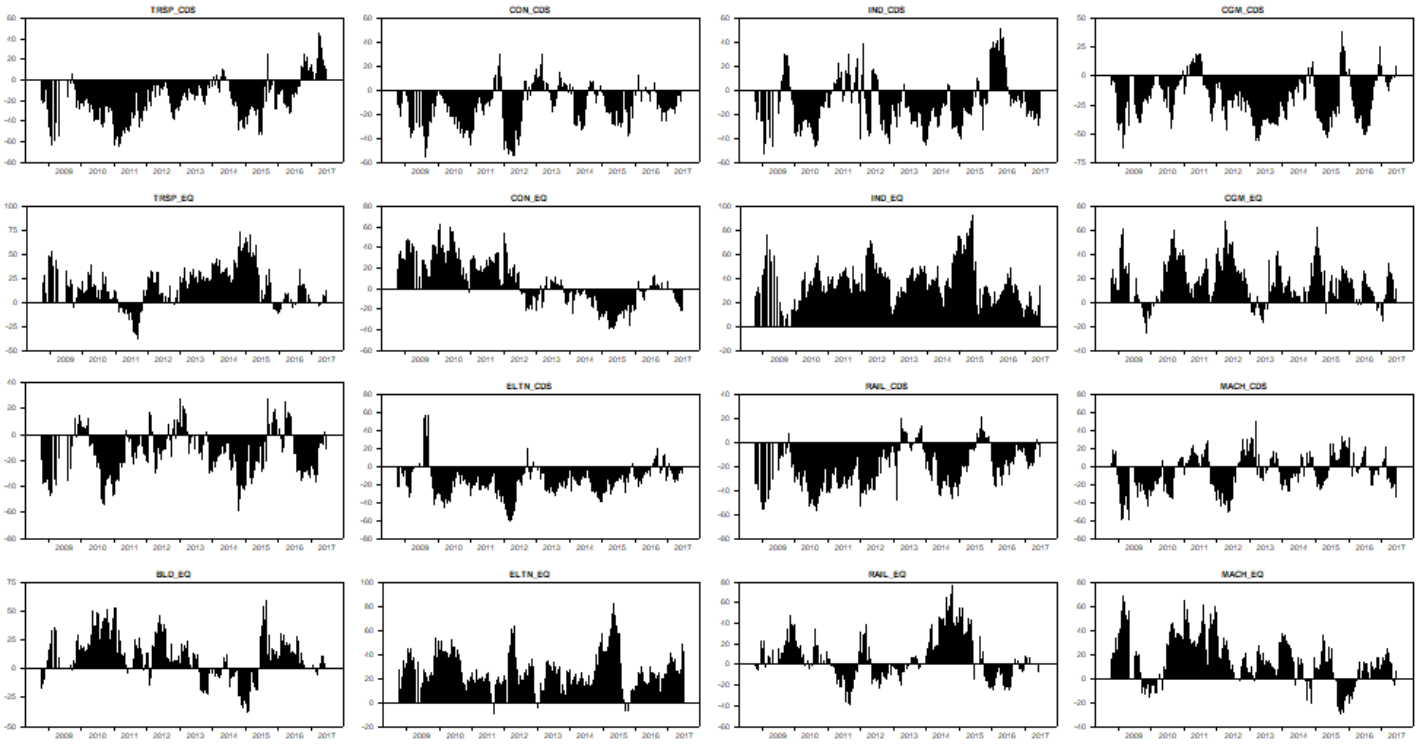


Figure 221: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Industrials Sector

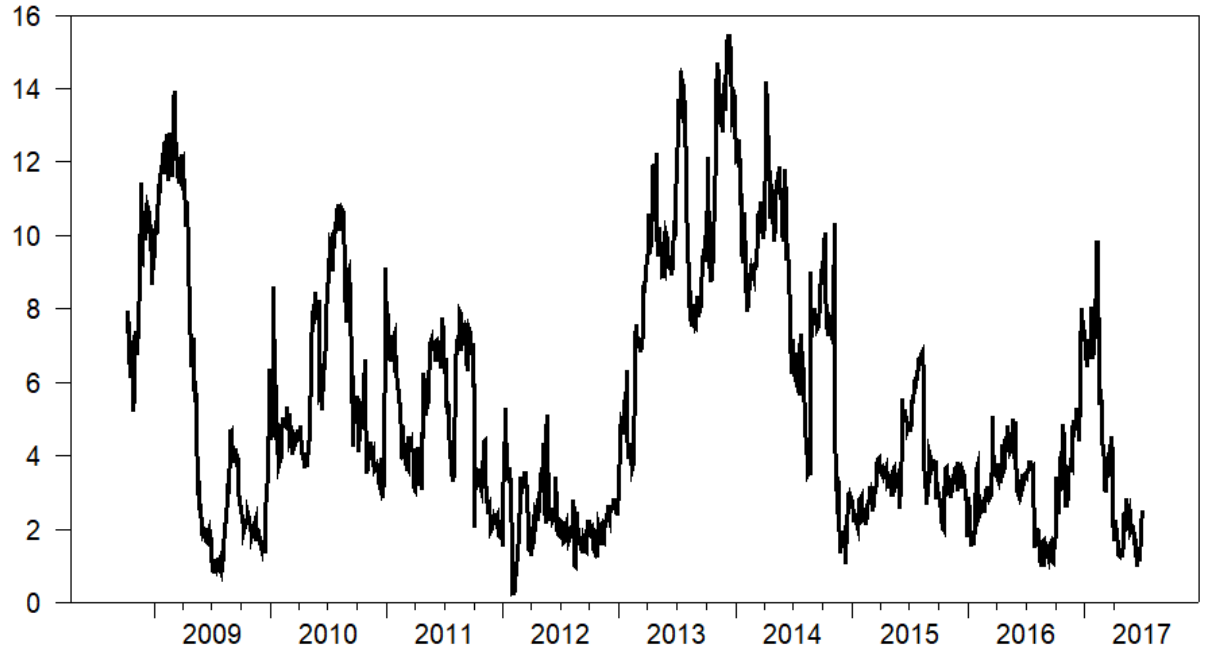


Figure 222: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Information / Data Technology Sector

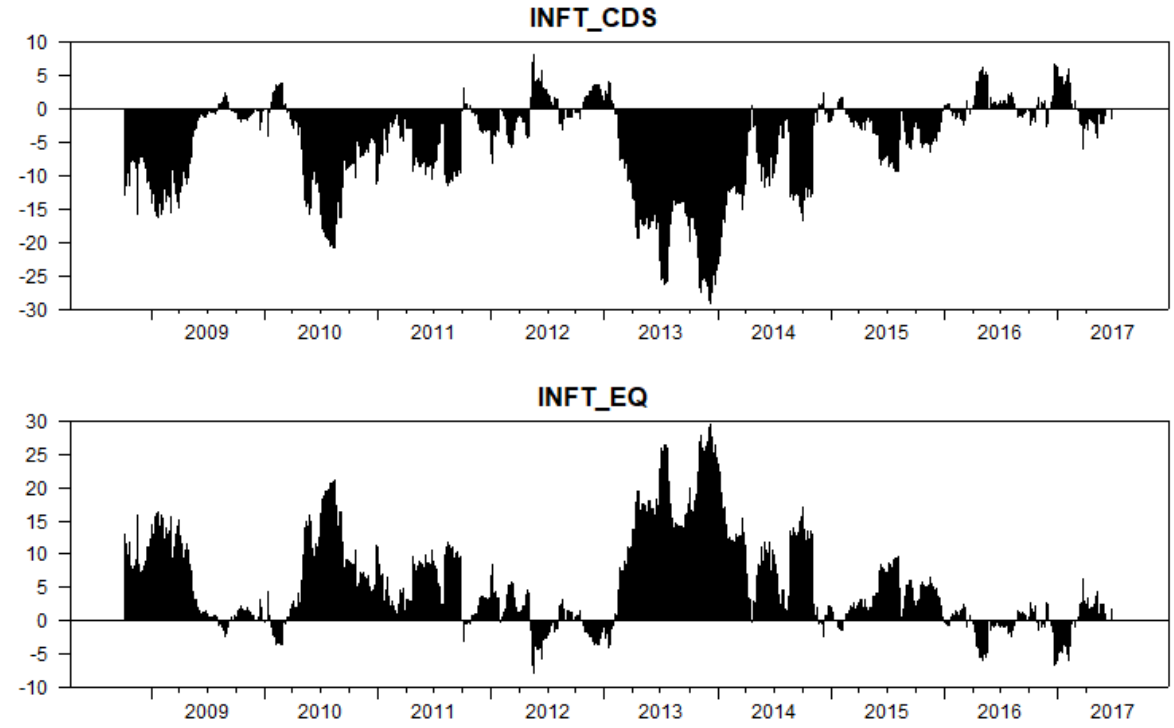


Figure 223: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Information / Data Technology Sector

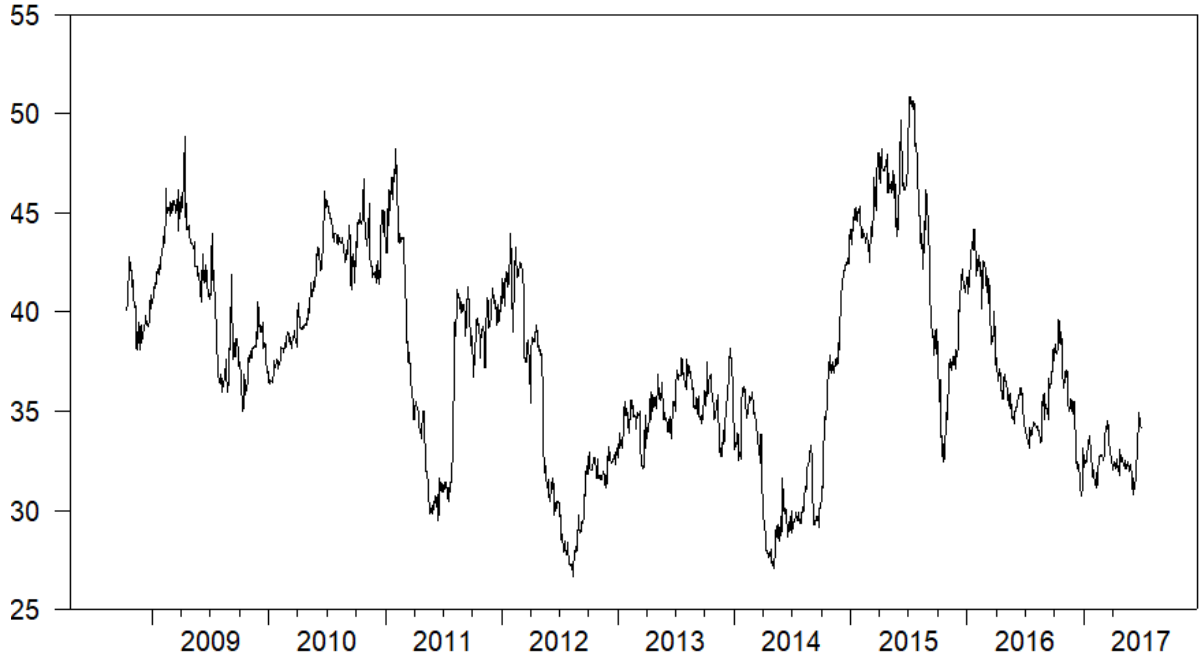


Figure 224: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Oil & Gas Sector

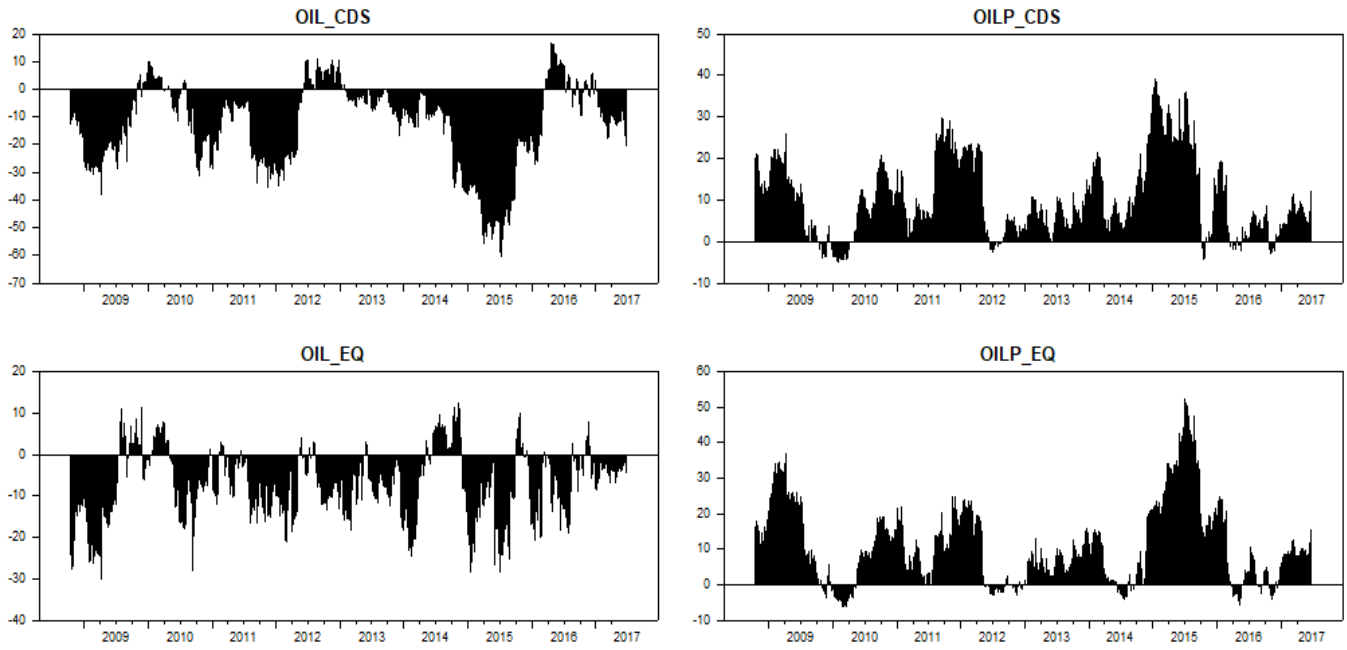


Figure 225: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Oil & Gas Sector

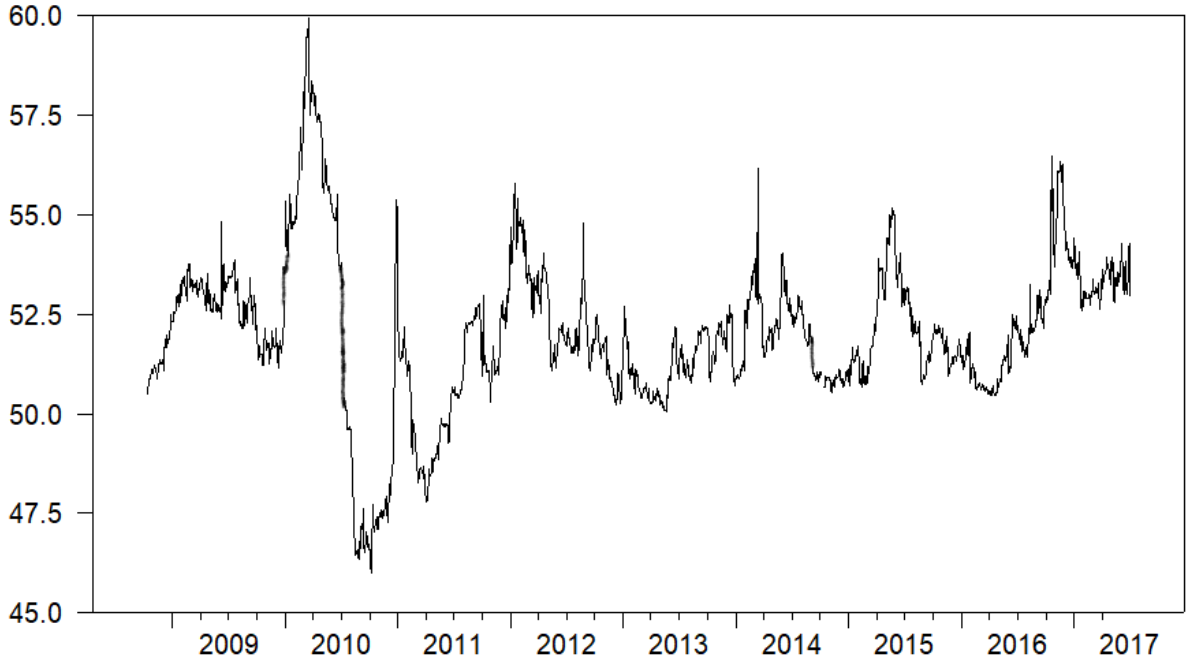


Figure 226: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Telecommunications Sector

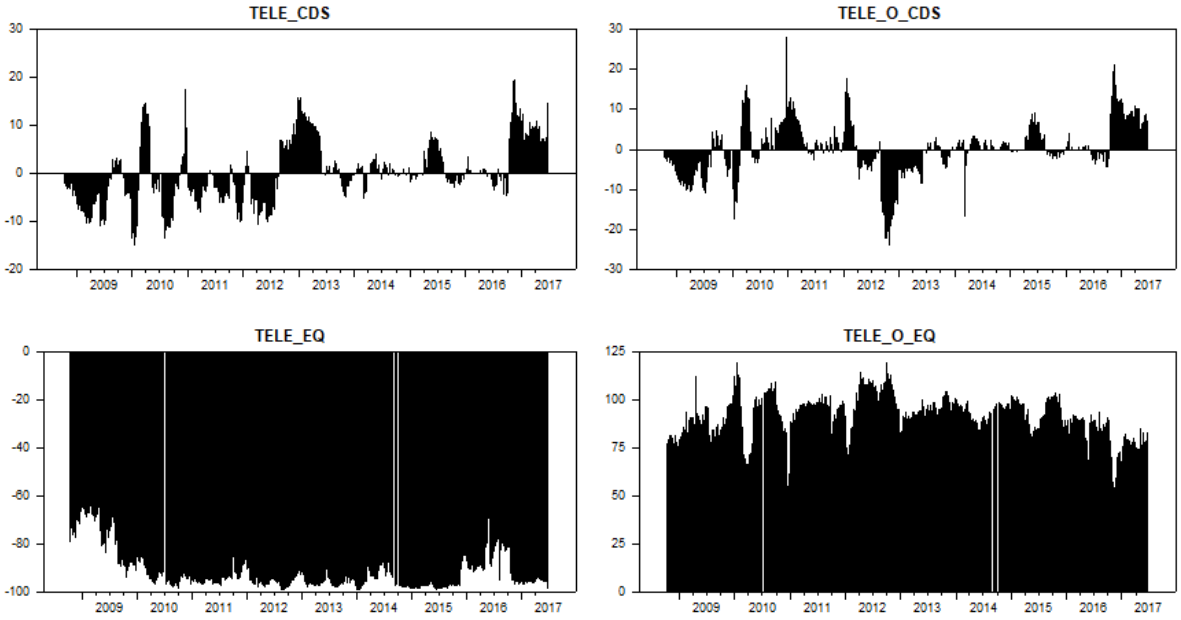


Figure 227: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Telecommunications Sector

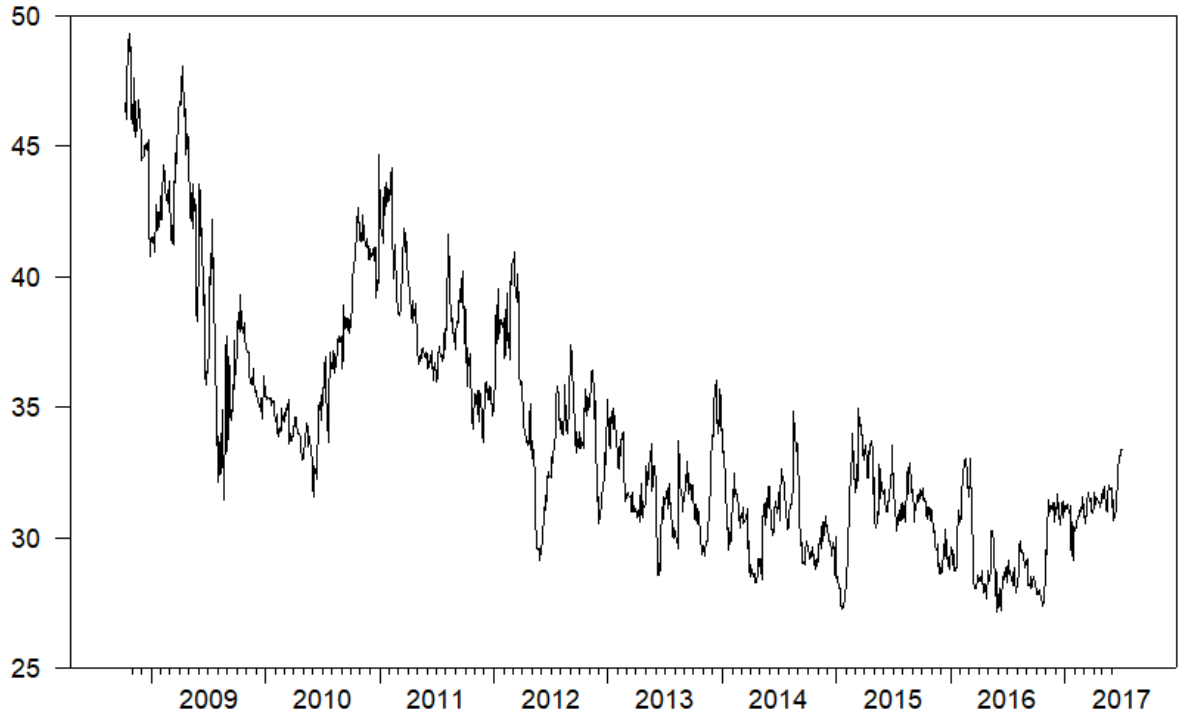


Figure 228: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Utility Sector

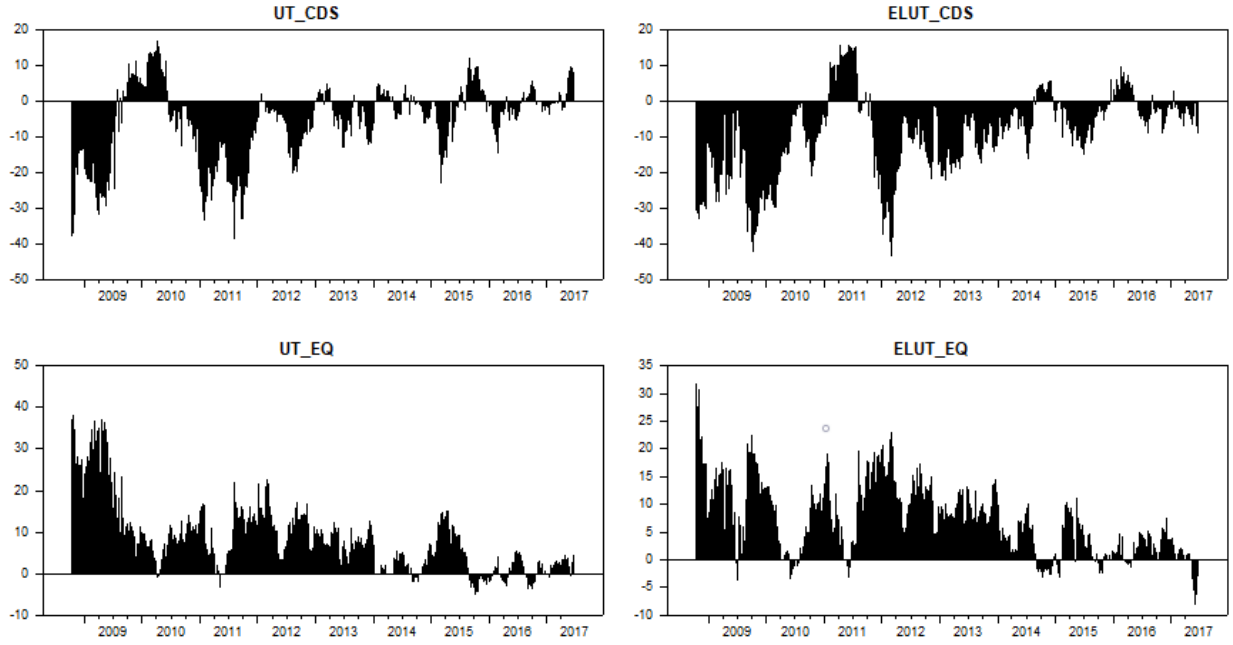


Figure 229: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Utility Sector

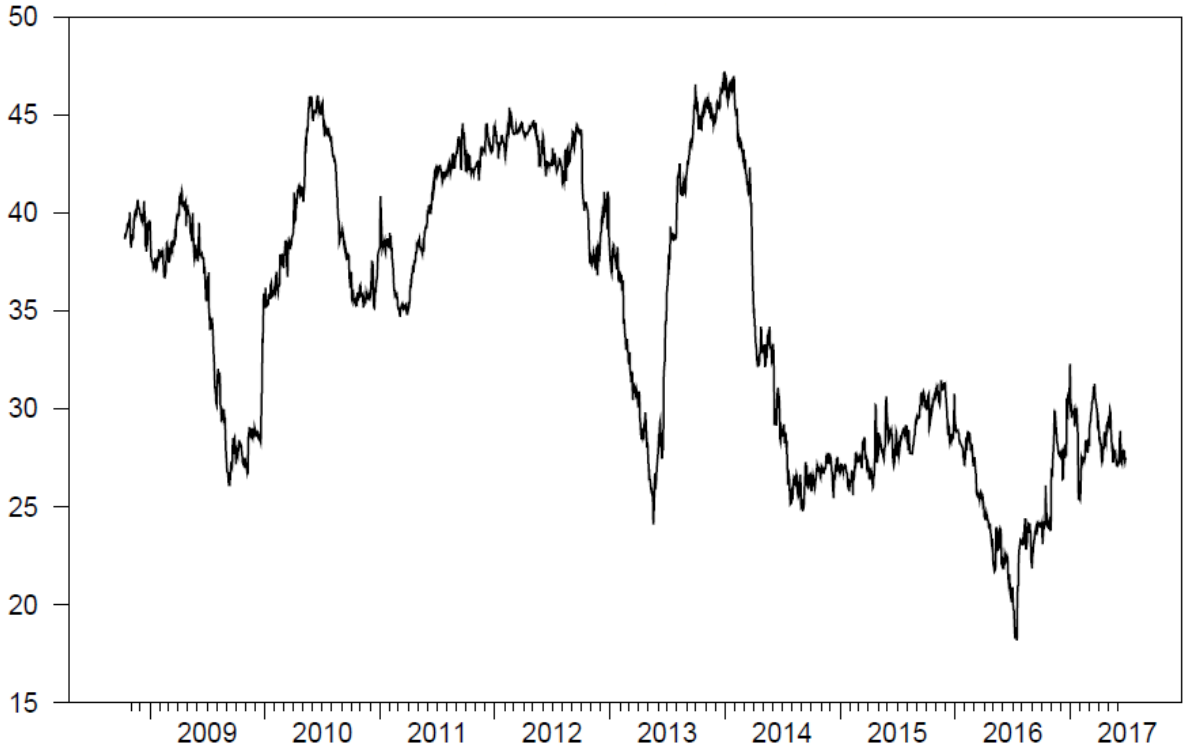


Figure 230: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Goods Sector Goods

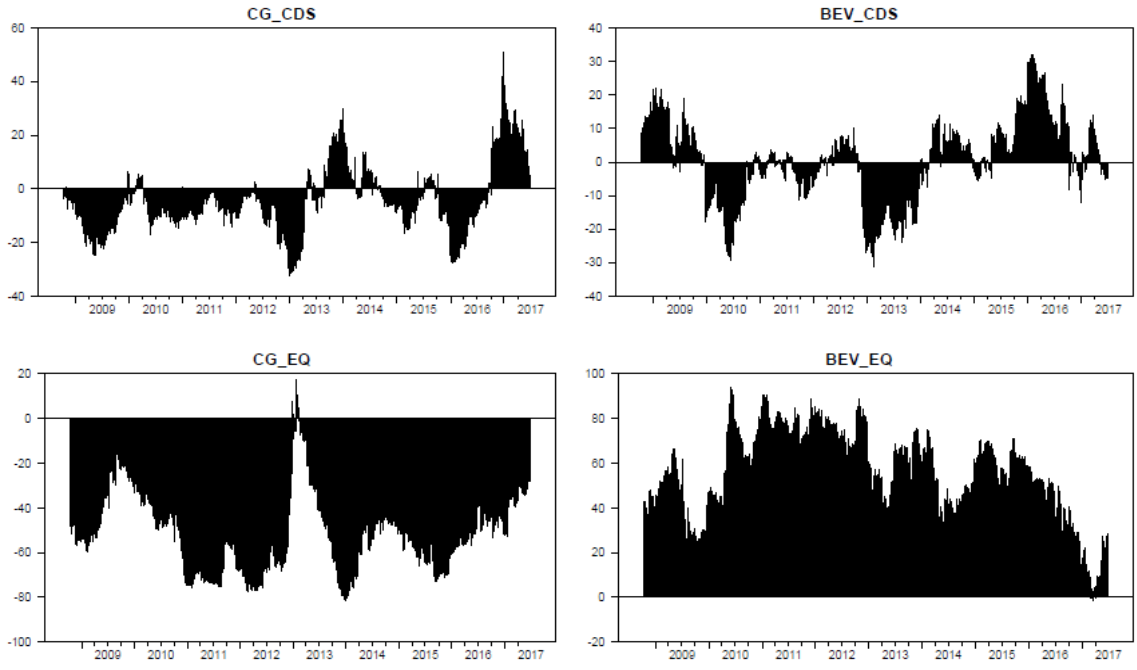


Figure 231: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Goods Sector

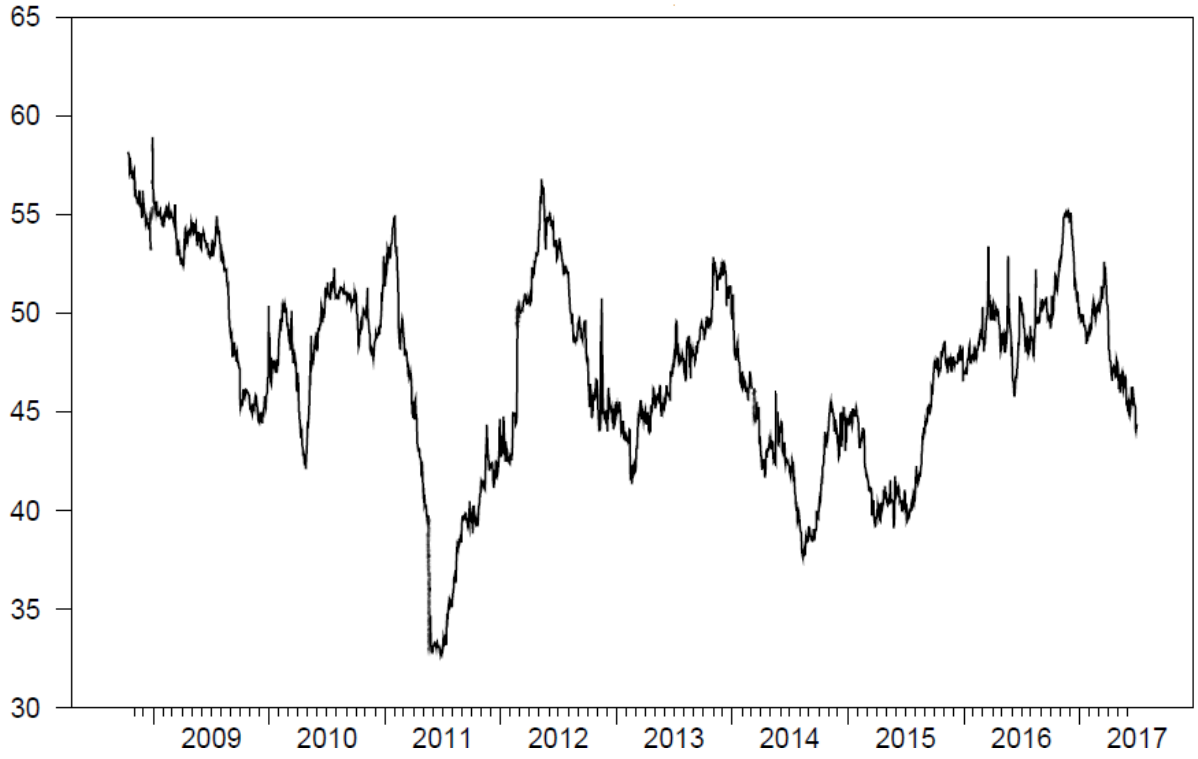


Figure 232: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Services Sector

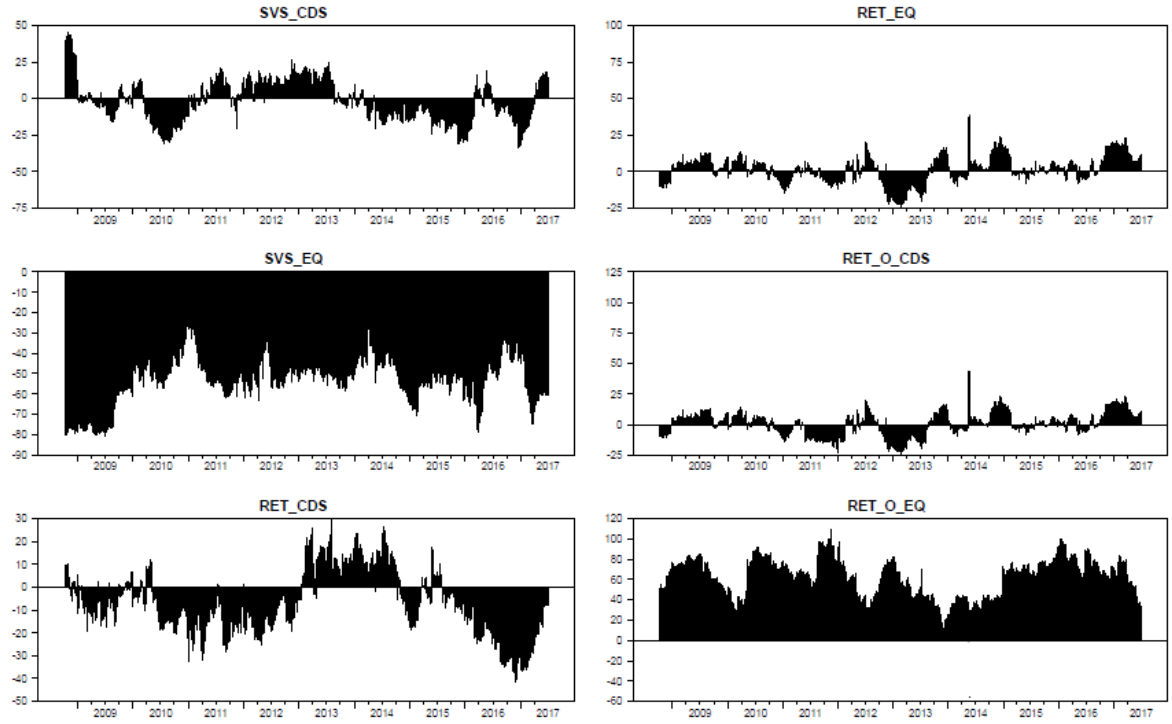


Figure 233: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Services

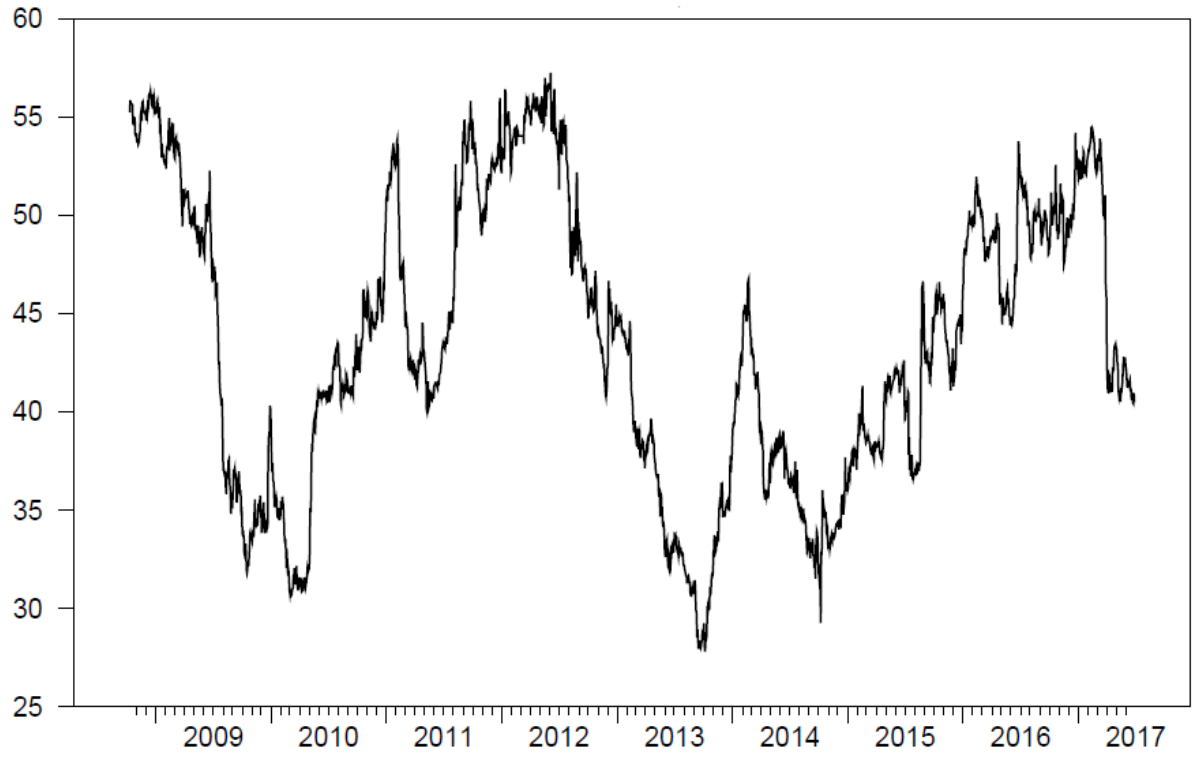


Figure 234: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Financials Sector

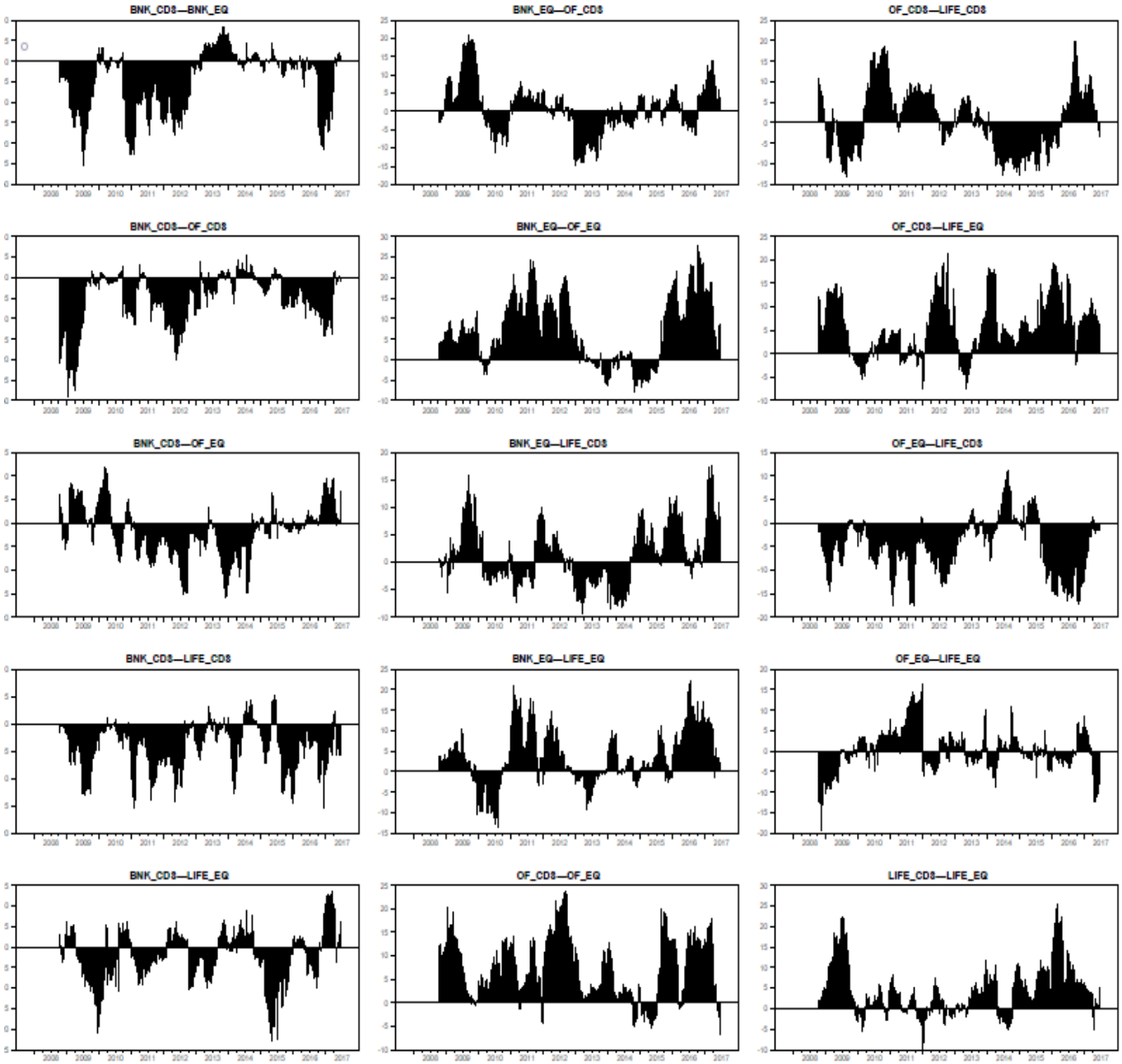


Figure 235: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Financials Sector

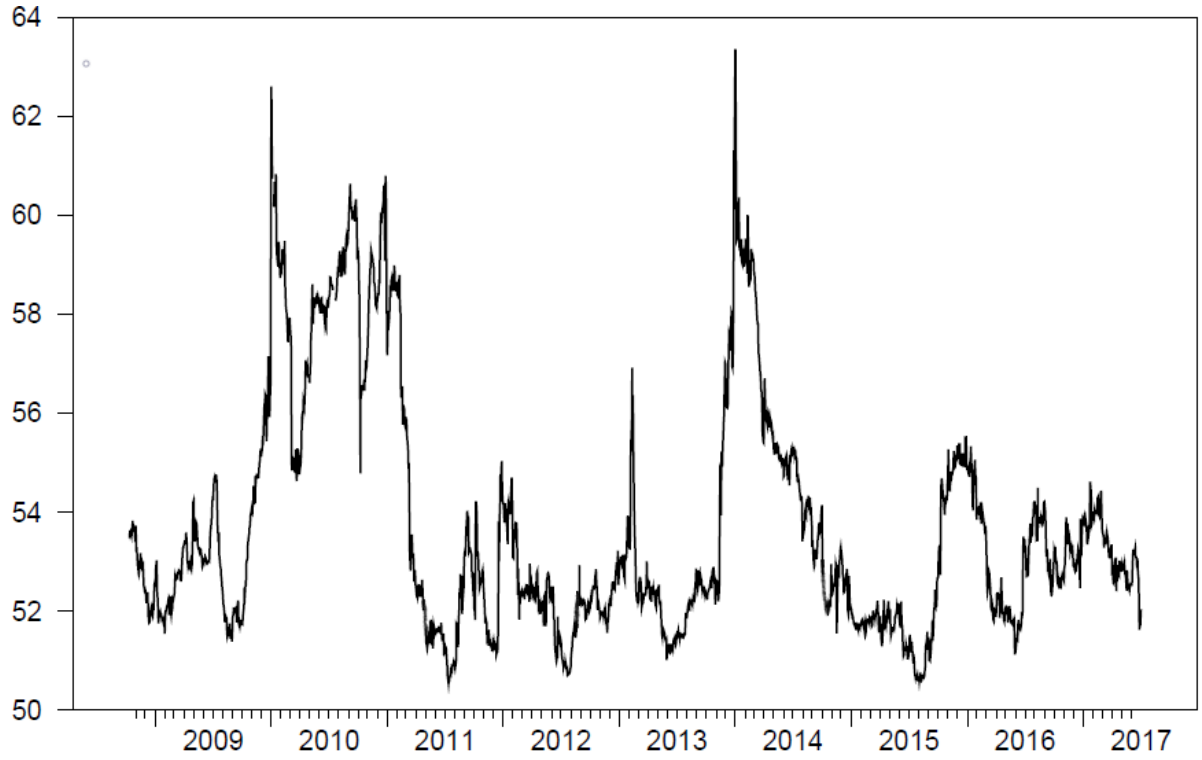


Figure 236: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Telecommunications Sector

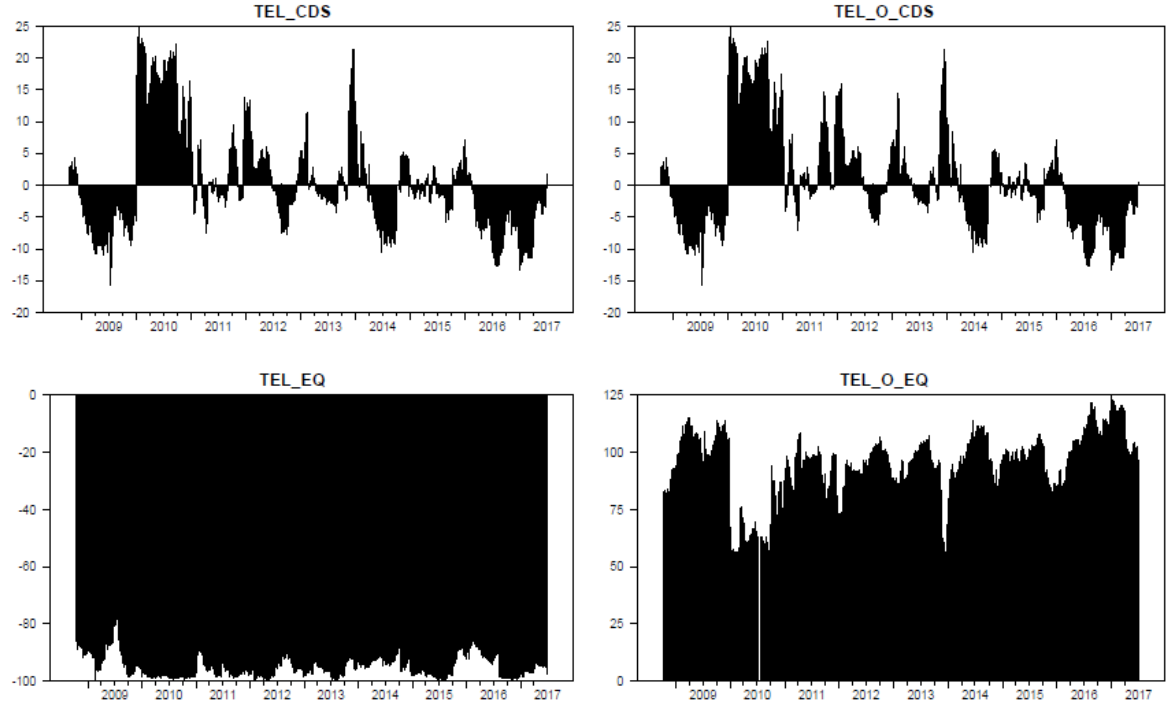


Figure 237: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Telecommunications Sector

EUROPE

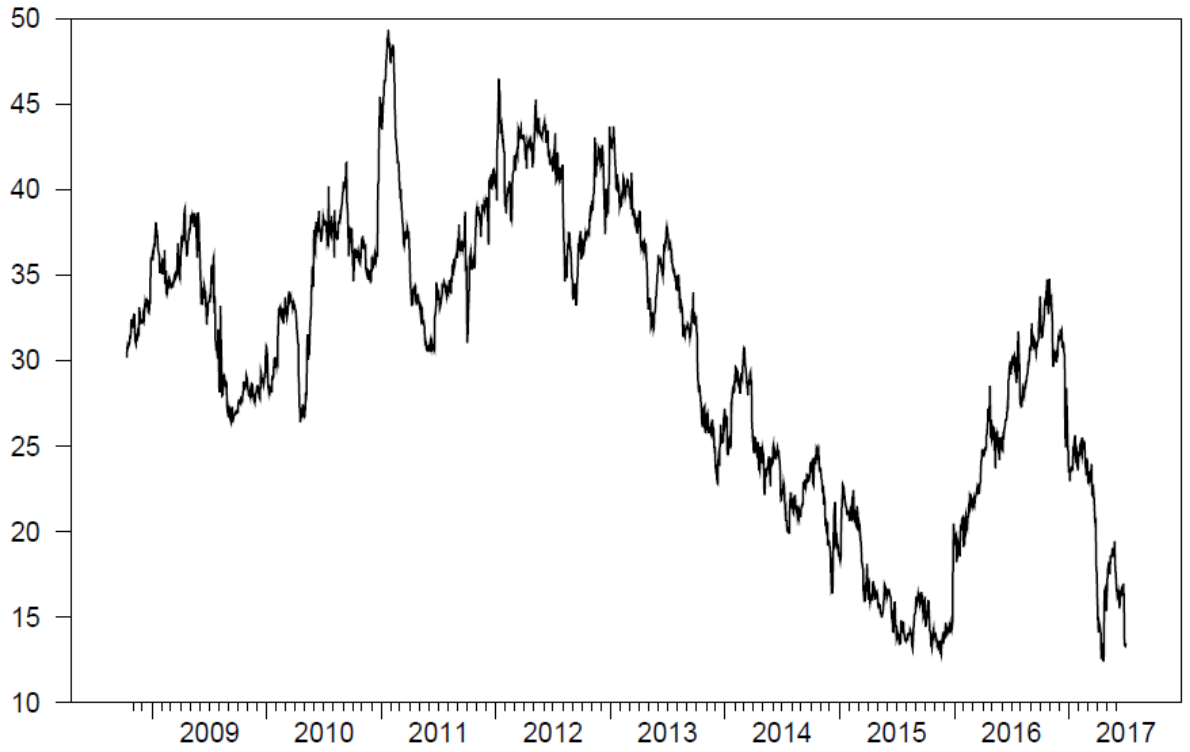


Figure 238: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Basic Materials Sector

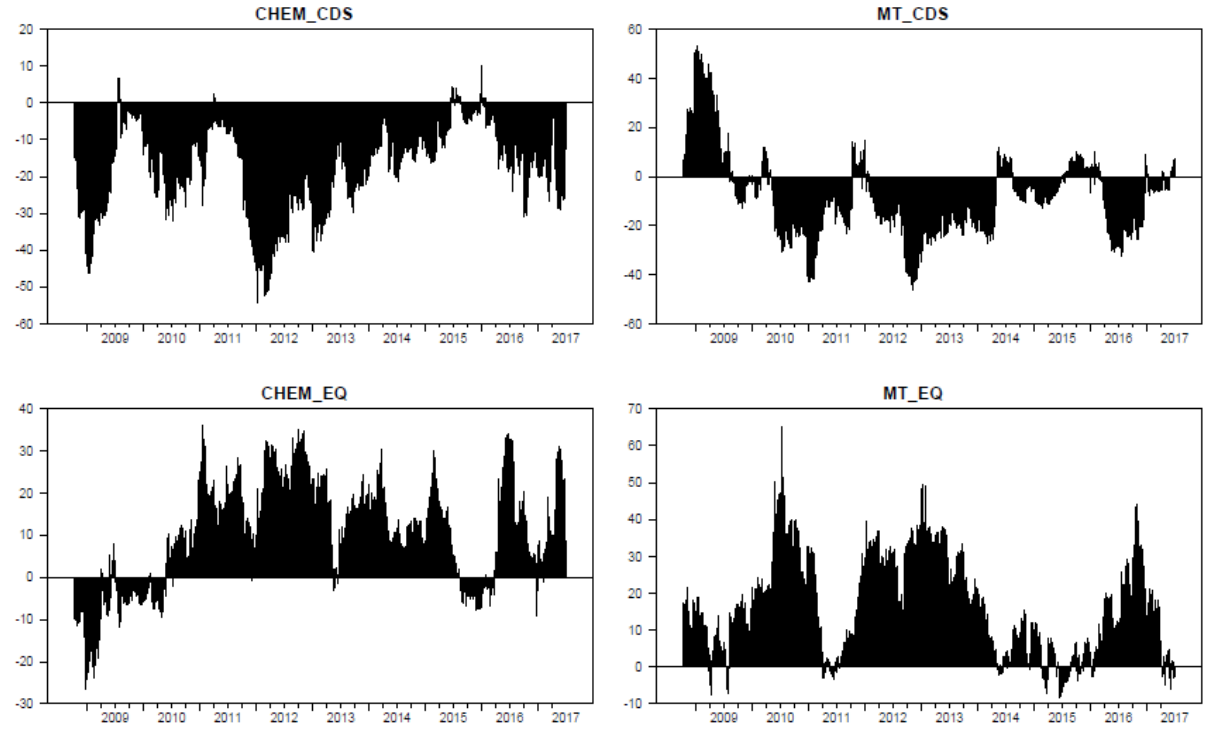


Figure 239: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Basic Materials Sector

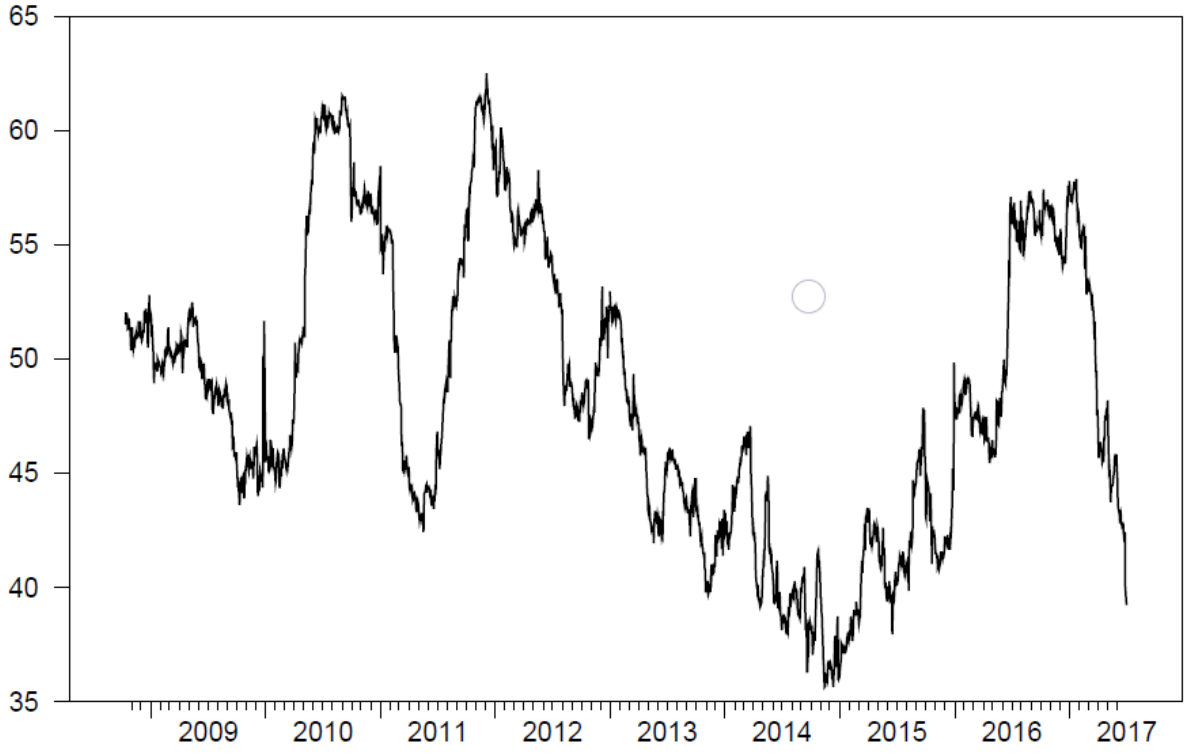


Figure 240: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Goods Sector

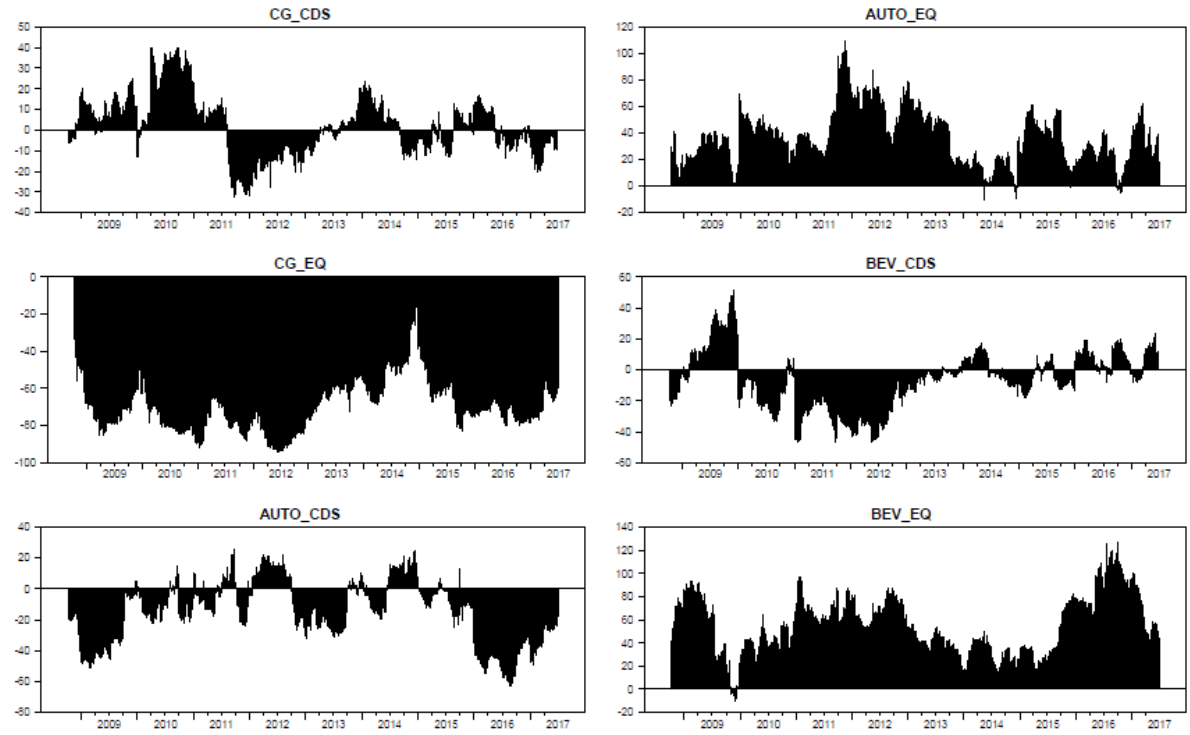


Figure 241: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Goods Sector

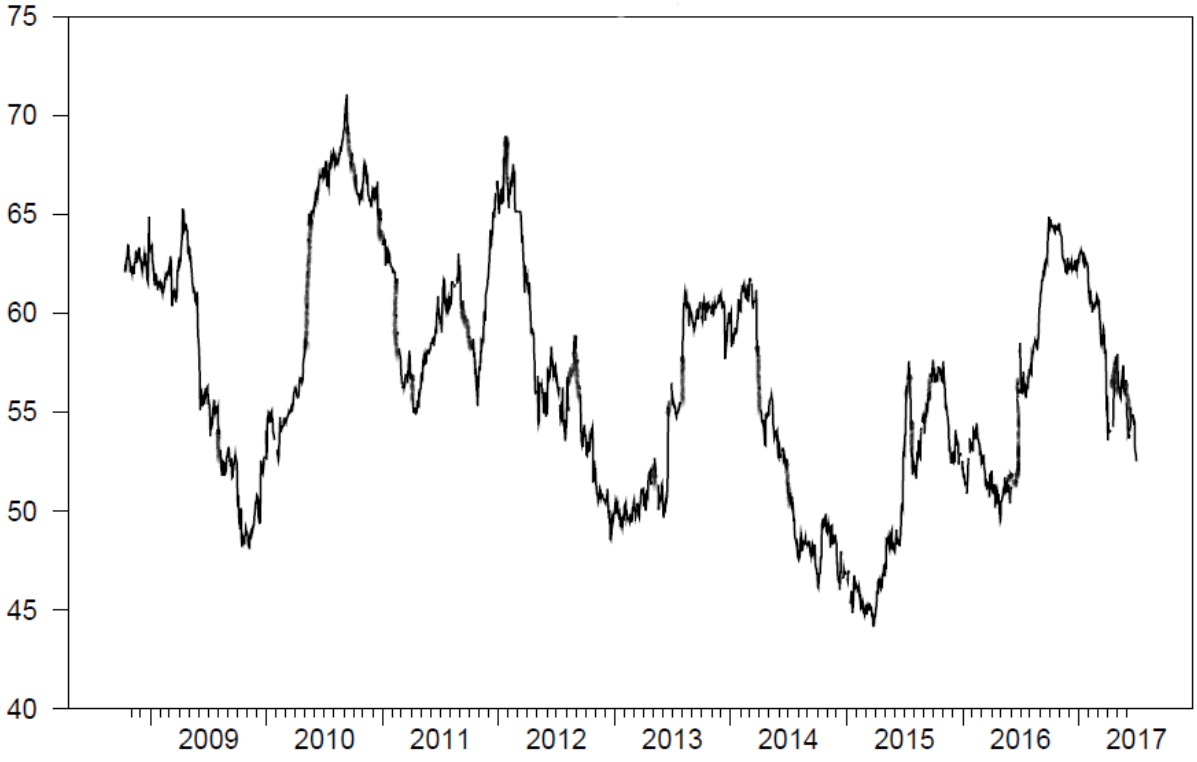


Figure 242: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Services Sector

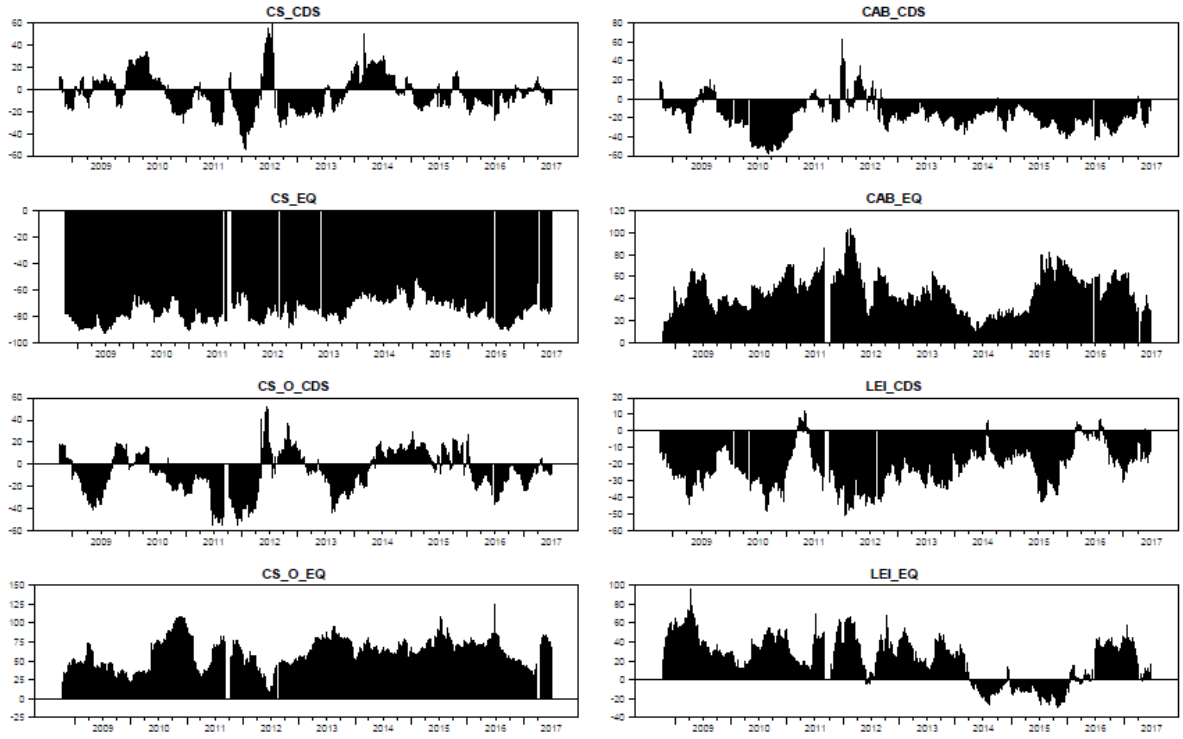


Figure 243: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Services Sector

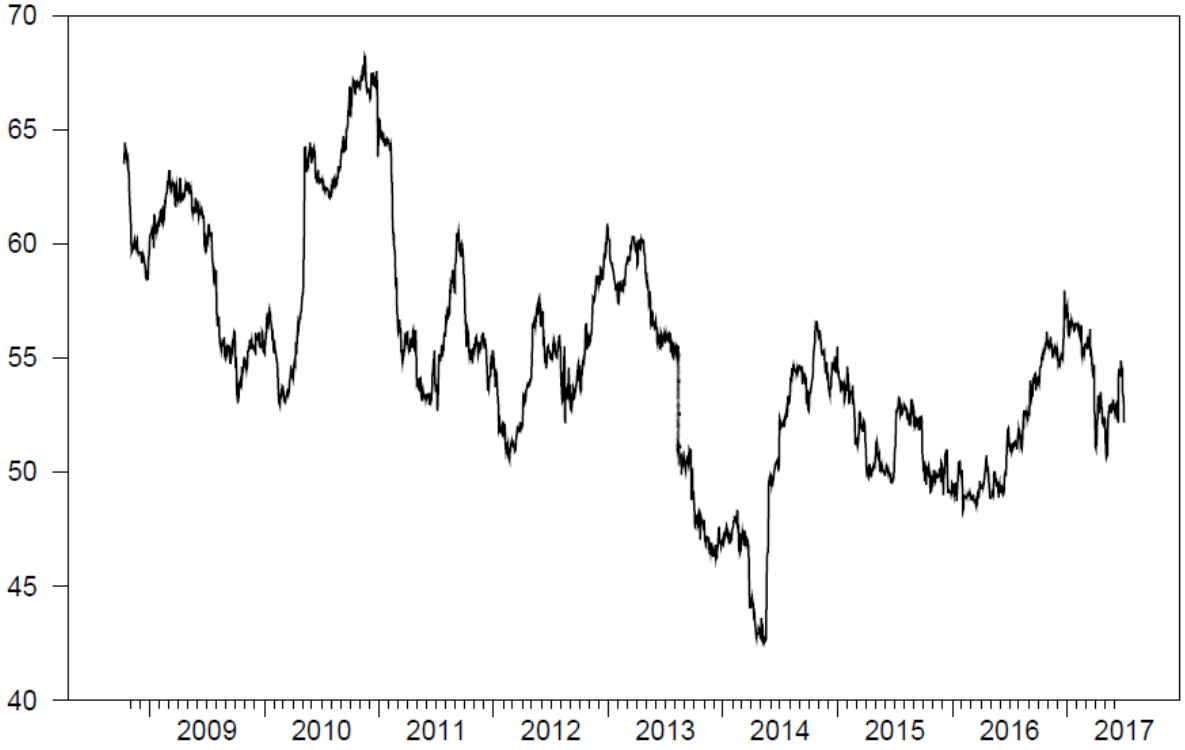


Figure 244: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Financials Sector

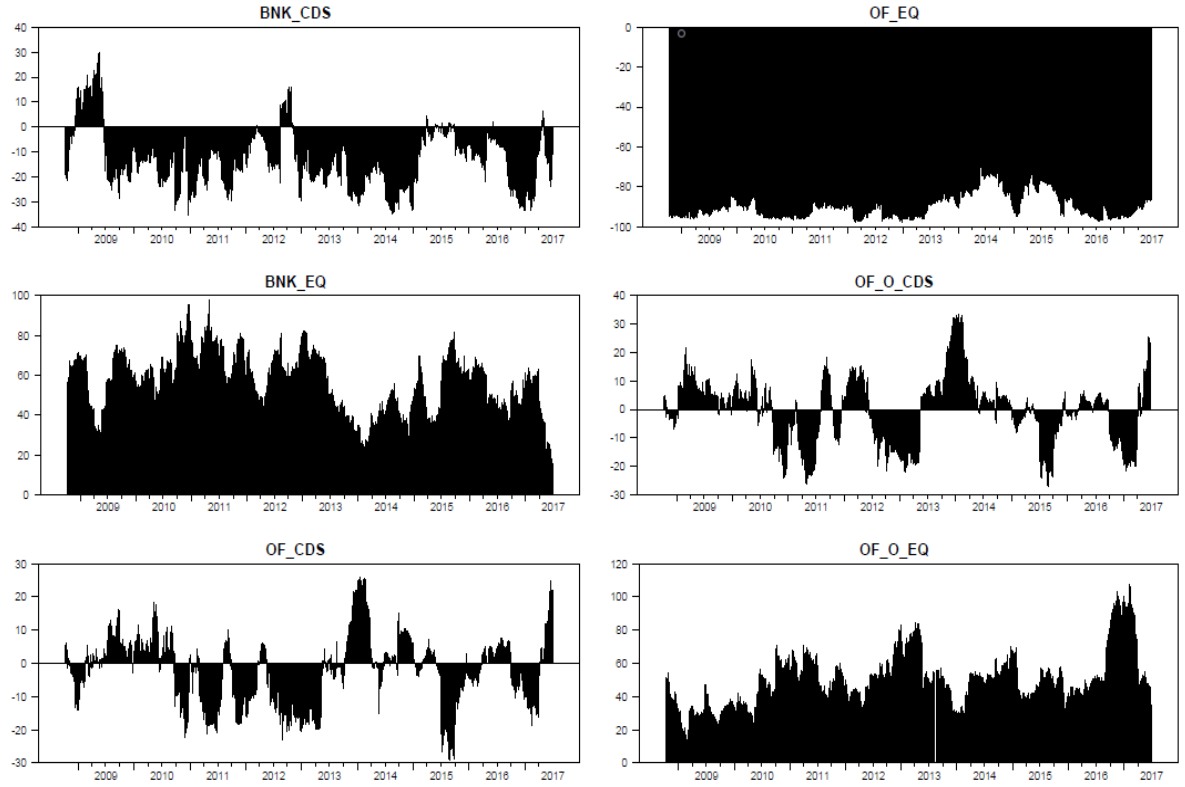


Figure 245: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Financials Sector

Figure 246: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Industrials Sector

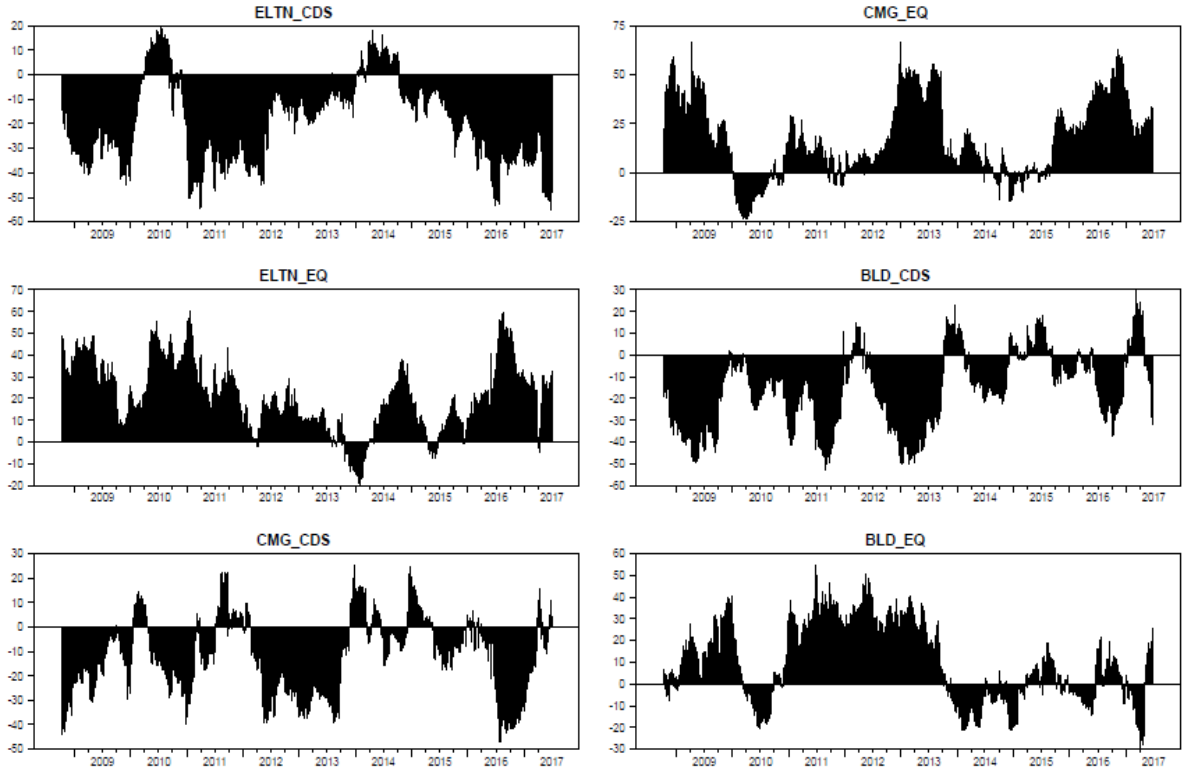


Figure 247: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Industrials Sector

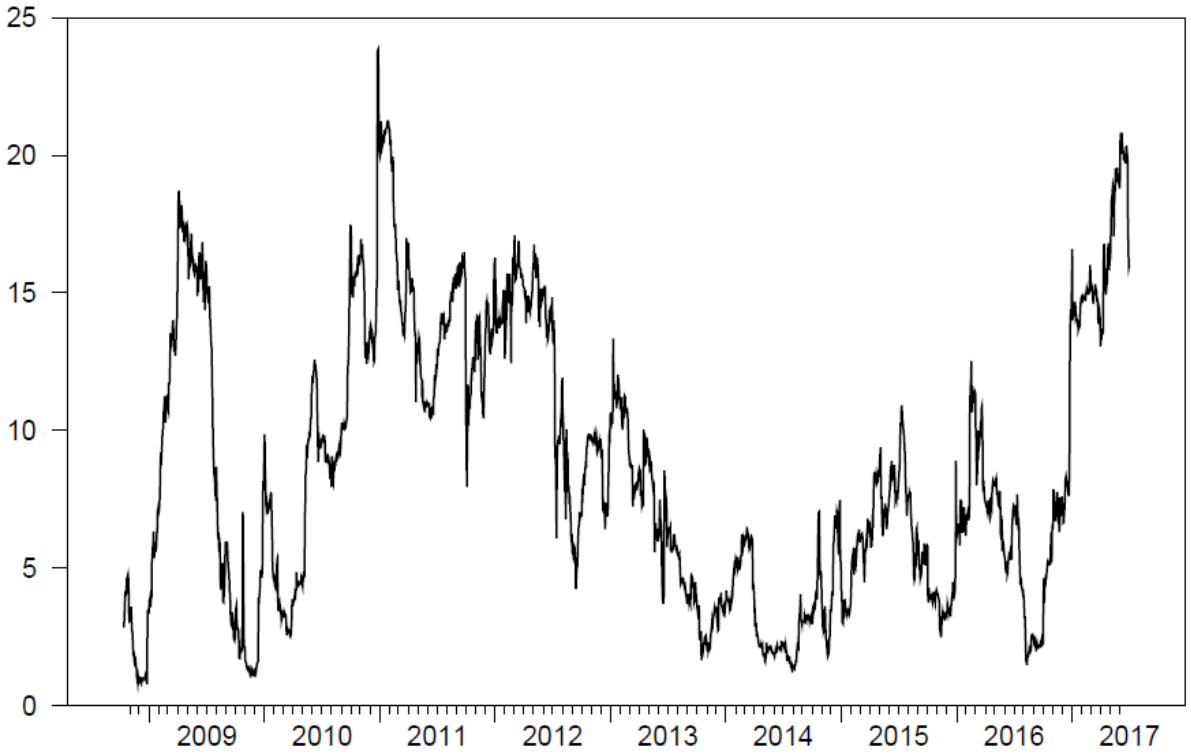


Figure 248: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Oil & Gas Sector

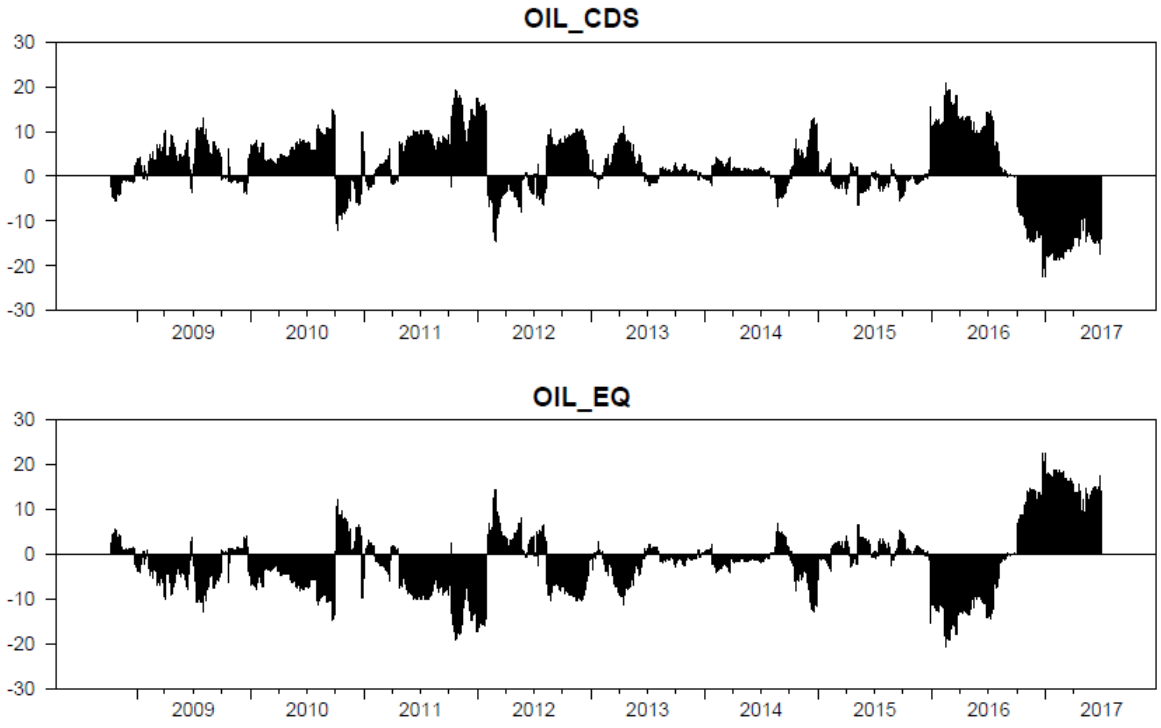


Figure 249: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Oil & Gas Sector

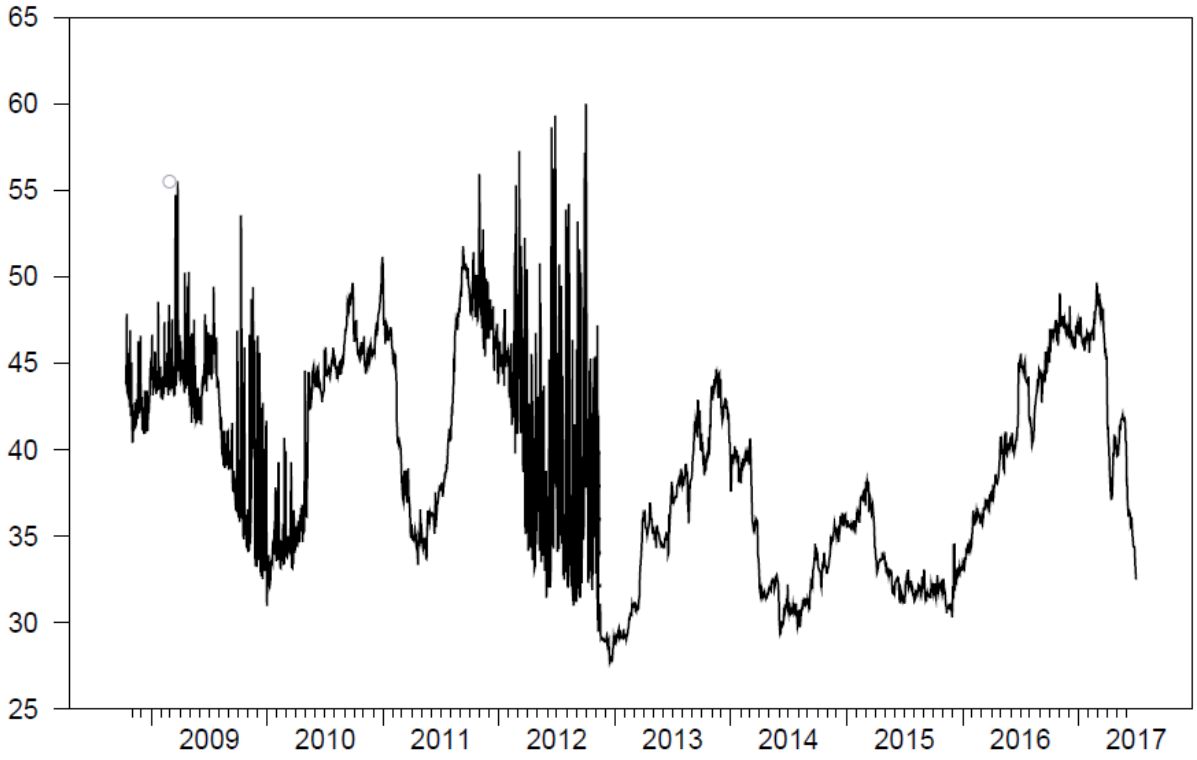


Figure 250: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Telecommunications Sector

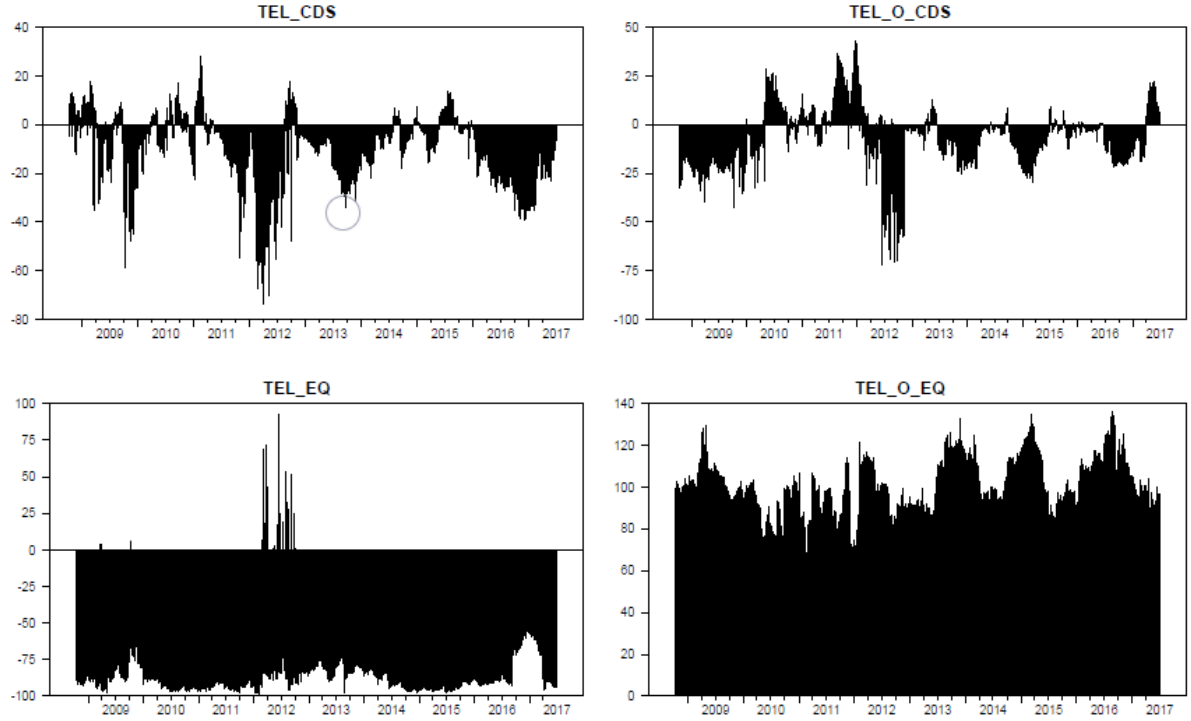


Figure 251: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Telecommunications Sector

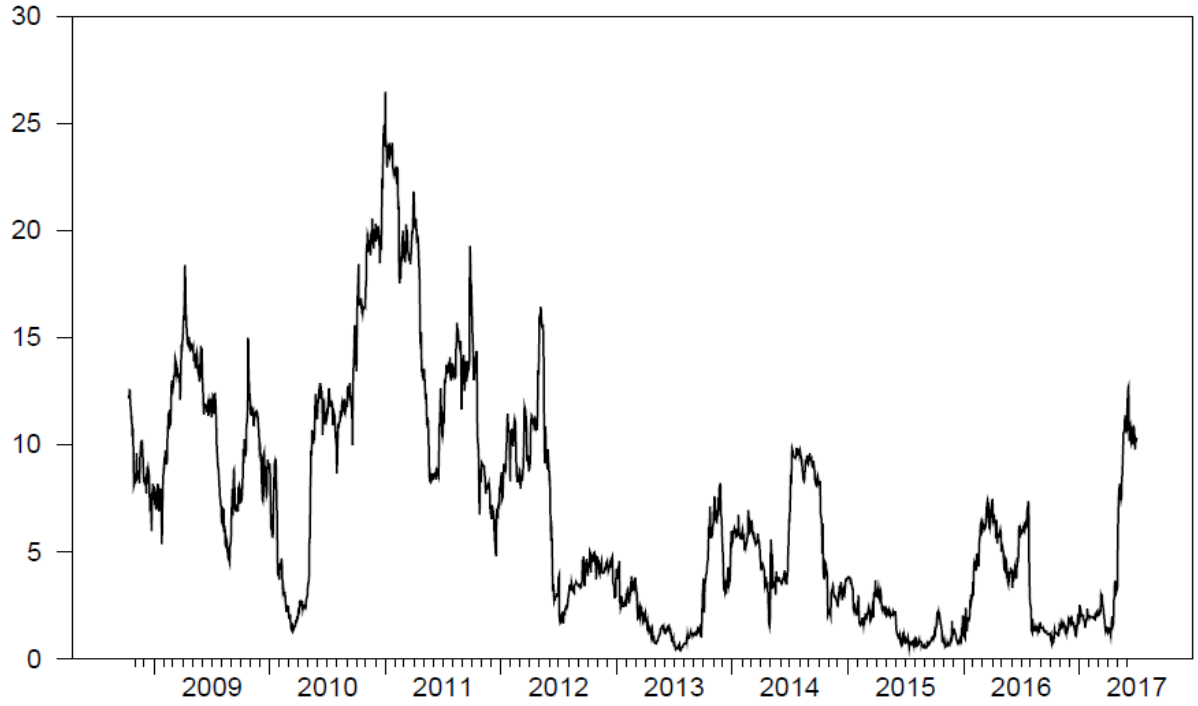


Figure 252: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Utility Sector

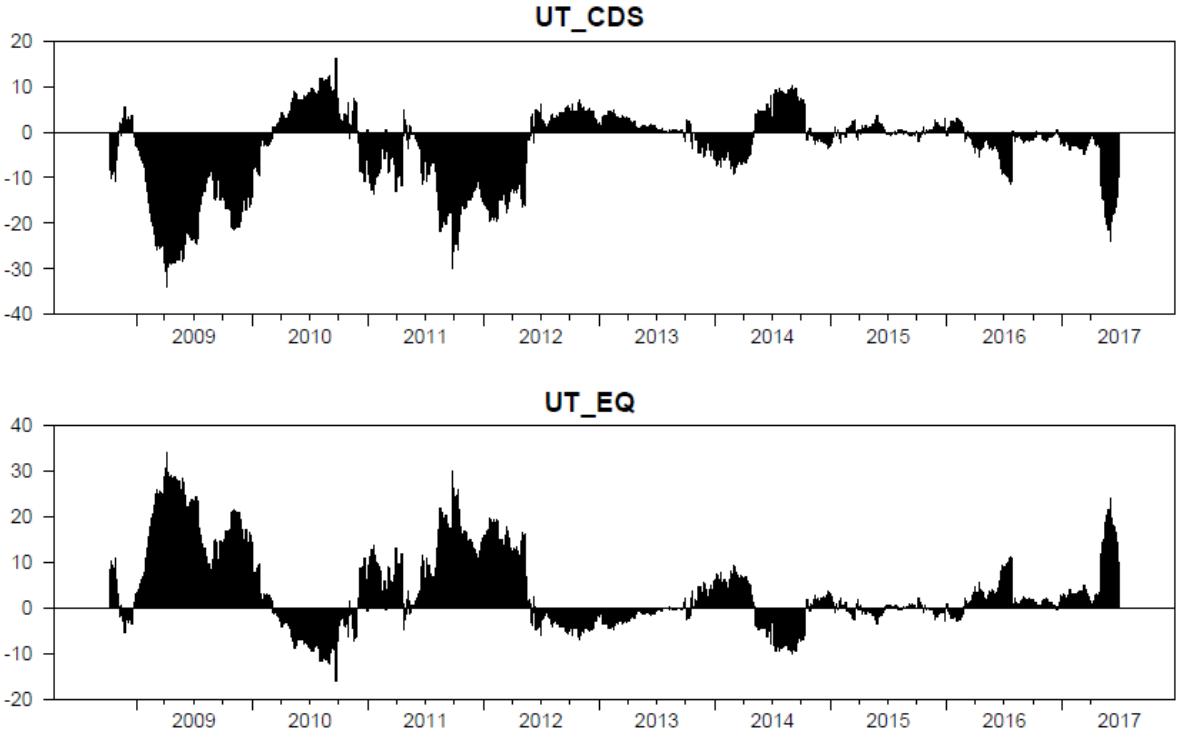


Figure 253: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Utility Sector

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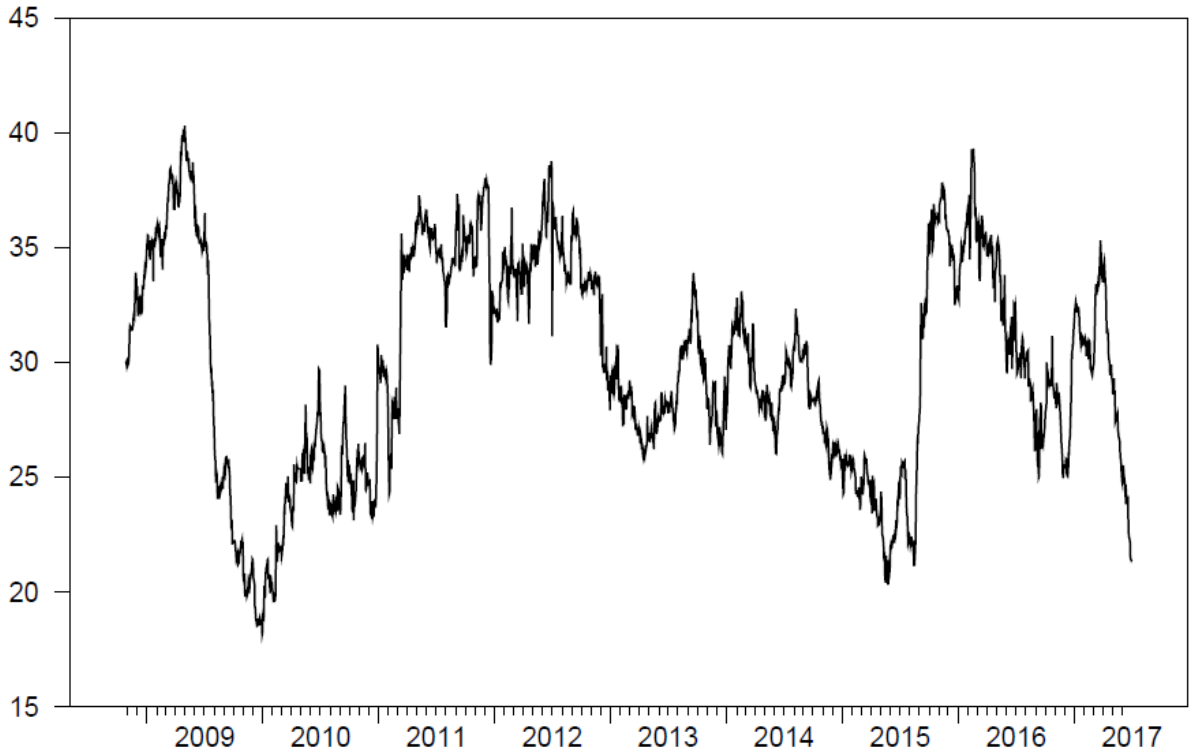

Figure 254: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Basic Materials Sector

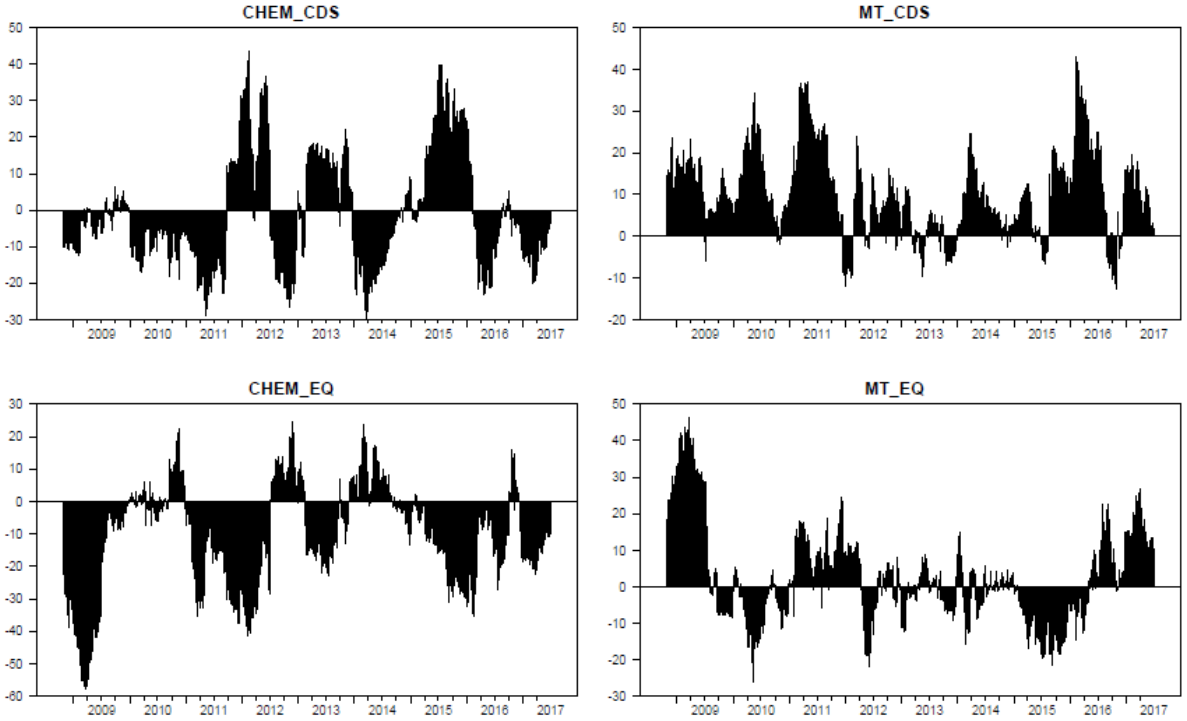

Figure 255: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Basic Materials Sector

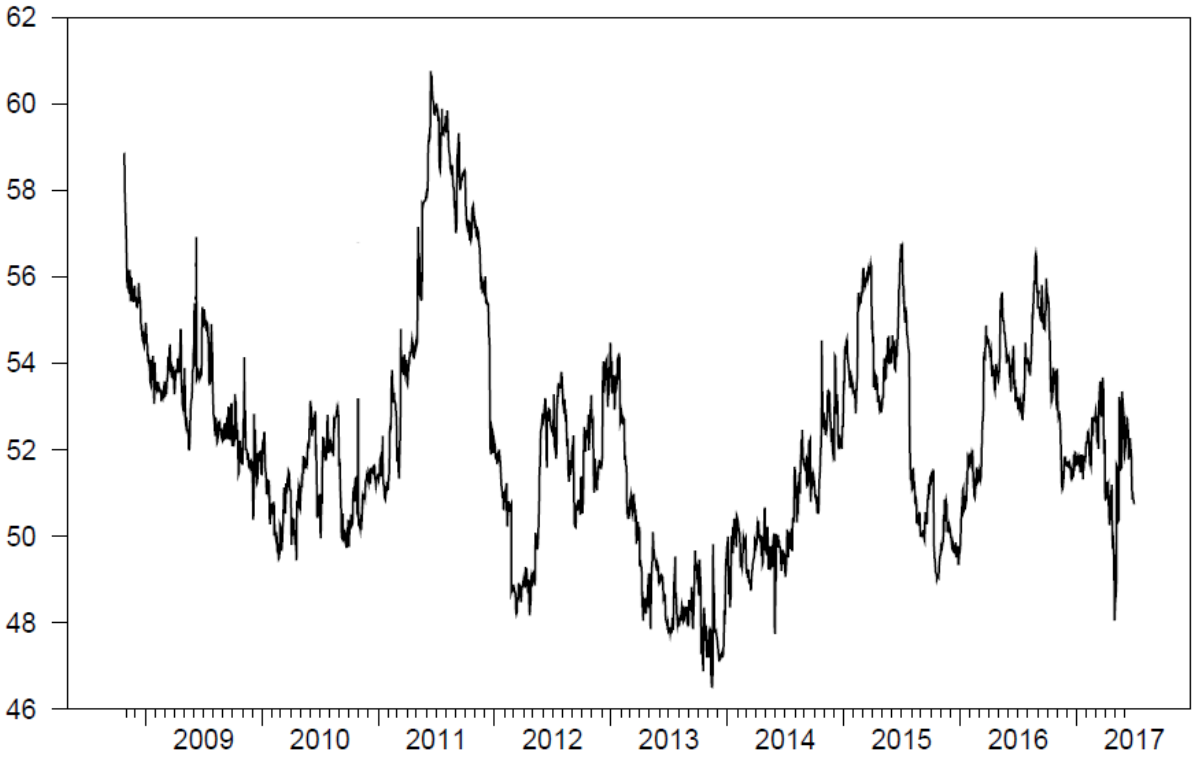

Figure 256: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Services Sector

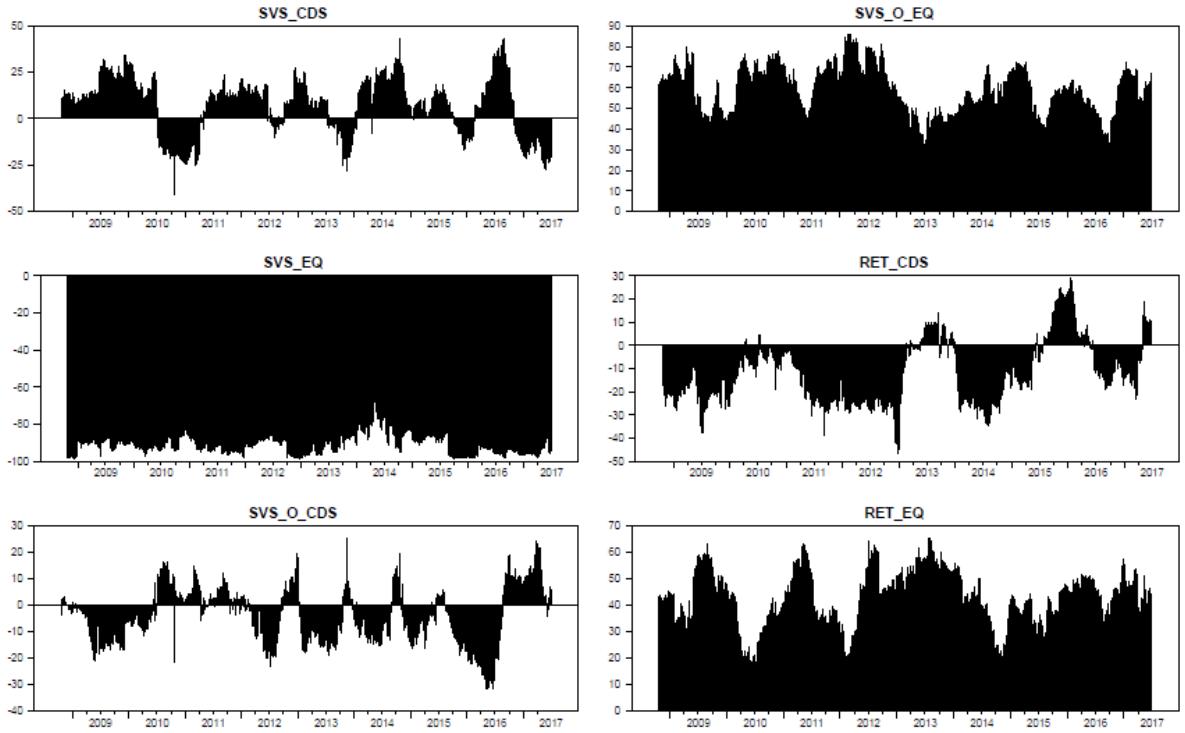

Figure 257: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Services Sector

Figure 258: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Financials Sector

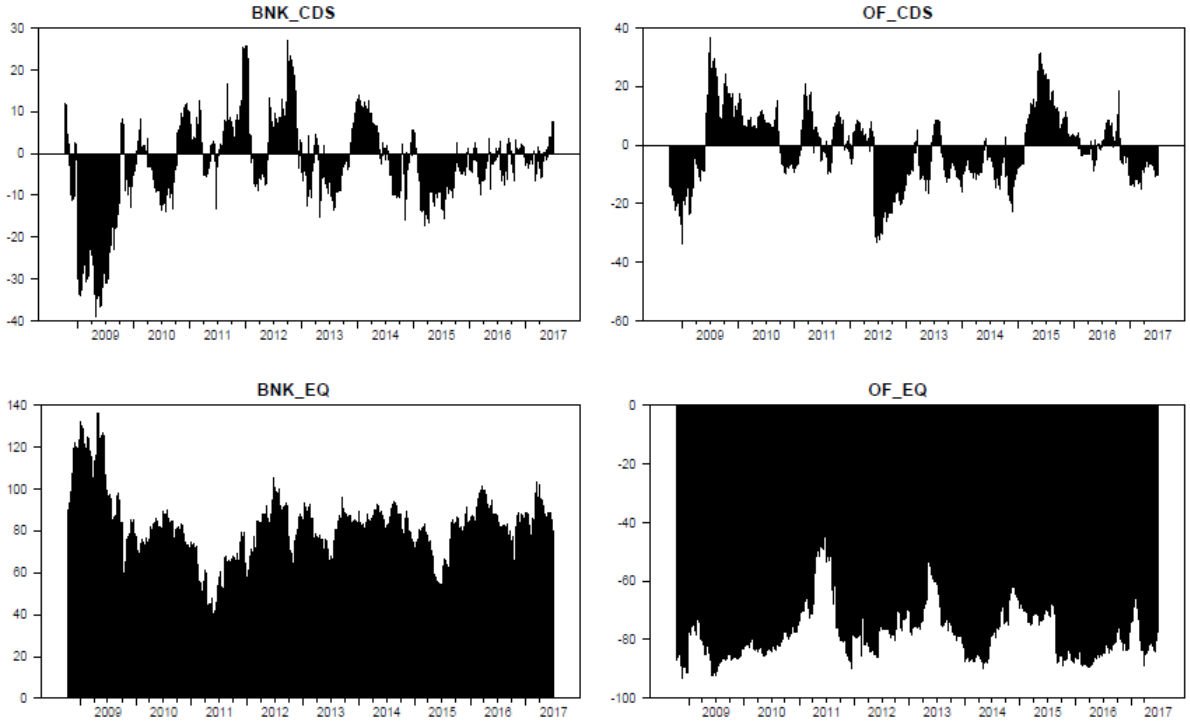

Figure 259: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Financials Sector

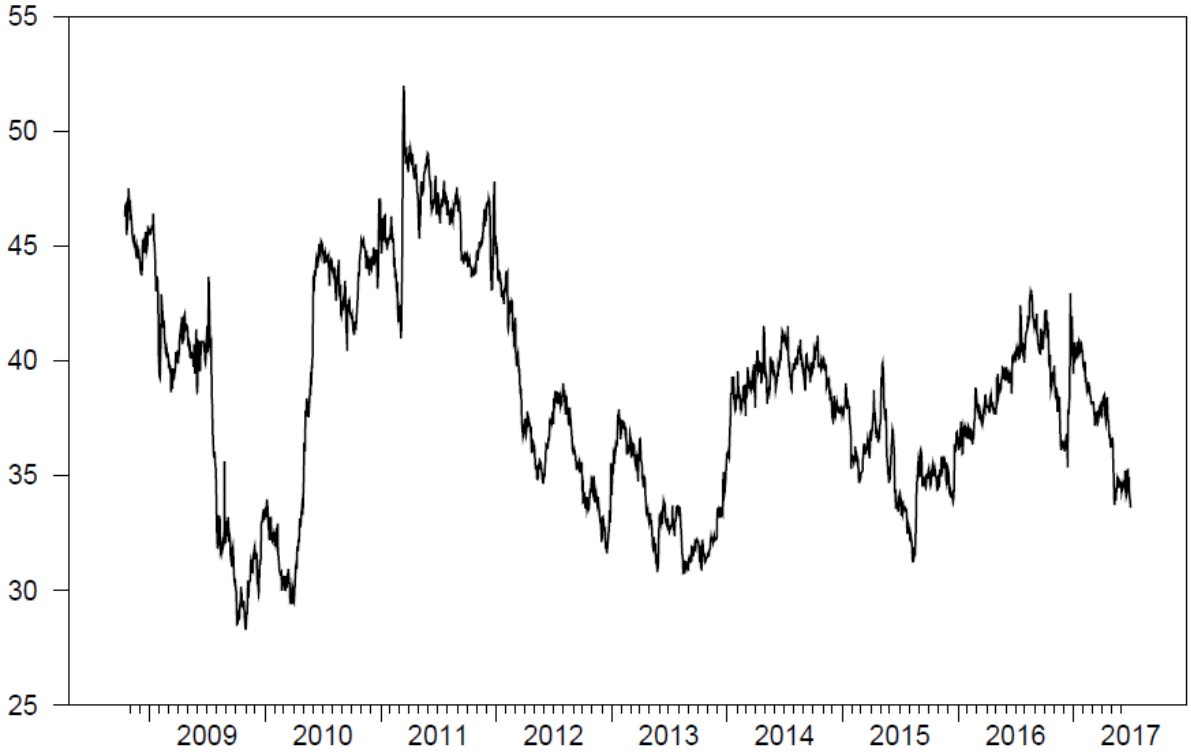

Figure 260: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Industrials Sector

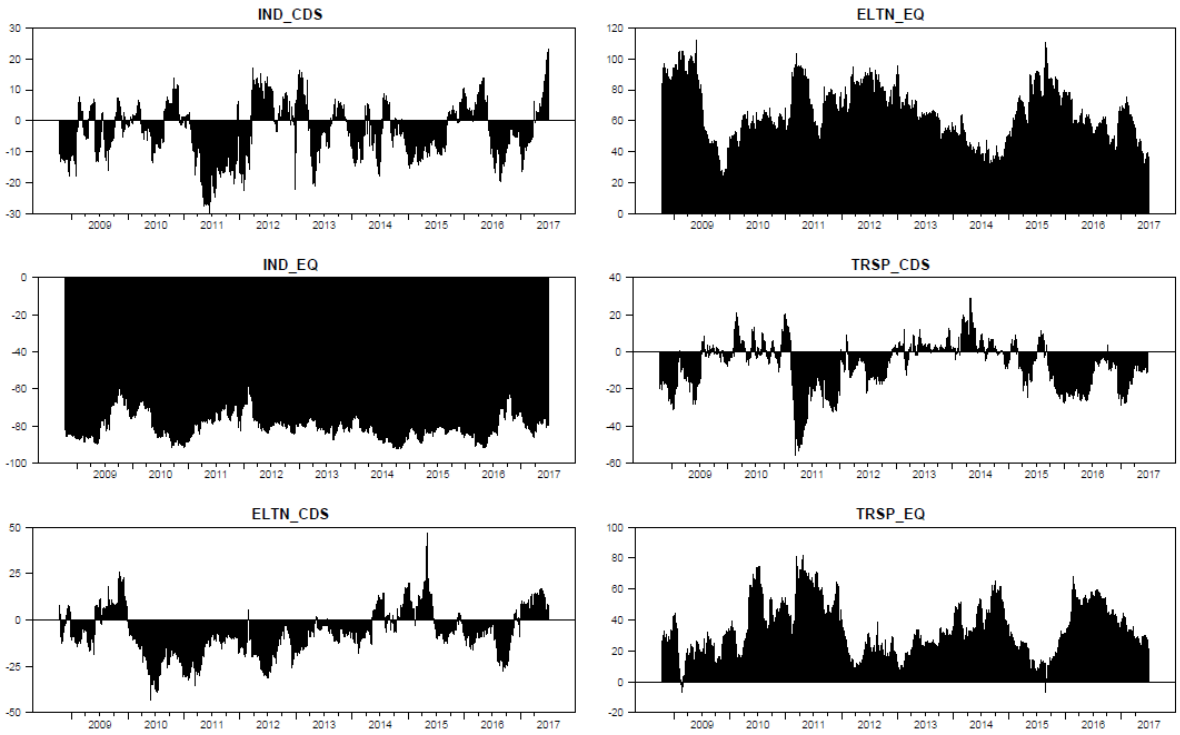

Figure 261: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Industrials Sector

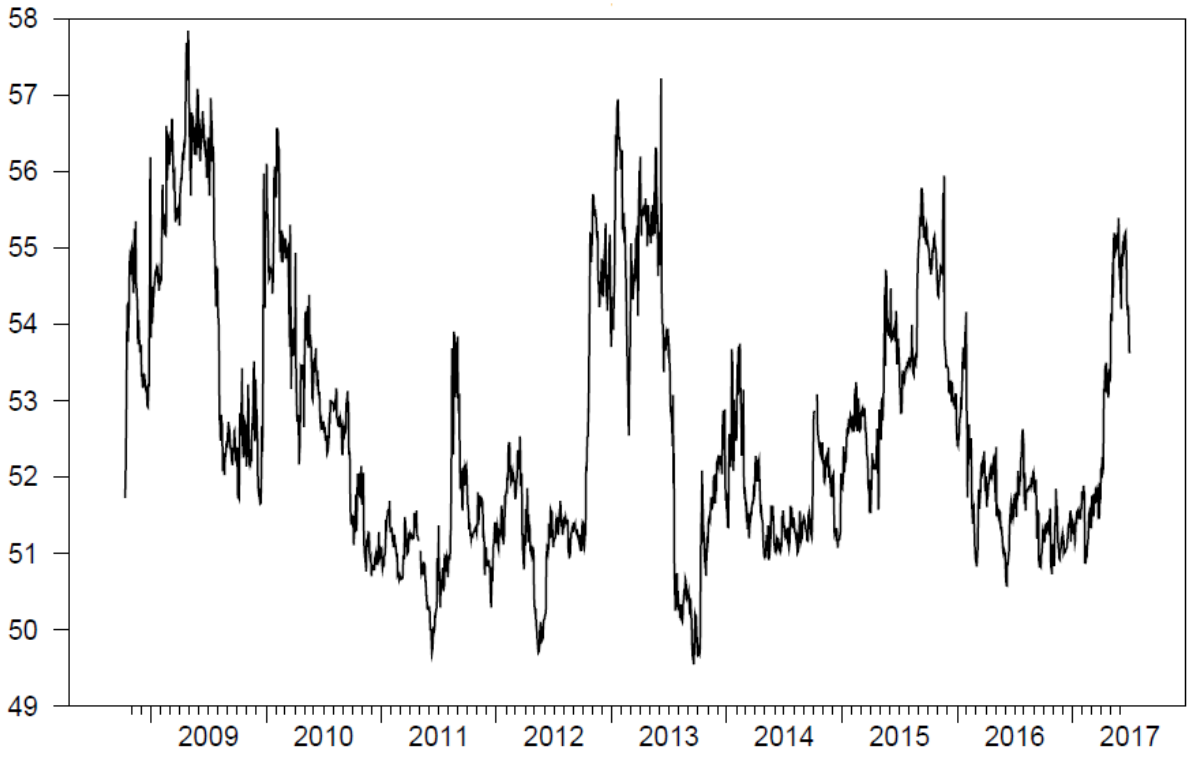

Figure 262: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Telecommunications Sector

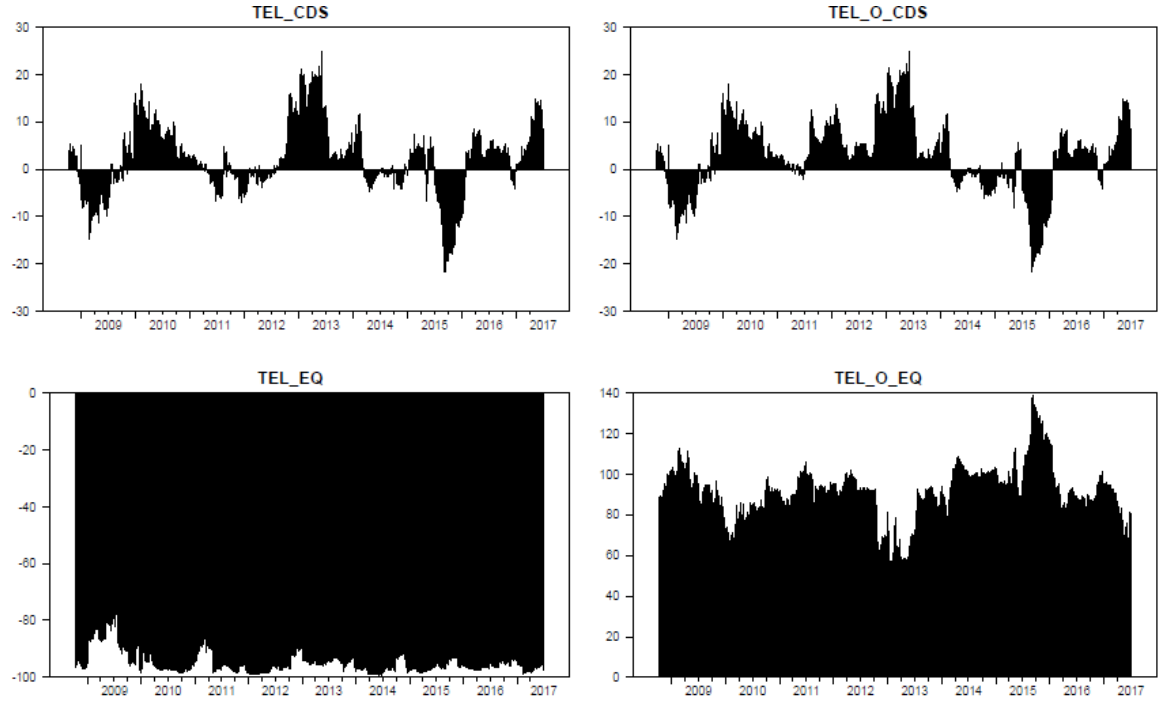

Figure 263: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Telecommunications Sector

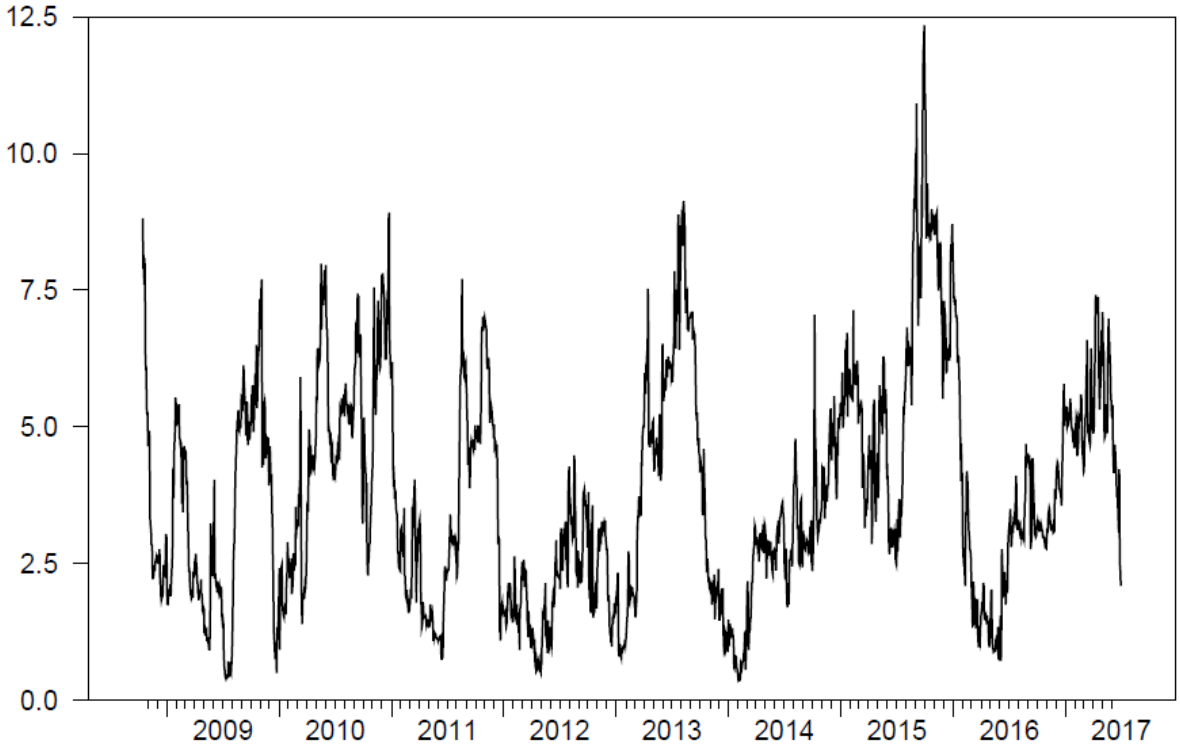

Figure 264: Total Volatility Spillovers between CDS Spreads and Equity Prices for the Utility Sector

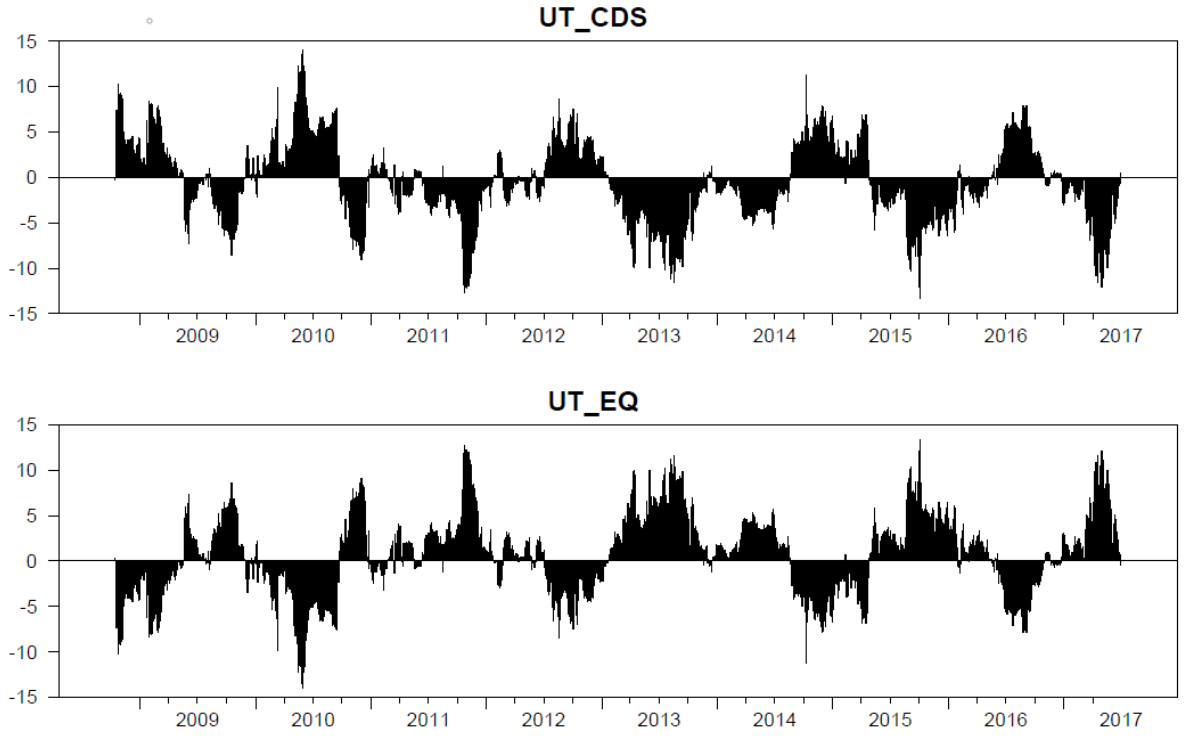

Figure 265: Net Volatility Spillovers between CDS Spreads and Equity Prices for the Utility Sector

E.6 CDS Spreads and Equity Volatility Sectors Connectedness: Across Regions Dynamic Analysis

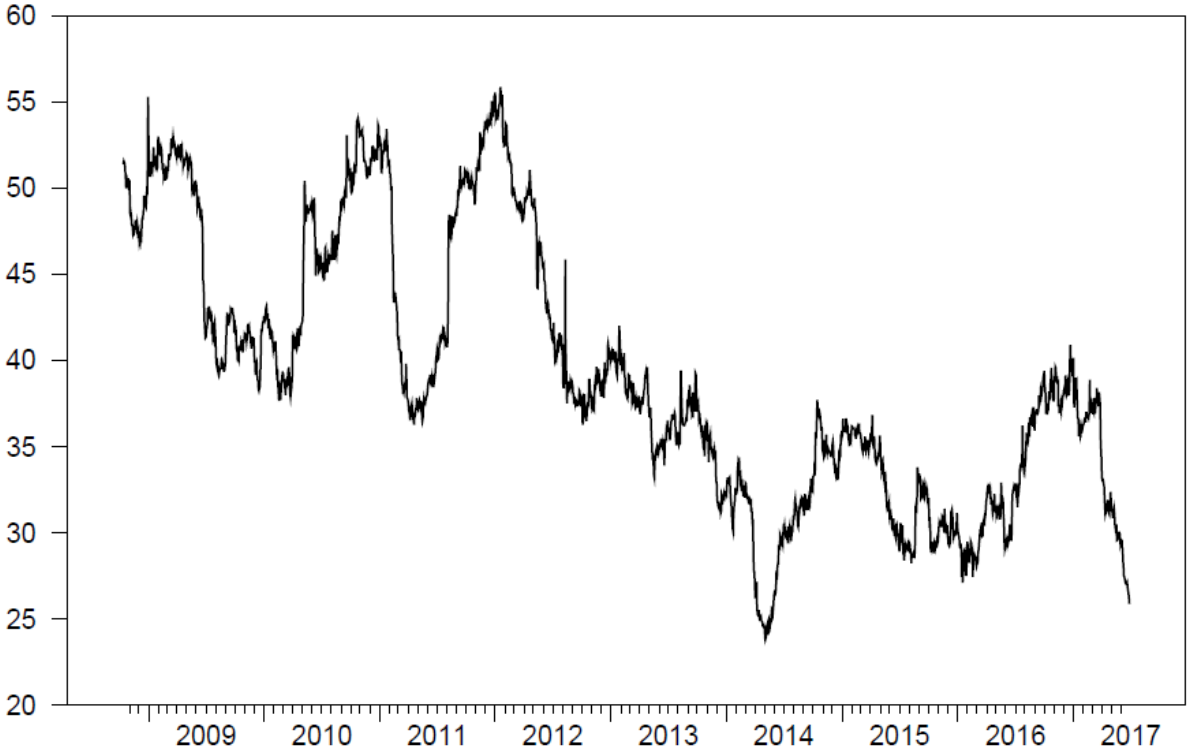

Figure 266: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Bank Sector

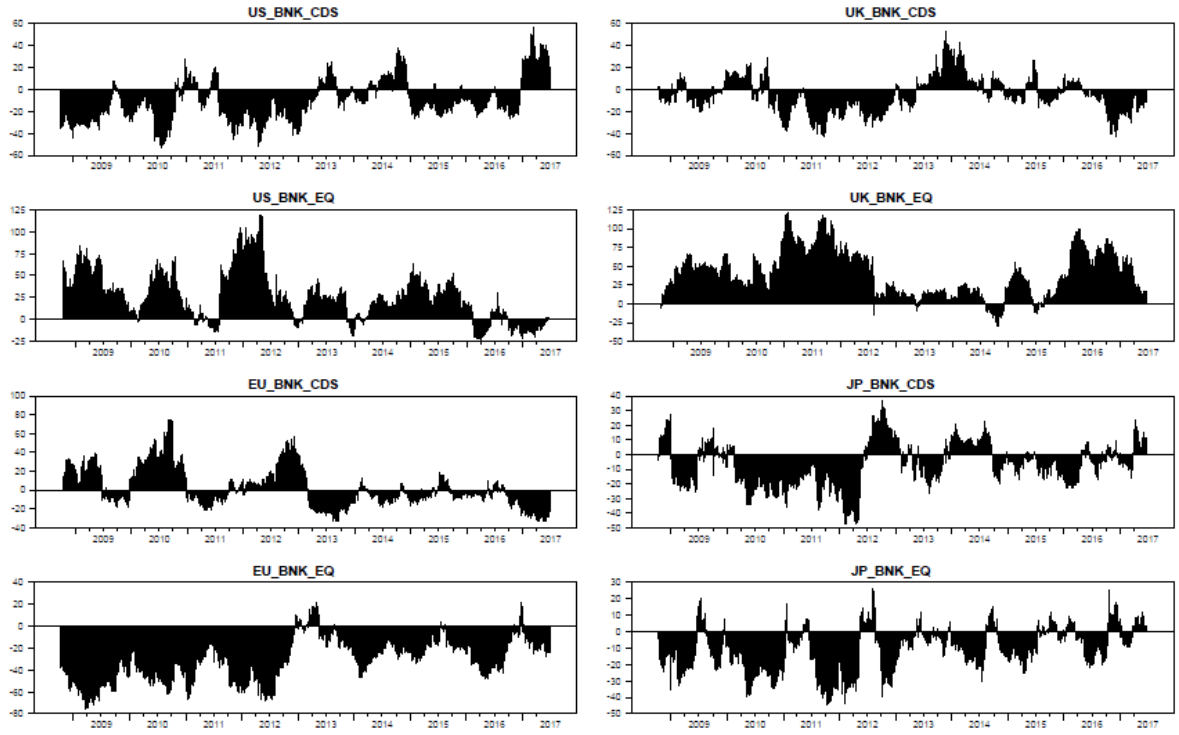

Figure 267: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Bank Sector

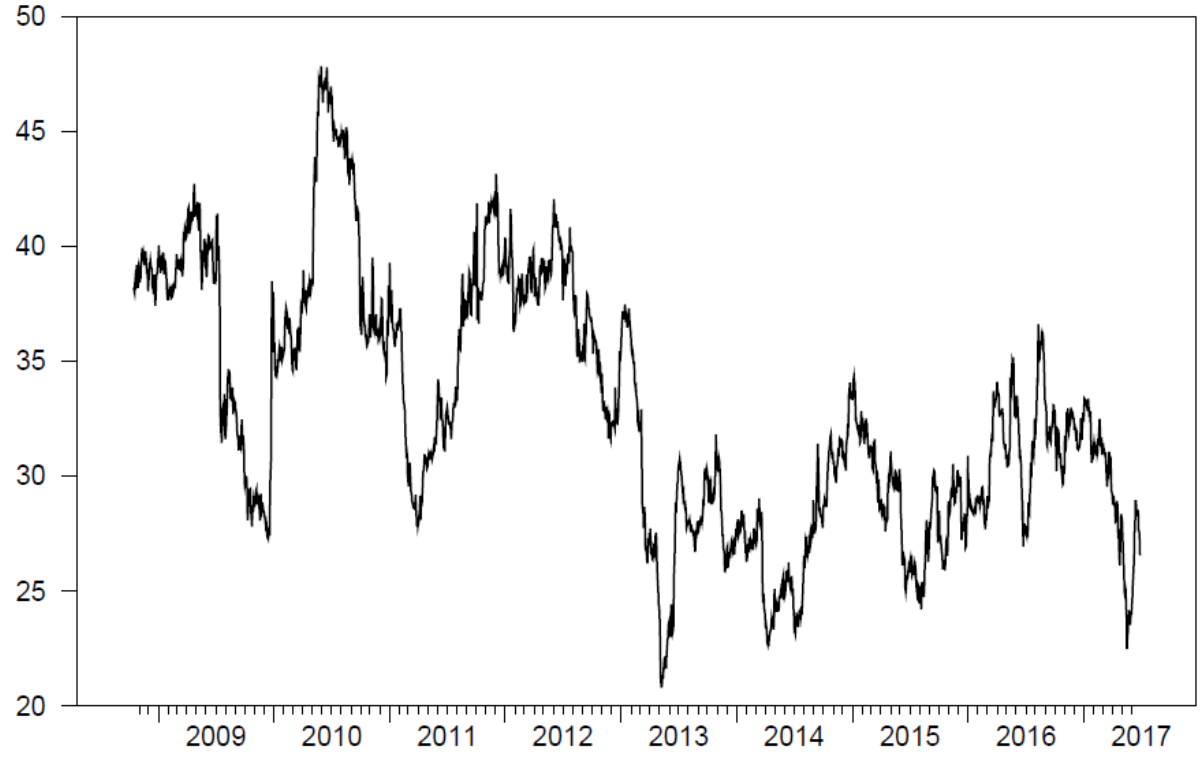

Figure 268: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Beverages/Bottling Sector

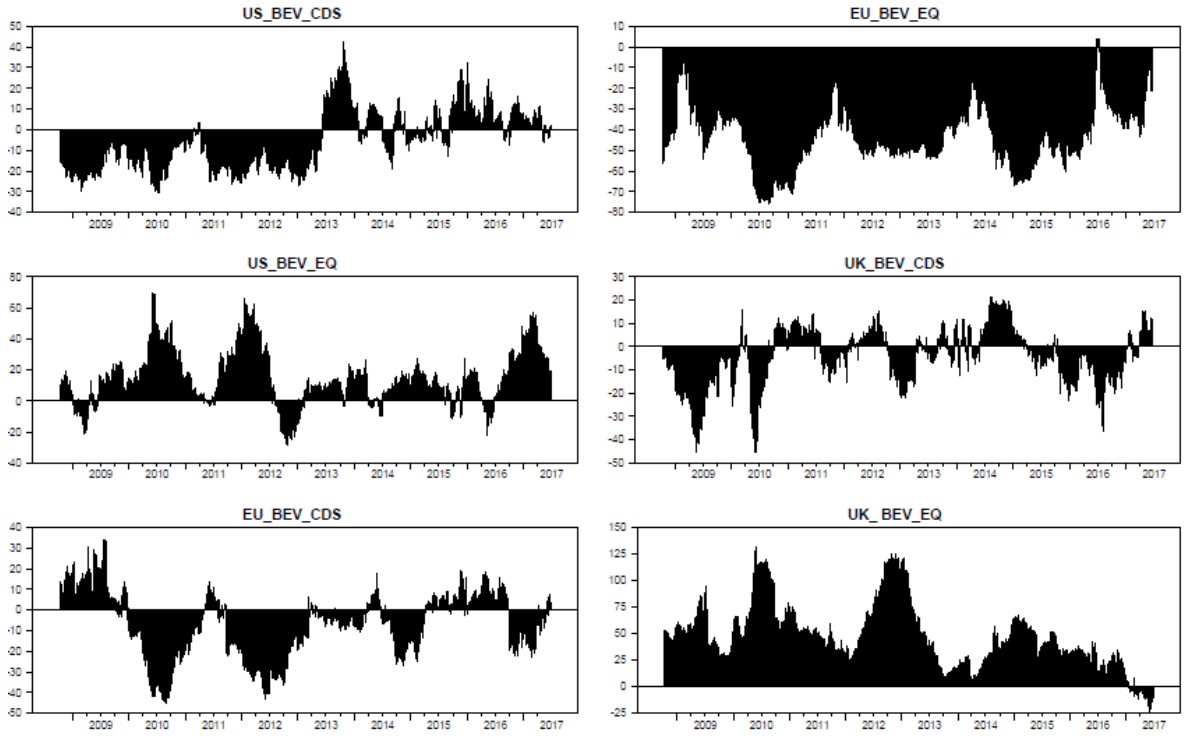

Figure 269: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Beverages/Bottling Sector

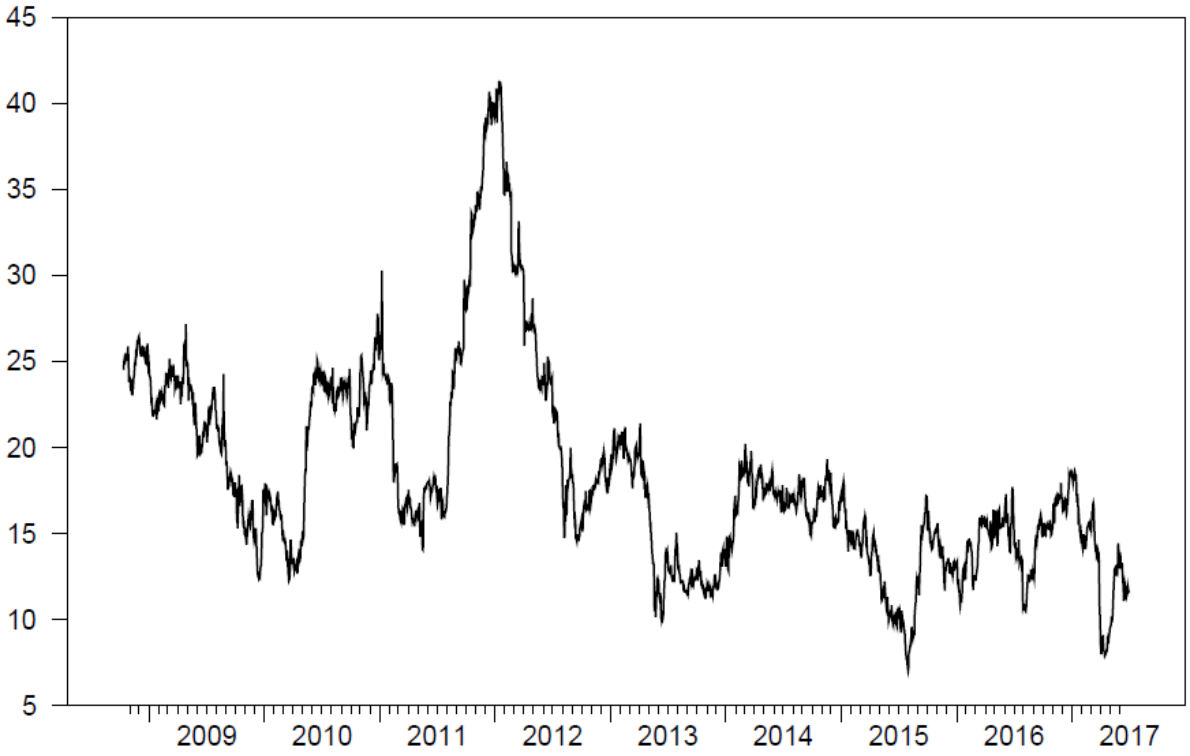

Figure 270: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Cable Media Sector

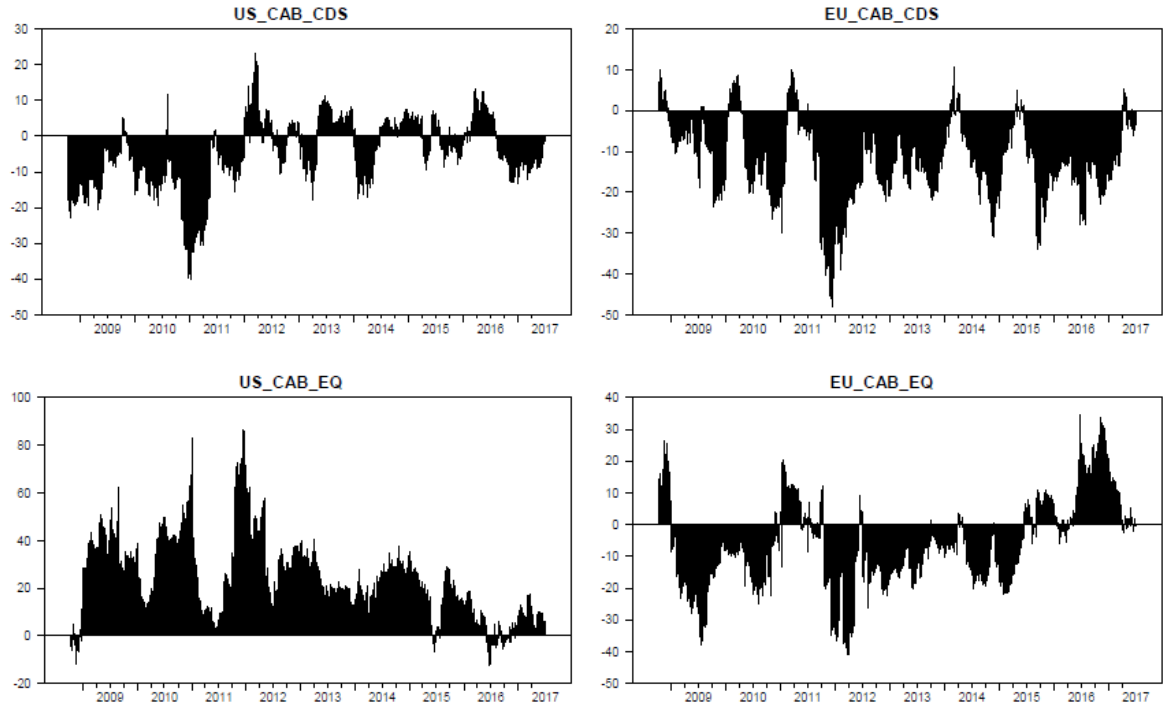

Figure 271: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Cable Media Sector

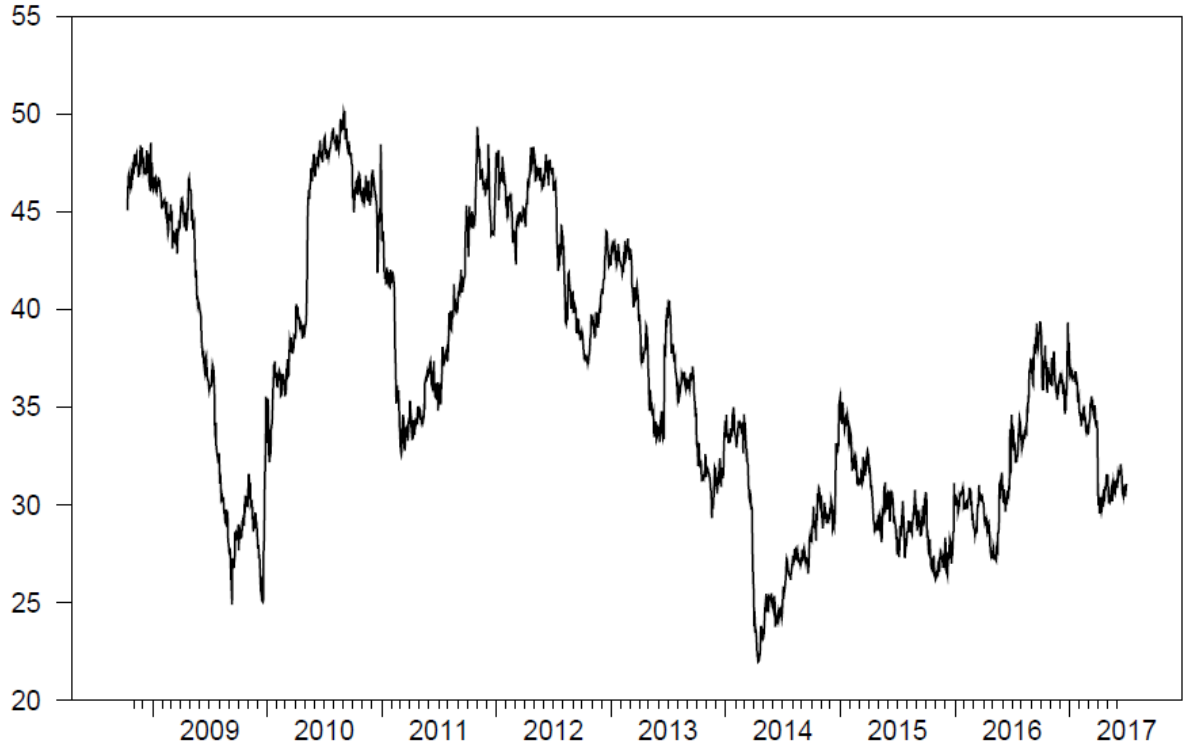

Figure 272: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Goods Sector

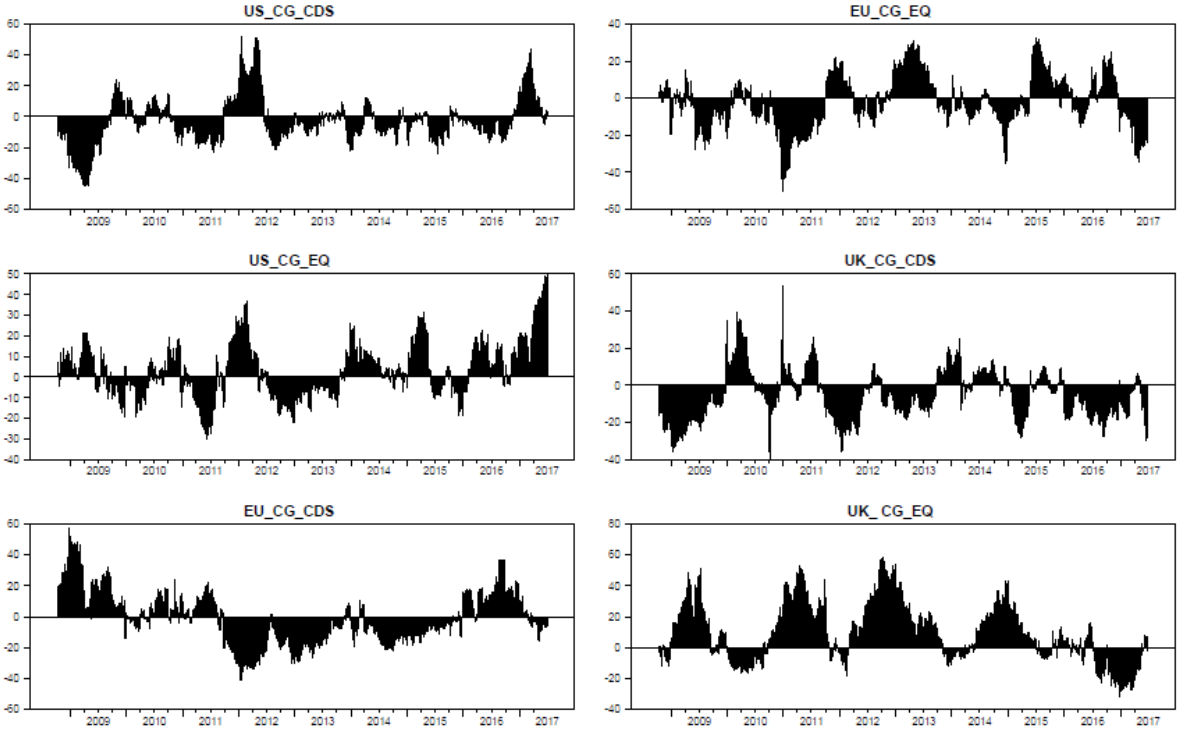

Figure 273: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Goods Sector

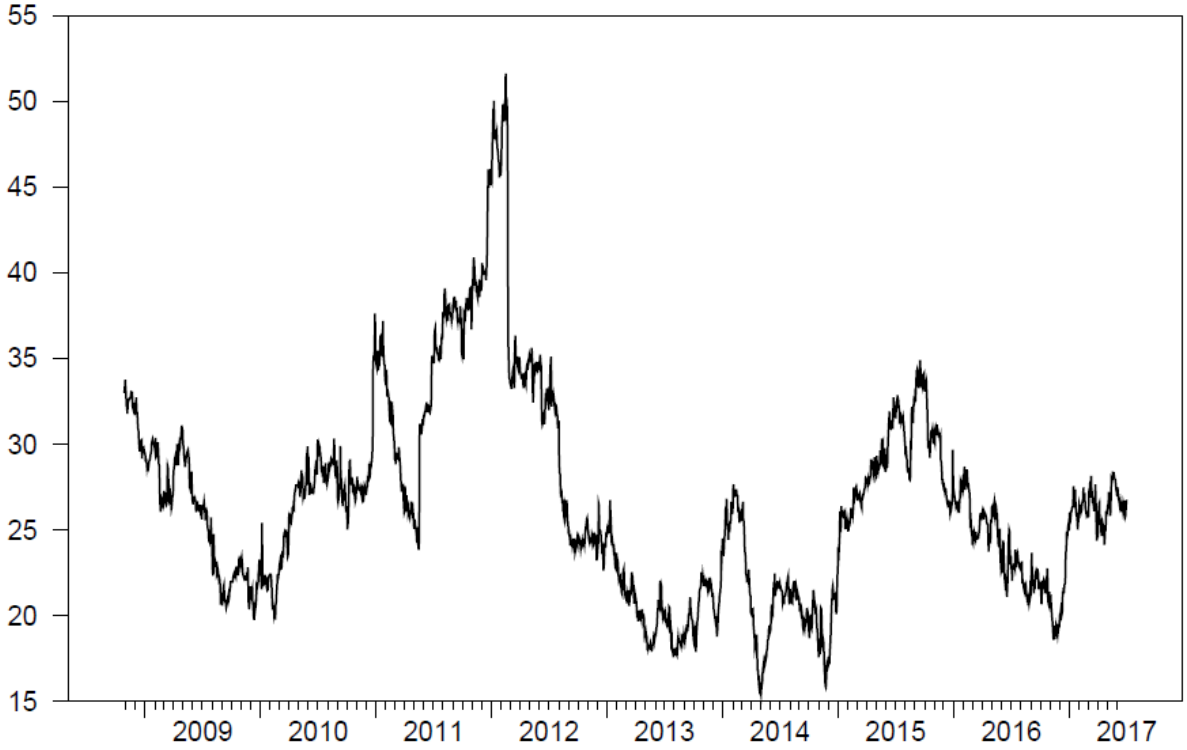

Figure 274: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Chemicals Sector

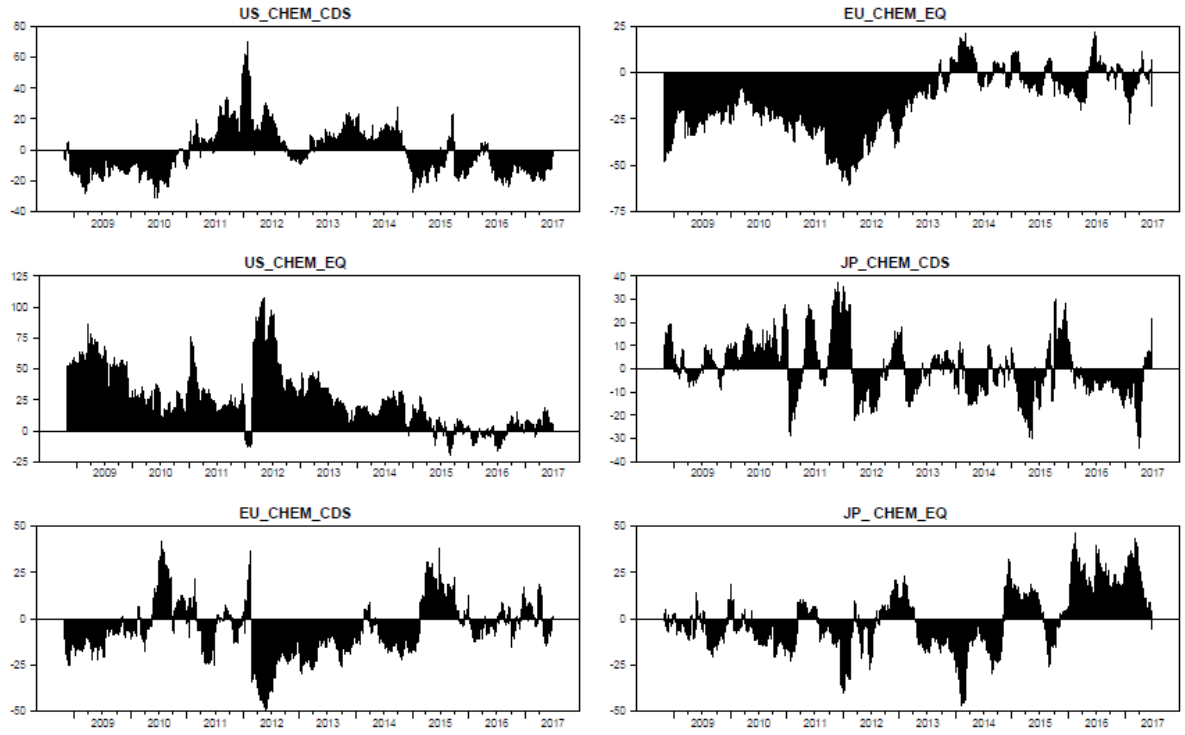

Figure 275: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Chemicals Sector

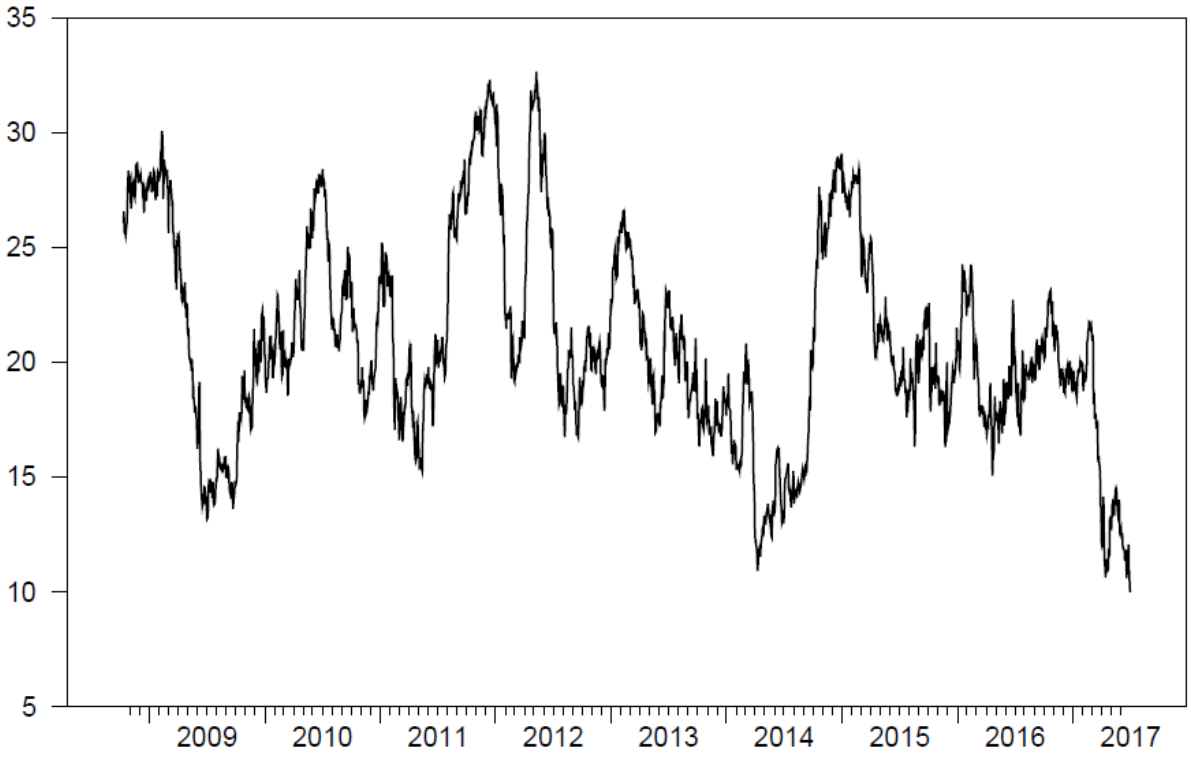

Figure 276: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Conglomerate / Diversified Mfg Sector

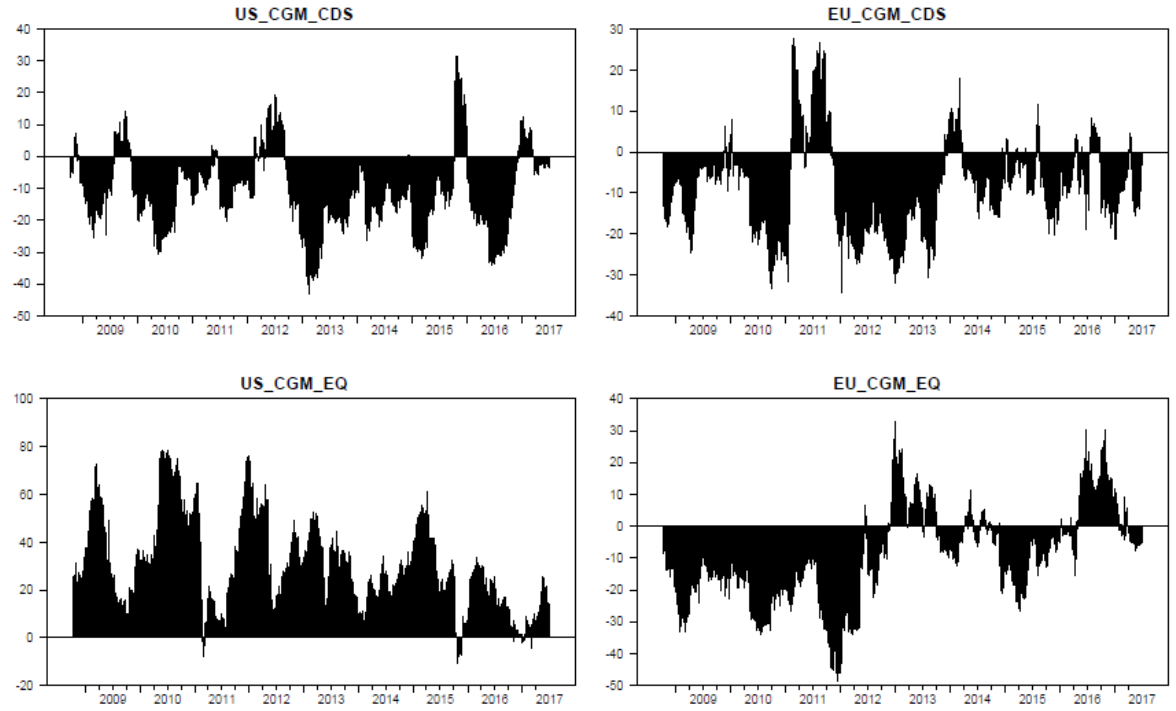

Figure 277: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Conglomerate / Diversified Mfg Sector

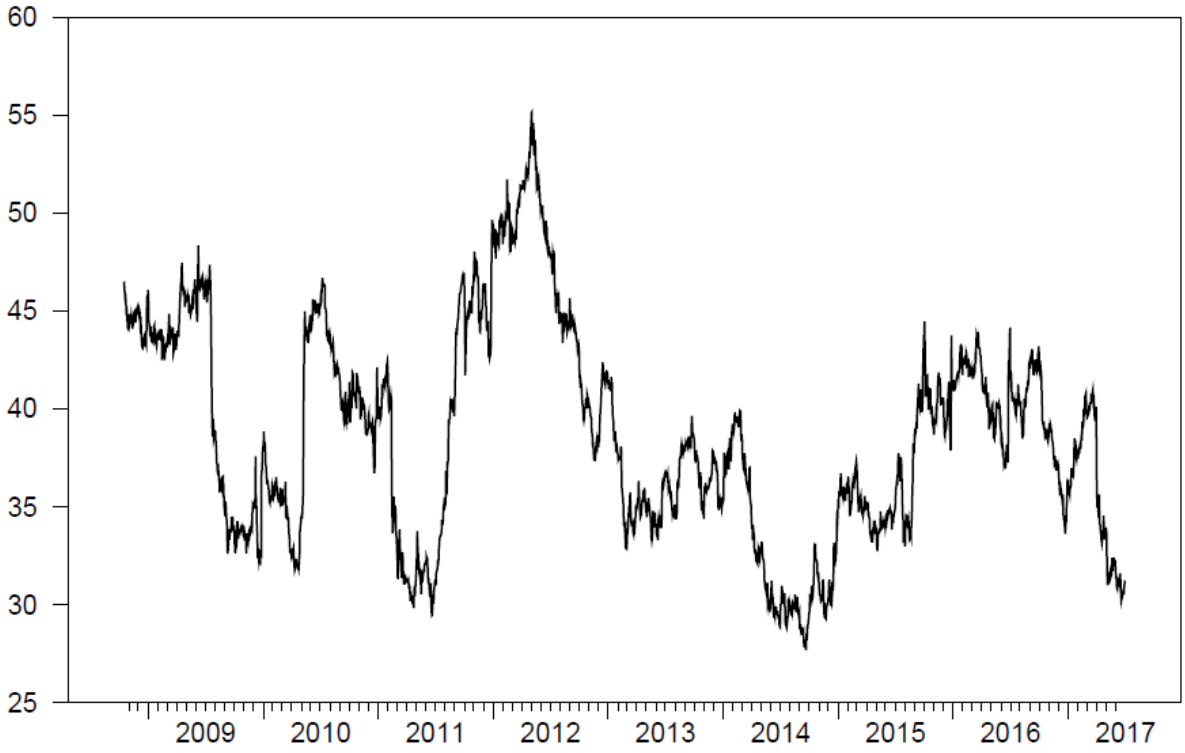

Figure 278: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Services Sector

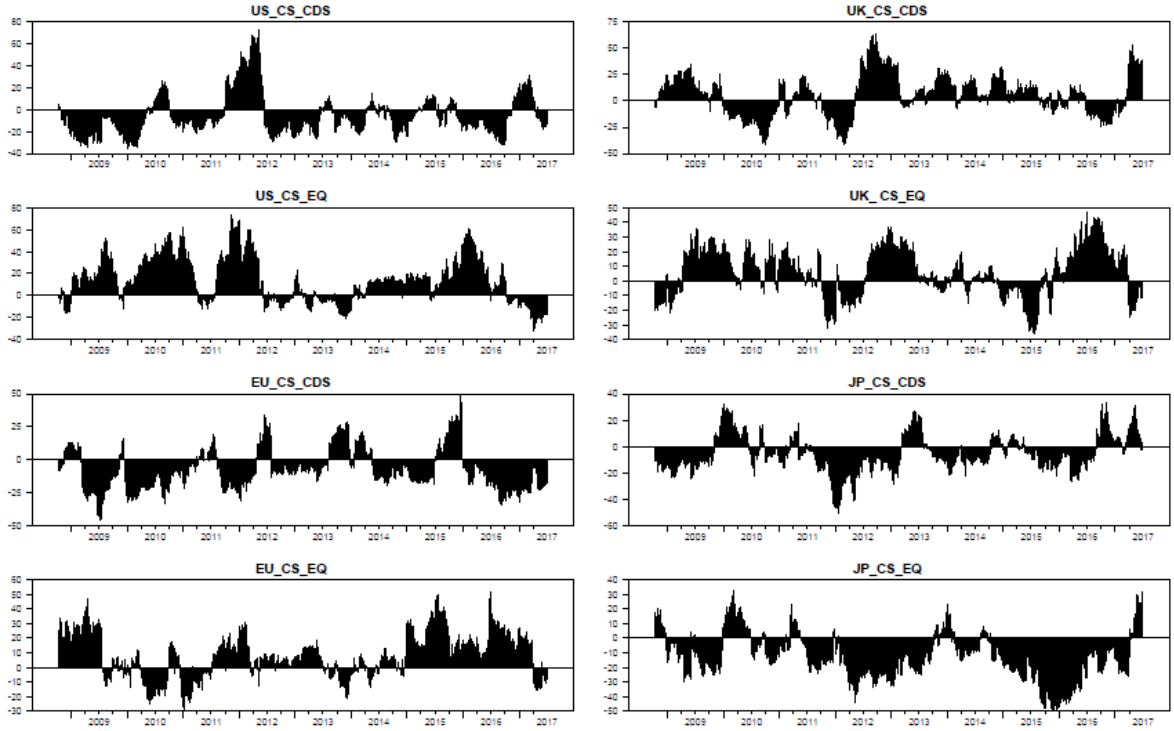

Figure 279: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Consumer Services Sector

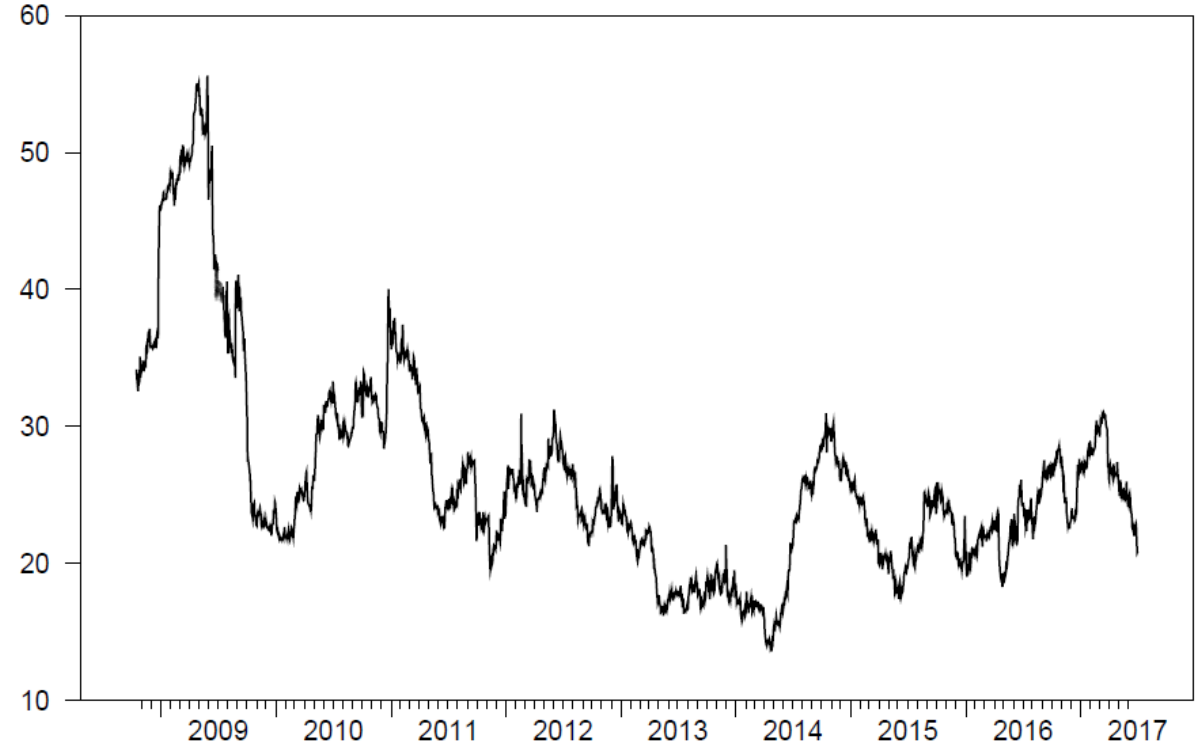

Figure 280: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Electric Power Sector

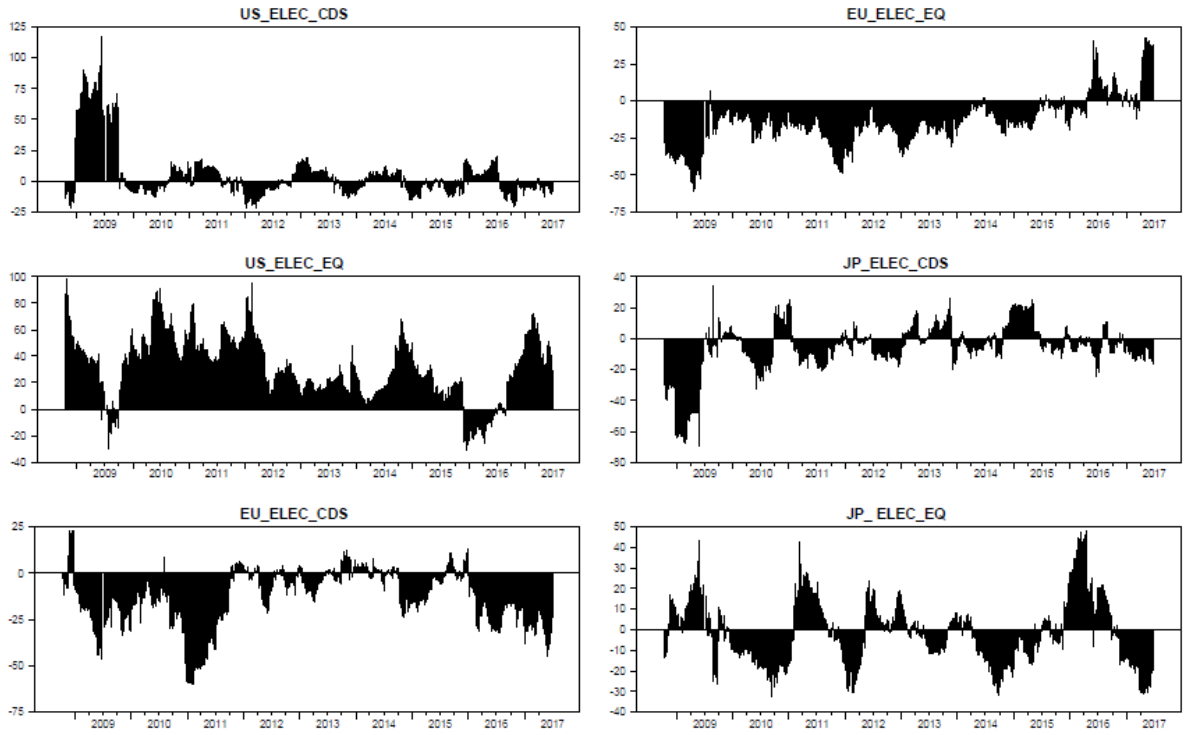

Figure 281: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Electric Power Sector

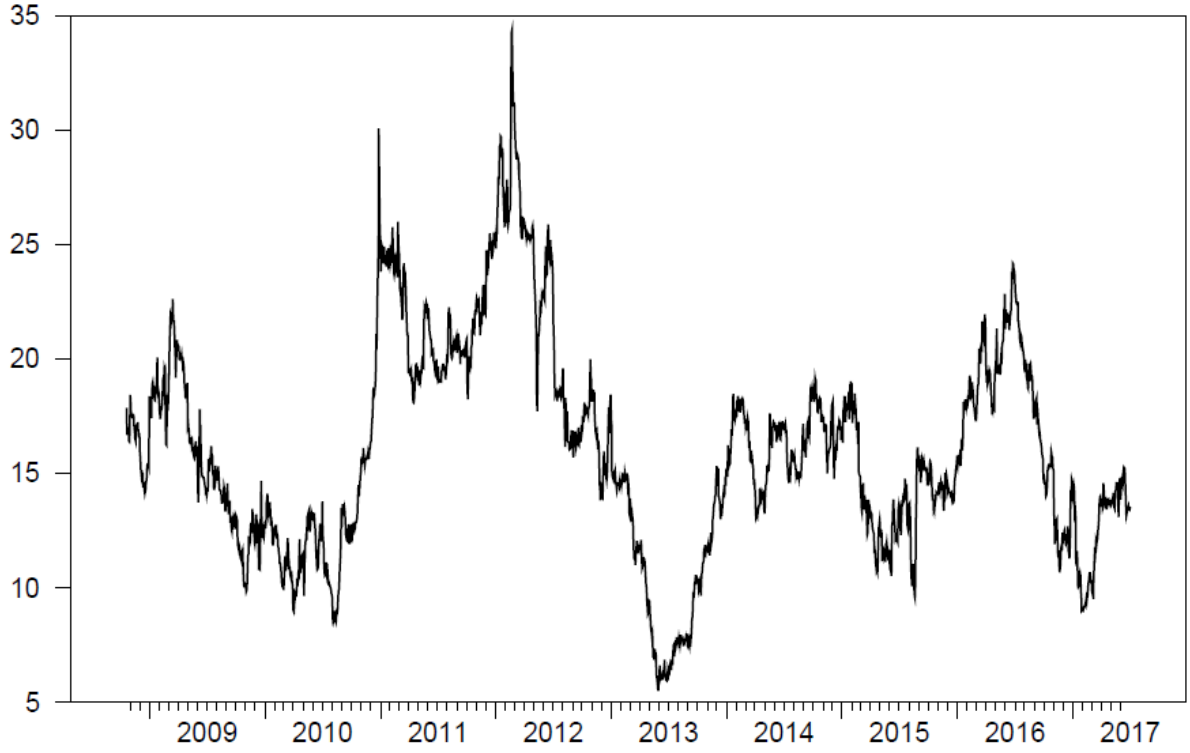

Figure 282: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Industrials Sector

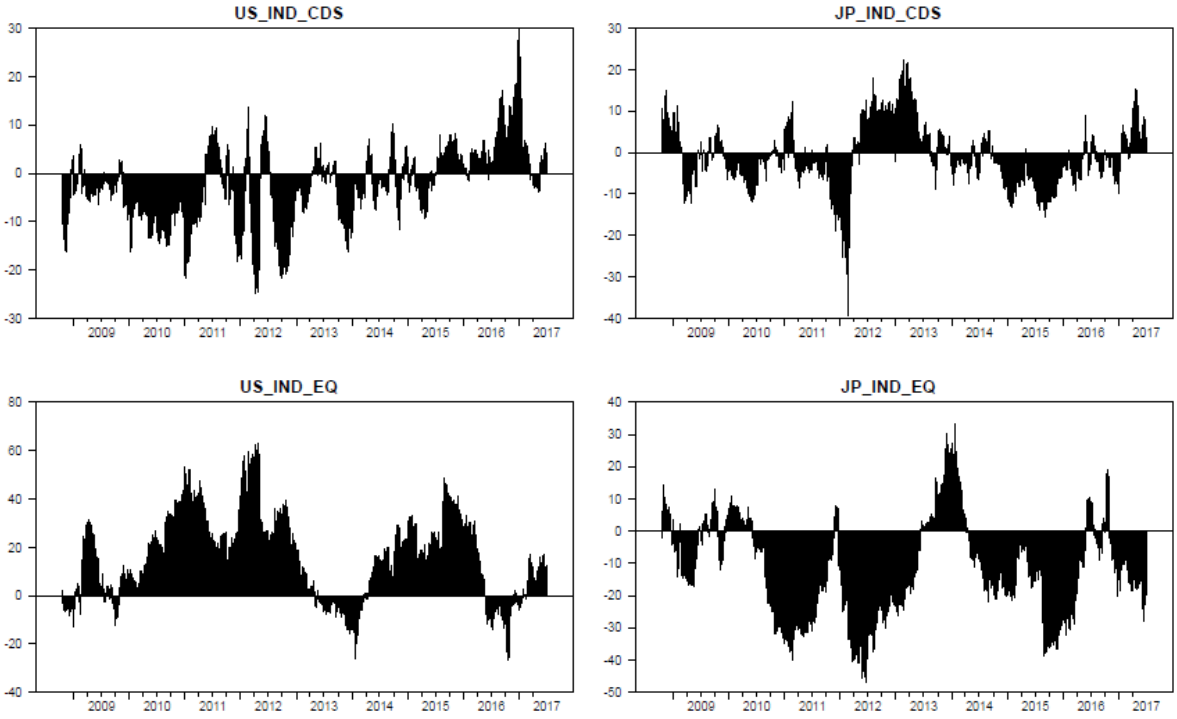

Figure 283: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Industrials Sector

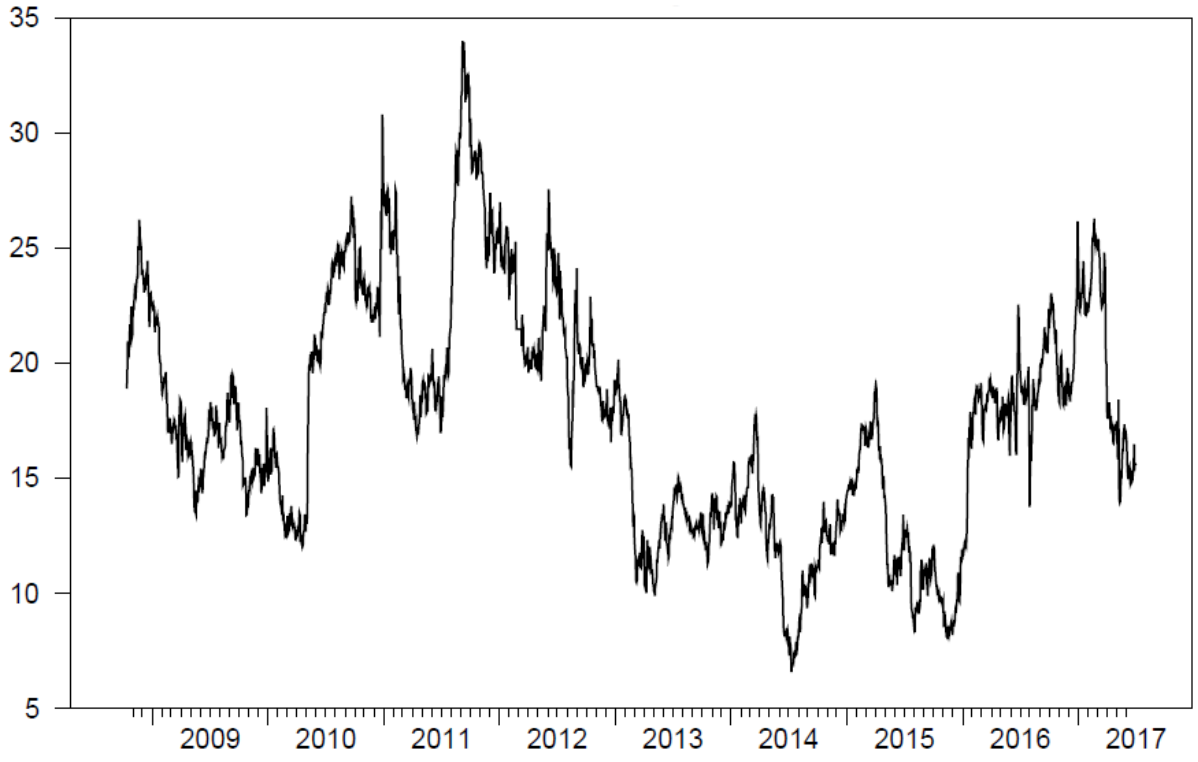

Figure 284: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Leisure Sector

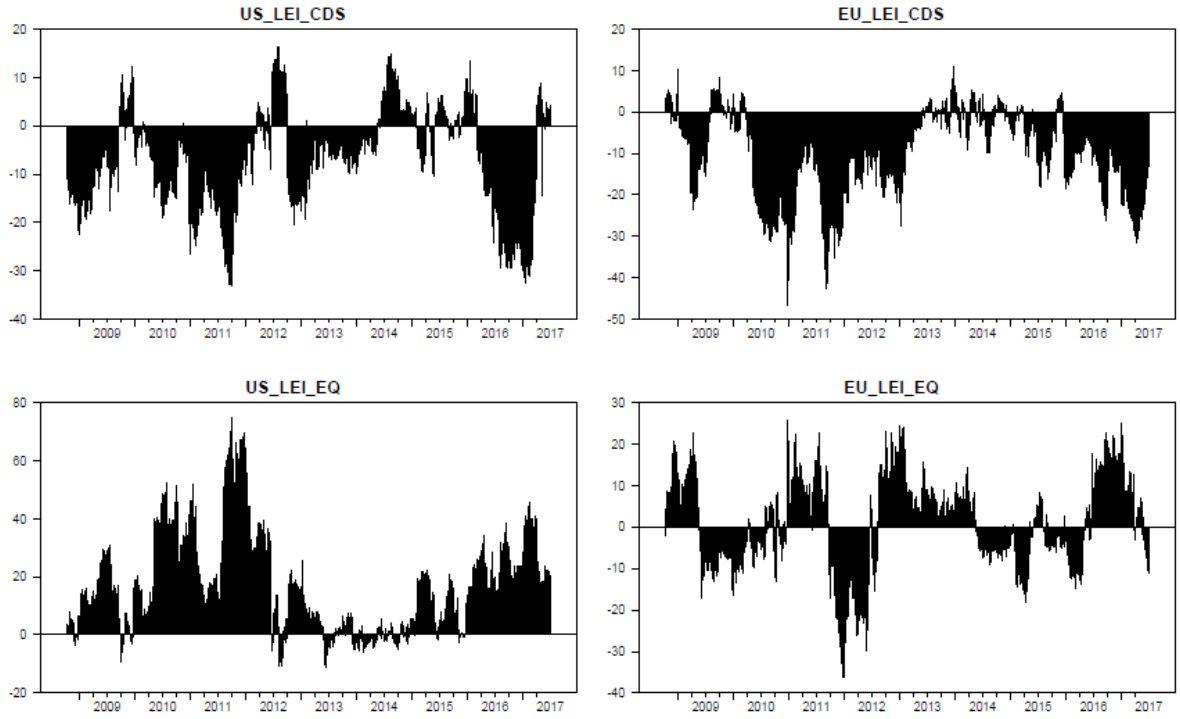

Figure 285: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Leisure Sector

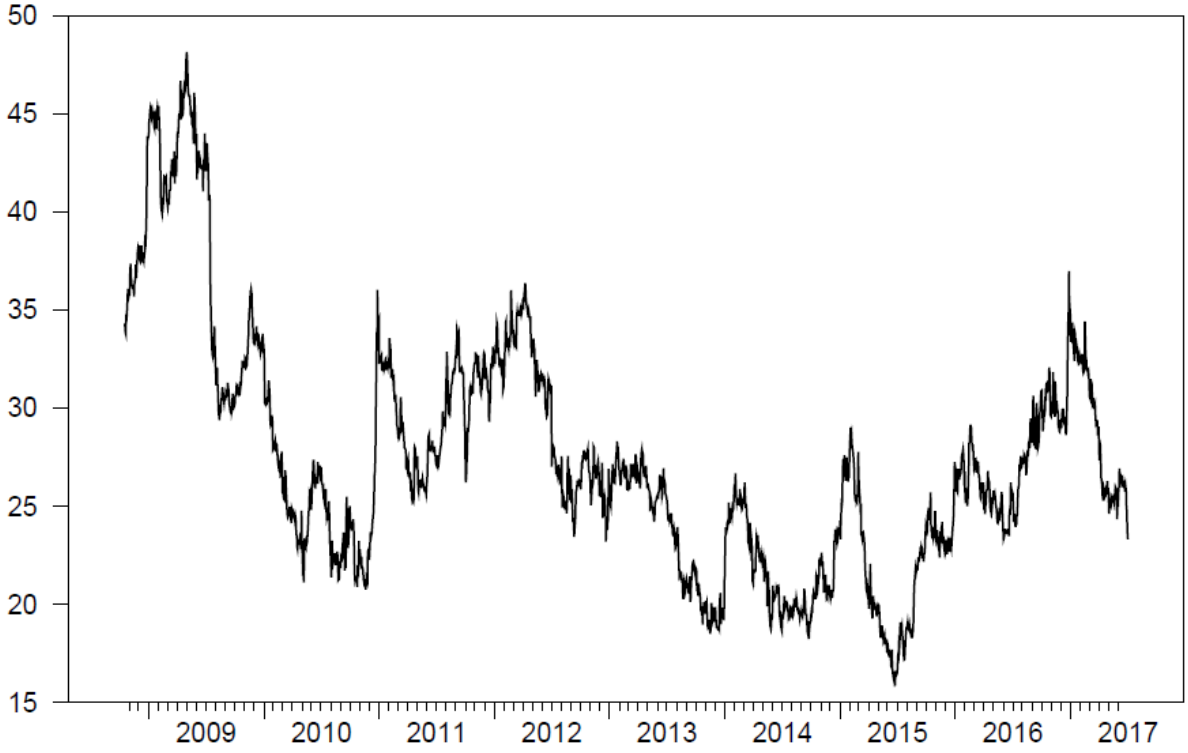

Figure 286: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Metals & Mining Sector

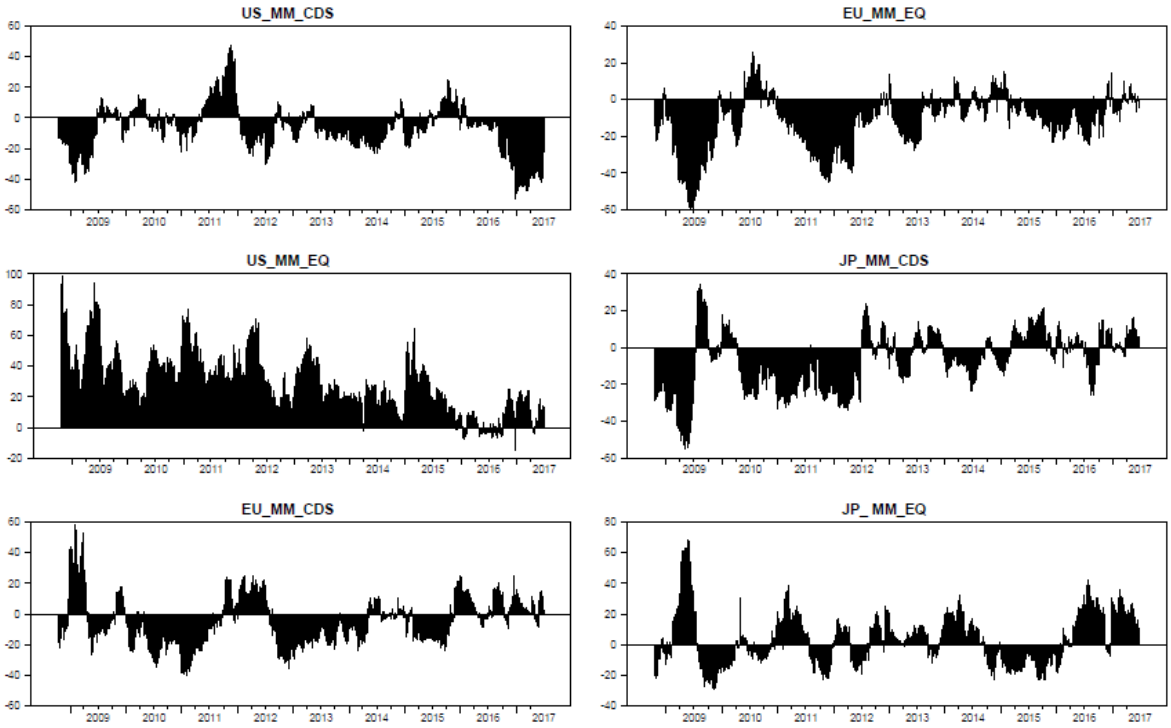

Figure 287: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Metals & Mining Sector

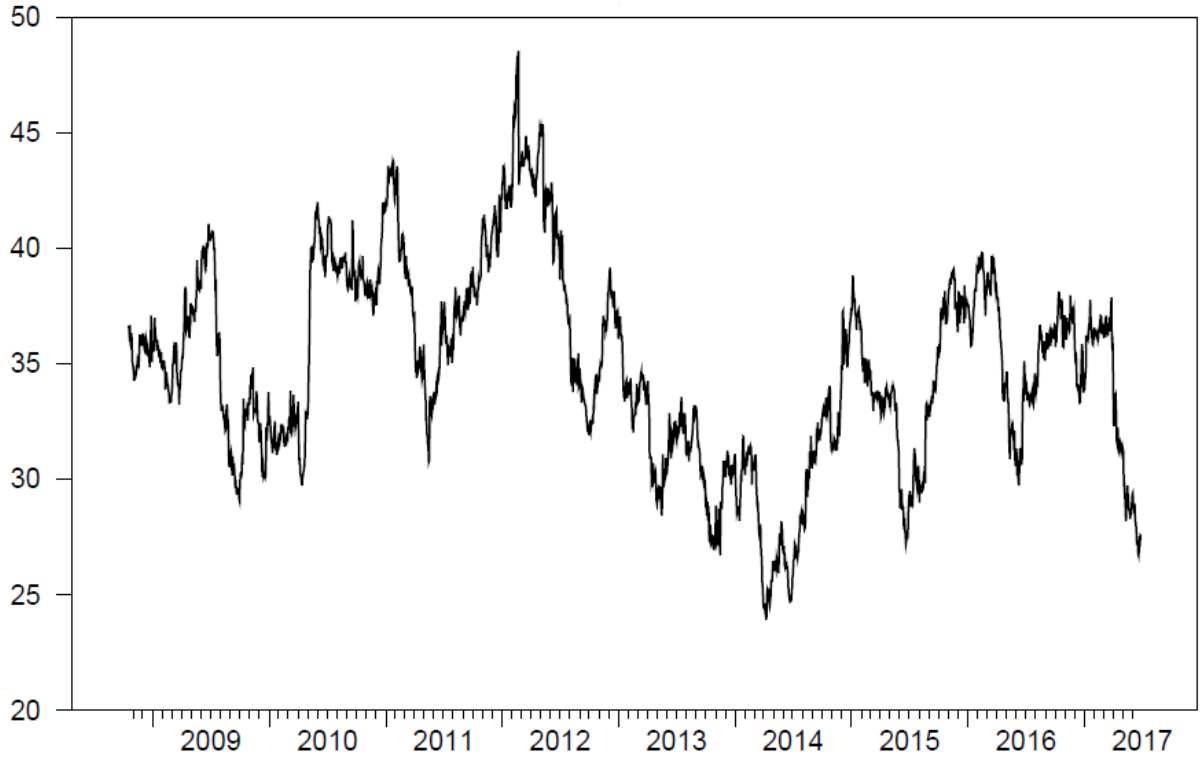

Figure 288: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Other Services Sector

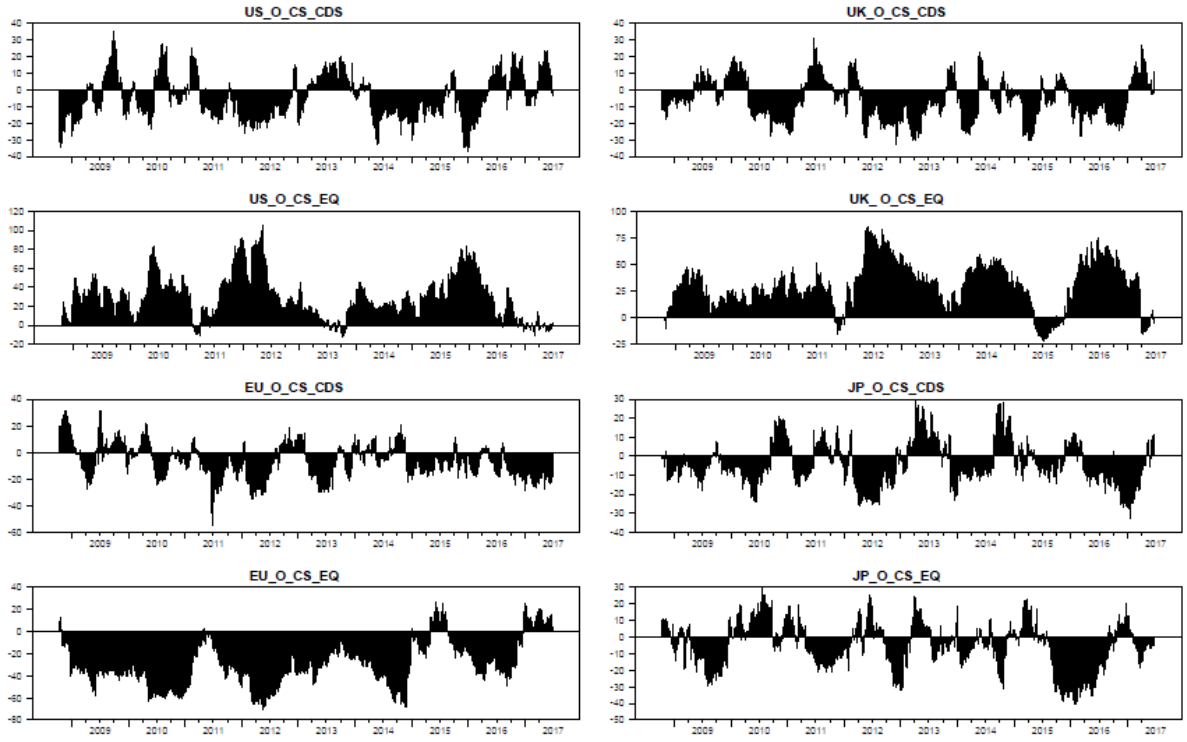

Figure 289: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Other Services Sector

Figure 290: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Financials Sector

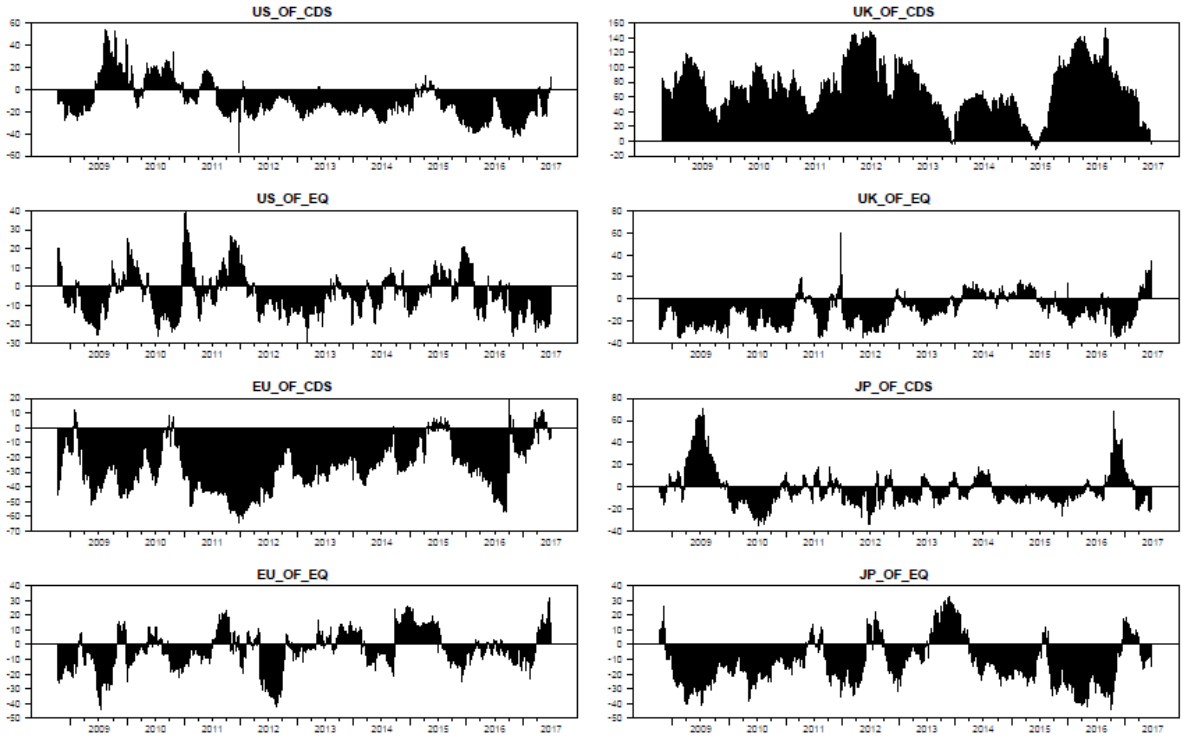

Figure 291: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Financials Sector

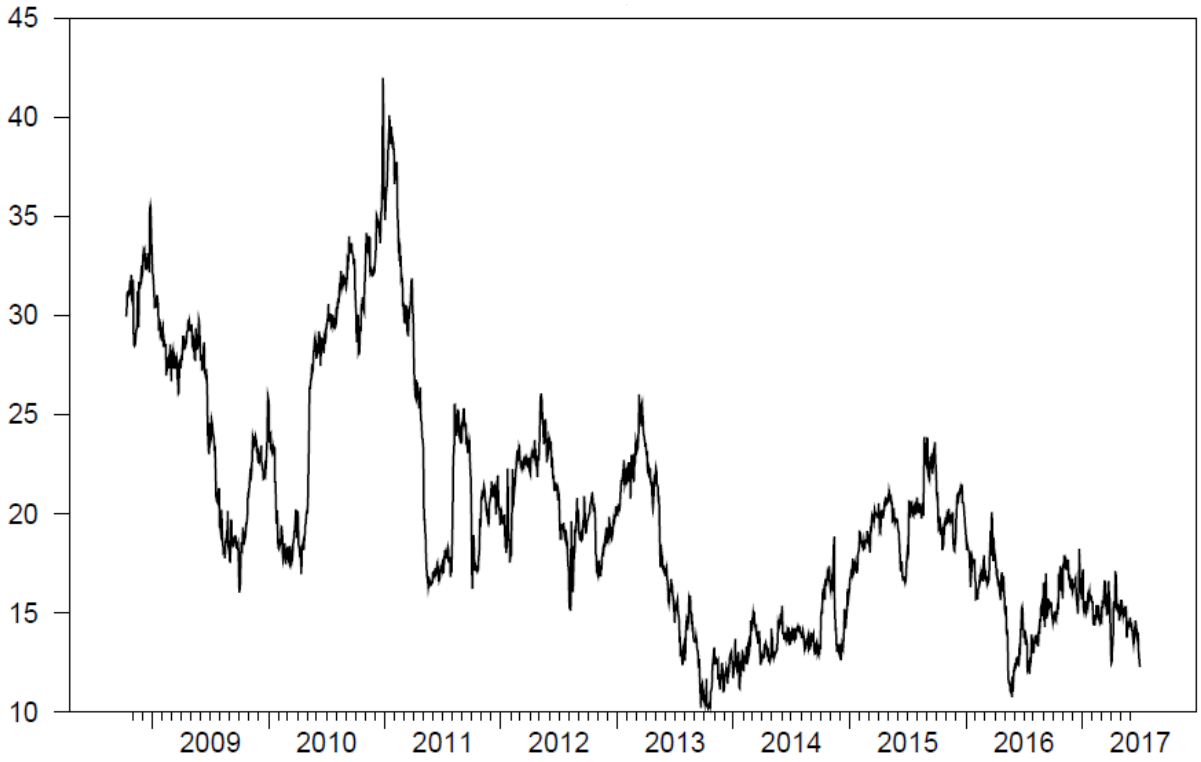

Figure 292: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Other Financials Sector

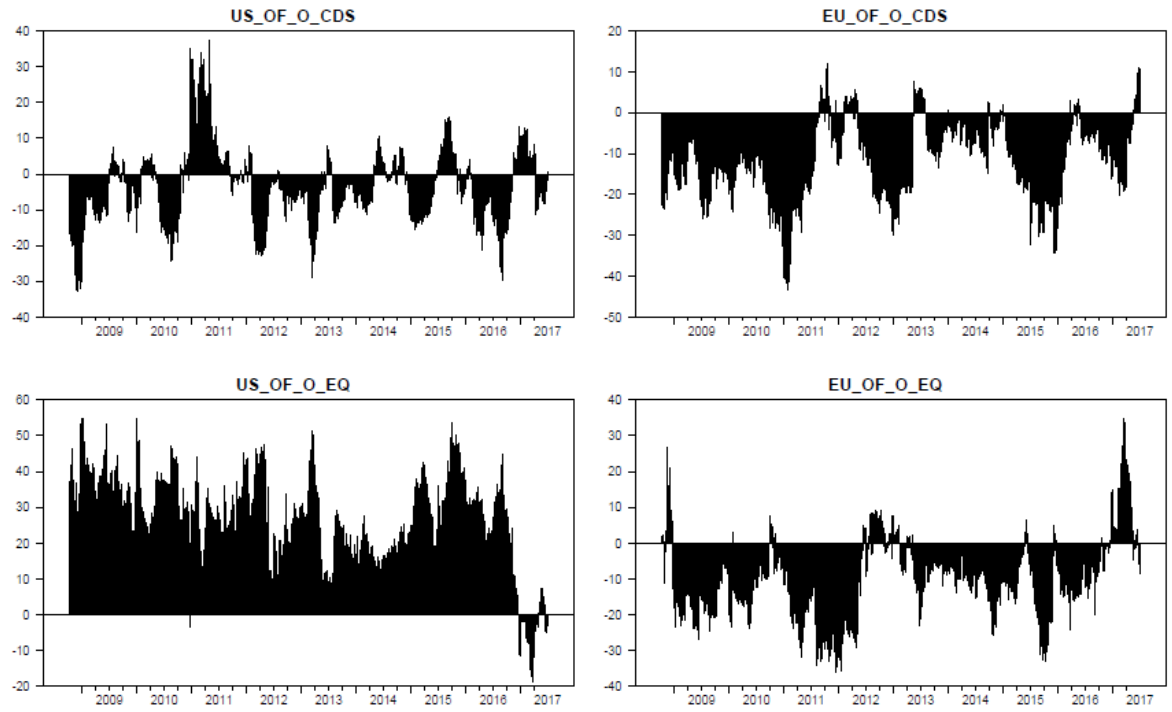

Figure 293: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Other Financials Sector

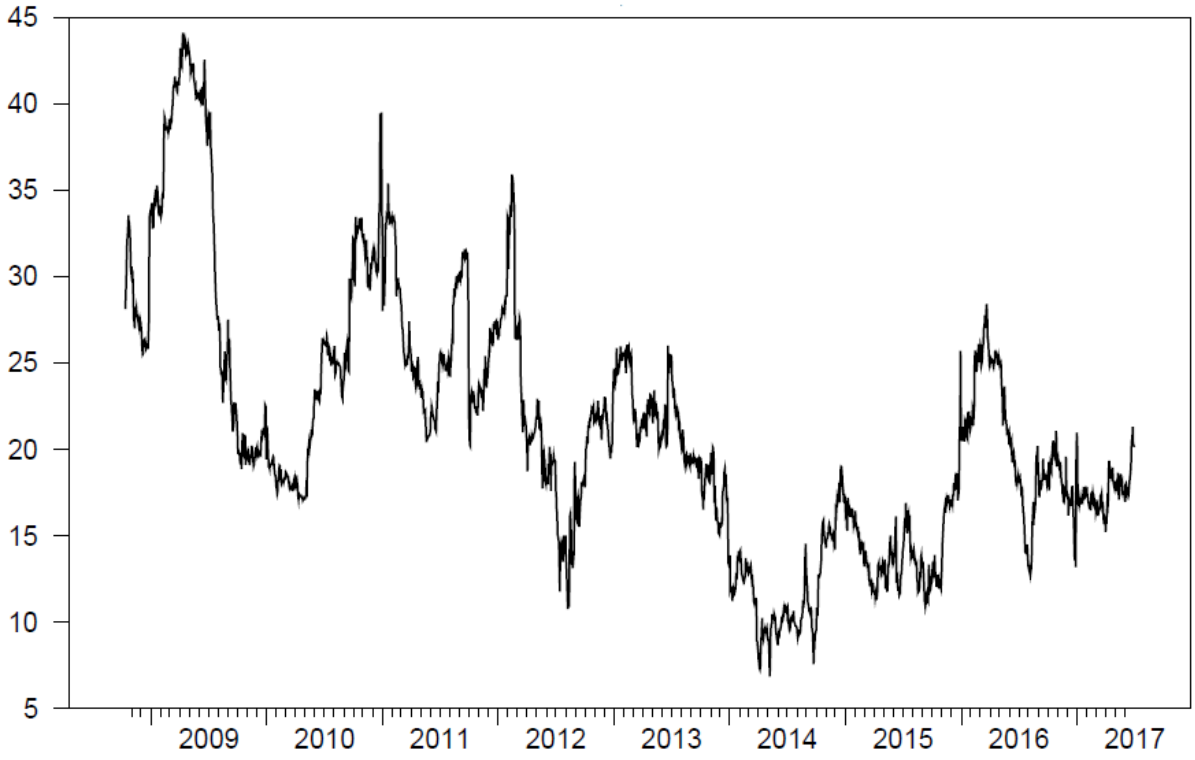

Figure 294: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Oil & Gas Sector

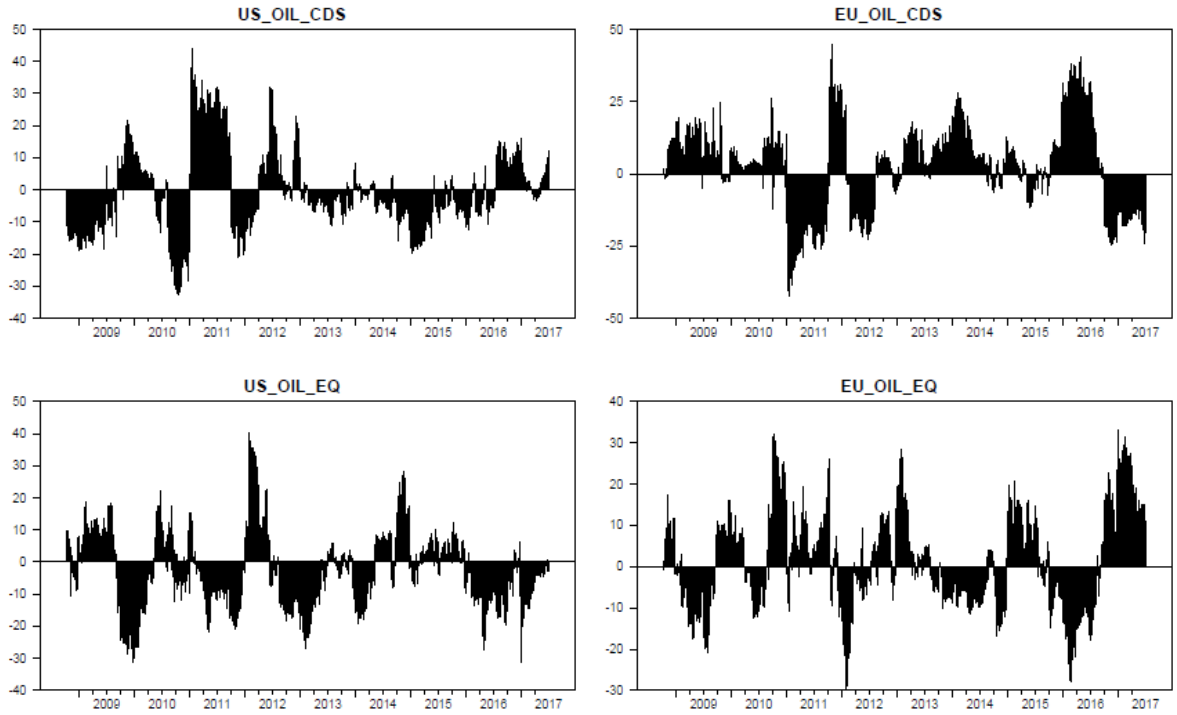

Figure 295: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Oil & Gas Sector

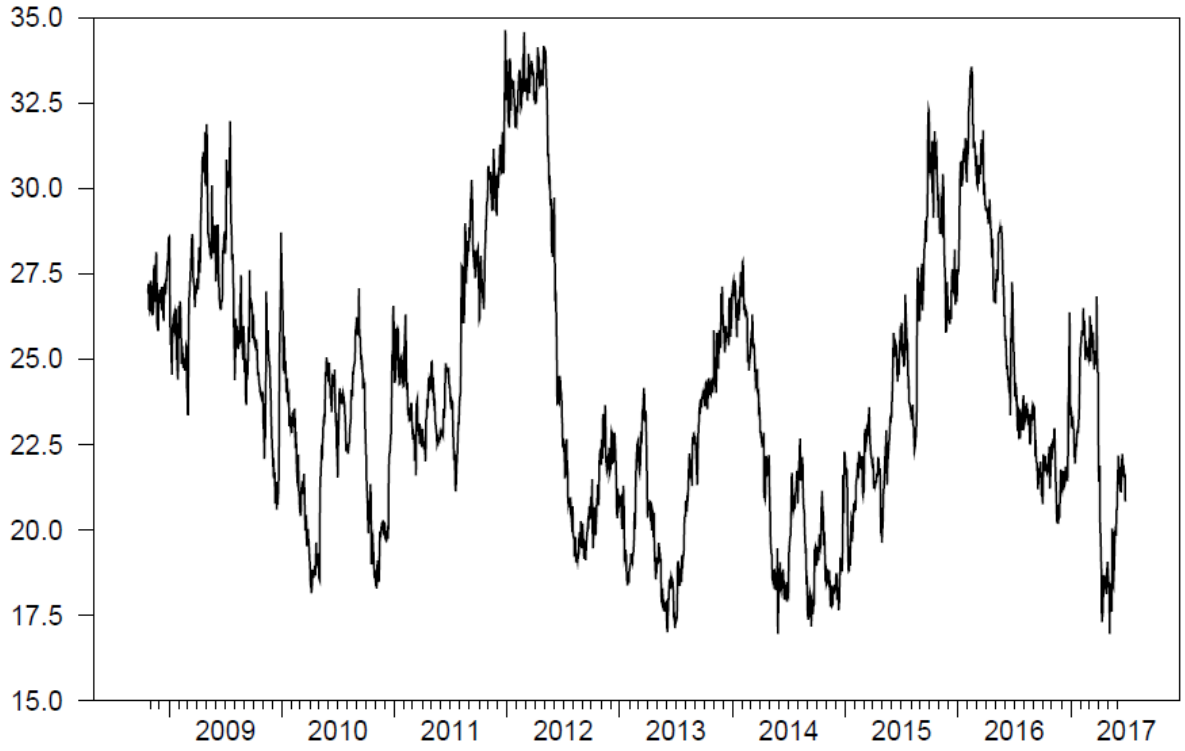

Figure 296: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Retail Other Sector

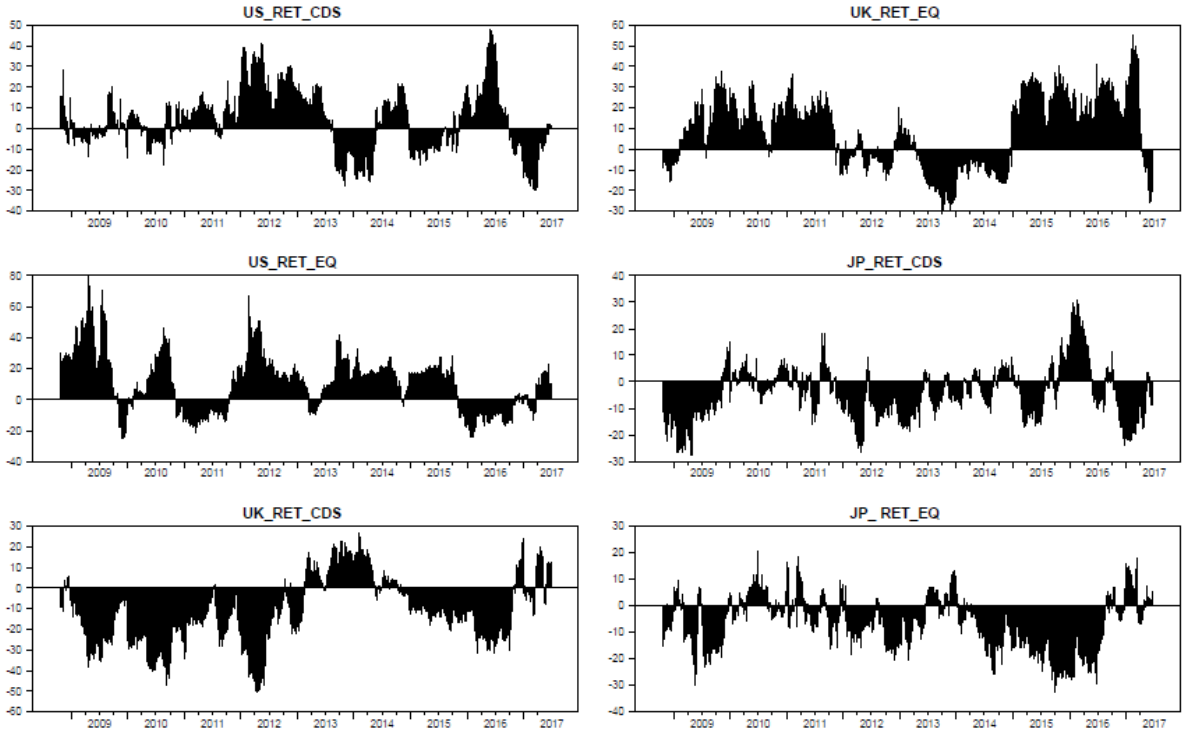

Figure 297: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Retail Other Sector

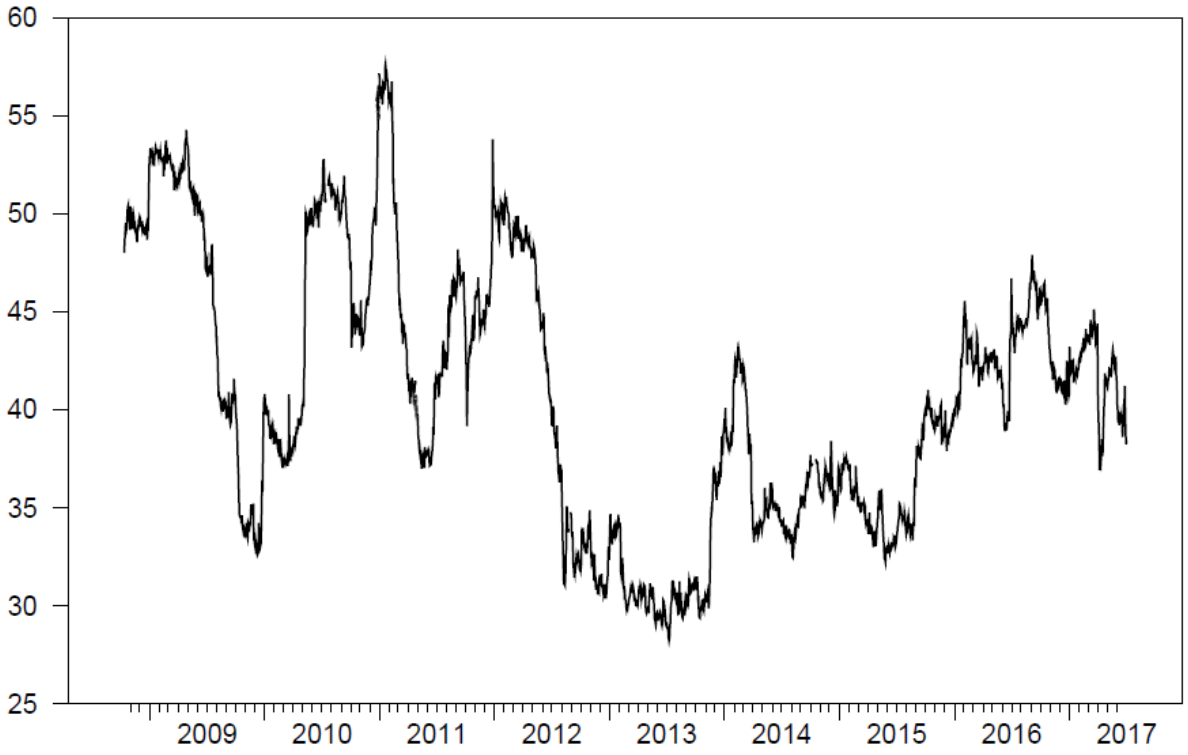

Figure 298: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Telecommunications Sector

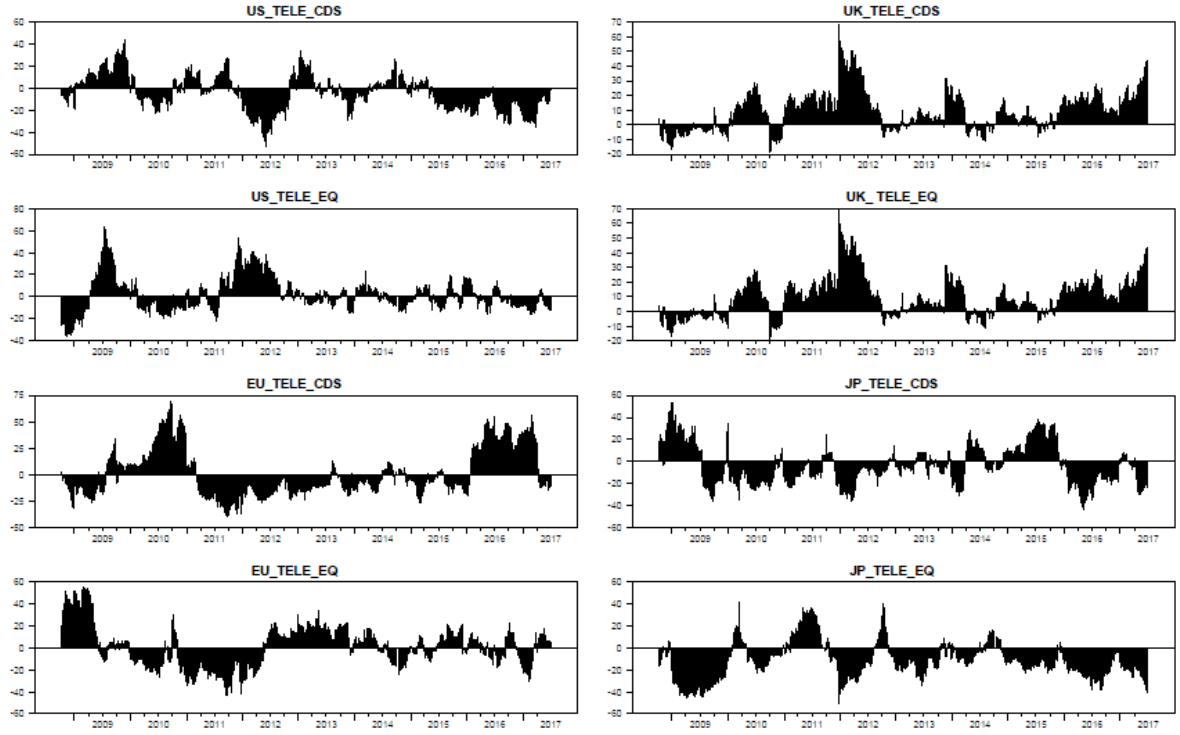

Figure 299: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Telecommunications Sector

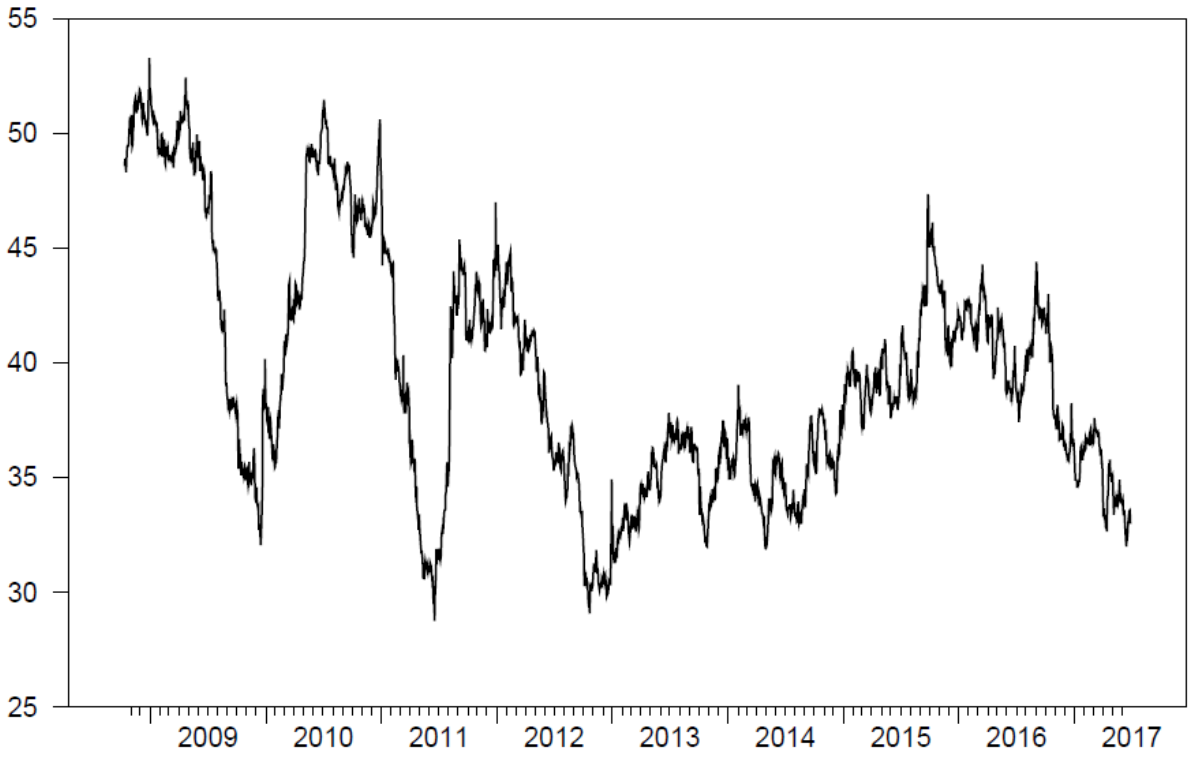

Figure 300: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Other Telecommunications Sector

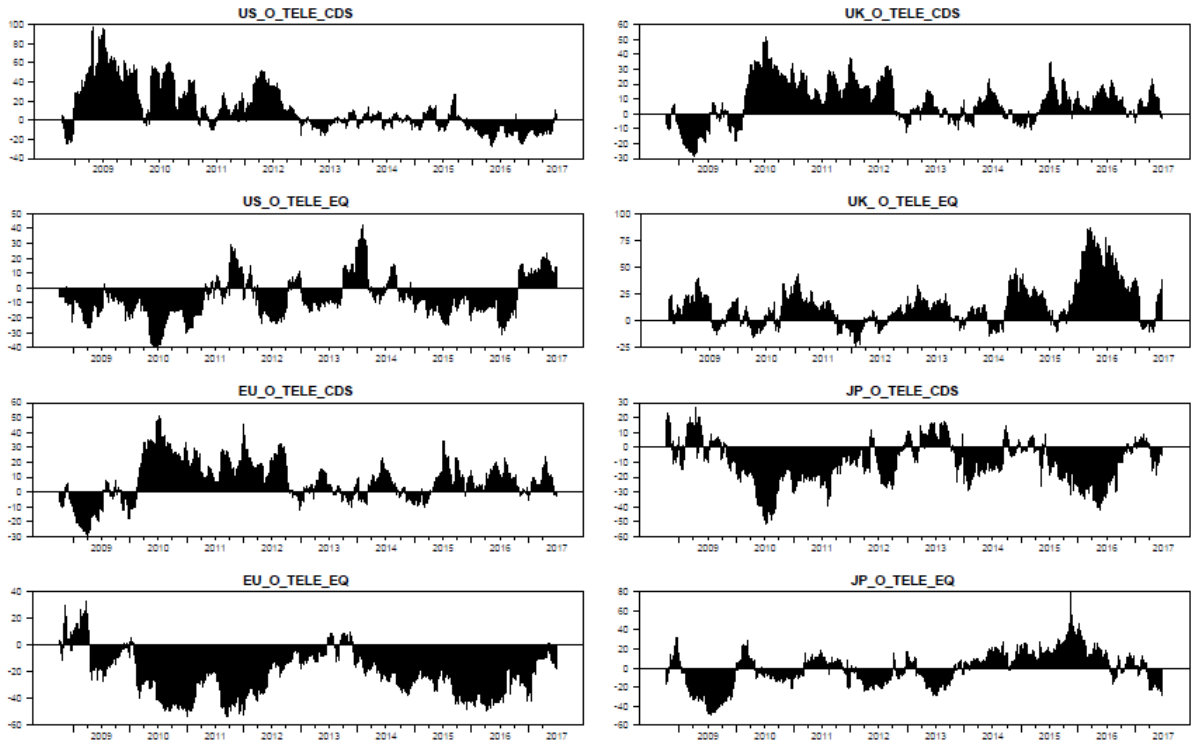

Figure 301: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Other Telecommunications Sector

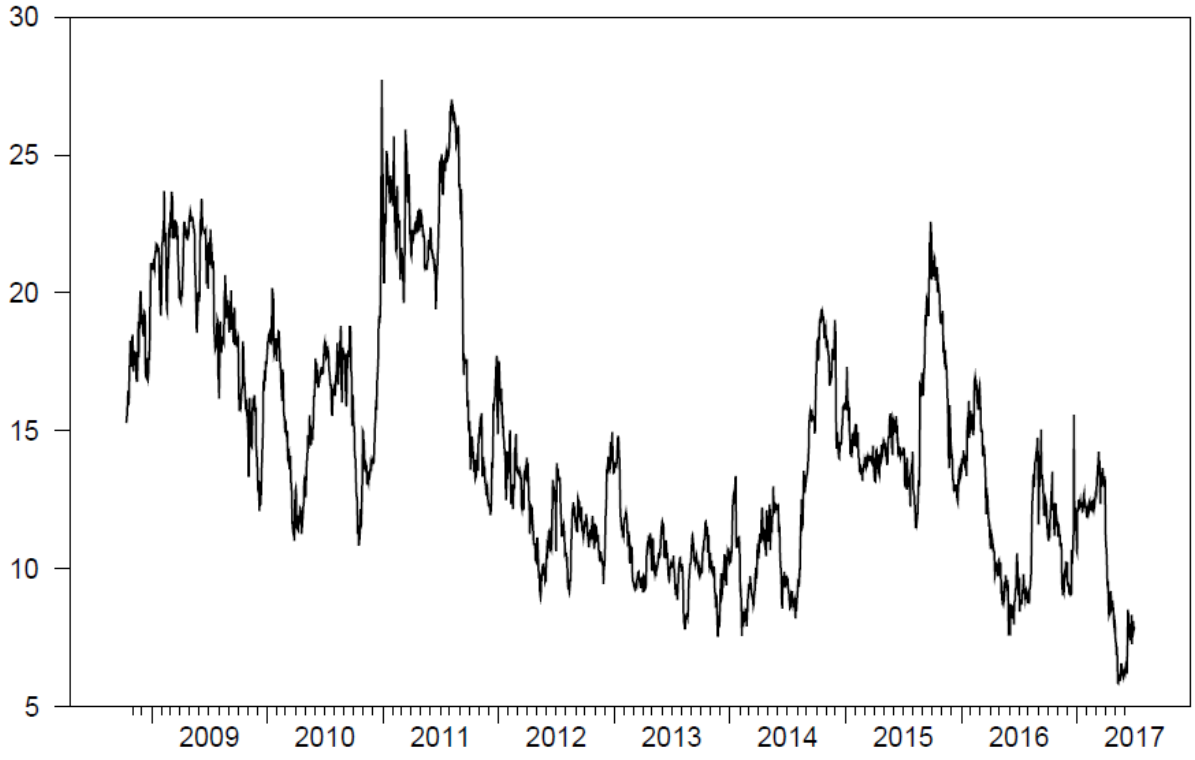

Figure 302: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Transportation Sector

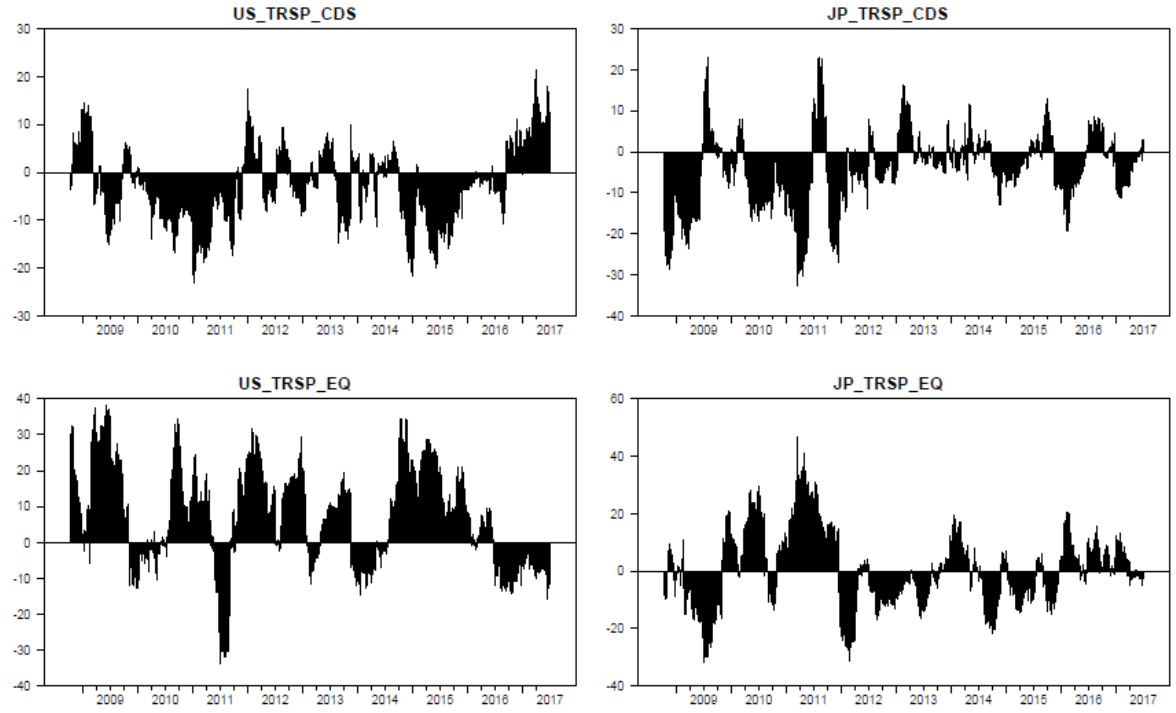

Figure 303: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Transportation Sector

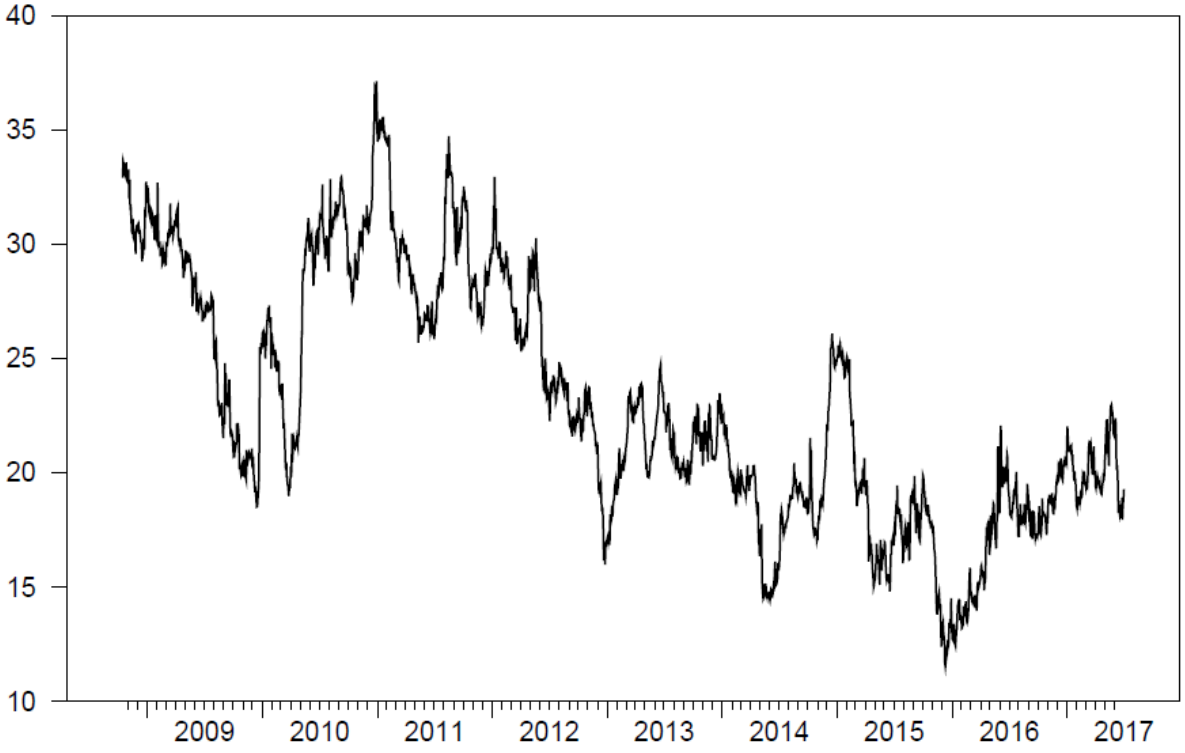

Figure 304: Total Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Utility Sector

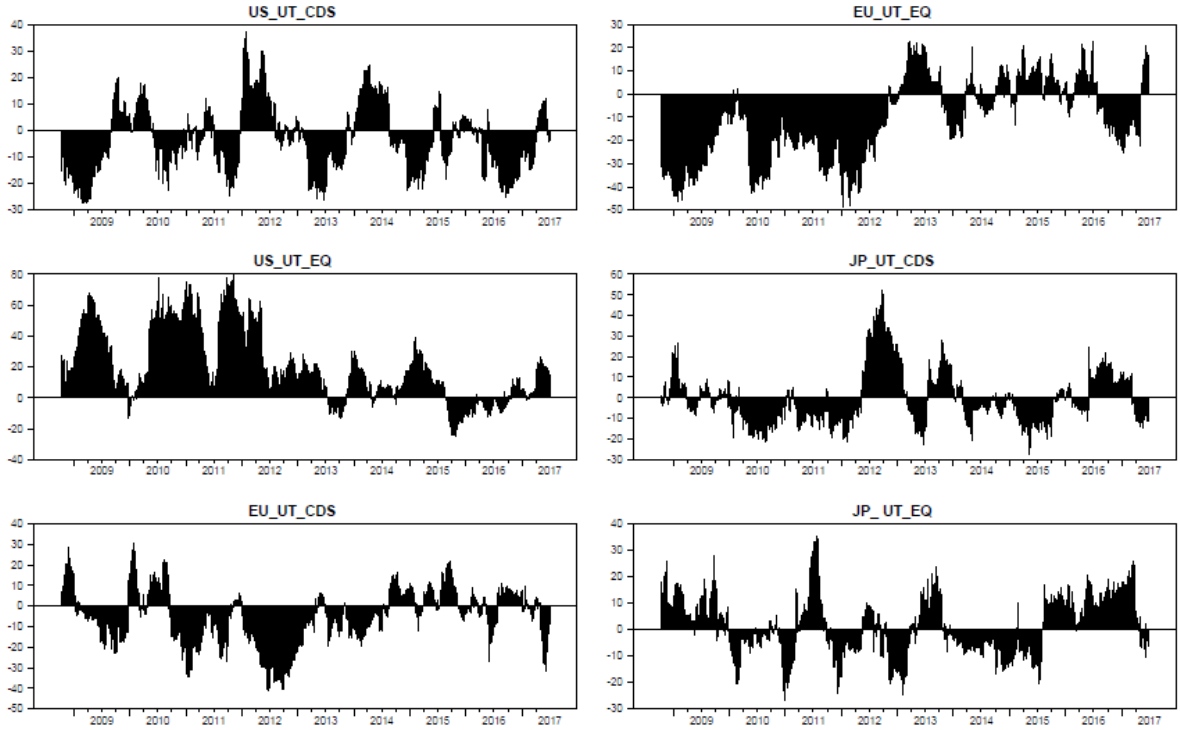

Figure 305: Net Regional Volatility Spillovers between CDS Spreads and Equity Prices for the Utility Sector

Appendix F

F.1 Dynamic Conditional Correlation GARCH Model

Credit Default Swaps

	US	UK	EU	JP	FROM
US	61.55	20.21	14.11	4.13	38.45
UK	12.3	61.97	22.61	3.11	38.03
EU	9.99	26.32	58.78	4.9	41.22
JP	5.12	6.35	8.59	79.95	20.05
TO	27.41	52.88	45.31	12.15	137.75
Inc.Own	88.96	114.85	104.09	92.09	**TCI**
NET	-11.04	14.85	4.09	-7.91	**34.44**
NPDC	1	3	2	0	

	US	UK	EU	JP	FROM
US	98.26	0.43	0.45	0.86	1.74
UK	1.96	96.75	1.09	0.19	3.25
EU	2.47	1.36	96.02	0.14	3.98
JP	3.51	0.18	0.11	96.2	3.8
TO	7.95	1.97	1.65	1.2	12.76
Inc.Own	106.21	98.72	97.67	97.4	**TCI**
NET	6.21	-1.28	-2.33	-2.6	**3.19**
NPDC	3	1	0	2	

Table 189: CDS Dynamic Connectedness Table for Banks Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	FROM
US	88.69	3.32	7.98	11.31
UK	4.3	60.55	35.15	39.45
EU	8.2	27.92	63.88	36.12
TO	12.51	31.24	43.13	86.88
Inc.Own	101.2	91.79	107.01	**TCI**
NET	1.2	-8.21	7.01	**28.96**
NPDC	2	0	1	

	US	UK	EU	FROM
US	95.73	2.44	1.83	4.27
UK	0.8	91.03	8.17	8.97
EU	0.62	8.48	90.89	9.11
TO	1.42	10.92	10.01	22.35
Inc.Own	97.15	101.95	100.9	**TCI**
NET	-2.85	1.95	0.9	**7.45**
NPDC	0	2	1	

Table 190: CDS Dynamic Connectedness Table for Consumer Goods Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	68.37	22.72	0.94	7.97	31.63
UK	17.65	78.54	1.97	1.84	21.46
EU	2.98	8.01	87.01	2	12.99
JP	2.16	0.64	0.17	97.02	2.98
TO	22.79	31.37	3.08	11.81	69.06
Inc.Own	91.16	109.92	90.09	108.83	**TCI**
NET	-8.84	9.92	-9.91	8.83	**17.26**
NPDC	1	2	0	3	

	US	UK	EU	JP	FROM
US	97.7	0.37	1.91	0.01	2.3
UK	1.76	70.99	27.23	0.01	29.01
EU	1.4	4.19	94.4	0.01	5.6
JP	0.01	0	0.01	99.97	0.03
TO	3.18	4.57	29.15	0.03	36.94
Inc.Own	100.88	75.56	123.55	100.01	**TCI**
NET	0.88	-24.44	23.55	0.01	**9.23**
NPDC	2	0	3	1	

Table 191: CDS Dynamic Connectedness Table for Consumer Services Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	85.92	3.36	10.07	0.65	14.08
UK	6.58	55.19	32.81	5.41	44.81
EU	6.76	11.24	79.46	2.54	20.54
JP	1.9	8.11	11.11	78.88	21.12
TO	15.24	22.7	53.99	8.6	100.54
Inc.Own	101.17	77.89	133.46	87.48	**TCI**
NET	1.17	-22.11	33.46	-12.52	**25.13**
NPDC	2	1	3	0	

	US	UK	EU	JP	FROM
US	98.95	0.11	0.01	0.93	1.05
UK	0.06	88.61	10.48	0.85	11.39
EU	0.02	25.39	74.58	0.02	25.42
JP	1.52	2.49	0.02	95.96	4.04
TO	1.6	27.99	10.51	1.79	41.9
Inc.Own	100.55	116.6	85.09	97.75	**TCI**
NET	0.55	16.6	-14.91	-2.25	**10.48**
NPDC	2	3	1	0	

Table 192: CDS Dynamic Connectedness Table for Consumer Services Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	93.67	3.2	2.02	1.11	6.33
UK	4.22	84.75	7.49	3.54	15.25
EU	4.3	12.24	79.72	3.73	20.28
JP	1.64	3.99	2.56	91.81	8.19
TO	10.16	19.43	12.07	8.39	50.05
INC.OWN	103.83	104.18	91.79	100.2	**TCI**
NET	3.83	4.18	-8.21	0.2	**12.51**
NPDC	3	2	0	1	

	US	UK	EU	JP	FROM
US	99.98	0.01	0	0	0.02
UK	0.13	99.41	0.45	0.01	0.59
EU	0	0.29	99.71	0.01	0.29
JP	0.01	0.01	0.01	99.97	0.03
TO	0.14	0.31	0.46	0.02	0.93
INC.OWN	100.12	99.72	100.17	99.99	**TCI**
NET	0.12	-0.28	0.17	-0.01	**0.23**
NPDC	3	1	2	0	

Table 193: CDS Dynamic Connectedness Table for Electric Power Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	68.14	9.65	19.26	2.95	31.86
UK	10.73	57.9	24.81	6.56	42.1
EU	18.94	21.96	53.97	5.13	46.03
JP	5.85	11.73	10.36	72.07	27.93
TO	35.52	43.34	54.42	14.64	147.92
Inc.Own	103.66	101.24	108.4	86.7	**TCI**
NET	3.66	1.24	8.4	-13.3	**36.98**
NPDC	2	1	3	0	

	US	UK	EU	JP	FROM
US	97.62	0.49	0	1.88	2.38
UK	1.53	97.83	0	0.64	2.17
EU	0.01	0	99.39	0.6	0.61
JP	0.93	0.1	0.11	98.87	1.13
TO	2.46	0.6	0.11	3.12	6.3
Inc.Own	100.08	98.42	99.5	101.99	**TCI**
NET	0.08	-1.58	-0.5	1.99	**1.57**
NPDC	2	0	1	3	

Table 194: CDS Dynamic Connectedness Table for Manufacturing Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	70.61	12.62	14.01	2.77	29.39
UK	5.7	68.38	22.05	3.87	31.62
EU	2.67	9.35	86.85	1.13	13.15
JP	2.74	8.51	5.86	82.88	17.12
TO	11.11	30.47	41.92	7.77	91.28
INC.OWN	81.71	98.86	128.77	90.66	**TCI**
NET	-18.29	-1.14	28.77	-9.34	**22.82**
NPDC	0	2	3	1	

	US	UK	EU	JP	FROM
US	96.75	1.51	1.7	0.04	3.25
UK	1.67	92.51	5.71	0.11	7.49
EU	2.84	8.64	88.38	0.14	11.62
JP	0.39	0.96	0.84	97.8	2.2
TO	4.91	11.11	8.25	0.29	24.56
INC.OWN	101.66	103.62	96.63	98.09	**TCI**
NET	1.66	3.62	-3.37	-1.91	**6.14**
NPDC	3	2	1	0	

Table 195: CDS Dynamic Connectedness Table for Telecommunications Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	94.16	4.09	1.74	5.84
EU	0.44	95.22	4.34	4.78
JP	0.43	9.9	89.67	10.33
TO	0.87	13.99	6.08	20.95
INC.OWN	95.04	109.21	95.76	**TCI**
NET	-4.96	9.21	-4.24	**6.98**
NPDC	0	2	1	

	US	EU	JP	FROM
US	98.75	0.55	0.7	1.25
EU	0.06	99.43	0.51	0.57
JP	0.25	1.77	97.98	2.02
TO	0.31	2.32	1.21	3.85
INC.OWN	99.06	101.75	99.19	**TCI**
NET	-0.94	1.75	-0.81	**1.28**
NPDC	0	2	1	

Table 196: CDS Dynamic Connectedness Table for Transportation Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	83.15	16.85	16.85
EU	3.75	96.25	3.75
TO	3.75	16.85	20.6
INC.OWN	86.89	113.11	**TCI**
NET	-13.11	13.11	**10.3**
NPDC	0	1	

	US	EU	FROM
US	97.97	2.03	2.03
EU	0.4	99.6	0.4
TO	0.4	2.03	2.42
INC.OWN	98.37	101.63	**TCI**
NET	-1.63	1.63	**1.21**
NPDC	0	1	

Table 197: CDS Dynamic Connectedness Table for Energy Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	61.7	22.56	10.46	5.29	38.3
UK	14.31	66.81	15.04	3.85	33.19
EU	11.94	27.08	53.58	7.4	46.42
JP	5.33	6.12	6.53	82.02	17.98
TO	31.58	55.76	32.03	16.53	135.89
Inc.Own	93.28	122.56	85.61	98.55	**TCI**
NET	-6.72	22.56	-14.39	-1.45	**33.97**
NPDC	2	3	0	1	

	US	UK	EU	JP	FROM
US	98.5	0.33	0.42	0.75	1.5
UK	1.56	97.2	1.1	0.14	2.8
EU	2.42	1.36	96.09	0.13	3.91
JP	3.34	0.14	0.11	96.42	3.58
TO	7.31	1.83	1.63	1.03	11.8
Inc.Own	105.81	99.03	97.72	97.44	**TCI**
NET	5.81	-0.97	-2.28	-2.56	**2.95**
NPDC	3	1	0	2	

Table 198: CDS Dynamic Connectedness Table for Banking Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	FROM
US	86.39	6.36	7.25	13.61
UK	2.18	75.46	22.35	24.54
EU	2.93	26.34	70.73	29.27
TO	5.12	32.7	29.6	67.42
Inc.OWN	91.51	108.16	100.33	**TCI**
NET	-8.49	8.16	0.33	**22.47**
NPDC	0	2	1	

	US	UK	EU	FROM
US	99.67	0.18	0.15	0.33
UK	0.57	72.3	27.13	27.7
EU	0.06	3.34	96.6	3.4
TO	0.63	3.52	27.29	31.44
Inc.OWN	100.3	75.81	123.88	**TCI**
NET	0.3	-24.19	23.88	**10.48**
NPDC	1	0	2	

Table 199: CDS Dynamic Connectedness Table for Beverages & Bottling Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	89.84	7.61	2.55	10.16
EU	12.19	75.77	12.04	24.23
JP	2.44	7.19	90.37	9.63
TO	14.62	14.8	14.59	44.02
INC.OWN	104.46	90.57	104.96	**TCI**
NET	4.46	-9.43	4.96	**14.67**
NPDC	1	0	2	

	US	EU	JP	FROM
US	98.85	1.15	0	1.15
EU	1.25	98.66	0.09	1.34
JP	0	0.07	99.92	0.08
TO	1.25	1.22	0.09	2.56
INC.OWN	100.1	99.88	100.02	**TCI**
NET	0.1	-0.12	0.02	**0.85**
NPDC	1	0	2	

Table 200: CDS Dynamic Connectedness Table for Automotive Manufacturing Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	94.16	5.84	5.84
EU	7.39	92.61	7.39
TO	7.39	5.84	13.23
INC.own	101.55	98.45	**TCI**
NET	1.55	-1.55	**6.61**
NPDC	1	0	

	US	EU	FROM
US	99.21	0.79	0.79
EU	3.56	96.44	3.56
TO	3.56	0.79	4.35
INC.own	102.77	97.23	**TCI**
NET	2.77	-2.77	**2.17**
NPDC	1	0	

Table 201: CDS Dynamic Connectedness Table for Building Products Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	95.17	4.83	4.83
EU	5.03	94.97	5.03
TO	5.03	4.83	9.86
Inc.Own	100.2	99.8	**TCI**
NET	0.2	-0.2	**4.93**
NPDC	1	0	

	US	EU	FROM
US	99.31	0.69	0.69
EU	0.13	99.87	0.13
TO	0.13	0.69	0.83
Inc.Own	99.44	100.56	**TCI**
NET	-0.56	0.56	**0.41**
NPDC	0	1	

Table 202: CDS Dynamic Connectedness Table for Cable Media Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	70.55	28.43	1.01	29.45
EU	6.32	93.01	0.67	6.99
JP	1.22	3.64	95.14	4.86
TO	7.53	32.07	1.68	41.29
InC.Own	78.09	125.09	96.82	**TCI**
NET	-21.91	25.09	-3.18	**13.76**
NPDC	1	2	0	

	US	EU	JP	FROM
US	98.11	1.84	0.05	1.89
EU	0.57	96.34	3.09	3.66
JP	0.01	1.56	98.44	1.56
TO	0.58	3.4	3.14	7.11
InC.Own	98.69	99.74	101.57	**TCI**
NET	-1.31	-0.26	1.57	**2.37**
NPDC	0	1	2	

Table 203: CDS Dynamic Connectedness Table for Chemicals Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	89.3	10.7	10.7
EU	2.2	97.8	2.2
TO	2.2	10.7	12.91
Inc.Own	91.5	108.5	**TCI**
NET	-8.5	8.5	**6.45**
NPDC	0	1	

	US	EU	FROM
US	85.21	14.79	14.79
EU	6.91	93.09	6.91
TO	6.91	14.79	21.7
Inc.Own	92.12	107.88	**TCI**
NET	-7.88	7.88	**10.85**
NPDC	0	1	

Table 204: CDS Dynamic Connectedness Table for Conglomerate Diversfiedi Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	94.04	5.63	0.33	5.96
EU	12.95	85.71	1.35	14.29
JP	2.96	5.18	91.86	8.14
TO	15.91	10.8	1.68	28.39
INC.OWN	109.94	96.51	93.54	**TCI**
NET	9.94	-3.49	-6.46	**9.46**
NPDC	2	1	0	

	US	EU	JP	FROM
US	96.1	3.63	0.26	3.9
EU	0.71	99.22	0.06	0.78
JP	0.17	0.2	99.63	0.37
TO	0.88	3.84	0.33	5.04
INC.OWN	96.98	103.06	99.96	**TCI**
NET	-3.02	3.06	-0.04	**1.68**
NPDC	0	2	1	

Table 205: CDS Dynamic Connectedness Table for Electronics Sector in the Crisis Period and After-Crisis Period

	US	JP	FROM
US	98.86	1.14	1.14
JP	0.17	99.83	0.17
TO	0.17	1.14	1.31
Inc.Own	99.03	100.97	**TCI**
Net	-0.97	0.97	**0.65**
NPDC	0	1	

	US	JP	FROM
US	99.95	0.05	0.05
JP	0.03	99.97	0.03
TO	0.03	0.05	0.08
Inc.Own	99.98	100.02	**TCI**
Net	-0.02	0.02	**0.04**
NPDC	0	1	

Table 206: CDS Dynamic Connectedness Table for Industrials Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	90.78	1.38	2.04	5.8	9.22
UK	5.01	88.66	3.16	3.16	11.34
EU	5.01	2.13	86.35	6.51	13.65
JP	6.89	1.03	3.16	88.92	11.08
TO	16.91	4.54	8.37	15.48	45.3
Inc.Own	107.69	93.2	94.72	104.39	**TCI**
NET	7.69	-6.8	-5.28	4.39	**11.32**
NPDC	3	0	1	2	

	US	UK	EU	JP	FROM
US	99.52	0.13	0.3	0.04	0.48
UK	0.44	98.42	1.13	0.01	1.58
EU	1.49	1.71	96.76	0.04	3.24
JP	0.23	0.01	0.04	99.71	0.29
TO	2.17	1.86	1.47	0.09	5.58
Inc.Own	101.69	100.28	98.23	99.81	**TCI**
NET	1.69	0.28	-1.77	-0.19	**1.4**
NPDC	3	2	1	0	

Table 207: CDS Dynamic Connectedness Table for Other Consumer Services Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	FROM
US	90.23	3.06	6.71	9.77
UK	6.96	61.16	31.88	38.84
EU	3.55	7.44	89	11
TO	10.51	10.51	38.59	59.61
INC.OWN	100.74	71.67	127.59	**TCI**
NET	0.74	-28.33	27.59	**19.87**
NPDC	1	0	2	

	US	UK	EU	FROM
US	99.9	0.04	0.06	0.1
UK	0.19	81.75	18.06	18.25
EU	0.07	4.19	95.74	4.26
TO	0.26	4.23	18.13	22.61
INC.OWN	100.16	85.98	113.86	**TCI**
NET	0.16	-14.02	13.86	**7.54**
NPDC	2	0	1	

Table 208: CDS Dynamic Connectedness Table for Other Financials II Sector in the Crisis Period and After-Crisis Period

	US	UK	JP	FROM
US	90.68	9.32	0	9.32
UK	5.19	94.64	0.18	5.36
JP	0	0.68	99.32	0.68
TO	5.19	10	0.18	15.37
Inc.Own	95.87	104.64	99.5	**TCI**
NET	-4.13	4.64	-0.5	**5.12**
NPDC	0	2	1	

	US	UK	JP	FROM
US	92.74	7.2	0.06	7.26
UK	1.73	98.26	0.01	1.74
JP	0.11	0.09	99.8	0.2
TO	1.83	7.29	0.08	9.2
Inc.Own	94.57	105.55	99.88	**TCI**
NET	-5.43	5.55	-0.12	**3.07**
NPDC	1	2	0	

Table 209: CDS Dynamic Connectedness Table for Retail Stores Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	72.14	12.49	13.5	1.87	27.86
UK	4.25	68.65	23.39	3.72	31.35
EU	2.19	11.19	85.3	1.32	14.7
JP	1.55	9.12	6.79	82.54	17.46
TO	7.99	32.79	43.68	6.91	91.37
INC.OWN	80.13	101.44	128.98	89.45	**TCI**
NET	-19.87	1.44	28.98	-10.55	**22.84**
NPDC	0	2	3	1	

	US	UK	EU	JP	FROM
US	96.79	1.5	1.68	0.04	3.21
UK	1.65	92.53	5.72	0.11	7.47
EU	2.79	8.64	88.42	0.14	11.58
JP	0.38	0.97	0.84	97.82	2.18
TO	4.82	11.1	8.23	0.29	24.44
INC.OWN	101.61	103.63	96.65	98.11	**TCI**
NET	1.61	3.63	-3.35	-1.89	**6.11**
NPDC	3	2	1	0	

Table 210: CDS Dynamic Connectedness Table for Other Telecommunications Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	99.48	0.52	0.52
EU	3.65	96.35	3.65
TO	3.65	0.52	4.17
Inc.Own	103.14	96.86	**TCI**
NET	3.14	-3.14	**2.09**
NPDC	1	0	

	US	EU	FROM
US	98.84	1.16	1.16
EU	1.03	98.97	1.03
TO	1.03	1.16	2.19
Inc.Own	99.86	100.14	**TCI**
NET	-0.14	0.14	**1.09**
NPDC	0	1	

Table 211: CDS Dynamic Connectedness Table for Leisure Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	88.31	6.17	5.53	11.69
EU	14.28	79.41	6.3	20.59
JP	7.19	3.54	89.27	10.73
TO	21.47	9.71	11.83	43.01
INC.own	109.78	89.12	101.1	**TCI**
NET	9.78	-10.88	1.1	**14.34**
NPDC	2	0	1	

	US	EU	JP	FROM
US	99.11	0.55	0.34	0.89
EU	0.62	99.25	0.14	0.75
JP	1.5	0.55	97.94	2.06
TO	2.12	1.1	0.48	3.7
INC.own	101.23	100.35	98.42	**TCI**
NET	1.23	0.35	-1.58	**1.23**
NPDC	2	1	0	

Table 212: CDS Dynamic Connectedness Table for Metals & Mining Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	84.23	15.77	15.77
EU	5.71	94.29	5.71
TO	5.71	15.77	21.48
Inc.OWN	89.94	110.06	**TCI**
NET	-10.06	10.06	**10.74**
NPDC	0	1	

	US	EU	FROM
US	92.19	7.81	7.81
EU	1.68	98.32	1.68
TO	1.68	7.81	9.5
Inc.OWN	93.87	106.13	**TCI**
NET	-6.13	6.13	**4.75**
NPDC	0	1	

Table 213: CDS Dynamic Connectedness Table for Oil & Gas Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	99.68	0.26	0.06	0.32
EU	1.46	95.99	2.55	4.01
JP	0.5	3.93	95.57	4.43
To	1.95	4.2	2.61	8.77
Inc.Own	101.63	100.19	98.18	**TCI**
Net	1.63	0.19	-1.82	**2.92**
NPDC	2	1	0	

	US	EU	JP	FROM
US	100	0	0	0
EU	0	100	0	0
JP	0.01	0	99.99	0.01
To	0.01	0	0.01	0.02
Inc.Own	100	100	100	**TCI**
Net	0	0	0	**0.01**
NPDC	2	1	0	

Table 214: CDS Dynamic Connectedness Table for Utilities Sector in the Crisis Period and After-Crisis Period

	US	JP	FROM
US	99.95	0.05	0.05
JP	2.87	97.13	2.87
To	2.87	0.05	2.92
Inc.Own	102.82	97.18	**TCI**
NET	2.82	-2.82	**1.46**
NPDC	1	0	

	US	JP	FROM
US	98.33	1.67	1.67
JP	0.42	99.58	0.42
To	0.42	1.67	2.09
Inc.Own	98.75	101.25	**TCI**
NET	-1.25	1.25	**1.05**
NPDC	0	1	

Table 215: CDS Dynamic Connectedness Table for Railroads Sector in the Crisis Period and After-Crisis Period

	US	JP	FROM
US	99.79	0.21	0.21
JP	0.21	99.79	0.21
TO	0.21	0.21	0.42
Inc.Own	99.99	100.01	**TCI**
NET	-0.01	0.01	**0.21**
NPDC	0	1	

	US	JP	FROM
US	99.91	0.09	0.09
JP	0.24	99.76	0.24
TO	0.24	0.09	0.33
Inc.Own	100.14	99.86	**TCI**
NET	0.14	-0.14	**0.17**
NPDC	1	0	

Table 216: CDS Dynamic Connectedness Table for Machinery Sector in the Crisis Period and After-Crisis Period

	US	JP	FROM
US	96.21	3.79	3.79
JP	1.3	98.7	1.3
TO	1.3	3.79	5.09
Inc.Own	97.52	102.48	**TCI**
NET	-2.48	2.48	**2.54**
NPDC	0	1	

	US	JP	FROM
US	99.99	0.01	0.01
JP	0.01	99.99	0.01
TO	0.01	0.01	0.02
Inc.Own	100.01	99.99	**TCI**
NET	0.01	-0.01	**0.01**
NPDC	1	0	

Table 217: CDS Dynamic Connectedness Table for Other Transportation Sector in the Crisis Period and After-Crisis Period

EQUITY

	US	UK	EU	JP	FROM
US	63.19	16.44	19.07	1.3	36.81
UK	14.94	48.18	33.95	2.92	51.82
EU	17.7	34.66	43.76	3.88	56.24
JP	2.3	5.68	7.41	84.6	15.4
TO	34.94	56.78	60.43	8.1	160.26
Inc.Own	98.13	104.97	104.19	92.7	**TCI**
NET	-1.87	4.97	4.19	-7.3	**40.07**
NPDC	1	3	2	0	

	US	UK	EU	JP	FROM
US	65.34	14.38	19.72	0.55	34.66
UK	11.79	49.89	35.83	2.5	50.11
EU	14.5	32.16	51.02	2.32	48.98
JP	0.8	4.41	4.56	90.23	9.77
TO	27.09	50.95	60.1	5.36	143.51
Inc.Own	92.43	100.84	111.13	95.6	**TCI**
NET	-7.57	0.84	11.13	-4.4	**35.88**
NPDC	1	2	3	0	

Table 218: Equity Dynamic Connectedness Table for Oil & Gas Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	71.37	26.93	0	1.69	28.63
UK	28.68	65.49	0	5.82	34.51
EU	0.01	0	99.81	0.18	0.19
JP	1.83	5.93	0.1	92.14	7.86
TO	30.52	32.87	0.11	7.69	71.18
Inc.Own	101.89	98.36	99.92	99.83	**TCI**
NET	1.89	-1.64	-0.08	-0.17	**17.8**
NPDC	3	2	0	1	

	US	UK	EU	JP	FROM
US	84.1	14.26	0	1.64	15.9
UK	21.45	76.45	0	2.1	23.55
EU	0	0.01	99.96	0.04	0.04
JP	1.47	1.25	0.01	97.26	2.74
TO	22.92	15.52	0.02	3.77	42.23
Inc.Own	107.02	91.97	99.97	101.04	**TCI**
NET	7.02	-8.03	-0.03	1.04	**10.56**
NPDC	2	1	0	3	

Table 219: Equity Dynamic Connectedness Table for Basic Materials Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	58.68	18.78	20.89	1.66	41.32
UK	17.58	46.58	31.11	4.73	53.42
EU	19.01	30.25	45.95	4.79	54.05
JP	2.09	6.37	6.63	84.92	15.08
TO	38.68	55.4	58.63	11.17	163.88
Inc.Own	97.36	101.98	104.58	96.09	**TCI**
NET	-2.64	1.98	4.58	-3.91	**40.97**
NPDC	1	2	3	0	

	US	UK	EU	JP	FROM
US	64.44	18.57	15.43	1.56	35.56
UK	13.5	55.75	26.2	4.54	44.25
EU	14.85	34.68	47.12	3.35	52.88
JP	1.52	6.08	3.39	89.02	10.98
TO	29.88	59.32	45.02	9.45	143.67
Inc.Own	94.32	115.07	92.14	98.47	**TCI**
NET	-5.68	15.07	-7.86	-1.53	**35.92**
NPDC	0	3	2	1	

Table 220: Equity Dynamic Connectedness Table for Industrails Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	63.05	14.86	20.85	1.25	36.95
UK	14.72	54.96	28.72	1.61	45.04
EU	18.58	25.84	52.64	2.94	47.36
JP	1.76	2.29	4.65	91.31	8.69
TO	35.06	42.98	54.21	5.79	138.05
Inc.Own	98.11	97.94	106.85	97.1	**TCI**
NET	-1.89	-2.06	6.85	-2.9	**34.51**
NPDC	1	2	3	0	

	US	UK	EU	JP	FROM
US	81.23	7.06	10.53	1.19	18.77
UK	15.35	51.36	29.46	3.84	48.64
EU	19.95	25.65	51.18	3.23	48.82
JP	2.02	3	2.91	92.07	7.93
TO	37.31	35.7	42.89	8.25	124.16
Inc.Own	118.54	87.06	94.07	100.33	**TCI**
NET	18.54	-12.94	-5.93	0.33	**31.04**
NPDC	3	0	1	2	

Table 221: Equity Dynamic Connectedness Table for Cosnumer Goods Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	65.28	18.53	15.7	0.49	34.72
UK	15.21	51.32	30.96	2.51	48.68
EU	15.04	36.14	45.66	3.16	54.34
JP	0.4	2.51	2.71	94.38	5.62
TO	30.65	57.18	49.37	6.17	143.36
Inc.Own	95.93	108.5	95.03	100.54	**TCI**
NET	-4.07	8.5	-4.97	0.54	**35.84**
NPDC	0	2	1	3	

	US	UK	EU	JP	FROM
US	70.11	14.31	13.92	1.66	29.89
UK	11.29	53.7	30.72	4.29	46.3
EU	11.6	32.45	52.55	3.4	47.45
JP	1.61	5.26	3.95	89.18	10.82
TO	24.51	52.01	48.59	9.35	134.46
Inc.Own	94.62	105.71	101.14	98.53	**TCI**
NET	-5.38	5.71	1.14	-1.47	**33.61**
NPDC	0	3	2	1	

Table 222: Equity Dynamic Connectedness Table for Cosnumer Services Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	72.6	10.71	16.3	0.39	27.4
UK	12.45	59.31	27.53	0.71	40.69
EU	15.9	23.1	58.42	2.58	41.58
JP	0.35	0.55	2.4	96.69	3.31
TO	28.7	34.36	46.23	3.69	112.97
Inc.Own	101.3	93.67	104.65	100.38	**TCI**
NET	1.3	-6.33	4.65	0.38	**28.24**
NPDC	1	0	2	3	

	US	UK	EU	JP	FROM
US	83.31	6.45	9.6	0.64	16.69
UK	12.99	52.76	31.58	2.66	47.24
EU	14.03	22.9	59.45	3.62	40.55
JP	0.69	1.42	2.67	95.23	4.77
TO	27.71	30.76	43.85	6.92	109.25
Inc.Own	111.02	83.53	103.3	102.15	**TCI**
NET	11.02	-16.47	3.3	2.15	**27.31**
NPDC	3	0	1	2	

Table 223: Equity Dynamic Connectedness Table for Healthcare Services Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	74.65	9.28	15.98	0.09	25.35
UK	10.61	56.91	31.38	1.1	43.09
EU	14.1	24.24	59.92	1.74	40.08
JP	0.08	0.86	1.76	97.29	2.71
TO	24.79	34.38	49.12	2.93	111.23
Inc.Own	99.44	91.29	109.05	100.23	**TCI**
NET	-0.56	-8.71	9.05	0.23	**27.81**
NPDC	1	0	3	2	

	US	UK	EU	JP	FROM
US	67.21	12.47	18.85	1.47	32.79
UK	3.75	59.9	34.13	2.22	40.1
EU	4.54	27.31	65.28	2.86	34.72
JP	0.54	2.72	4.37	92.37	7.63
TO	8.84	42.5	57.36	6.55	115.25
Inc.Own	76.04	102.39	122.64	98.92	**TCI**
NET	-23.96	2.39	22.64	-1.08	**28.81**
NPDC	0	2	3	1	

Table 224: Equity Dynamic Connectedness Table for Telecommunications Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	77.74	7.73	14.25	0.28	22.26
UK	11.25	64.8	23	0.95	35.2
EU	17.71	19.63	61.84	0.82	38.16
JP	0.27	0.63	0.63	98.47	1.53
TO	29.23	27.99	37.89	2.05	97.15
Inc.Own	106.97	92.79	99.73	100.52	**TCI**
NET	6.97	-7.21	-0.27	0.52	**24.29**
NPDC	2	0	1	3	

	US	UK	EU	JP	FROM
US	83.06	7.85	8.64	0.45	16.94
UK	5.17	62.94	28.66	3.23	37.06
EU	3.86	19.46	74.89	1.79	25.11
JP	0.17	1.89	1.54	96.39	3.61
TO	9.21	29.19	38.85	5.48	82.72
Inc.Own	92.27	92.13	113.73	101.87	**TCI**
NET	-7.73	-7.87	13.73	1.87	**20.68**
NPDC	0	1	2	3	

Table 225: Equity Dynamic Connectedness Table for Utilities Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	64.21	17.19	18.07	0.52	35.79
UK	15.12	46.02	35.61	3.25	53.98
EU	14.88	33.32	48.13	3.67	51.87
JP	1.06	7.53	9.08	82.33	17.67
TO	31.06	58.04	62.76	7.44	159.31
Inc.Own	95.27	104.06	110.9	89.77	**TCI**
NET	-4.73	4.06	10.9	-10.23	**39.83**
NPDC	1	2	3	0	

	US	UK	EU	JP	FROM
US	65.23	18.71	13.65	2.41	34.77
UK	16.15	53.16	24.83	5.86	46.84
EU	16.87	35.56	43.05	4.52	56.95
JP	3.05	8.6	4.63	83.73	16.27
TO	36.06	62.87	43.1	12.79	154.82
Inc.Own	101.3	116.03	86.15	96.52	**TCI**
NET	1.3	16.03	-13.85	-3.48	**38.71**
NPDC	2	3	1	0	

Table 226: Equity Dynamic Connectedness Table for Financials Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	65.77	14.51	18.09	1.63	34.23
UK	14.02	52.86	27.79	5.33	47.14
EU	17.23	27.41	51.52	3.84	48.48
JP	1.89	6.39	4.67	87.04	12.96
TO	33.14	48.31	50.56	10.8	142.81
Inc.Own	98.92	101.16	102.07	97.84	**TCI**
NET	-1.08	1.16	2.07	-2.16	**35.7**
NPDC	1	2	3	0	

	US	UK	EU	JP	FROM
US	67.21	12.47	18.85	1.47	32.79
UK	3.75	59.9	34.13	2.22	40.1
EU	4.54	27.31	65.28	2.86	34.72
JP	0.54	2.72	4.37	92.37	7.63
TO	8.84	42.5	57.36	6.55	115.25
Inc.Own	76.04	102.39	122.64	98.92	**TCI**
NET	-23.96	2.39	22.64	-1.08	**28.81**
NPDC	0	2	3	1	

Table 227: Equity Dynamic Connectedness Table for Technology Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	84.64	15.17	0.03	0.16	15.36
UK	10.71	88.17	0.13	0.98	11.83
EU	0.04	0.31	99.55	0.1	0.45
JP	0.17	1.46	0.06	98.31	1.69
TO	10.92	16.94	0.22	1.24	29.32
Inc.Own	95.56	105.11	99.78	99.55	**TCI**
NET	-4.44	5.11	-0.22	-0.45	**7.33**
NPDC	2	3	0	1	

	US	UK	EU	JP	FROM
US	80.74	18.72	0.3	0.24	19.26
UK	9.22	88.4	0.07	2.31	11.6
EU	0.21	0.1	99	0.69	1
JP	0.28	5.48	1.19	93.05	6.95
TO	9.7	24.3	1.57	3.24	38.81
Inc.Own	90.45	112.7	100.57	96.29	**TCI**
NET	-9.55	12.7	0.57	-3.71	**9.7**
NPDC	1	3	2	0	

Table 228: Equity Dynamic Connectedness Table for Other Consumer Services Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	74.65	9.28	15.98	0.09	25.35
UK	10.61	56.91	31.38	1.1	43.09
EU	14.1	24.24	59.92	1.74	40.08
JP	0.08	0.86	1.76	97.29	2.71
TO	24.79	34.38	49.12	2.93	111.23
Inc.Own	99.44	91.29	109.05	100.23	**TCI**
NET	-0.56	-8.71	9.05	0.23	**27.81**
NPDC	1	0	3	2	

	US	UK	EU	JP	FROM
US	67.21	12.47	18.85	1.47	32.79
UK	3.75	59.9	34.13	2.22	40.1
EU	4.54	27.31	65.28	2.86	34.72
JP	0.54	2.72	4.37	92.37	7.63
TO	8.84	42.5	57.36	6.55	115.25
Inc.Own	76.04	102.39	122.64	98.92	**TCI**
NET	-23.96	2.39	22.64	-1.08	**28.81**
NPDC	0	2	3	1	

Table 229: Equity Dynamic Connectedness Table for Other Telecommunications Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	80.97	18.86	0.03	0.14	19.03
UK	22.69	77.2	0.04	0.07	22.8
EU	0.04	0.04	99.87	0.05	0.13
JP	0.31	0.13	0.08	99.48	0.52
TO	23.04	19.04	0.15	0.25	42.47
Inc.Own	104.01	96.24	100.02	99.73	**TCI**
NET	4.01	-3.76	0.02	-0.27	**10.62**
NPDC	3	2	1	0	

	US	UK	EU	JP	FROM
US	77.45	22.38	0.08	0.08	22.55
UK	20.55	79.24	0.2	0.01	20.76
EU	0.15	0.41	99.44	0	0.56
JP	0.1	0.01	0	99.89	0.11
TO	20.79	22.81	0.27	0.09	43.97
Inc.Own	98.25	102.05	99.71	99.99	**TCI**
NET	-1.75	2.05	-0.29	-0.01	**10.99**
NPDC	2	3	0	1	

Table 230: Equity Dynamic Connectedness Table for Banking Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	99.54	0.09	0.37	0.46
EU	0.13	97.9	1.96	2.1
JP	0.28	0.96	98.75	1.25
To	0.41	1.05	2.34	3.8
Inc.Own	99.95	98.95	101.09	**TCI**
NET	-0.05	-1.05	1.09	**1.27**
NPDC	1	0	2	

	US	EU	JP	FROM
US	98.82	0.64	0.55	1.18
EU	0.31	96.51	3.18	3.49
JP	0.18	2.14	97.68	2.32
To	0.49	2.78	3.73	7
Inc.Own	99.31	99.29	101.41	**TCI**
NET	-0.69	-0.71	1.41	**2.33**
NPDC	0	1	2	

Table 231: Equity Dynamic Connectedness Table for Other Utilities Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	95.94	1.32	2.73	4.06
EU	0.7	89.82	9.48	10.18
JP	2.32	15.25	82.44	17.56
To	3.01	16.57	12.22	31.8
Inc.Own	98.96	106.39	94.65	**TCI**
NET	-1.04	6.39	-5.35	**10.6**
NPDC	0	2	1	

	US	EU	JP	FROM
US	95.86	0.33	3.81	4.14
EU	0.24	91.34	8.42	8.66
JP	1.63	4.93	93.44	6.56
To	1.87	5.26	12.23	19.36
Inc.Own	97.73	96.6	105.67	**TCI**
NET	-2.27	-3.4	5.67	**6.45**
NPDC	0	1	2	

Table 232: Equity Dynamic Connectedness Table for Automotive Manufacturer Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	99.94	0.03	0.03	0.06
EU	0.04	86.85	13.11	13.15
JP	0.02	8.59	91.39	8.61
To	0.06	8.62	13.14	21.82
Inc.Own	100	95.47	104.53	**TCI**
NET	0	-4.53	4.53	**7.27**
NPDC	1	0	2	

	US	EU	JP	FROM
US	99.96	0.03	0.01	0.04
EU	0.06	89.31	10.63	10.69
JP	0.01	4.52	95.47	4.53
To	0.07	4.55	10.64	15.26
Inc.Own	100.03	93.86	106.1	**TCI**
NET	0.03	-6.14	6.1	**5.09**
NPDC	1	0	2	

Table 233: Equity Dynamic Connectedness Table for Chemicals Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	97.14	0	2.86	2.86
EU	0	86.74	13.26	13.26
JP	2.25	9.91	87.84	12.16
To	2.25	9.91	16.12	28.28
Inc.Own	99.39	96.65	103.96	**TCI**
NET	-0.61	-3.35	3.96	**9.43**
NPDC	1	0	2	

	US	EU	JP	FROM
US	97.42	0.05	2.53	2.58
EU	0.05	93.62	6.33	6.38
JP	1.9	5.09	93	7
To	1.95	5.15	8.86	15.96
Inc.Own	99.37	98.77	101.86	**TCI**
NET	-0.63	-1.23	1.86	**5.32**
NPDC	0	1	2	

Table 234: Equity Dynamic Connectedness Table for Electronics Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	99.93	0	0.07	0.07
EU	0	87.89	12.11	12.11
JP	0.04	8	91.96	8.04
To	0.04	8.01	12.18	20.22
Inc.Own	99.97	95.9	104.13	**TCI**
NET	-0.03	-4.1	4.13	**6.74**
NPDC	0	1	2	

	US	EU	JP	FROM
US	99.95	0.04	0.01	0.05
EU	0.05	92.5	7.45	7.5
JP	0	2.78	97.22	2.78
To	0.06	2.82	7.46	10.34
Inc.Own	100.01	95.31	104.68	**TCI**
NET	0.01	-4.69	4.68	**3.45**
NPDC	1	0	2	

Table 235: Equity Dynamic Connectedness Table for Metals & Mining Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	FROM
US	87.51	12.48	0	12.49
UK	13.01	86.87	0.12	13.13
EU	0	0.18	99.82	0.18
To	13.01	12.66	0.13	25.8
Inc.Own	100.52	99.53	99.95	**TCI**
NET	0.52	-0.47	-0.05	**8.6**
NPDC	2	1	0	

	US	UK	EU	FROM
US	93.06	6.94	0	6.94
UK	7.1	92.9	0.01	7.1
EU	0.01	0.04	99.95	0.05
To	7.1	6.98	0.01	14.09
Inc.Own	100.16	99.88	99.96	**TCI**
NET	0.16	-0.12	-0.04	**4.7**
NPDC	2	1	0	

Table 236: Equity Dynamic Connectedness Table for Beverages & Bottling Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	FROM
US	81.03	18.92	0.05	18.97
UK	22.93	76.75	0.32	23.25
EU	0.08	0.42	99.51	0.49
To	23.01	19.33	0.37	42.71
Inc.Own	104.04	96.08	99.88	**TCI**
NET	4.04	-3.92	-0.12	**14.24**
NPDC	2	1	0	

	US	UK	EU	FROM
US	81.08	18.91	0.01	18.92
UK	20.94	78.96	0.1	21.04
EU	0.03	0.2	99.77	0.23
To	20.97	19.11	0.11	40.19
Inc.Own	102.04	98.07	99.89	**TCI**
NET	2.04	-1.93	-0.11	**13.4**
NPDC	2	1	0	

Table 237: Equity Dynamic Connectedness Table for Other Financials Sector in the Crisis Period and After-Crisis Period

	US	UK	JP	FROM
US	88.27	10.96	0.77	11.73
UK	8.04	89.83	2.13	10.17
JP	0.47	1.77	97.76	2.24
To	8.51	12.73	2.9	24.14
Inc.Own	96.79	102.56	100.65	**TCI**
NET	-3.21	2.56	0.65	**8.05**
NPDC	0	1	2	

	US	UK	JP	FROM
US	92.83	6.18	0.98	7.17
UK	9.65	85.22	5.12	14.78
JP	1.08	3.61	95.31	4.69
To	10.74	9.79	6.11	26.64
Inc.Own	103.57	95.02	101.42	**TCI**
NET	3.57	-4.98	1.42	**8.88**
NPDC	2	0	1	

Table 238: Equity Dynamic Connectedness Table for Retail Stores Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	81.1	18.9	18.9
EU	23.82	76.18	23.82
To	23.82	18.9	42.72
Inc.Own	104.92	95.08	**TCI**
NET	4.92	-4.92	**21.36**
NPDC	1	0	

	US	EU	FROM
US	76.08	23.92	23.92
EU	22.73	77.27	22.73
To	22.73	23.92	46.64
Inc.Own	98.81	101.19	**TCI**
NET	-1.19	1.19	**23.32**
NPDC	0	1	

Table 239: Equity Dynamic Connectedness Table for Oilfield Machinery & Products Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	99.93	0.07	0.07
EU	0.08	99.92	0.08
To	0.08	0.07	0.15
Inc.Own	100.01	99.99	**TCI**
NET	0.01	-0.01	**0.07**
NPDC	1	0	

	US	EU	FROM
US	99.99	0.01	0.01
EU	0.04	99.96	0.04
To	0.04	0.01	0.05
Inc.Own	100.03	99.97	**TCI**
NET	0.03	-0.03	**0.02**
NPDC	1	0	

Table 240: Equity Dynamic Connectedness Table for Conglomerate Diversified Mfg Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	99.94	0.06	0.06
EU	0.08	99.92	0.08
To	0.08	0.06	0.14
Inc.Own	100.02	99.98	**TCI**
NET	0.02	-0.02	**0.07**
NPDC	1	0	

	US	EU	FROM
US	99.99	0.01	0.01
EU	0.01	99.99	0.01
To	0.01	0.01	0.02
Inc.Own	100	100	**TCI**
NET	0	0	**0.01**
NPDC	0	1	

Table 241: Equity Dynamic Connectedness Table for Oil & Gas Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	100	0	0
EU	0	100	0
To	0	0	0.01
Inc.Own	100	100	**TCI**
NET	0	0	**0.00**
NPDC	1	0	

	US	EU	FROM
US	99.98	0.02	0.02
EU	0.01	99.99	0.01
To	0.01	0.02	0.03
Inc.Own	100	100	**TCI**
NET	0	0	**0.02**
NPDC	0	1	

Table 242: Equity Dynamic Connectedness Table for Leisure Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	99.97	0.03	0.03
EU	0.03	99.97	0.03
To	0.03	0.03	0.05
Inc.Own	100	100	**TCI**
NET	0	0	**0.03**
NPDC	1	0	

	US	EU	FROM
US	99.99	0.01	0.01
EU	0.01	99.99	0.01
To	0.01	0.01	0.02
Inc.Own	100	100	**TCI**
NET	0	0	**0.01**
NPDC	0	1	

Table 243: Equity Dynamic Connectedness Table for Building Products Sector in the Crisis Period and After-Crisis Period

	US	JP	FROM
US	97.19	2.81	2.81
JP	2.16	97.84	2.16
To	2.16	2.81	4.97
Inc.Own	99.35	100.65	**TCI**
NET	-0.65	0.65	**2.49**
NPDC	0	1	

	US	JP	FROM
US	98.68	1.32	1.32
JP	1.34	98.66	1.34
To	1.34	1.32	2.66
Inc.Own	100.03	99.97	**TCI**
NET	0.03	-0.03	**1.33**
NPDC	1	0	

Table 244: Equity Dynamic Connectedness Table for Industrial Other Sector in the Crisis Period and After-Crisis Period

	US	JP	FROM
US	97.74	2.26	2.26
JP	1.68	98.32	1.68
To	1.68	2.26	3.93
Inc.Own	99.42	100.58	**TCI**
NET	-0.58	0.58	**1.97**
NPDC	0	1	

	US	JP	FROM
US	98.39	1.61	1.61
JP	0.54	99.46	0.54
To	0.54	1.61	2.15
Inc.Own	98.93	101.07	**TCI**
NET	-1.07	1.07	**1.08**
NPDC	0	1	

Table 245: Equity Dynamic Connectedness Table for Other Transportation Sector in the Crisis Period and After-Crisis Period

	US	JP	FROM
US	96.79	3.21	3.21
JP	2.78	97.22	2.78
To	2.78	3.21	6
Inc.Own	99.57	100.43	**TCI**
NET	-0.43	0.43	**3.00**
NPDC	0	1	

	US	JP	FROM
US	98.24	1.76	1.76
JP	1.35	98.65	1.35
To	1.35	1.76	3.12
Inc.Own	99.59	100.41	**TCI**
NET	-0.41	0.41	**1.56**
NPDC	0	1	

Table 246: Equity Dynamic Connectedness Table for Machinery Sector in the Crisis Period and After-Crisis Period

Credit Default Swaps and Equity Connectedness

	LEI_CDS_US	LEI_EQ_US	LEI_CDS_EU	LEI_EQ_EU	FROM
LEI_CDS_US	96.03	2.45	0.59	0.93	3.97
LEI_EQ_US	6.07	93.65	0.28	0	6.35
LEI_CDS_EU	4.23	0.8	94.13	0.84	5.87
LEI_EQ_EU	3.04	0	0.38	96.58	3.42
TO	13.34	3.25	1.25	1.77	19.6
INC.OWN	109.37	96.9	95.39	98.35	**TCI**
NET	9.37	-3.1	-4.61	-1.65	**4.9**
NPDC	3	2	0	1	

	LEI_CDS_US	LEI_EQ_US	LEI_CDS_EU	LEI_EQ_EU	FROM
LEI_CDS_US	97.25	1.39	1.32	0.04	2.75
LEI_EQ_US	6.92	89.91	3.15	0.02	10.09
LEI_CDS_EU	1.17	0.56	97.92	0.34	2.08
LEI_EQ_EU	0.16	0.01	1.75	98.07	1.93
TO	8.26	1.97	6.23	0.4	16.85
INC.OWN	105.51	91.88	104.15	98.47	**TCI**
NET	5.51	-8.12	4.15	-1.53	**4.21**
NPDC	2	0	3	1	

Table 247: Dynamic Connectedness Table for Leisure Sector in the Crisis Period and After-Crisis Period

	IND_CDS_US	IND_EQ_US	IND_CDS_JP	IND_EQ_JP	FROM
IND_CDS_US	94.87	2.11	1.45	1.56	5.13
IND_EQ_US	1.22	95.54	0.38	2.86	4.46
IND_CDS_JP	0.22	0.1	98.47	1.21	1.53
IND_EQ_JP	0.77	2.42	3.9	92.92	7.08
TO	2.21	4.64	5.73	5.63	18.21
INC.OWN	97.08	100.17	104.2	98.55	**TCI**
NET	-2.92	0.17	4.2	-1.45	**4.55**
NPDC	0	1	3	2	

	IND_CDS_US	IND_EQ_US	IND_CDS_JP	IND_EQ_JP	FROM
IND_CDS_US	99.55	0.01	0.05	0.39	0.45
IND_EQ_US	0	97.6	0.01	2.39	2.4
IND_CDS_JP	0.03	0.01	99.74	0.22	0.26
IND_EQ_JP	0.1	1.69	0.1	98.11	1.89
TO	0.13	1.71	0.16	3	5
INC.OWN	99.68	99.31	99.9	101.11	**TCI**
NET	-0.32	-0.69	-0.1	1.11	**1.25**
NPDC	0	2	1	3	

Table 248: Dynamic Connectedness Table for Industrial Sector in the Crisis Period and After-Crisis Period

	OIL_CDS_US	OIL_EQ_US	OIL_CDS_EU	OIL_EQ_EU	FROM
OIL_CDS_US	81.84	2.2	14.18	1.78	18.16
OIL_EQ_US	1.78	71.2	5.22	21.8	28.8
OIL_CDS_EU	5.12	2.34	91.26	1.29	8.74
OIL_EQ_EU	1.81	27.54	3.64	67.01	32.99
TO	8.71	32.07	23.03	24.87	88.68
INC.OWN	90.55	103.28	114.29	91.88	**TCI**
NET	-9.45	3.28	14.29	-8.12	**22.17**
NPDC	1	2	3	0	

	CGM_CDS_US	CGM_EQ_US	CGM_CDS_EU	CGM_EQ_EU	FROM
CGM_CDS_US	79.17	4.72	15.22	0.89	20.83
CGM_EQ_US	4.38	89.1	6.51	0.01	10.9
CGM_CDS_EU	7.27	3.35	88.46	0.92	11.54
CGM_EQ_EU	3	0.03	6.48	90.48	9.52
TO	14.65	8.11	28.21	1.82	52.79
INC.OWN	93.83	97.21	116.67	92.3	**TCI**
NET	-6.17	-2.79	16.67	-7.7	**13.2**
NPDC	1	2	3	0	

Table 249: Dynamic Connectedness Table for Oil & Gas Sector in the Crisis Period and After-Crisis Period

	CAB_CDS_US	CAB_EQ_US	CAB_CDS_EU	CAB_EQ_EU	FROM
CAB_CDS_US	82.52	9.6	4.19	3.69	17.48
CAB_EQ_US	4.97	92.64	2.33	0.06	7.36
CAB_CDS_EU	4.61	4.96	87.1	3.32	12.9
CAB_EQ_EU	2.48	0.08	2.03	95.41	4.59
TO	12.07	14.64	8.56	7.07	42.33
INC.OWN	94.59	107.28	95.66	102.48	**TCI**
NET	-5.41	7.28	-4.34	2.48	**10.58**
NPDC	1	3	0	2	

	CAB_CDS_US	CAB_EQ_US	CAB_CDS_EU	CAB_EQ_EU	FROM
CAB_CDS_US	99.05	0.2	0.69	0.06	0.95
CAB_EQ_US	0.05	98.12	1.82	0.01	1.88
CAB_CDS_EU	0.13	1.5	97.74	0.63	2.26
CAB_EQ_EU	0.01	0.01	0.52	99.47	0.53
TO	0.19	1.71	3.03	0.7	5.62
INC.OWN	99.23	99.83	100.77	100.17	**TCI**
NET	-0.77	-0.17	0.77	0.17	**1.41**
NPDC	0	1	2	3	

Table 250: Dynamic Connectedness Table for Cable Media Sector in the Crisis Period and After-Crisis Period

	CGM_CDS_US	CGM_EQ_US	CGM_CDS_EU	CGM_EQ_EU	FROM
CGM_CDS_US	79.51	6	11.54	2.95	20.49
CGM_EQ_US	5.77	86.69	7.49	0.06	13.31
CGM_CDS_EU	2.59	1.75	94.78	0.88	5.22
CGM_EQ_EU	3.32	0.07	4.42	92.19	7.81
TO	11.67	7.82	23.45	3.9	46.84
INC.OWN	91.18	94.5	118.23	96.08	TCI
NET	-8.82	-5.5	18.23	-3.92	**11.71**
NPDC	1	2	3	0	

	CGM_CDS_US	CGM_EQ_US	CGM_CDS_EU	CGM_EQ_EU	FROM
CGM_CDS_US	79.17	4.72	15.22	0.89	20.83
CGM_EQ_US	4.38	89.1	6.51	0.01	10.9
CGM_CDS_EU	7.27	3.35	88.46	0.92	11.54
CGM_EQ_EU	3	0.03	6.48	90.48	9.52
TO	14.65	8.11	28.21	1.82	52.79
INC.OWN	93.83	97.21	116.67	92.3	TCI
NET	-6.17	-2.79	16.67	-7.7	**13.2**
NPDC	1	2	3	0	

Table 251: Dynamic Connectedness Table for Conglomerate Diversified Mfg Sector in the Crisis Period and After-Crisis Period

	OTRSP_CDS_US	OTRSP_EQ_US	OTRSP_CDS_JP	OTRSP_EQ_JP	FROM
OTRSP_CDS_US	94.91	0.82	3.78	0.49	5.09
OTRSP_EQ_US	0.36	97.15	0.27	2.23	2.85
OTRSP_CDS_JP	1.2	0.19	89.09	9.52	10.91
OTRSP_EQ_JP	0.15	1.52	8.93	89.41	10.59
TO	1.71	2.53	12.97	12.24	29.45
INC.OWN	96.61	99.68	102.06	101.65	TCI
NET	-3.39	-0.32	2.06	1.65	**7.36**
NPDC	0	1	2	3	

	OTRSP_CDS_US	OTRSP_EQ_US	OTRSP_CDS_JP	OTRSP_EQ_JP	FROM
OTRSP_CDS_US	99.8	0.02	0.01	0.18	0.2
OTRSP_EQ_US	0.08	98.4	0.02	1.5	1.6
OTRSP_CDS_JP	0.01	0.01	98.6	1.38	1.4
OTRSP_EQ_JP	0.3	0.49	1.05	98.15	1.85
TO	0.39	0.52	1.08	3.05	5.04
INC.OWN	100.19	98.92	99.68	101.21	TCI
NET	0.19	-1.08	-0.32	1.21	**1.26**
NPDC	3	0	1	2	

Table 252: Dynamic Connectedness Table for Transportation Sector in the Crisis Period and After-Crisis Period

	OF_CDS_US	OF_EQ_US	OF_CDS_UK	OF_EQ_UK	OF_CDS_EU	OF_EQ_EU	FROM
OF II_CDS_US	82.34	2.72	3.08	3.47	7.73	0.66	17.66
OF II_EQ_US	3.29	72.01	2.59	15.64	6.43	0.04	27.99
OF II_CDS_UK	6.06	4.2	48.29	9.84	29.07	2.53	51.71
OF II_EQ_UK	4.33	16.12	6.25	58	15.08	0.23	42
OF II_CDS_EU	3.91	2.68	7.47	6.11	77.39	2.44	22.61
OF II_EQ_EU	1.23	0.06	2.4	0.34	9.03	86.92	13.08
TO	18.82	25.79	21.8	35.39	67.35	5.9	175.05
Inc.Own	101.16	97.8	70.09	93.39	144.73	92.83	**TCI**
Net	1.16	-2.2	-29.91	-6.61	44.73	-7.17	**29.17**
NPDC	4	3	0	2	5	1	

	OF_CDS_US	OF_EQ_US	OF_CDS_UK	OF_EQ_UK	OF_CDS_EU	OF_EQ_EU	FROM
OF II_CDS_US	98.81	0.28	0.04	0.52	0.06	0.29	1.19
OF II_EQ_US	0.3	79.69	0.57	18.69	0.74	0.01	20.31
OF II_CDS_UK	0.17	2.37	73.21	7.04	16.24	0.96	26.79
OF II_EQ_UK	0.6	19.95	1.81	74.83	2.71	0.1	25.17
OF II_CDS_EU	0.07	0.76	4.05	2.59	92.35	0.19	7.65
OF II_EQ_EU	0.69	0.03	0.51	0.2	0.4	98.18	1.82
TO	1.83	23.39	6.98	29.04	20.15	1.55	82.93
Inc.Own	100.64	103.07	80.19	103.86	112.5	99.73	**TCI**
Net	0.64	3.07	-19.81	3.86	12.5	-0.27	**13.82**
NPDC	5	4	0	2	3	1	

Table 253: Dynamic Connectedness Table for Other Financials Sector in the Crisis Period and After-Crisis Period

	UT_CDS_US	UT_EQ_US	UT_CDS_EU	UT_EQ_EU	UT_CDS_JP	UT_EQ_JP	FROM
UT_CDS_US	98.38	0.8	0.32	0.18	0.06	0.25	1.62
UT_EQ_US	1.87	95.92	1.53	0.08	0.26	0.35	4.08
UT_CDS_EU	1.7	3.42	91.82	0.63	2.35	0.09	8.18
UT_EQ_EU	0.66	0.12	0.43	94.54	2.41	1.83	5.46
UT_CDS_JP	0.49	0.88	3.64	5.38	88.95	0.66	11.05
UT_EQ_JP	0.45	0.27	0.03	0.93	0.15	98.18	1.82
TO	5.16	5.49	5.95	7.2	5.22	3.17	32.2
Inc.Own	103.54	101.42	97.77	101.75	94.17	101.35	**TCI**
Net	3.54	1.42	-2.23	1.75	-5.83	1.35	**5.37**
NPDC	5	3	1	2	0	4	

	UT_CDS_US	UT_EQ_US	UT_CDS_EU	UT_EQ_EU	UT_CDS_JP	UT_EQ_JP	FROM
UT_CDS_US	99.93	0.03	0	0.01	0	0.03	0.07
UT_EQ_US	0.26	98.04	0.45	0.63	0.08	0.54	1.96
UT_CDS_EU	0	0.08	99.85	0.05	0	0.01	0.15
UT_EQ_EU	0.03	0.31	0.13	96.08	0.32	3.13	3.92
UT_CDS_JP	0.01	0.01	0	0.13	99.62	0.23	0.38
UT_EQ_JP	0.08	0.18	0.02	2.11	0.39	97.21	2.79
TO	0.38	0.61	0.6	2.92	0.8	3.94	9.25
Inc.Own	100.31	98.65	100.46	99	100.43	101.16	**TCI**
Net	0.31	-1.35	0.46	-1	0.43	1.16	**1.54**
NPDC	5	0	4	1	3	2	

Table 254: Dynamic Connectedness Table for Utilities Sector in the Crisis Period and After-Crisis Period

	RET_CDS_US	RET_EQ_US	RET_CDS_UK	RET_EQ_UK	RET_CDS_JP	RET_EQ_JP	FROM
RET_CDS_US	81.84	2.88	8.69	4.91	0	1.68	18.16
RET_EQ_US	2.12	83.21	3.79	10.16	0.01	0.71	16.79
RET_CDS_UK	4.53	2.68	79.94	9.38	0.16	3.31	20.06
RET_EQ_UK	2.49	7	9.14	79.52	0.01	1.84	20.48
RET_CDS_JP	0	0.03	0.7	0.04	98.58	0.65	1.42
RET_EQ_JP	0.77	0.44	2.92	1.66	0.13	94.07	5.93
TO	9.92	13.03	25.23	26.16	0.3	8.19	82.84
Inc.Own	91.76	96.24	105.17	105.68	98.88	102.27	TCI
Net	-8.24	-3.76	5.17	5.68	-1.12	2.27	**13.81**
NPDC	0	2	3	4	1	5	

	RET_CDS_US	RET_EQ_US	RET_CDS_UK	RET_EQ_UK	RET_CDS_JP	RET_EQ_JP	FROM
RET_CDS_US	91.59	0.07	7.51	0.46	0.05	0.31	8.41
RET_EQ_US	0.07	89.04	3.96	5.89	0.1	0.94	10.96
RET_CDS_UK	1.75	0.91	94.33	2.04	0.01	0.96	5.67
RET_EQ_UK	0.66	8.33	12.48	74.07	0.03	4.43	25.93
RET_CDS_JP	0.13	0.25	0.13	0.05	98.94	0.5	1.06
RET_EQ_JP	0.34	1.02	4.52	3.41	0.22	90.49	9.51
TO	2.95	10.59	28.6	11.84	0.41	7.13	61.53
Inc.Own	94.55	99.63	122.93	85.91	99.35	97.63	TCI
Net	-5.45	-0.37	22.93	-14.09	-0.65	-2.37	**10.25**
NPDC	4	3	5	1	0	2	

Table 255: Dynamic Connectedness Table for Retail Stores Sector in the Crisis Period and After-Crisis Period

	MM_CDS_US	MM_EQ_US	MM_CDS_EU	MM_EQ_EU	MM_CDS_JP	MM_EQ_JP	FROM
MM_CDS_US	82.31	0.01	5.7	2.24	5.07	4.67	17.69
MM_EQ_US	0.02	99.82	0.04	0	0.05	0.07	0.18
MM_CDS_EU	12.54	0.04	70.28	2.85	5.51	8.78	29.72
MM_EQ_EU	3.67	0	2.12	76.59	6.78	10.84	23.41
MM_CDS_JP	5.92	0.03	2.93	4.82	74.61	11.69	25.39
MM_EQ_JP	4.71	0.03	4.03	6.66	10.1	74.48	25.52
TO	26.86	0.11	14.81	16.57	27.52	36.06	121.93
Inc.Own	109.16	99.93	85.09	93.15	102.13	110.53	TCI
Net	9.16	-0.07	-14.91	-6.85	2.13	10.53	**20.32**
NPDC	5	0	1	2	3	4	

	MM_CDS_US	MM_EQ_US	MM_CDS_EU	MM_EQ_EU	MM_CDS_JP	MM_EQ_JP	FROM
MM_CDS_US	98.7	0	0.58	0.28	0.34	0.09	1.3
MM_EQ_US	0	99.87	0.08	0.04	0	0.01	0.13
MM_CDS_EU	0.58	0.02	98.87	0.01	0.13	0.39	1.13
MM_EQ_EU	1.26	0.05	0.06	89.66	1.72	7.25	10.34
MM_CDS_JP	1.42	0	0.55	1.62	92.16	4.26	7.84
MM_EQ_JP	0.16	0	0.65	2.72	1.69	94.78	5.22
TO	3.41	0.08	1.93	4.68	3.88	12	25.97
Inc.Own	102.11	99.95	100.79	94.34	96.03	106.78	TCI
Net	2.11	-0.05	0.79	-5.66	-3.97	6.78	**4.33**
NPDC	4	2	5	0	1	3	

Table 256: Dynamic Connectedness Table for Metals & Mining Sector in the Crisis Period and After-Crisis Period

	ELEC_CDS_US	ELEC_EQ_US	ELEC_CDS_EU	ELEC_EQ_EU	ELEC_CDS_JP	ELEC_EQ_JP	FROM
ELEC_CDS_US	89.44	1.92	5.46	0.77	0.32	2.09	10.56
ELEC_EQ_US	6.11	86.8	4.25	0	0.29	2.55	13.2
ELEC_CDS_EU	11.83	2.9	76.82	2.16	1.21	5.08	23.18
ELEC_EQ_EU	2.66	0	3.46	80.71	0.85	12.32	19.29
ELEC_CDS_JP	2.78	0.79	4.81	2.1	84.93	4.59	15.07
ELEC_EQ_JP	5.12	1.97	5.75	8.7	1.31	77.15	22.85
TO	28.5	7.59	23.73	13.72	3.99	26.63	104.16
Inc.Own	117.95	94.39	100.55	94.42	88.92	103.78	TCI
Net	17.95	-5.61	0.55	-5.58	-11.08	3.78	**17.36**
NPDC	5	2	4	1	0	3	

	ELEC_CDS_US	ELEC_EQ_US	ELEC_CDS_EU	ELEC_EQ_EU	ELEC_CDS_JP	ELEC_EQ_JP	FROM
ELEC_CDS_US	93.75	1.01	3.69	0.26	0.26	1.04	6.25
ELEC_EQ_US	0.74	89.55	7.33	0.05	0.03	2.3	10.45
ELEC_CDS_EU	0.71	1.91	94.69	0.99	0.06	1.64	5.31
ELEC_EQ_EU	0.19	0.05	3.71	90.02	0	6.03	9.98
ELEC_CDS_JP	0.16	0.02	0.21	0	98.69	0.91	1.31
ELEC_EQ_JP	0.59	1.77	4.83	4.74	0.81	87.27	12.73
TO	2.39	4.76	19.76	6.04	1.16	11.92	46.03
Inc.Own	96.14	94.31	114.46	96.05	99.84	99.2	TCI
Net	-3.86	-5.69	14.46	-3.95	-0.16	-0.8	**7.67**
NPDC	0	1	5	2	3	4	

Table 257: Dynamic Connectedness Table for Electronics Sector in the Crisis Period and After-Crisis Period

	CHEM_CDS_US	CHEM_EQ_US	CHEM_CDS_EU	CHEM_EQ_EU	CHEM_CDS_JP	CHEM_EQ_JP	FROM
CHEM_CDS_US	66.7	0	27.19	1.96	0.96	3.19	33.3
CHEM_EQ_US	0	99.76	0.1	0.03	0.08	0.03	0.24
CHEM_CDS_EU	5.98	0.03	87.02	1.54	0.64	4.8	12.98
CHEM_EQ_EU	1.71	0.04	6.13	79.17	0.53	12.42	20.83
CHEM_CDS_JP	1.19	0.13	3.57	0.75	92.21	2.15	7.79
CHEM_EQ_JP	1.71	0.02	11.69	7.62	0.93	78.03	21.97
TO	10.57	0.22	48.68	11.9	3.14	22.59	97.11
Inc.Own	77.28	99.98	135.69	91.07	95.35	100.62	TCI
Net	-22.72	-0.02	35.69	-8.93	-4.65	0.62	**16.19**
NPDC	1	3	5	2	0	4	

	CHEM_CDS_US	CHEM_EQ_US	CHEM_CDS_EU	CHEM_EQ_EU	CHEM_CDS_JP	CHEM_EQ_JP	FROM
CHEM_CDS_US	97.04	0	1.83	0.44	0.05	0.63	2.96
CHEM_EQ_US	0	99.35	0.03	0.03	0.58	0.01	0.65
CHEM_CDS_EU	0.55	0.02	92.54	1.07	3.01	2.8	7.46
CHEM_EQ_EU	0.46	0.06	3.68	85.49	0.12	10.19	14.51
CHEM_CDS_JP	0.01	0.19	1.56	0.02	97.35	0.87	2.65
CHEM_EQ_JP	0.27	0.01	3.99	4.23	2.39	89.11	10.89
TO	1.29	0.28	11.09	5.79	6.15	14.51	39.12
Inc.Own	98.33	99.63	103.63	91.29	103.5	103.62	TCI
Net	-1.67	-0.37	3.63	-8.71	3.5	3.62	**6.52**
NPDC	1	2	4	0	5	3	

Table 258: Dynamic Connectedness Table for Chemicals Sector in the Crisis Period and After-Crisis Period

	CG_CDS_US	CG_EQ_US	CG_CDS_UK	CG_EQ_UK	CG_CDS_EU	CG_EQ_EU	FROM
CG_CDS_US	85.18	1.16	3.23	0.67	7.78	1.97	14.82
CG_EQ_US	2.18	55.49	5.6	13.15	5.14	18.44	44.51
CG_CDS_UK	3.79	3.49	52.72	2.5	30.78	6.71	47.28
CG_EQ_UK	1.3	13.51	4.13	50.16	4.57	26.34	49.84
CG_CDS_EU	7.37	2.59	24.85	2.24	56.54	6.41	43.46
CG_EQ_EU	3.01	14.96	8.73	20.8	10.33	42.16	57.84
TO	17.66	35.71	46.55	39.36	58.61	59.87	257.75
Inc.Own	102.84	91.2	99.26	89.52	115.15	102.04	TCI
Net	2.84	-8.8	-0.74	-10.48	15.15	2.04	**42.96**
NPDC	4	1	3	0	5	2	

	CG_CDS_US	CG_EQ_US	CG_CDS_UK	CG_EQ_UK	CG_CDS_EU	CG_EQ_EU	FROM
CG_CDS_US	91.01	2.78	2.36	0.8	1.78	1.27	8.99
CG_EQ_US	0.47	80.68	1.04	6.88	0.67	10.26	19.32
CG_CDS_UK	0.74	1.92	82.25	3.05	7.61	4.43	17.75
CG_EQ_UK	0.29	14.87	3.57	50.66	1.79	28.82	49.34
CG_CDS_EU	0.59	1.32	8.14	1.63	84.6	3.71	15.4
CG_EQ_EU	0.39	18.68	4.37	24.28	3.42	48.85	51.15
TO	2.48	39.57	19.48	36.65	15.27	48.49	161.95
Inc.Own	93.5	120.25	101.73	87.31	99.88	97.34	TCI
Net	-6.5	20.25	1.73	-12.69	-0.12	-2.66	**26.99**
NPDC	0	5	3	1	2	4	

Table 259: Dynamic Connectedness Table for Consumer Goods Sector in the Crisis Period and After-Crisis Period

	BEV_CDS_US	BEV_EQ_US	BEV_CDS_UK	BEV_EQ_UK	BEV_CDS_EU	BEV_EQ_EU	FROM
BEV_CDS_US	84.27	0.59	6.26	1.05	7.1	0.73	15.73
BEV_EQ_US	0.51	82.11	2.74	11.66	2.98	0	17.89
BEV_CDS_UK	2.12	1.07	72.42	1.98	21.79	0.63	27.58
BEV_EQ_UK	0.9	11.67	5.07	78.35	3.89	0.11	21.65
BEV_CDS_EU	2.81	1.36	25.51	1.78	67.46	1.08	32.54
BEV_EQ_EU	0.92	0	2.34	0.16	3.47	93.1	6.9
TO	7.26	14.7	41.93	16.63	39.22	2.55	122.29
Inc.Own	91.53	96.82	114.34	94.98	106.68	95.65	TCI
Net	-8.47	-3.18	14.34	-5.02	6.68	-4.35	**20.38**
NPDC	1	3	5	2	4	0	

	BEV_CDS_US	BEV_EQ_US	BEV_CDS_UK	BEV_EQ_UK	BEV_CDS_EU	BEV_EQ_EU	FROM
BEV_CDS_US	99.02	0.33	0.18	0.12	0.15	0.2	0.98
BEV_EQ_US	0.42	91.75	0.51	6.88	0.45	0	8.25
BEV_CDS_UK	0.55	1.25	69.15	2.6	26.04	0.42	30.85
BEV_EQ_UK	0.15	6.91	1.06	89.96	1.91	0.01	10.04
BEV_CDS_EU	0.06	0.14	3.31	0.6	95.43	0.46	4.57
BEV_EQ_EU	1.19	0.01	0.82	0.04	7.07	90.87	9.13
TO	2.37	8.64	5.87	10.23	35.62	1.09	63.83
Inc.Own	101.39	100.39	75.02	100.19	131.05	91.96	TCI
Net	1.39	0.39	-24.98	0.19	31.05	-8.04	**10.64**
NPDC	4	3	1	2	5	0	

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Table 260: Dynamic Connectedness Table for Beverages and Bottling Sector in the Crisis Period and After-Crisis Period

	BNK_CDS_US	BNK_EQ_US	BNK_CDS_UK	BNK_EQ_UK	BNK_CDS_EU	BNK_EQ_EU	BNK_CDS_JP	BNK_EQ_JP	FROM
BNK_CDS_US	48.45	10.95	16.07	9.1	11.18	0.93	3.26	0.04	51.55
BNK_EQ_US	16.35	62.2	4.11	14.33	2.71	0.02	0.18	0.11	37.8
BNK_CDS_UK	11.14	1.91	55.56	5.82	20.54	2.21	2.82	0.01	44.44
BNK_EQ_UK	13.87	14.63	12.79	50.35	6.81	0.03	1.48	0.05	49.65
BNK_CDS_EU	9.26	1.5	24.53	3.7	54.1	2.35	4.55	0	45.9
BNK_EQ_EU	1.81	0.03	6.19	0.03	5.53	76.66	9.71	0.03	23.34
BNK_CDS_JP	4.69	0.18	5.83	1.4	7.89	7.16	72.85	0	27.15
BNK_EQ_JP	0.16	0.31	0.08	0.13	0.01	0.08	0.01	99.21	0.79
TO	57.28	29.5	69.62	34.51	54.67	12.78	22.02	0.24	280.61
INC.OWN	105.73	91.71	125.18	84.85	108.77	89.44	94.87	99.46	**TCI**
NET	5.73	-8.29	25.18	-15.15	8.77	-10.56	-5.13	-0.54	**35.08**
NPDC	5	3	7	2	6	1	4	0	

	BNK_CDS_US	BNK_EQ_US	BNK_CDS_UK	BNK_EQ_UK	BNK_CDS_EU	BNK_EQ_EU	BNK_CDS_JP	BNK_EQ_JP	FROM
BNK_CDS_US	87.59	5.45	0.44	4.76	0.45	0.43	0.87	0	12.41
BNK_EQ_US	14.07	65.95	0.33	17.91	0.79	0.06	0.82	0.07	34.05
BNK_CDS_UK	2.11	0.61	92.99	2.84	1.09	0.11	0.19	0.05	7.01
BNK_EQ_UK	11.39	16.58	1.43	68.05	1.45	0.16	0.93	0.01	31.95
BNK_CDS_EU	2.6	1.77	1.32	3.46	89.73	0.98	0.14	0	10.27
BNK_EQ_EU	2.4	0.13	0.13	0.38	0.96	94.81	1.19	0	5.19
BNK_CDS_JP	3.81	1.39	0.17	1.69	0.11	0.93	91.74	0.15	8.26
BNK_EQ_JP	0	0.09	0.04	0.01	0	0	0.12	99.74	0.26
TO	36.4	26.02	3.86	31.05	4.85	2.68	4.26	0.28	109.4
INC.OWN	123.99	91.97	96.85	99.1	94.59	97.48	96	100.02	**TCI**
NET	23.99	-8.03	-3.15	-0.9	-5.41	-2.52	-4	0.02	**13.67**
NPDC	7	5	2	6	0	1	3	4	

Table 261: Dynamic Connectedness Table for Banking Sector in the Crisis Period and After-Crisis Period

	CS_CDS_US	CS_EQ_US	CS_CDS_UK	CS_EQ_UK	CS_CDS_EU	CS_EQ_EU	CS_CDS_JP	CS_EQ_JP	FROM
CS_CDS_US	49.98	7.34	16.65	8.33	0.69	8.26	5.86	2.89	50.02
CS_EQ_US	5.89	58.52	3.26	17.03	0.31	14.38	0.14	0.46	41.48
CS_CDS_UK	14.05	3.43	62.37	6.81	1.57	7.4	1.47	2.9	37.63
CS_EQ_UK	5.37	13.66	5.19	44.97	0.69	27.7	0.13	2.3	55.03
CS_CDS_EU	2.62	1.46	7.04	4.04	76.41	4.8	1.77	1.88	23.59
CS_EQ_EU	6.05	13.12	6.42	31.5	0.93	38.99	0.19	2.81	61.01
CS_CDS_JP	2.14	0.07	0.64	0.07	0.17	0.09	95.32	1.51	4.68
CS_EQ_JP	1.96	0.39	2.33	2.42	0.34	2.6	2.81	87.15	12.85
TO	38.07	39.47	41.54	70.2	4.68	65.24	12.36	14.74	286.3
INC.OWN	88.05	97.99	103.91	115.17	81.09	104.22	107.67	101.9	**TCI**
NET	-11.95	-2.01	3.91	15.17	-18.91	4.22	7.67	1.9	**35.79**
NPDC	1	3	2	6	0	4	7	5	

	CS_CDS_US	CS_EQ_US	CS_CDS_UK	CS_EQ_UK	CS_CDS_EU	CS_EQ_EU	CS_CDS_JP	CS_EQ_JP	FROM
CS_CDS_US	92.81	1.05	0.35	1.91	1.84	1.57	0.01	0.44	7.19
CS_EQ_US	0.84	66.11	0.65	13.85	3.45	13.46	0.03	1.61	33.89
CS_CDS_UK	1.39	3.18	55.65	7.58	21.5	8.35	0.01	2.34	44.35
CS_EQ_UK	1.14	10.37	1.15	48	7.3	28.11	0.01	3.92	52
CS_CDS_EU	1.1	2.57	3.26	7.28	72.79	8.21	0.01	4.79	27.21
CS_EQ_EU	0.97	10.49	1.32	29.27	8.58	46.3	0.01	3.06	53.7
CS_CDS_JP	0.01	0.05	0	0.01	0.01	0.02	99.62	0.28	0.38
CS_EQ_JP	0.33	1.53	0.45	4.99	6.12	3.74	0.18	82.64	17.36
TO	5.79	29.24	7.19	64.89	48.81	63.45	0.26	16.45	236.08
INC.OWN	98.61	95.34	62.84	112.89	121.6	109.75	99.87	99.1	**TCI**
NET	-1.39	-4.66	-37.16	12.89	21.6	9.75	-0.13	-0.9	**29.51**
NPDC	2	3	0	6	7	5	1	4	

Table 262: Dynamic Connectedness Table for Consumer Services Sector in the Crisis Period and After-Crisis Period

	OCS_CDS_US	OCS_EQ_US	OCS_CDS_UK	OCS_EQ_UK	OCS_CDS_EU	OCS_EQ_EU	OCS_CDS_JP	OCS_EQ_JP	FROM
OCS_CDS_US	87.61	1.02	1.34	2.07	1.99	0.04	5.68	0.26	12.39
OCS_EQ_US	2.95	79.73	0.97	14.35	0.82	0.03	1	0.15	20.27
OCS_CDS_UK	4.64	1.15	81.48	6.14	2.91	0.35	2.93	0.39	18.52
OCS_EQ_UK	4.07	9.7	3.48	79.5	1.9	0.12	0.33	0.89	20.5
OCS_CDS_EU	4.87	0.69	2.06	2.37	83.26	0.05	6.31	0.39	16.74
OCS_EQ_EU	0.19	0.04	0.49	0.3	0.1	97.53	1.26	0.09	2.47
OCS_CDS_JP	6.86	0.41	1.02	0.2	3.12	0.31	87.24	0.84	12.76
OCS_EQ_JP	0.8	0.16	0.35	1.42	0.5	0.06	2.16	94.55	5.45
TO	24.38	13.17	9.7	26.87	11.34	0.96	19.67	3.01	109.1
INC.OWN	111.99	92.91	91.19	106.37	94.59	98.49	106.91	97.56	**TCI**
NET	11.99	-7.09	-8.81	6.37	-5.41	-1.51	6.91	-2.44	**13.64**
NPDC	7	3	1	5	4	0	6	2	

	OCS_CDS_US	OCS_EQ_US	OCS_CDS_UK	OCS_EQ_UK	OCS_CDS_EU	OCS_EQ_EU	OCS_CDS_JP	OCS_EQ_JP	FROM
OCS_CDS_US	97.21	0.63	0.13	1.56	0.29	0.07	0.04	0.07	2.79
OCS_EQ_US	2.49	77.22	0.13	17.92	1.72	0.29	0	0.23	22.78
OCS_CDS_UK	0.44	0.11	97.54	0.69	1.12	0.02	0.01	0.08	2.46
OCS_EQ_UK	3.01	8.69	0.4	83.23	2.4	0.07	0.03	2.18	16.77
OCS_CDS_EU	1.34	2.01	1.55	5.8	87.9	0.41	0.04	0.94	12.1
OCS_EQ_EU	0.19	0.21	0.02	0.1	0.25	98.54	0.02	0.69	1.46
OCS_CDS_JP	0.23	0.01	0.01	0.09	0.04	0.04	99.58	0.01	0.42
OCS_EQ_JP	0.34	0.28	0.11	5.41	0.97	1.18	0	91.72	8.28
TO	8.03	11.93	2.35	31.57	6.78	2.06	0.15	4.19	67.06
INC.OWN	105.24	89.15	99.89	114.81	94.68	100.6	99.72	95.91	**TCI**
NET	5.24	-10.85	-0.11	14.81	-5.32	0.6	-0.28	-4.09	**8.38**
NPDC	7	3	4	6	2	5	0	1	

Table 263: Dynamic Connectedness Table for Other Consumer Services Sector in the Crisis Period and After-Crisis Period

	OF_CDS_US	OF_EQ_US	OF_CDS_UK	OF_EQ_UK	OF_CDS_EU	OF_EQ_EU	OF_CDS_JP	OF_EQ_JP	FROM
OF_CDS_US	75.53	2.66	2.98	3.6	9.1	4.19	0.58	1.36	24.47
OF_EQ_US	2.81	57.5	2.21	15.7	4.63	16.53	0.15	0.48	42.5
OF_CDS_UK	4.94	3.47	40.97	7.66	24.77	10.47	4.03	3.68	59.03
OF_EQ_UK	3.12	12.9	4.01	38.49	7.75	30.34	0.63	2.76	61.51
OF_CDS_EU	5.56	2.68	9.13	5.46	63.54	8.27	2.06	3.28	36.46
OF_EQ_EU	3.24	12.13	4.89	27.1	10.49	38.43	0.72	2.98	61.57
OF_CDS_JP	1.68	0.4	7.08	2.11	9.83	2.71	68.72	7.47	31.28
OF_EQ_JP	2.55	0.85	4.16	5.97	10.07	7.22	4.81	64.36	35.64
TO	23.9	35.1	34.48	67.61	76.64	79.74	12.98	22	352.45
INC.OWN	99.43	92.6	75.45	106.1	140.19	118.17	81.7	86.37	**TCI**
NET	-0.57	-7.4	-24.55	6.1	40.19	18.17	-18.3	-13.63	**44.06**
NPDC	4	3	2	5	7	6	0	1	

	OF_CDS_US	OF_EQ_US	OF_CDS_UK	OF_EQ_UK	OF_CDS_EU	OF_EQ_EU	OF_CDS_JP	OF_EQ_JP	FROM
OF_CDS_US	97.6	0.27	0.11	0.5	0.01	0.43	0.93	0.15	2.4
OF_EQ_US	0.24	64.06	0.75	18.55	0.31	13.51	0.2	2.39	35.94
OF_CDS_UK	0.06	0.47	85.35	1.23	10.15	1.3	0.83	0.62	14.65
OF_EQ_UK	0.37	15.66	1.68	51.08	0.79	24	0.74	5.67	48.92
OF_CDS_EU	0.02	0.46	24.71	1.39	72.3	0.97	0.02	0.14	27.7
OF_EQ_EU	0.46	16.21	2.52	34.09	0.79	41.02	0.58	4.33	58.98
OF_CDS_JP	1.46	0.36	2.39	1.58	0.02	0.86	90.68	2.65	9.32
OF_EQ_JP	0.17	2.97	1.24	8.36	0.12	4.49	1.84	80.81	19.19
TO	2.77	36.39	33.4	65.69	12.19	45.57	5.14	15.96	217.12
INC.OWN	100.36	100.45	118.75	116.77	84.49	86.59	95.82	96.77	**TCI**
NET	0.36	0.45	18.75	16.77	-15.51	-13.41	-4.18	-3.23	**27.14**
NPDC	4	5	7	6	1	3	0	2	

Table 264: Dynamic Connectedness Table for Other Financials Sector in the Crisis Period and After-Crisis Period

	TELE_CDS_US	TELE_EQ_US	TELE_CDS_UK	TELE_EQ_UK	TELE_CDS_EU	TELE_EQ_EU	TELE_CDS_JP	TELE_EQ_JP	FROM
TELE_CDS_US	60.05	3.12	12.29	1.69	15.02	3.5	2.53	1.81	39.95
TELE_EQ_US	2.21	67.96	3.28	8.32	3.25	14.24	0.66	0.08	32.04
TELE_CDS_UK	5.36	2.02	56.22	1.3	24.41	4.96	3.67	2.05	43.78
TELE_EQ_UK	1.41	9.83	2.49	53.53	2.38	29.05	0.3	1.02	46.47
TELE_CDS_EU	3.06	0.94	11.43	0.58	79.21	2.42	1.25	1.11	20.79
TELE_EQ_EU	2.02	11.66	6.57	20.15	6.86	50.61	0.71	1.43	49.39
TELE_CDS_JP	2.73	1	9.05	0.38	6.6	1.31	76.54	2.4	23.46
TELE_EQ_JP	1.14	0.07	2.98	0.77	3.44	1.56	1.41	88.62	11.38
TO	17.93	28.63	48.08	33.2	61.96	57.04	10.52	9.9	267.26
INC.OWN	77.98	96.6	104.3	86.73	141.17	107.65	87.06	98.52	**TCI**
NET	-22.02	-3.4	4.3	-13.27	41.17	7.65	-12.94	-1.48	**33.41**
NPDC	1	3	6	2	7	5	0	4	

	TELE_CDS_US	TELE_EQ_US	TELE_CDS_UK	TELE_EQ_UK	TELE_CDS_EU	TELE_EQ_EU	TELE_CDS_JP	TELE_EQ_JP	FROM
TELE_CDS_US	94.06	0.28	1.76	0.66	1.92	1.2	0.04	0.07	5.94
TELE_EQ_US	4.75	60.16	4.96	11.22	0.62	16.95	0.03	1.32	39.84
TELE_CDS_UK	1.85	0.31	85.22	2.01	5.96	3.73	0.11	0.82	14.78
TELE_EQ_UK	3.12	3.17	9.05	50.39	3.44	28.89	0.06	1.88	49.61
TELE_CDS_EU	3.09	0.06	9.14	1.17	82.7	3.04	0.14	0.65	17.3
TELE_EQ_EU	4.15	3.5	12.26	21.1	6.52	50.13	0.13	2.21	49.87
TELE_CDS_JP	0.42	0.02	1.02	0.12	0.87	0.36	96.7	0.48	3.3
TELE_EQ_JP	0.42	0.5	4.9	2.51	2.55	4.04	0.3	84.79	15.21
TO	17.81	7.85	43.08	38.78	21.88	58.21	0.81	7.42	195.84
INC.OWN	111.87	68.01	128.31	89.17	104.58	108.34	97.51	92.22	**TCI**
NET	11.87	-31.99	28.31	-10.83	4.58	8.34	-2.49	-7.78	**24.48**
NPDC	7	0	6	3	5	4	1	2	

Table 265: Dynamic Connectedness Table for Telecommunications Sector in the Crisis Period and After-Crisis Period

	OTELE_CDS_US	OTELE_EQ_US	OTELE_CDS_UK	OTELE_EQ_UK	OTELE_CDS_EU	OTELE_EQ_EU	OTELE_CDS_JP	OTELE_EQ_JP	FROM
OTELE_CDS_US	63.07	2.82	11.95	1.66	13.72	3.42	1.69	1.68	36.93
OTELE_EQ_US	1.64	67.89	3.49	8.31	3.73	14.22	0.64	0.08	32.11
OTELE_CDS_UK	3.92	1.97	57.94	1.22	24.73	4.72	3.5	1.98	42.06
OTELE_EQ_UK	1.14	9.84	2.56	53.66	2.39	29.11	0.29	1.02	46.34
OTELE_CDS_EU	2.32	1.09	12.79	0.59	78.05	2.6	1.41	1.14	21.95
OTELE_EQ_EU	1.62	11.62	6.83	20.07	7.28	50.44	0.71	1.42	49.56
OTELE_CDS_JP	1.49	0.97	9.43	0.37	7.38	1.33	76.58	2.44	23.42
OTELE_EQ_JP	0.87	0.07	3.15	0.77	3.51	1.56	1.44	88.62	11.38
TO	13.01	28.38	50.19	32.98	62.74	56.97	9.69	9.77	263.74
INC.OWN	76.08	96.27	108.13	86.64	140.8	107.41	86.27	98.4	**TCI**
NET	-23.92	-3.73	8.13	-13.36	40.8	7.41	-13.73	-1.6	**32.97**
NPDC	0	3	6	2	7	5	1	4	

	OTELE_CDS_US	OTELE_EQ_US	OTELE_CDS_UK	OTELE_EQ_UK	OTELE_CDS_EU	OTELE_EQ_EU	OTELE_CDS_JP	OTELE_EQ_JP	FROM
OTELE_CDS_US	94.11	0.29	1.75	0.65	1.9	1.19	0.04	0.06	5.89
OTELE_EQ_US	4.79	60.16	4.93	11.22	0.6	16.96	0.03	1.32	39.84
OTELE_CDS_UK	1.82	0.31	85.25	2.01	5.97	3.73	0.11	0.82	14.75
OTELE_EQ_UK	3.08	3.18	9.04	50.45	3.4	28.93	0.05	1.88	49.55
OTELE_CDS_EU	3.04	0.06	9.15	1.16	82.77	3.04	0.14	0.65	17.23
OTELE_EQ_EU	4.1	3.51	12.26	21.12	6.51	50.17	0.12	2.21	49.83
OTELE_CDS_JP	0.41	0.02	1.03	0.11	0.86	0.35	96.74	0.49	3.26
OTELE_EQ_JP	0.37	0.5	4.91	2.51	2.53	4.04	0.31	84.85	15.15
TO	17.6	7.85	43.06	38.77	21.77	58.24	0.79	7.42	195.51
INC.OWN	111.71	68.02	128.31	89.22	104.54	108.4	97.53	92.27	**TCI**
NET	11.71	-31.98	28.31	-10.78	4.54	8.4	-2.47	-7.73	**24.44**
NPDC	7	0	6	3	5	4	1	2	

Table 266: Dynamic Connectedness Table for Other Telecommunications Sector in the Crisis Period and After-Crisis Period

F.2 Full-BEKK-GARCH Model

Credit Default Swaps

	US	UK	EU	JP	FROM
US	85.32	4.93	4.91	4.84	14.68
UK	86.35	4.66	3.87	5.12	95.34
EU	86.44	4.63	3.78	5.16	96.22
JP	85.30	4.93	4.91	4.86	95.14
TO	258.08	14.48	13.69	15.12	**75.34**
NET	243.41	-80.85	-82.54	-80.02	

	US	UK	EU	JP	FROM
US	86.04	4.78	4.51	4.67	13.96
UK	70.45	4.58	16.59	8.38	95.42
EU	68.87	4.65	17.96	8.51	82.04
JP	85.84	4.76	4.38	5.02	94.98
TO	225.17	14.19	25.48	21.56	**71.60**
NET	211.21	-81.23	-56.56	-73.42	

Table 267: CDS Dynamic Connectedness Table for Banks Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	FROM
US	88.20	6.64	5.17	11.80
UK	2.01	90.89	7.10	9.11
EU	8.78	46.47	44.75	55.25
TO	10.79	53.11	12.27	**25.39**
NET	-1.01	44.00	-42.98	

	US	UK	EU	FROM
US	87.85	6.96	5.19	12.15
UK	4.90	81.02	14.08	18.98
EU	6.77	49.07	44.16	55.84
TO	11.67	56.02	19.27	**28.99**
NET	-0.48	37.04	-36.56	

Table 268: CDS Dynamic Connectedness Table for Consumer Goods Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	90.12	3.56	4.04	2.27	9.88
UK	89.52	4.15	4.04	2.29	95.85
EU	89.49	3.65	4.56	2.29	95.44
JP	64.35	3.68	4.54	27.43	72.57
TO	243.36	10.90	12.62	6.85	**68.43**
NET	233.48	-84.95	-82.81	-65.72	

	US	UK	EU	JP	FROM
US	86.76	3.31	4.77	5.16	13.24
UK	86.48	3.59	4.76	5.17	96.41
EU	86.52	3.37	4.95	5.17	95.05
JP	66.12	3.57	4.76	25.55	74.45
TO	239.12	10.24	14.29	15.50	**69.79**
NET	225.88	-86.17	-80.77	-58.95	

Table 269: CDS Dynamic Connectedness Table for Consumer Services Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	5.44	85.43	3.64	5.50	94.56
UK	5.44	85.43	3.64	5.50	14.57
EU	5.44	85.43	3.64	5.50	96.36
JP	5.44	85.43	3.64	5.50	94.50
TO	16.31	256.28	10.91	16.50	**75.00**
NET	-78.25	241.71	-85.45	-78.01	

	US	UK	EU	JP	FROM
US	6.80	72.94	13.22	7.03	93.20
UK	6.80	72.94	13.22	7.03	27.06
EU	6.80	72.94	13.22	7.03	86.78
JP	6.80	72.94	13.22	7.03	92.97
TO	20.41	218.81	39.67	21.10	**75.00**
NET	-72.78	191.75	-47.10	-71.86	

Table 270: CDS Dynamic Connectedness Table for Other Financials Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	10.06	71.55	9.72	8.67	89.94
UK	5.31	84.89	5.32	4.48	15.11
EU	4.97	82.21	6.40	6.42	93.60
JP	5.14	75.20	5.10	14.56	85.44
TO	15.42	228.96	20.14	19.57	**71.02**
NET	-74.52	213.84	-73.46	-65.87	

	US	UK	EU	JP	FROM
US	28.60	45.25	17.28	8.87	71.40
UK	5.12	86.20	5.21	3.47	13.80
EU	11.69	65.40	14.28	8.62	85.72
JP	4.79	59.73	4.68	30.80	69.20
TO	21.61	170.38	27.16	20.96	**60.03**
NET	-49.79	156.59	-58.56	-48.24	

Table 271: CDS Dynamic Connectedness Table for Electric Power Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	2.43	38.54	53.80	5.23	97.57
UK	2.43	38.54	53.80	5.23	61.46
EU	2.43	38.54	53.80	5.23	46.20
JP	2.43	38.54	53.80	5.23	94.77
TO	7.30	115.62	161.39	15.70	**75.00**
NET	-90.27	54.16	115.18	-79.07	

	US	UK	EU	JP	FROM
US	5.48	35.18	52.58	6.76	94.52
UK	5.48	35.18	52.58	6.76	64.82
EU	5.48	35.18	52.58	6.76	47.42
JP	5.48	35.18	52.58	6.76	93.24
TO	16.44	105.53	157.75	20.28	**75.00**
NET	-78.09	40.71	110.34	-72.96	

Table 272: CDS Dynamic Connectedness Table for Manufacturing Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	4.09	4.01	87.60	4.31	95.91
UK	4.05	4.01	87.63	4.31	95.99
EU	4.05	4.01	87.63	4.31	12.37
JP	4.06	4.01	87.63	4.30	95.70
TO	12.17	12.03	262.86	12.92	**74.99**
NET	-83.74	-83.96	250.48	-82.77	

	US	UK	EU	JP	FROM
US	4.20	3.97	87.58	4.25	95.80
UK	4.05	3.98	87.71	4.26	96.02
EU	4.05	3.98	87.71	4.26	12.29
JP	4.06	3.99	87.69	4.26	95.74
TO	12.15	11.95	262.98	12.77	**74.96**
NET	-83.65	-84.07	250.69	-82.97	

Table 273: CDS Dynamic Connectedness Table for Telecommunications Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	FROM
US	76.00	14.82	9.18	24.00
UK	5.40	90.99	3.61	9.01
EU	4.98	4.08	90.94	9.06
TO	10.38	18.90	12.79	**14.02**
NET	-13.63	9.90	3.73	

	US	UK	EU	FROM
US	78.15	15.70	6.14	21.85
UK	5.24	90.63	4.13	9.37
EU	5.18	4.87	89.95	10.05
TO	10.42	20.57	10.27	**13.75**
NET	-11.43	11.21	0.22	

Table 274: CDS Dynamic Connectedness Table for Transportation Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	11.03	88.97	88.97
EU	10.61	89.39	10.61
TO	10.61	88.97	**49.79**
NET	-78.36	78.36	

	US	EU	FROM
US	14.54	85.46	85.46
EU	8.52	91.48	8.52
TO	8.52	85.46	**46.99**
NET	-76.94	76.94	

Table 275: CDS Dynamic Connectedness Table for Energy Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	87.45	4.73	4.75	3.07	12.55
UK	9.87	19.18	23.36	47.59	80.82
EU	4.64	5.61	86.73	3.02	13.27
JP	11.57	6.76	5.28	76.40	23.60
TO	26.07	17.09	33.39	53.68	**32.56**
NET	13.53	-63.73	20.13	30.08	

	US	UK	EU	JP	FROM
US	85.58	5.39	5.56	3.47	14.42
UK	5.99	16.40	40.68	36.93	83.60
EU	3.04	5.54	86.70	4.71	13.30
JP	5.52	6.87	8.04	79.57	20.43
TO	14.55	17.80	54.28	45.12	**32.94**
NET	0.13	-65.80	40.99	24.69	

Table 276: CDS Dynamic Connectedness Table for Banking Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	FROM
US	15.54	9.56	74.90	84.46
UK	10.63	71.99	17.38	28.01
EU	12.27	6.34	81.40	18.60
TO	22.89	15.90	92.28	**43.69**
NET	-61.57	-12.11	73.68	

	US	UK	EU	FROM
US	35.72	8.80	55.47	64.28
UK	9.02	61.34	29.64	38.66
EU	8.76	6.52	84.71	15.29
TO	17.78	15.33	85.12	**39.41**
NET	-46.50	-23.33	69.83	

Table 277: CDS Dynamic Connectedness Table for Beverages and Bottling Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	8.09	4.07	87.85	91.91
EU	7.95	4.24	87.81	95.76
JP	8.12	4.05	87.83	12.17
TO	16.07	8.12	175.66	**66.61**
NET	-75.85	-87.64	163.49	

	US	EU	JP	FROM
US	8.02	4.97	87.00	91.98
EU	7.93	5.17	86.90	94.83
JP	8.05	4.96	86.99	13.01
TO	15.98	9.93	173.91	**66.60**
NET	-76.00	-84.90	160.90	

Table 278: CDS Dynamic Connectedness Table for Automotive Manufacturer Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	94.45	5.55	5.55
EU	4.09	95.91	4.09
TO	4.09	5.55	**4.82**
NET	-1.47	1.47	

	US	EU	FROM
US	94.54	5.46	5.46
EU	4.47	95.53	4.47
TO	4.47	5.46	**4.96**
NET	-0.99	0.99	

Table 279: CDS Dynamic Connectedness Table for Building Products Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	94.85	5.15	5.15
EU	90.79	9.21	90.79
TO	90.79	5.15	**47.97**
NET	85.65	-85.65	

	US	EU	FROM
US	93.70	6.30	6.30
EU	87.39	12.61	87.39
TO	87.39	6.30	**46.85**
NET	81.09	-81.09	

Table 280: CDS Dynamic Connectedness Table for Cable Media Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	9.67	7.49	82.84	90.33
EU	10.06	31.55	58.38	68.45
JP	10.75	6.00	83.24	16.76
TO	20.82	13.49	141.22	**58.51**
NET	-69.51	-54.95	124.46	

	US	EU	JP	FROM
US	13.50	5.49	81.01	86.50
EU	9.06	10.85	80.08	89.15
JP	8.69	5.12	86.19	13.81
TO	17.75	10.61	161.09	**63.15**
NET	-68.75	-78.54	147.28	

Table 281: CDS Dynamic Connectedness Table for Chemicals Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	96.24	3.76	3.76
EU	8.76	91.24	8.76
TO	8.76	3.76	**6.26**
NET	4.99	-4.99	

	US	EU	FROM
US	97.08	2.92	2.92
EU	6.03	93.97	6.03
TO	6.03	2.92	**4.48**
NET	3.11	-3.11	

Table 282: CDS Dynamic Connectedness Table for Conglomerate Diversified Mfg Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	8.76	85.79	5.45	91.24
EU	6.99	86.76	6.25	13.24
JP	5.49	10.67	83.85	16.15
TO	12.48	96.46	11.70	**40.21**
NET	-78.77	83.22	-4.45	

	US	EU	JP	FROM
US	15.82	78.40	5.79	84.18
EU	6.21	86.66	7.13	13.34
JP	4.97	8.50	86.53	13.47
TO	11.18	86.90	12.92	**37.00**
NET	-73.00	73.55	-0.55	

Table 283: CDS Dynamic Connectedness Table for Electronics Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	94.34	5.66	5.66
EU	27.22	72.78	27.22
TO	27.22	5.66	**16.44**
NET	21.57	-21.57	

	US	EU	FROM
US	93.48	6.52	6.52
EU	11.87	88.13	11.87
TO	11.87	6.52	**9.19**
NET	5.35	-5.35	

Table 284: CDS Dynamic Connectedness Table for Industrials Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	3.66	5.48	3.34	87.52	96.34
UK	3.66	5.47	3.34	87.52	94.53
EU	3.66	5.48	3.34	87.52	96.66
JP	3.66	5.48	3.34	87.52	12.48
TO	10.99	16.43	10.03	262.55	**75.00**
NET	-85.34	-78.10	-86.63	250.07	

	US	UK	EU	JP	FROM
US	3.82	5.61	3.96	86.61	96.18
UK	3.82	5.61	3.96	86.61	94.39
EU	3.82	5.61	3.96	86.61	96.04
JP	3.82	5.61	3.96	86.61	13.39
TO	11.46	16.84	11.87	259.83	**75.00**
NET	-84.72	-77.54	-84.18	246.44	

Table 285: CDS Dynamic Connectedness Table for Other Consumer Services Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	FROM
US	5.72	48.68	45.59	94.28
UK	5.72	48.69	45.59	51.31
EU	5.72	48.69	45.59	54.41
TO	11.45	97.37	91.18	**66.67**
NET	-82.83	46.06	36.77	

	US	UK	EU	FROM
US	6.87	12.59	80.54	93.13
UK	6.87	12.59	80.54	87.41
EU	6.87	12.59	80.54	19.46
TO	13.75	25.18	161.07	**66.67**
NET	-79.38	-62.23	141.61	

Table 286: CDS Dynamic Connectedness Table for Other Financials II Sector in the Crisis Period and After-Crisis Period

	US	UK	JP	FROM
US	4.93	4.90	90.18	95.07
UK	4.93	4.90	90.18	95.10
JP	4.93	4.90	90.18	9.82
TO	9.85	9.79	180.36	**66.67**
NET	-85.22	-85.31	170.54	

	US	UK	JP	FROM
US	5.33	5.33	89.34	94.67
UK	5.33	5.33	89.34	94.67
JP	5.33	5.33	89.34	10.66
TO	10.66	10.67	178.67	66.67
NET	-84.01	-84.00	168.01	

Table 287: CDS Dynamic Connectedness Table for Retail Stores Other Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	5.49	3.25	87.11	4.15	94.51
UK	4.06	3.21	88.59	4.13	96.79
EU	4.06	3.21	88.59	4.14	11.41
JP	4.15	3.21	88.52	4.12	95.88
TO	12.27	9.67	264.23	12.42	**74.65**
NET	-82.24	-87.12	252.82	-83.46	

	US	UK	EU	JP	FROM
US	5.60	3.10	87.23	4.08	94.40
UK	4.01	3.06	88.86	4.07	96.94
EU	4.01	3.06	88.86	4.07	11.14
JP	4.22	3.18	86.78	5.82	94.18
TO	12.24	9.33	262.87	12.22	**74.17**
NET	-82.16	-87.61	251.73	-81.96	

Table 288: CDS Dynamic Connectedness Table for Other Telecommunications Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	32.66	67.34	67.34
EU	5.26	94.74	5.26
TO	5.26	67.34	**36.30**
NET	-62.08	62.08	

	US	EU	FROM
US	18.54	81.46	81.46
EU	5.74	94.26	5.74
TO	5.74	81.46	**43.60**
NET	-75.73	75.73	

Table 289: CDS Dynamic Connectedness Table for Leisure Sector in the Crisis Period and After-Crisis Period

	US	UK	JP	FROM
US	93.81	2.76	3.43	6.19
UK	12.68	73.39	13.93	26.61
JP	9.14	8.01	82.85	17.15
TO	21.83	10.77	17.37	**16.65**
NET	15.63	-15.85	0.21	

	US	UK	JP	FROM
US	90.54	4.74	4.72	9.46
UK	21.97	67.84	10.19	32.16
JP	21.29	5.95	72.76	27.24
TO	43.25	10.69	14.92	**22.95**
NET	33.79	-21.47	-12.32	

Table 290: CDS Dynamic Connectedness Table for Metals & Mining Sector in the Crisis Period and After-Crisis Period

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	US	EU	FROM
US	12.90	87.10	87.10
EU	12.90	87.10	12.90
TO	12.90	87.10	**50.00**
NET	-74.20	74.20	

	US	EU	FROM
US	10.76	89.24	89.24
EU	10.76	89.24	10.76
TO	10.76	89.24	**50.00**
NET	-78.49	78.49	

Table 291: CDS Dynamic Connectedness Table for Oil & Gas Sector in the Crisis Period and After-Crisis Period

	US	UK	JP	FROM
US	5.10	83.16	11.75	94.90
UK	5.10	83.14	11.76	16.86
JP	5.14	16.18	78.68	21.32
TO	10.24	99.34	23.51	**44.36**
NET	-84.66	82.47	2.19	

	US	UK	JP	FROM
US	13.19	68.99	17.82	86.81
UK	13.20	68.96	17.84	31.04
JP	11.68	29.08	59.25	40.75
TO	24.88	98.07	35.66	**52.87**
NET	-61.93	67.02	-5.09	

Table 292: CDS Dynamic Connectedness Table for Utility Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	95.31	4.69	4.69
EU	92.19	7.81	92.19
TO	92.19	4.69	**48.44**
NET	87.50	-87.50	

	US	EU	FROM
US	95.12	4.88	4.88
EU	94.31	5.69	94.31
TO	94.31	4.88	**49.60**
NET	89.43	-89.43	

Table 293: CDS Dynamic Connectedness Table for Railroads Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	95.77	4.23	4.23
EU	5.45	94.55	5.45
TO	5.45	4.23	**4.84**
NET	1.22	-1.22	

	US	EU	FROM
US	95.14	4.86	4.86
EU	5.80	94.20	5.80
TO	5.80	4.86	**5.33**
NET	0.94	-0.94	

Table 294: CDS Dynamic Connectedness Table for Other Transportation Sector in the Crisis Period and After-Crisis Period

EQUITY

	US	UK	EU	JP	FROM
US	86.69	2.11	6.13	5.07	13.31
UK	57.75	30.83	3.89	7.53	69.17
EU	36.30	10.66	40.35	12.69	59.65
JP	65.55	17.37	7.47	9.62	90.38
TO	153.23	30.13	17.49	25.29	**58.13**
NET	146.30	-39.04	-42.16	-65.10	

	US	UK	EU	JP	FROM
US	87.87	2.24	4.36	5.53	12.13
UK	47.04	40.66	4.71	7.58	59.34
EU	38.90	10.93	38.19	11.98	61.81
JP	67.28	18.21	6.19	8.32	91.68
TO	153.23	31.38	15.26	25.09	**56.24**
NET	141.10	-27.96	-46.54	-66.59	

Table 295: Equity Dynamic Connectedness Table for Oil & Gas Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	16.13	5.59	71.17	7.11	83.87
UK	5.79	4.62	84.92	4.67	95.38
EU	18.03	6.74	66.36	8.87	33.64
JP	5.72	4.72	84.83	4.73	95.27
TO	30.08	17.05	240.93	20.65	**77.04**
NET	-54.33	-78.33	207.28	-74.62	

	US	UK	EU	JP	FROM
US	16.56	5.01	71.40	7.03	83.44
UK	5.71	4.52	85.20	4.57	95.48
EU	18.74	5.90	66.59	8.76	33.41
JP	5.62	4.61	85.17	4.60	95.40
TO	30.08	15.52	241.77	20.37	**76.93**
NET	-53.36	-79.96	208.36	-75.04	

Table 296: Equity Dynamic Connectedness Table for Basic Materials Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	68.52	2.25	23.67	5.56	31.48
UK	84.87	1.93	8.93	4.27	98.07
EU	34.93	2.42	54.70	7.95	45.30
JP	84.24	3.53	7.17	5.07	94.93
TO	216.91	8.20	39.77	17.78	**67.45**
NET	172.55	-89.87	-5.53	-77.15	

	US	UK	EU	JP	FROM
US	76.40	2.88	15.74	4.98	23.60
UK	86.40	2.42	6.53	4.66	97.58
EU	49.30	3.34	40.95	6.41	59.05
JP	81.22	4.10	7.28	7.40	92.60
TO	216.91	10.31	29.55	16.05	**68.21**
NET	193.31	-87.27	-29.50	-76.55	

Table 297: Equity Dynamic Connectedness Table for Industrials Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	80.33	7.49	7.34	4.85	19.67
UK	50.22	9.40	17.04	23.33	90.60
EU	2.49	2.29	93.37	1.85	6.63
JP	29.00	9.76	27.78	33.46	66.54
TO	77.07	19.53	52.16	30.02	**45.86**
NET	62.04	-71.06	45.53	-36.52	

	US	UK	EU	JP	FROM
US	83.14	6.56	6.63	3.68	16.86
UK	46.16	7.55	14.66	31.63	92.45
EU	4.16	2.38	91.46	2.00	8.54
JP	26.75	7.56	19.36	46.33	53.67
TO	77.07	16.50	40.65	37.31	**42.88**
NET	60.21	-75.95	32.11	-16.36	

Figure

Table 298: Equity Dynamic Connectedness Table for Consumer Goods Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	69.94	6.67	10.77	12.61	30.06
UK	3.46	85.43	6.04	5.06	14.57
EU	3.74	18.01	73.98	4.27	26.02
JP	7.41	9.55	10.13	72.91	27.09
TO	17.09	34.23	26.95	21.95	**24.43**
NET	-15.45	19.67	0.93	-5.15	

	US	UK	EU	JP	FROM
US	71.07	6.44	12.00	10.48	28.93
UK	4.48	85.61	6.07	3.84	14.39
EU	5.27	27.97	63.29	3.47	36.71
JP	7.34	4.17	8.56	79.93	20.07
TO	17.09	38.58	26.64	17.79	**25.02**
NET	-11.84	24.19	-10.07	-2.27	

Table 299: Equity Dynamic Connectedness Table for Consumer Services Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	92.17	1.72	3.07	3.03	7.83
UK	92.40	1.00	3.18	3.43	99.00
EU	92.83	1.29	3.06	2.83	96.94
JP	10.23	6.25	9.07	74.45	25.55
TO	191.06	9.25	15.32	9.29	**57.33**
NET	187.63	-89.74	-81.63	-16.26	

	US	UK	EU	JP	FROM
US	92.51	1.72	3.09	2.68	7.49
UK	92.61	0.99	3.20	3.21	99.01
EU	93.18	1.30	3.07	2.45	96.93
JP	5.26	5.92	7.90	80.92	19.08
TO	191.06	8.93	14.19	8.33	**55.63**
NET	183.57	-90.08	-82.74	-10.75	

Table 300: Equity Dynamic Connectedness Table for Healthcare Services Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	78.16	4.42	8.47	8.94	21.84
UK	52.81	8.64	26.77	11.78	91.36
EU	1.31	2.35	93.15	3.18	6.85
JP	5.76	4.29	7.02	82.93	17.07
TO	62.61	11.06	42.26	23.91	**34.28**
NET	38.04	-80.29	35.42	6.83	

	US	UK	EU	JP	FROM
US	78.82	4.39	8.23	8.56	21.18
UK	57.53	9.62	21.06	11.79	90.38
EU	1.05	2.01	94.12	2.82	5.88
JP	4.03	4.22	5.86	85.89	14.11
TO	62.61	10.63	35.14	23.17	**32.89**
NET	41.43	-79.76	29.26	9.06	

Table 301: Equity Dynamic Connectedness Table for Telecommunications Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	92.48	1.80	1.85	3.87	7.52
UK	93.24	1.93	2.00	2.83	98.07
EU	50.98	1.41	40.46	7.15	59.54
JP	2.38	5.53	4.51	87.57	12.43
TO	161.82	8.74	8.36	13.85	**44.39**
NET	139.09	-89.33	-51.18	1.42	

	US	UK	EU	JP	FROM
US	92.78	1.67	1.87	3.67	7.22
UK	92.83	1.97	2.43	2.77	98.03
EU	66.08	1.10	27.71	5.12	72.29
JP	2.91	5.16	4.72	87.21	12.79
TO	161.82	7.93	9.02	11.56	**47.58**
NET	154.60	-90.10	-63.27	-1.23	

Table 302: Equity Dynamic Connectedness Table for Utilities Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	94.76	1.72	1.49	2.04	5.24
UK	92.41	2.38	1.93	3.27	97.62
EU	88.96	2.08	5.33	3.63	94.67
JP	37.18	8.09	34.30	20.44	79.56
TO	201.74	11.88	37.71	8.94	**69.27**
NET	213.30	-85.73	-56.95	-70.62	

	US	UK	EU	JP	FROM
US	95.59	1.74	1.42	1.25	4.41
UK	92.76	2.42	2.09	2.72	97.58
EU	88.71	2.05	6.42	2.82	93.58
JP	20.27	2.77	23.13	53.83	46.17
TO	201.74	6.56	26.65	6.80	**60.44**
NET	197.33	-91.02	-66.94	-39.37	

Table 303: Equity Dynamic Connectedness Table for Financials Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	73.46	13.08	10.40	3.06	26.54
UK	13.50	10.13	73.44	2.92	89.87
EU	6.96	17.56	71.75	3.72	28.25
JP	34.53	32.83	24.01	8.63	91.37
TO	50.65	63.47	107.84	9.71	**59.01**
NET	28.46	-26.39	79.59	-81.66	

	US	UK	EU	JP	FROM
US	73.93	12.69	10.74	2.64	26.07
UK	13.57	9.54	73.81	3.08	90.46
EU	6.86	17.24	72.86	3.04	27.14
JP	30.23	30.15	28.76	10.87	89.13
TO	50.65	60.07	113.30	8.77	**58.20**
NET	24.58	-30.39	86.17	-80.36	

Table 304: Equity Dynamic Connectedness Table for Technology Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	91.63	8.37	8.37
EU	65.36	34.64	65.36
TO	65.36	8.37	**36.86**
NET	56.99	-56.99	

	US	EU	FROM
US	91.02	8.98	8.98
EU	63.89	36.11	63.89
TO	63.89	8.98	**36.44**
NET	54.92	-54.92	

Table 305: Equity Dynamic Connectedness Table for Other Oil & Gas Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	90.52	5.13	4.35	9.48
EU	1.92	91.68	6.40	8.32
JP	3.85	5.41	90.74	9.26
TO	5.77	10.54	10.75	**9.02**
NET	-3.71	2.22	1.49	

	US	EU	JP	FROM
US	91.02	5.25	3.73	8.98
EU	2.23	91.61	6.16	8.39
JP	3.65	5.37	90.97	9.03
TO	5.88	10.62	9.89	**8.80**
NET	-3.10	2.23	0.86	

Table 306: Equity Dynamic Connectedness Table for Other Utilities Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	96.45	3.55	3.55
EU	95.05	4.95	95.05
TO	95.05	3.55	**49.30**
NET	91.50	-91.50	

	US	EU	FROM
US	97.05	2.95	2.95
EU	95.43	4.57	95.43
TO	95.43	2.95	**49.19**
NET	92.48	-92.48	

Table 307: Equity Dynamic Connectedness Table for Conglomerate Diversified Mfg Sector in the Crisis Period and After-Crisis Period sector in the After Crisis period

	US	EU	JP	FROM
US	90.91	1.04	8.05	9.09
EU	90.84	0.90	8.26	99.10
JP	32.84	4.42	62.74	37.26
TO	123.68	5.46	16.31	**48.48**
NET	114.59	-93.64	-20.95	

	US	EU	JP	FROM
US	91.58	0.90	7.52	8.42
EU	91.67	0.78	7.55	99.22
JP	12.93	5.37	81.69	18.31
TO	104.61	6.27	15.07	**41.98**
NET	96.18	-92.94	-3.24	

Table 308: Equity Dynamic Connectedness Table for Automotive Manufacturer Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	FROM
US	52.95	32.86	14.19	47.05
UK	3.55	92.33	4.12	7.67
EU	1.57	85.54	12.89	87.11
TO	5.12	118.40	18.32	**47.28**
NET	-41.93	110.73	-68.80	

	US	UK	EU	FROM
US	57.78	29.04	13.17	42.22
UK	3.38	92.40	4.22	7.60
EU	1.64	85.35	13.01	86.99
TO	5.03	114.39	17.39	**45.60**
NET	-37.19	106.79	-69.60	

Table 309: Equity Dynamic Connectedness Table for Beverages & Bottling Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	18.81	71.18	10.01	81.19
EU	16.78	73.50	9.72	26.50
JP	1.49	2.71	95.80	4.20
TO	18.27	73.89	19.73	**37.30**
NET	-62.91	47.38	15.53	

	US	EU	JP	FROM
US	14.78	76.96	8.26	85.22
EU	13.02	79.02	7.95	20.98
JP	2.80	1.46	95.75	4.25
TO	15.82	78.42	16.21	**36.82**
NET	-69.39	57.44	11.96	

Table 310: Equity Dynamic Connectedness Table for Chemicals Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	84.78	3.93	5.65	5.65	15.22
UK	4.04	81.22	7.33	7.41	18.78
EU	2.98	89.27	3.91	3.84	96.09
JP	16.55	26.51	9.07	47.86	52.14
TO	23.63	119.71	22.05	16.90	**45.56**
NET	8.35	100.93	-74.04	-35.24	

	US	UK	EU	JP	FROM
US	81.03	6.93	6.13	5.91	18.97
UK	4.20	82.65	6.57	6.59	17.35
EU	3.31	88.87	3.98	3.85	96.02
JP	16.13	11.31	4.16	68.41	31.59
TO	23.63	107.11	16.86	16.34	**40.99**
NET	4.66	89.76	-79.16	-15.25	

Table 311: Equity Dynamic Connectedness Table for Other Consumer Services Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	78.16	4.42	8.47	8.94	21.84
UK	52.81	8.64	26.77	11.78	91.36
EU	1.31	2.35	93.15	3.18	6.85
JP	5.76	4.29	7.02	82.93	17.07
TO	62.61	11.06	42.26	23.91	**34.28**
NET	38.04	-80.29	35.42	6.83	

	US	UK	EU	JP	FROM
US	78.82	4.39	8.23	8.56	21.18
UK	57.53	9.62	21.06	11.79	90.38
EU	1.05	2.01	94.12	2.82	5.88
JP	4.03	4.22	5.86	85.89	14.11
TO	62.61	10.63	35.14	23.17	**32.89**
NET	41.43	-79.76	29.26	9.06	

Table 312: Equity Dynamic Connectedness Table for Other Telecommunciations Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	97.00	3.00	3.00
EU	97.30	2.70	97.30
TO	97.30	3.00	**50.15**
NET	94.30	-94.30	

	US	EU	FROM
US	97.09	2.91	2.91
EU	97.47	2.53	97.47
TO	97.47	2.91	**50.19**
NET	94.56	-94.56	

Table 313: Equity Dynamic Connectedness Table for Cable Media Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	91.65	3.45	4.90	8.35
EU	91.20	3.43	5.37	96.57
JP	76.55	7.92	15.53	84.47
TO	167.75	11.37	10.26	**63.13**
NET	159.40	-85.20	-74.20	

	US	EU	JP	FROM
US	91.70	3.57	4.73	8.30
EU	91.24	3.53	5.23	96.47
JP	64.23	9.73	26.05	73.95
TO	155.47	13.30	9.96	**59.57**
NET	147.17	-83.17	-63.99	

Table 314: Equity Dynamic Connectedness Table for Electronics Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	94.77	5.23	5.23
EU	94.67	5.33	94.67
TO	94.67	5.23	**49.95**
NET	89.45	-89.45	

	US	EU	FROM
US	94.92	5.08	5.08
EU	94.85	5.15	94.85
TO	94.85	5.08	**49.96**
NET	89.77	-89.77	

Table 315: Equity Dynamic Connectedness Table for Leisure Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	JP	FROM
US	36.72	35.04	9.87	18.37	63.28
UK	12.14	74.34	5.57	7.95	25.66
EU	6.08	82.04	5.73	6.15	94.27
JP	7.39	22.57	8.23	61.81	38.19
TO	13.87	139.65	23.67	32.48	**55.35**
NET	-37.68	113.99	-70.61	-5.71	

	US	UK	EU	JP	FROM
US	22.22	50.90	9.17	17.71	77.78
UK	5.15	83.88	4.40	6.57	16.12
EU	5.10	83.83	5.36	5.71	94.64
JP	3.62	9.87	6.61	79.91	20.09
TO	13.87	144.59	20.18	29.98	**52.16**
NET	-63.91	128.48	-74.46	9.89	

Table 316: Equity Dynamic Connectedness Table for Banking Sector in the Crisis Period and After-Crisis Period

	US	UK	EU	FROM
US	83.75	1.62	14.63	16.25
UK	84.15	1.29	14.56	98.71
EU	13.70	79.44	6.86	93.14
TO	97.85	81.06	29.18	**69.37**
NET	81.60	-17.64	-63.96	

	US	UK	EU	FROM
US	85.19	1.73	13.08	14.81
UK	85.50	1.48	13.02	98.52
EU	12.62	80.57	6.81	93.19
TO	98.12	82.29	26.10	**68.84**
NET	83.31	-16.23	-67.09	

Table 317: Equity Dynamic Connectedness Table for Other Financials Sector in the Crisis Period and After-Crisis Period

	US	UK	JP	FROM
US	95.55	1.63	2.82	4.45
UK	17.63	78.36	4.01	21.64
JP	3.26	4.30	92.44	7.56
TO	20.89	5.93	6.83	**11.22**
NET	16.44	-15.70	-0.73	

	US	UK	JP	FROM
US	96.24	1.93	1.83	3.76
UK	12.81	84.03	3.15	15.97
JP	2.22	4.13	93.65	6.35
TO	15.04	6.05	4.99	**8.69**
NET	11.28	-9.91	-1.36	

Table 318: Equity Dynamic Connectedness Table for Other Retail Stores Sector in the Crisis Period and After-Crisis Period

	US	EU	JP	FROM
US	89.86	3.33	6.81	10.14
EU	26.16	66.40	7.44	33.60
JP	6.56	4.95	88.49	11.51
TO	32.71	8.28	14.25	**18.42**
NET	22.58	-25.32	2.74	

	US	EU	JP	FROM
US	89.96	3.51	6.52	10.04
EU	23.80	69.06	7.14	30.94
JP	5.69	4.88	89.43	10.57
TO	29.49	8.40	13.66	**17.18**
NET	19.46	-22.55	3.09	

Table 319: Equity Dynamic Connectedness Table for Metals & Mining Sector in the Crisis Period and After-Crisis Period

	US	EU	FROM
US	96.10	3.90	3.90
EU	96.69	3.31	96.69
TO	96.69	3.90	**50.30**
NET	92.79	-92.79	

	US	EU	FROM
US	96.59	3.41	3.41
EU	97.10	2.90	97.10
TO	97.10	3.41	**50.25**
NET	93.68	-93.68	

Table 320: Equity Dynamic Connectedness Table for Building Products Sector in the Crisis Period and After-Crisis Period

	US	JP	FROM
US	96.05	3.95	3.95
EU	92.86	7.14	92.86
TO	92.86	3.95	**48.41**
NET	88.91	-88.91	

	US	JP	FROM
US	96.51	3.49	3.49
EU	86.76	13.24	86.76
TO	86.76	3.49	**45.13**
NET	83.27	-83.27	

Table 321: Equity Dynamic Connectedness Table for Oilfield Machinery & Products Sector in the Crisis Period and After-Crisis Period

	US	JP	FROM
US	95.11	4.89	4.89
EU	4.83	95.17	4.83
TO	4.83	4.89	**4.86**
NET	-0.06	0.06	

	US	JP	FROM
US	95.14	4.86	4.86
EU	5.00	95.00	5.00
TO	5.00	4.86	**4.93**
NET	0.14	-0.14	

Table 322: Equity Dynamic Connectedness Table for Other Transportation Sector in the Crisis Period and After-Crisis Period

	US	JP	FROM
US	84.14	15.86	15.86
EU	80.80	19.20	80.80
TO	80.80	15.86	**48.33**
NET	64.94	-64.94	

	US	JP	FROM
US	82.71	17.29	17.29
EU	79.06	20.94	79.06
TO	79.06	17.29	**48.17**
NET	61.77	-61.77	

Table 323: Equity Dynamic Connectedness Table for Machinery Sector in the Crisis Period and After-Crisis Period

Credit Default Swaps and Equity Connectedness

	LEI_CDS_US	LEI_EQ_US	LEI_CDS_EU	LEI_EQ_EU	FROM
LEI_CDS_US	13.89	16.31	59.68	10.13	86.11
LEI_EQ_US	13.89	16.31	59.68	10.13	83.69
LEI_CDS_EU	13.89	16.31	59.68	10.13	40.32
LEI_EQ_EU	13.89	16.31	59.68	10.13	89.87
TO	41.66	48.93	179.03	30.38	**75.00**
NET	-44.45	-34.76	138.71	-59.50	

	LEI_CDS_US	LEI_EQ_US	LEI_CDS_EU	LEI_EQ_EU	FROM
LEI_CDS_US	10.43	4.81	76.01	8.75	89.57
LEI_EQ_US	10.43	4.81	76.01	8.75	95.19
LEI_CDS_EU	10.43	4.81	76.01	8.75	23.99
LEI_EQ_EU	10.43	4.81	76.01	8.75	91.25
TO	31.30	14.43	228.02	26.25	**75.00**
NET	-58.27	-80.76	204.03	-65.00	

Table 324: Dynamic Connectedness Table for Leisure Sector in the Crisis Period and After-Crisis Period

	IND_CDS_US	IND_EQ_US	IND_CDS_JP	IND_EQ_JP	FROM
IND_CDS_US	84.18	4.97	5.64	5.21	15.82
IND_EQ_US	4.79	86.17	4.83	4.21	13.83
IND_CDS_JP	6.45	5.10	81.84	6.61	18.16
IND_EQ_JP	4.55	3.08	4.72	87.66	12.34
TO	15.79	13.15	15.19	16.03	**15.04**
NET	-0.03	-0.68	-2.97	3.69	

	IND_CDS_US	IND_EQ_US	IND_CDS_JP	IND_EQ_JP	FROM
IND_CDS_US	86.65	2.96	5.24	5.15	13.35
IND_EQ_US	4.85	86.29	4.92	3.94	13.71
IND_CDS_JP	3.54	5.63	85.25	5.58	14.75
IND_EQ_JP	4.45	3.77	4.75	87.04	12.96
TO	12.84	12.36	14.91	14.67	**13.69**
NET	-0.51	-1.35	0.16	1.70	

Table 325: Dynamic Connectedness Table for Industrials Sector in the Crisis Period and After-Crisis Period

	OIL_CDS_US	OIL_EQ_US	OIL_CDS_EU	OIL_EQ_EU	FROM
OIL_CDS_US	6.96	6.78	79.38	6.89	93.04
OIL_EQ_US	6.96	6.78	79.38	6.89	93.22
OIL_CDS_EU	6.96	6.78	79.38	6.89	20.62
OIL_EQ_EU	6.96	6.78	79.38	6.89	93.11
TO	20.87	20.33	238.13	20.67	**75.00**
NET	-72.18	-72.90	217.51	-72.43	

	OIL_CDS_US	OIL_EQ_US	OIL_CDS_EU	OIL_EQ_EU	FROM
OIL_CDS_US	6.29	6.26	81.12	6.34	93.71
OIL_EQ_US	6.29	6.26	81.12	6.34	93.74
OIL_CDS_EU	6.29	6.26	81.12	6.34	18.88
OIL_EQ_EU	6.29	6.26	81.12	6.34	93.66
TO	18.86	18.77	243.36	19.01	**75.00**
NET	-74.86	-74.98	224.49	-74.65	

Table 326: Dynamic Connectedness Table for Oil & Gas Sector in the Crisis Period and After-Crisis Period

	CAB_CDS_US	CAB_EQ_US	CAB_CDS_EU	CAB_EQ_EU	FROM
CAB_CDS_US	69.13	18.25	7.52	5.09	30.87
CAB_EQ_US	6.04	86.32	6.17	1.46	13.68
CAB_CDS_EU	15.42	68.80	12.62	3.16	87.38
CAB_EQ_EU	6.75	84.00	6.83	2.42	97.58
TO	28.21	171.05	20.53	9.71	**57.38**
NET	-2.66	157.37	-66.85	-87.87	

	CAB_CDS_US	CAB_EQ_US	CAB_CDS_EU	CAB_EQ_EU	FROM
CAB_CDS_US	82.26	5.51	6.73	5.50	17.74
CAB_EQ_US	6.08	86.27	6.41	1.24	13.73
CAB_CDS_EU	33.18	44.07	18.28	4.47	81.72
CAB_EQ_EU	6.93	83.63	7.16	2.28	97.72
TO	46.19	133.20	20.30	11.21	**52.72**
NET	28.45	119.47	-61.42	-86.51	

Table 327: Dynamic Connectedness Table for Cable Media Sector in the Crisis Period and After-Crisis Period

	CGM_CDS_US	CGM_EQ_US	CGM_CDS_EU	CGM_EQ_EU	FROM
CGM_CDS_US	63.61	19.38	9.46	7.56	36.39
CGM_EQ_US	12.54	69.57	9.21	8.68	30.43
CGM_CDS_EU	8.51	30.38	56.38	4.72	43.62
CGM_EQ_EU	11.38	67.28	9.11	12.23	87.77
TO	32.43	117.04	27.79	20.96	**49.55**
NET	-3.96	86.61	-15.83	-66.81	

	CGM_CDS_US	CGM_EQ_US	CGM_CDS_EU	CGM_EQ_EU	FROM
CGM_CDS_US	79.99	9.80	5.40	4.82	20.01
CGM_EQ_US	14.12	64.70	8.33	12.85	35.30
CGM_CDS_EU	8.67	9.67	76.23	5.43	23.77
CGM_EQ_EU	12.44	61.66	8.53	17.38	82.62
TO	35.22	81.13	22.26	23.10	**40.42**
NET	15.20	45.83	-1.51	-59.52	

Table 328: Dynamic Connectedness Table for Conglomerate Diversified Mfg in the Crisis Period and After-Crisis Period

	OF_CDS_US	OF_EQ_US	OF_CDS_UK	OF_EQ_UK	OF_CDS_EU	OF_EQ_EU	FROM
OF_CDS_US	5.26	3.54	67.46	4.61	13.89	5.25	94.74
OF_EQ_US	5.26	3.54	67.46	4.61	13.88	5.25	96.46
OF_CDS_UK	5.26	3.54	67.46	4.61	13.88	5.25	32.54
OF_EQ_UK	5.26	3.54	67.47	4.61	13.88	5.25	95.39
OF_CDS_EU	5.26	3.54	67.46	4.61	13.89	5.25	86.11
OF_EQ_EU	5.26	3.54	67.47	4.61	13.88	5.25	94.75
TO	26.28	17.68	337.32	23.05	69.41	26.25	**83.33**
NET	-68.46	-78.78	304.78	-72.34	-16.70	-68.50	

	OF_CDS_US	OF_EQ_US	OF_CDS_UK	OF_EQ_UK	OF_CDS_EU	OF_EQ_EU	FROM
OF_CDS_US	6.34	5.72	31.80	5.96	43.78	6.39	93.66
OF_EQ_US	6.34	5.72	31.81	5.96	43.78	6.39	94.28
OF_CDS_UK	6.34	5.72	31.81	5.96	43.78	6.39	68.19
OF_EQ_UK	6.34	5.72	31.81	5.96	43.78	6.39	94.04
OF_CDS_EU	6.34	5.72	31.80	5.96	43.78	6.39	56.22
OF_EQ_EU	6.34	5.72	31.82	5.96	43.77	6.39	93.61
TO	31.68	28.60	159.05	29.81	218.89	31.97	**83.33**
NET	-61.98	-65.68	90.86	-64.23	162.67	-61.64	

Table 329: Dynamic Connectedness Table for Other Financials II Sector in the Crisis Period and After-Crisis Period

	OTRSP_CDS_US	OTRSP_EQ_US	OTRSP_CDS_JP	OTRSP_EQ_JP	FROM
OTRSP_CDS_US	77.74	9.34	7.86	5.06	22.26
OTRSP_EQ_US	7.56	83.71	5.20	3.54	16.29
OTRSP_CDS_JP	7.38	4.37	63.44	24.81	36.56
OTRSP_EQ_JP	7.63	2.70	7.02	82.65	17.35
TO	22.57	16.41	20.08	33.41	**23.12**
NET	0.30	0.12	-16.48	16.06	

	OTRSP_CDS_US	OTRSP_EQ_US	OTRSP_CDS_JP	OTRSP_EQ_JP	FROM
OTRSP_CDS_US	86.68	4.00	4.78	4.53	13.32
OTRSP_EQ_US	9.38	80.67	4.95	5.00	19.33
OTRSP_CDS_JP	5.85	4.82	69.25	20.08	30.75
OTRSP_EQ_JP	6.48	2.71	5.76	85.05	14.95
TO	21.71	11.53	15.50	29.61	**19.59**
NET	8.39	-7.80	-15.25	14.66	

Table 330: Dynamic Connectedness Table for Transportation Sector in the Crisis Period and After-Crisis Period

	UT_CDS_US	UT_EQ_US	UT_CDS_EU	UT_EQ_EU	UT_CDS_JP	UT_EQ_JP	FROM
UT_CDS_US	6.91	8.06	73.24	2.33	3.98	5.49	93.09
UT_EQ_US	6.13	76.15	5.86	2.07	4.63	5.15	23.85
UT_CDS_EU	6.55	7.83	73.28	1.89	4.62	5.82	26.72
UT_EQ_EU	15.71	8.54	14.81	47.28	5.95	7.71	52.72
UT_CDS_JP	5.16	3.90	9.23	2.34	75.03	4.33	24.97
UT_EQ_JP	5.38	3.66	5.17	4.18	4.22	77.38	22.62
TO	38.94	32.00	108.32	12.81	23.41	28.50	**40.66**
NET	-54.15	8.15	81.59	-39.91	-1.56	5.88	

	UT_CDS_US	UT_EQ_US	UT_CDS_EU	UT_EQ_EU	UT_CDS_JP	UT_EQ_JP	FROM
UT_CDS_US	9.63	9.37	67.72	3.72	5.38	4.17	90.37
UT_EQ_US	5.67	77.57	5.34	2.59	4.26	4.57	22.43
UT_CDS_EU	6.30	8.40	73.44	3.06	4.53	4.28	26.56
UT_EQ_EU	20.54	11.27	19.39	35.08	6.82	6.91	64.92
UT_CDS_JP	5.16	4.30	17.89	2.48	65.87	4.30	34.13
UT_EQ_JP	4.77	3.52	4.57	4.33	4.10	78.71	21.29
TO	42.43	36.87	114.91	16.18	25.08	24.23	**43.28**
NET	-47.94	14.44	88.34	-48.74	-9.04	2.94	

Table 331: Dynamic Connectedness Table for Utilities Sector in the Crisis Period and After-Crisis Period

	RET_CDS_US	RET_EQ_US	RET_CDS_UK	RET_EQ_UK	RET_CDS_JP	RET_EQ_JP	FROM
RET_CDS_US	6.44	6.12	7.09	7.94	64.18	8.24	93.56
RET_EQ_US	11.25	49.77	4.78	13.29	11.64	9.25	50.23
RET_CDS_UK	6.34	5.75	76.15	3.74	3.43	4.60	23.85
RET_EQ_UK	9.95	8.07	4.50	60.28	8.80	8.40	39.72
RET_CDS_JP	7.16	3.78	6.30	7.77	65.25	9.73	34.75
RET_EQ_JP	5.84	3.30	3.31	4.85	5.35	77.35	22.65
TO	40.54	27.02	25.99	37.59	93.40	40.23	**44.13**
NET	-53.02	-23.21	2.13	-2.13	58.65	17.57	

	RET_CDS_US	RET_EQ_US	RET_CDS_UK	RET_EQ_UK	RET_CDS_JP	RET_EQ_JP	FROM
RET_CDS_US	19.88	5.48	6.20	6.65	55.36	6.45	80.12
RET_EQ_US	10.52	45.53	5.38	17.57	12.49	8.51	54.47
RET_CDS_UK	6.32	5.64	78.35	2.46	3.29	3.95	21.65
RET_EQ_UK	8.21	9.53	6.25	60.12	7.82	8.08	39.88
RET_CDS_JP	20.63	4.85	5.88	6.65	55.06	6.93	44.94
RET_EQ_JP	4.70	4.20	3.63	5.02	4.68	77.77	22.23
TO	50.38	29.70	27.34	38.34	83.63	33.91	**43.88**
NET	-29.75	-24.77	5.69	-1.54	38.69	11.68	

Table 332: Dynamic Connectedness Table for Other Retail Sector in the Crisis Period and After-Crisis Period

	MM_CDS_US	MM_EQ_US	MM_CDS_EU	MM_EQ_EU	MM_CDS_JP	MM_EQ_JP	FROM
MM_CDS_US	62.66	5.17	16.59	4.07	4.97	6.54	37.34
MM_EQ_US	4.63	78.46	4.98	3.32	3.55	5.05	21.54
MM_CDS_EU	8.79	8.46	64.67	6.52	4.08	7.49	35.33
MM_EQ_EU	4.90	78.30	4.96	3.08	3.73	5.04	96.92
MM_CDS_JP	5.25	3.96	7.03	2.69	76.70	4.36	23.30
MM_EQ_JP	9.22	5.22	11.25	2.69	3.76	67.85	32.15
TO	32.79	101.11	44.81	19.30	20.09	28.48	**41.10**
NET	-4.55	79.57	9.48	-77.63	-3.21	-3.67	

	MM_CDS_US	MM_EQ_US	MM_CDS_EU	MM_EQ_EU	MM_CDS_JP	MM_EQ_JP	FROM
MM_CDS_US	50.91	6.30	24.70	5.95	5.74	6.40	49.09
MM_EQ_US	13.11	63.48	6.87	4.91	5.18	6.46	36.52
MM_CDS_EU	9.51	7.26	66.65	6.50	3.76	6.33	33.35
MM_EQ_EU	12.51	64.43	6.72	4.66	5.27	6.41	95.34
MM_CDS_JP	11.54	4.71	16.82	2.57	59.56	4.79	40.44
MM_EQ_JP	9.44	6.01	21.39	4.59	4.74	53.81	46.19
TO	56.11	88.72	76.50	24.52	24.69	30.39	**50.15**
NET	7.02	52.20	43.14	-70.82	-15.75	-15.80	

Table 333: Dynamic Connectedness Table for Metals & Mining Sector in the Crisis Period and After-Crisis Period

	ELEC_CDS_US	ELEC_EQ_US	ELEC_CDS_EU	ELEC_EQ_EU	ELEC_CDS_JP	ELEC_EQ_JP	FROM
ELEC_CDS_US	16.30	11.27	52.46	6.52	9.21	4.24	83.70
ELEC_EQ_US	7.42	68.27	6.95	4.13	7.88	5.35	31.73
ELEC_CDS_EU	6.50	41.09	35.59	4.78	6.20	5.84	64.41
ELEC_EQ_EU	6.36	71.47	6.47	5.52	6.88	3.30	94.48
ELEC_CDS_JP	5.46	8.27	7.44	6.50	64.35	7.98	35.65
ELEC_EQ_JP	10.55	44.52	9.82	5.64	11.87	17.60	82.40
TO	36.28	176.62	83.15	27.57	42.04	26.70	**65.39**
NET	-47.42	144.89	18.75	-66.91	6.39	-55.70	

	ELEC_CDS_US	ELEC_EQ_US	ELEC_CDS_EU	ELEC_EQ_EU	ELEC_CDS_JP	ELEC_EQ_JP	FROM
ELEC_CDS_US	35.14	4.41	38.05	7.94	9.91	4.55	64.86
ELEC_EQ_US	8.46	62.84	8.76	4.42	9.74	5.78	37.16
ELEC_CDS_EU	6.87	31.24	44.72	5.05	6.01	6.12	55.28
ELEC_EQ_EU	6.56	68.79	7.58	6.14	8.06	2.86	93.86
ELEC_CDS_JP	3.74	4.17	7.00	6.44	71.54	7.10	28.46
ELEC_EQ_JP	9.61	26.62	11.04	5.73	12.80	34.20	65.80
TO	35.24	135.23	72.43	29.57	46.52	26.41	**57.57**
NET	-29.61	98.08	17.15	-64.28	18.06	-39.39	

Table 334: Dynamic Connectedness Table for Electronics Sector in the Crisis Period and After-Crisis Period

	CHEM_CDS_US	CHEM_EQ_US	CHEM_CDS_EU	CHEM_EQ_EU	CHEM_CDS_JP	CHEM_EQ_JP	FROM
CHEM_CDS_US	7.72	3.20	2.55	6.66	75.63	4.23	92.28
CHEM_EQ_US	14.15	24.30	4.58	3.38	45.74	7.86	75.70
CHEM_CDS_EU	8.97	4.12	17.38	5.17	60.20	4.17	82.62
CHEM_EQ_EU	10.76	4.60	5.18	64.76	8.52	6.18	35.24
CHEM_CDS_JP	8.69	3.16	2.45	6.25	75.43	4.01	24.57
CHEM_EQ_JP	8.25	3.18	6.83	3.97	34.61	43.16	56.84
TO	50.81	18.25	21.60	25.44	224.70	26.45	**61.21**
NET	-41.46	-57.45	-61.02	-9.80	200.13	-30.39	

	CHEM_CDS_US	CHEM_EQ_US	CHEM_CDS_EU	CHEM_EQ_EU	CHEM_CDS_JP	CHEM_EQ_JP	FROM
CHEM_CDS_US	9.85	4.90	3.90	5.89	71.58	3.89	90.15
CHEM_EQ_US	8.09	7.32	4.45	4.06	71.38	4.71	92.68
CHEM_CDS_EU	5.67	4.23	7.97	5.13	73.39	3.61	92.03
CHEM_EQ_EU	11.45	2.52	6.01	54.01	20.84	5.17	45.99
CHEM_CDS_JP	5.37	4.51	3.59	5.41	77.62	3.49	22.38
CHEM_EQ_JP	5.36	4.00	4.16	4.39	52.94	29.15	70.85
TO	35.93	20.17	22.12	24.88	290.12	20.86	**69.01**
NET	-54.22	-72.51	-69.91	-21.11	267.74	-49.98	

Table 335: Dynamic Connectedness Table for Chemicals Sector in the Crisis Period and After-Crisis Period

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	CG_CDS_US	CG_EQ_US	CG_CDS_UK	CG_EQ_UK	CG_CDS_EU	CG_EQ_EU	FROM
CG_CDS_US	74.00	4.53	6.29	4.22	6.09	4.86	26.00
CG_EQ_US	14.42	47.60	11.01	5.85	12.28	8.84	52.40
CG_CDS_UK	3.43	2.03	90.70	0.95	1.50	1.39	9.30
CG_EQ_UK	12.78	44.16	11.17	13.57	9.62	8.69	86.43
CG_CDS_EU	8.68	3.29	6.64	4.21	71.05	6.12	28.95
CG_EQ_EU	8.23	3.12	7.26	3.58	7.32	70.49	29.51
TO	47.53	57.13	42.37	18.82	36.82	29.91	**38.76**
NET	21.53	4.73	33.08	-67.61	7.87	0.40	

	CG_CDS_US	CG_EQ_US	CG_CDS_UK	CG_EQ_UK	CG_CDS_EU	CG_EQ_EU	FROM
CG_CDS_US	76.68	4.65	5.95	1.62	5.88	5.22	23.32
CG_EQ_US	14.06	49.72	11.57	4.88	11.51	8.25	50.28
CG_CDS_UK	5.42	4.00	80.98	1.70	4.33	3.57	19.02
CG_EQ_UK	12.74	40.42	11.39	16.09	9.95	9.42	83.91
CG_CDS_EU	9.14	4.65	9.17	5.14	63.75	8.16	36.25
CG_EQ_EU	8.88	5.04	7.69	5.10	7.72	65.56	34.44
TO	50.24	58.76	45.76	18.45	39.39	34.63	**41.21**
NET	26.92	8.48	26.74	-65.46	3.14	0.19	

Table 336: Dynamic Connectedness Table for Consumer Goods Sector in the Crisis Period and After-Crisis Period

	BEV_CDS_US	BEV_EQ_US	BEV_CDS_UK	BEV_EQ_UK	BEV_CDS_EU	BEV_EQ_EU	FROM
BEV_CDS_US	75.00	5.57	4.74	3.41	4.00	7.28	25.00
BEV_EQ_US	11.56	3.48	10.51	53.72	5.72	15.02	96.52
BEV_CDS_UK	14.26	9.78	31.32	22.94	11.48	10.22	68.68
BEV_EQ_UK	10.26	2.45	7.32	62.02	6.56	11.40	37.98
BEV_CDS_EU	9.99	2.15	10.40	5.61	64.27	7.58	35.73
BEV_EQ_EU	5.99	4.48	6.06	72.37	4.77	6.34	93.66
TO	52.06	24.43	39.03	158.04	32.52	51.49	**59.59**
NET	27.06	-72.09	-29.65	120.07	-3.22	-42.17	

	BEV_CDS_US	BEV_EQ_US	BEV_CDS_UK	BEV_EQ_UK	BEV_CDS_EU	BEV_EQ_EU	FROM
BEV_CDS_US	71.07	5.43	5.48	3.94	7.53	6.55	28.93
BEV_EQ_US	10.11	3.19	11.69	53.76	8.88	12.36	96.81
BEV_CDS_UK	14.57	9.74	18.76	33.78	12.65	10.50	81.24
BEV_EQ_UK	8.78	2.16	8.38	63.14	8.43	9.11	36.86
BEV_CDS_EU	9.22	2.32	11.50	5.78	63.41	7.77	36.59
BEV_EQ_EU	5.80	4.84	6.58	70.95	5.15	6.67	93.33
TO	48.49	24.49	43.64	168.22	42.64	46.29	**62.29**
NET	19.56	-72.32	-37.61	131.35	6.05	-47.04	

Table 337: Dynamic Connectedness Table for Beverages & Bottling Sector in the Crisis Period and After-Crisis Period

	BNK_CDS_US	BNK_EQ_US	BNK_CDS_UK	BNK_EQ_UK	BNK_CDS_EU	BNK_EQ_EU	BNK_CDS_JP	BNK_EQ_JP	FROM
BNK_CDS_US	25.03	7.42	14.06	3.69	13.11	10.28	13.83	12.58	74.97
BNK_EQ_US	1.84	26.58	10.34	23.95	9.42	8.15	10.42	9.30	73.42
BNK_CDS_UK	4.54	14.01	7.63	8.77	9.30	20.14	12.82	22.80	92.37
BNK_EQ_UK	3.05	9.06	15.62	17.79	12.92	13.13	15.59	12.86	82.21
BNK_CDS_EU	2.04	4.48	6.29	3.00	62.91	6.15	7.03	8.10	37.09
BNK_EQ_EU	4.63	5.28	6.56	57.93	6.42	6.25	6.59	6.35	93.75
BNK_CDS_JP	5.99	6.96	14.86	17.10	15.15	12.45	15.79	11.70	84.21
BNK_EQ_JP	17.62	7.50	11.96	4.00	11.88	9.92	11.90	25.21	74.79
TO	39.72	54.71	79.68	118.43	78.20	80.22	78.17	83.68	**76.60**
NET	-35.25	-18.71	-12.68	36.22	41.11	-13.54	-6.04	8.89	

	BNK_CDS_US	BNK_EQ_US	BNK_CDS_UK	BNK_EQ_UK	BNK_CDS_EU	BNK_EQ_EU	BNK_CDS_JP	BNK_EQ_JP	FROM
BNK_CDS_US	22.25	8.24	13.86	2.77	15.35	10.61	14.77	12.15	77.75
BNK_EQ_US	2.89	17.51	9.75	26.95	11.92	9.37	12.03	9.59	82.49
BNK_CDS_UK	3.78	11.17	19.91	7.49	26.41	12.36	5.75	13.14	80.09
BNK_EQ_UK	3.51	4.42	14.90	17.45	16.86	14.36	16.95	11.56	82.55
BNK_CDS_EU	3.70	5.35	7.82	4.32	62.82	5.19	5.05	5.76	37.18
BNK_EQ_EU	4.55	4.83	5.90	58.85	7.11	6.16	6.56	6.05	93.84
BNK_CDS_JP	6.32	7.70	10.52	9.71	18.54	9.72	29.37	8.14	70.63
BNK_EQ_JP	7.25	7.39	8.48	4.13	8.16	7.93	9.28	47.37	52.63
TO	31.99	49.10	71.22	114.21	104.34	69.52	70.40	66.38	72.15
NET	-45.76	-33.39	-8.87	31.66	67.15	-24.31	-0.23	13.75	

Table 338: Dynamic Connectedness Table for Banking Sector in the Crisis Period and After-Crisis Period

	CS_CDS_US	CS_EQ_US	CS_CDS_UK	CS_EQ_UK	CS_CDS_EU	CS_EQ_EU	CS_CDS_JP	CS_EQ_JP	FROM
CS_CDS_US	66.20	3.52	3.36	4.83	10.79	2.77	4.83	3.69	33.80
CS_EQ_US	66.31	3.52	3.35	4.82	10.70	2.78	4.82	3.70	96.48
CS_CDS_UK	66.15	3.53	3.36	4.83	10.83	2.77	4.83	3.69	96.64
CS_EQ_UK	66.36	3.52	3.34	4.82	10.66	2.78	4.82	3.70	95.18
CS_CDS_EU	66.36	3.52	3.34	4.82	10.66	2.78	4.81	3.69	89.34
CS_EQ_EU	66.30	3.52	3.36	4.80	10.73	2.75	4.83	3.70	97.25
CS_CDS_JP	66.38	3.52	3.34	4.83	10.64	2.78	4.81	3.70	95.19
CS_EQ_JP	66.04	3.53	3.37	4.84	10.92	2.76	4.84	3.69	96.31
TO	463.91	24.66	23.46	33.78	75.28	19.43	33.79	25.87	**87.52**
NET	430.11	-71.82	-73.18	-61.40	-14.05	-77.81	-61.40	-70.44	

	CS_CDS_US	CS_EQ_US	CS_CDS_UK	CS_EQ_UK	CS_CDS_EU	CS_EQ_EU	CS_CDS_JP	CS_EQ_JP	FROM
CS_CDS_US	65.61	4.92	4.41	5.69	6.28	4.51	4.30	4.28	34.39
CS_EQ_US	65.67	4.92	4.40	5.68	6.23	4.52	4.29	4.29	95.08
CS_CDS_UK	65.58	4.93	4.41	5.69	6.30	4.51	4.31	4.28	95.59
CS_EQ_UK	65.69	4.92	4.40	5.68	6.20	4.52	4.29	4.30	94.32
CS_CDS_EU	65.69	4.92	4.39	5.68	6.20	4.52	4.29	4.29	93.80
CS_EQ_EU	65.65	4.93	4.41	5.68	6.24	4.50	4.30	4.30	95.50
CS_CDS_JP	65.66	4.94	4.40	5.70	6.19	4.53	4.28	4.31	95.72
CS_EQ_JP	65.51	4.93	4.42	5.70	6.35	4.51	4.31	4.27	95.73
TO	459.45	34.50	30.82	39.81	43.79	31.61	30.09	30.04	**87.51**
NET	425.06	-60.58	-64.77	-54.50	-50.00	-63.88	-65.63	-65.68	

Table 339: Dynamic Connectedness Table for Consumer Services Sector in the Crisis Period and After-Crisis Period

	OCS_CDS_US	OCS_EQ_US	OCS_CDS_UK	OCS_EQ_UK	OCS_CDS_EU	OCS_EQ_EU	OCS_CDS_JP	OCS_EQ_JP	FROM
OCS_CDS_US	3.75	2.99	4.57	3.39	3.68	4.42	72.99	4.22	96.25
OCS_EQ_US	3.75	2.99	4.57	3.39	3.68	4.42	72.99	4.22	97.01
OCS_CDS_UK	3.75	2.99	4.57	3.39	3.68	4.42	72.99	4.22	95.43
OCS_EQ_UK	3.75	2.99	4.57	3.39	3.68	4.42	72.99	4.22	96.61
OCS_CDS_EU	3.75	2.99	4.57	3.39	3.68	4.42	72.99	4.22	96.32
OCS_EQ_EU	3.75	2.99	4.57	3.39	3.68	4.42	72.99	4.22	95.58
OCS_CDS_JP	3.75	2.99	4.57	3.39	3.68	4.42	72.99	4.22	27.01
OCS_EQ_JP	3.75	2.99	4.57	3.39	3.68	4.42	72.99	4.22	95.78
TO	26.22	20.96	31.96	23.72	25.74	30.91	510.96	29.53	**87.50**
NET	-70.03	-76.05	-63.47	-72.89	-70.58	-64.68	483.96	-66.26	

	OCS_CDS_US	OCS_EQ_US	OCS_CDS_UK	OCS_EQ_UK	OCS_CDS_EU	OCS_EQ_EU	OCS_CDS_JP	OCS_EQ_JP	FROM
OCS_CDS_US	3.40	3.75	4.36	3.76	3.50	4.26	72.87	4.09	96.60
OCS_EQ_US	3.41	3.75	4.36	3.76	3.50	4.26	72.87	4.09	96.25
OCS_CDS_UK	3.41	3.75	4.36	3.76	3.50	4.26	72.87	4.09	95.64
OCS_EQ_UK	3.41	3.75	4.36	3.76	3.50	4.26	72.87	4.09	96.24
OCS_CDS_EU	3.41	3.75	4.36	3.76	3.50	4.26	72.87	4.09	96.50
OCS_EQ_EU	3.41	3.75	4.36	3.76	3.50	4.26	72.87	4.09	95.74
OCS_CDS_JP	3.41	3.75	4.36	3.76	3.50	4.26	72.87	4.09	27.13
OCS_EQ_JP	3.41	3.75	4.36	3.76	3.50	4.26	72.87	4.09	95.91
TO	23.84	26.26	30.54	26.31	24.51	29.80	510.10	28.65	**87.50**
NET	-72.76	-69.99	-65.10	-69.93	-71.99	-65.94	482.97	-67.26	

Table 340: Dynamic Connectedness Table for Other Consumer Services Sector in the Crisis Period and After-Crisis Period

	OF_CDS_US	OF_EQ_US	OF_CDS_UK	OF_EQ_UK	OF_CDS_EU	OF_EQ_EU	OF_CDS_JP	OF_EQ_JP	FROM
OF_CDS_US	3.82	1.64	80.85	1.58	3.30	1.25	3.84	3.72	96.18
OF_EQ_US	3.82	1.64	80.84	1.58	3.30	1.25	3.84	3.72	98.36
OF_CDS_UK	3.82	1.63	80.84	1.60	3.34	1.23	3.83	3.72	19.16
OF_EQ_UK	3.82	1.63	80.84	1.60	3.34	1.22	3.83	3.72	98.40
OF_CDS_EU	3.82	1.63	80.85	1.59	3.32	1.24	3.83	3.72	96.68
OF_EQ_EU	3.82	1.63	80.84	1.60	3.34	1.23	3.83	3.72	98.77
OF_CDS_JP	3.82	1.63	80.84	1.60	3.34	1.23	3.83	3.72	96.17
OF_EQ_JP	3.82	1.63	80.84	1.60	3.34	1.23	3.83	3.72	96.28
TO	26.73	11.42	565.90	11.14	23.29	8.65	26.83	26.05	**87.50**
NET	-69.46	-86.94	546.74	-87.26	-73.38	-90.12	-69.34	-70.23	

	OF_CDS_US	OF_EQ_US	OF_CDS_UK	OF_EQ_UK	OF_CDS_EU	OF_EQ_EU	OF_CDS_JP	OF_EQ_JP	FROM
OF_CDS_US	4.49	3.13	70.05	2.84	8.20	2.29	4.59	4.42	95.51
OF_EQ_US	4.50	3.12	70.07	2.83	8.19	2.28	4.59	4.42	96.88
OF_CDS_UK	4.49	3.08	70.49	2.83	7.92	2.23	4.56	4.40	29.51
OF_EQ_UK	4.48	3.07	70.57	2.83	7.88	2.21	4.56	4.40	97.17
OF_CDS_EU	4.49	3.10	70.34	2.83	8.02	2.25	4.57	4.41	91.98
OF_EQ_EU	4.48	3.07	70.56	2.83	7.88	2.21	4.56	4.40	97.79
OF_CDS_JP	4.49	3.08	70.50	2.83	7.92	2.22	4.56	4.40	95.44
OF_EQ_JP	4.48	3.08	70.54	2.83	7.90	2.22	4.56	4.40	95.60
TO	31.41	21.61	492.62	19.80	55.89	15.69	32.00	30.84	**87.48**
NET	-64.10	-75.27	463.11	-77.37	-36.09	-82.09	-63.44	-64.76	

Table 341: Dynamic Connectedness Table for Other Financials Sector in the Crisis Period and After-Crisis Period

	TELE_CDS_US	TELE_EQ_US	TELE_CDS_UK	TELE_EQ_UK	TELE_CDS_EU	TELE_EQ_EU	TELE_CDS_JP	TELE_EQ_JP	FROM
TELE_CDS_US	2.69	2.45	2.53	2.87	81.69	2.12	3.01	2.65	97.31
TELE_EQ_US	2.71	2.56	2.58	2.91	81.36	2.13	3.06	2.68	97.44
TELE_CDS_UK	2.68	2.45	2.53	2.87	81.70	2.11	3.01	2.65	97.47
TELE_EQ_UK	2.89	7.10	2.93	3.16	75.60	2.11	3.37	2.83	96.84
TELE_CDS_EU	2.68	2.45	2.53	2.87	81.70	2.12	3.01	2.65	18.30
TELE_EQ_EU	2.82	2.61	2.73	3.05	80.58	2.21	3.22	2.79	97.79
TELE_CDS_JP	2.70	2.47	2.57	2.90	81.60	2.09	3.00	2.67	97.00
TELE_EQ_JP	2.69	2.43	2.54	2.88	81.66	2.11	3.03	2.66	97.34
TO	19.17	21.95	18.41	20.35	564.20	14.79	21.70	18.91	**87.44**
NET	-78.14	-75.48	-79.06	-76.49	545.90	-83.00	-75.30	-78.42	

	TELE_CDS_US	TELE_EQ_US	TELE_CDS_UK	TELE_EQ_UK	TELE_CDS_EU	TELE_EQ_EU	TELE_CDS_JP	TELE_EQ_JP	FROM
TELE_CDS_US	2.78	2.69	2.56	2.98	80.89	2.43	2.98	2.70	97.22
TELE_EQ_US	2.78	2.64	2.60	3.02	80.79	2.44	3.01	2.72	97.36
TELE_CDS_UK	2.75	2.69	2.56	2.98	80.91	2.42	2.98	2.70	97.44
TELE_EQ_UK	3.06	3.94	2.92	3.30	78.28	2.45	3.19	2.86	96.70
TELE_CDS_EU	2.75	2.69	2.56	2.98	80.91	2.43	2.98	2.70	19.09
TELE_EQ_EU	2.88	2.65	2.71	3.13	80.46	2.30	3.08	2.79	97.70
TELE_CDS_JP	2.80	2.74	2.62	3.04	80.39	2.42	3.23	2.75	96.77
TELE_EQ_JP	2.76	2.67	2.57	2.99	80.89	2.42	2.99	2.71	97.29
TO	19.78	20.07	18.54	21.12	562.61	17.02	21.21	19.22	**87.45**
NET	-77.44	-77.29	-78.90	-75.58	543.52	-80.69	-75.56	-78.06	

Table 342: Dynamic Connectedness Table for Telecommunications Sector in the Crisis Period and After-Crisis Period

	OTELE_CDS_US	OTELE_EQ_US	OTELE_CDS_UK	OTELE_EQ_UK	OTELE_CDS_EU	OTELE_EQ_EU	OTELE_CDS_JP	OTELE_EQ_JP	FROM
OTELE_CDS_US	2.70	2.21	2.42	2.61	82.58	1.91	2.95	2.62	97.30
OTELE_EQ_US	2.76	2.33	2.48	2.62	82.25	1.91	3.02	2.63	97.67
OTELE_CDS_UK	2.70	2.21	2.42	2.61	82.58	1.91	2.95	2.62	97.58
OTELE_EQ_UK	2.97	2.88	2.68	2.65	81.07	1.93	3.22	2.60	97.35
OTELE_CDS_EU	2.70	2.21	2.42	2.61	82.58	1.91	2.95	2.62	17.42
OTELE_EQ_EU	2.80	2.23	2.54	2.66	82.26	1.85	3.06	2.60	98.15
OTELE_CDS_JP	2.70	2.24	2.45	2.63	82.51	1.91	2.92	2.64	97.08
OTELE_EQ_JP	2.71	2.19	2.44	2.61	82.54	1.91	2.97	2.62	97.38
TO	19.33	16.17	17.42	18.36	575.80	13.38	21.12	18.33	**87.49**
NET	-77.96	-81.50	-80.16	-78.99	558.38	-84.77	-75.95	-79.04	

	OTELE_CDS_US	OTELE_EQ_US	OTELE_CDS_UK	OTELE_EQ_UK	OTELE_CDS_EU	OTELE_EQ_EU	OTELE_CDS_JP	OTELE_EQ_JP	FROM
OTELE_CDS_US	2.76	2.48	2.46	2.78	81.70	2.24	2.91	2.67	97.24
OTELE_EQ_US	2.80	2.45	2.51	2.80	81.59	2.24	2.95	2.66	97.55
OTELE_CDS_UK	2.75	2.49	2.46	2.78	81.71	2.24	2.91	2.67	97.54
OTELE_EQ_UK	2.98	2.42	2.67	2.86	81.13	2.28	3.05	2.60	97.14
OTELE_CDS_EU	2.75	2.48	2.46	2.78	81.71	2.24	2.91	2.67	18.29
OTELE_EQ_EU	2.84	2.49	2.57	2.84	81.54	2.14	2.95	2.63	97.86
OTELE_CDS_JP	2.78	2.54	2.51	2.83	81.39	2.26	2.98	2.71	97.02
OTELE_EQ_JP	2.76	2.47	2.47	2.78	81.68	2.24	2.92	2.67	97.33
TO	19.65	17.38	17.65	19.59	570.75	15.74	20.61	18.60	**87.50**
NET	-77.59	-80.17	-79.89	-77.55	552.46	-82.12	-76.41	-78.73	

Table 343: Dynamic Connectedness Table for Other Telecommunications Sector in the Crisis Period and After-Crisis Period

Appendix G

G.1 Dynamic Conditional Correlation GARCH Model

Credit Default Swap

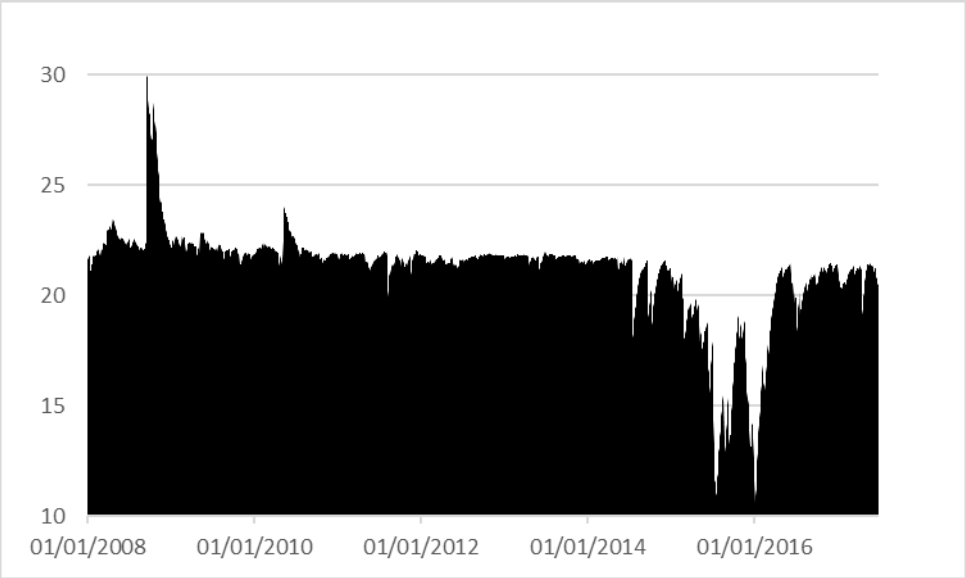


Figure 306: Total Average Dynamic Connectedness Banks

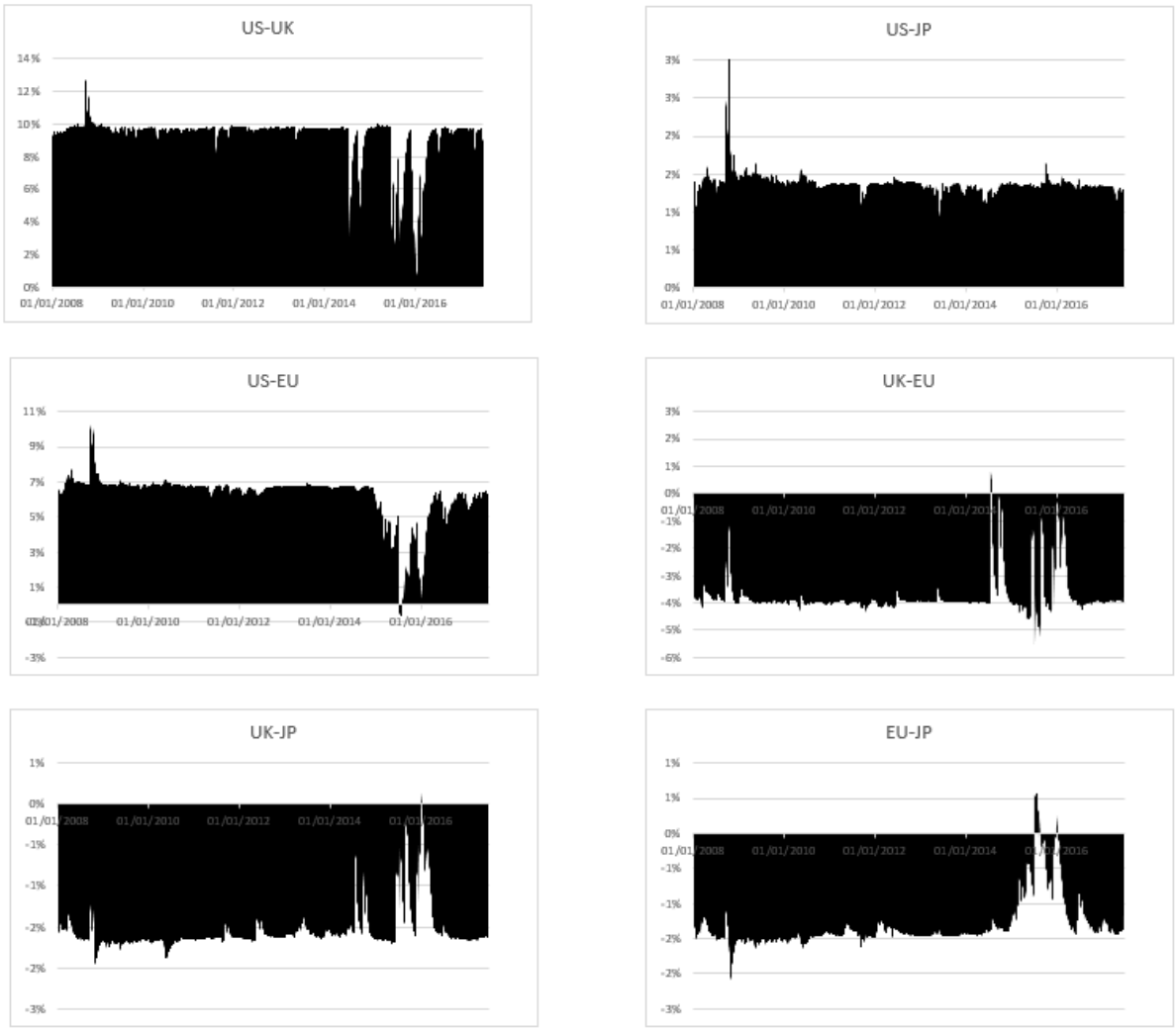


Figure 307: Net Pairwise Directional Connectedness Banks

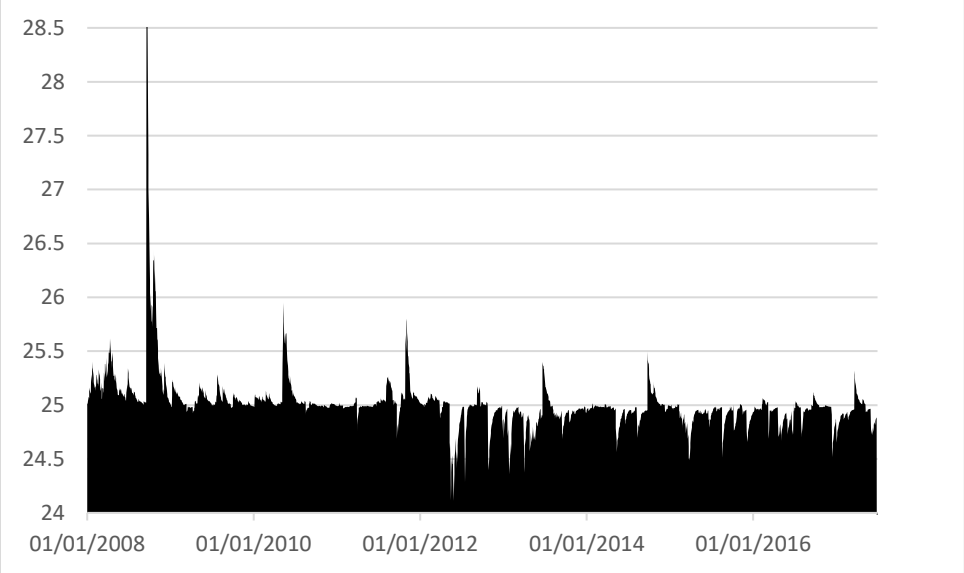


Figure 308: Total Average Dynamic Connectedness Consumer Goods

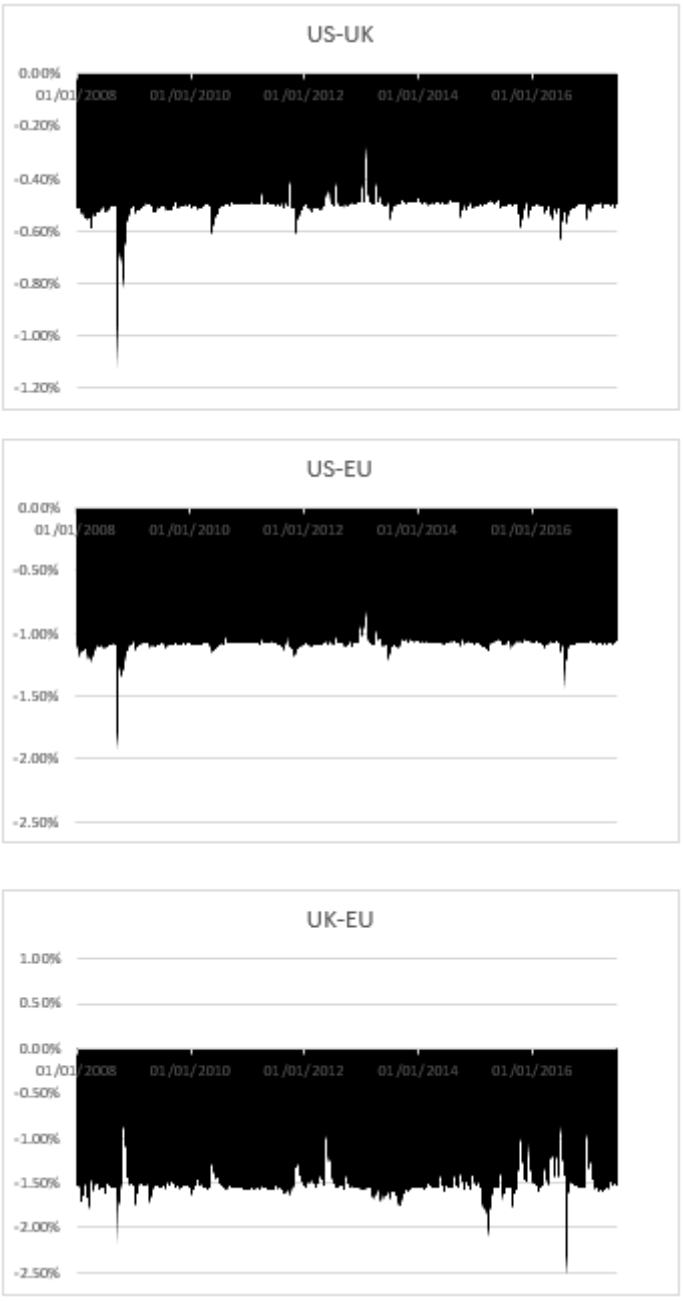


Figure 309: Net Pairwise Directional Connectedness Consumer Goods

Figure 310: Total Average Dynamic Connectedness Consumer Services

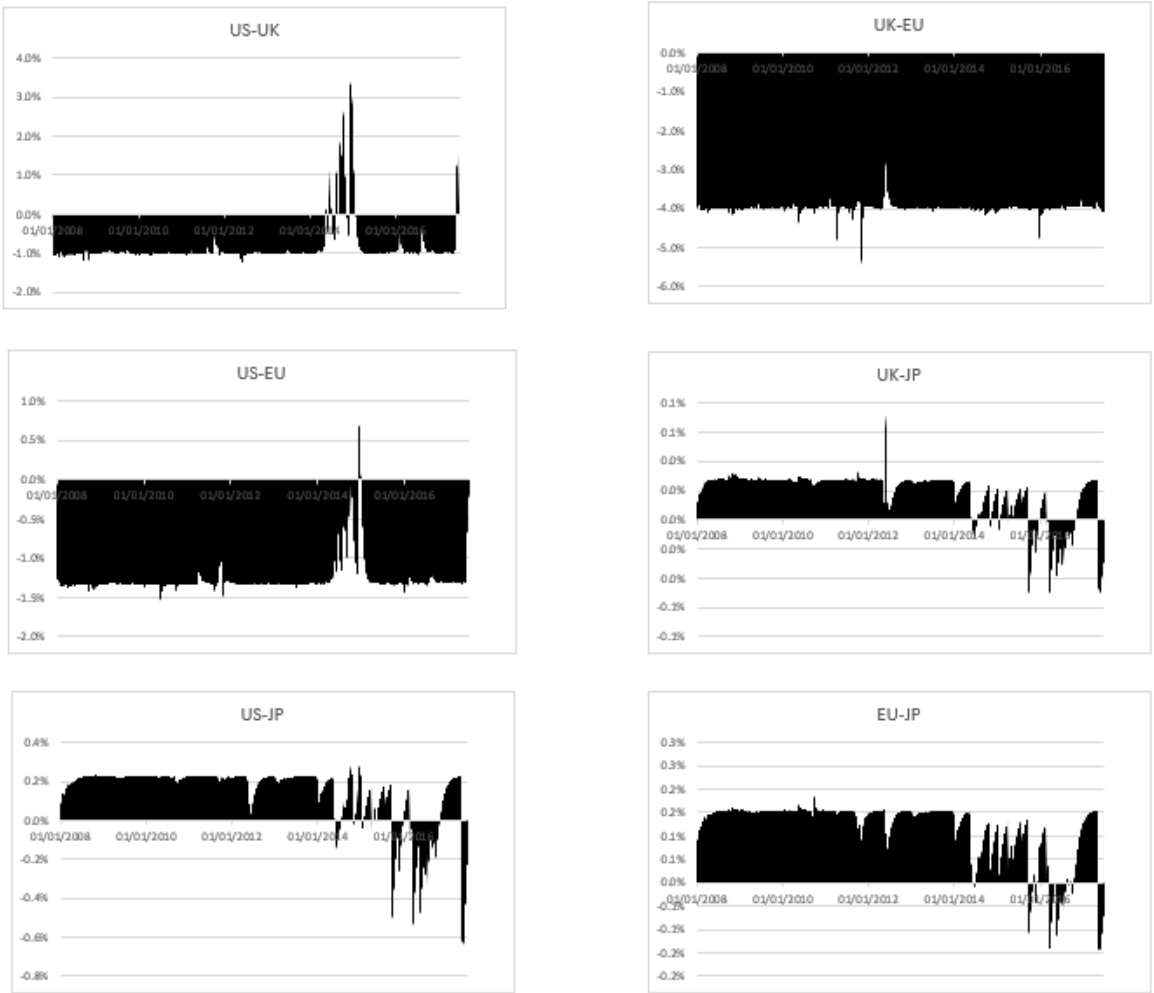


Figure 311: Net Pairwise Directional Connectedness Consumer Services

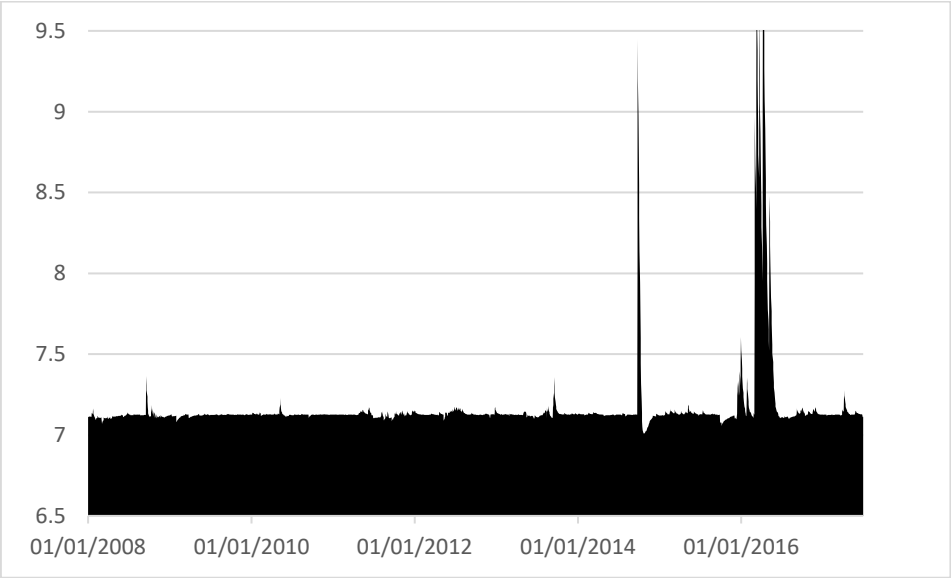


Figure 312: Total Average Dynamic Connectedness Other Financials

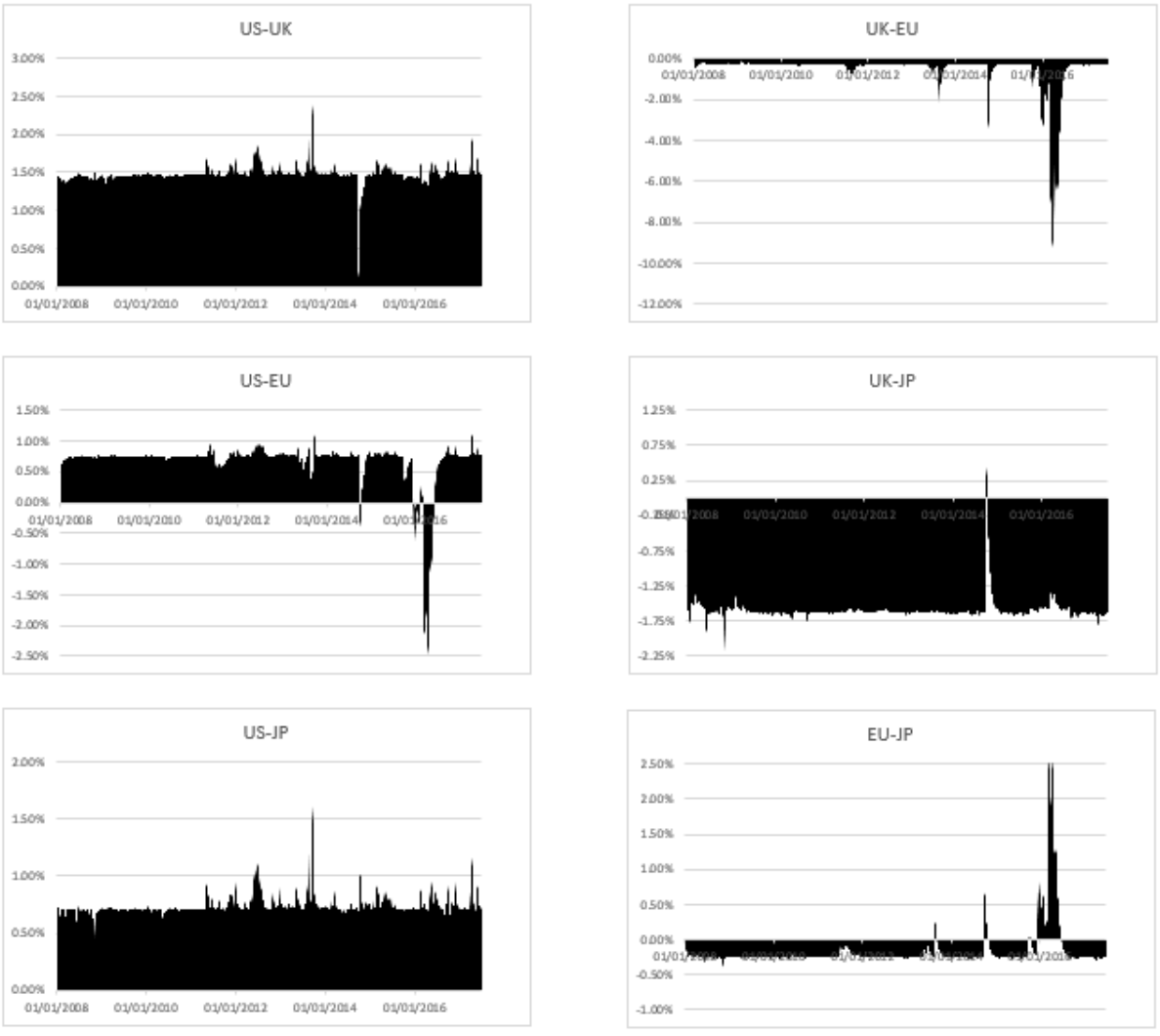


Figure 313: Net Pairwise Directional Connectedness Other Financials

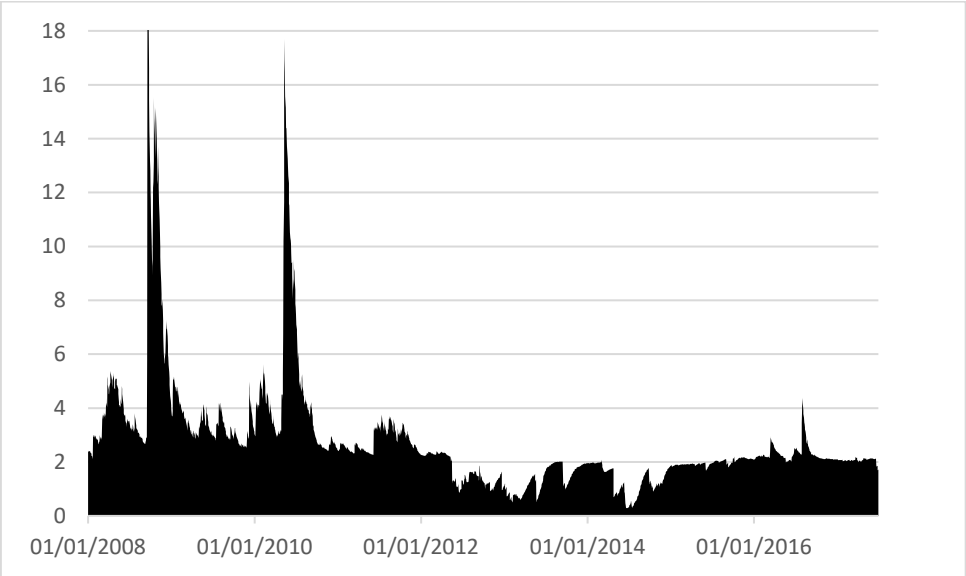


Figure 314: Total Average Dynamic Connectedness Electric Power

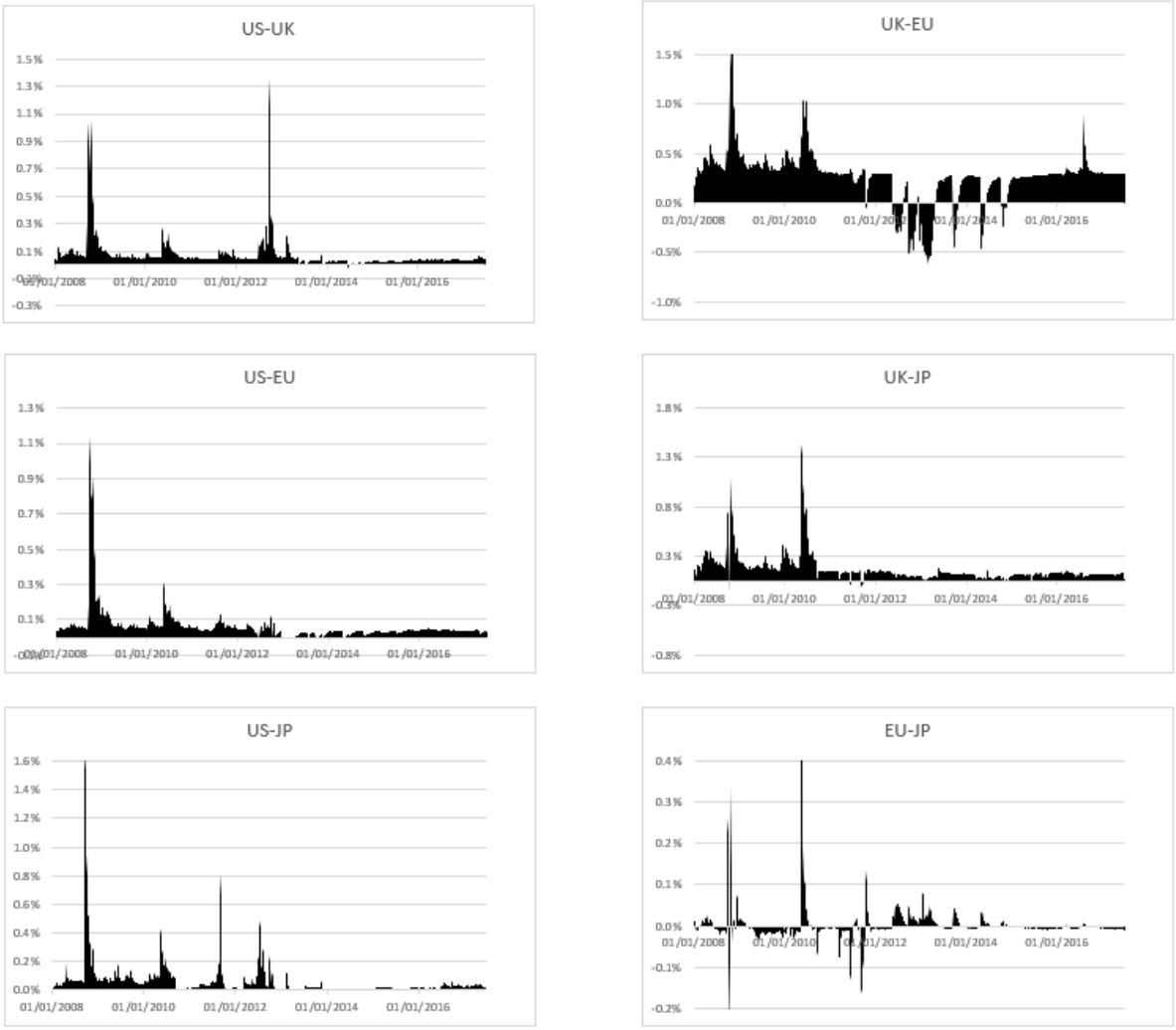


Figure 315: Net Pairwise Directional Connectedness Electric Power

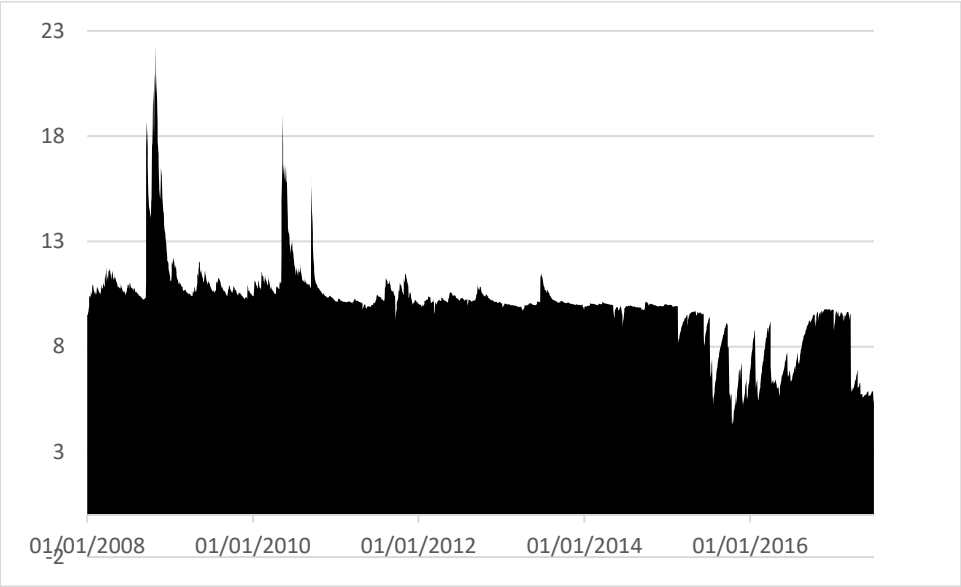


Figure 316: Total Average Dynamic Connectedness Manufacturing

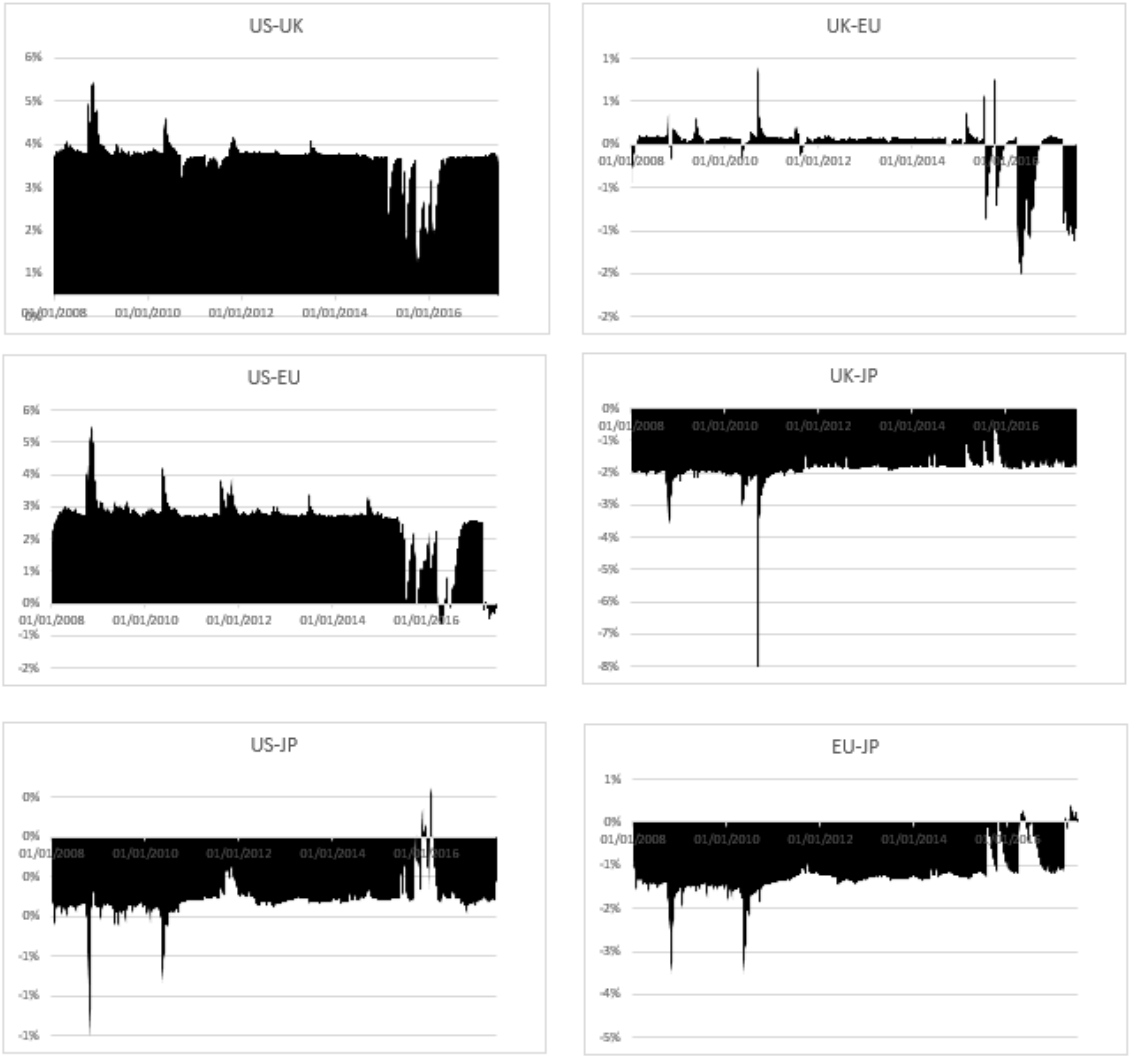


Figure 317: Net Pairwise Directional Connectedness Manufacturing

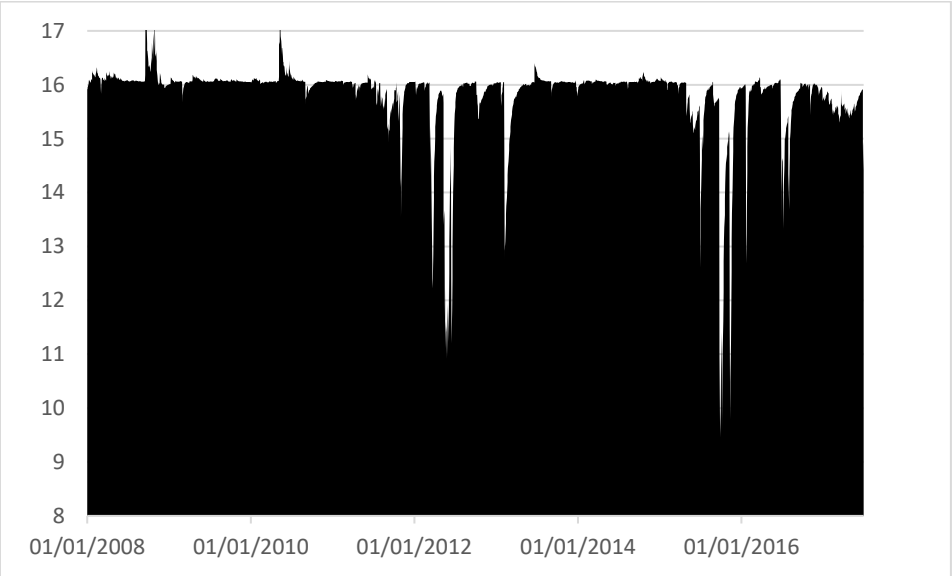


Figure 318: Total Average Dynamic Connectedness Telecommunications

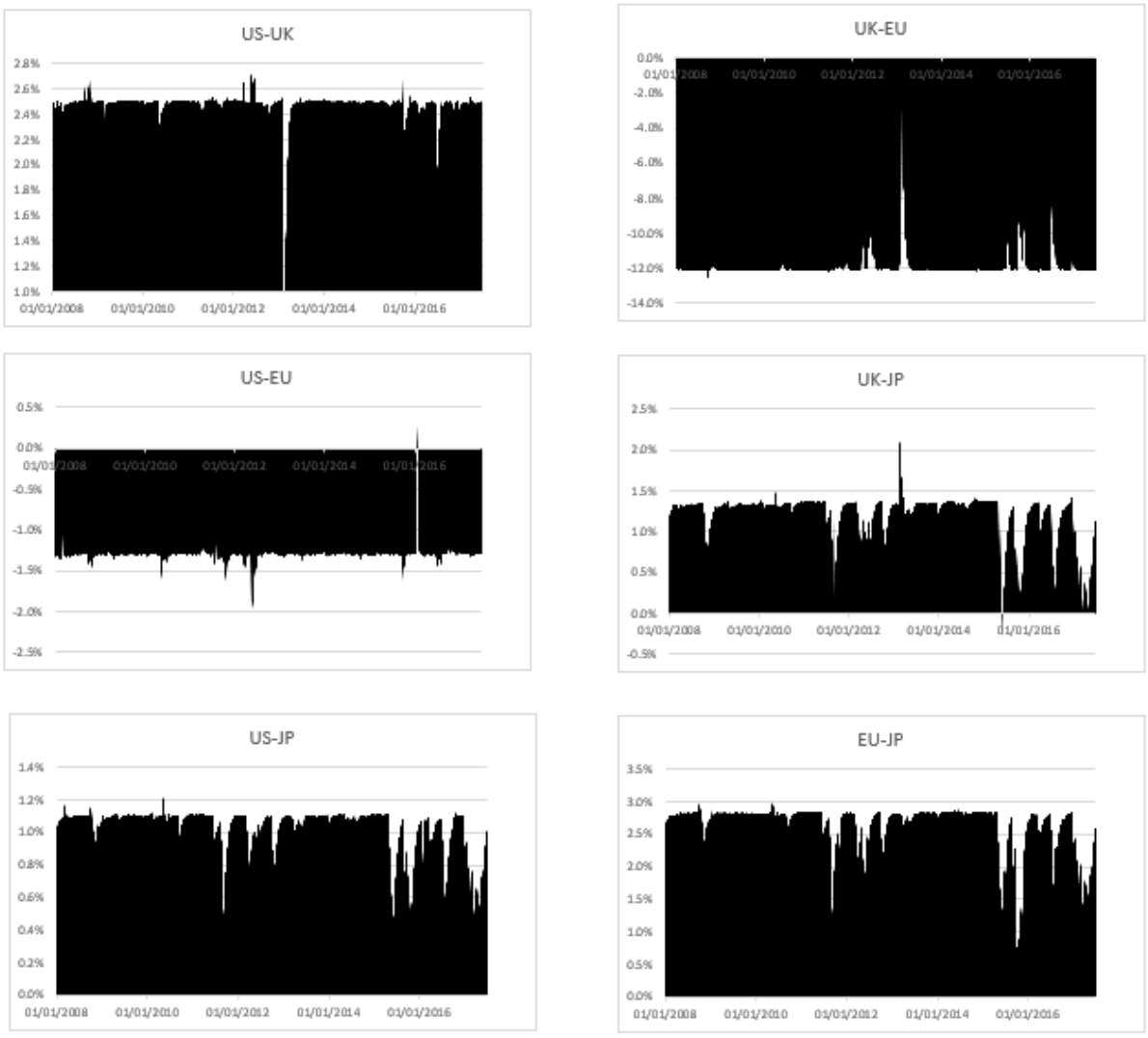


Figure 319: Net Pairwise Directional Connectedness Telecommunications

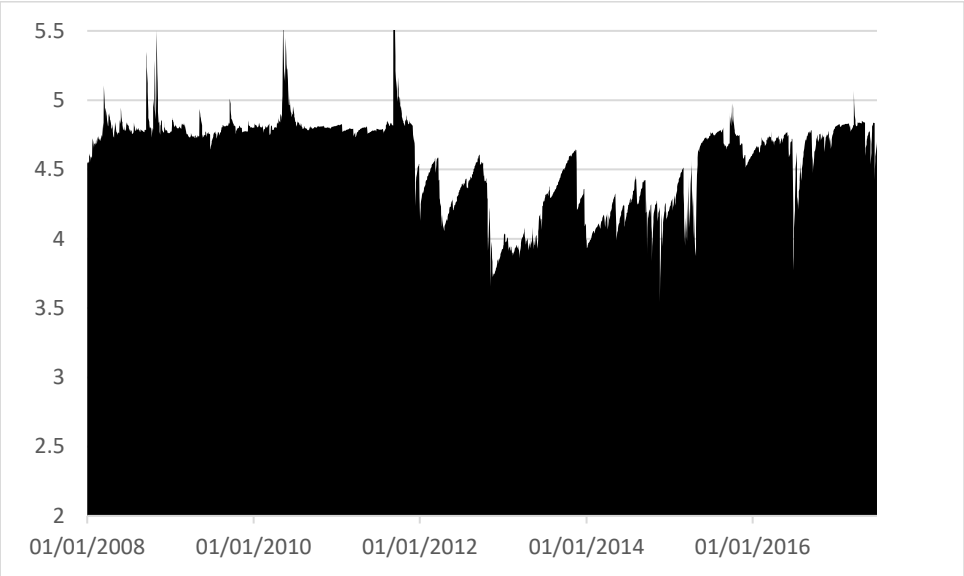


Figure 320: Total Average Dynamic Connectedness Transportation

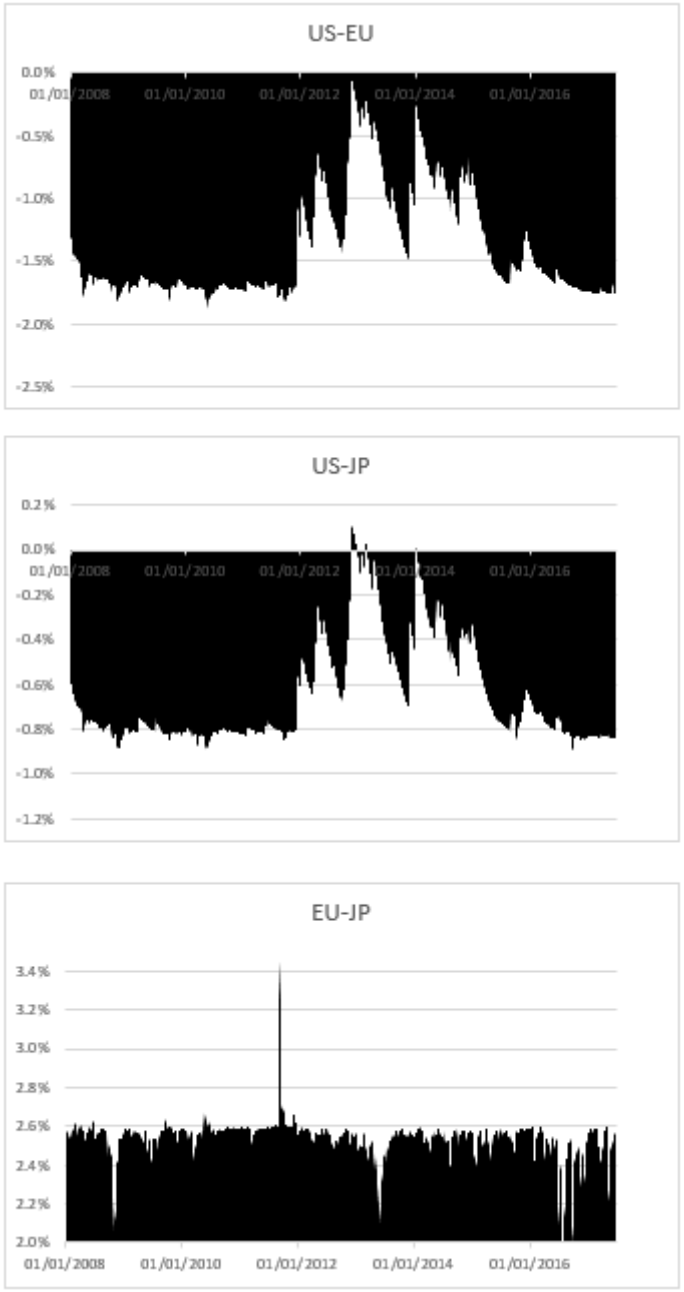


Figure 321: Net Pairwise Directional Connectedness Transportation

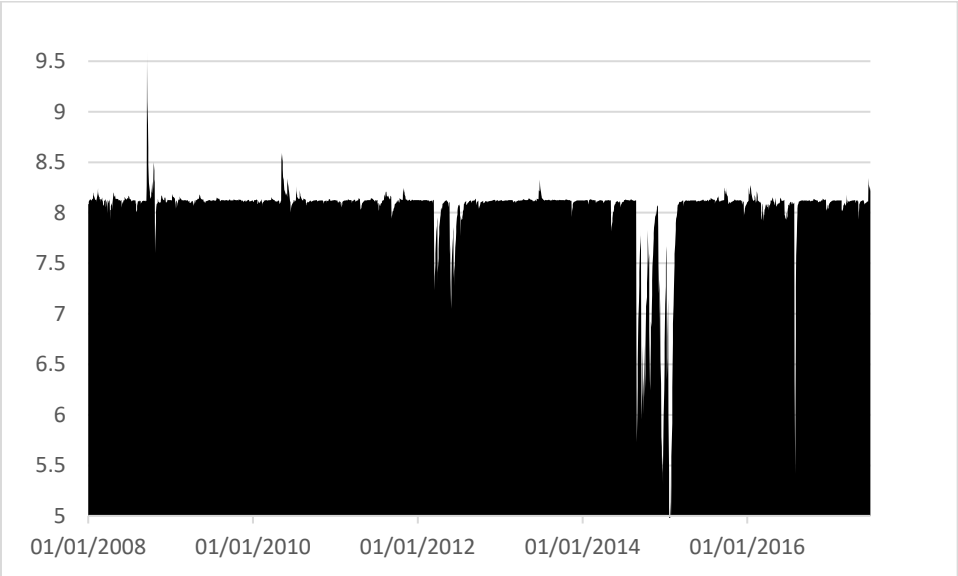


Figure 322: Total Average Dynamic Connectedness Energy

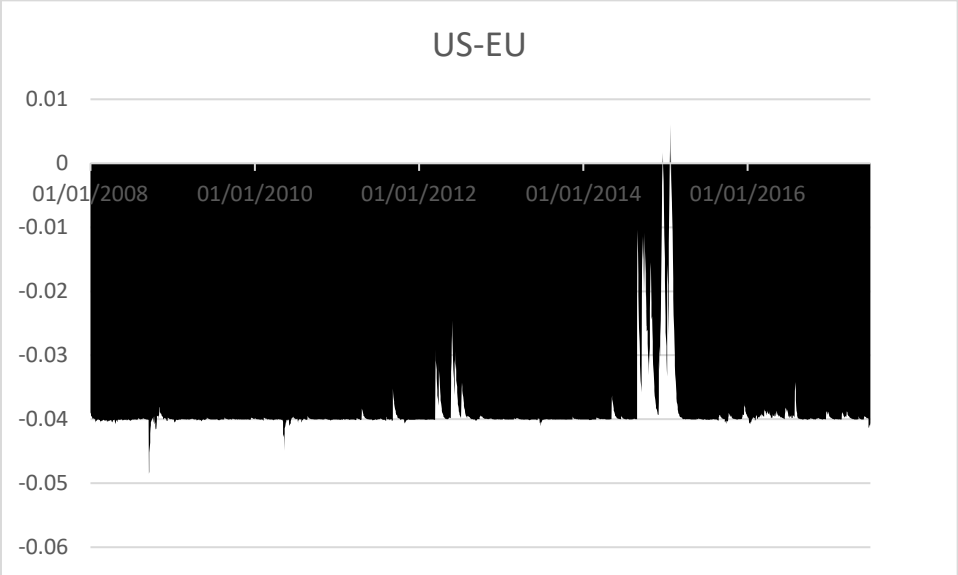


Figure 323: Net Pairwise Directional Connectedness Energy

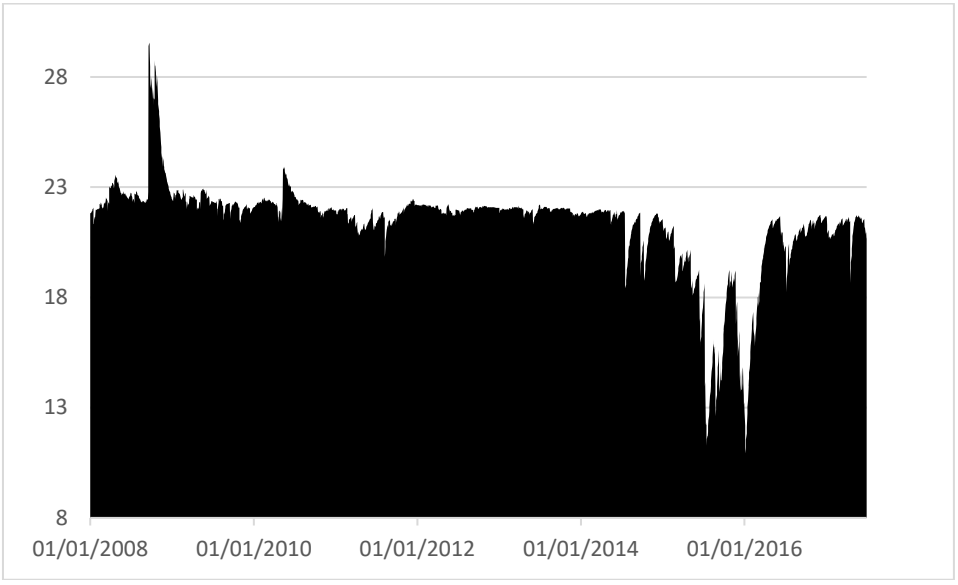


Figure 324: Total Average Dynamic Connectedness Banking

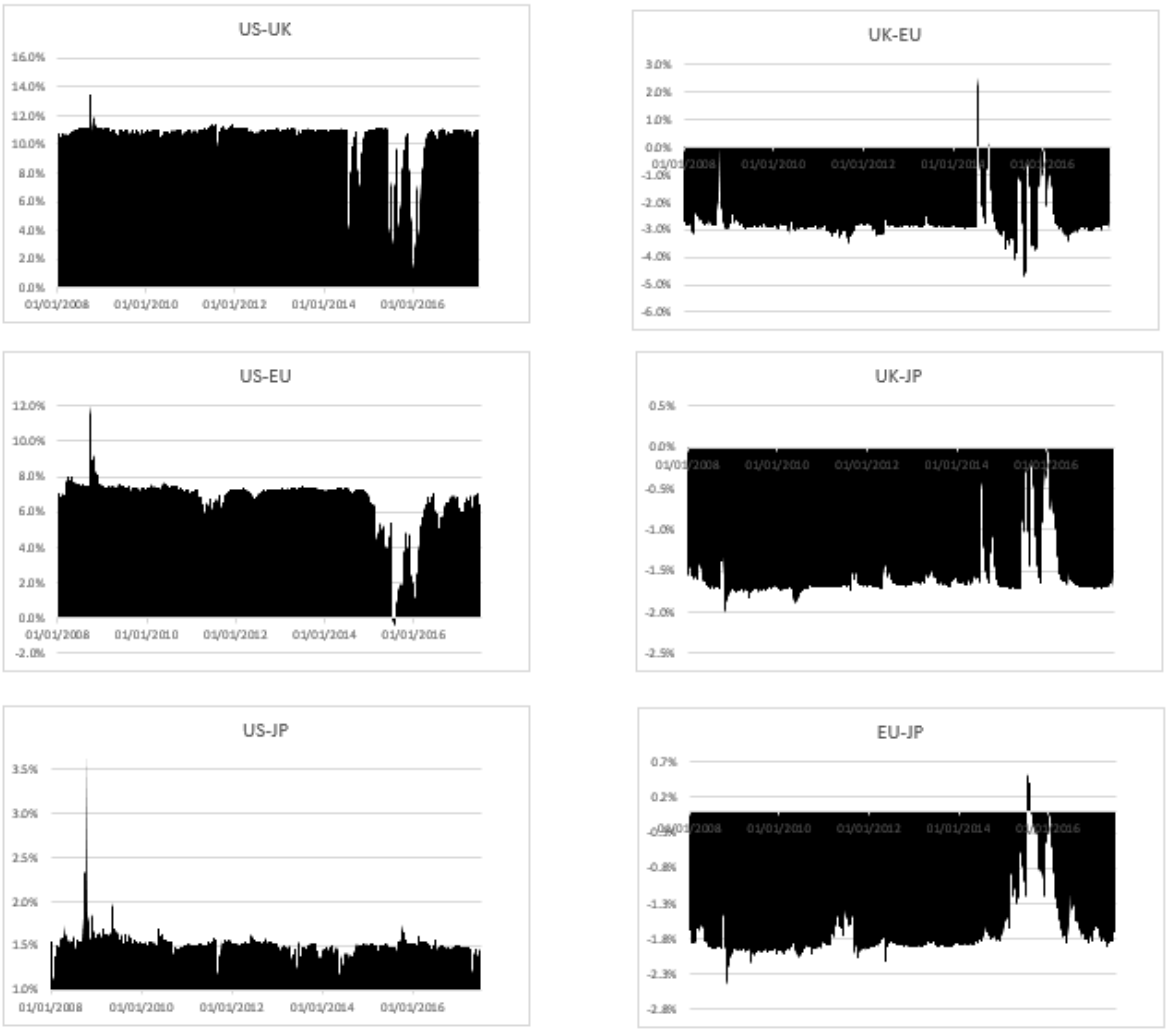


Figure 325: Net Pairwise Directional Connectedness Banking

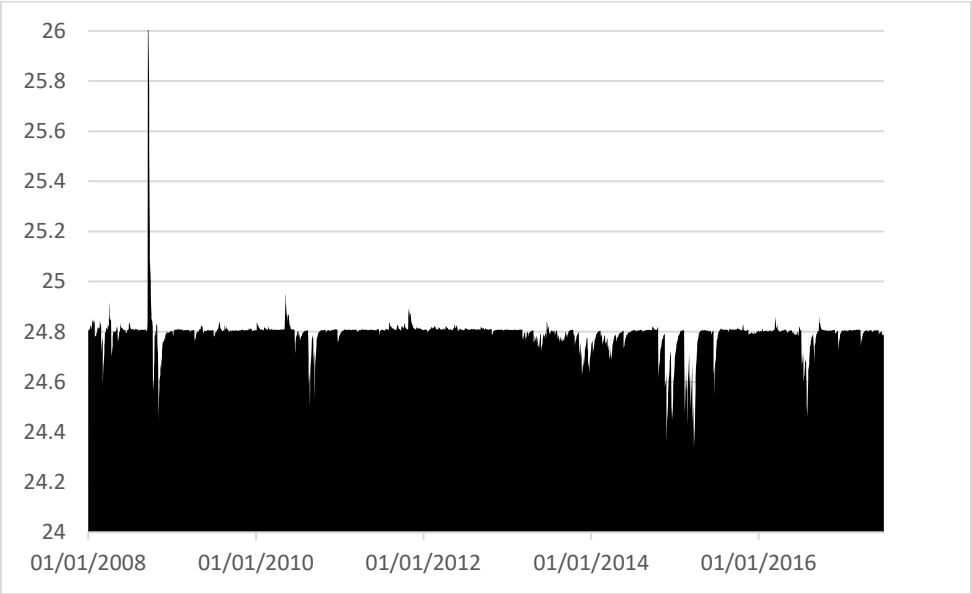


Figure 326: Total Average Dynamic Connectedness Beverages/Bottling

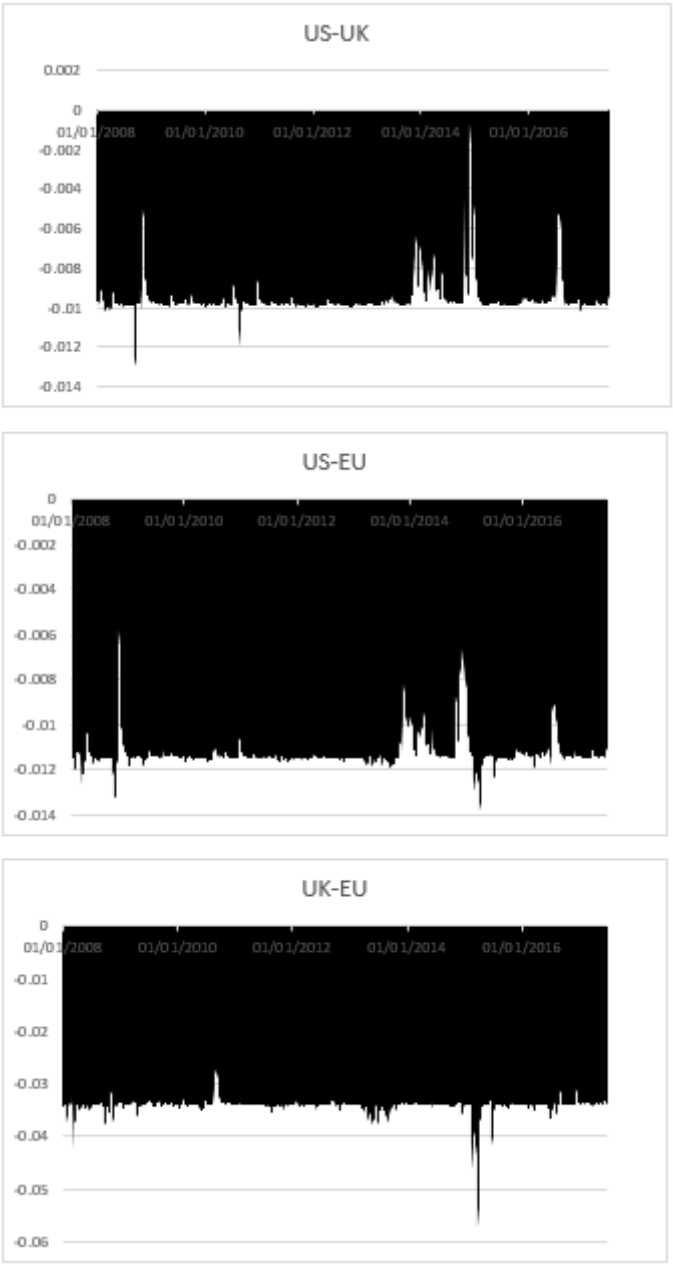


Figure 327: Net Pairwise Directional Connectedness Beverages/Bottling

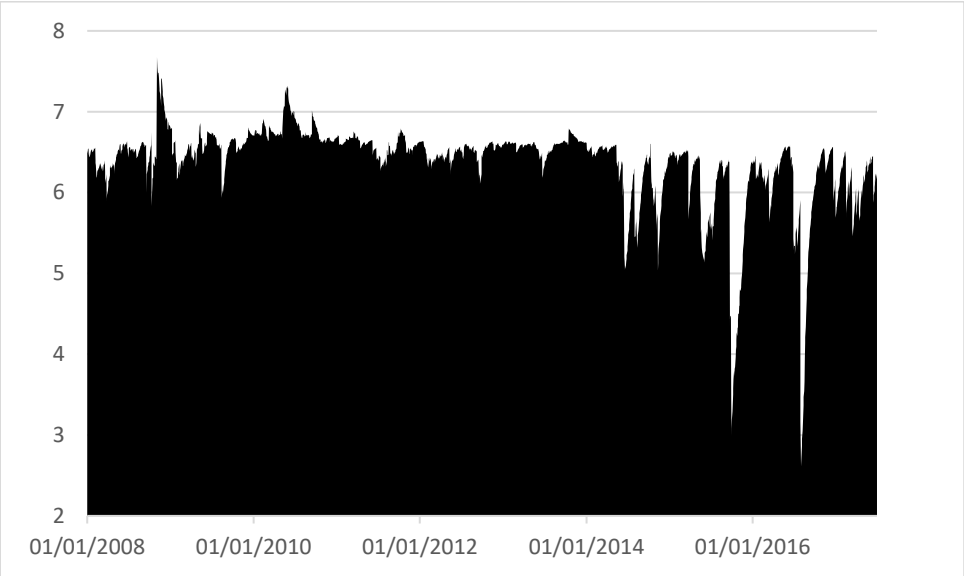


Figure 328: Total Average Dynamic Connectedness Automotive Manufacturer

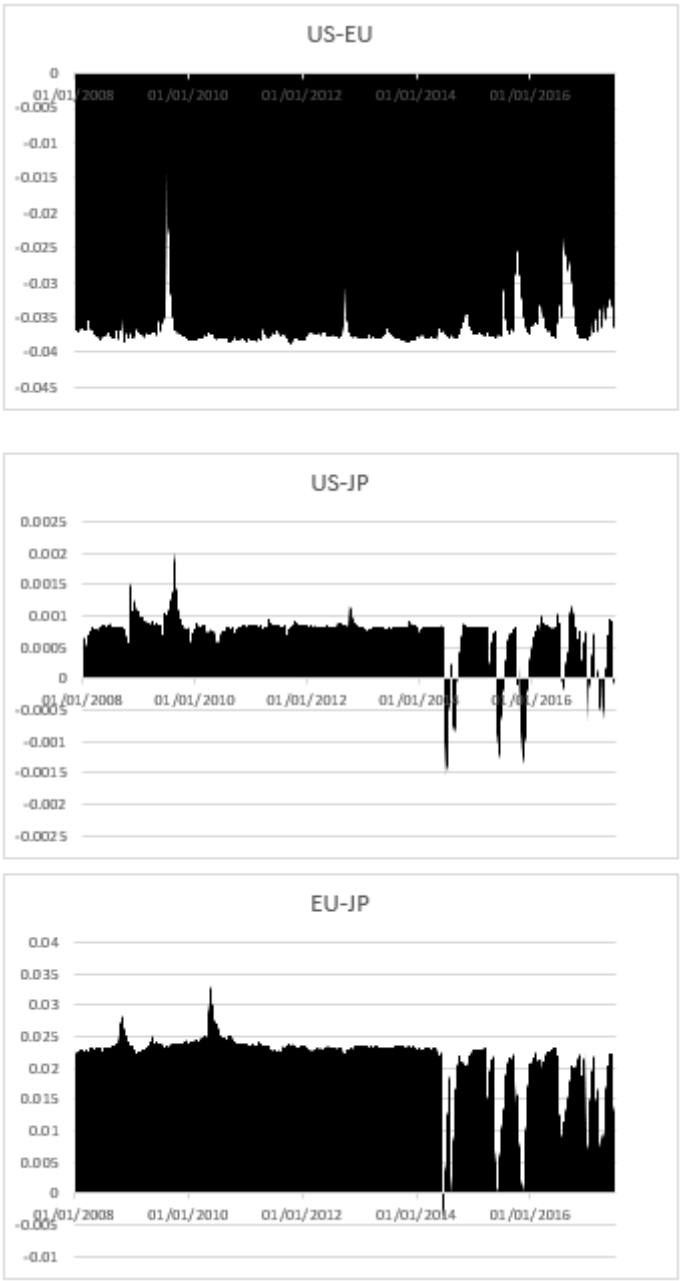


Figure 329: Net Pairwise Directional Connectedness Automotive Manufacturer

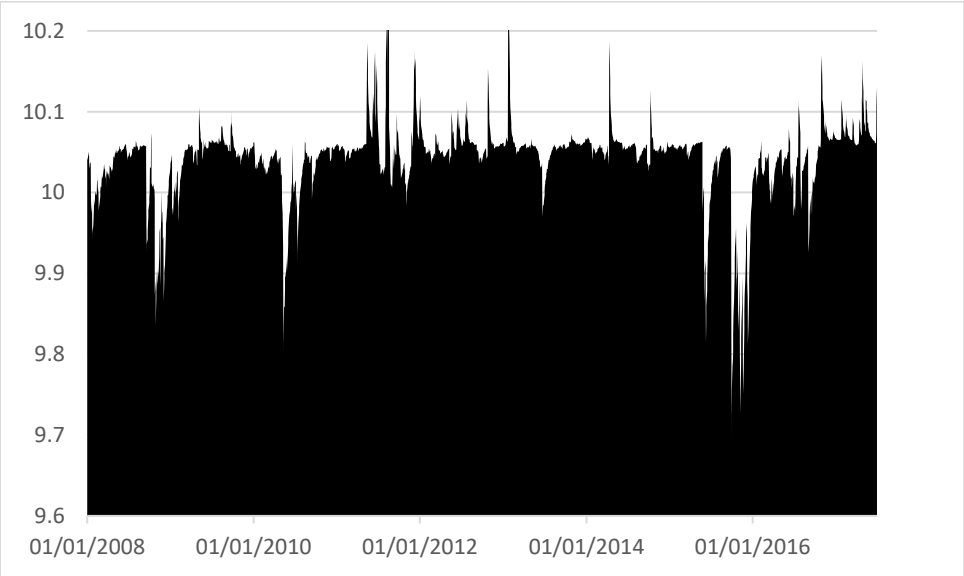


Figure 330: Total Average Dynamic Connectedness Building Products

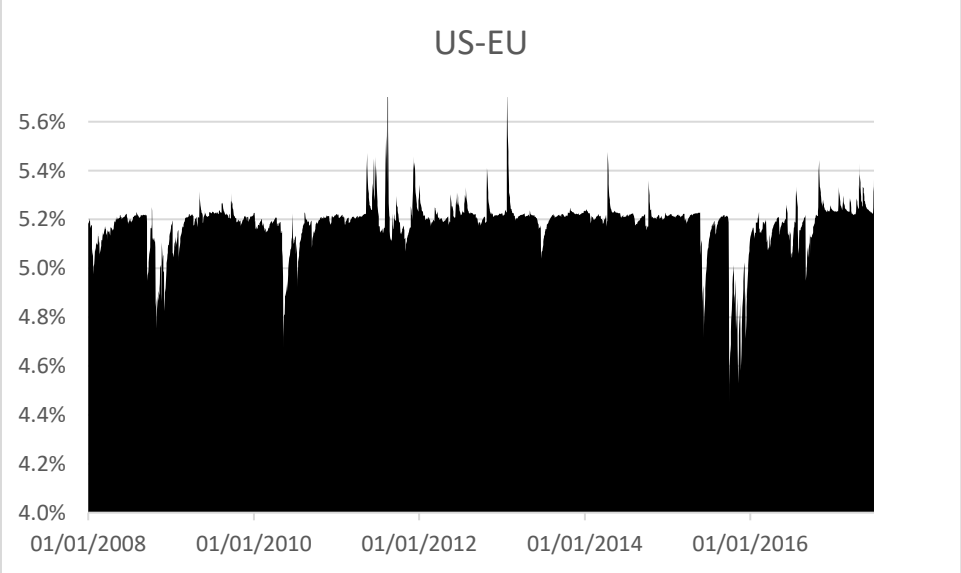


Figure 331: Net Pairwise Directional Connectedness Building Products

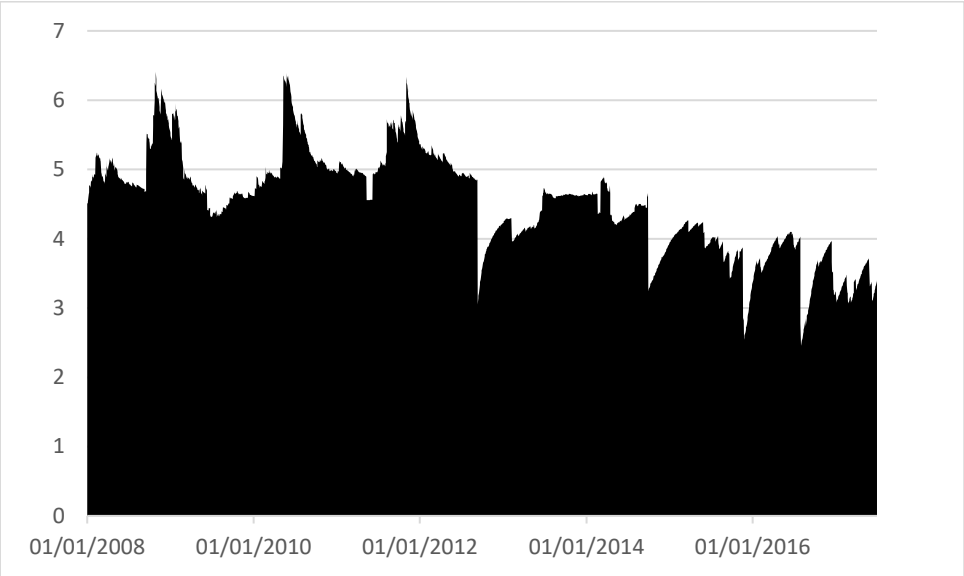


Figure 332: Total Average Dynamic Connectedness Cable Media

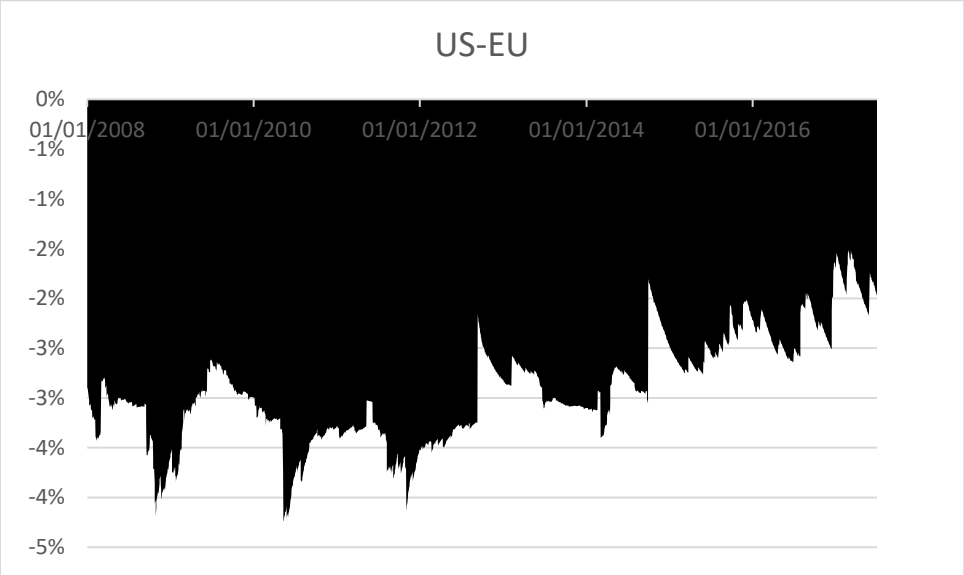


Figure 333: Net Pairwise Directional Connectedness Cable Media

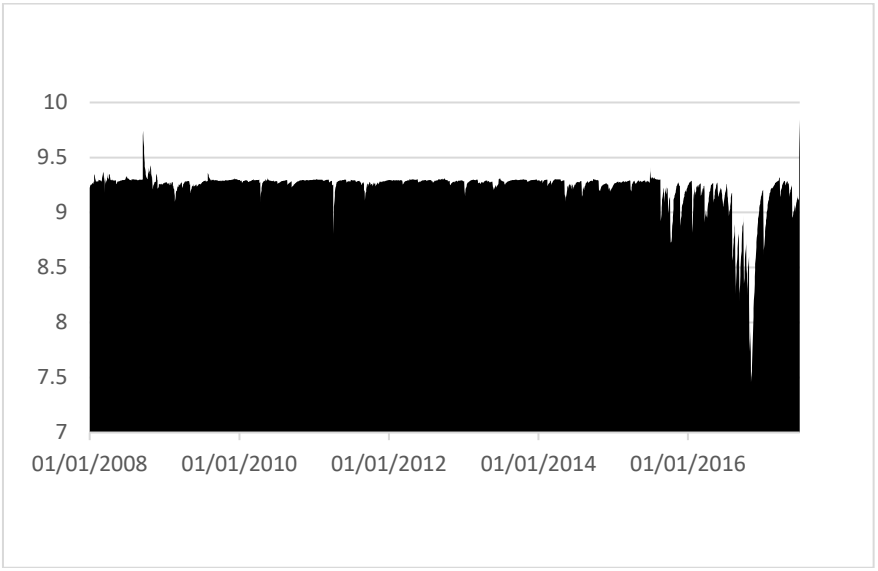


Figure 334: Total Average Dynamic Connectedness Chemicals

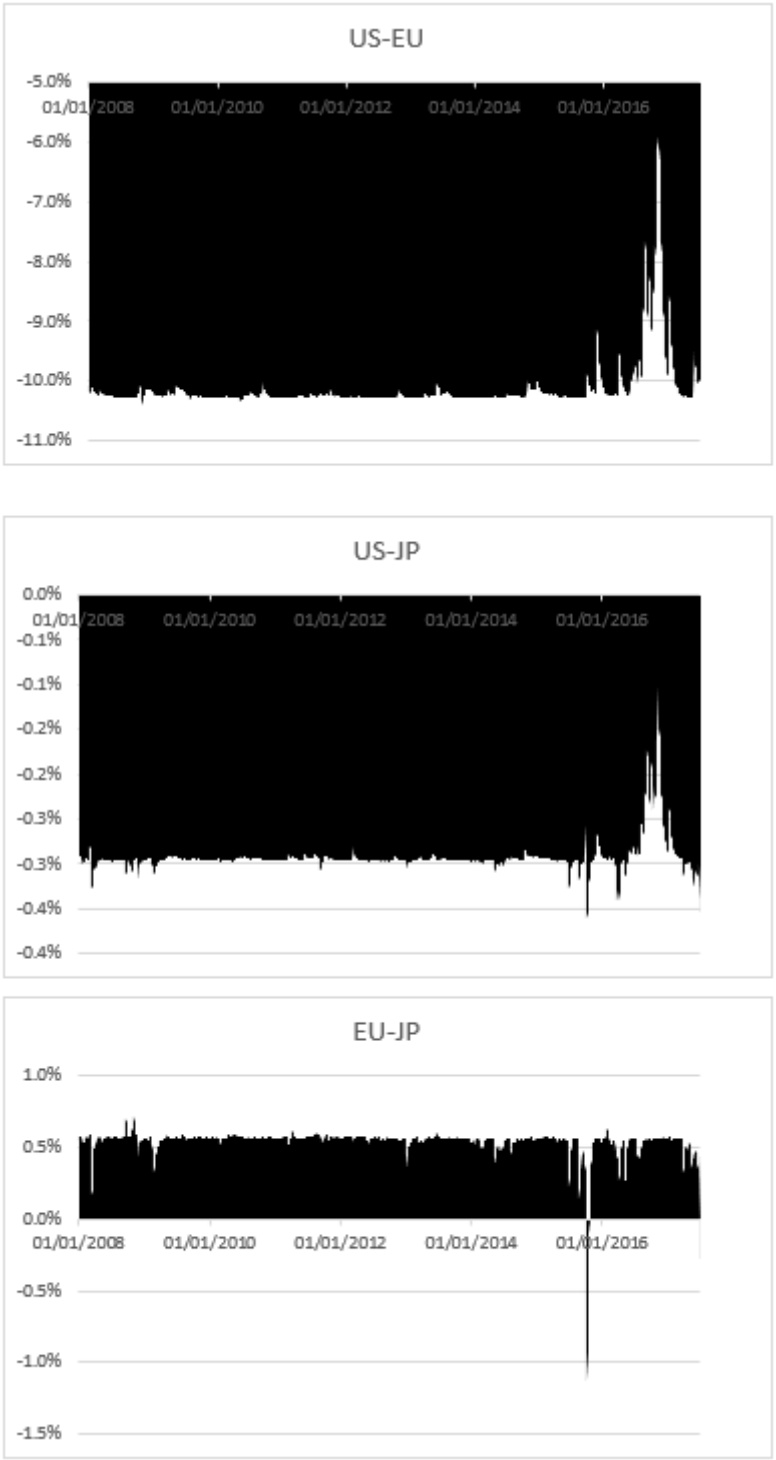


Figure 335: Net Pairwise Directional Connectedness Chemicals

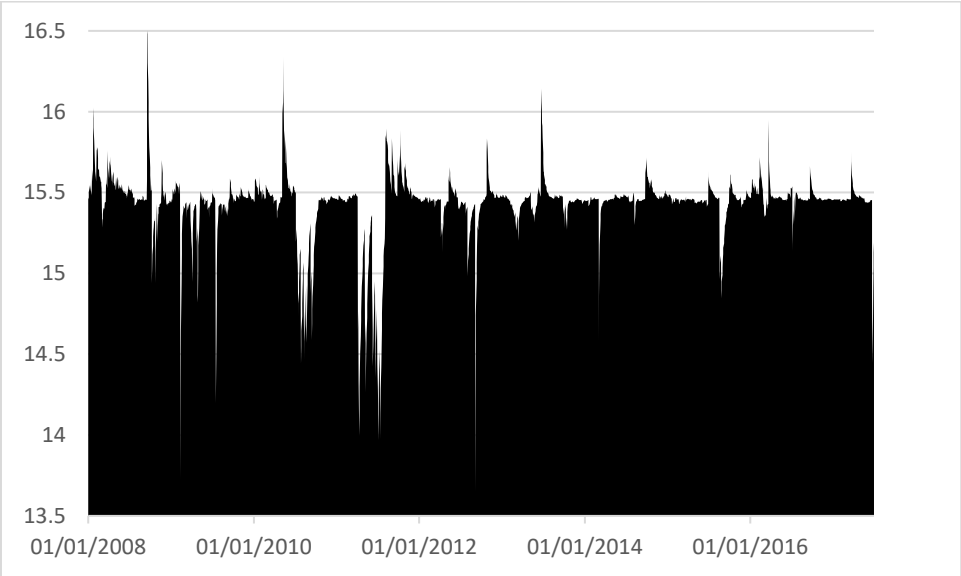


Figure 336: Total Average Dynamic Connectedness Conglomerate Diversified Mfg

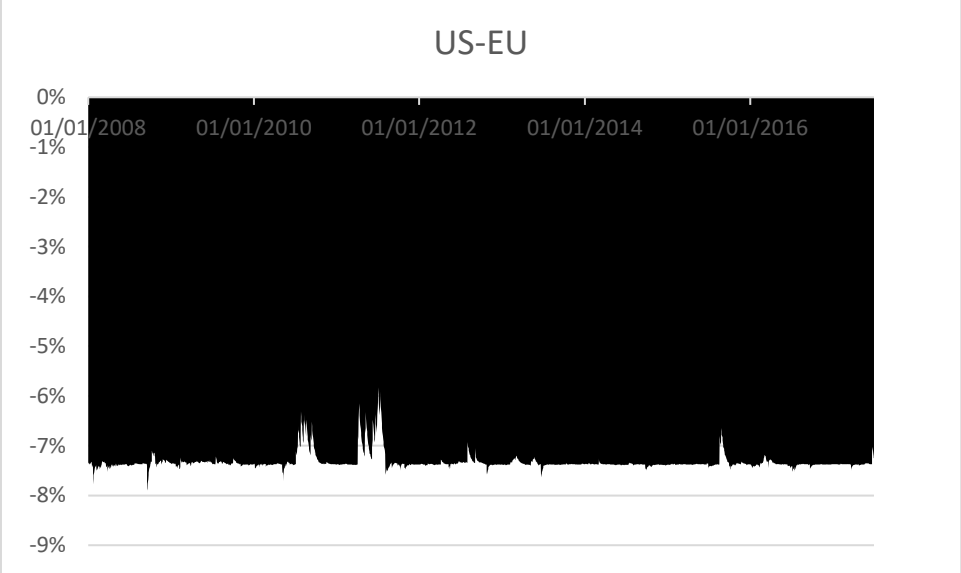


Figure 337: Net Pairwise Directional Connectedness Conglomerate Diversified Mfg

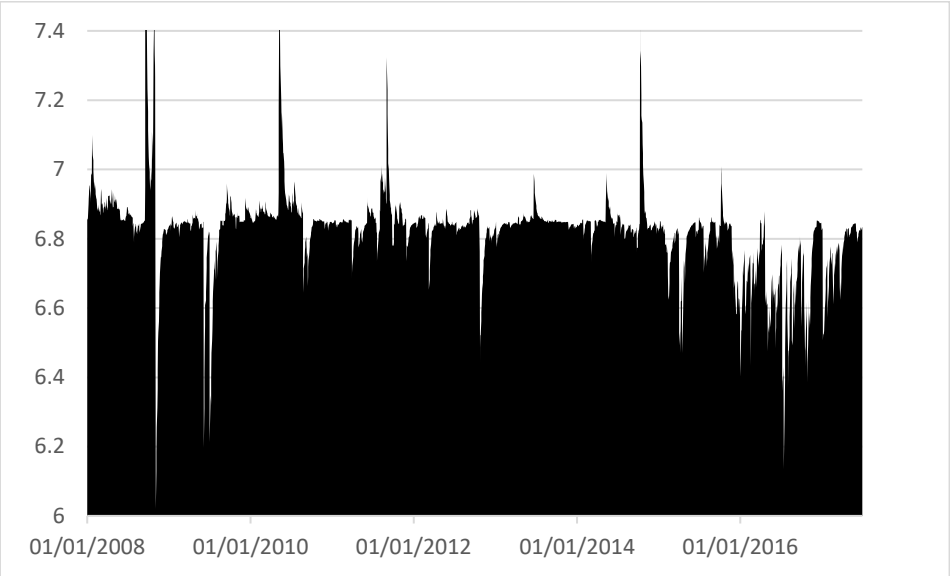


Figure 338: Total Average Dynamic Connectedness Electronics

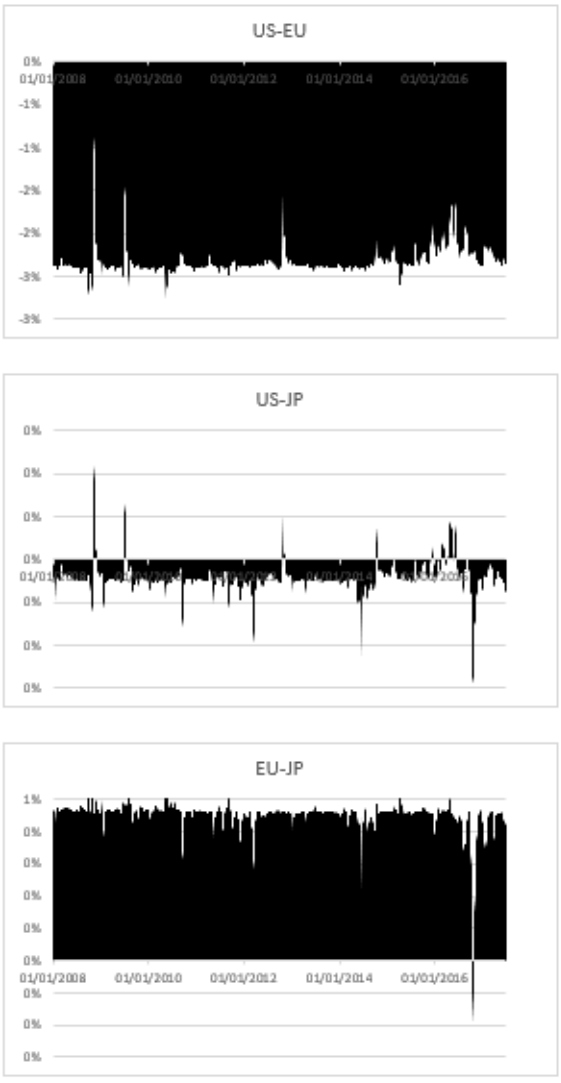


Figure 339: Net Pairwise Directional Connectedness Electronics

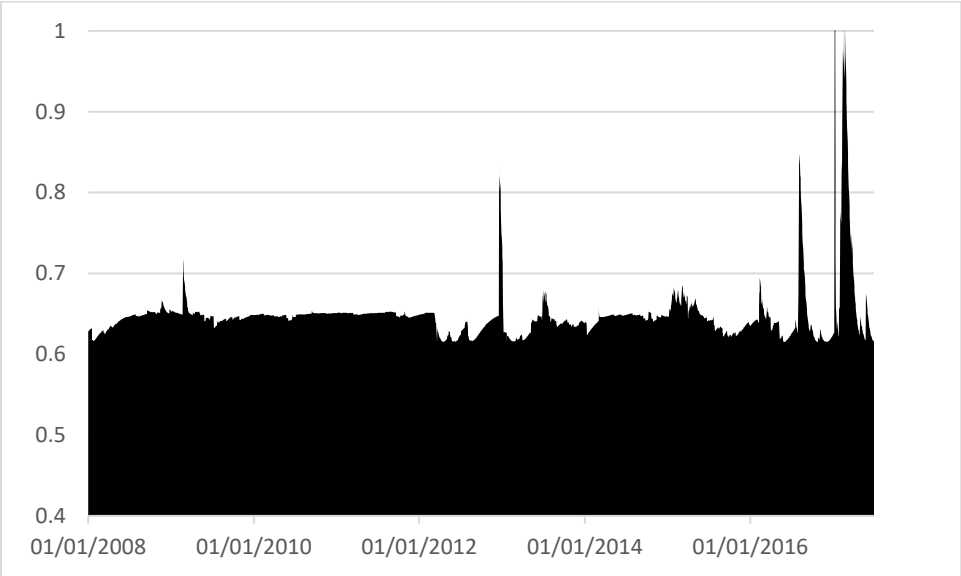


Figure 340: Total Average Dynamic Connectedness Industrials

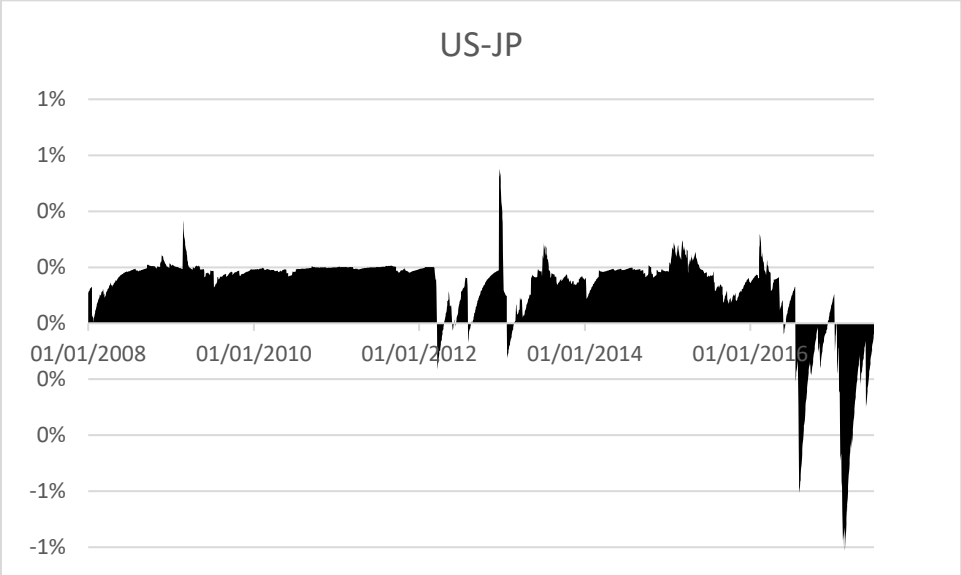


Figure 341: Net Pairwise Directional Connectedness Industrials

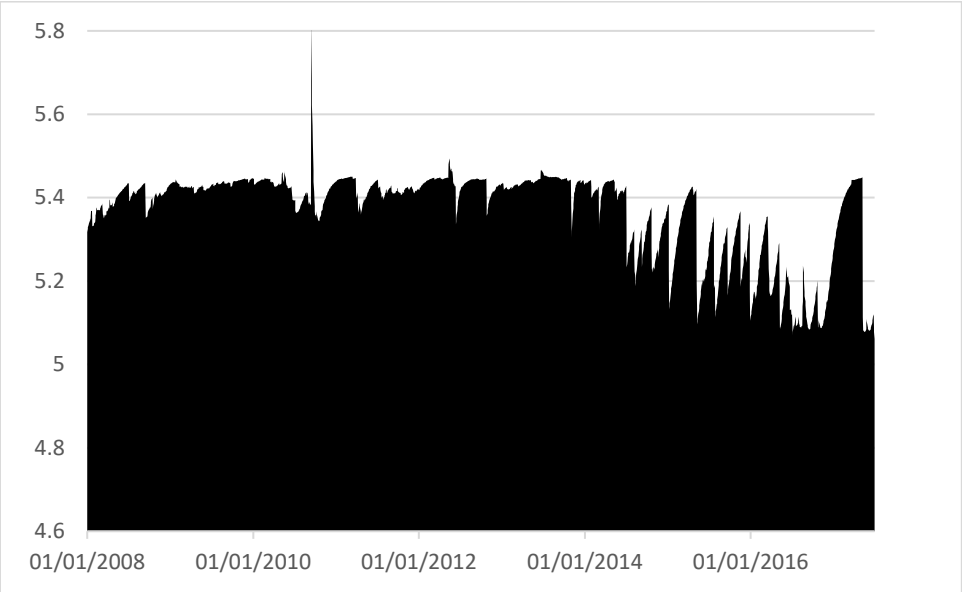


Figure 342: Total Average Dynamic Connectedness Other Consumer Services

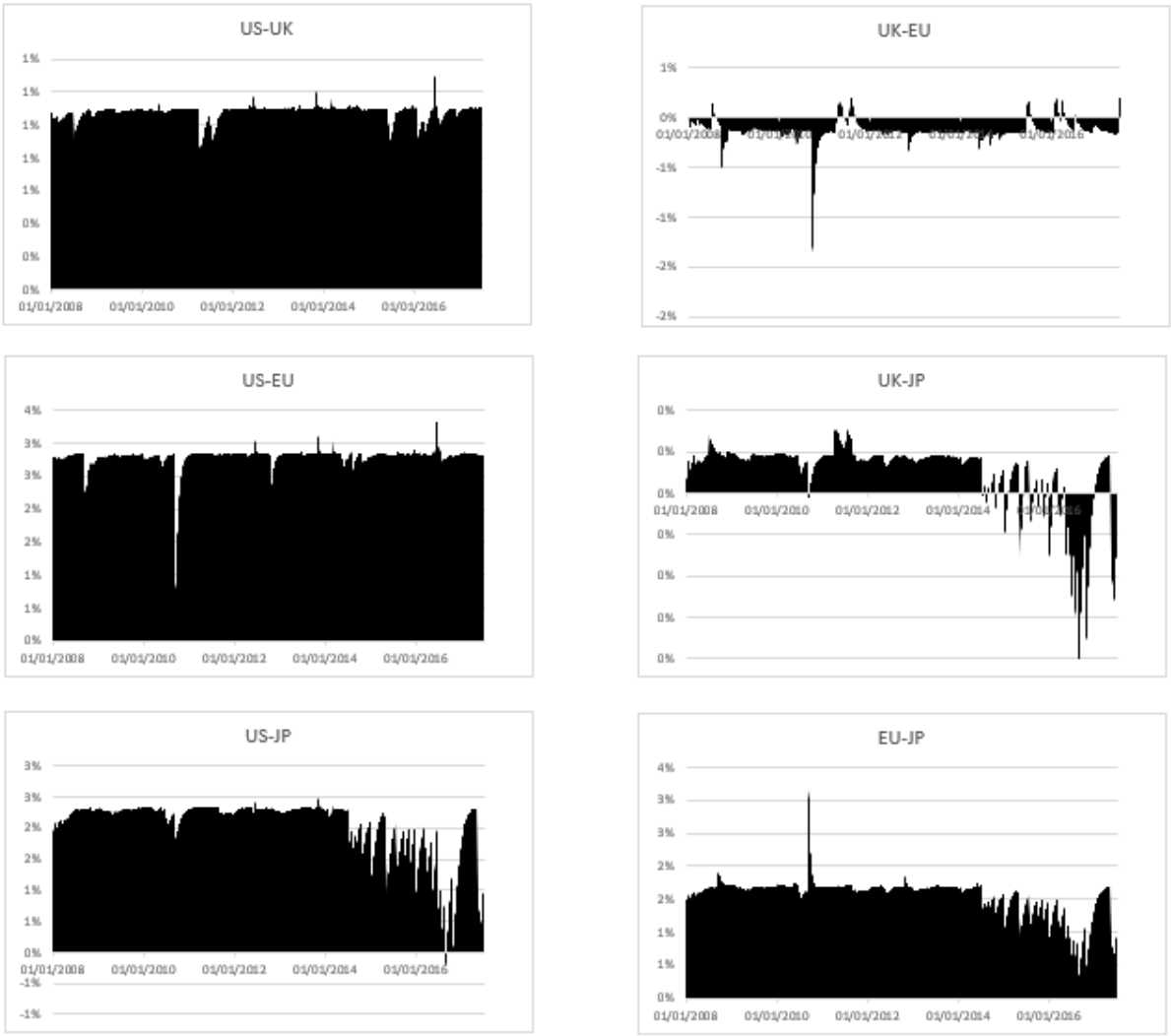


Figure 343: Net Pairwise Directional Connectedness Other Consumer Services

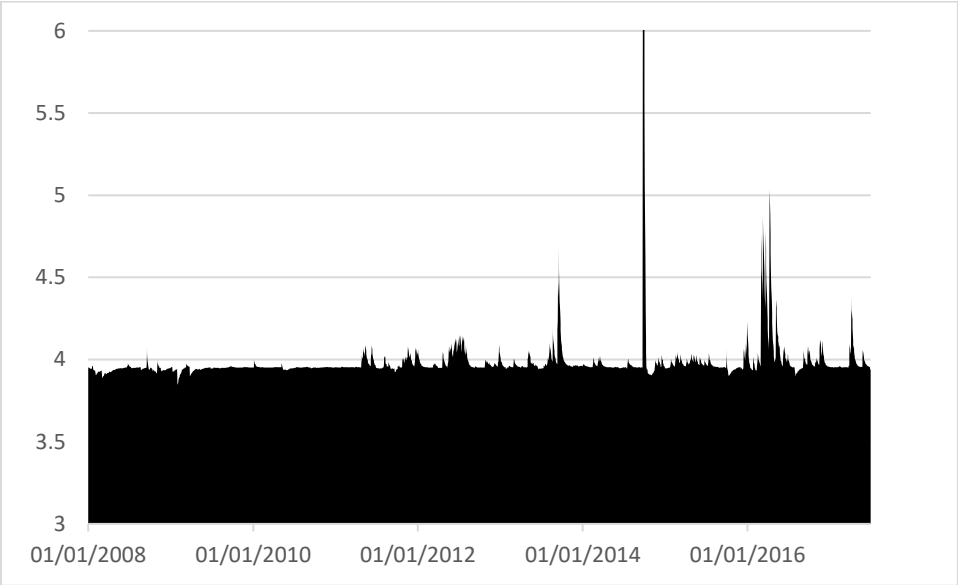


Figure 344: Total Average Dynamic Connectedness Other Financials II

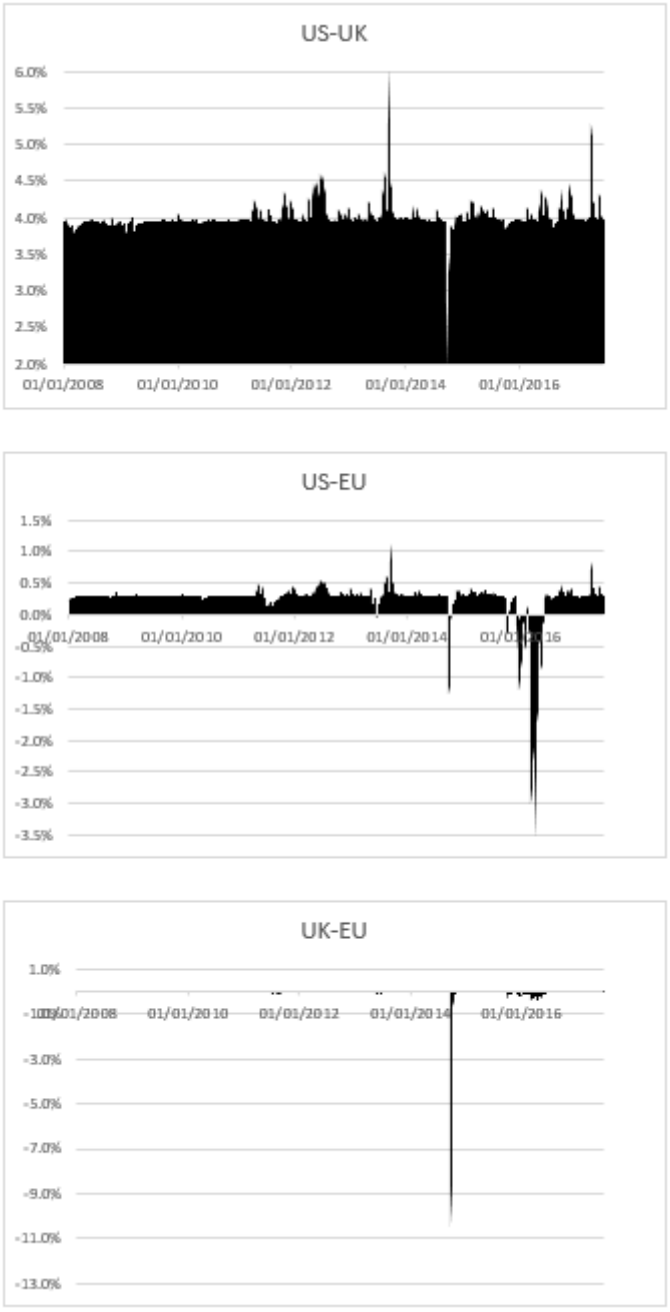


Figure 345: Net Pairwise Directional Connectedness Other Financials II

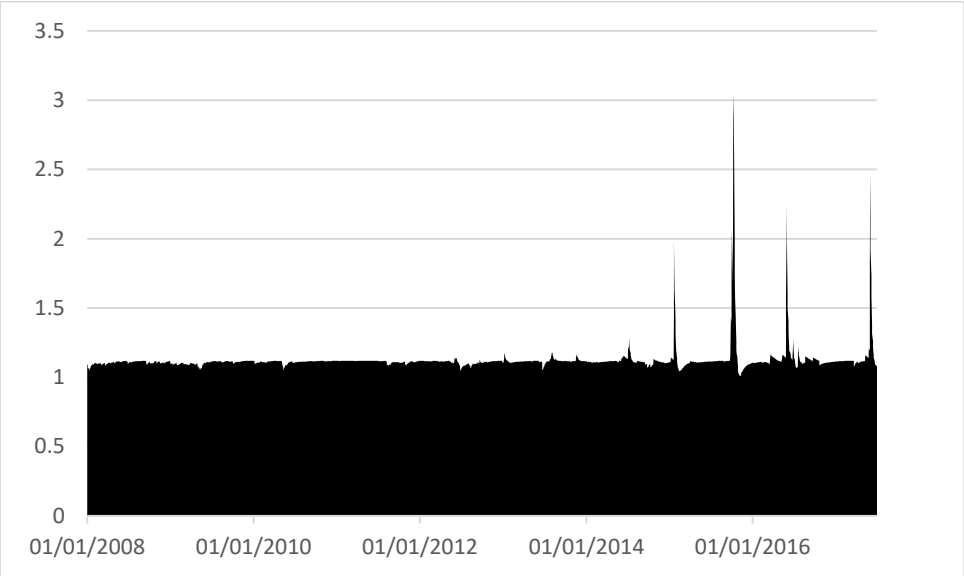


Figure 346: Total Average Dynamic Connectedness Retail Stores

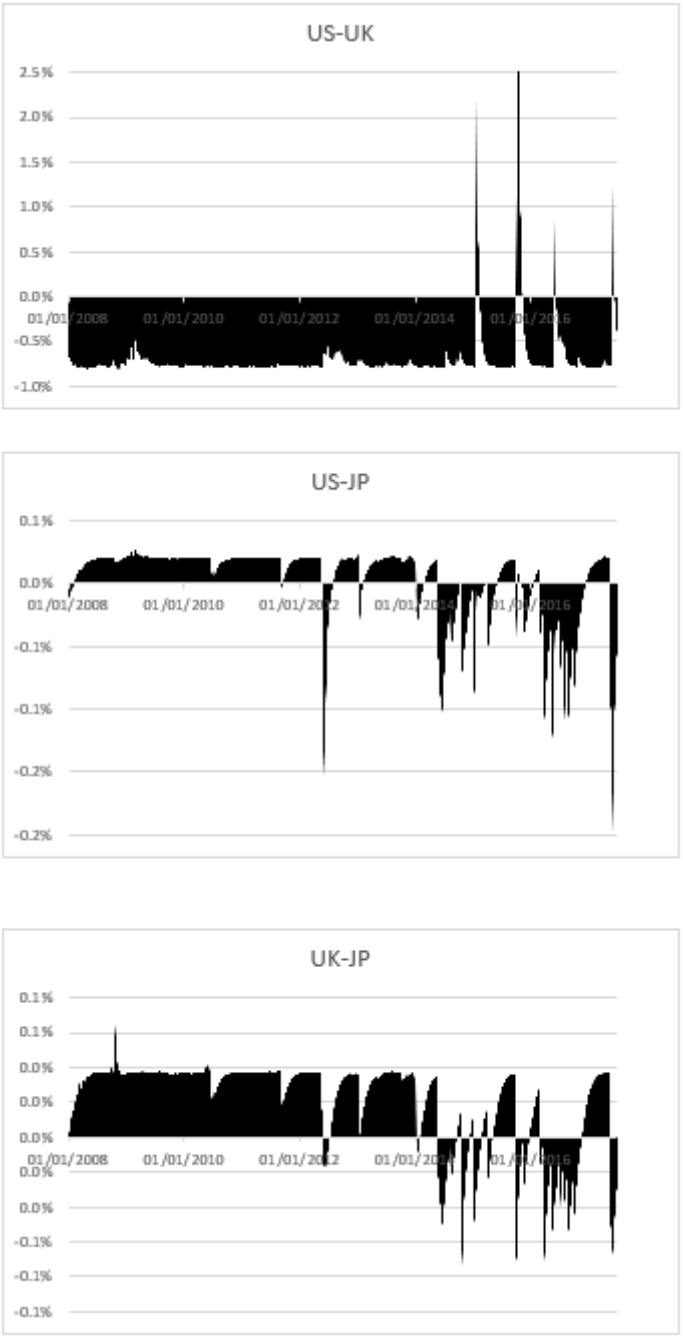


Figure 347: Net Pairwise Directional Connectedness Retail Stores

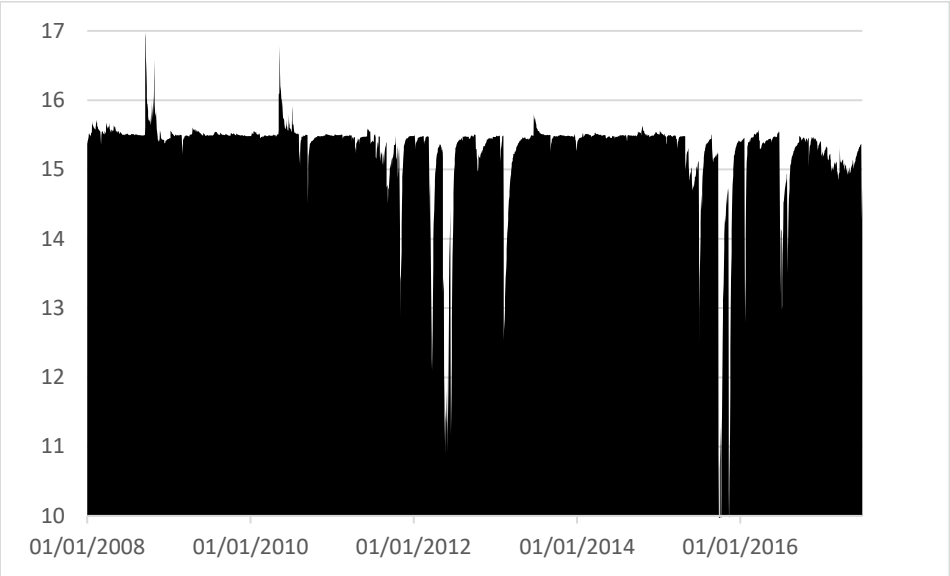


Figure 348: Total Average Dynamic Connectedness Other Telecommunications

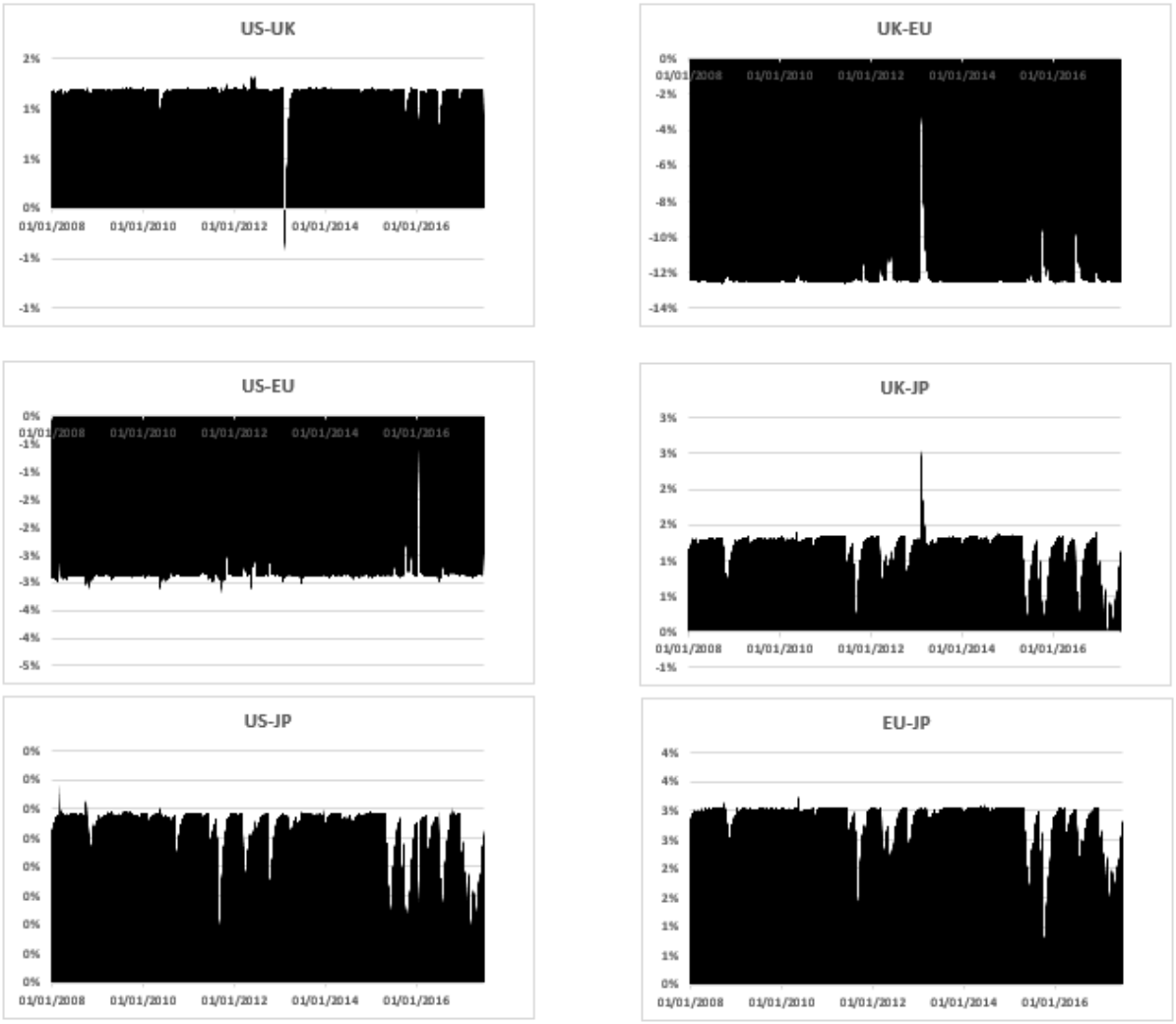


Figure 349: Net Pairwise Directional Connectedness Other Telecommunications

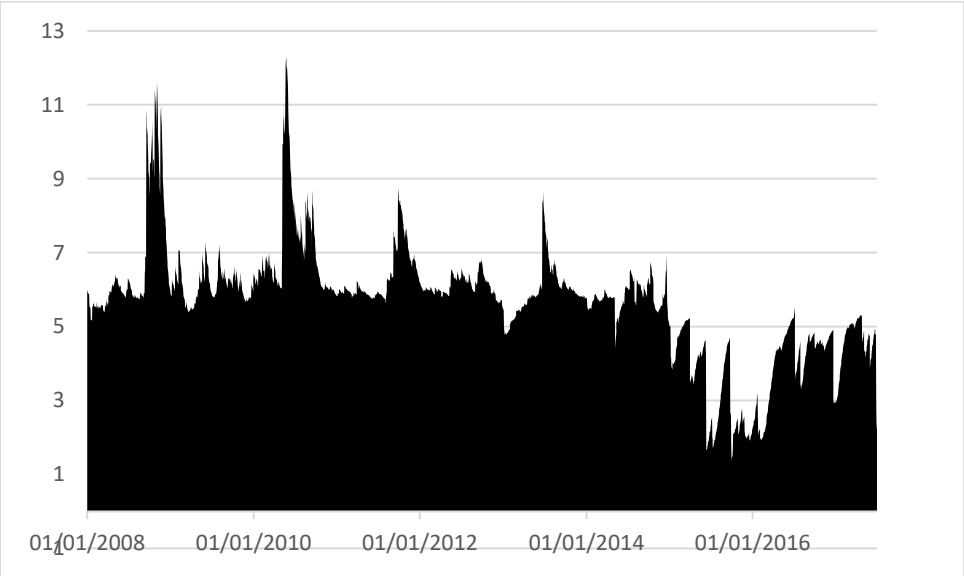


Figure 350: Total Average Dynamic Connectedness Metals & Mining

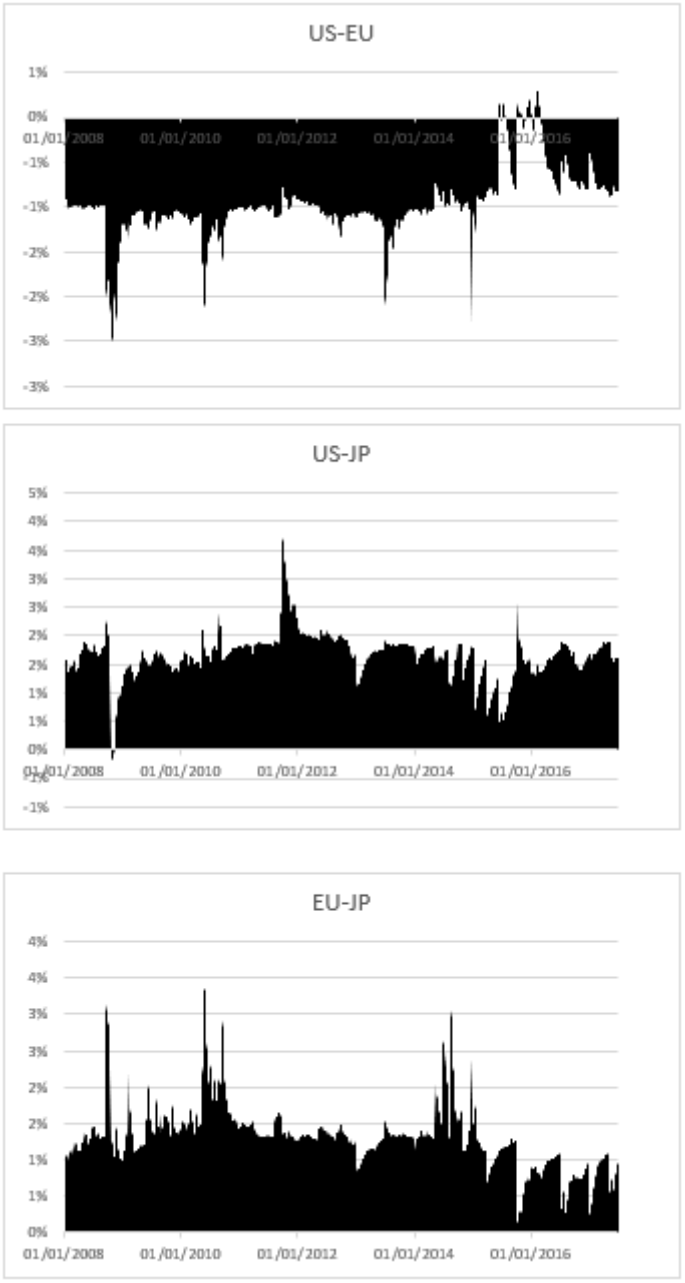


Figure 351: Net Pairwise Directional Connectedness Metals & Mining

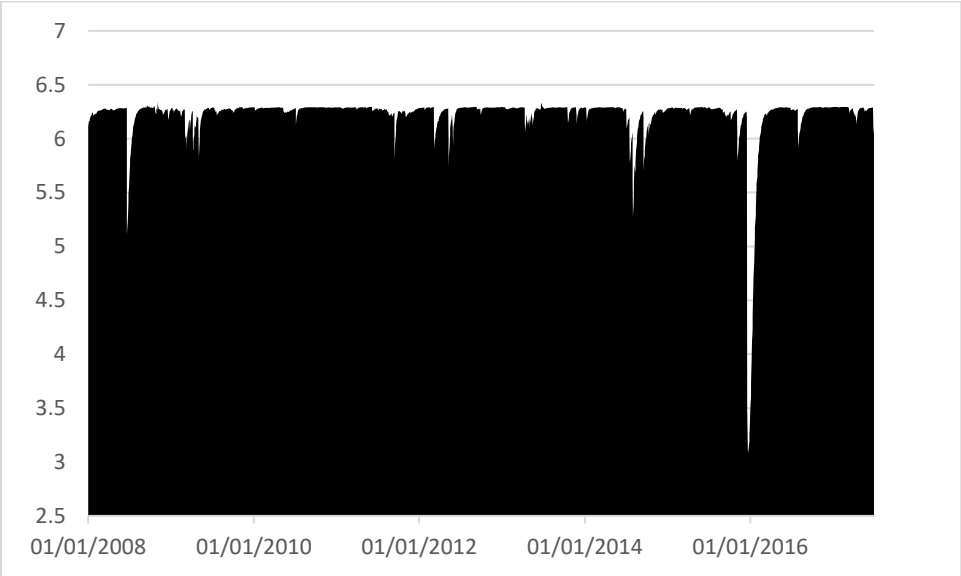


Figure 352: Total Average Dynamic Connectedness Leisure

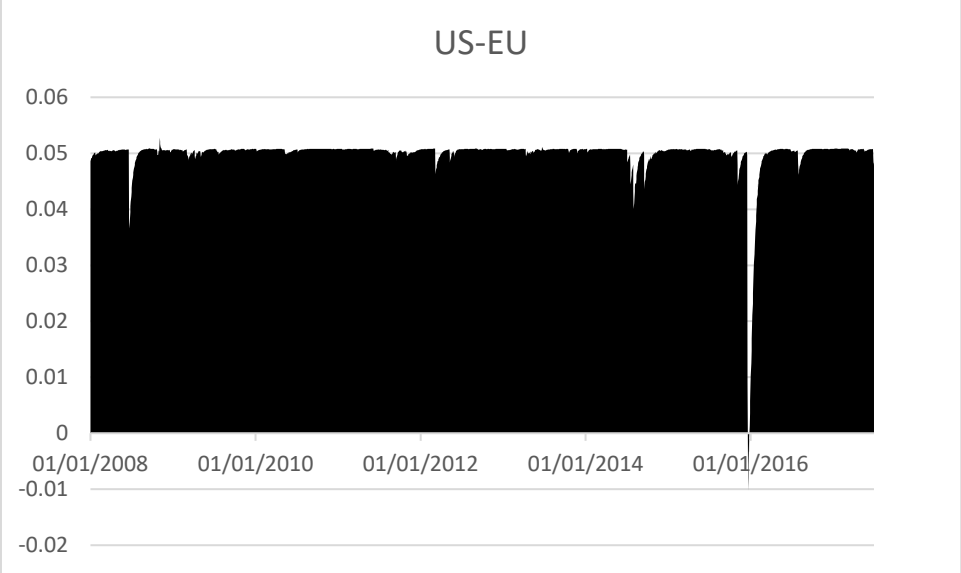


Figure 353: Net Pairwise Directional Connectedness Leisure

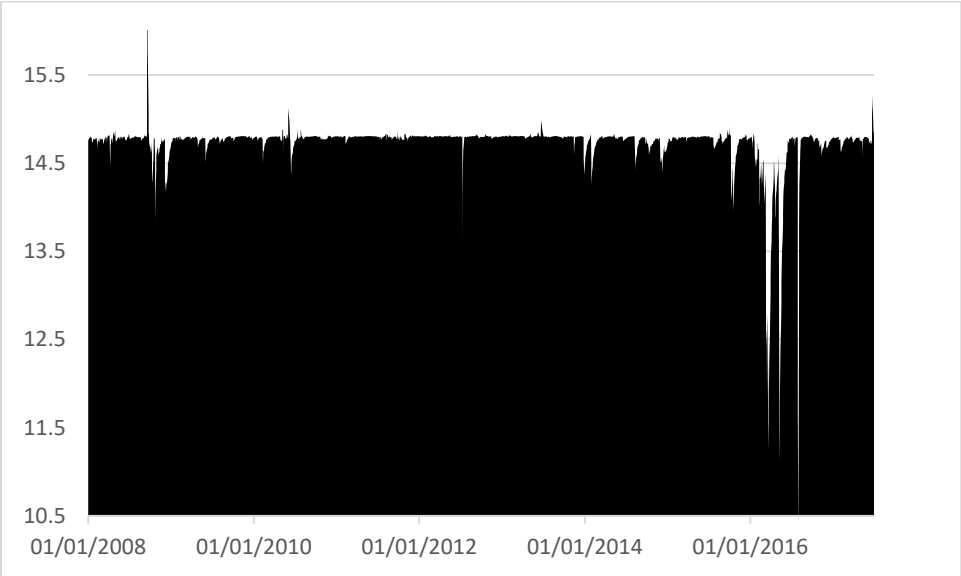


Figure 354: Total Average Dynamic Connectedness Oil & Gas

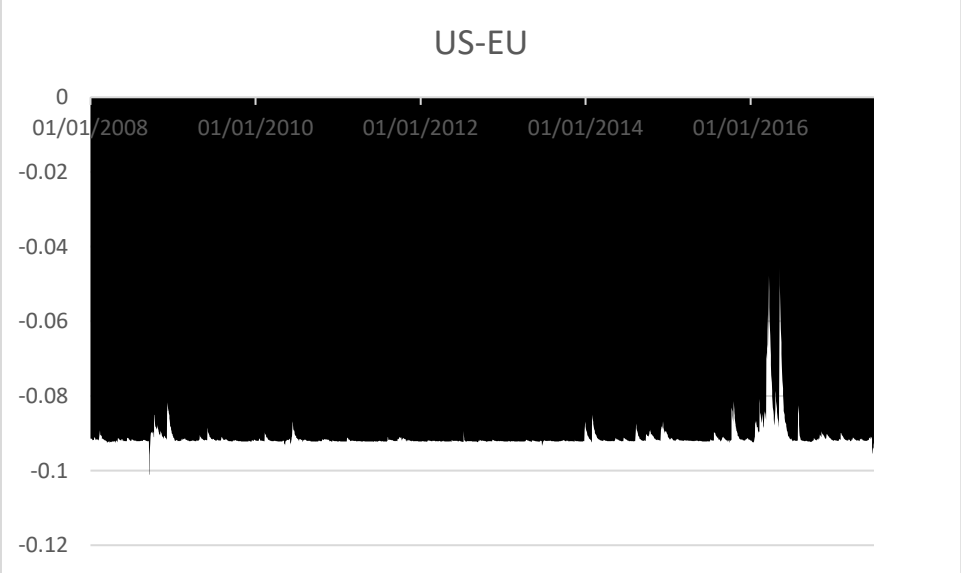


Figure 355: Net Pairwise Directional Connectedness Oil & Gas

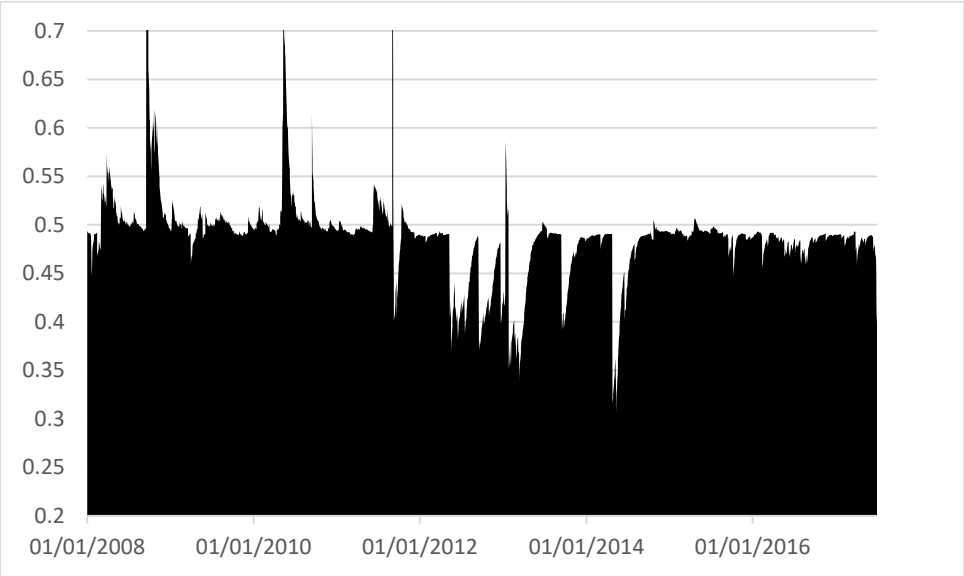


Figure 356: Total Average Dynamic Connectedness Utility

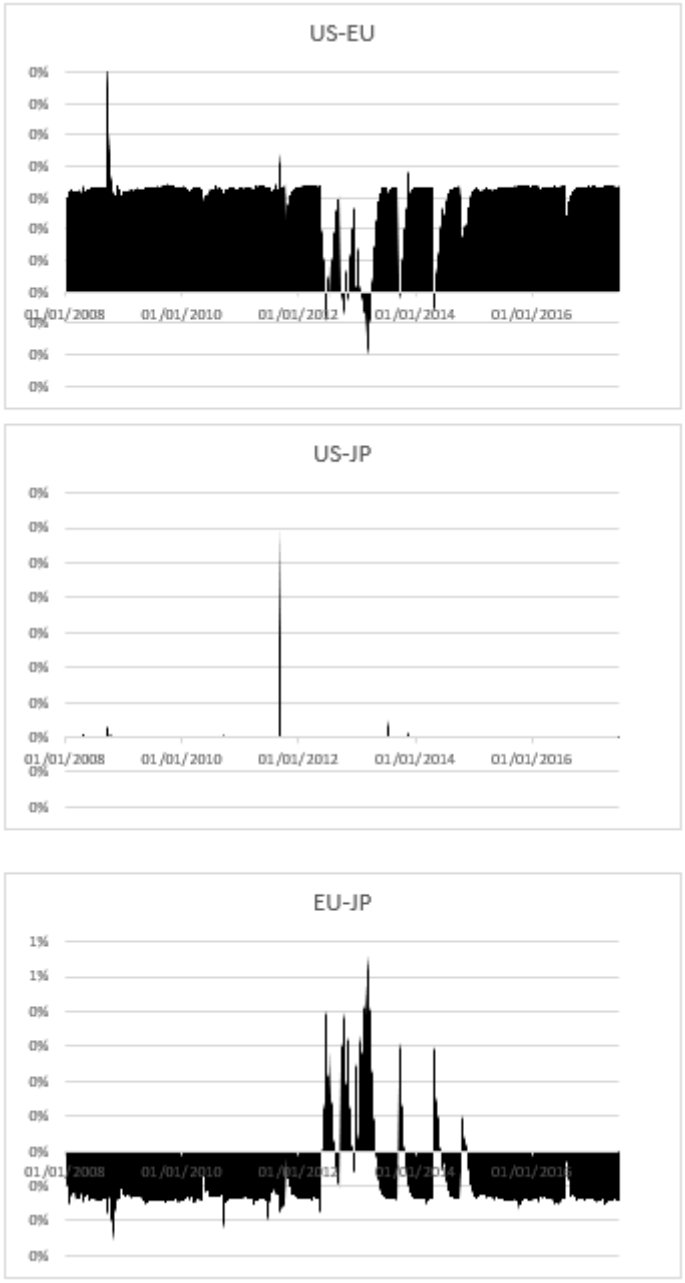


Figure 357: Net Pairwise Directional Connectedness Utility

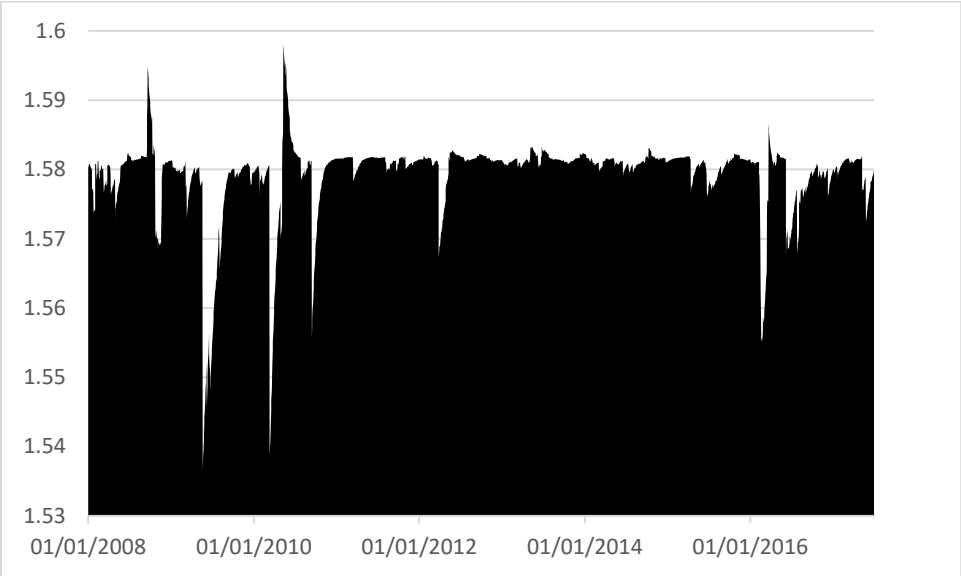


Figure 358: Total Average Dynamic Connectedness Railroads

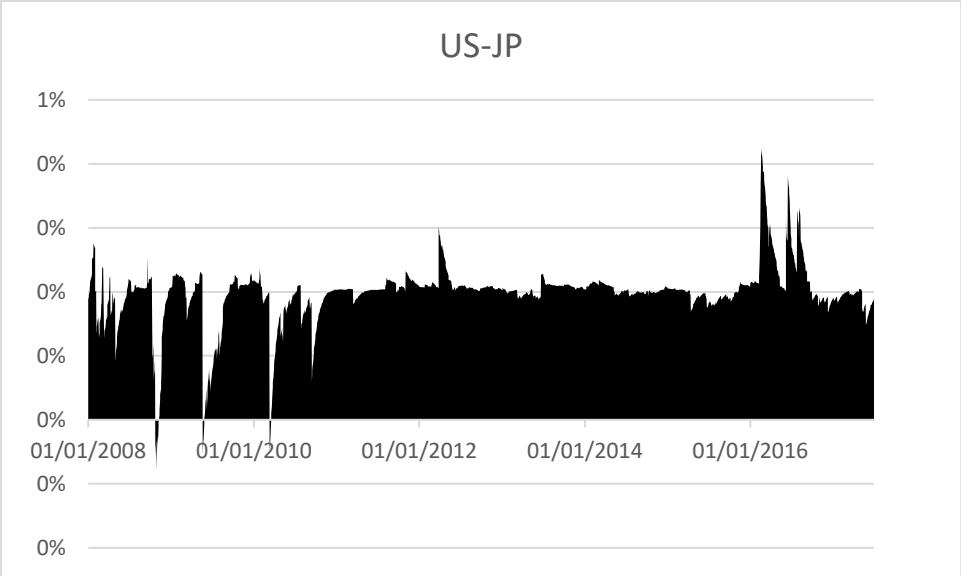


Figure 359: Net Pairwise Directional Connectedness Railroads

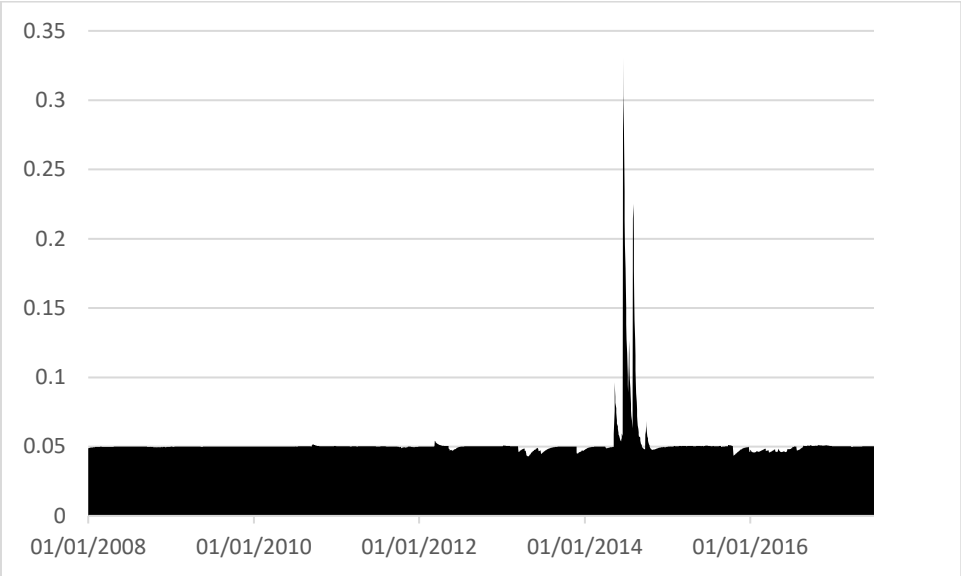


Figure 360: Total Average Dynamic Connectedness Machinery

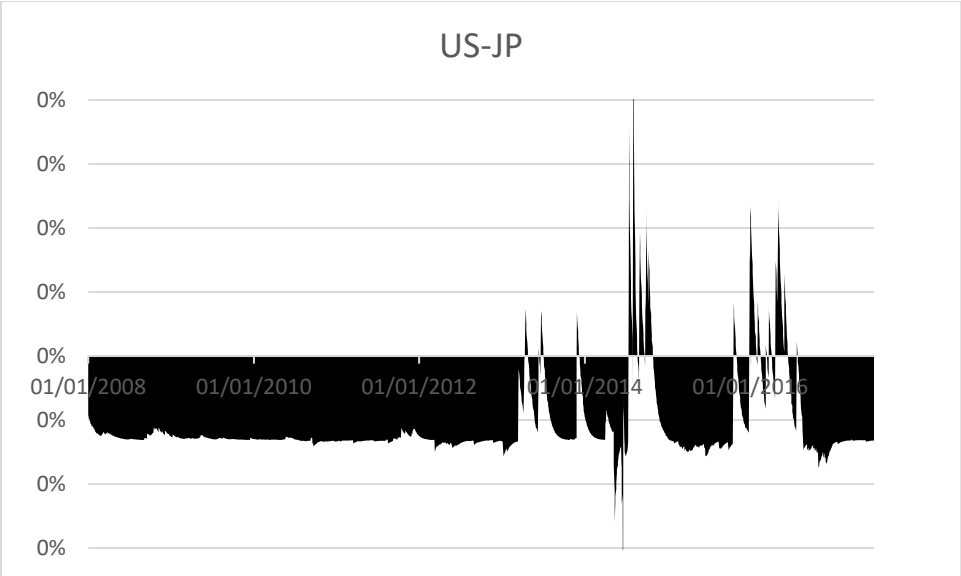


Figure 361: Net Pairwise Directional Connectedness Machinery

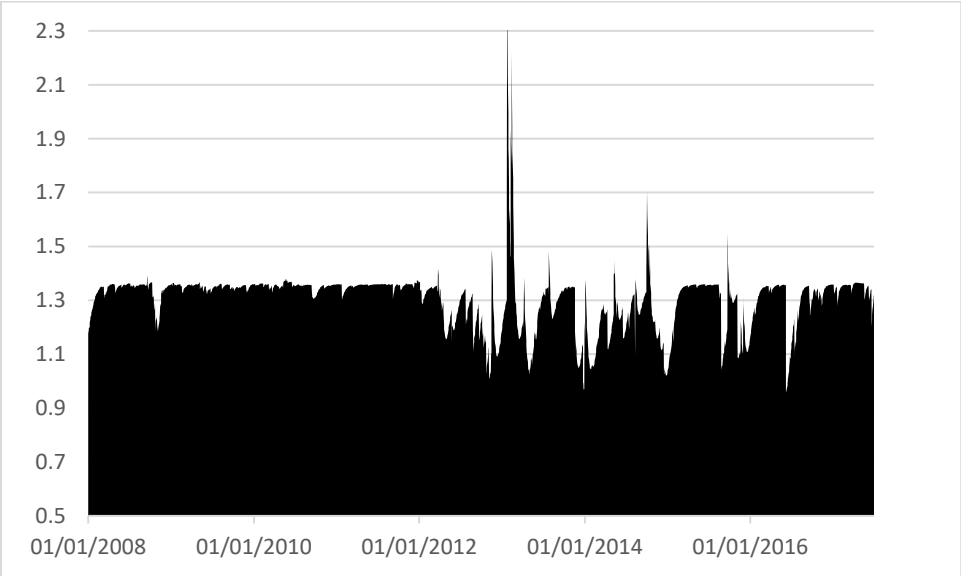


Figure 362: Total Average Dynamic Connectedness Other Transportation

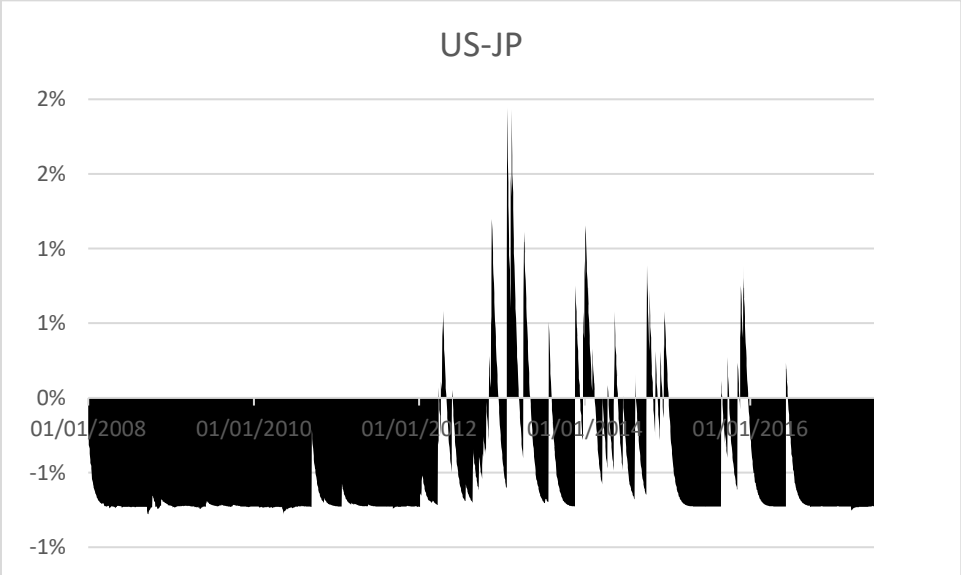


Figure 363: Net Pairwise Directional Connectedness Other Transportation

EQUITY

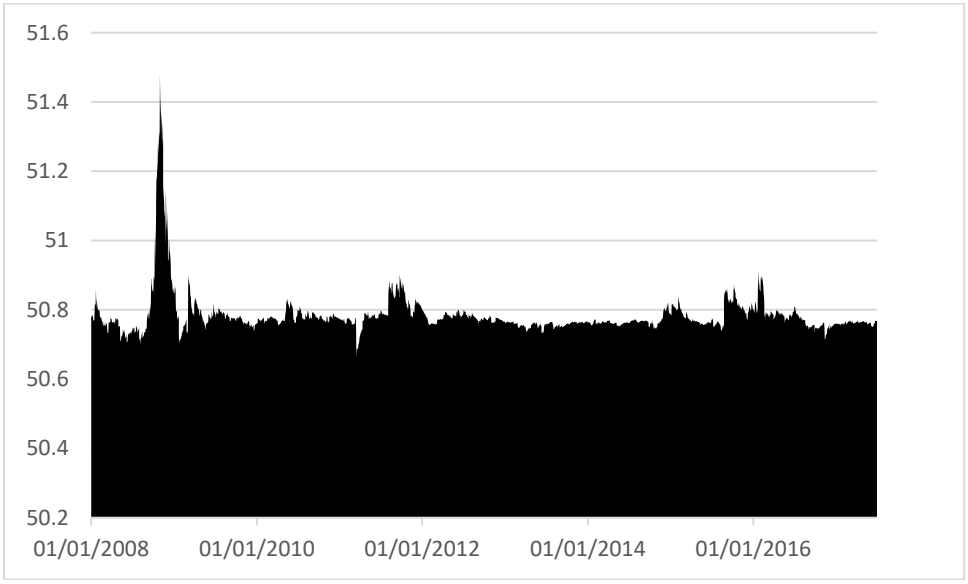


Figure 364: Total Average Dynamic Connectedness Oil & Gas

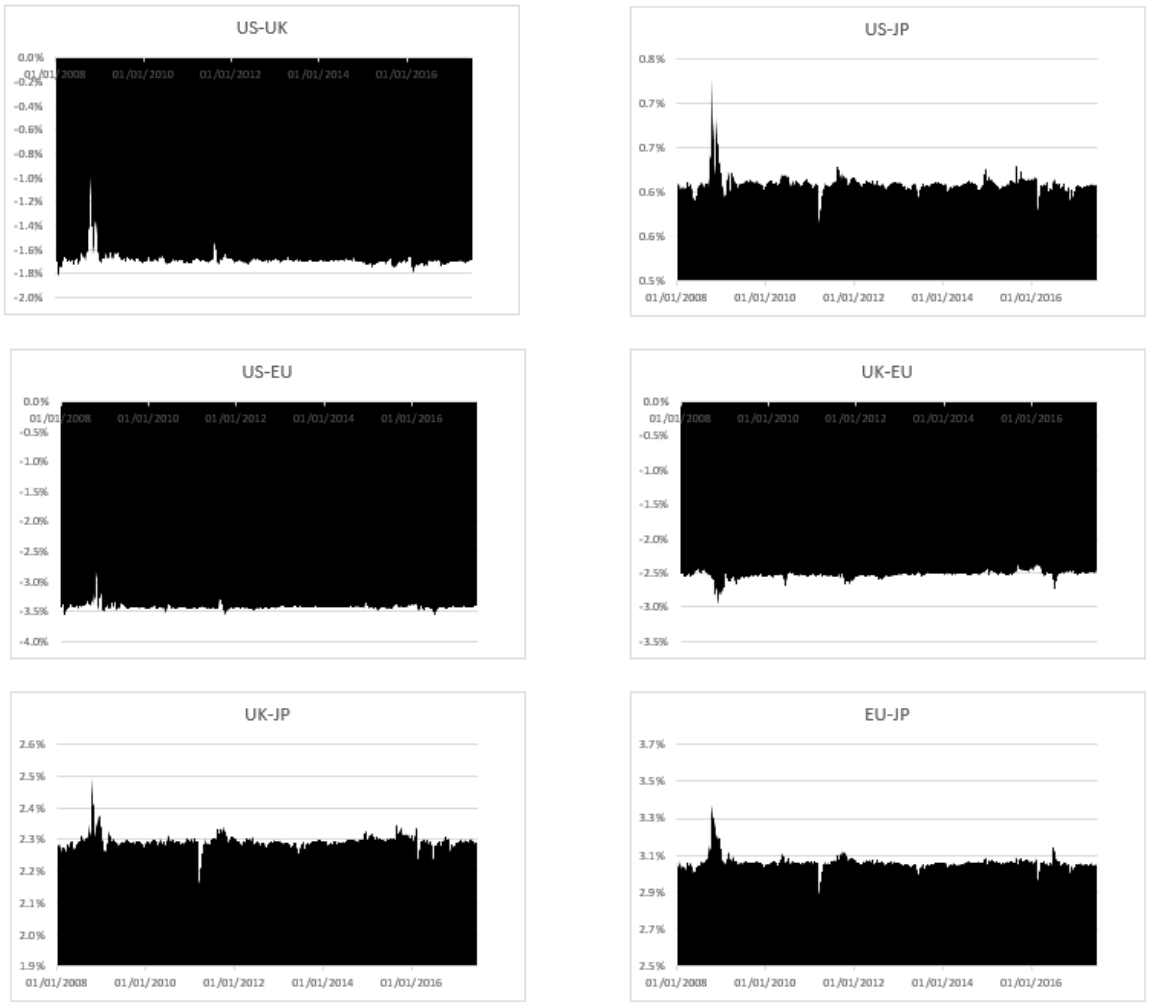


Figure 365: Net Pairwise Directional Connectedness Oil & Gas

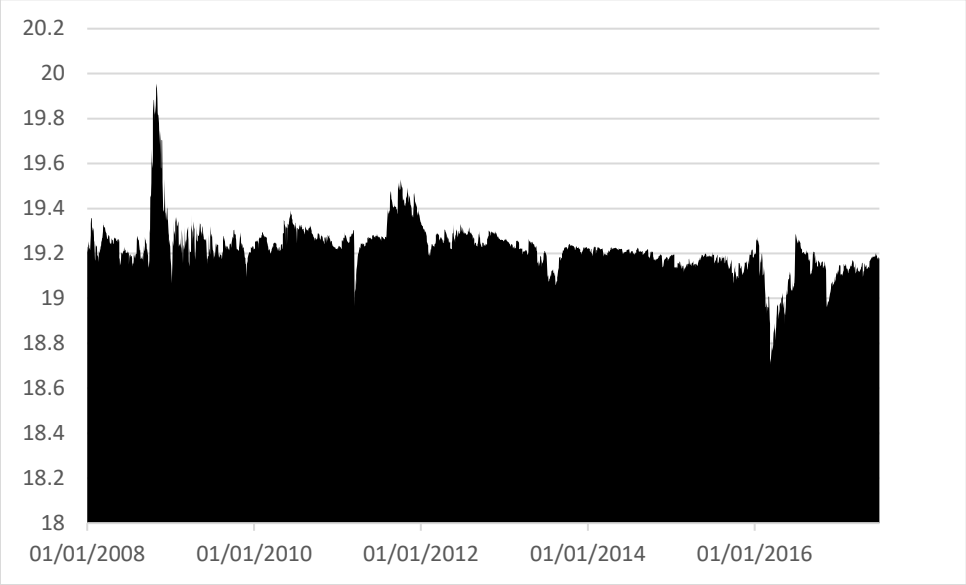


Figure 366: Total Average Dynamic Connectedness Basic Materials

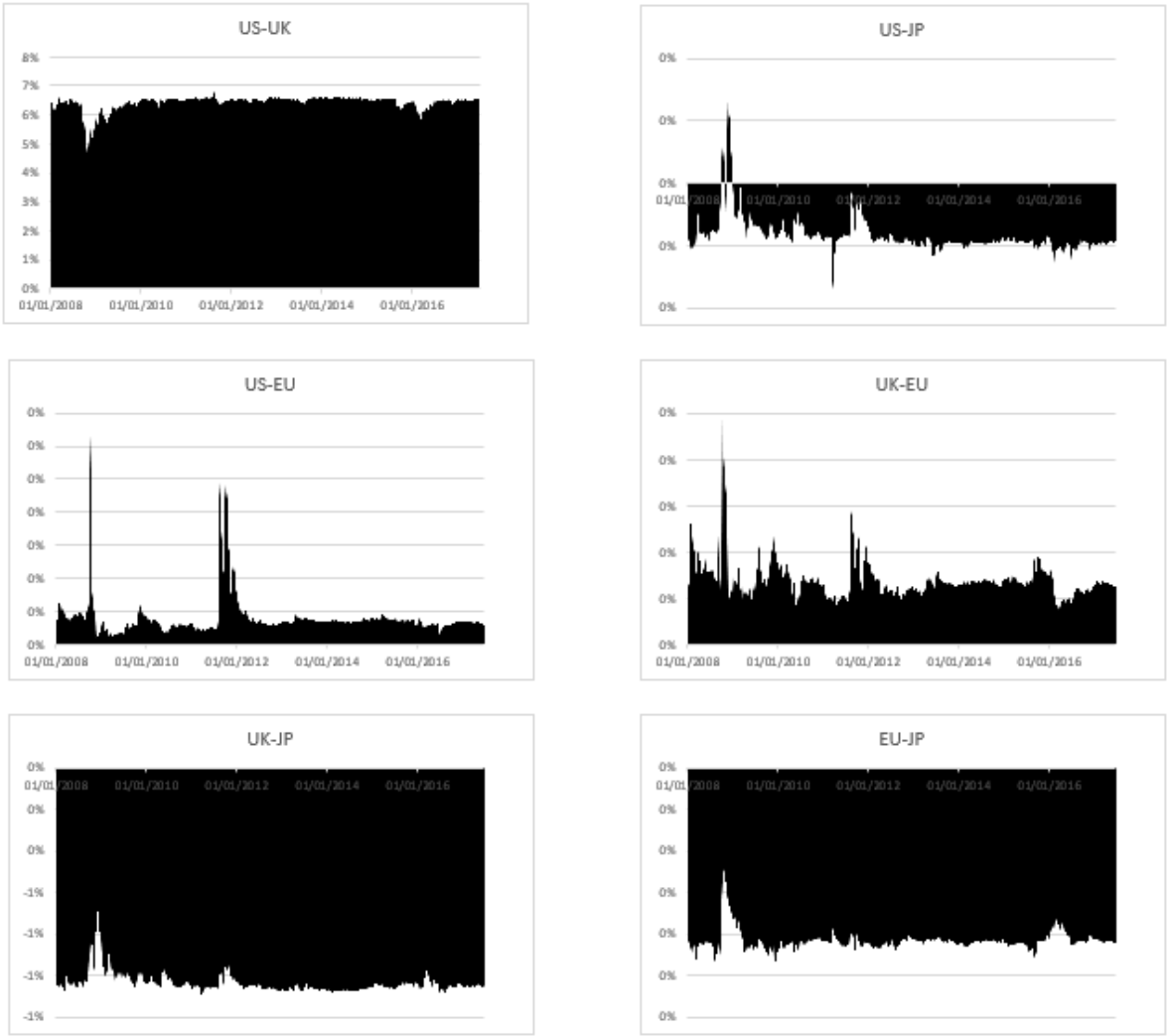


Figure 367: Net Pairwise Directional Connectedness Basic Materials

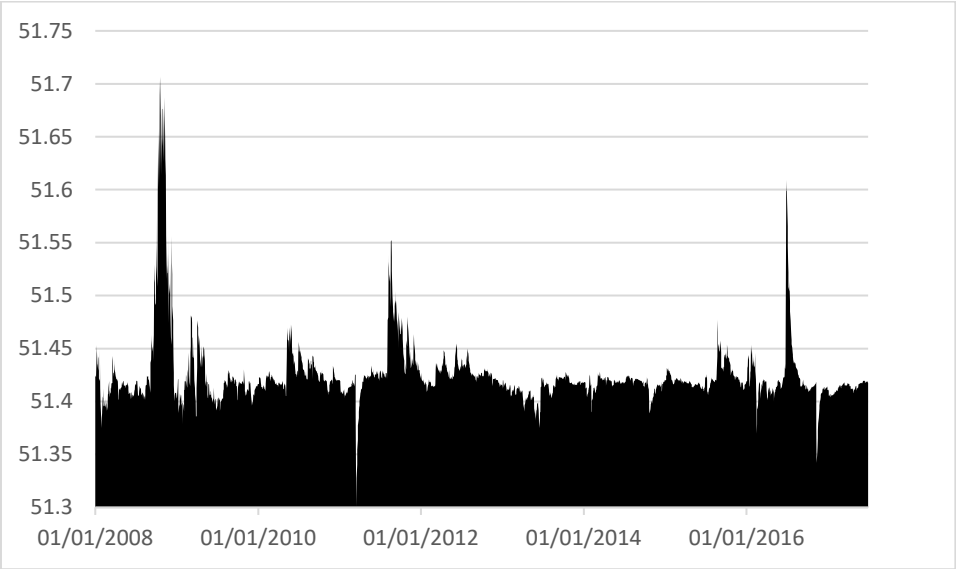


Figure 368: Total Average Dynamic Connectedness Industrials

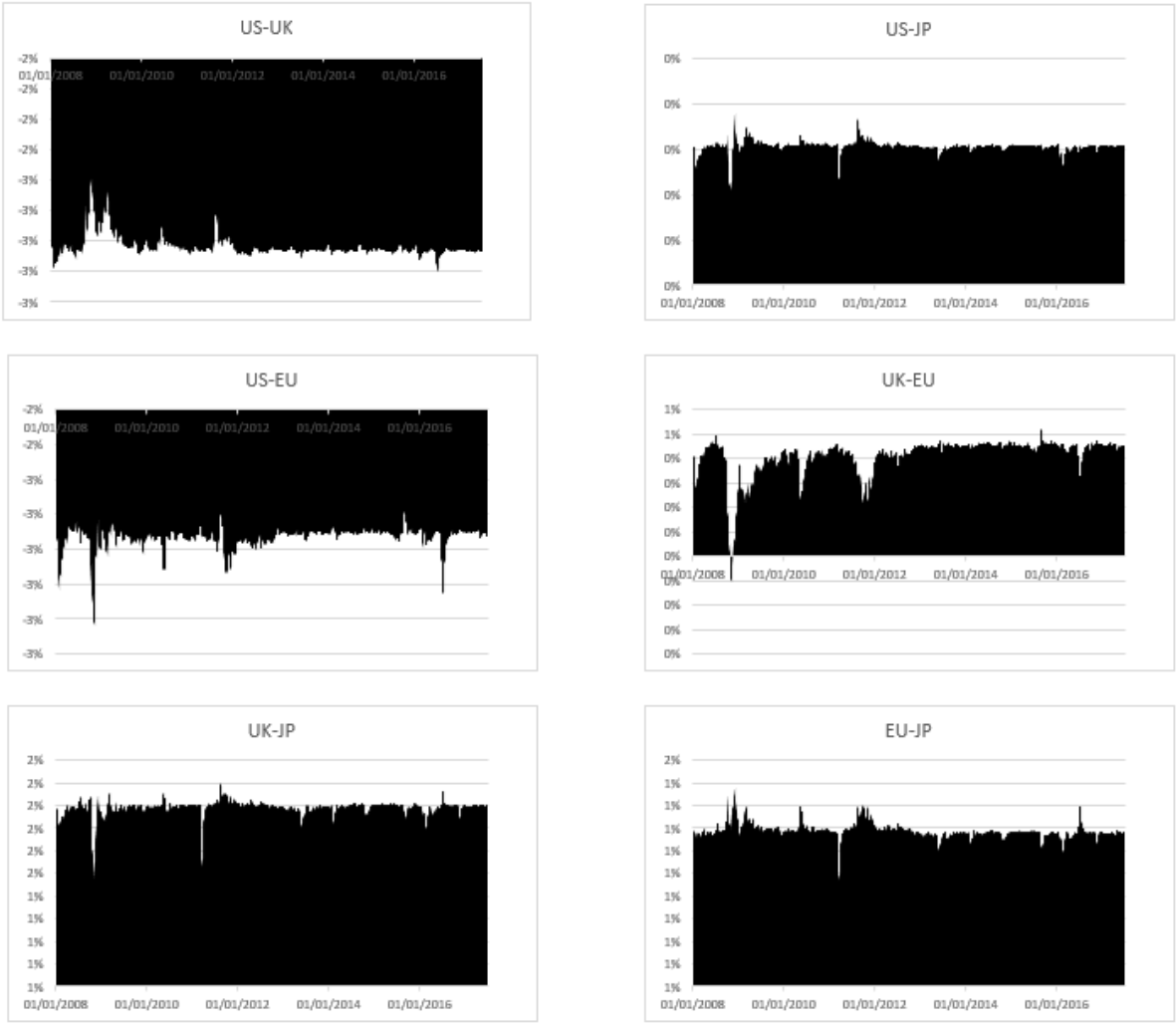


Figure 369: Net Pairwise Directional Connectedness Industrials

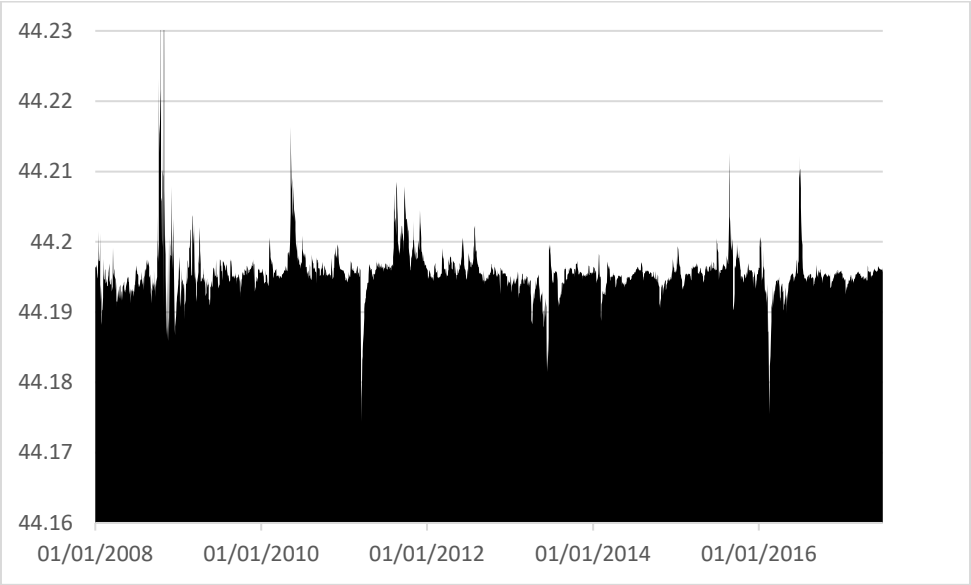


Figure 370: Total Average Dynamic Connectedness Consumer Goods

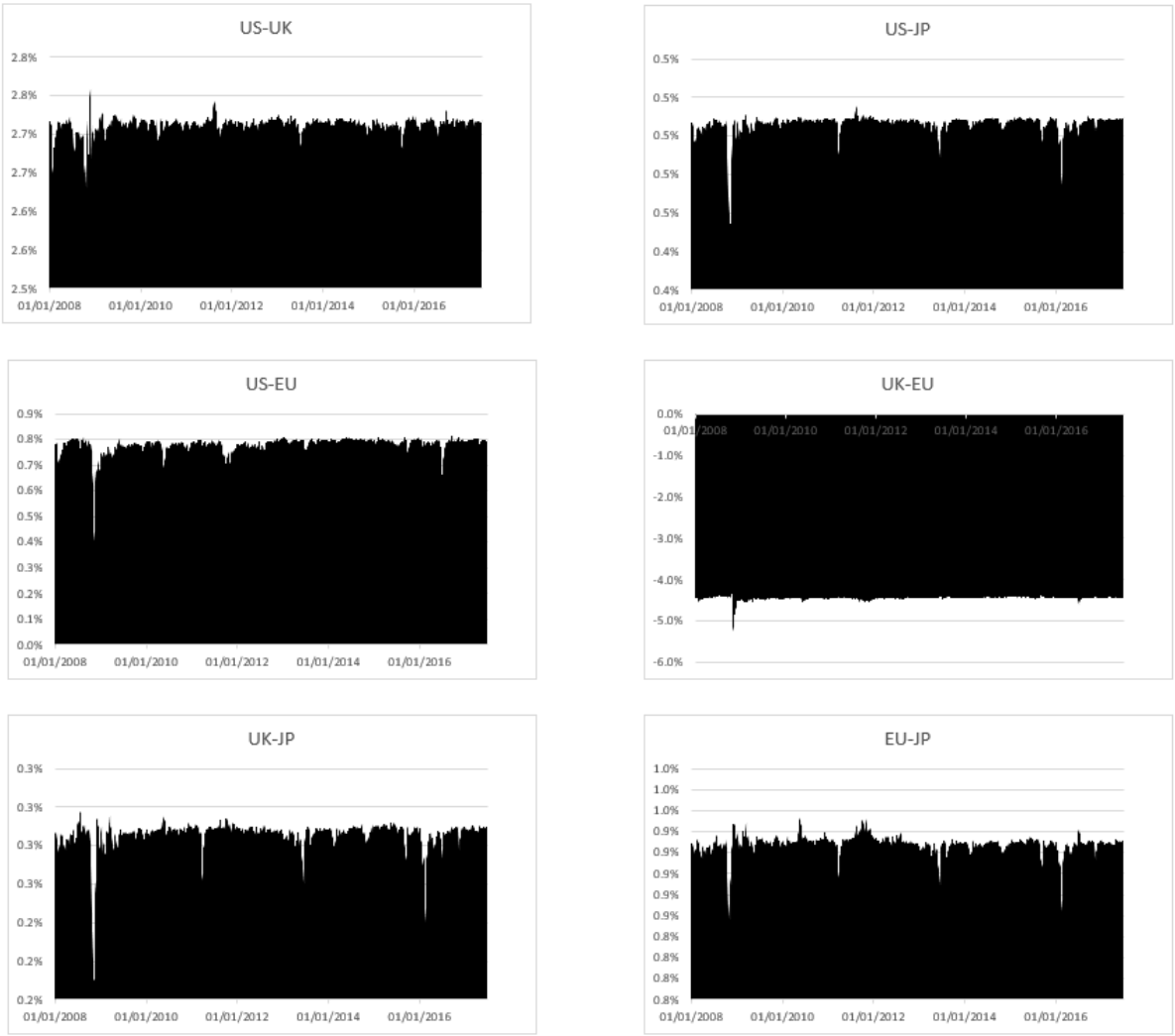


Figure 371: Net Pairwise Directional Connectedness Consumer Goods

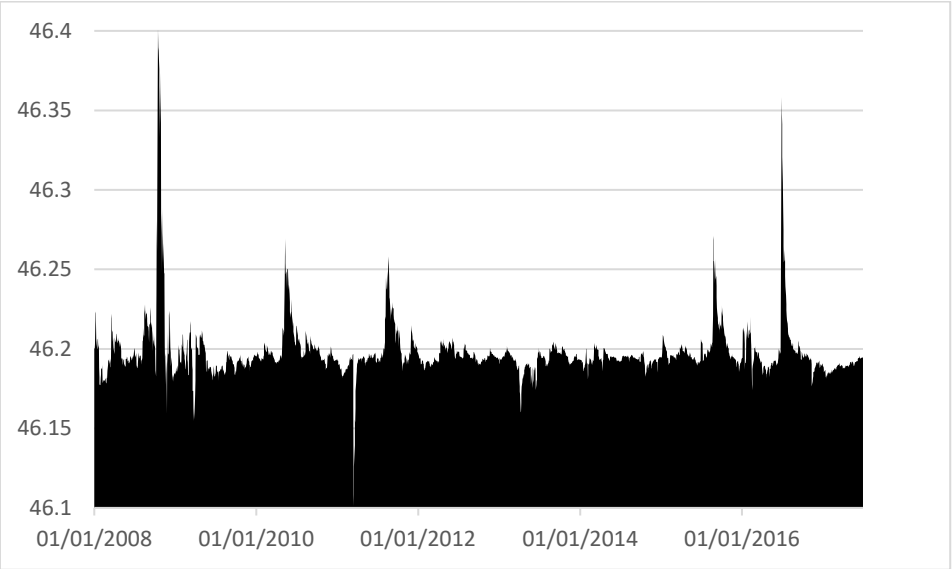


Figure 372: Total Average Dynamic Connectedness Consumer Services

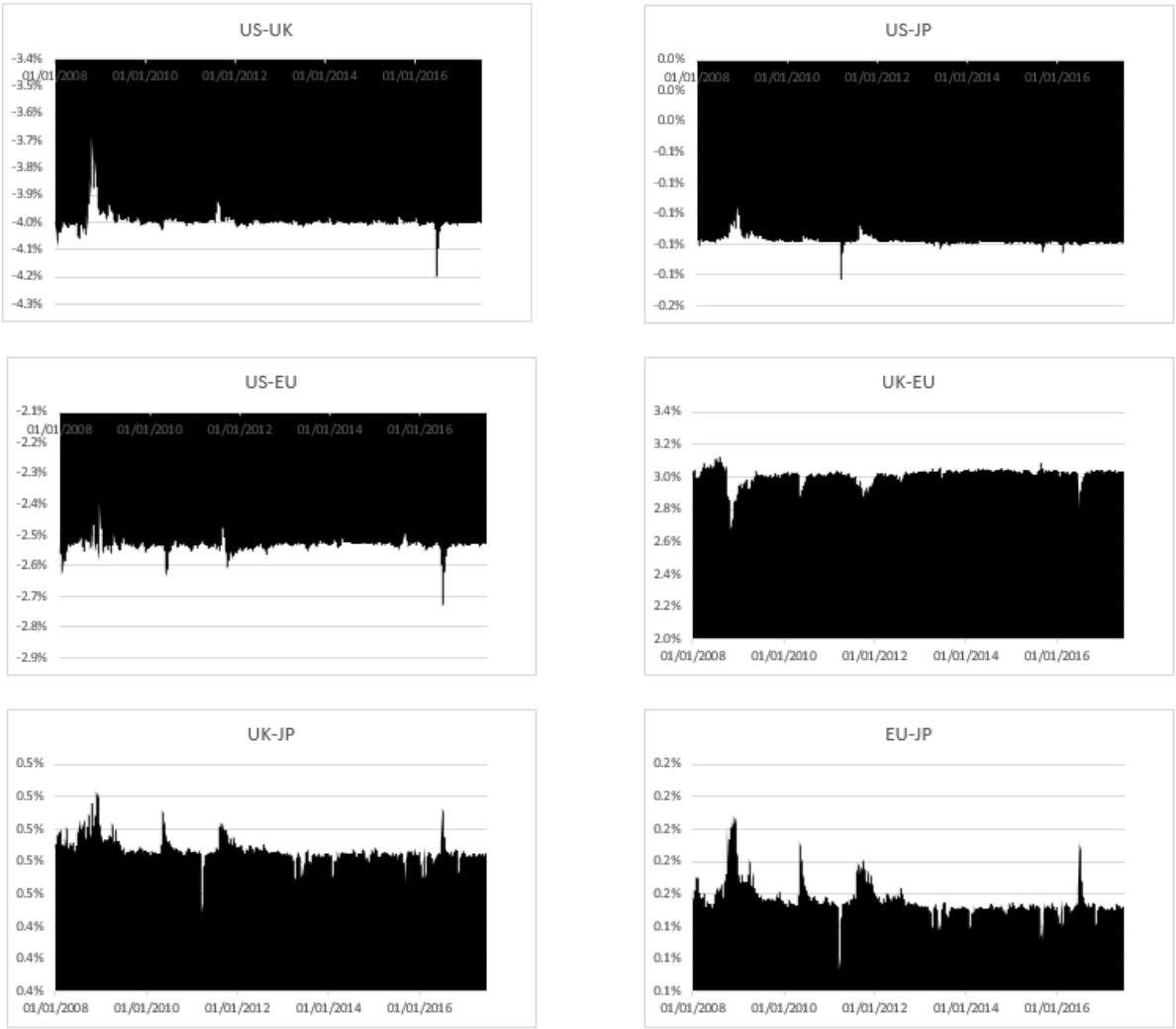


Figure 373: Net Pairwise Directional Connectedness Consumer Services

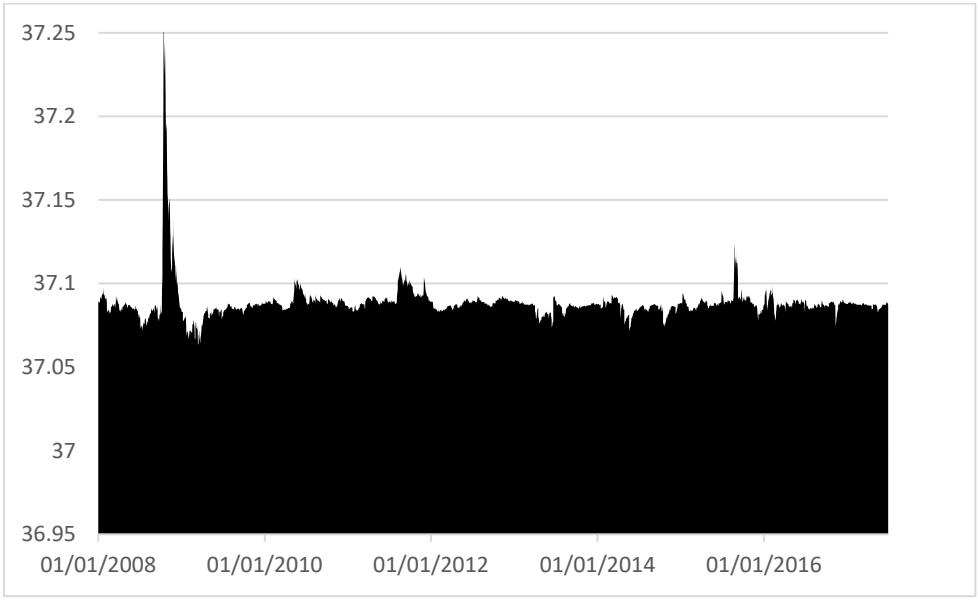


Figure 374: Total Average Dynamic Connectedness Healthcare Services

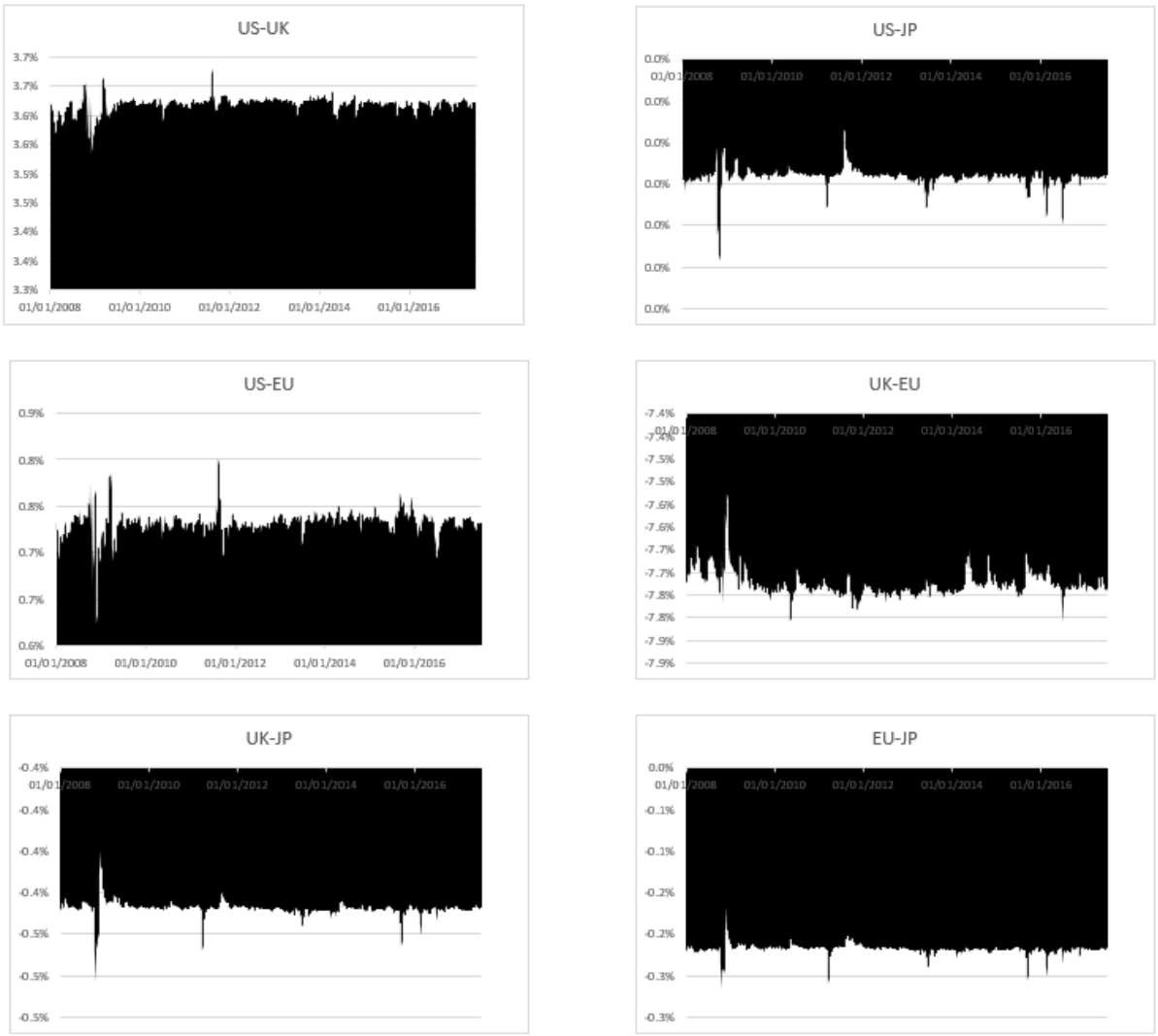


Figure 375: Net Pairwise Directional Connectedness Healthcare Services

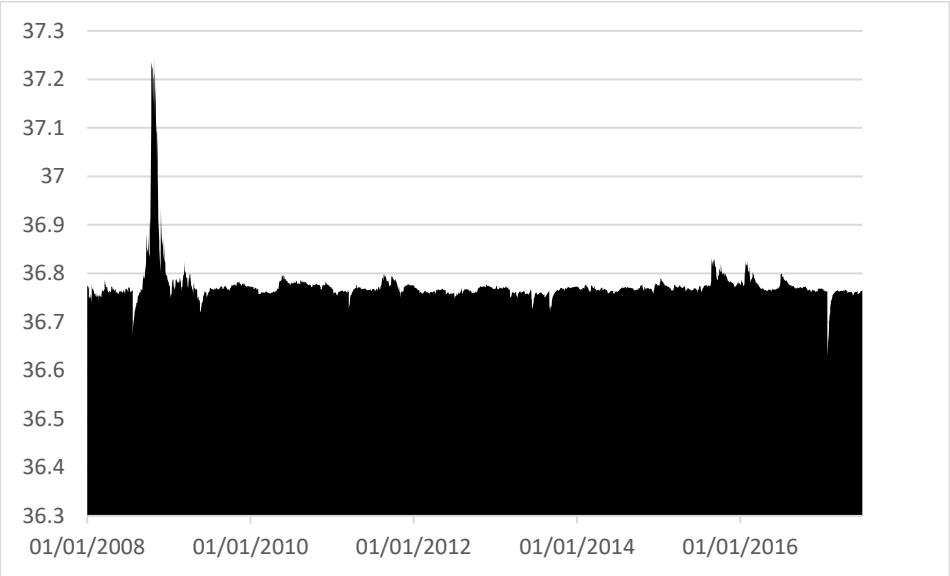


Figure 376: Total Average Dynamic Connectedness Telecommunications Services

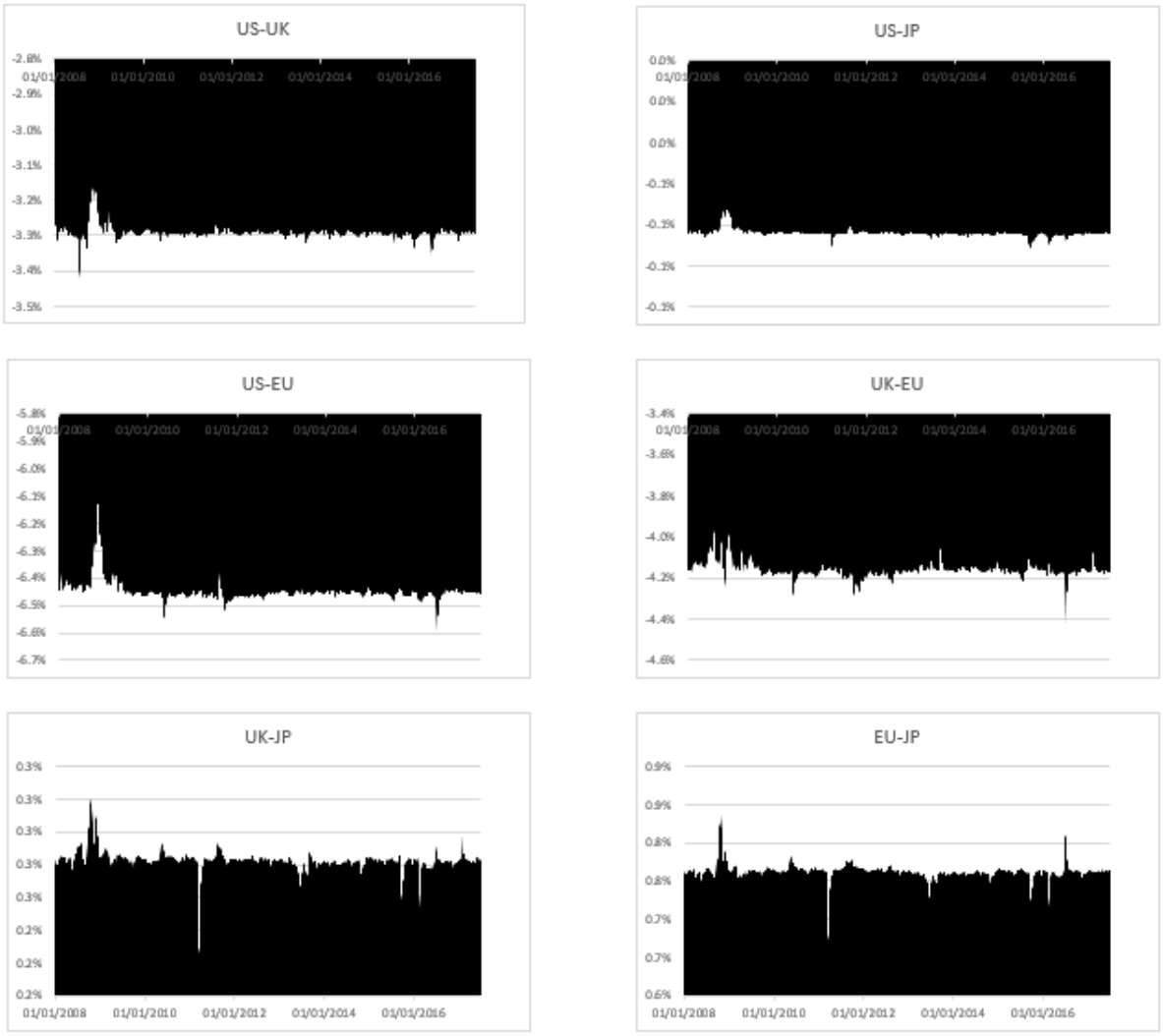


Figure 377: Net Pairwise Directional Connectedness Telecommunications Services

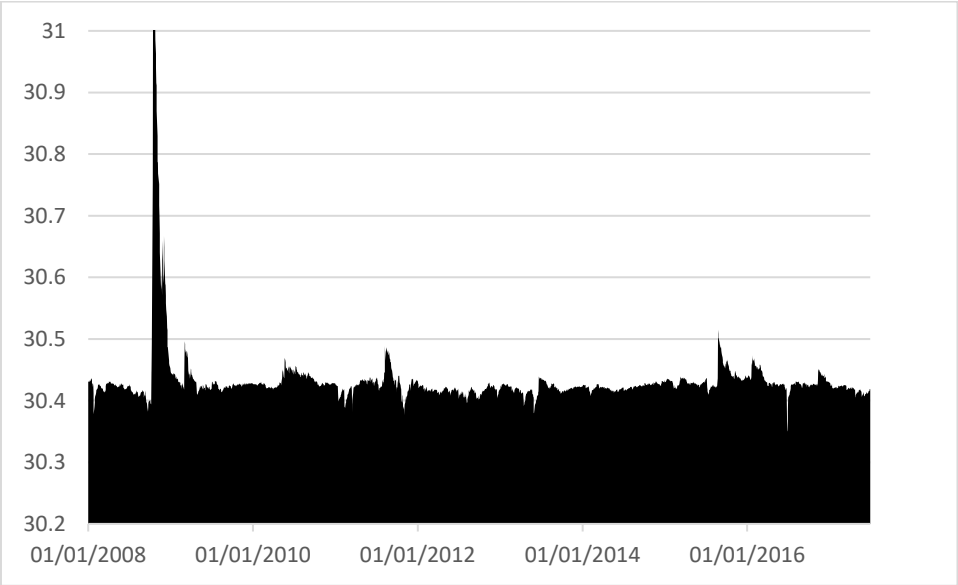


Figure 378: Total Average Dynamic Connectedness Utilities

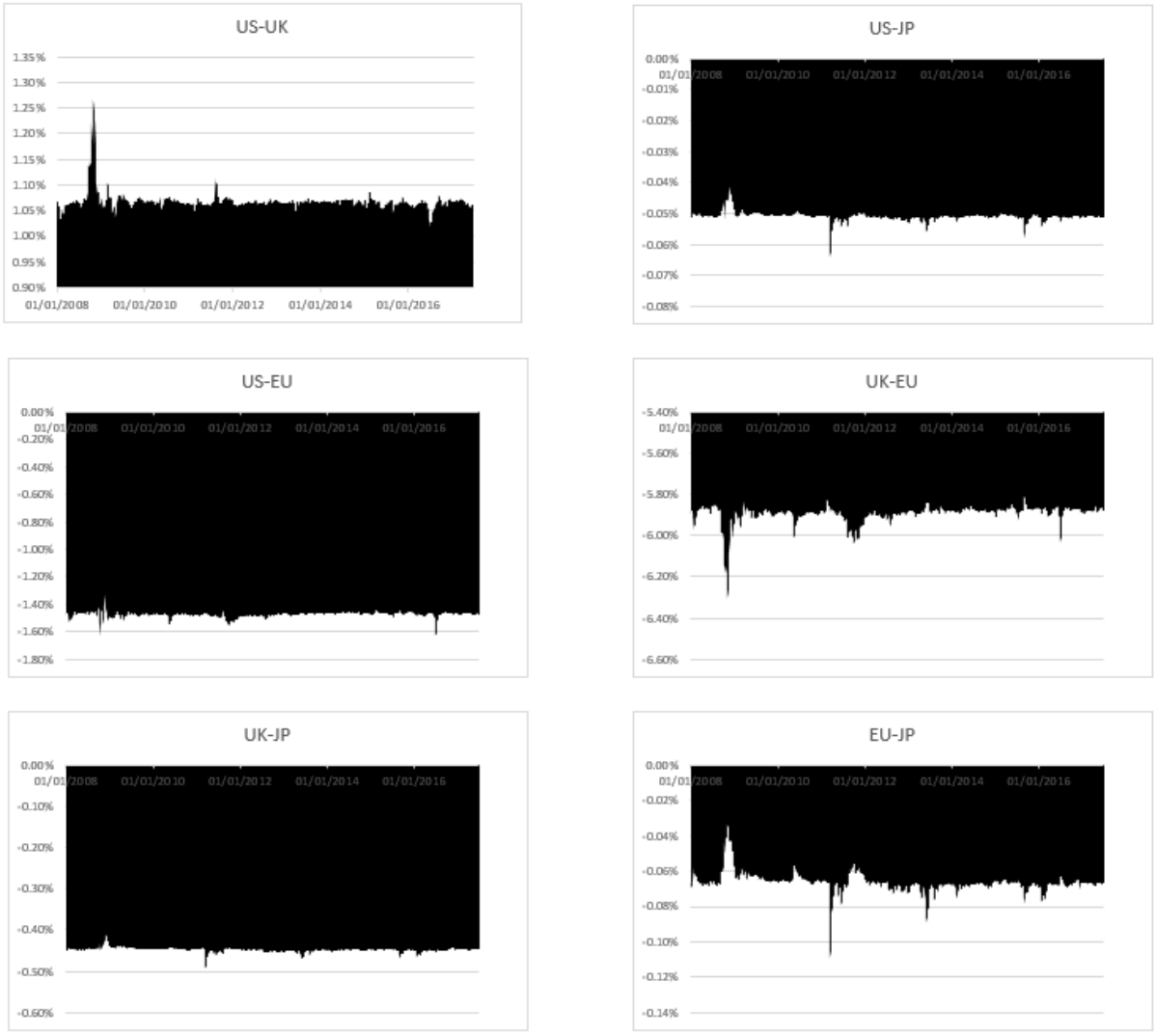


Figure 379: Net Pairwise Directional Connectedness Utilities

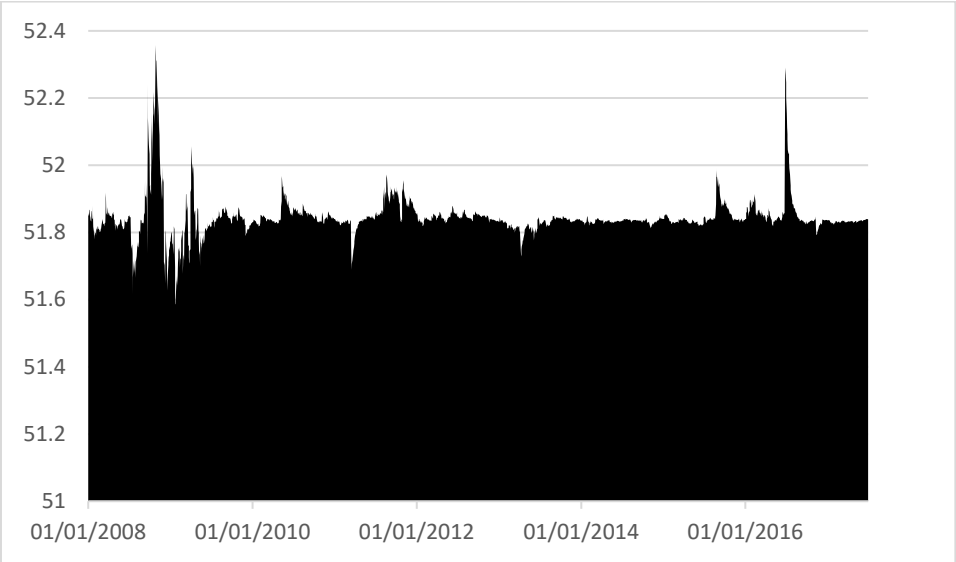


Figure 380: Total Average Dynamic Connectedness Financials

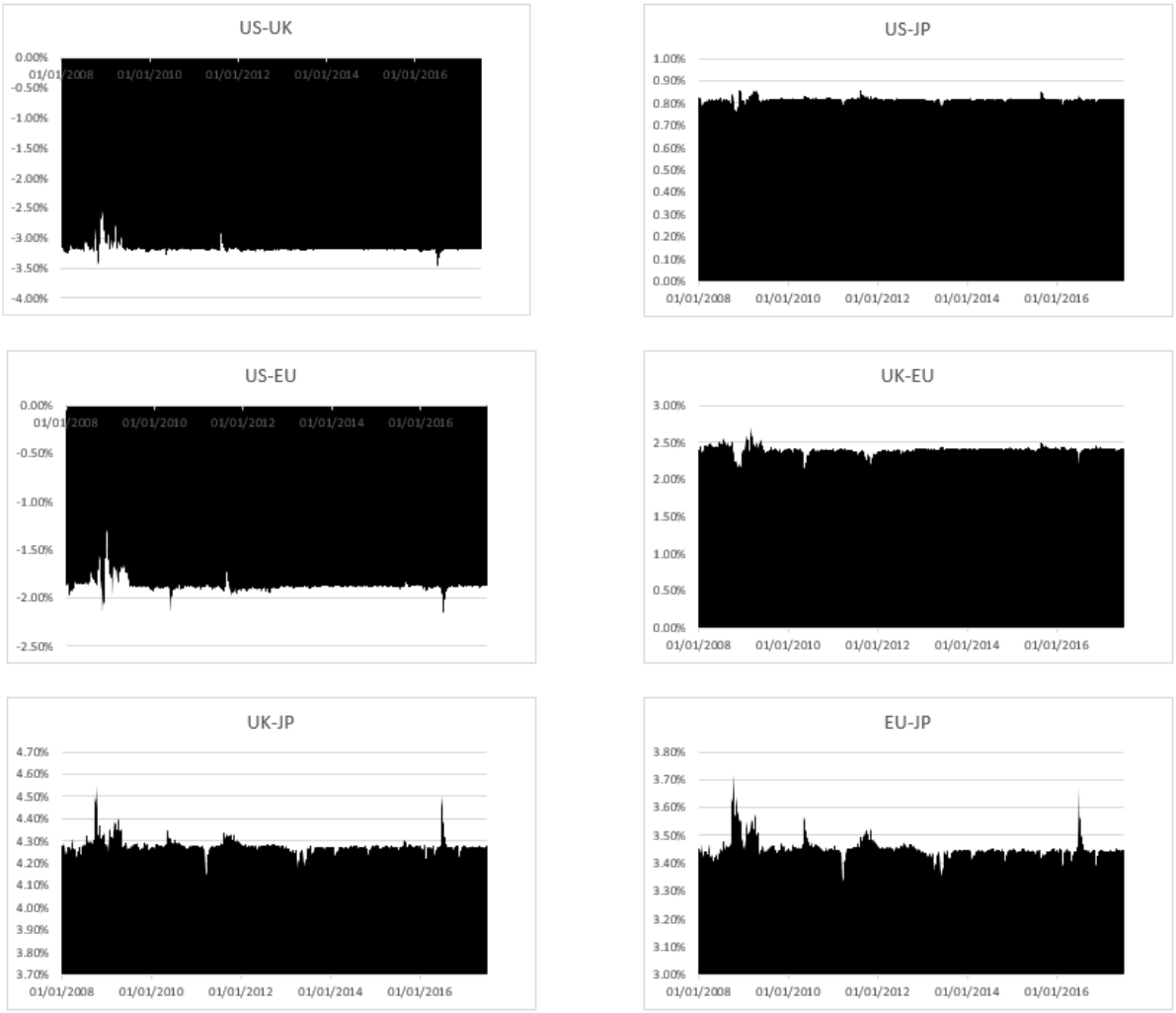


Figure 381: Net Pairwise Directional Connectedness Financials

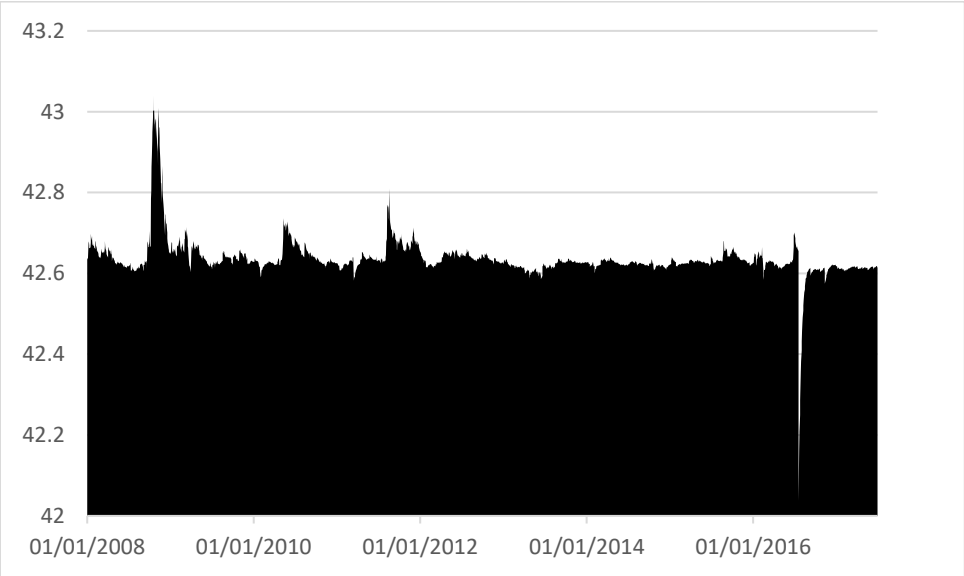


Figure 382: Total Average Dynamic Connectedness Technology

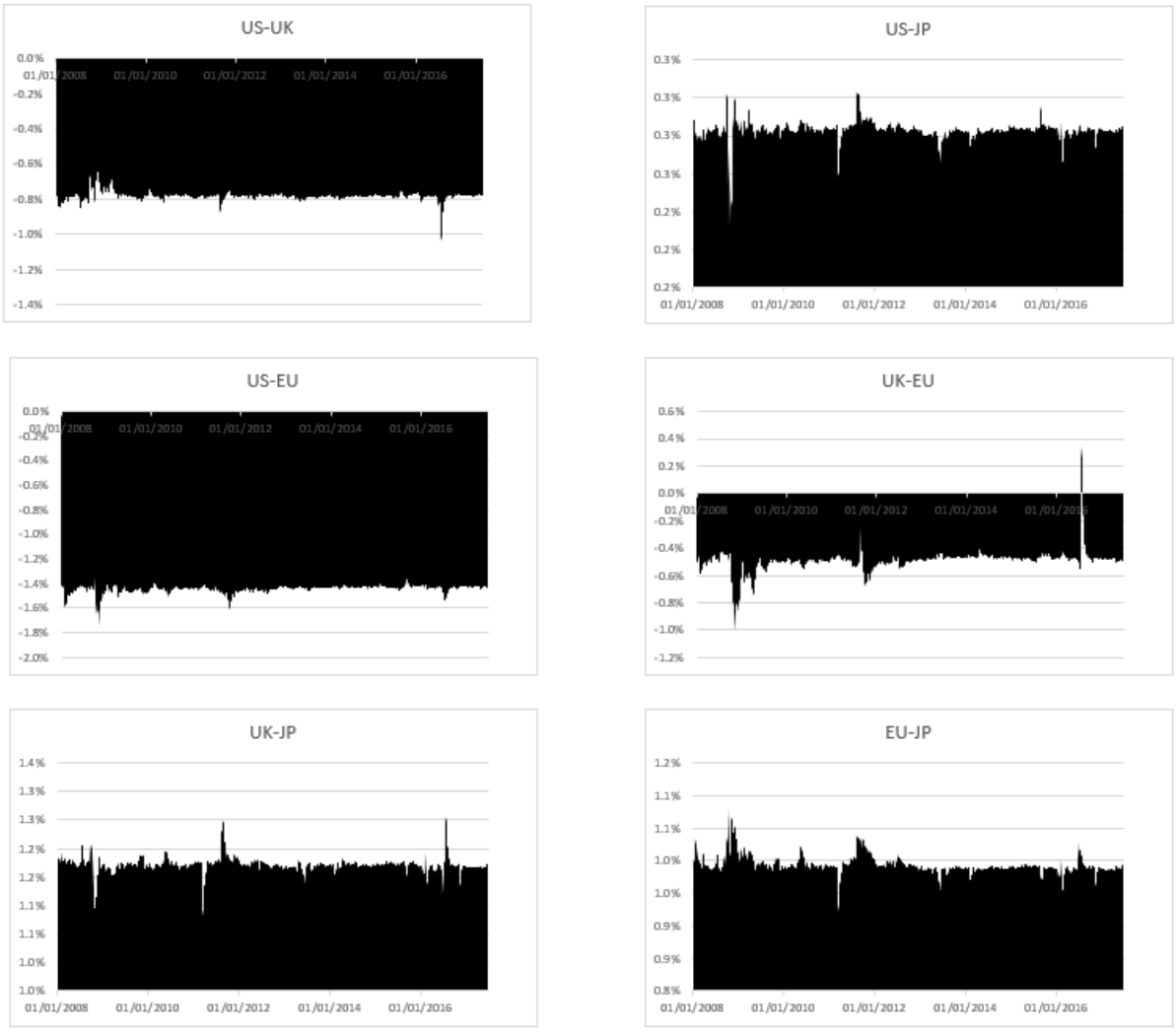


Figure 383: Net Pairwise Directional Connectedness Technology

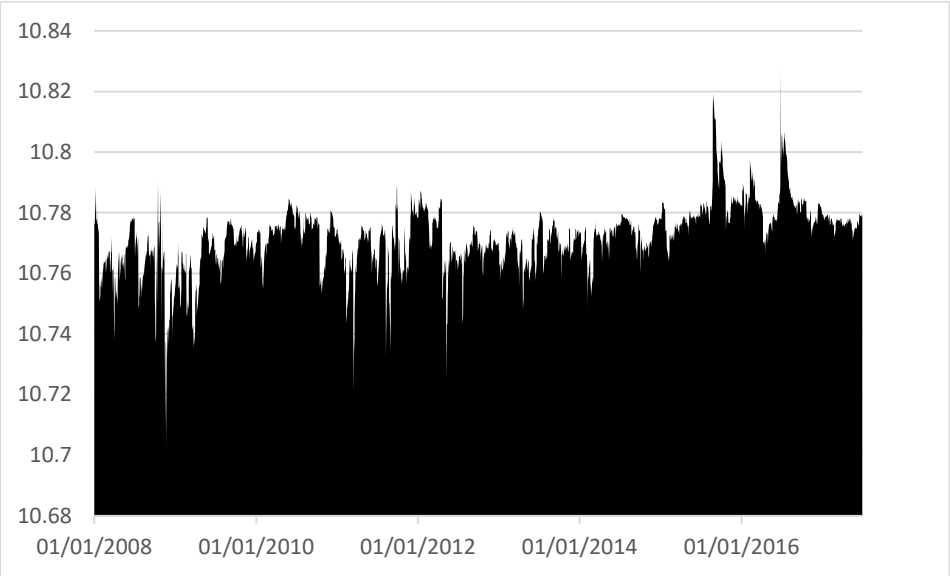


Figure 384: Total Average Dynamic Connectedness Other Consumer Services

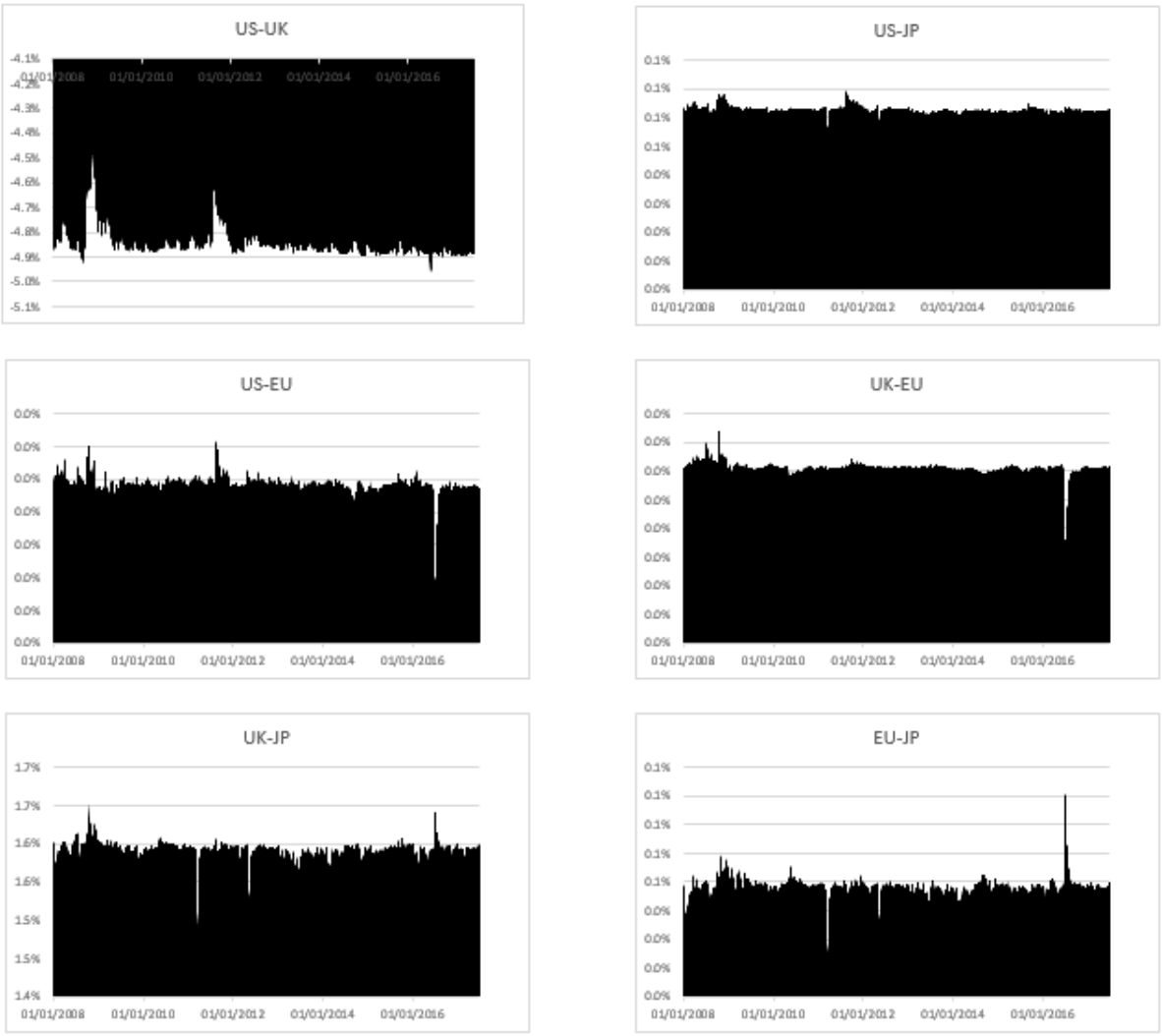


Figure 385: Net Pairwise Directional Connectedness Other Consumer Services

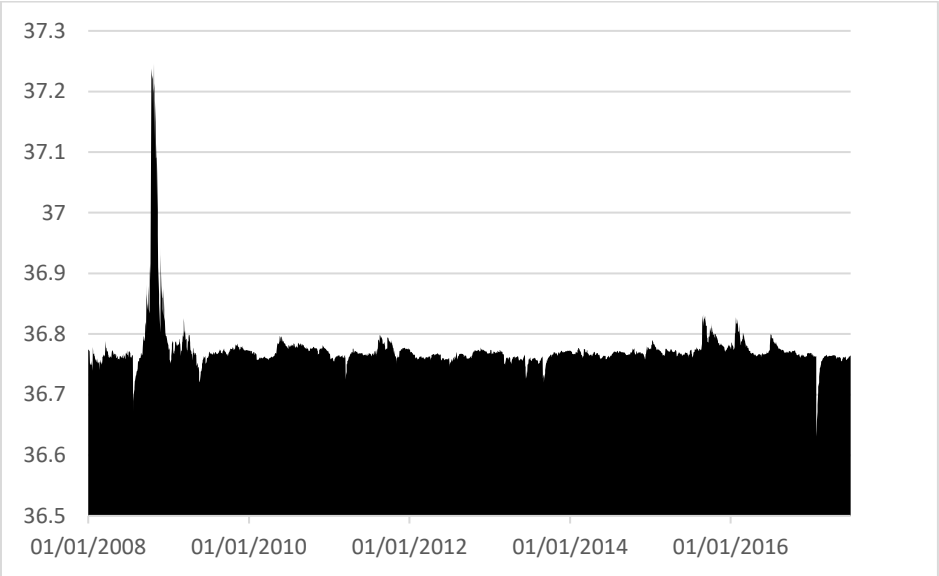


Figure 386: Total Average Dynamic Connectedness Other Telecommunications Services

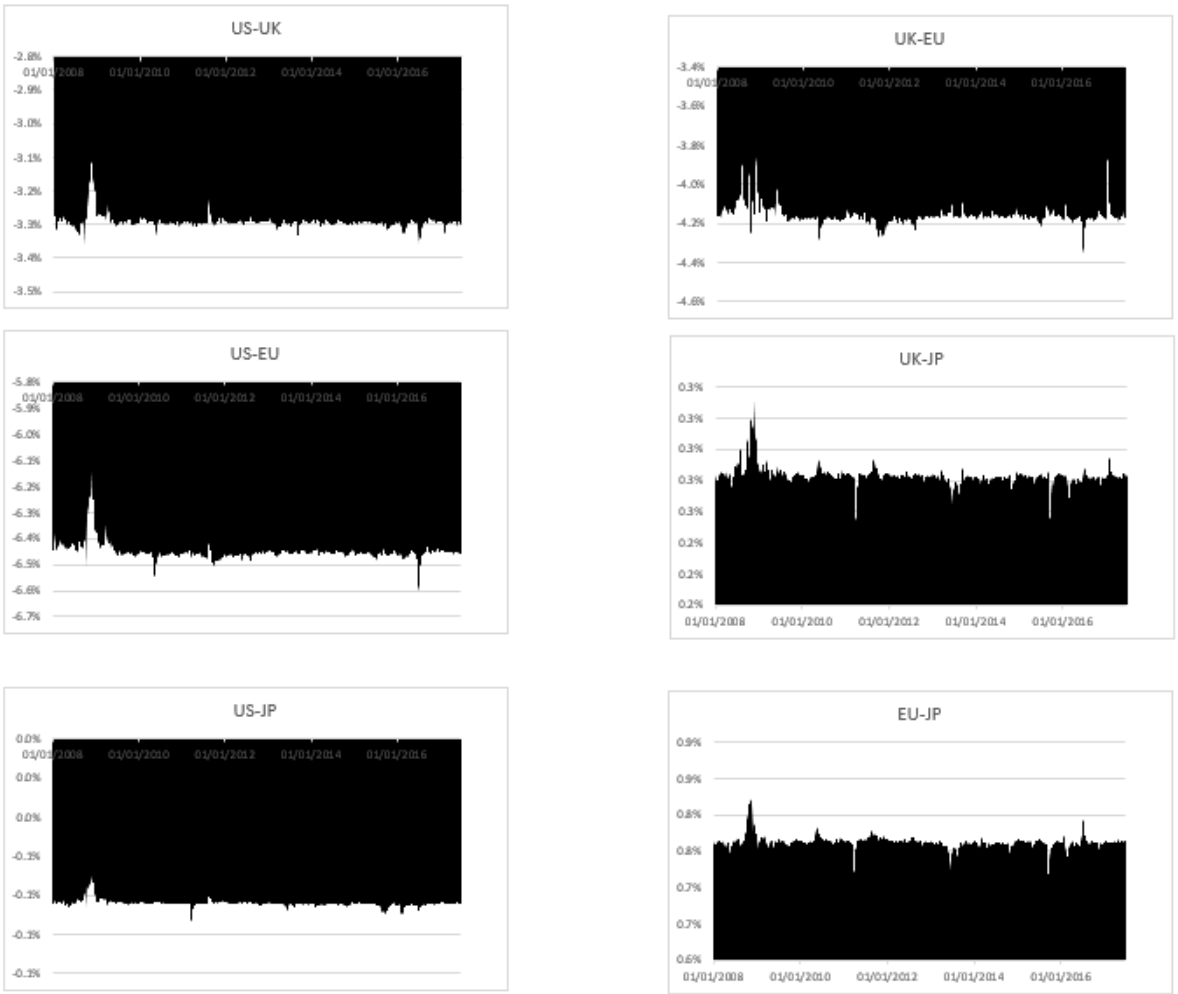


Figure 387: Net Pairwise Directional Connectedness Other Telecommunications Services

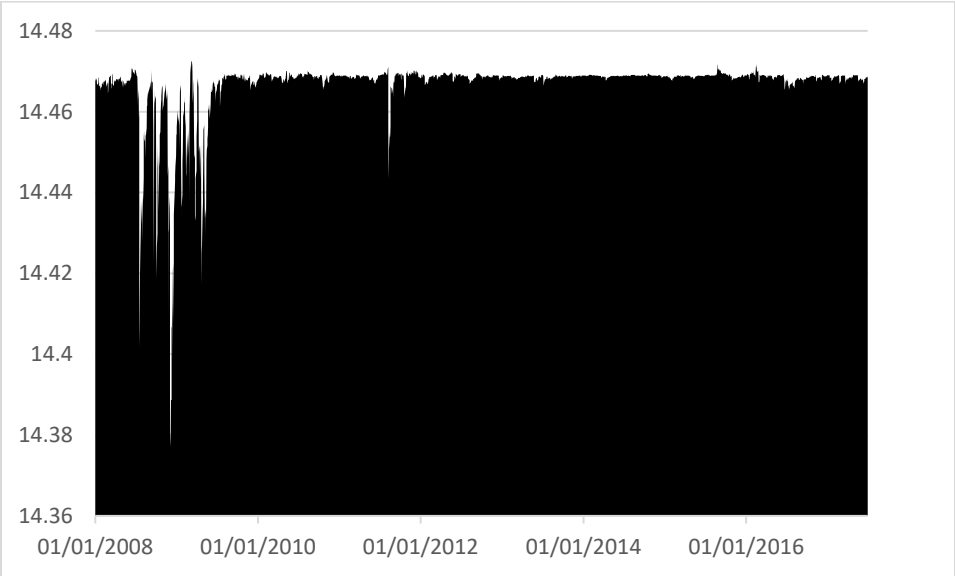


Figure 388: Total Average Dynamic Connectedness Banking

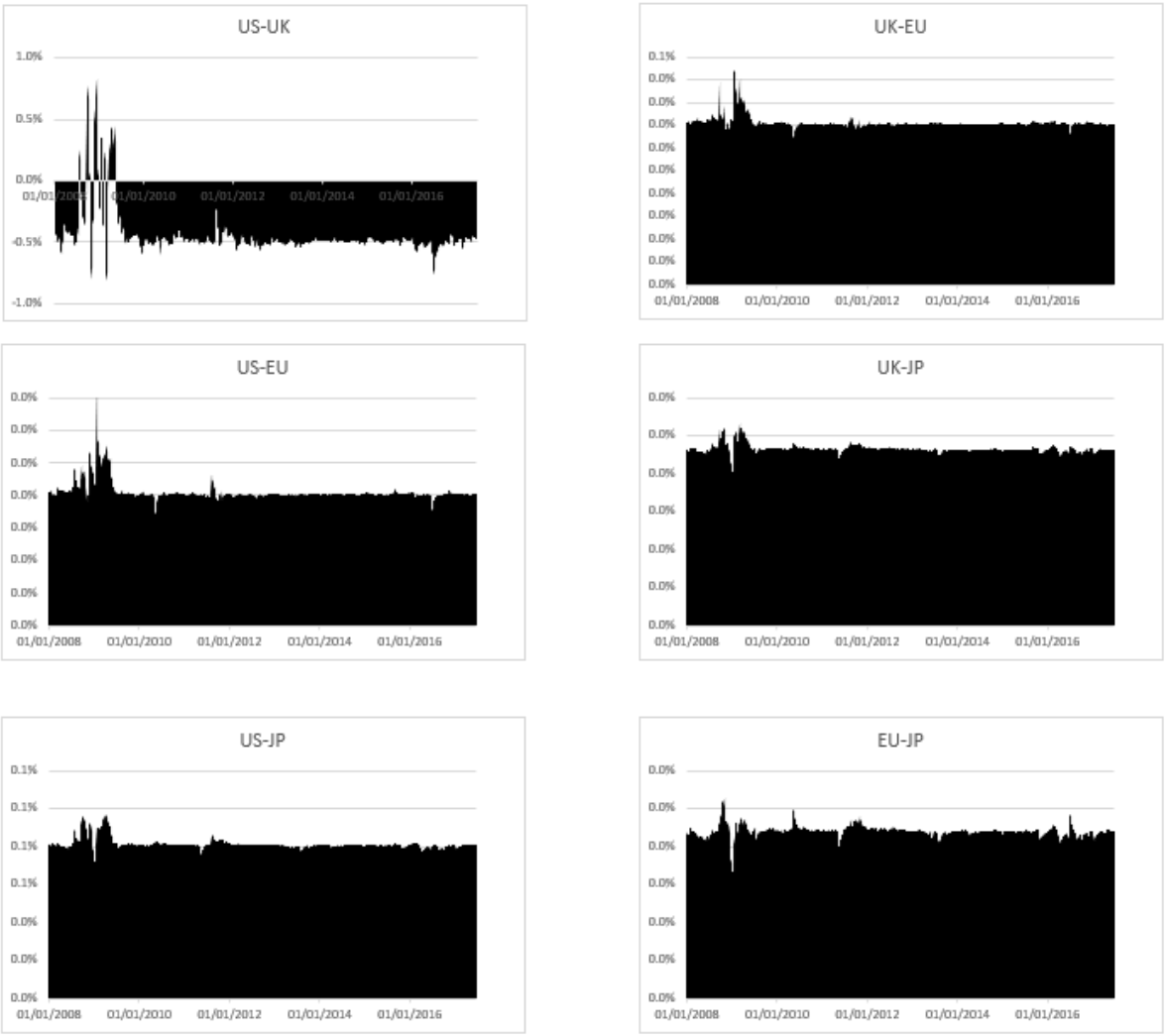


Figure 389: Net Pairwise Directional Connectedness Banking

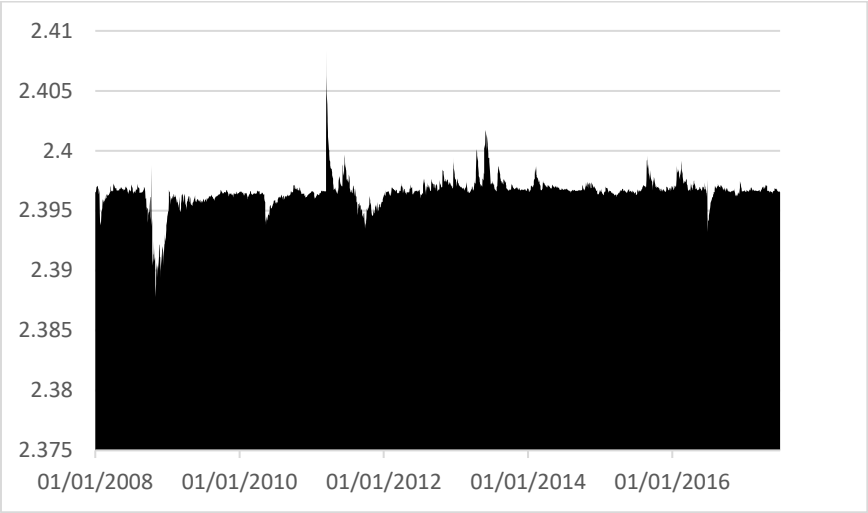


Figure 390: Total Average Dynamic Connectedness Other Utilities

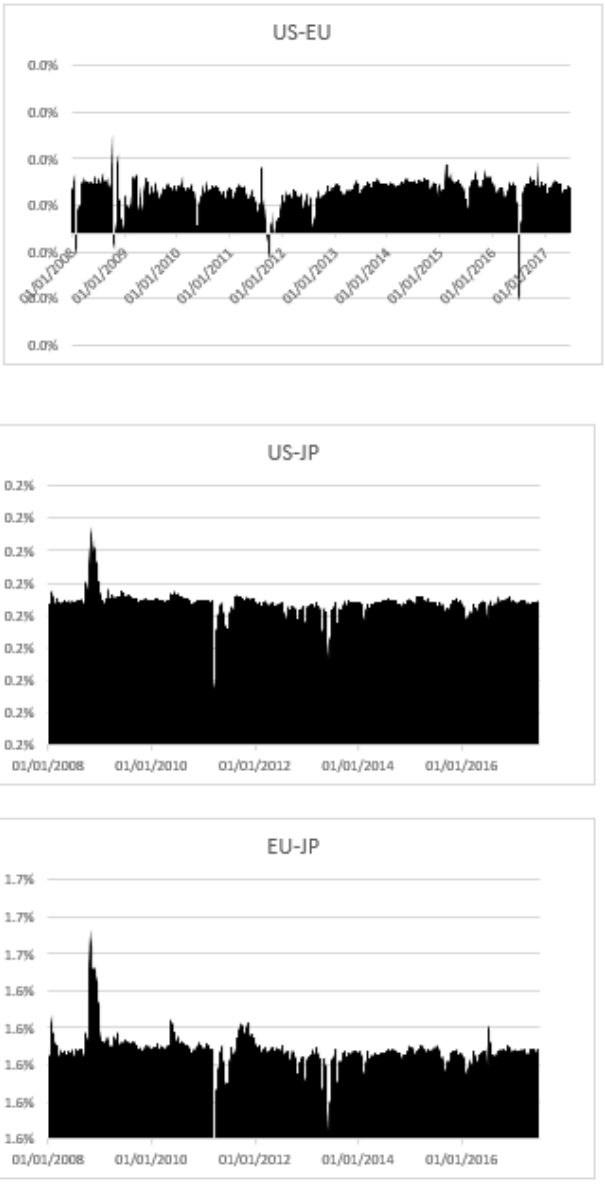


Figure 391: Net Pairwise Directional Connectedness Other Utilities

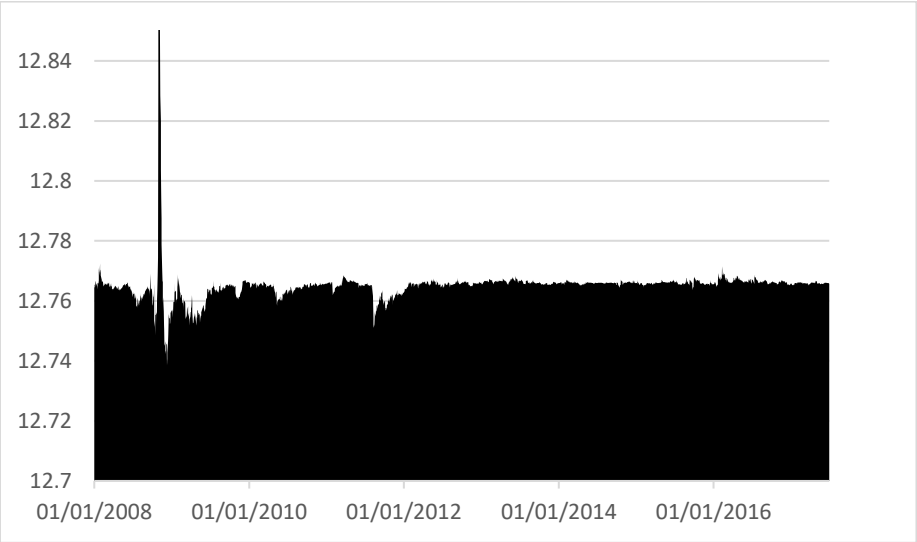


Figure 392: Total Average Dynamic Connectedness Automotive Manufacturer

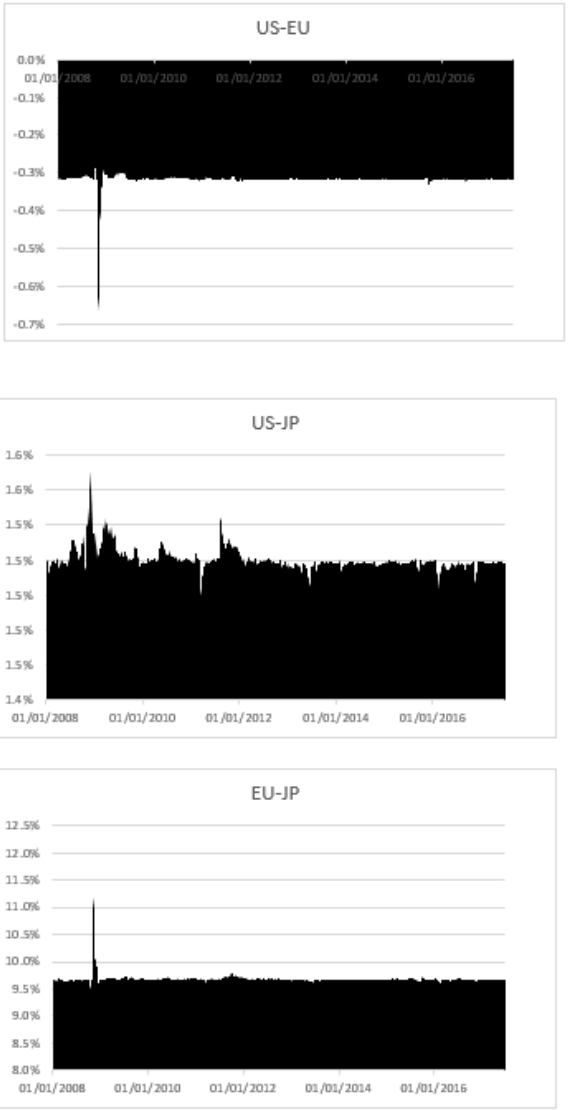


Figure 393: Net Pairwise Directional Connectedness Automotive Manufacturer

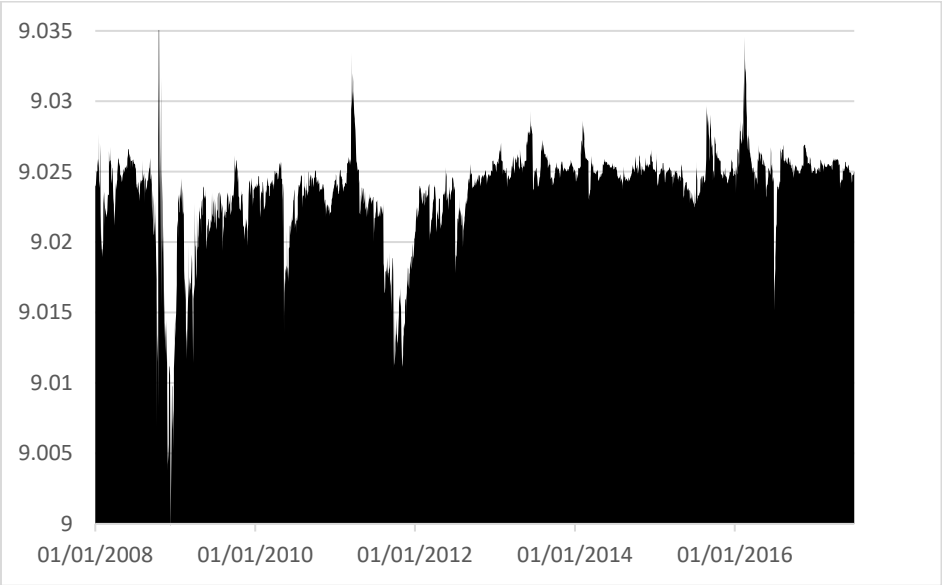
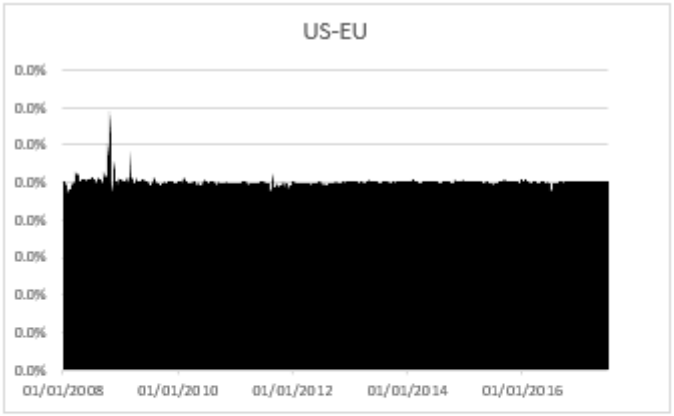
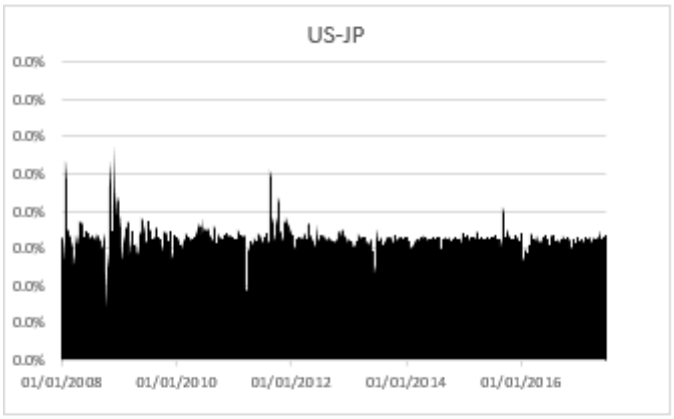


Figure 394: Total Average Dynamic Connectedness Chemicals





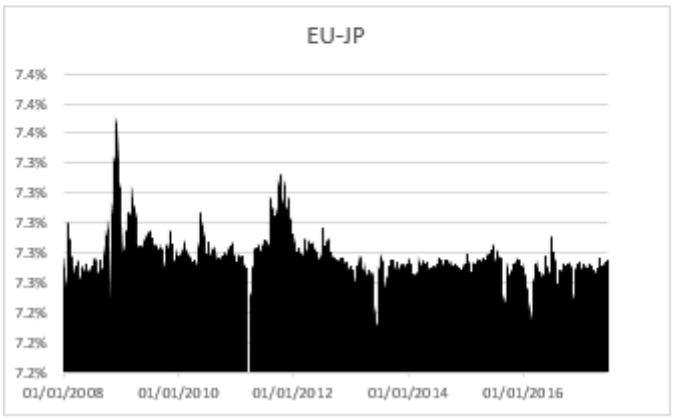


Figure 395: Net Pairwise Directional Connectedness Chemicals

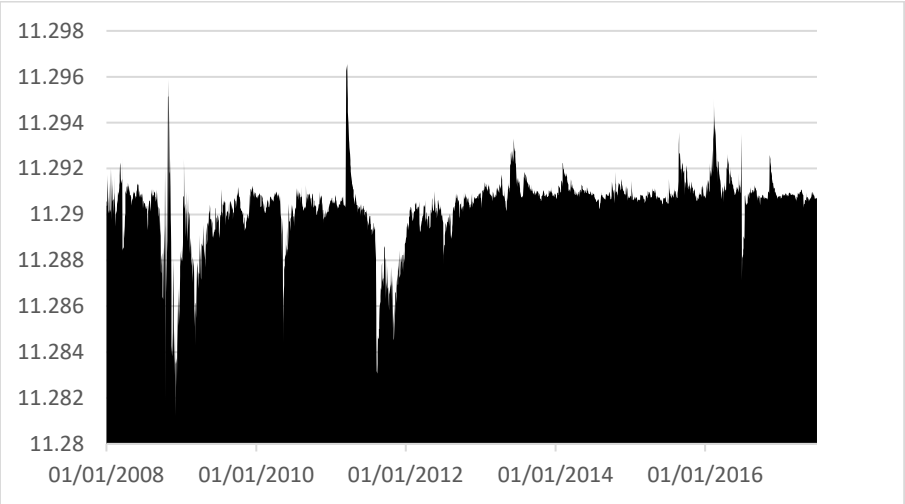


Figure 396: Total Average Dynamic Connectedness Electronics

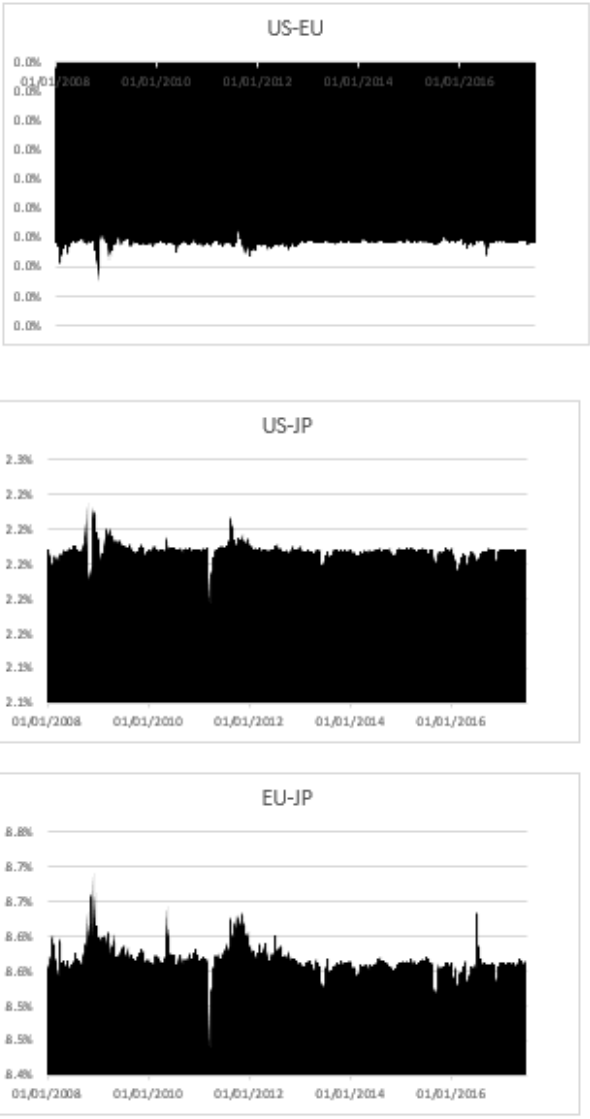


Figure 397: Net Pairwise Directional Connectedness Electronics

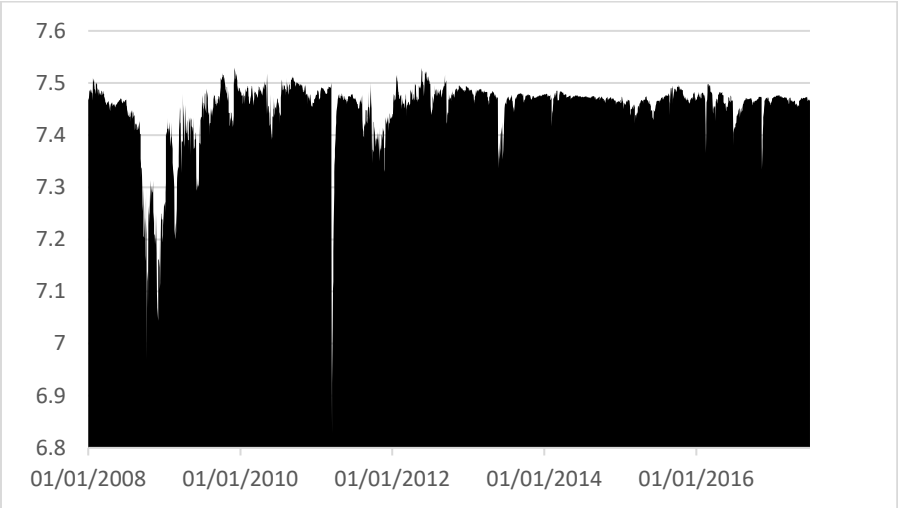


Figure 398: Total Average Dynamic Connectedness Metals & Mining

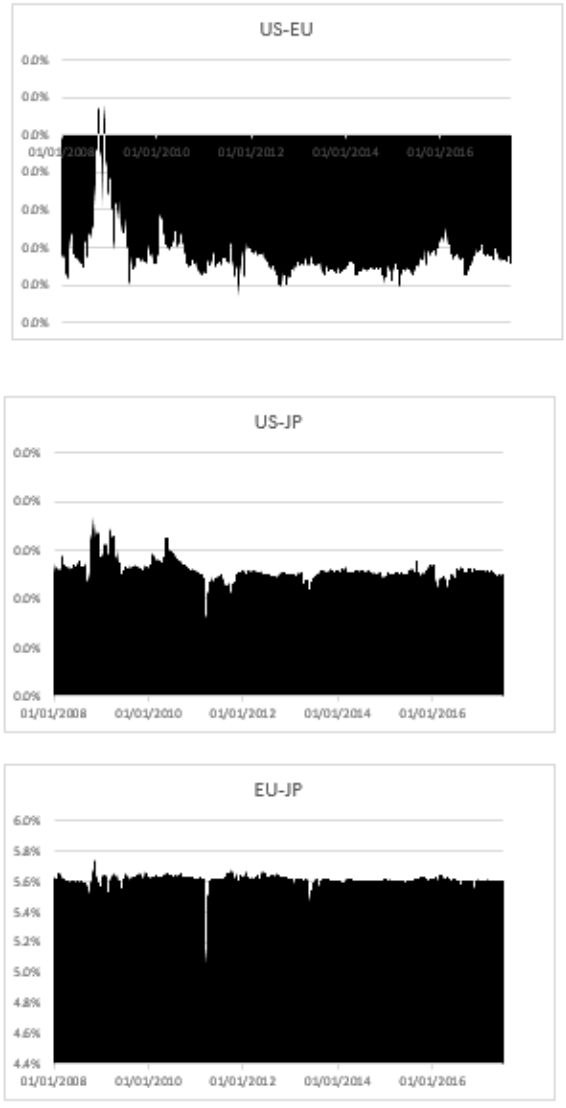


Figure 399: Net Pairwise Directional Connectedness Metals & Mining

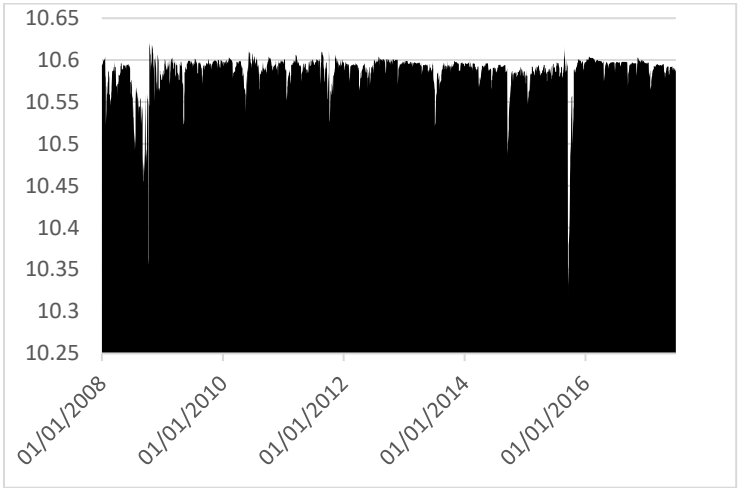


Figure 400: Total Average Dynamic Connectedness Beverages & Bottling

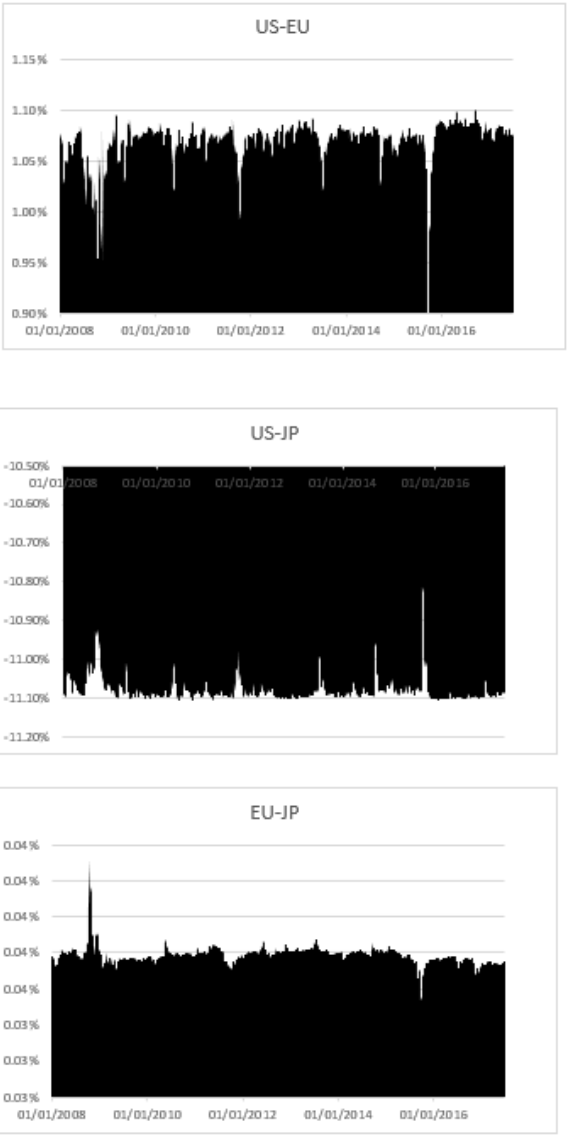


Figure 401: Net Pairwise Directional Connectedness Beverages & Bottling

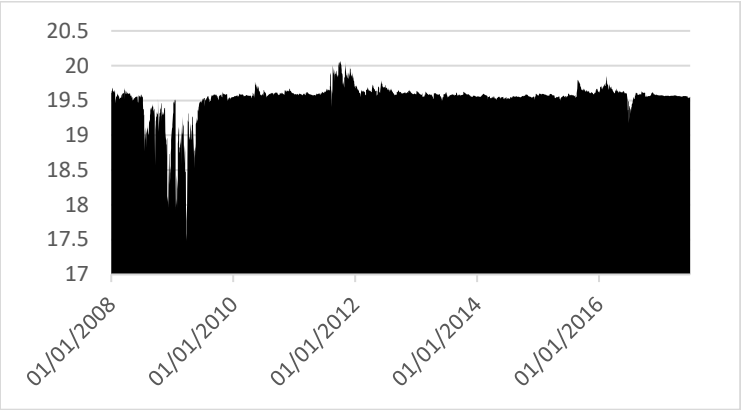
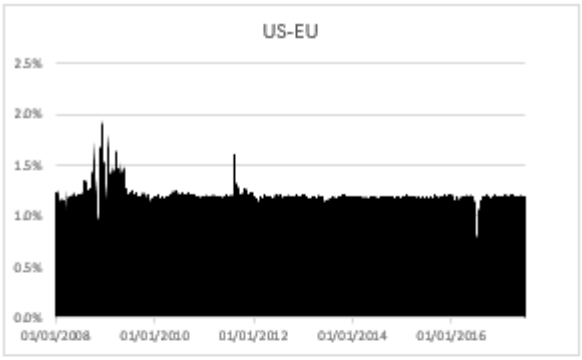
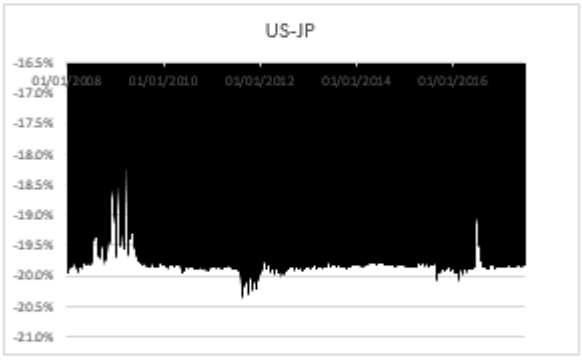


Figure 402: Total Average Dynamic Connectedness Other Financials





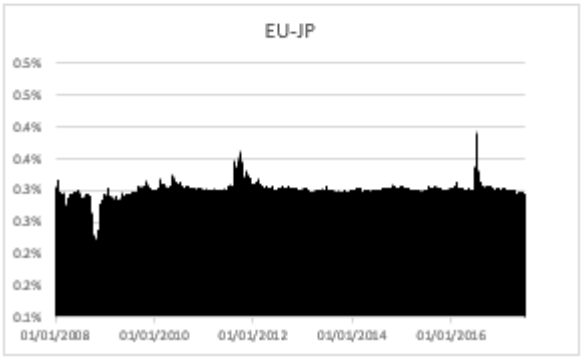


Figure 403: Net Pairwise Directional Connectedness Other Financials

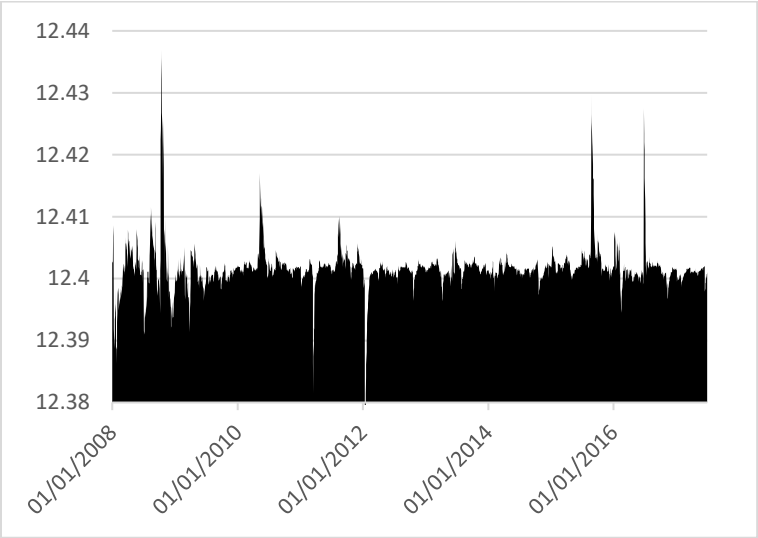


Figure 404: Total Average Dynamic Connectedness Retail Stores

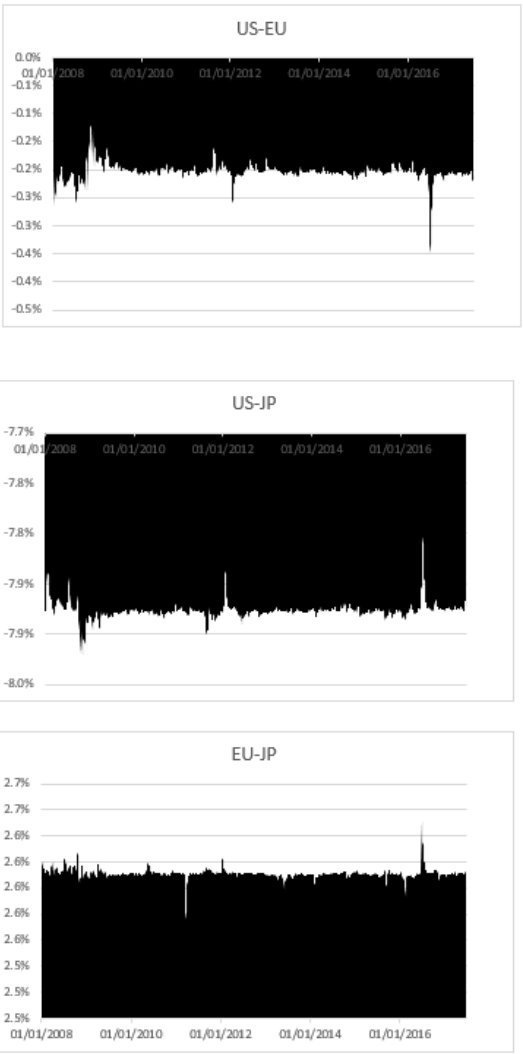


Figure 405: Net Pairwise Directional Connectedness Retail Stores

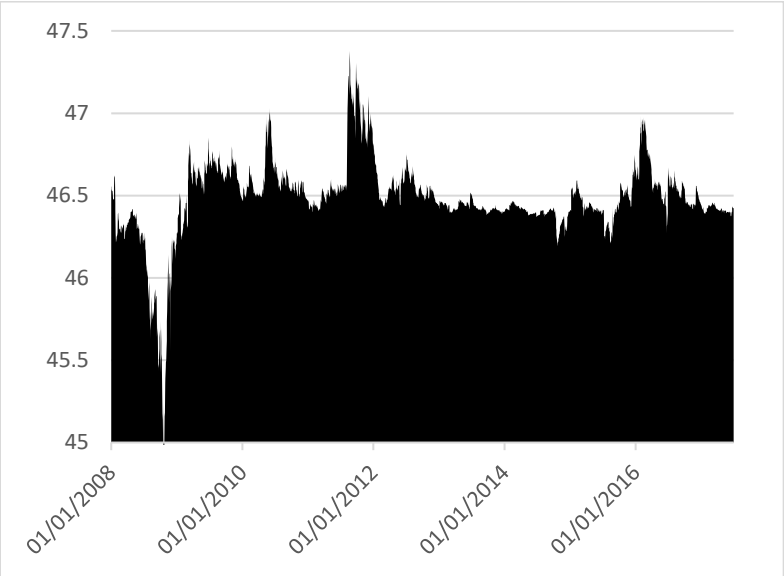


Figure 406: Total Average Dynamic Connectedness Oil Field Machinery

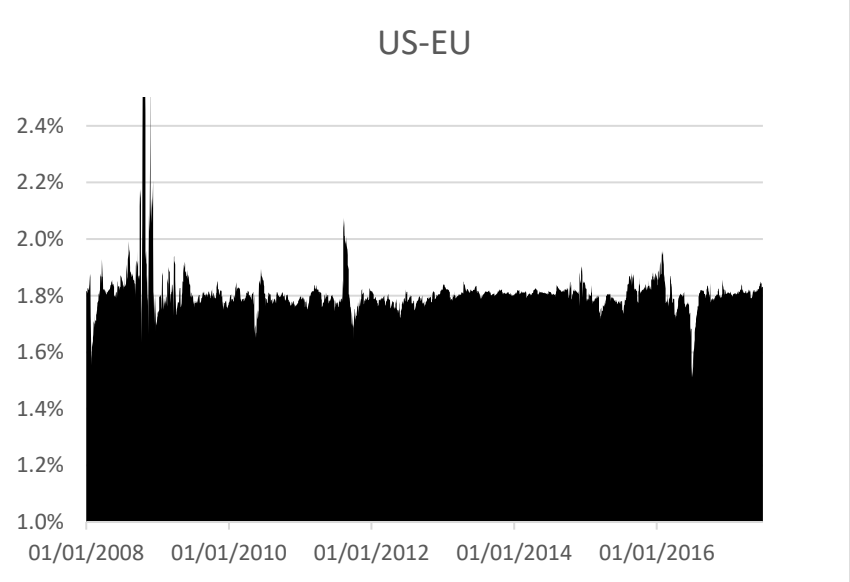


Figure 407: Net Pairwise Directional Connectedness Oil Field Machinery

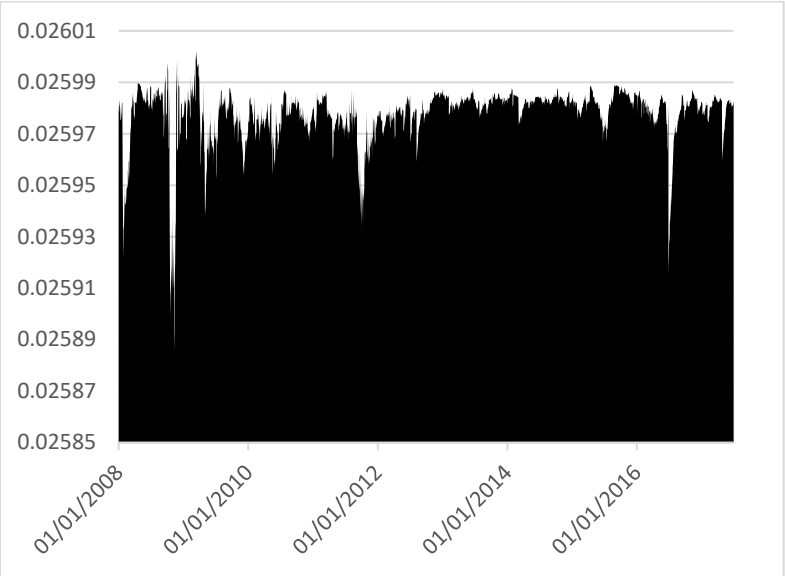


Figure 408: Total Average Dynamic Connectedness Conglomerate Diversified Mfg

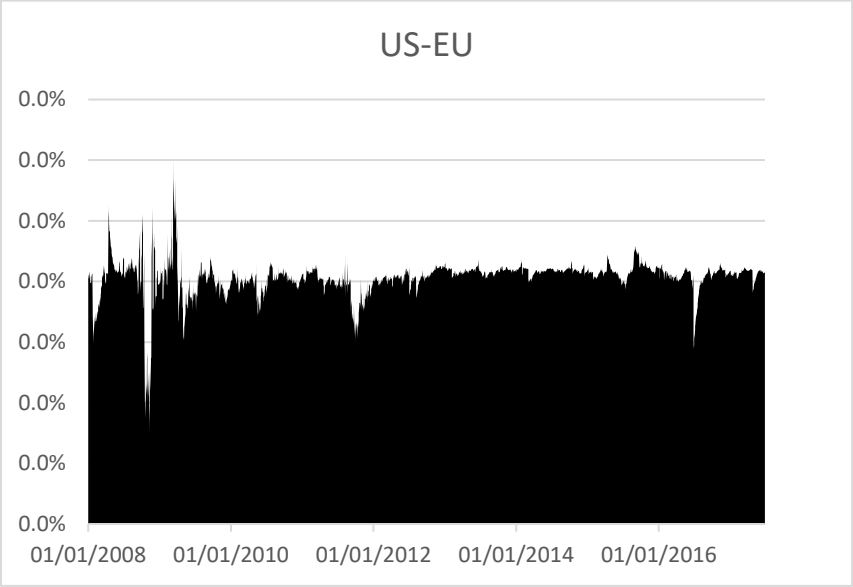


Figure 409: Net Pairwise Directional Connectedness Conglomerate Diversified Mfg

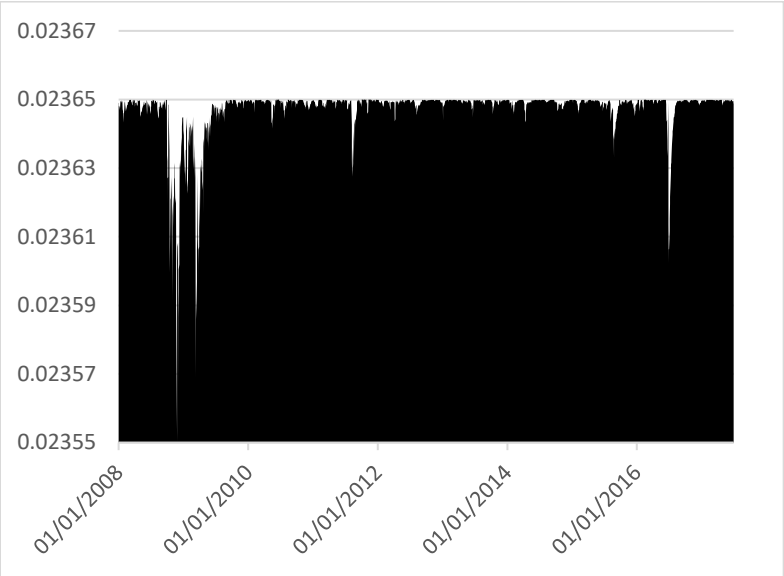


Figure 410: Total Average Dynamic Connectedness Conglomerate Cable Media

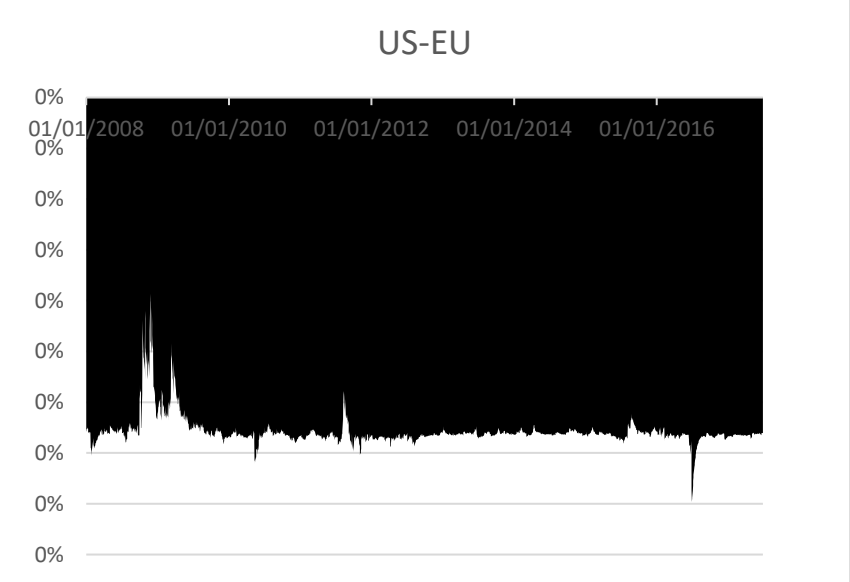


Figure 411: Net Pairwise Directional Connectedness Cable Media

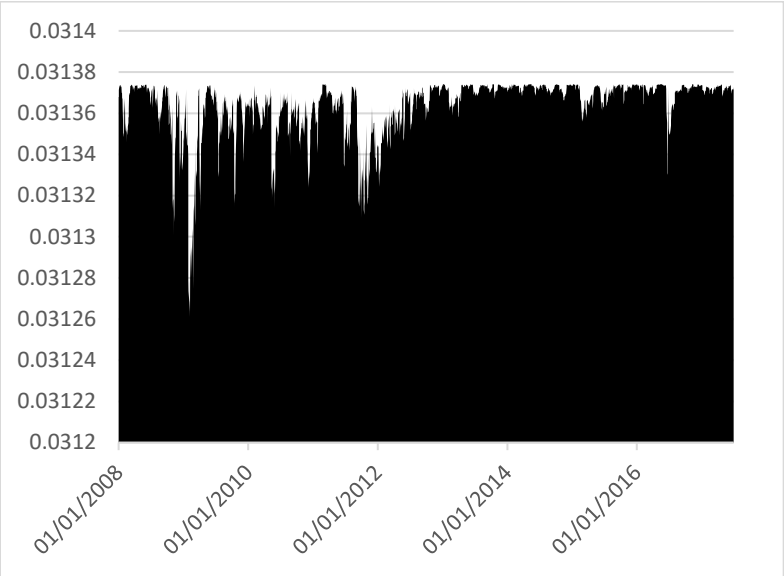


Figure 412: Total Average Dynamic Connectedness Conglomerate Leisure

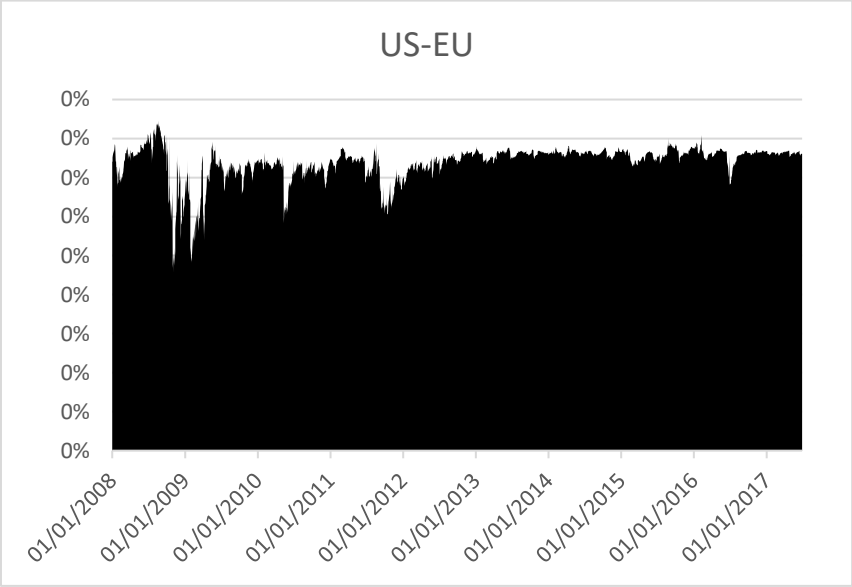


Figure 413: Net Pairwise Directional Connectedness Leisure

Figure 414: Total Average Dynamic Connectedness Building Products

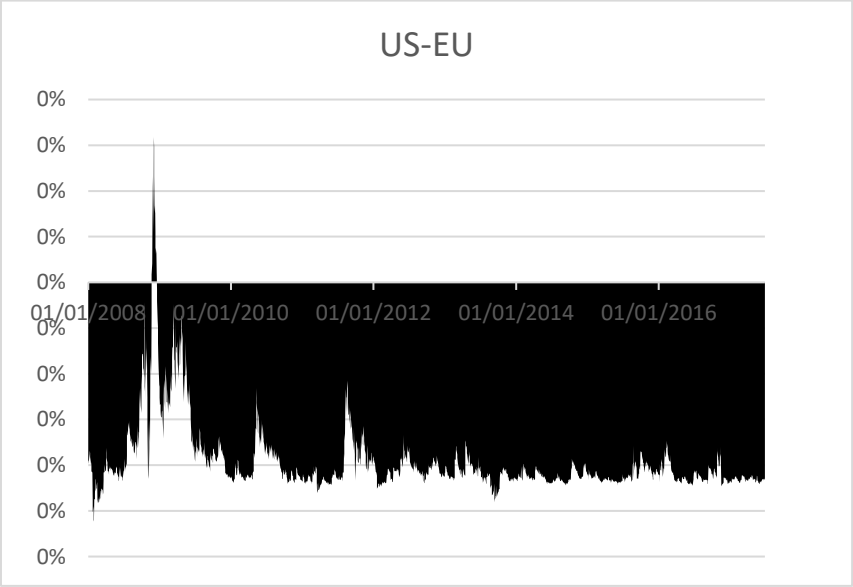


Figure 415: Net Pairwise Directional Connectedness Building Products

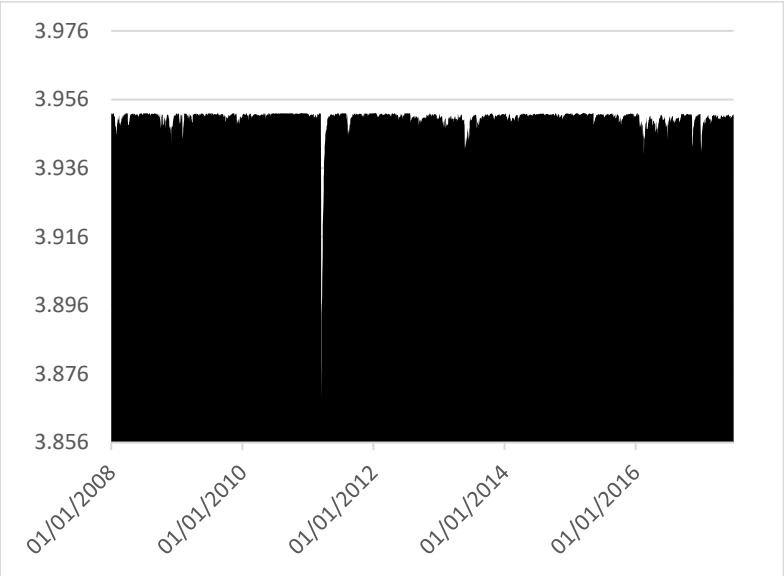


Figure 416: Total Average Dynamic Connectedness Other Industrials

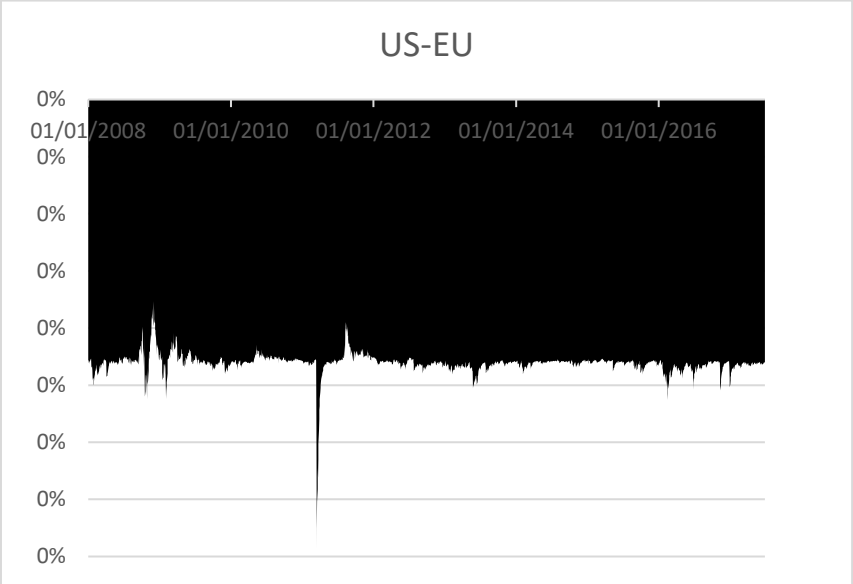


Figure 417: Net Pairwise Directional Connectedness Other Industrials

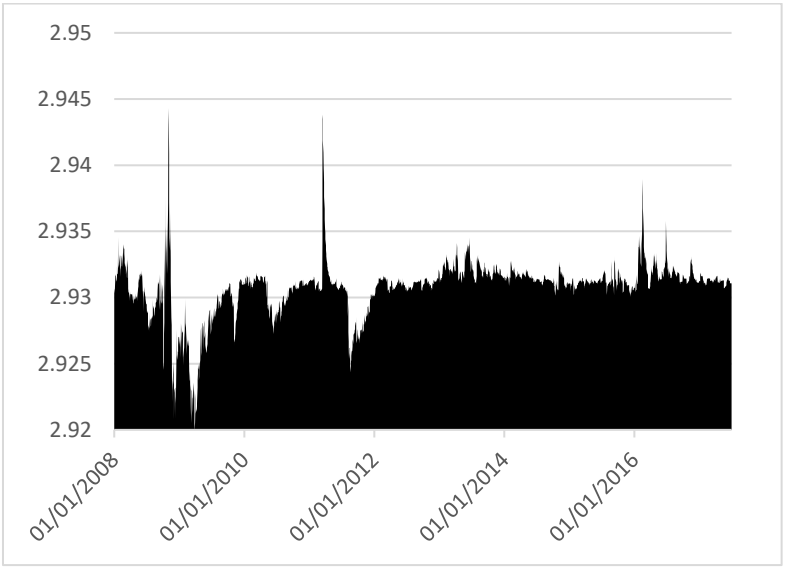


Figure 418: Total Average Dynamic Connectedness Other Transportation

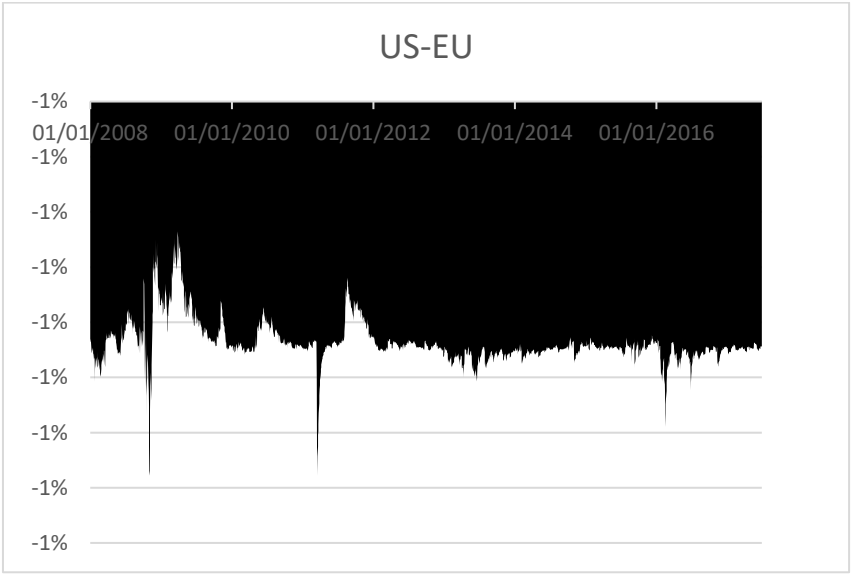


Figure 419: Net Pairwise Directional Connectedness Other Transportation

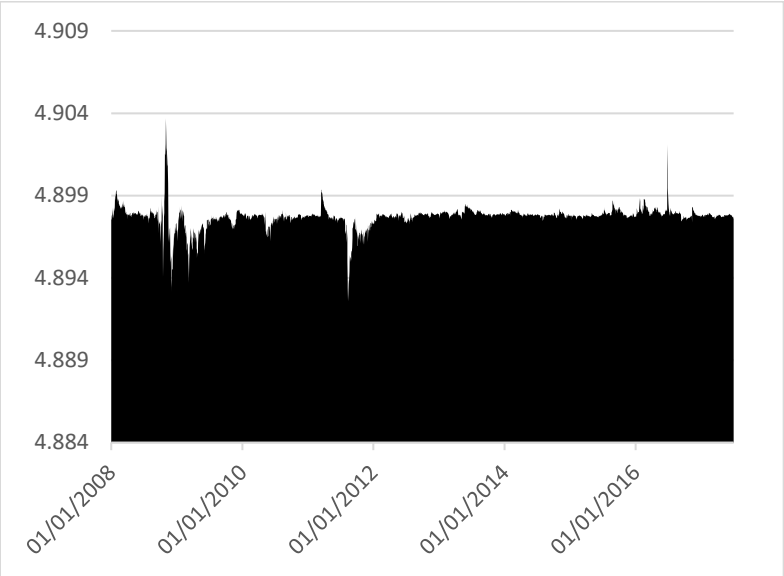


Figure 420: Total Average Dynamic Connectedness Machinery

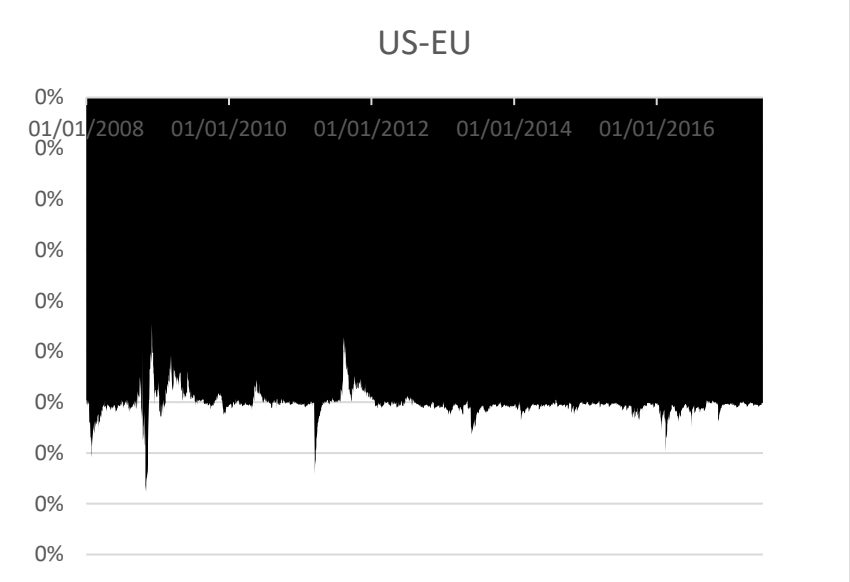


Figure 421: Net Pairwise Directional Connectedness Machinery

Credit Default Swap and Equity Connectedness

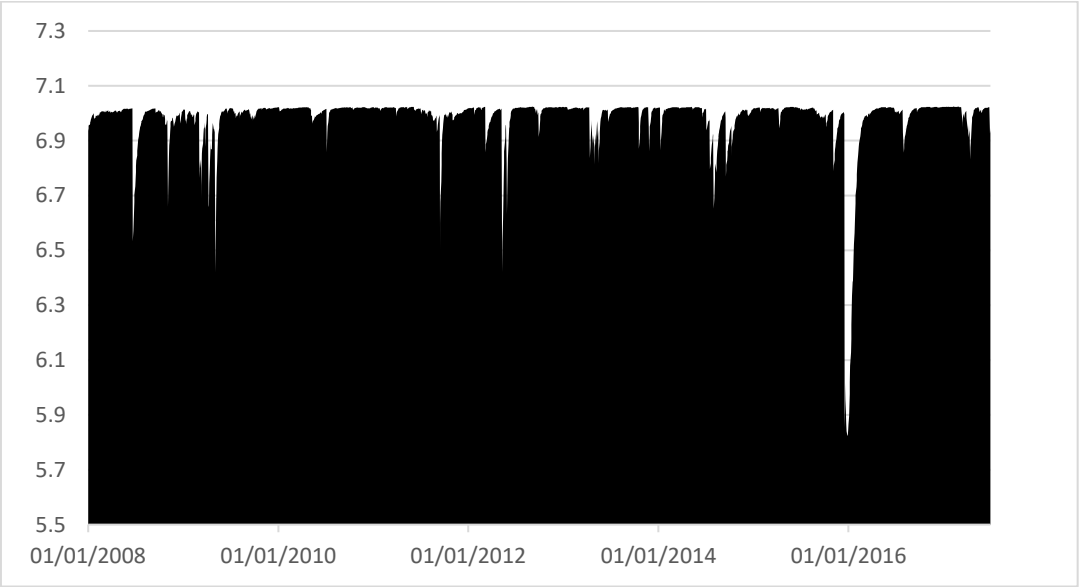


Figure 422: Total Average Dynamic Connectedness Leisure

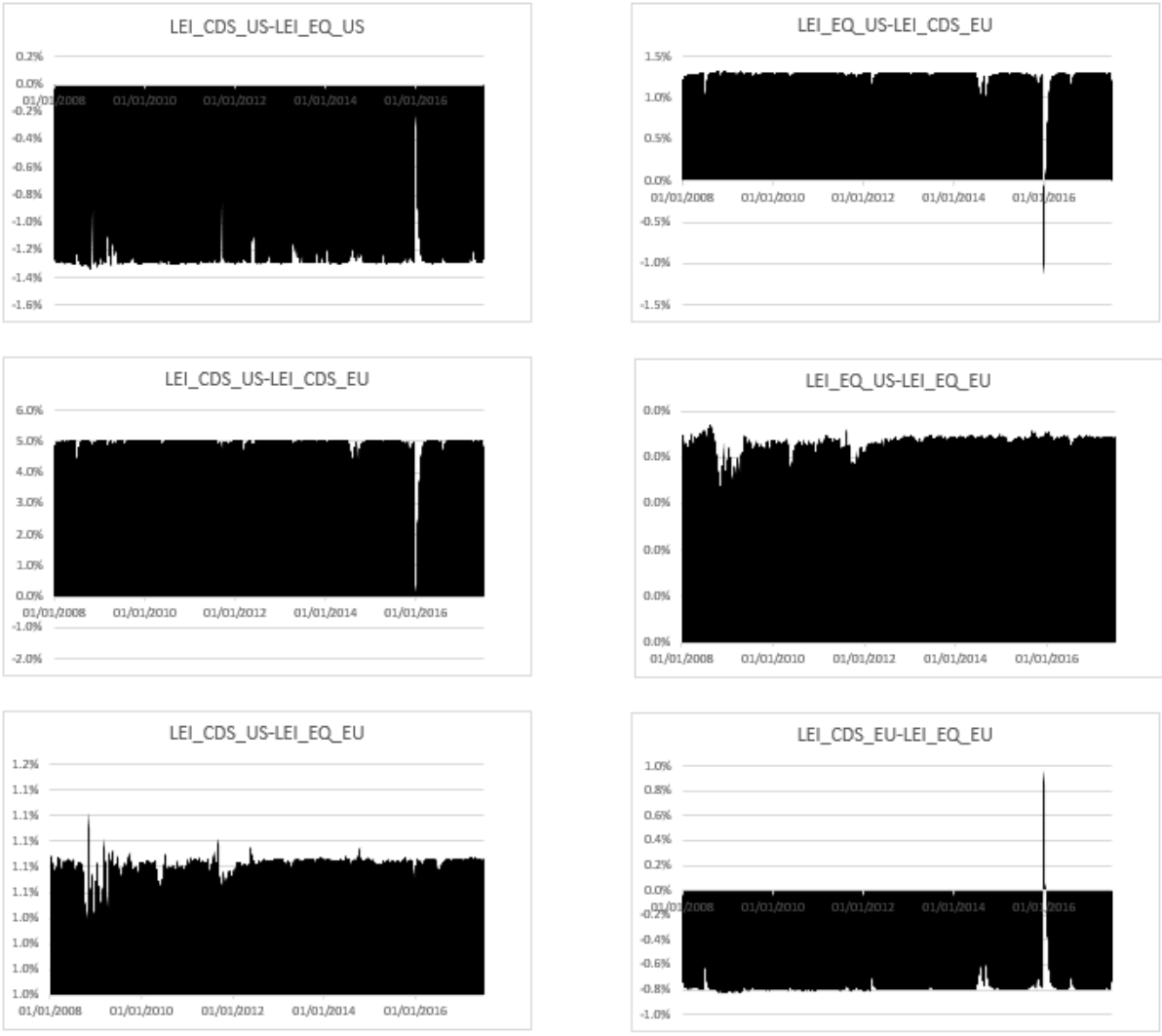


Figure 423: Net Pairwise Directional Connectedness Leisure

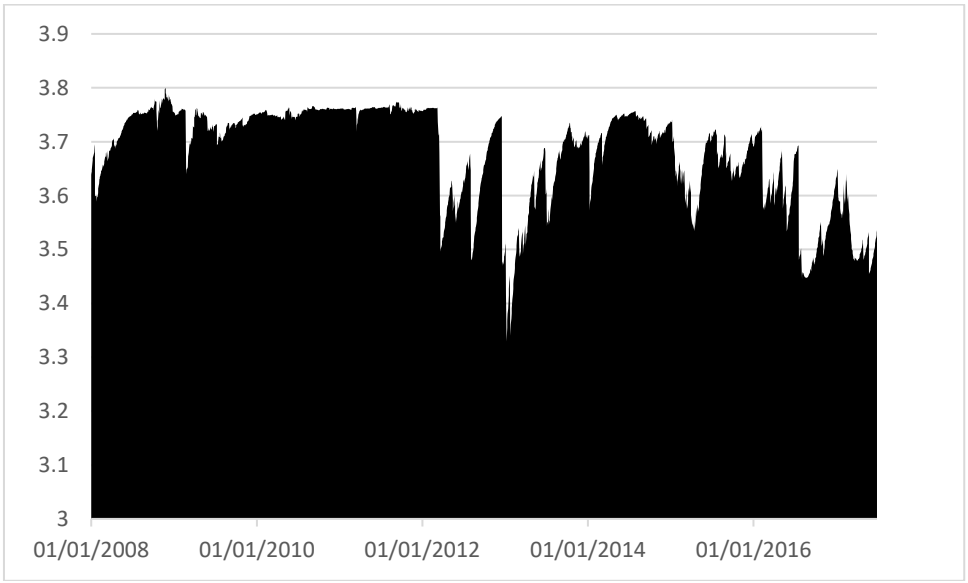


Figure 424: Total Average Dynamic Connectedness Industrial

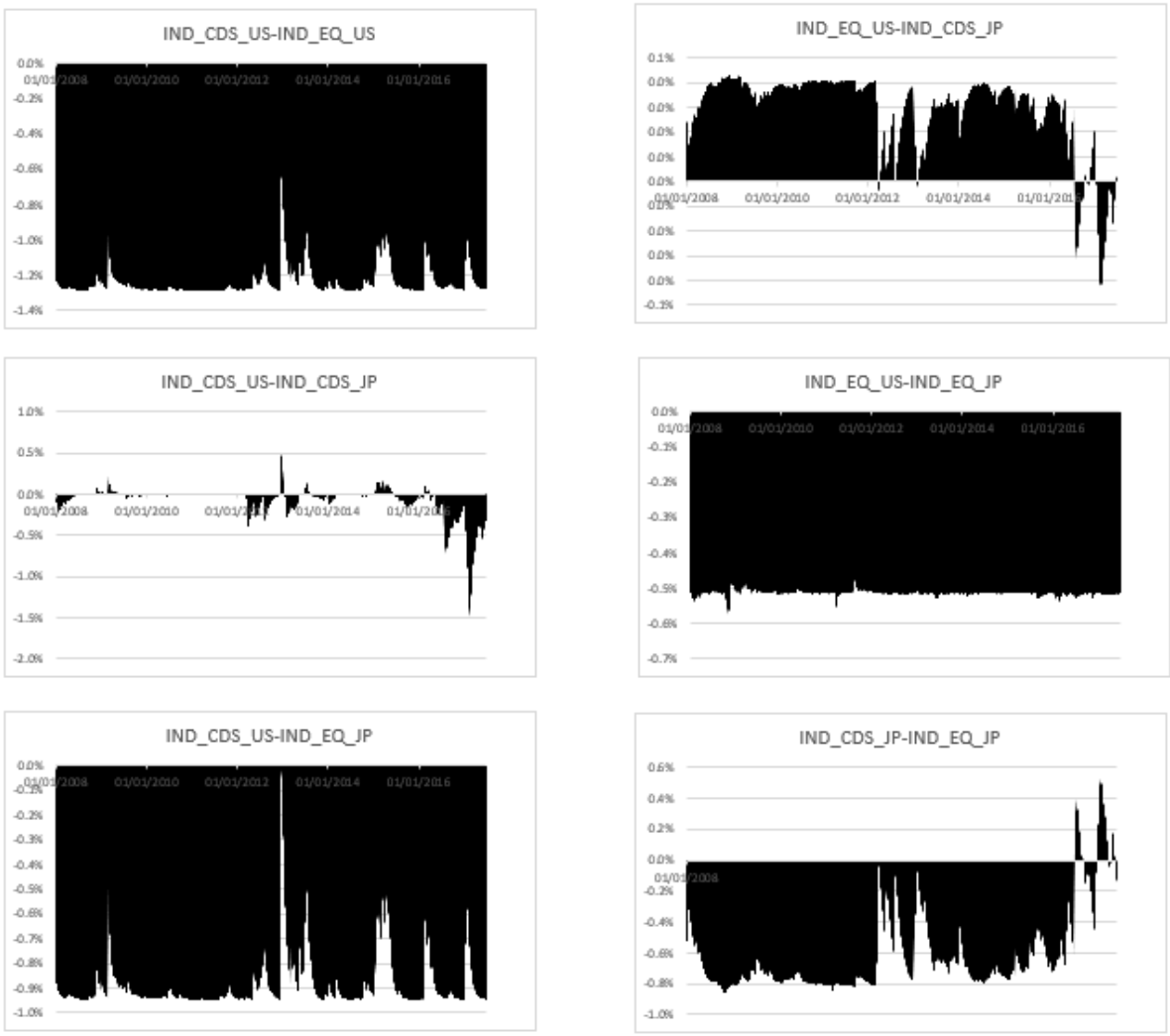


Figure 425: Net Pairwise Directional Connectedness Industrial

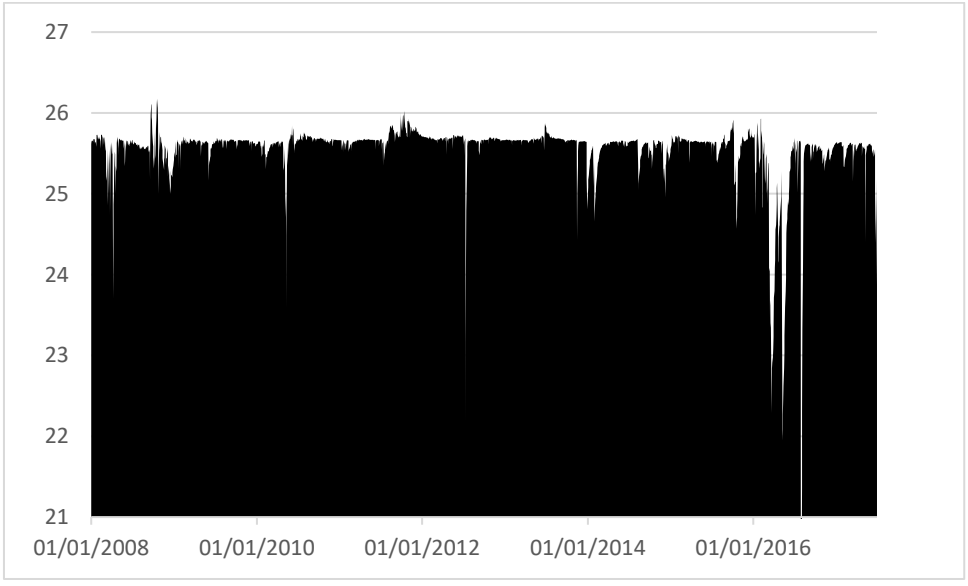


Figure 426: Total Average Dynamic Connectedness Oil & Gas

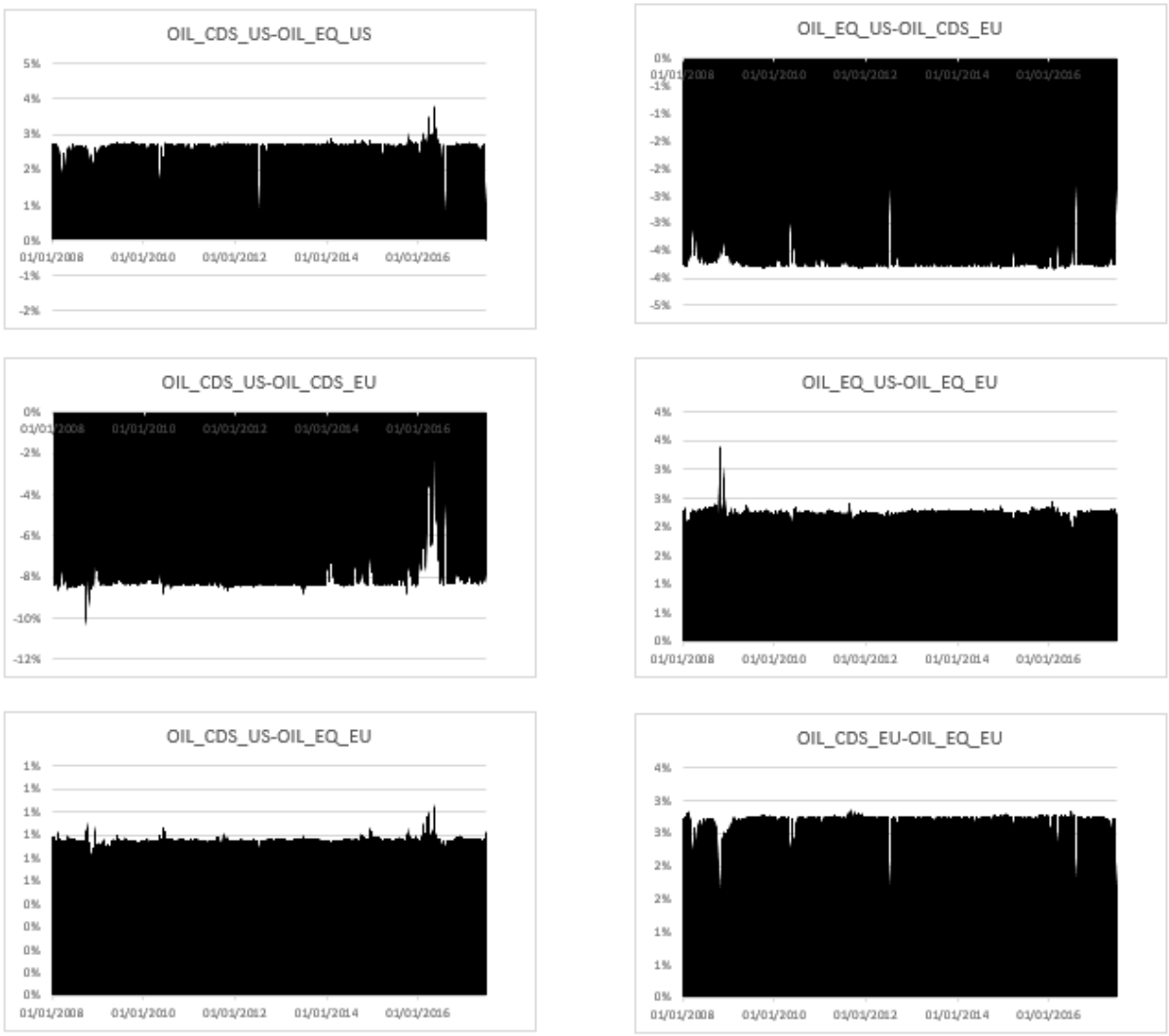


Figure 427: Net Pairwise Directional Connectedness Oil & Gas

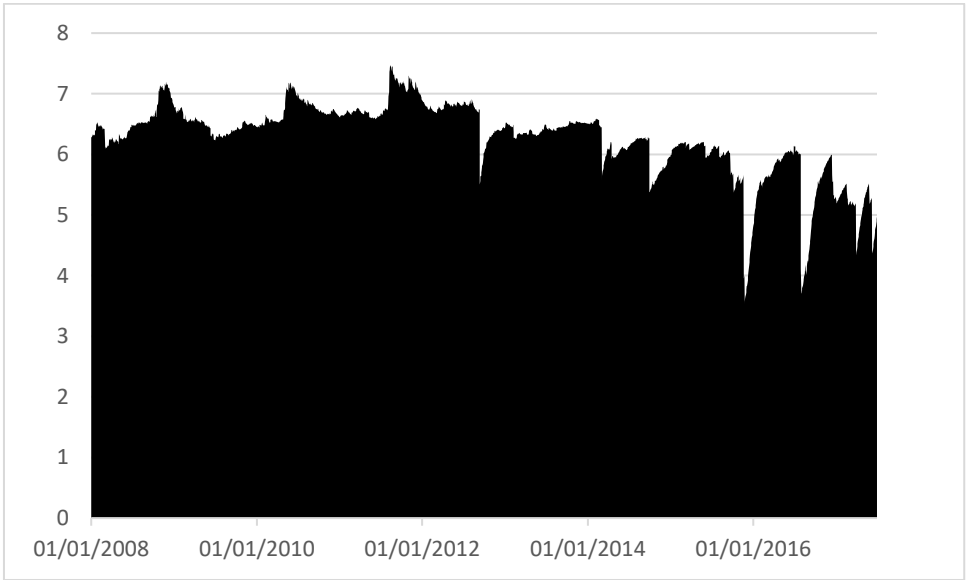


Figure 428: Total Average Dynamic Connectedness Cable Media

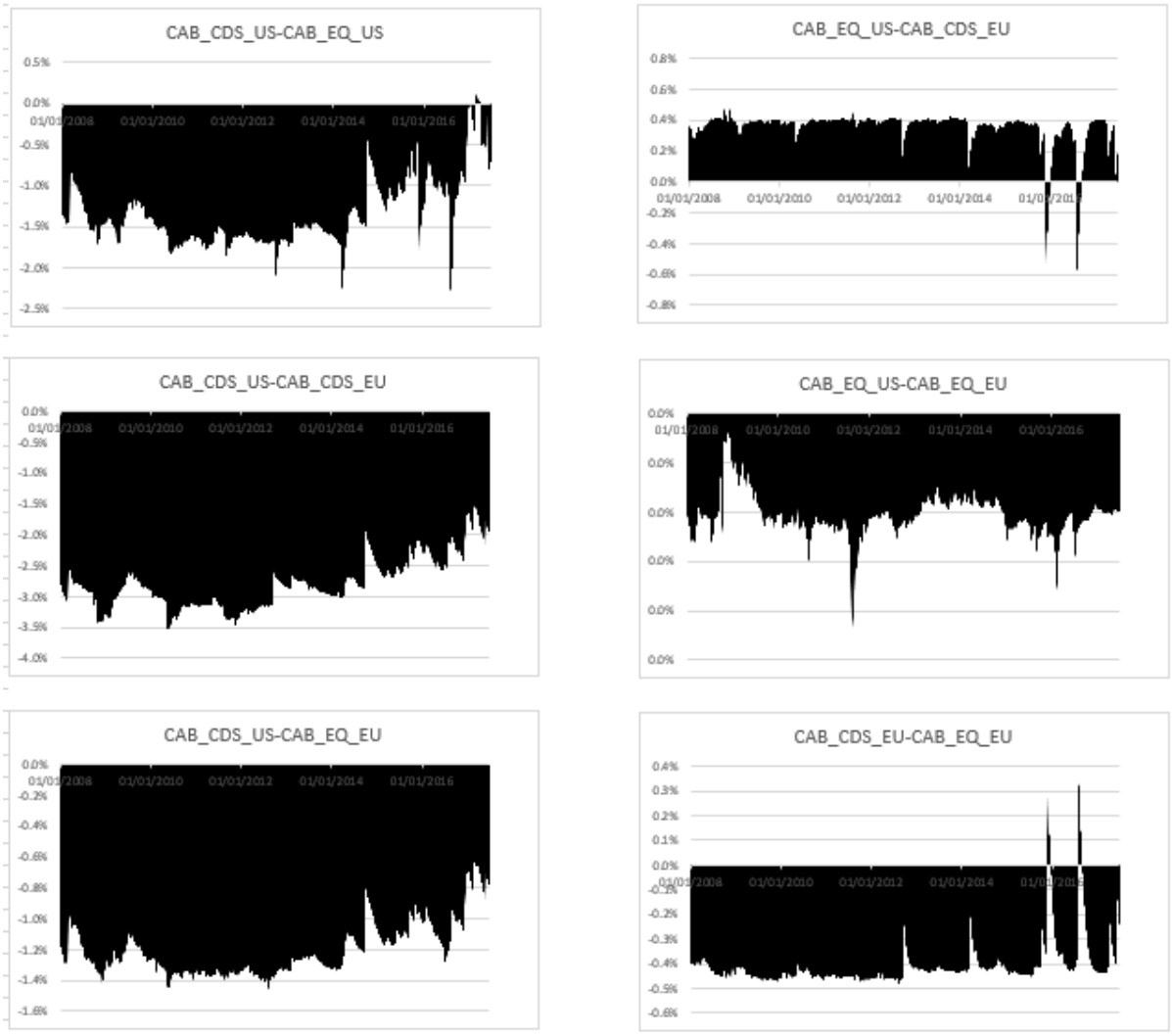


Figure 429: Net Pairwise Directional Connectedness Cable Media

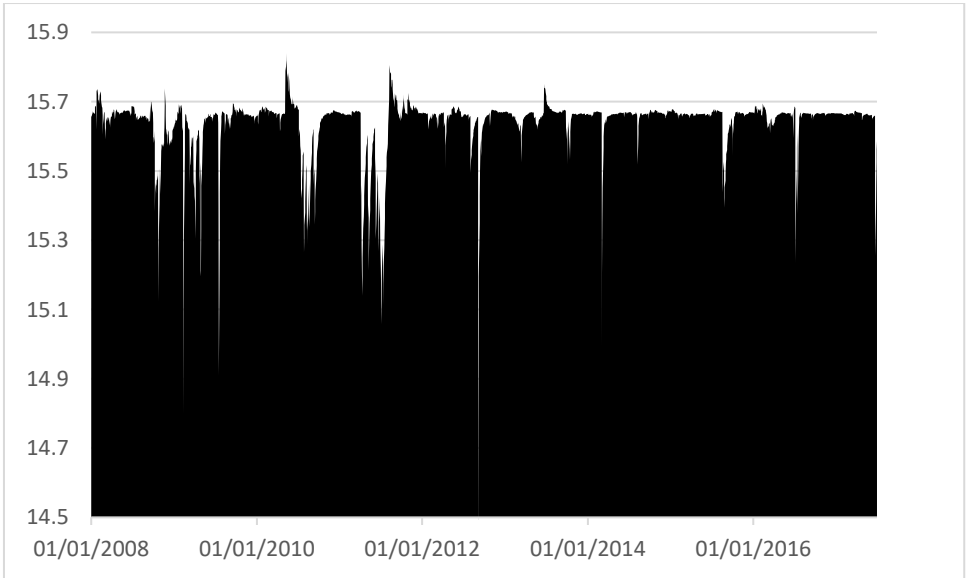


Figure 430: Total Average Dynamic Connectedness Conglomerate Diversified Mfg

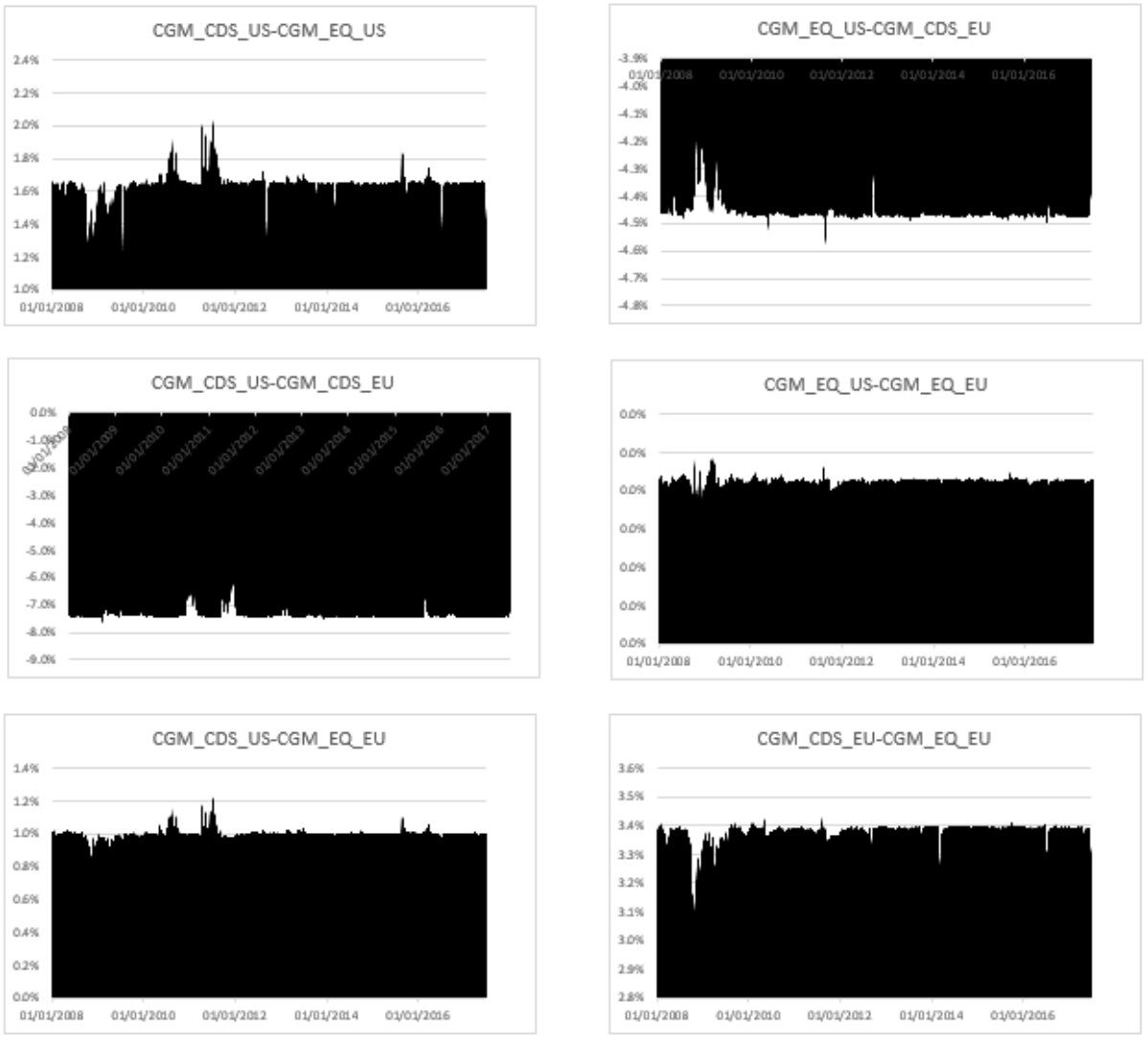


Figure 431: Net Pairwise Directional Connectedness Conglomerate Diversified Mfg

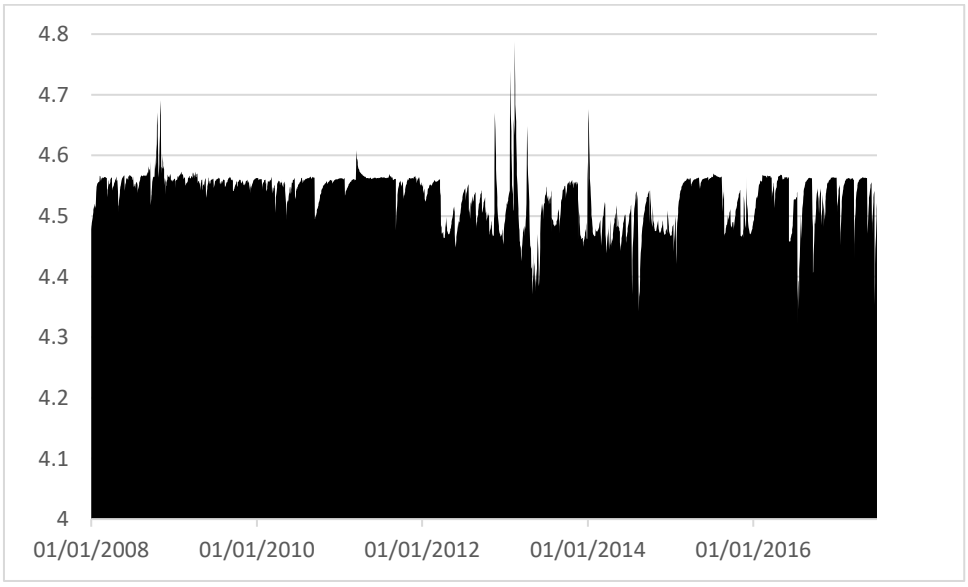


Figure 432: Total Average Dynamic Connectedness Transportation

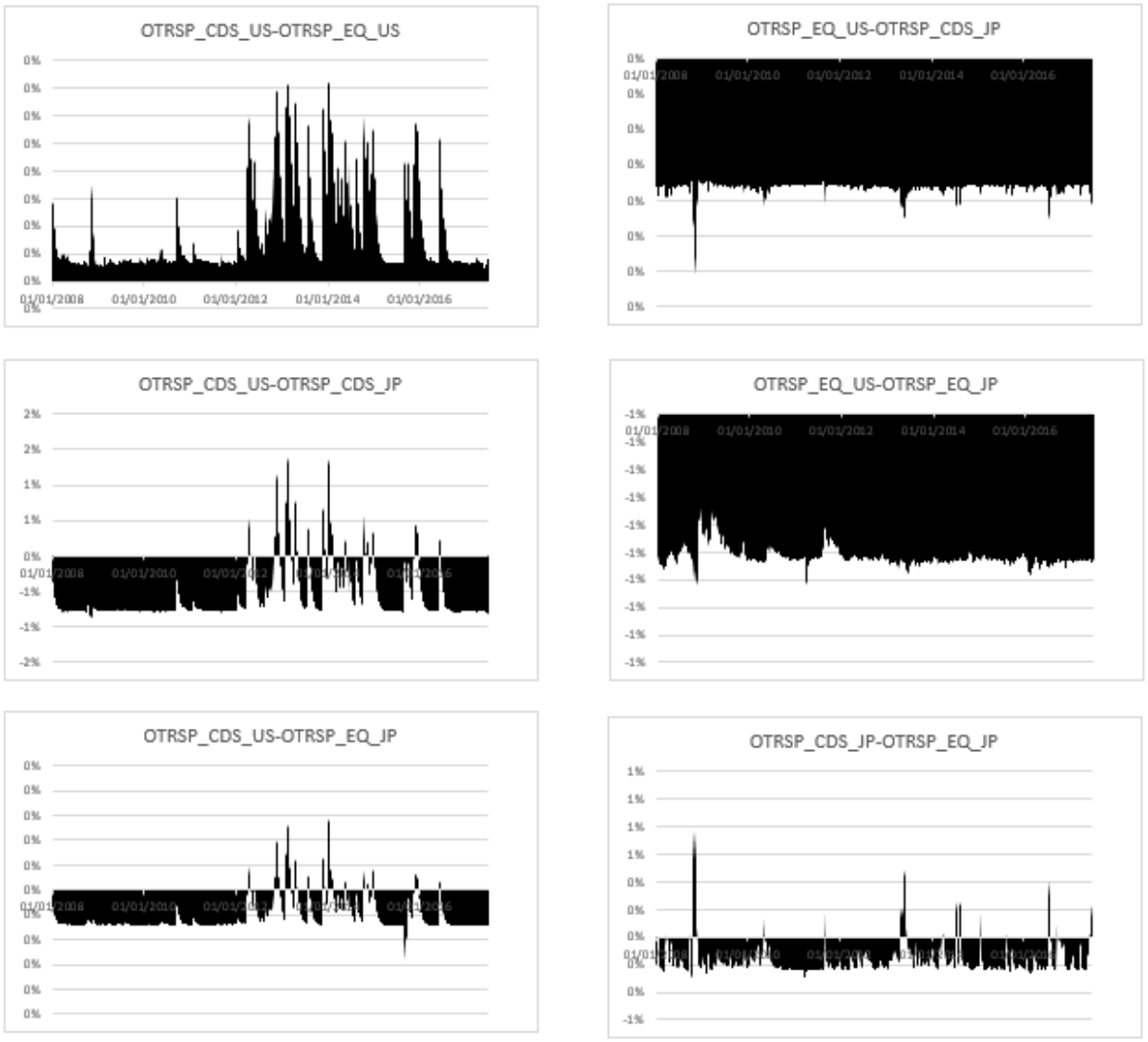


Figure 433: Net Pairwise Directional Connectedness Transportation

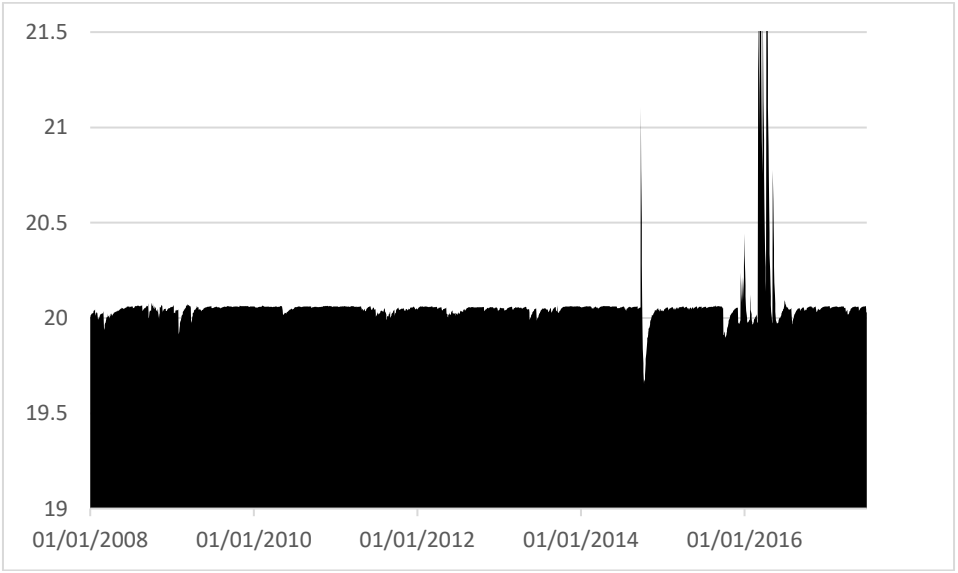


Figure 434: Total Average Dynamic Connectedness Other Financials II

Figure 435: Net Pairwise Directional Connectedness Other Financials II

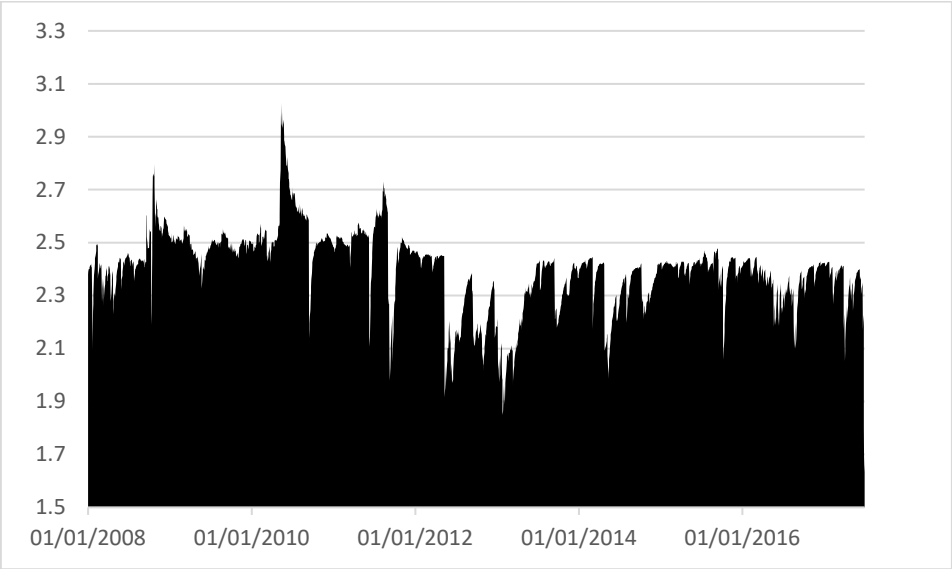


Figure 436: Total Average Dynamic Connectedness Utilities

Figure 437: Net Pairwise Directional Connectedness Utilities

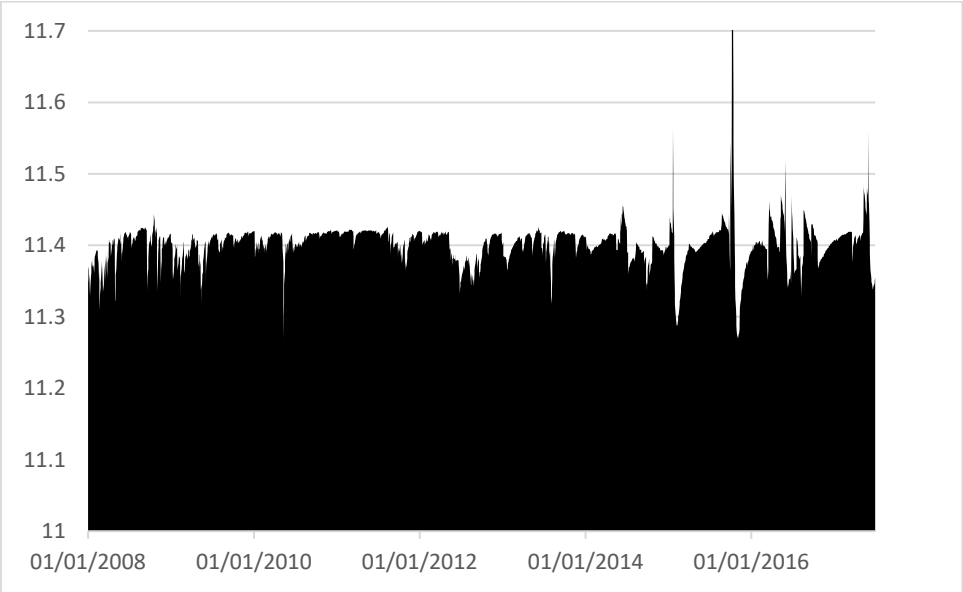


Figure 438: Total Average Dynamic Connectedness Retail Stores

Figure 439: Net Pairwise Directional Connectedness Retail Stores

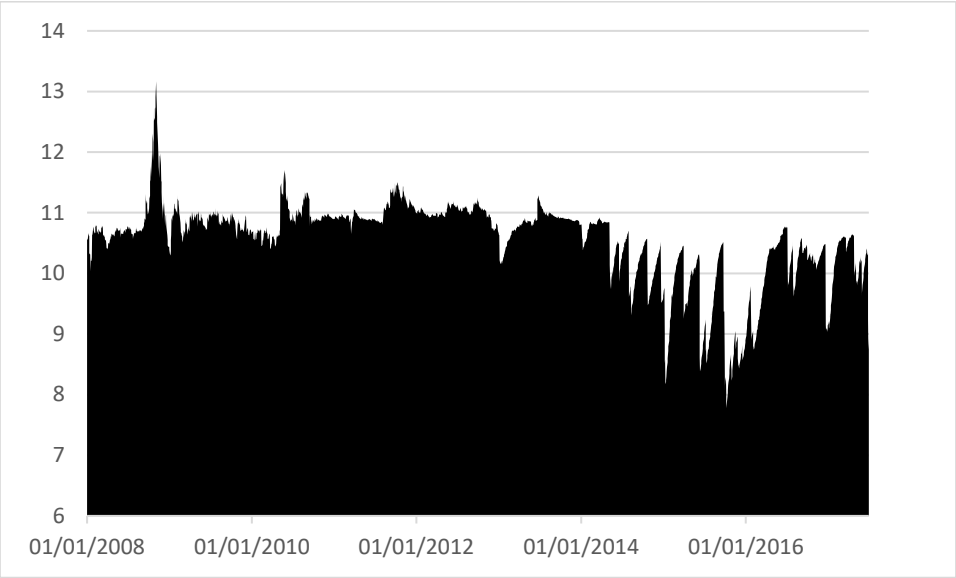


Figure 440: Total Average Dynamic Connectedness Metals & Mining

Figure 441: Net Pairwise Directional Connectedness Metals & Mining

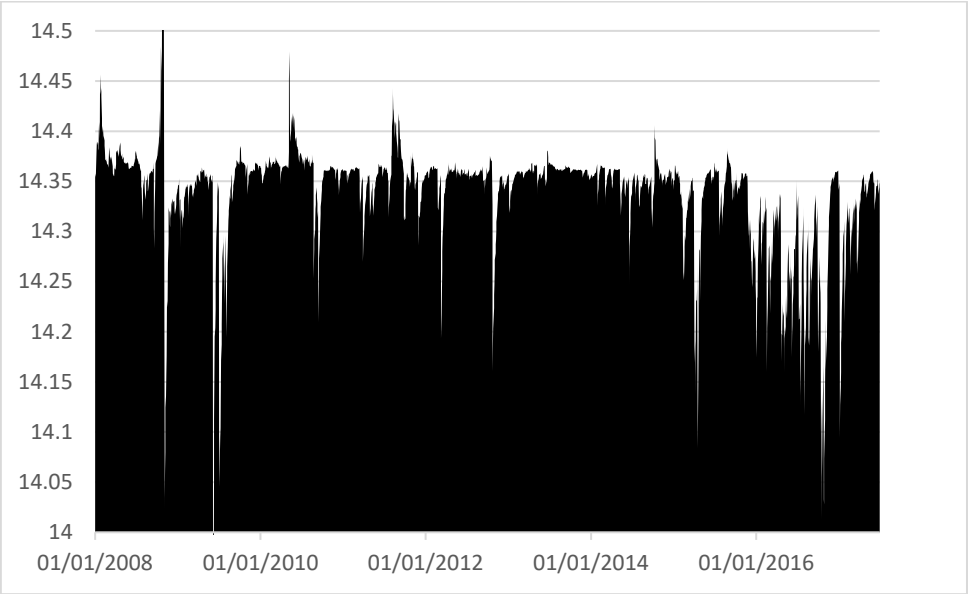


Figure 442: Total Average Dynamic Connectedness Electric Power

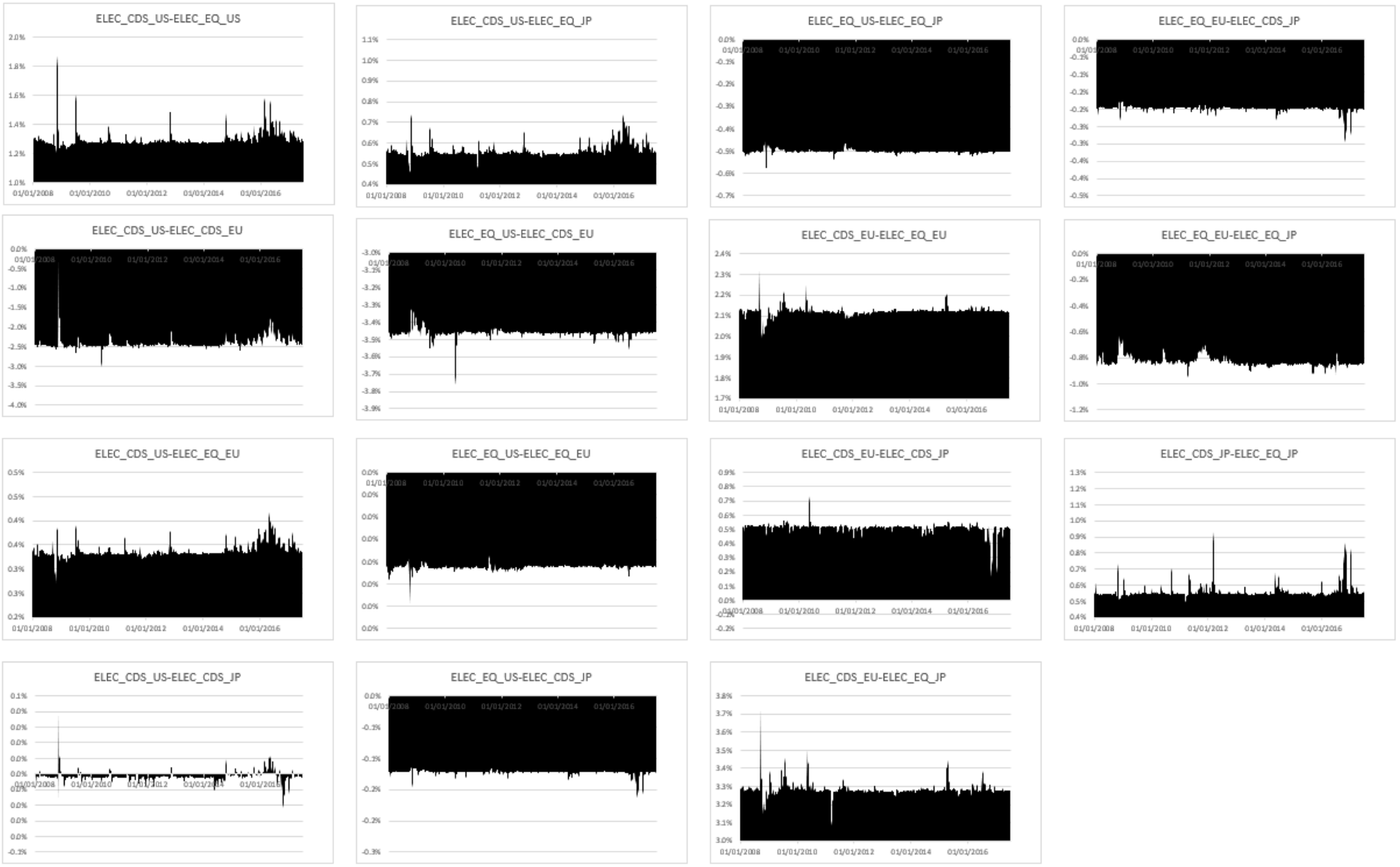


Figure 443: Net Pairwise Directional Connectedness Electric Power

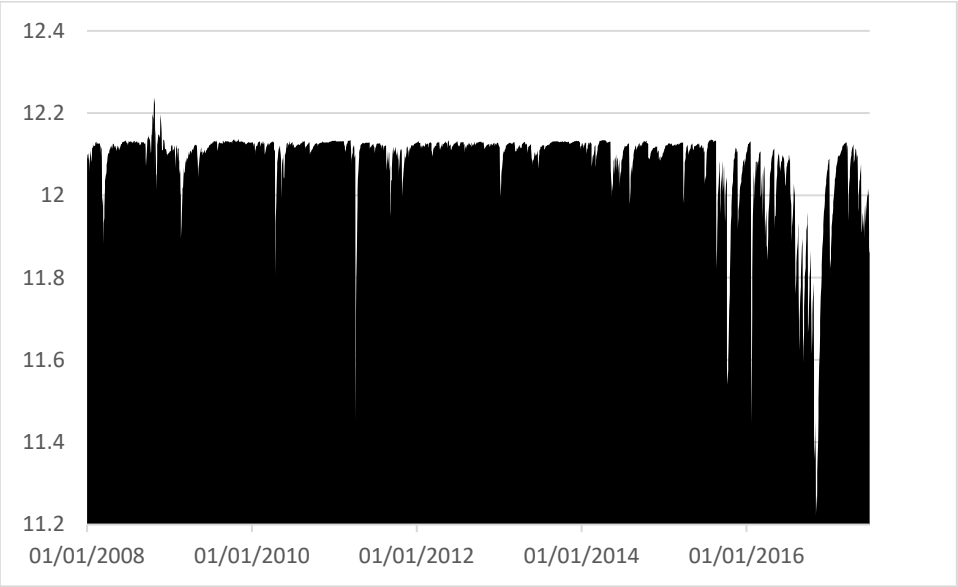


Figure 444: Total Average Dynamic Connectedness Chemicals

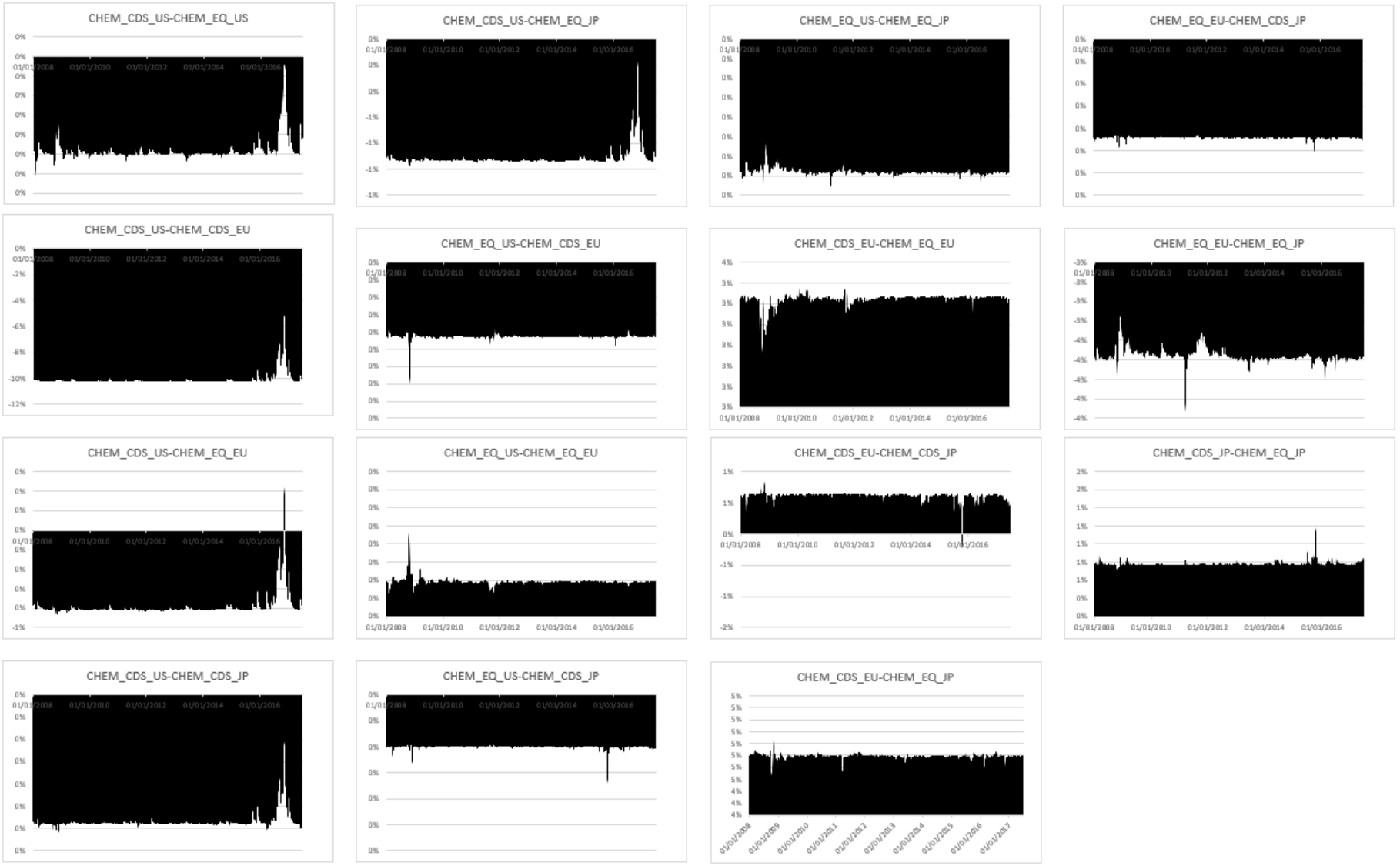


Figure 445: Net Pairwise Directional Connectedness Chemicals

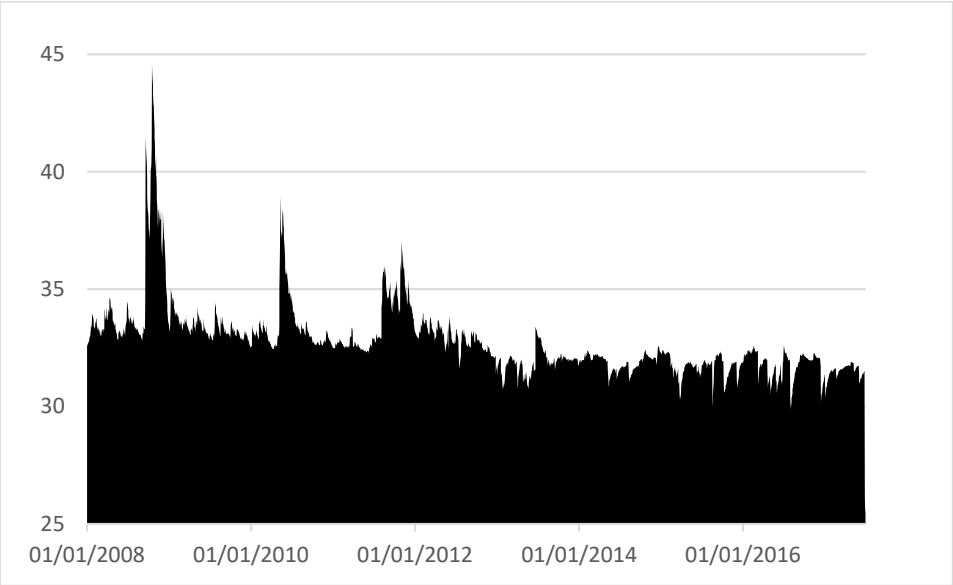


Figure 446: Total Average Dynamic Connectedness Consumer Goods

Figure 447: Net Pairwise Directional Connectedness Consumer Goods

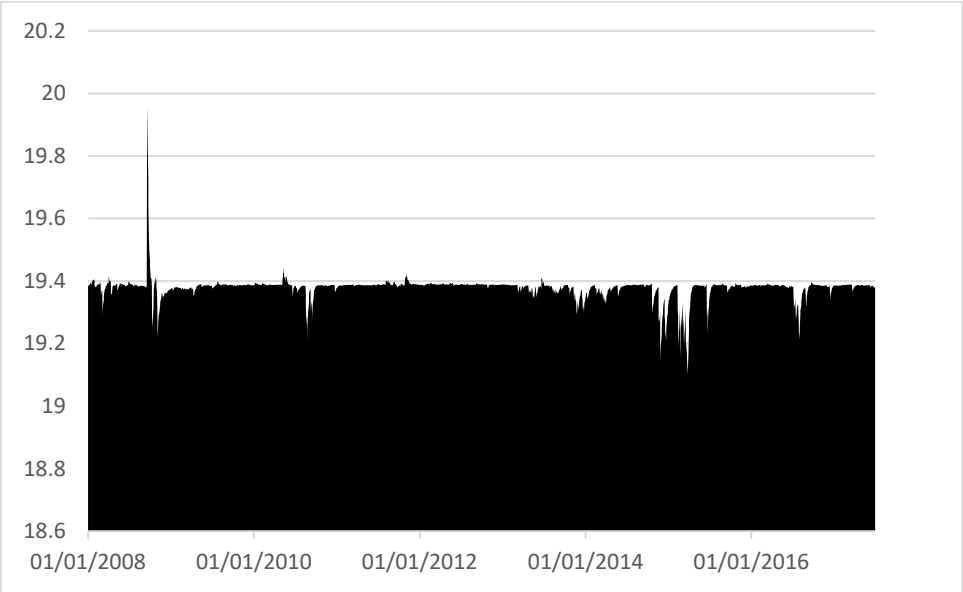


Figure 448: Total Average Dynamic Connectedness Beverages & Bottling

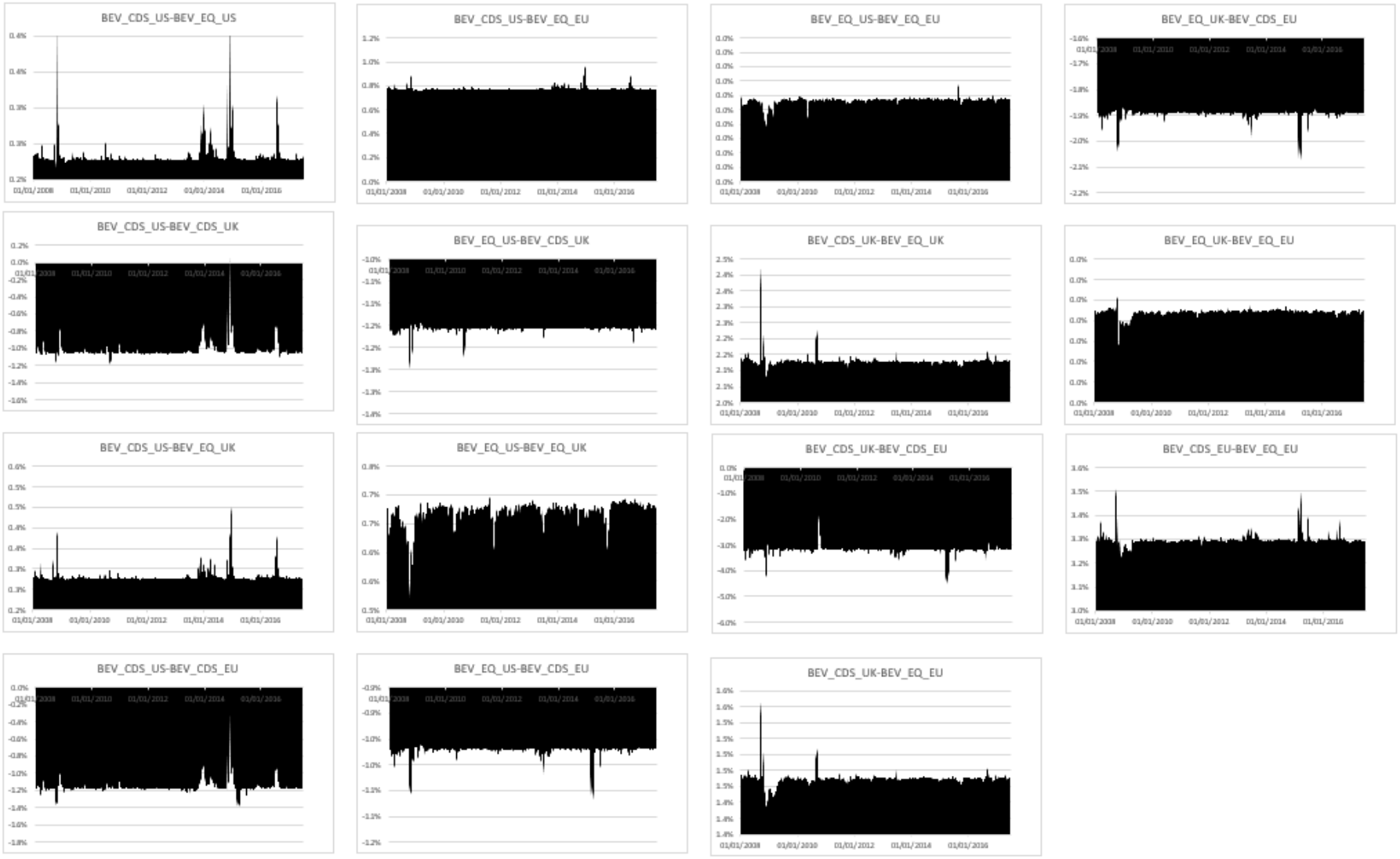


Figure 449: Net Pairwise Directional Connectedness Beverages & Bottling

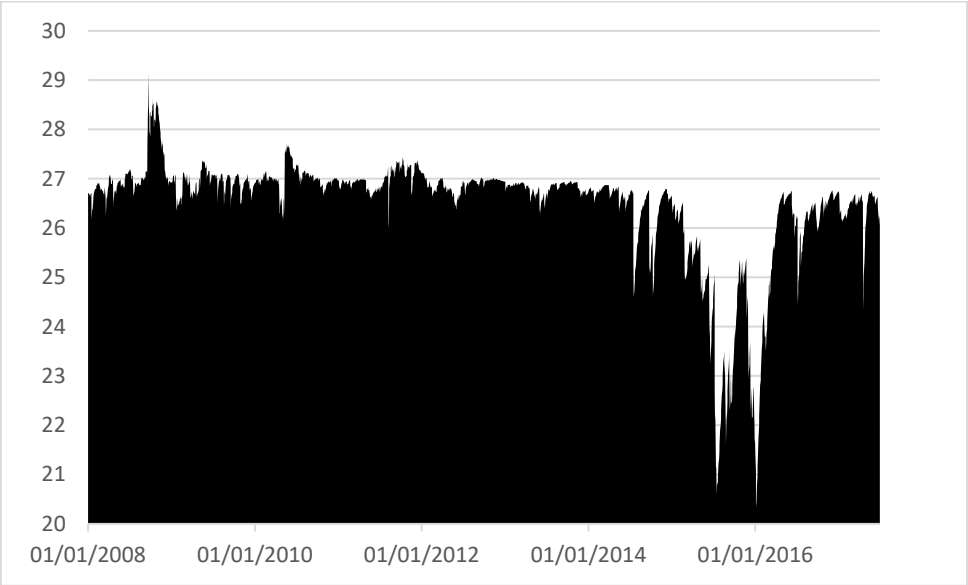


Figure 450: Total Average Dynamic Connectedness Banking

Figure 451: Net Pairwise Directional Connectedness Banking

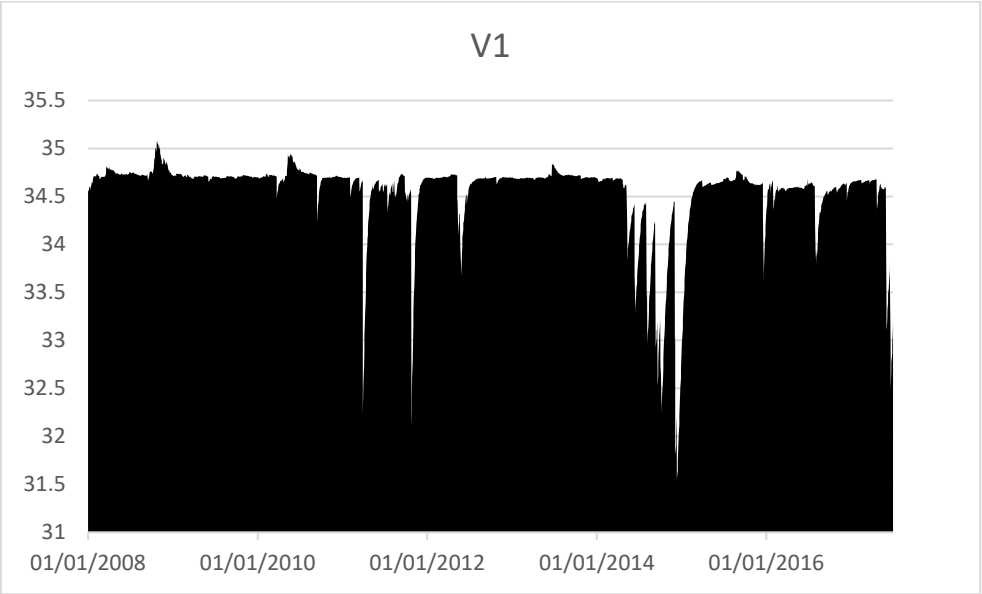


Figure 452: Total Average Dynamic Connectedness Consumer Services

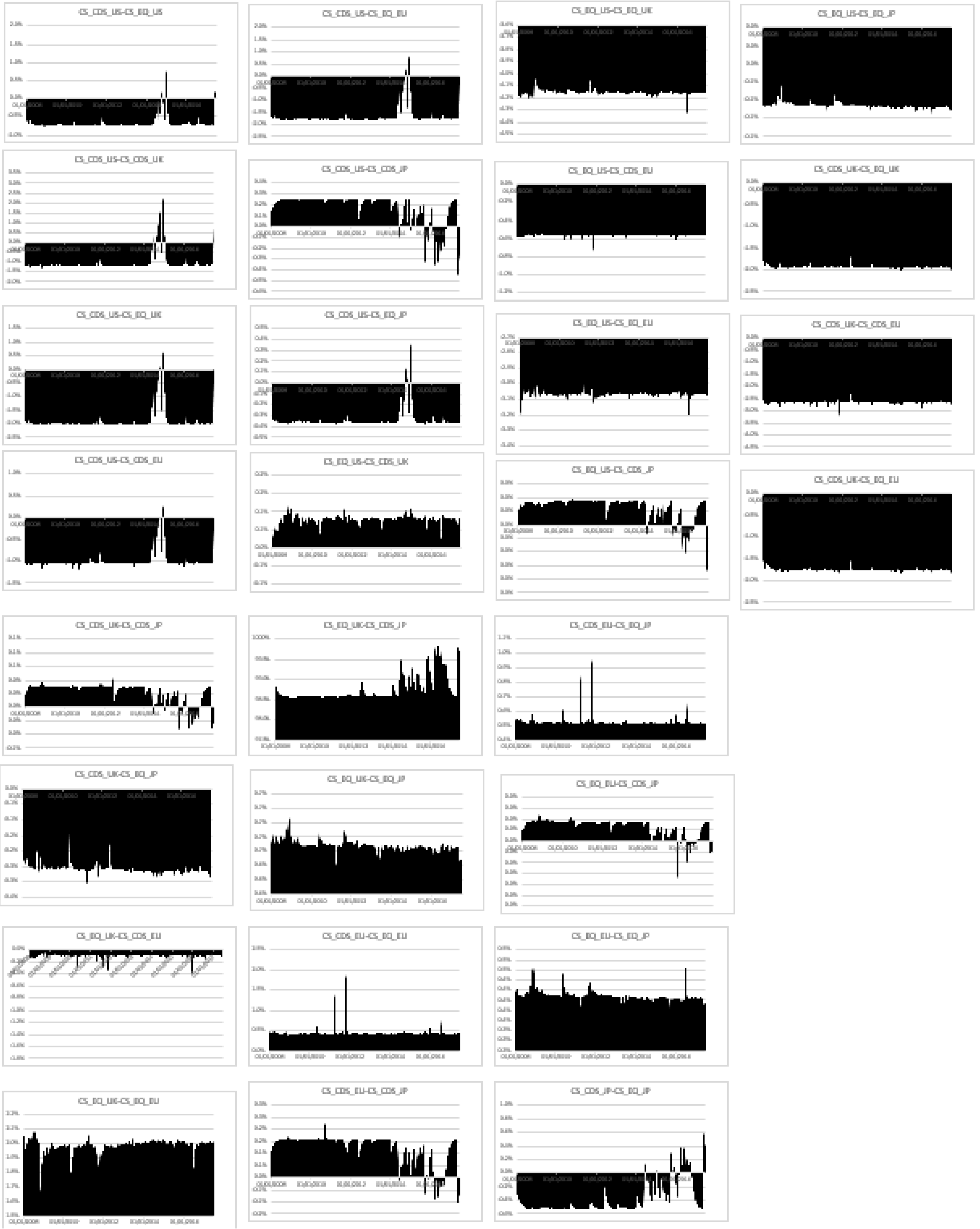


Figure 453: Net Pairwise Directional Connectedness Consumer Services

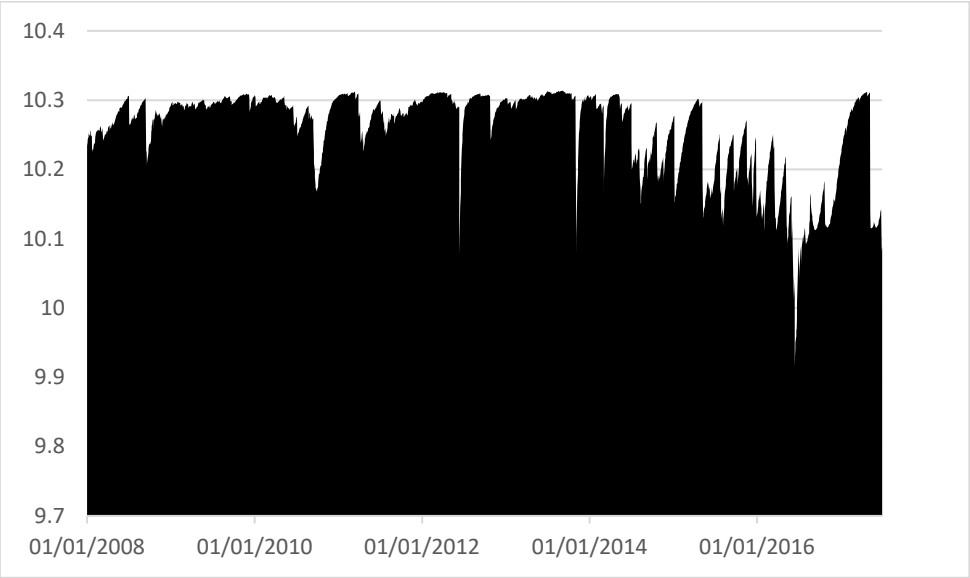


Figure 454: Total Average Dynamic Connectedness Other Consumer Services

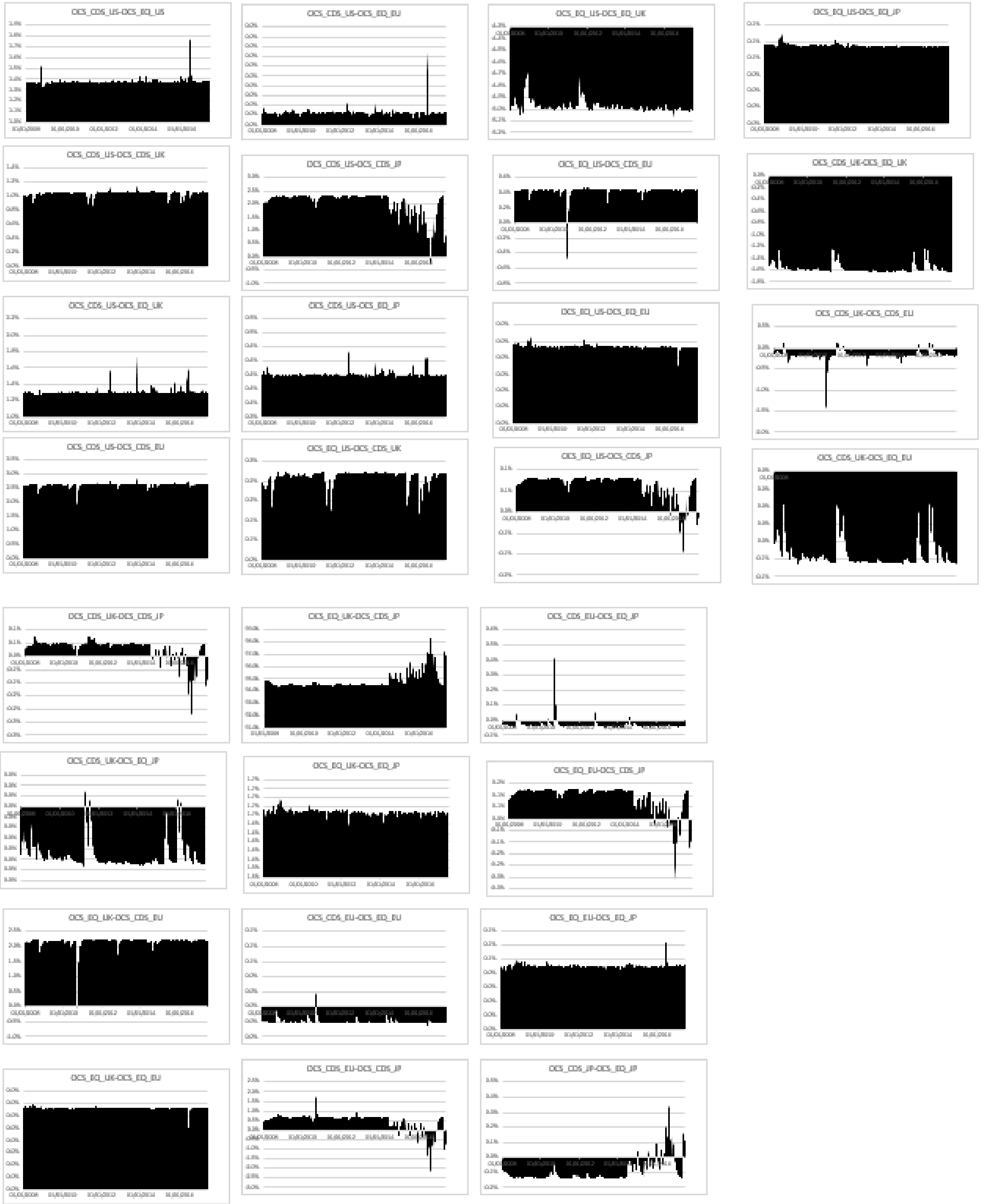


Figure 455: Net Pairwise Directional Connectedness Other Consumer Services

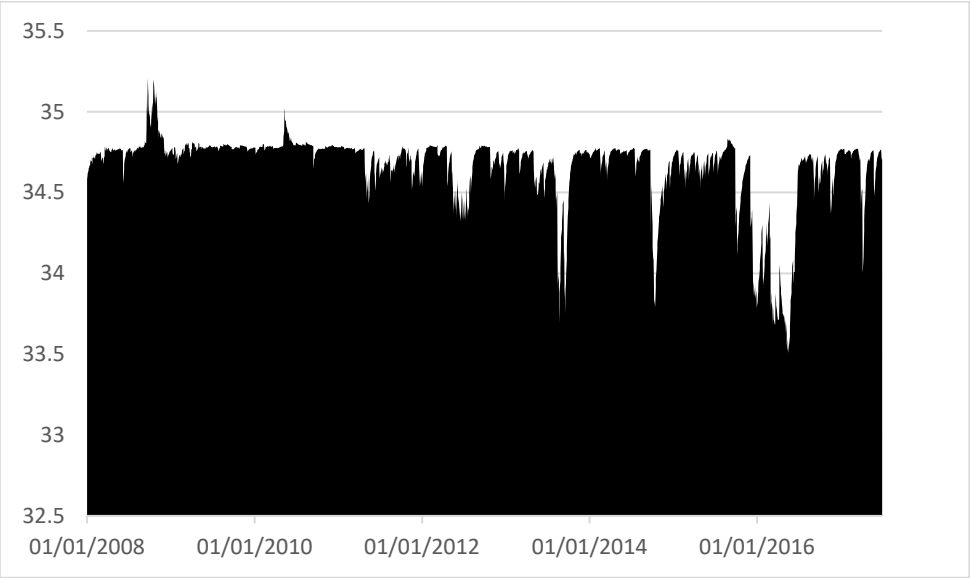


Figure 456: Total Average Dynamic Connectedness Other Financials II

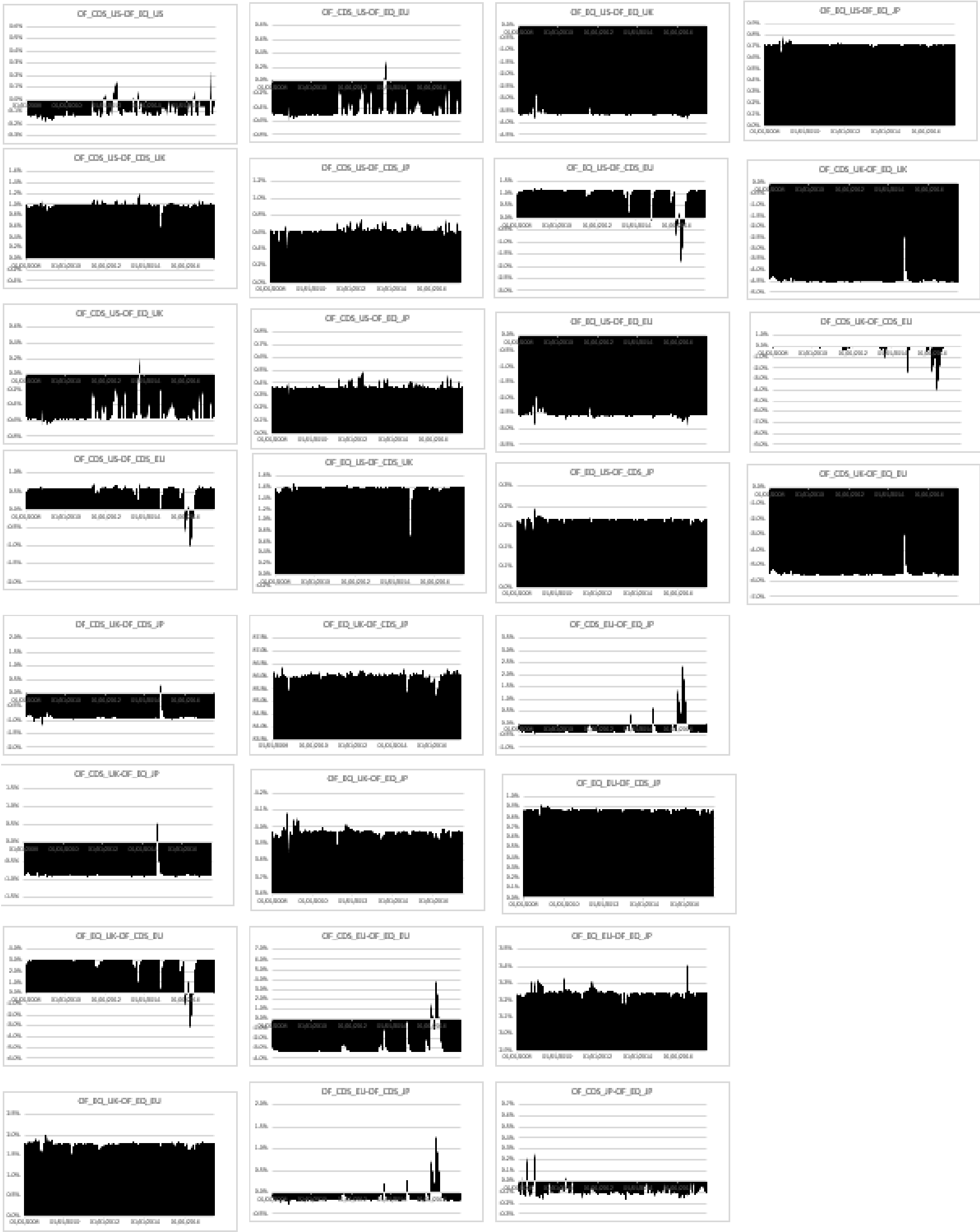


Figure 457: Net Pairwise Directional Connectedness Other Financials II

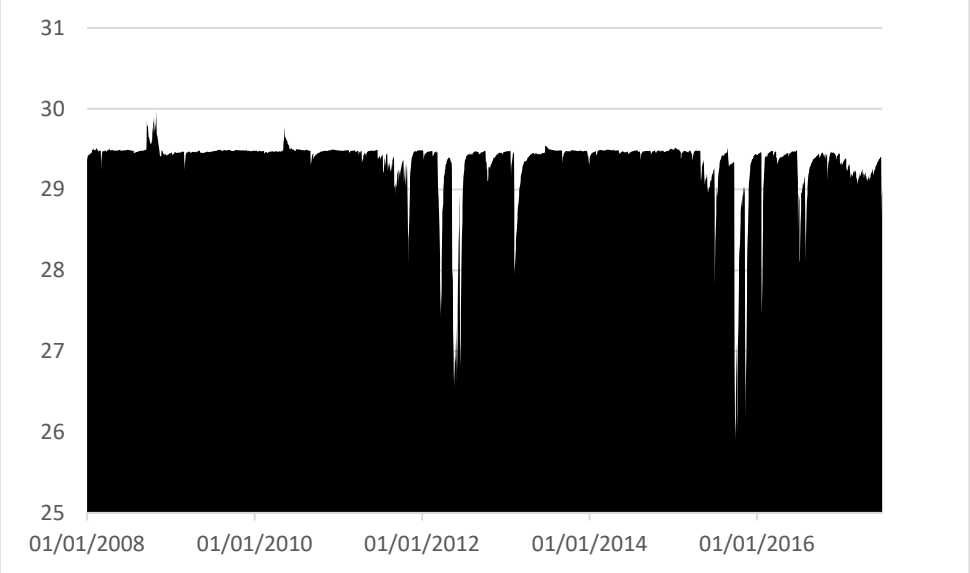
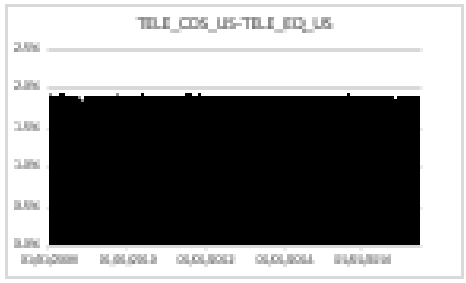
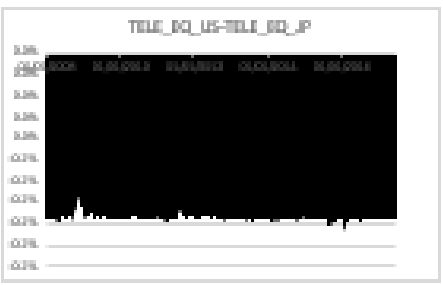
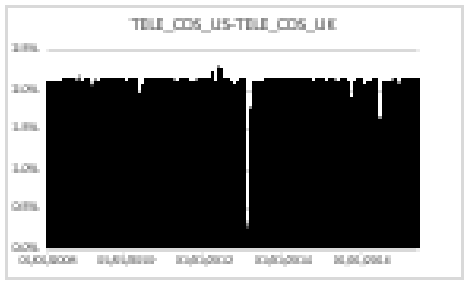
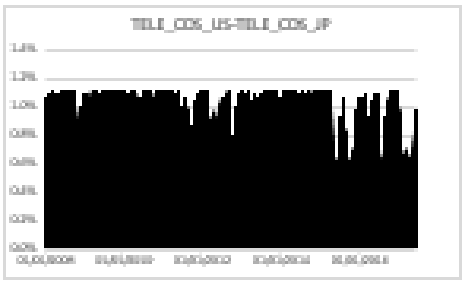


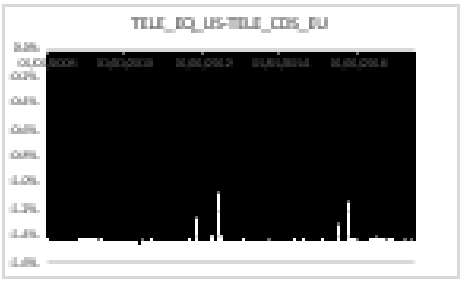
Figure 458: Total Average Dynamic Connectedness Telecommunications

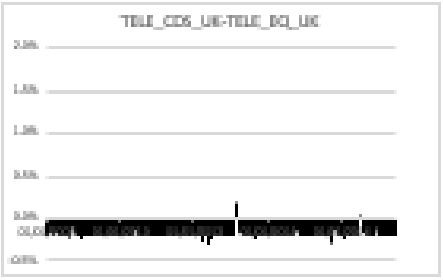


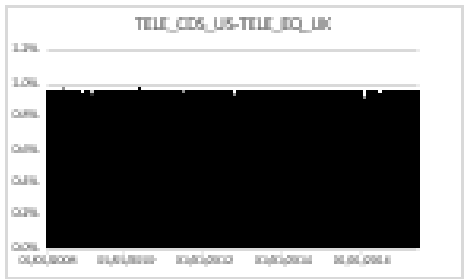


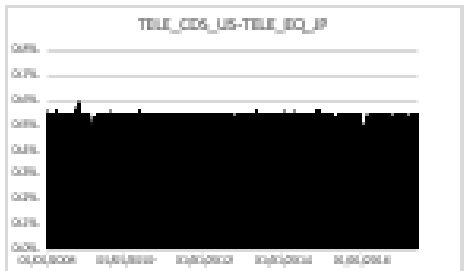


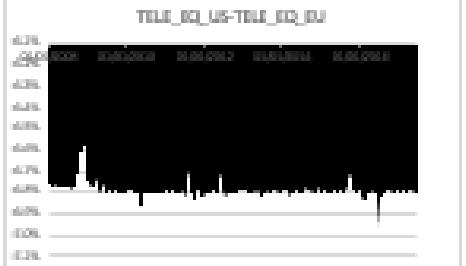


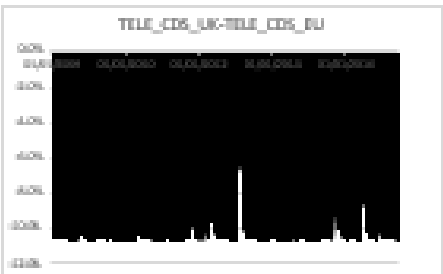


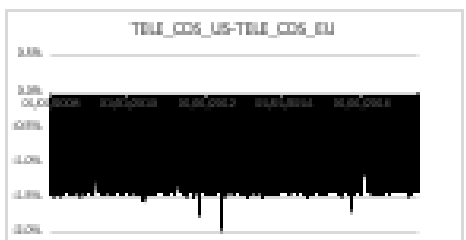


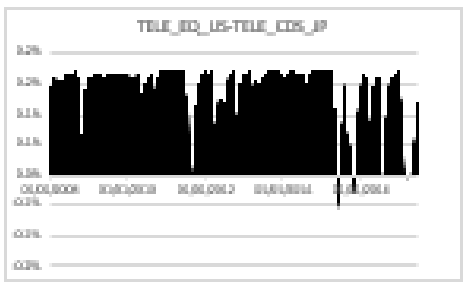


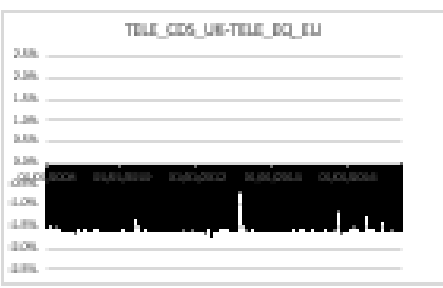


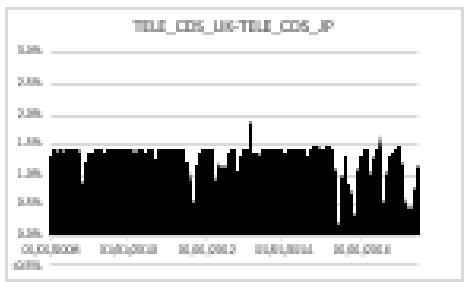


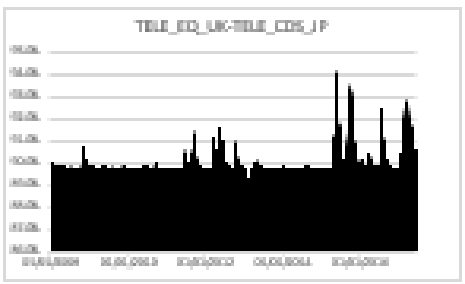


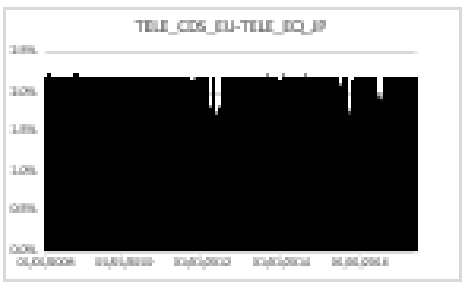


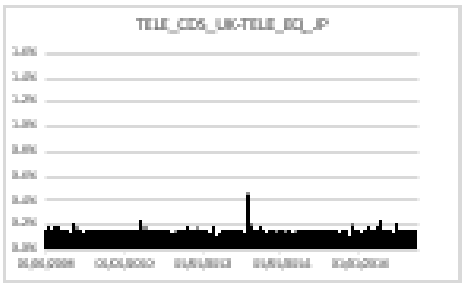


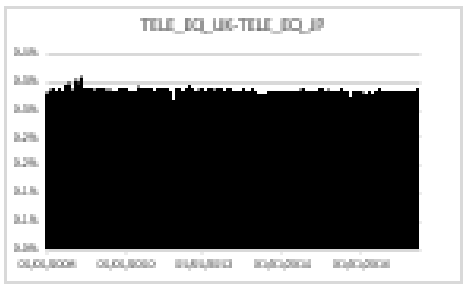


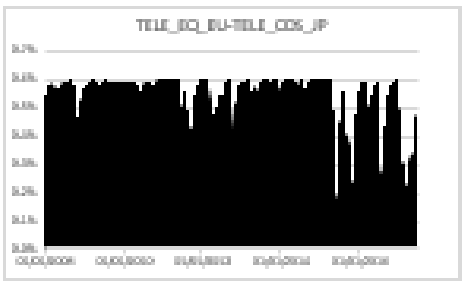


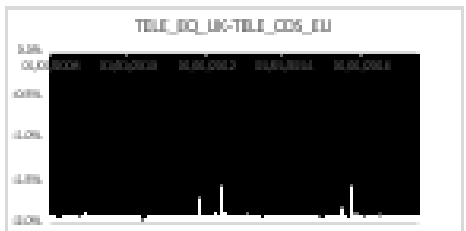


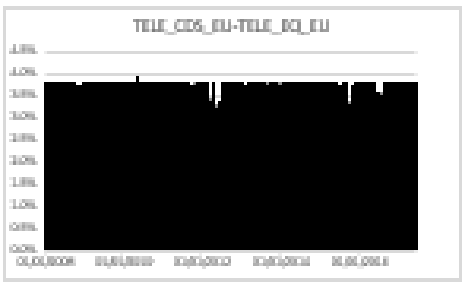


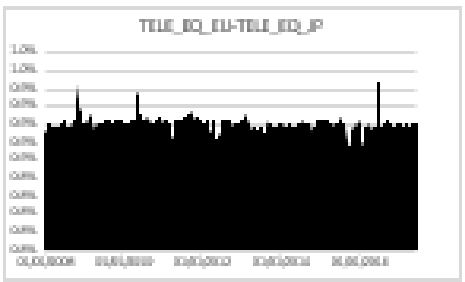


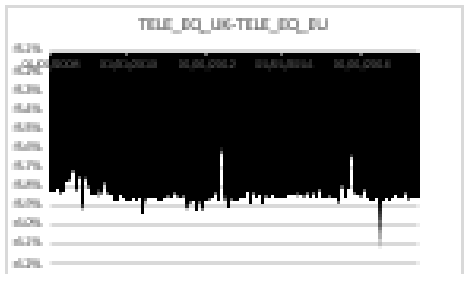


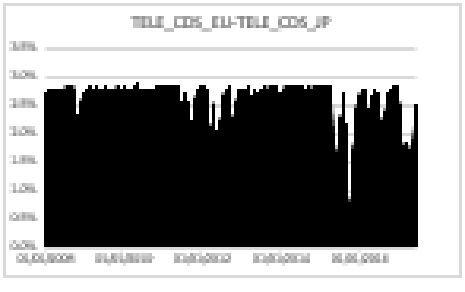












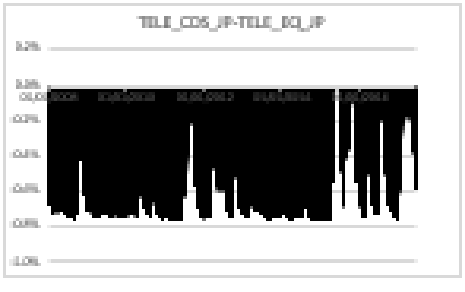


Figure 459: Net Pairwise Directional Connectedness Telecommunications

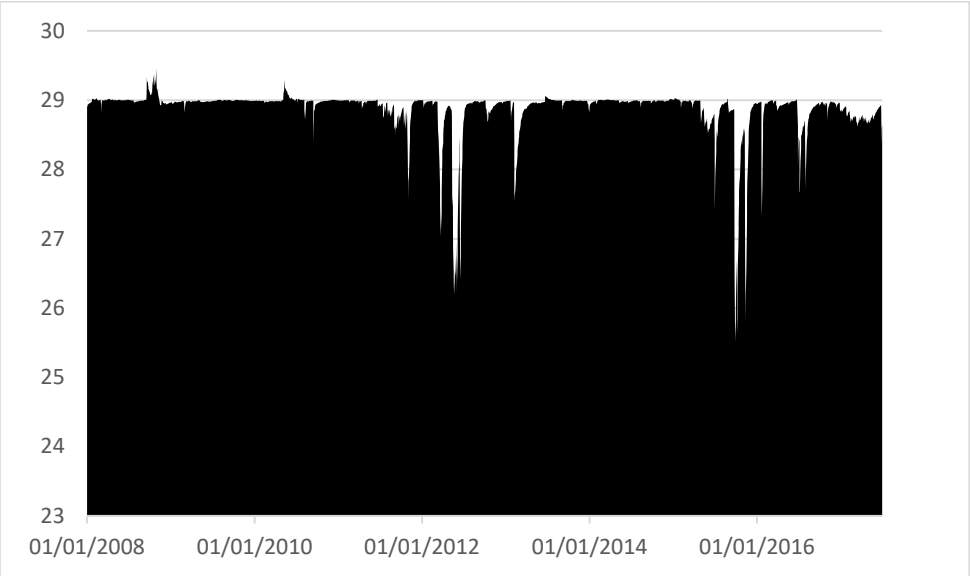


Figure 460: Total Average Dynamic Connectedness Other Telecommunications

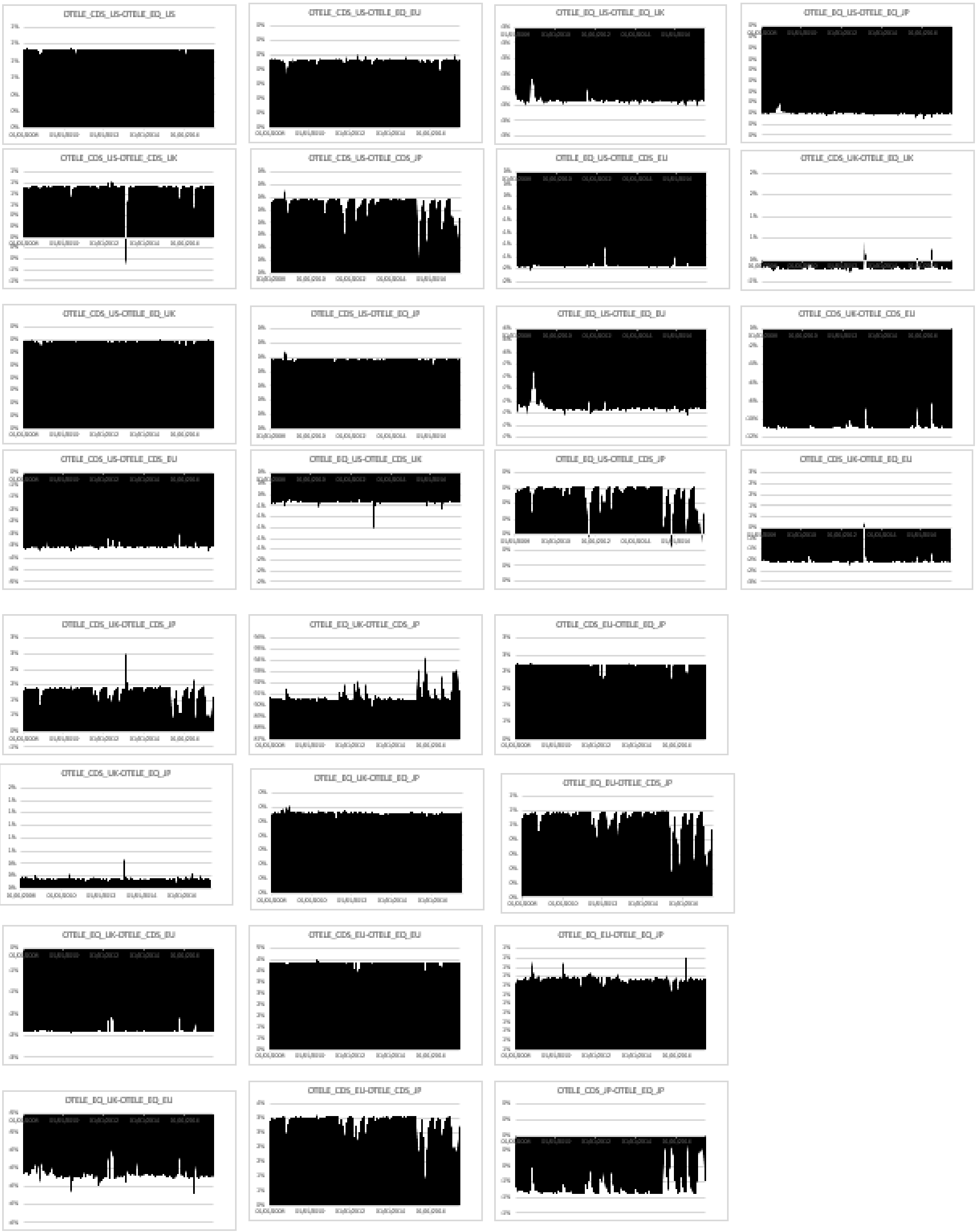


Figure 461: Net Pairwise Directional Connectedness Other Telecommunications

G.2 Full-BEKK GARCH Model

Credit Default Swap

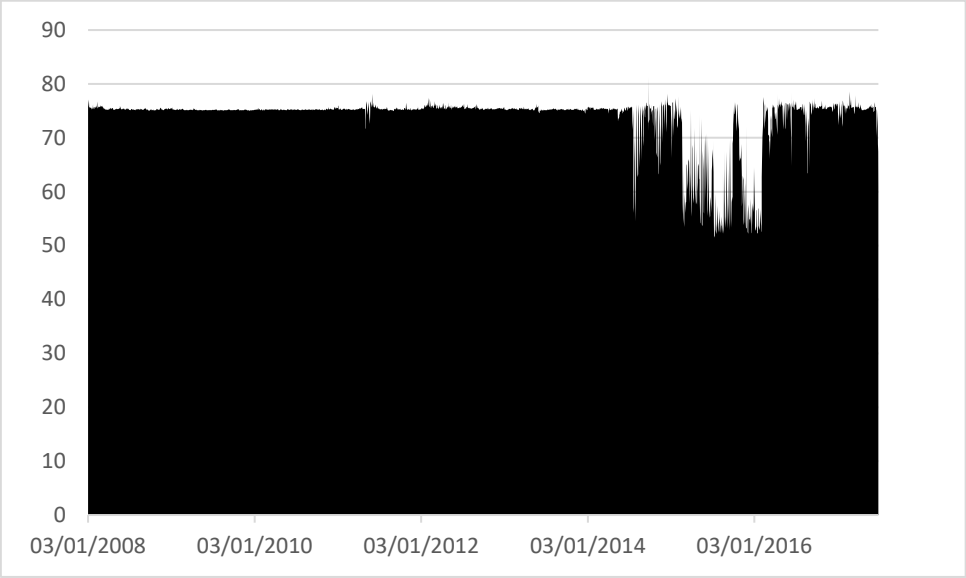


Figure 462: Total Average Dynamic Connectedness Banks

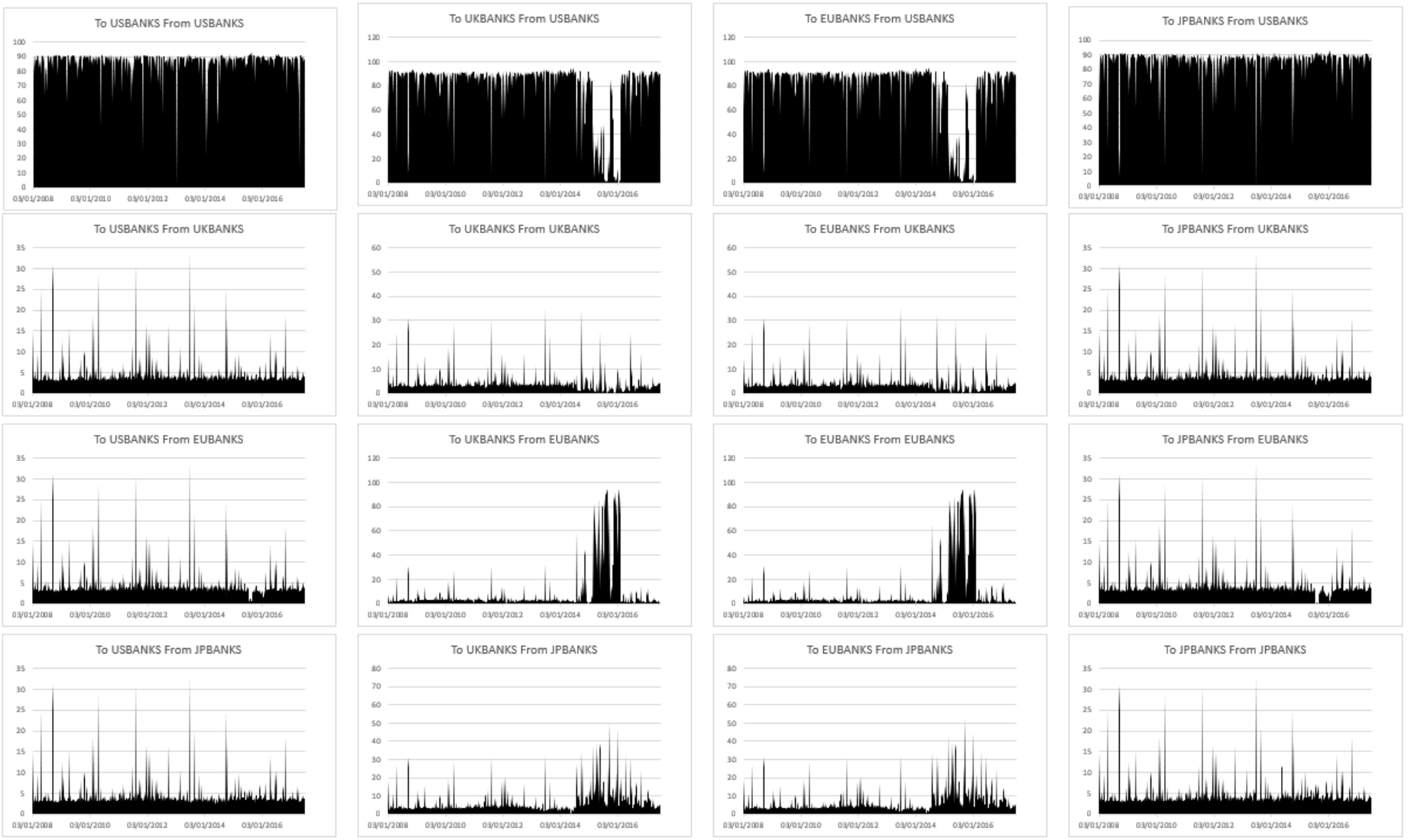


Figure 463: Net Pairwise Directional Connectedness Banks

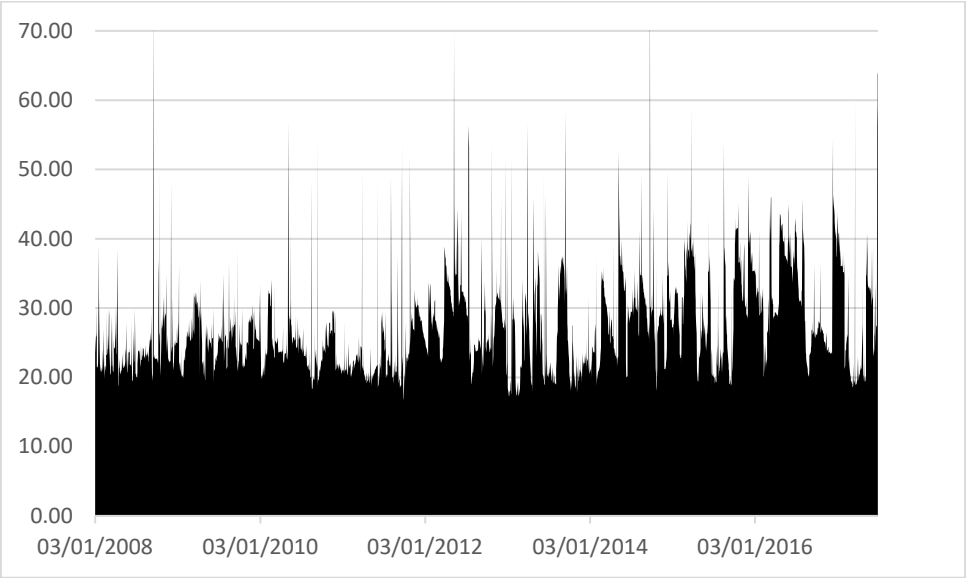


Figure 464: Total Average Dynamic Connectedness Consumer Goods

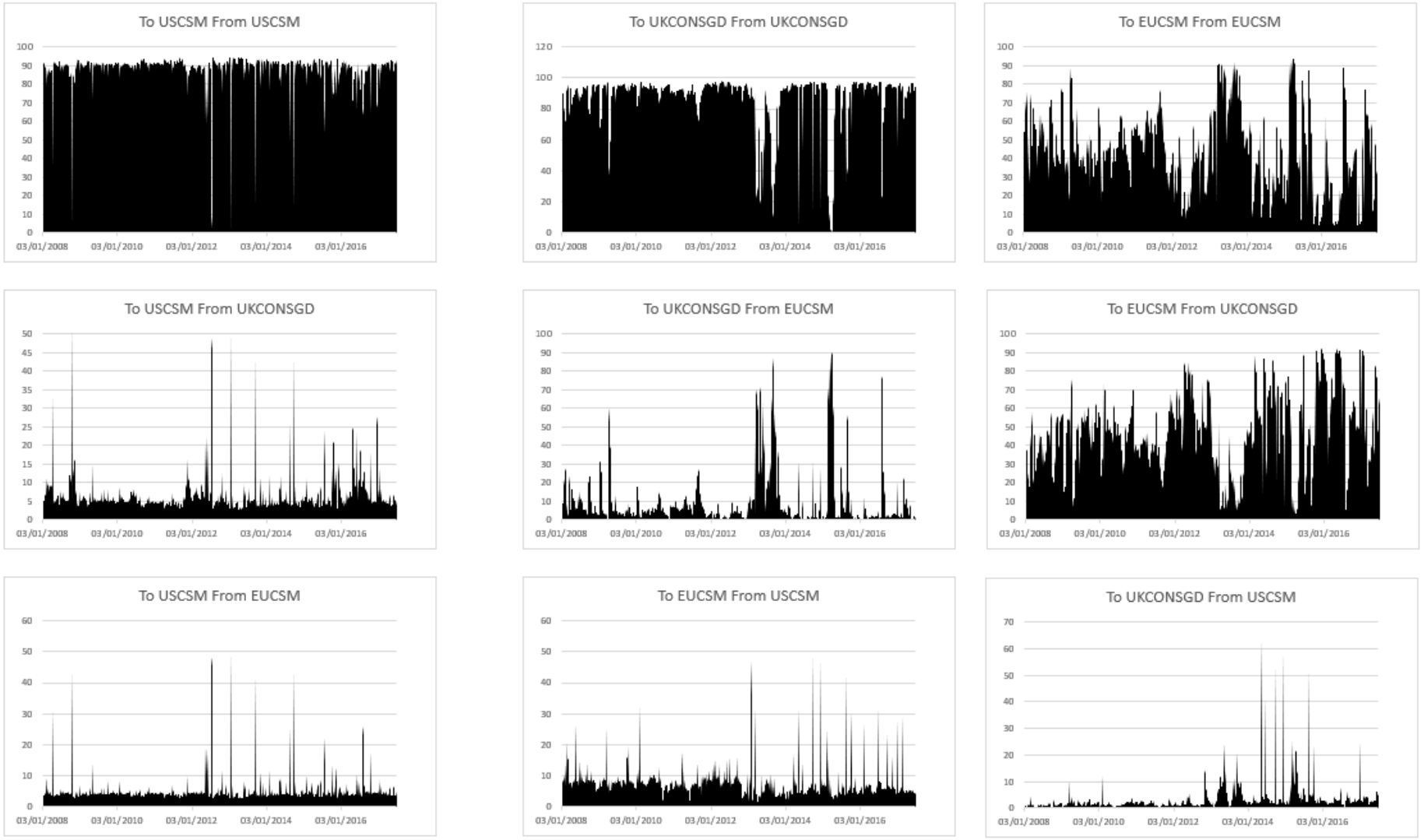


Figure 465: Net Pairwise Directional Connectedness Consumer Goods

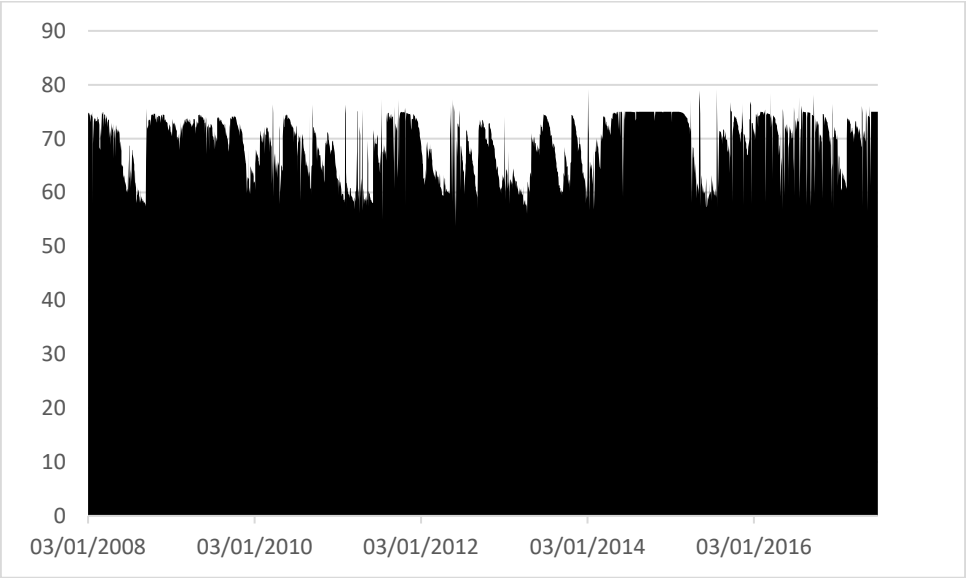


Figure 466: Total Average Dynamic Connectedness Consumer Services

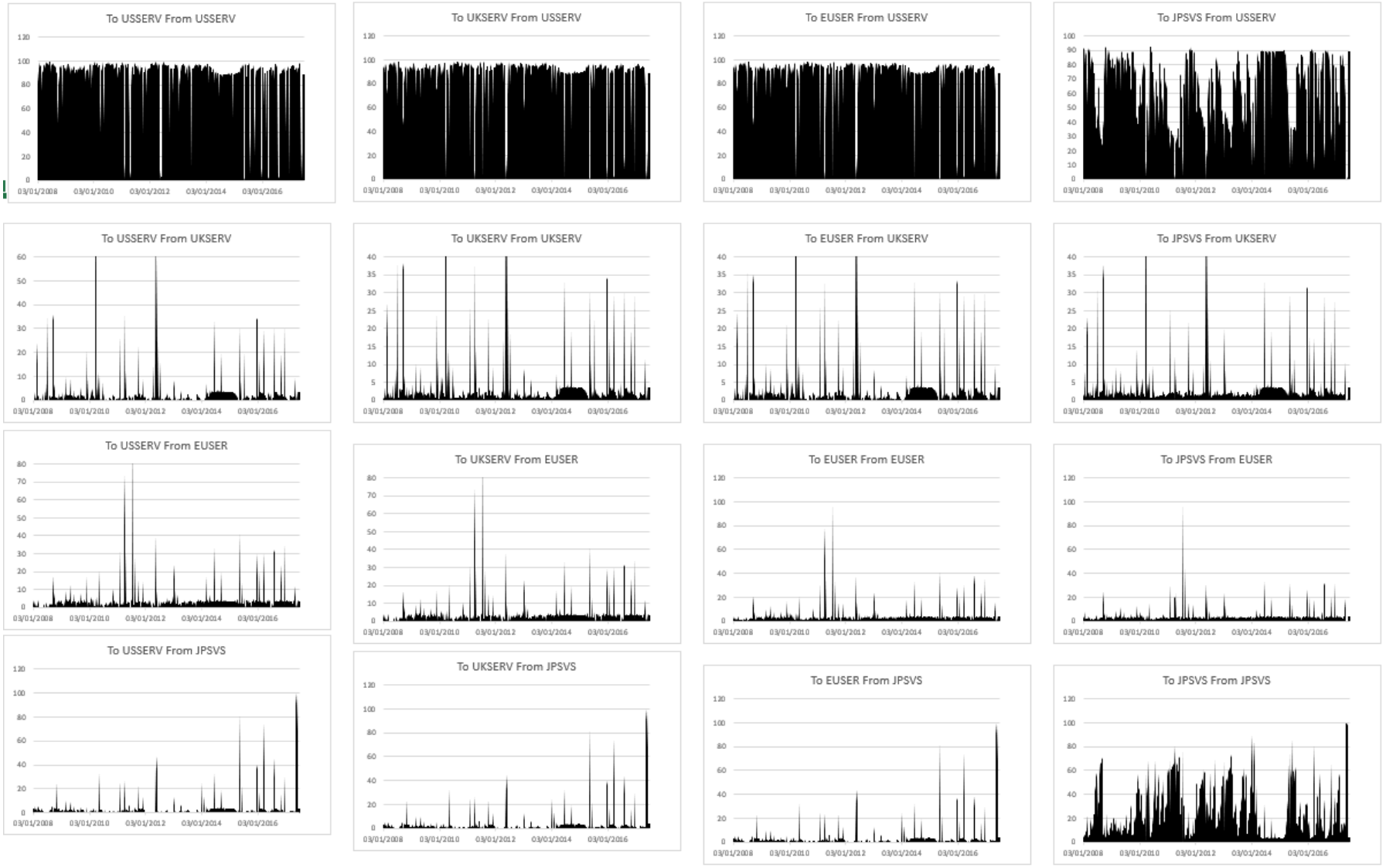


Figure 467: Net Pairwise Directional Connectedness Consumer Services

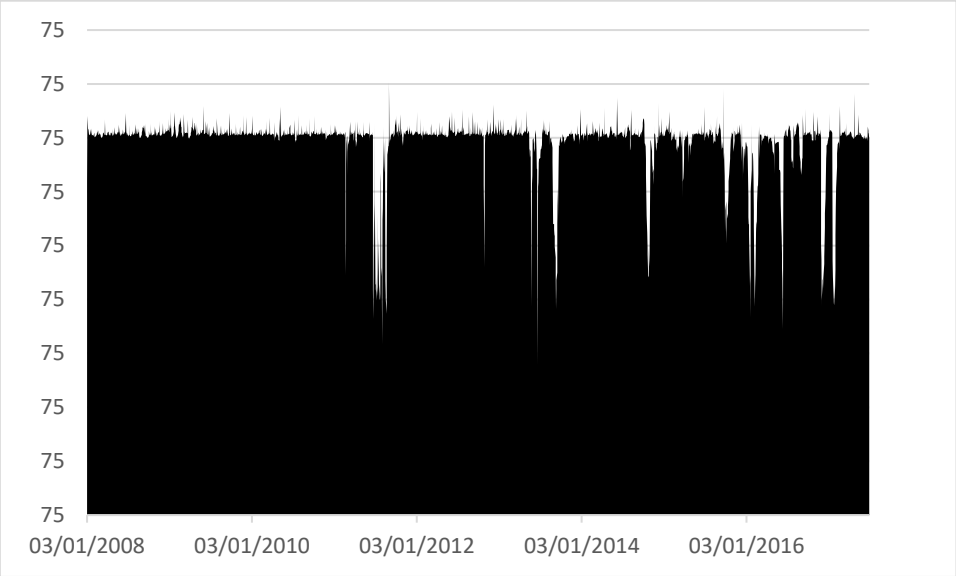


Figure 468: Total Average Dynamic Connectedness Other Financials

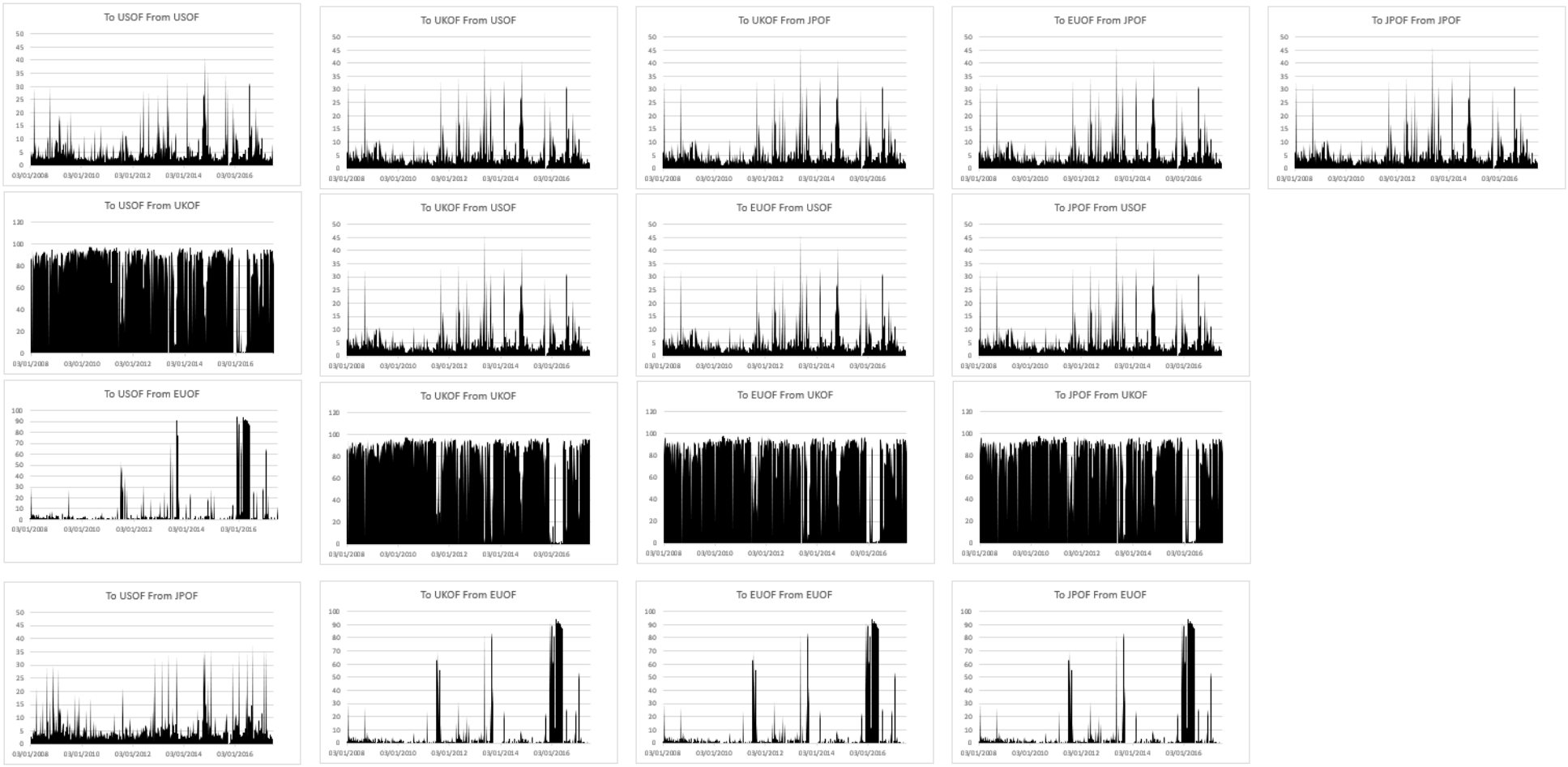


Figure 469: Net Pairwise Directional Connectedness Other Financials

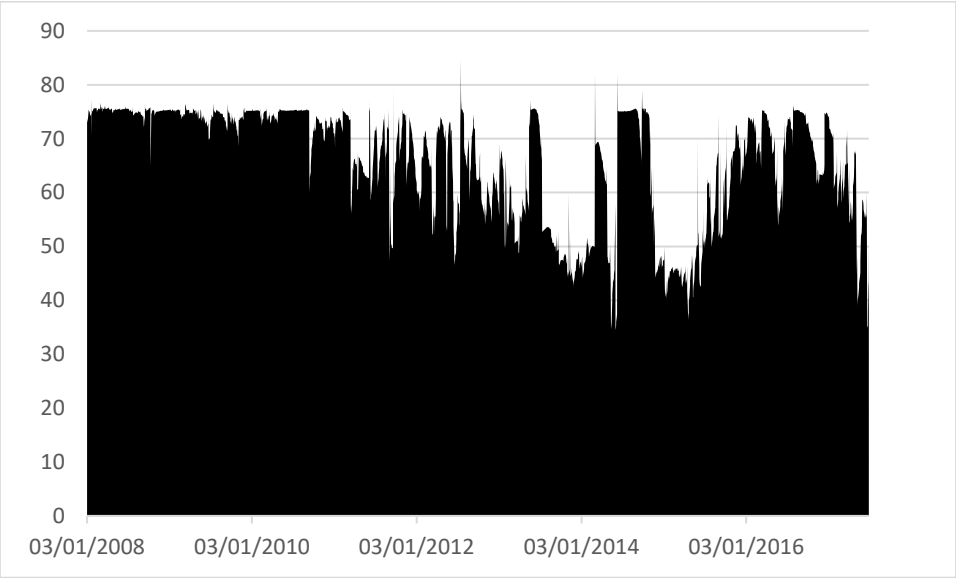


Figure 470: Total Average Dynamic Connectedness Electric Power

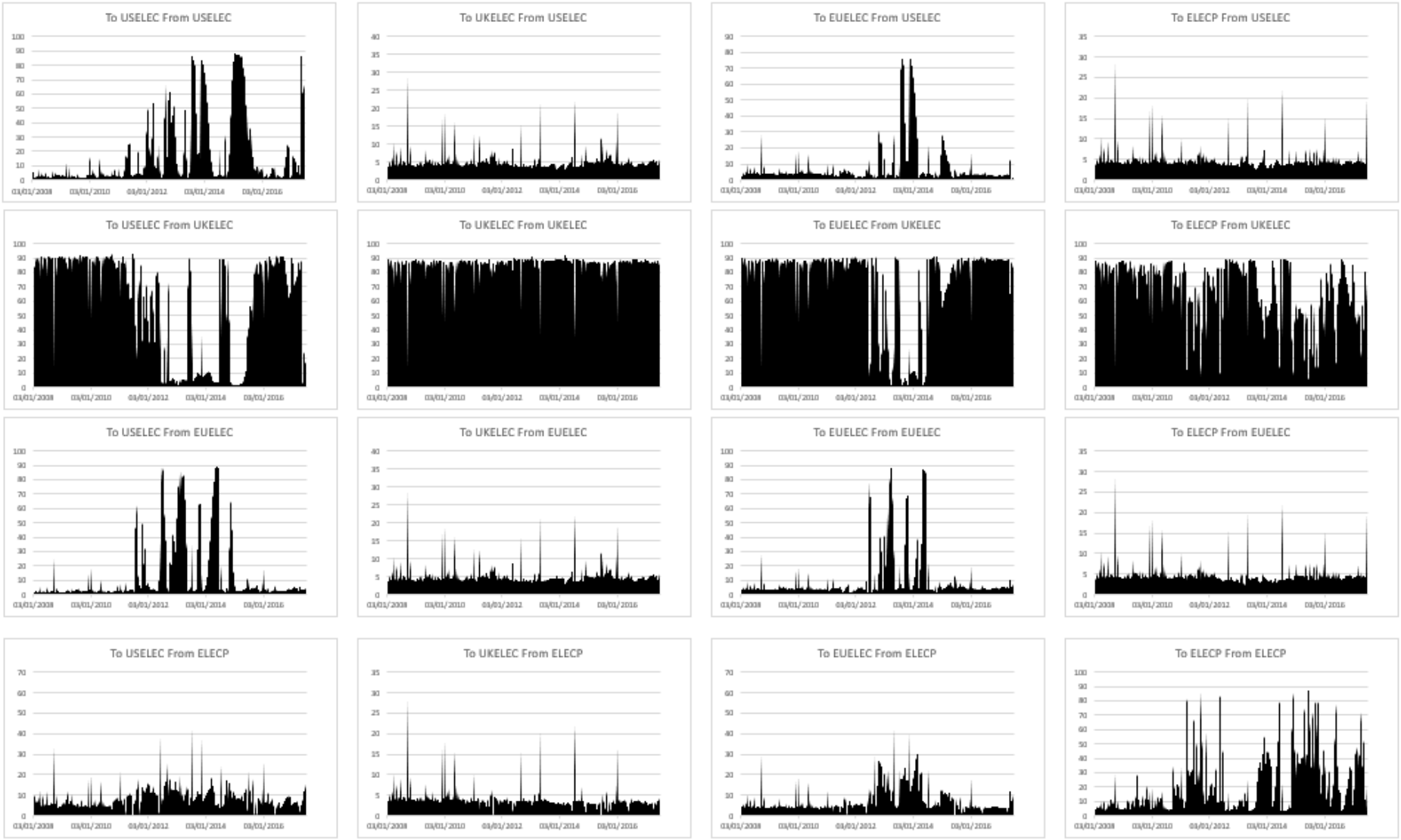


Figure 471: Net Pairwise Directional Connectedness Electric Power

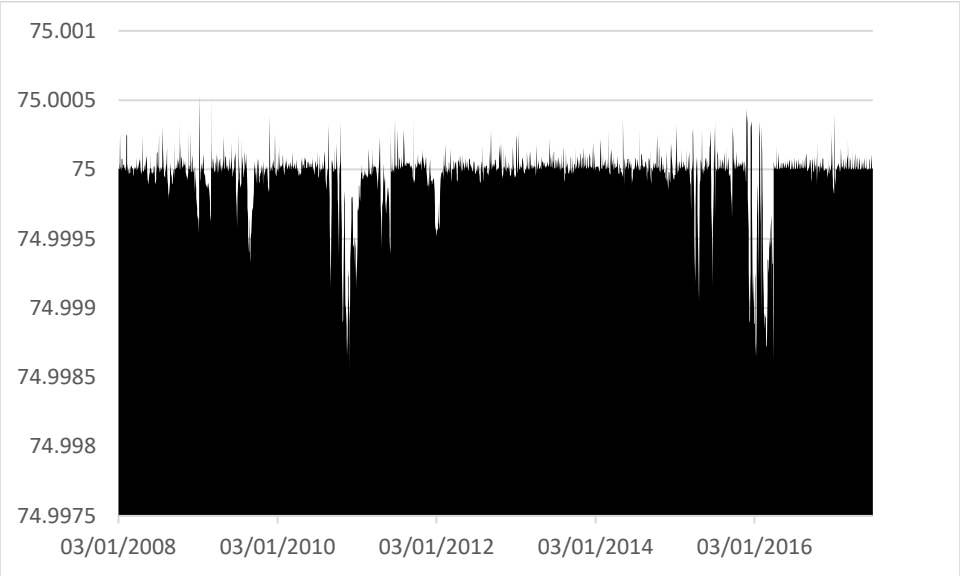


Figure 472: Total Average Dynamic Connectedness Manufacturing

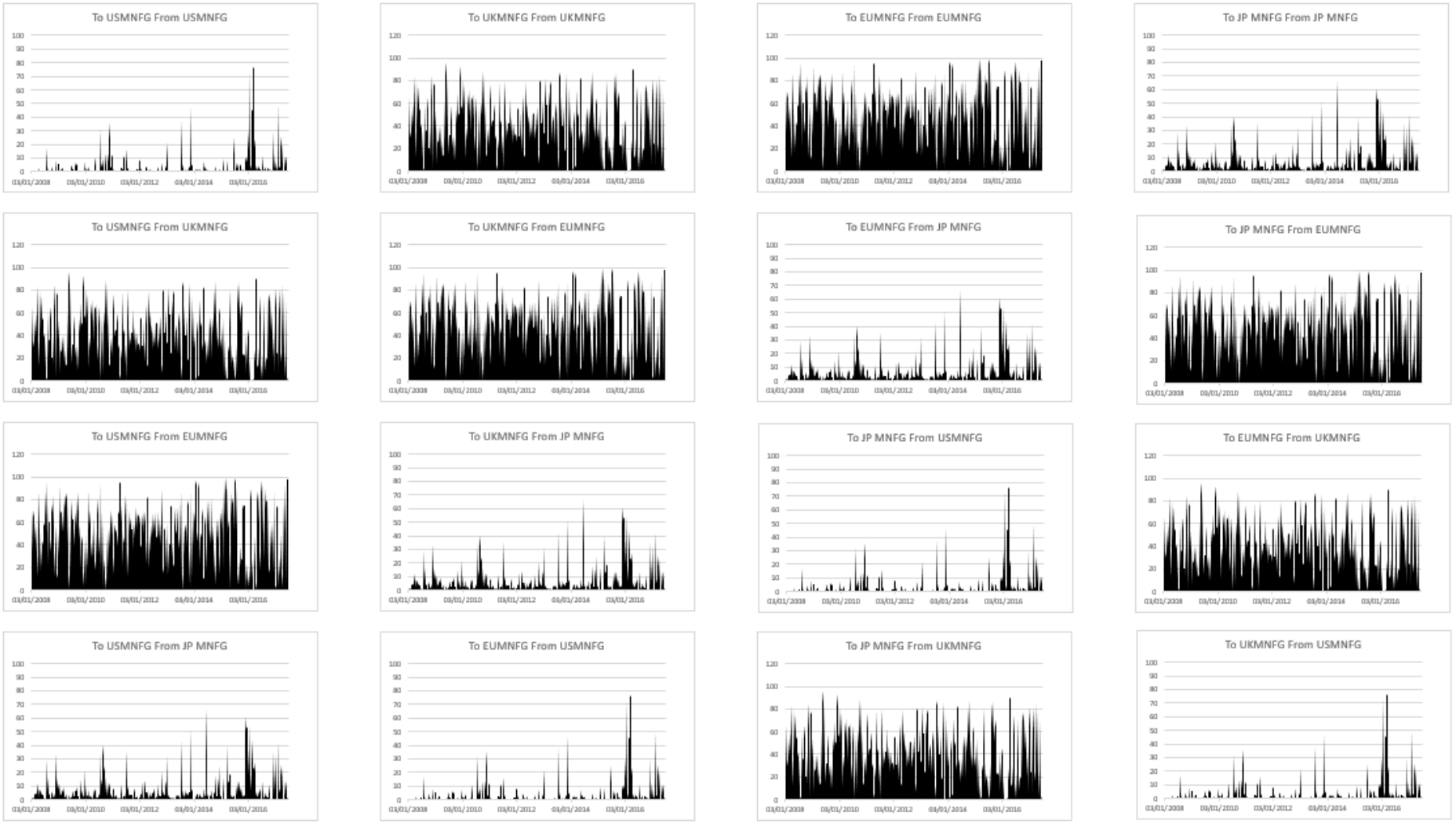


Figure 473: Net Pairwise Directional Connectedness Manufacturing

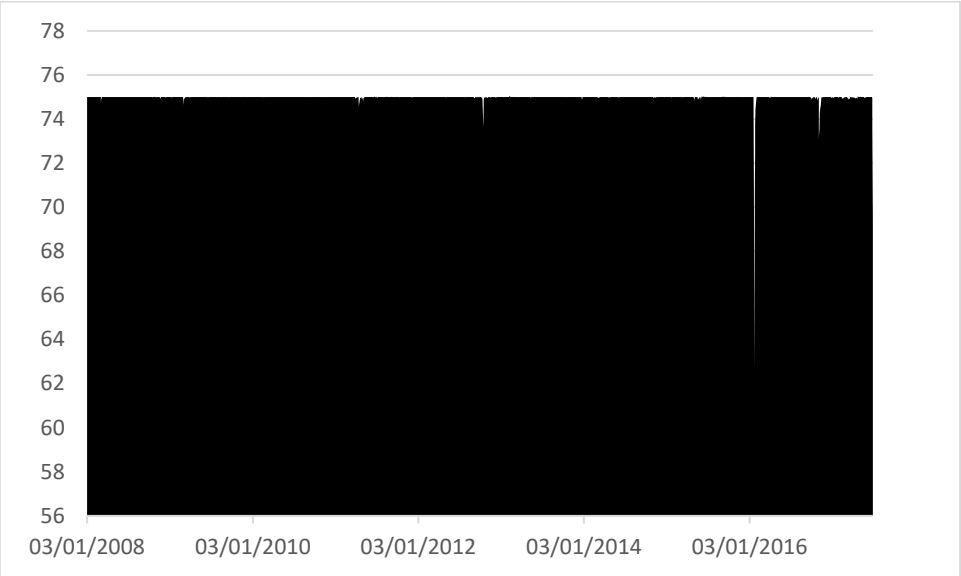


Figure 474: Total Average Dynamic Connectedness Telecommunications

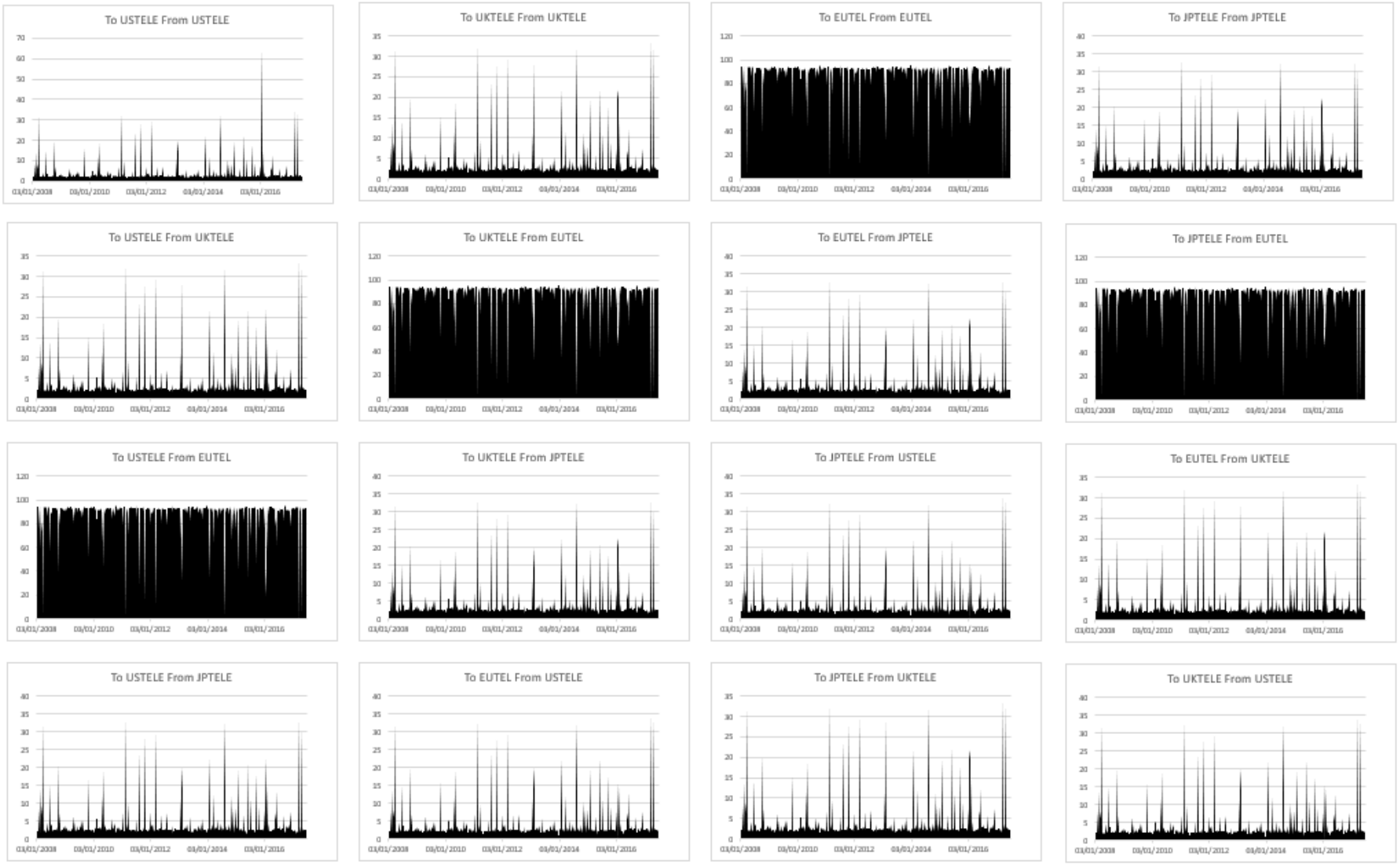


Figure 475: Net Pairwise Directional Connectedness Telecommunications

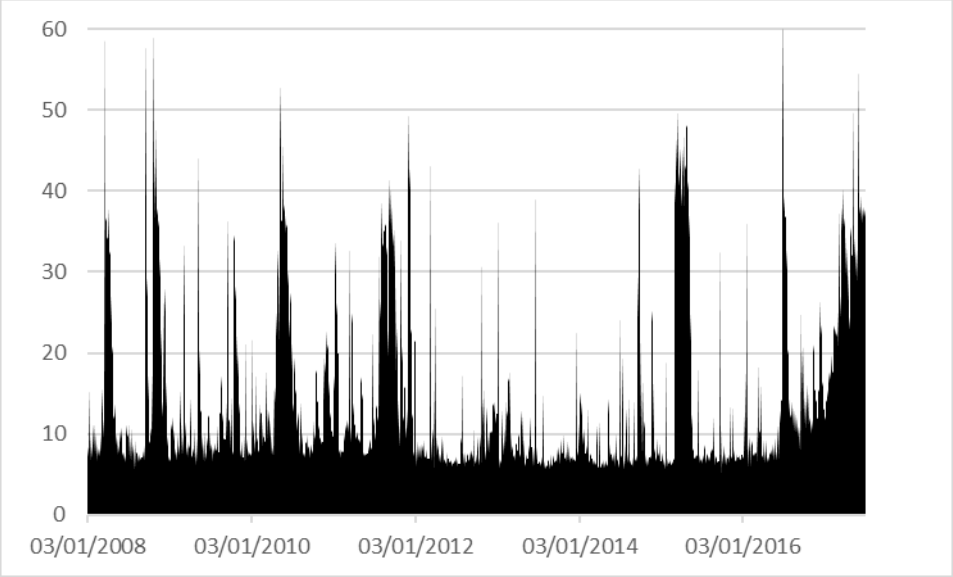


Figure 476: Total Average Dynamic Connectedness Transportation

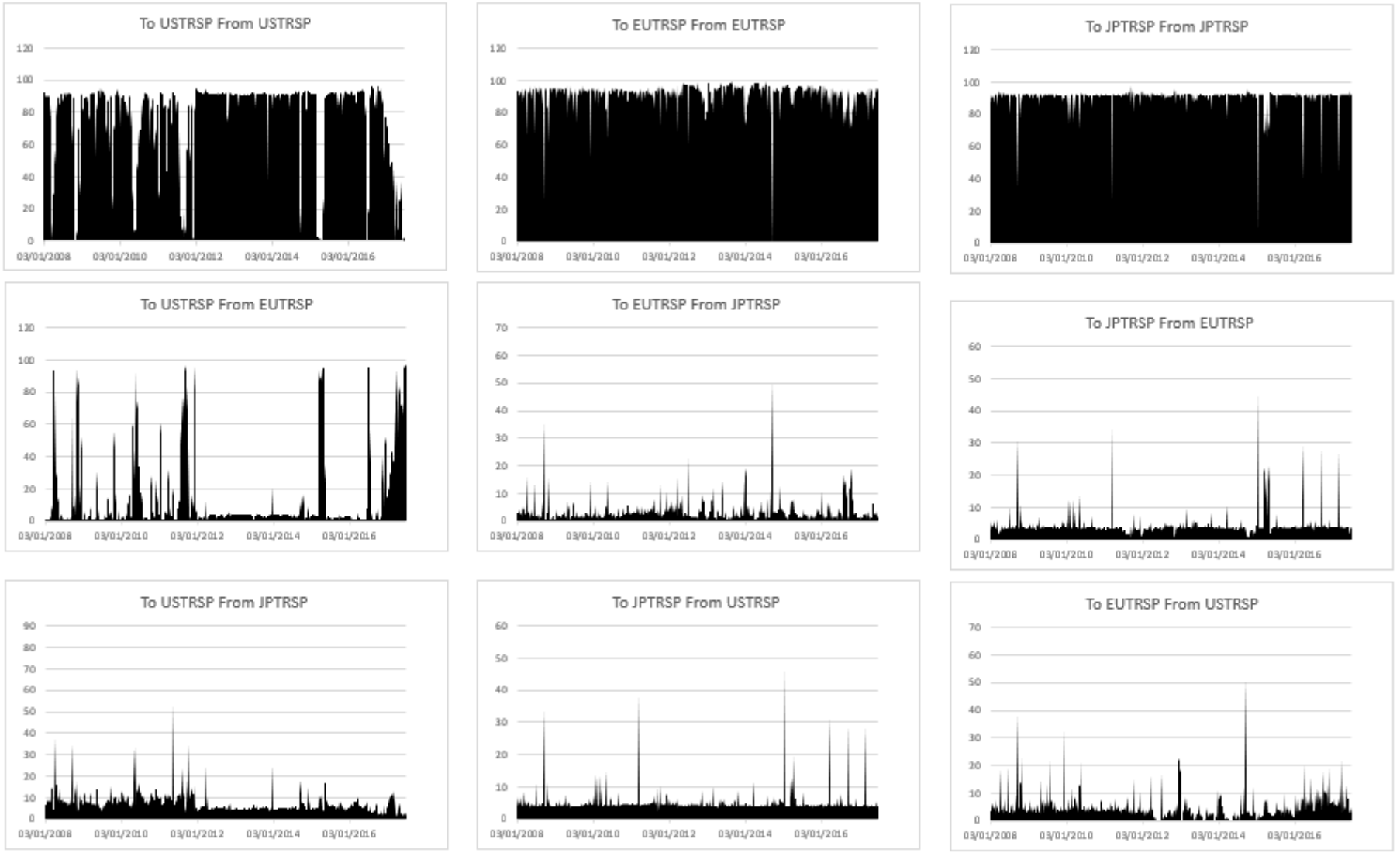


Figure 477: Net Pairwise Directional Connectedness Transportation

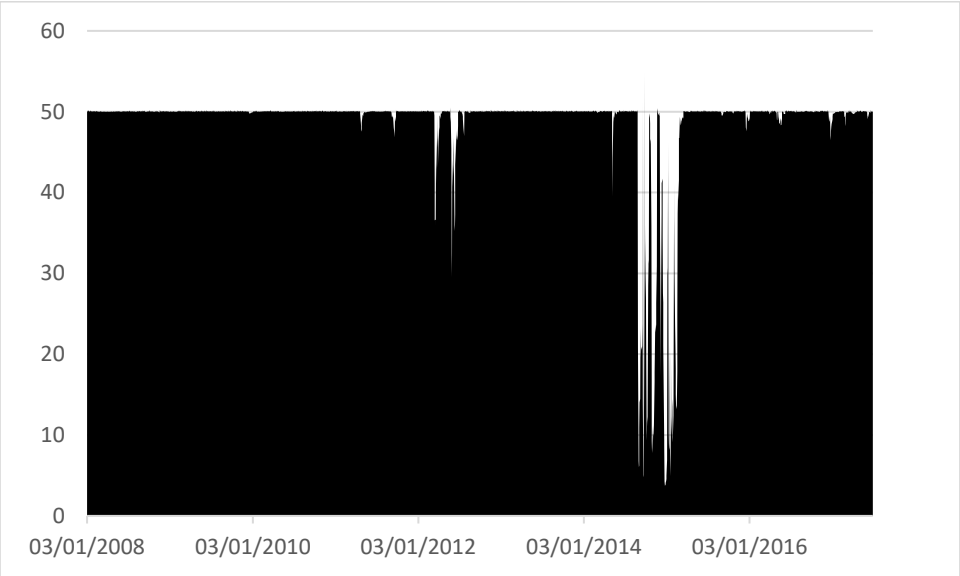
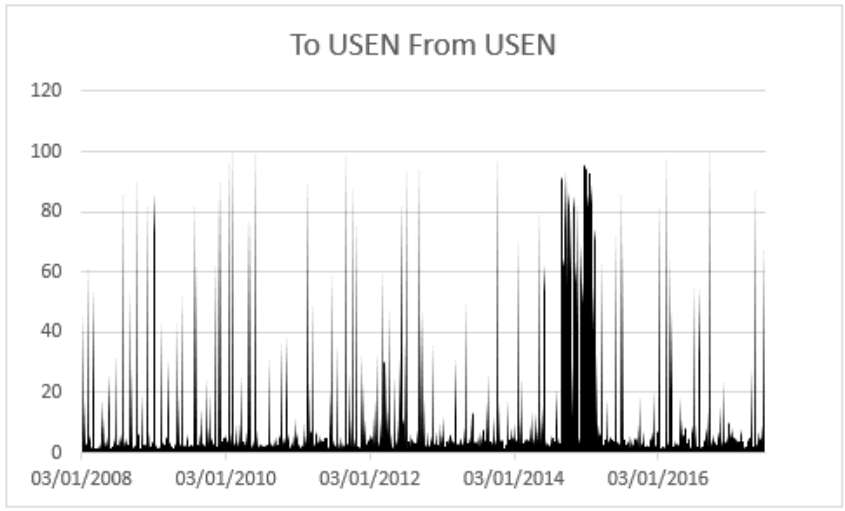
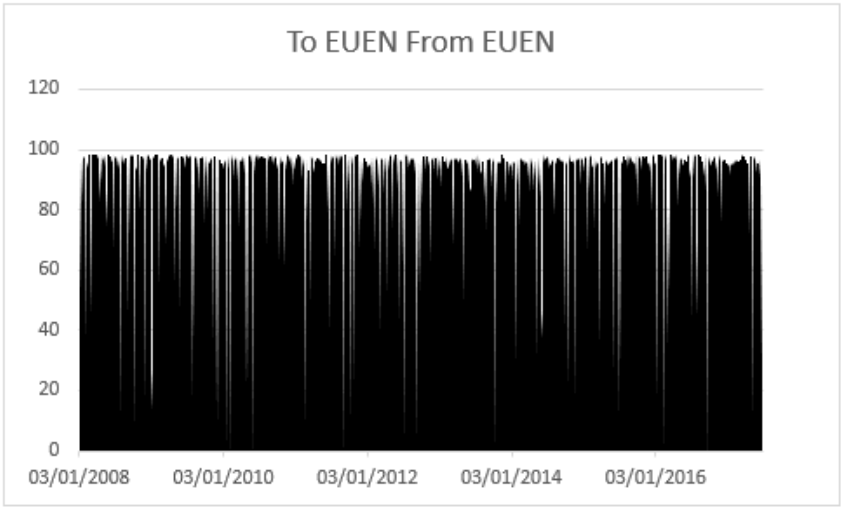
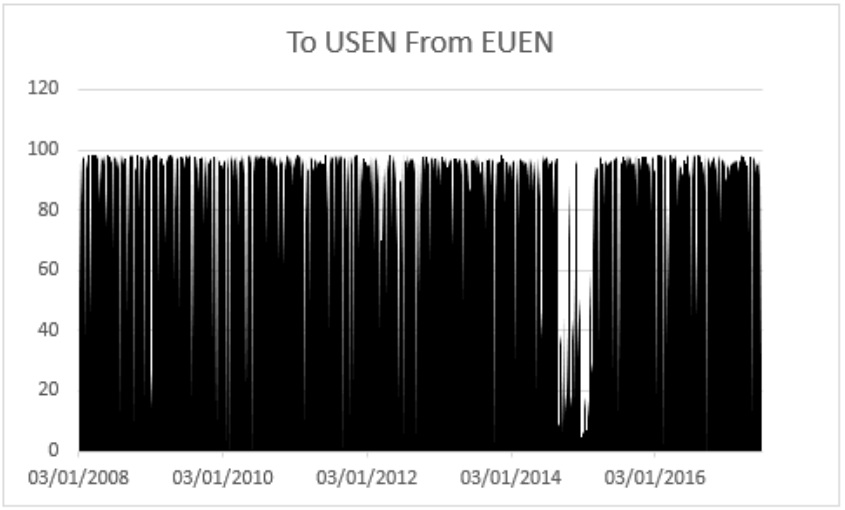


Figure 478: Total Average Dynamic Connectedness Energy







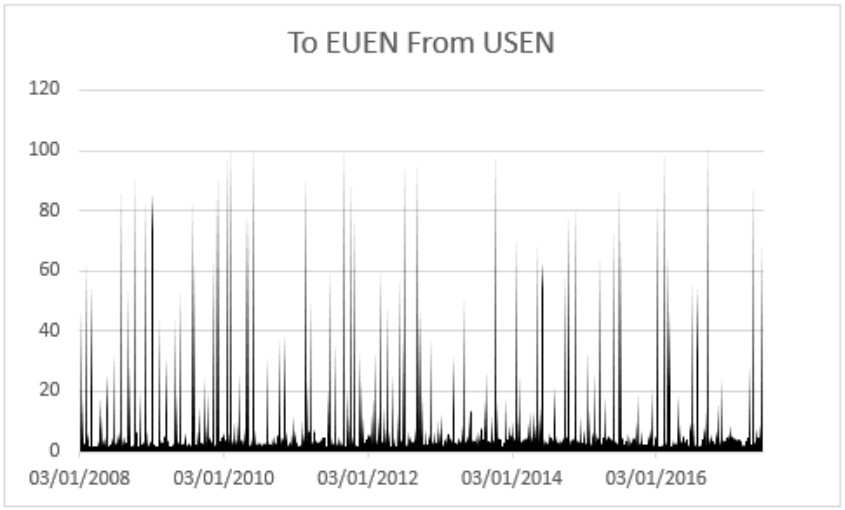


Figure 479: Net Pairwise Directional Connectedness Energy

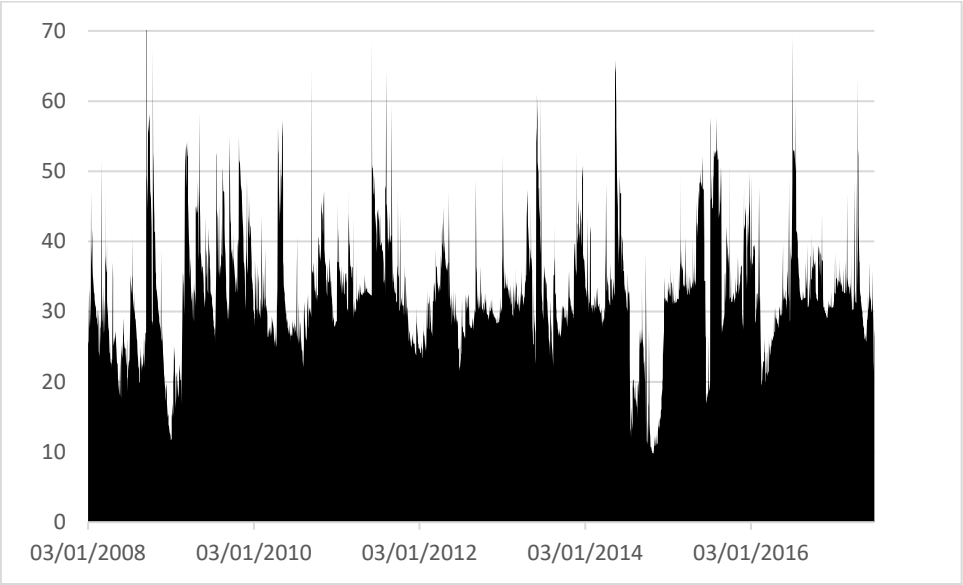


Figure 480: Total Average Dynamic Connectedness Banking

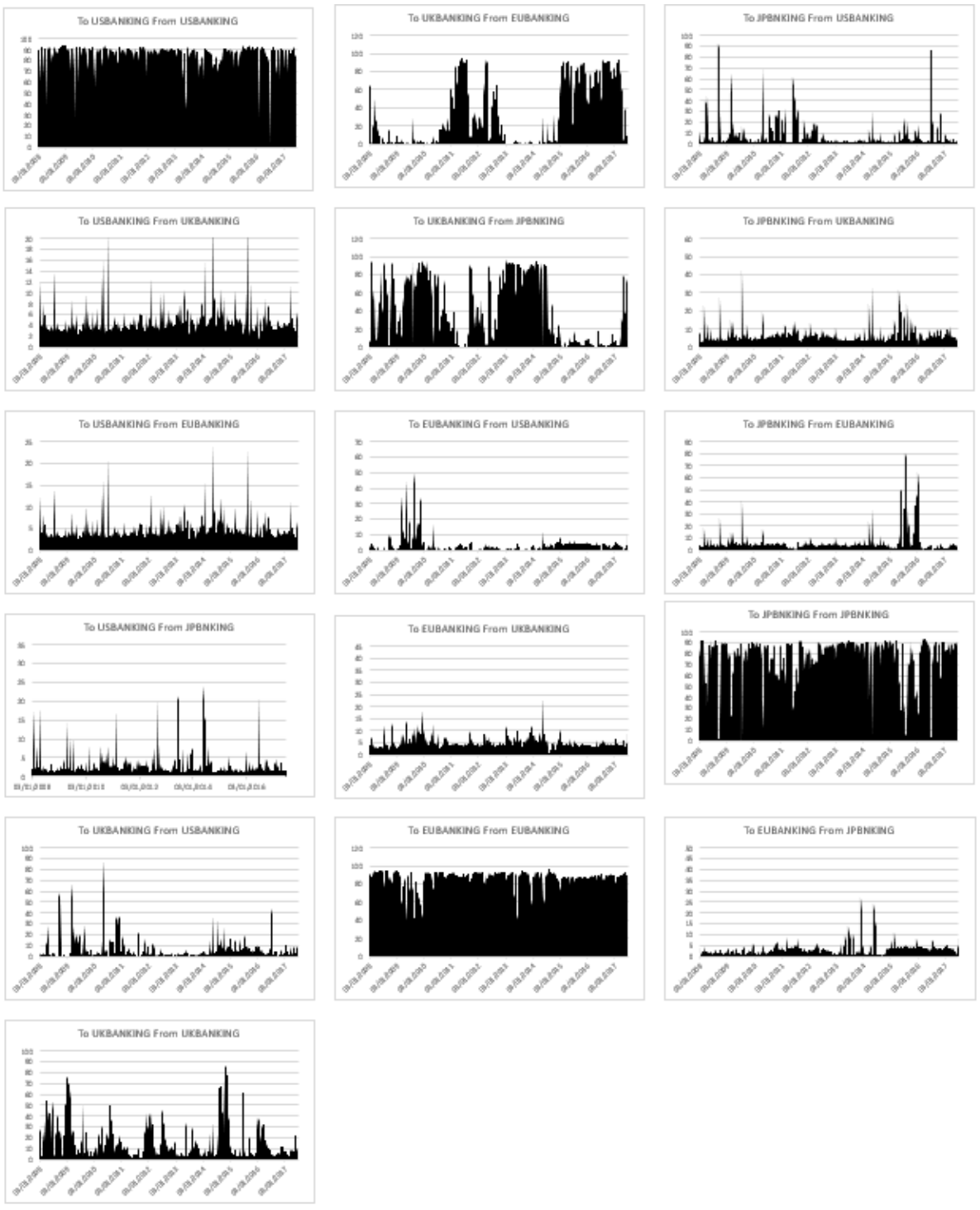


Figure 481: Net Pairwise Directional Connectedness Banking

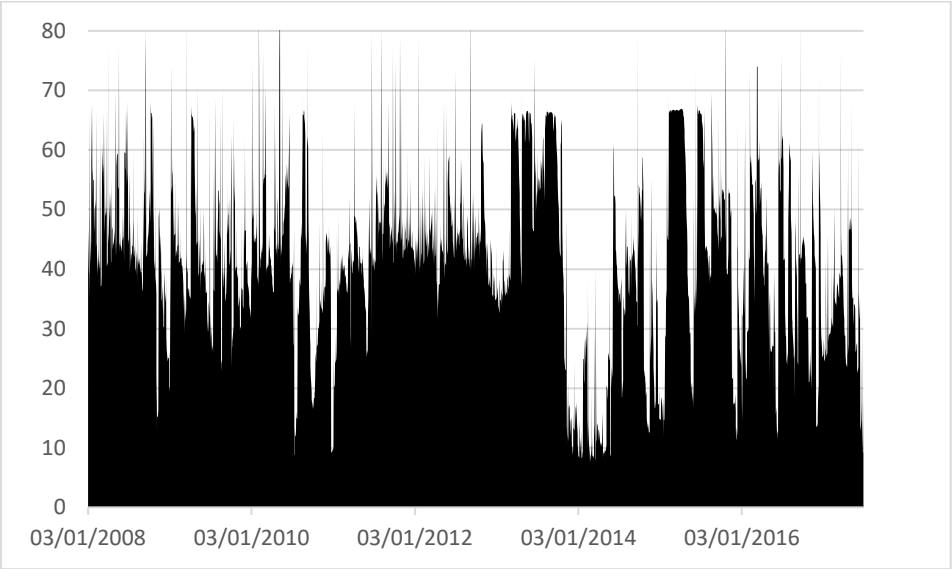


Figure 482: Total Average Dynamic Connectedness Beverages and Bottling

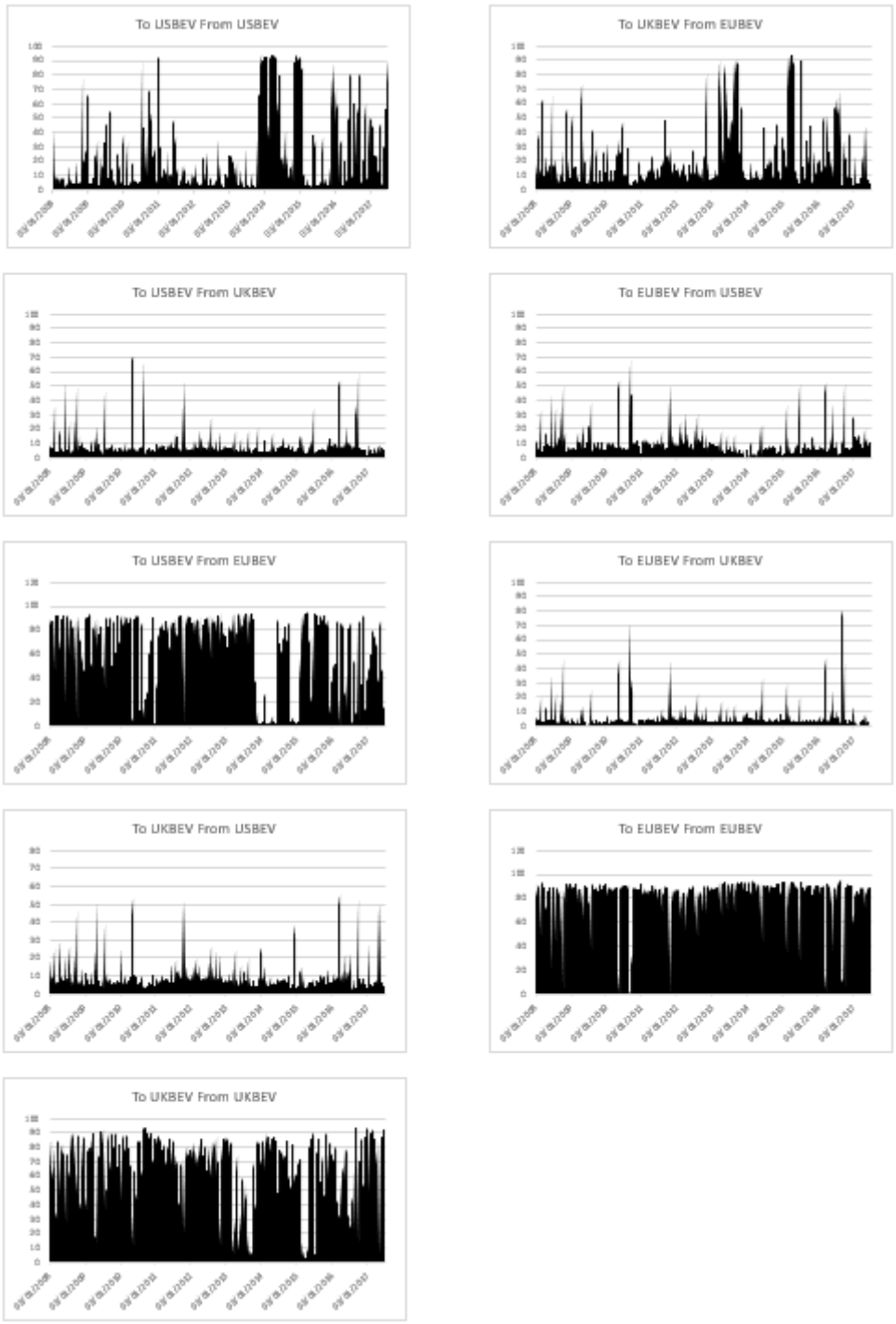


Figure 483: Net Pairwise Directional Connectedness Beverages and Bottling

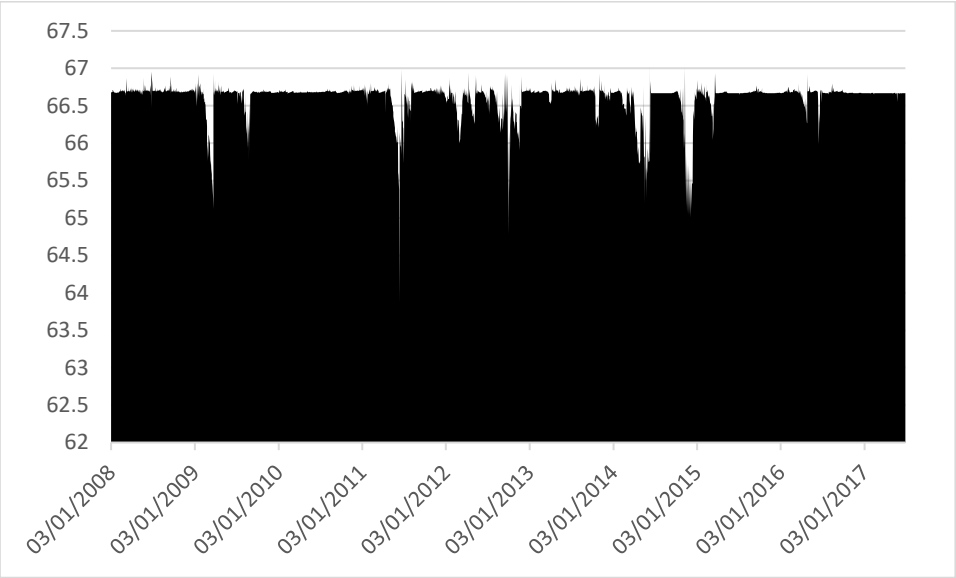


Figure 484: Total Average Dynamic Connectedness Automotive Manufacturer

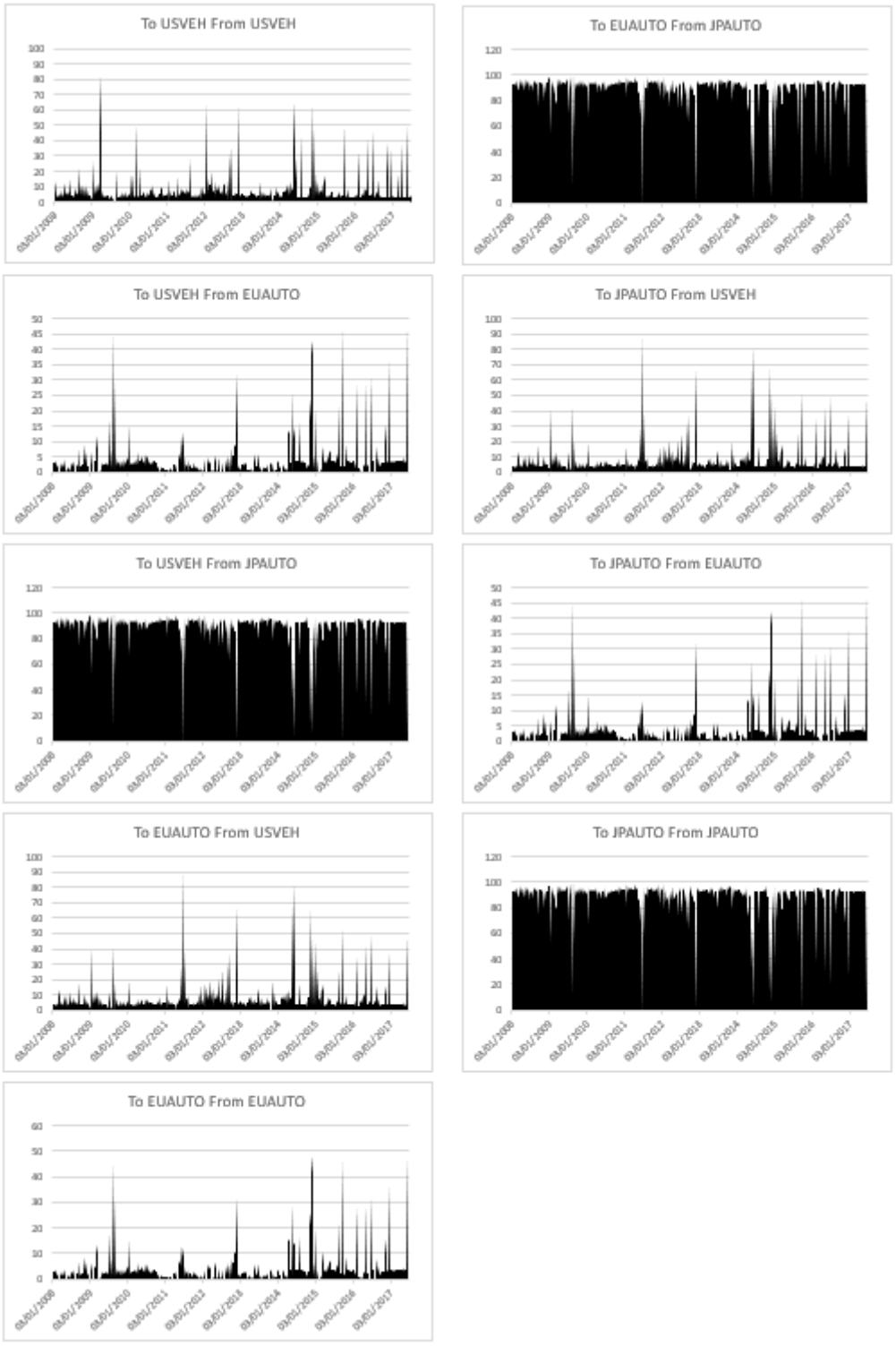


Figure 485: Net Pairwise Directional Connectedness Automotive Manufacturer

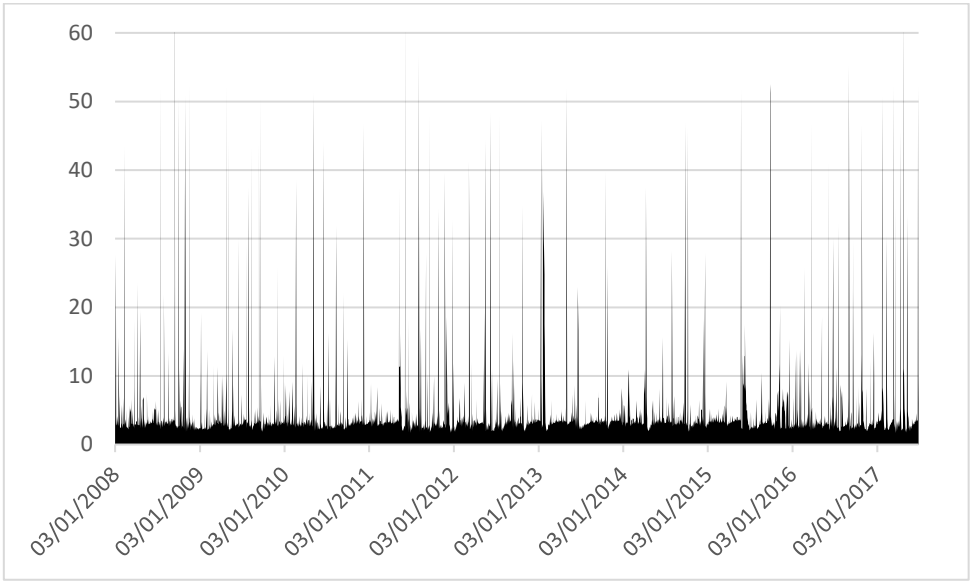


Figure 486: Total Average Dynamic Connectedness Building Products

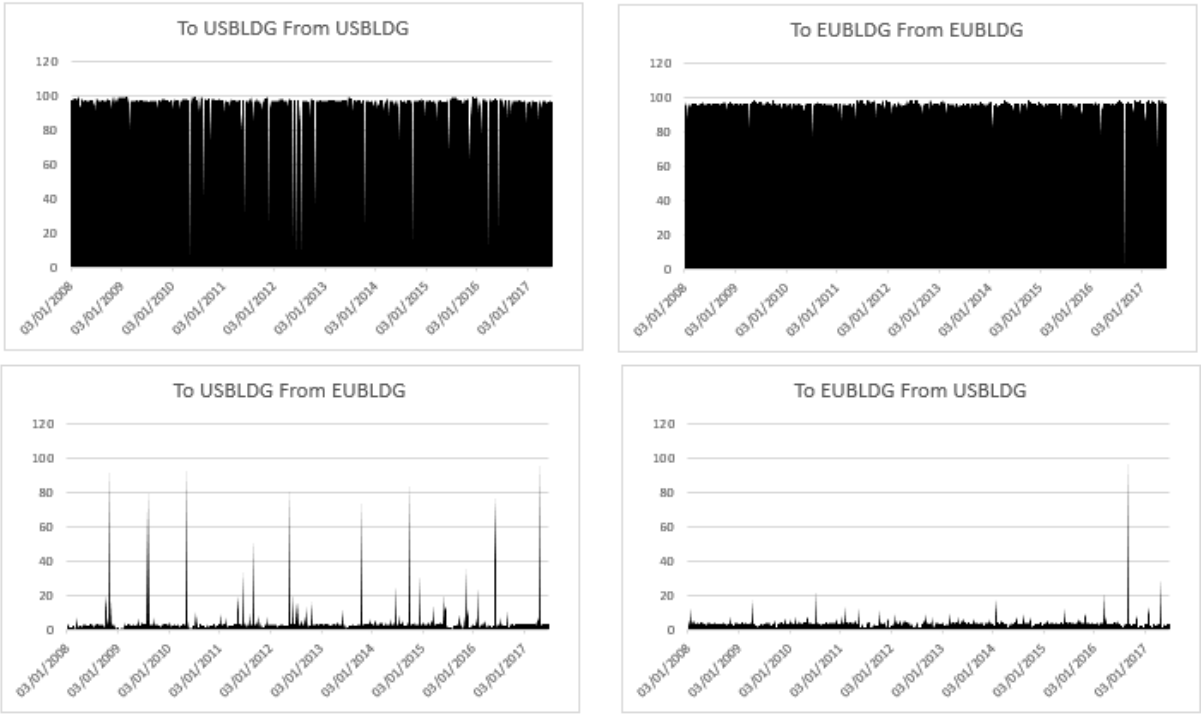


Figure 487: Net Pairwise Directional Connectedness Building Products

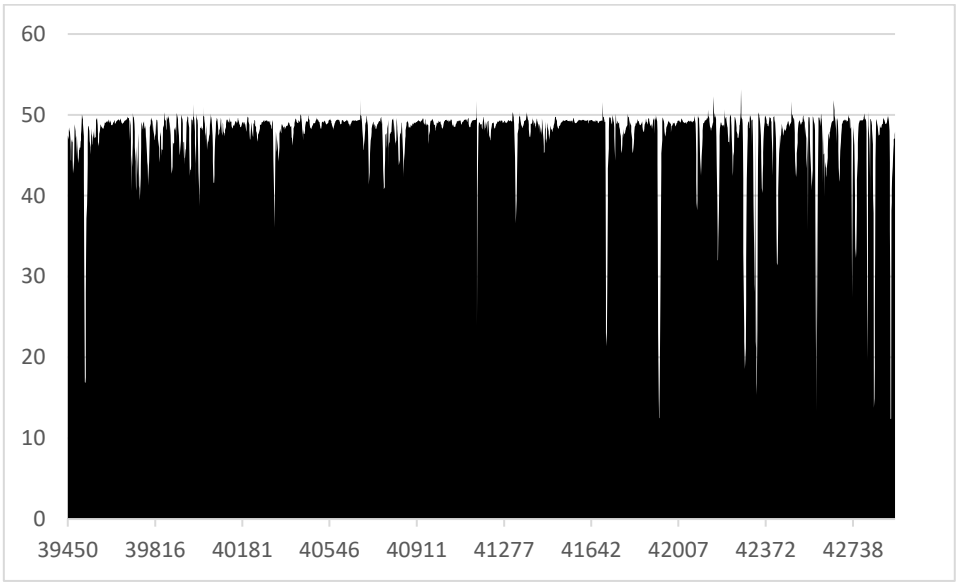


Figure 488: Total Average Dynamic Connectedness Cable Media

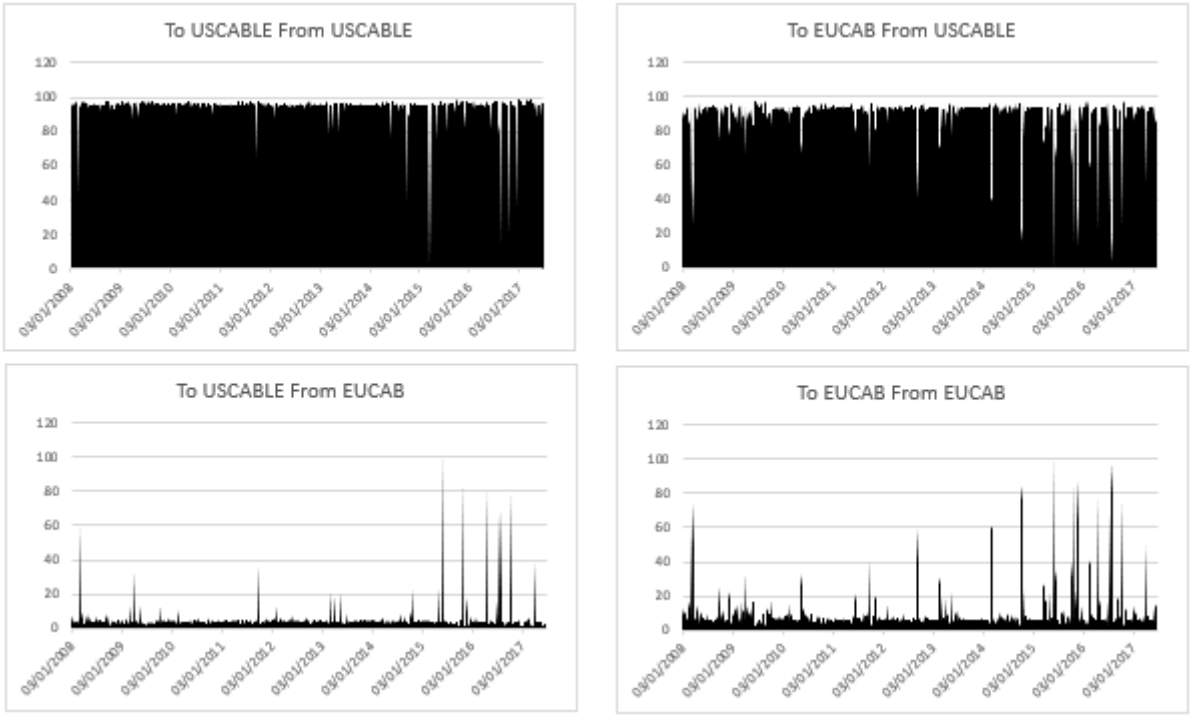


Figure 489: Net Pairwise Directional Connectedness Cable Media

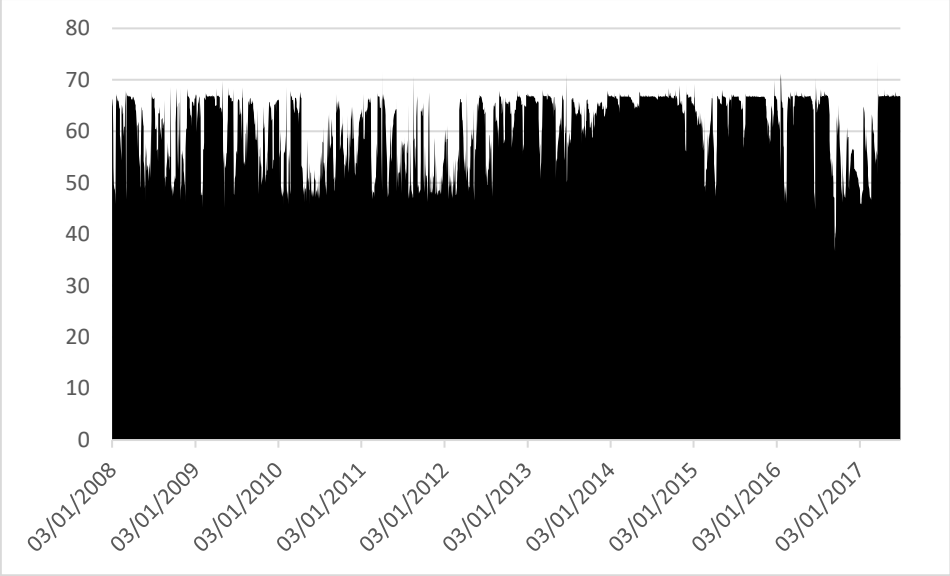


Figure 490: Total Average Dynamic Connectedness Chemicals

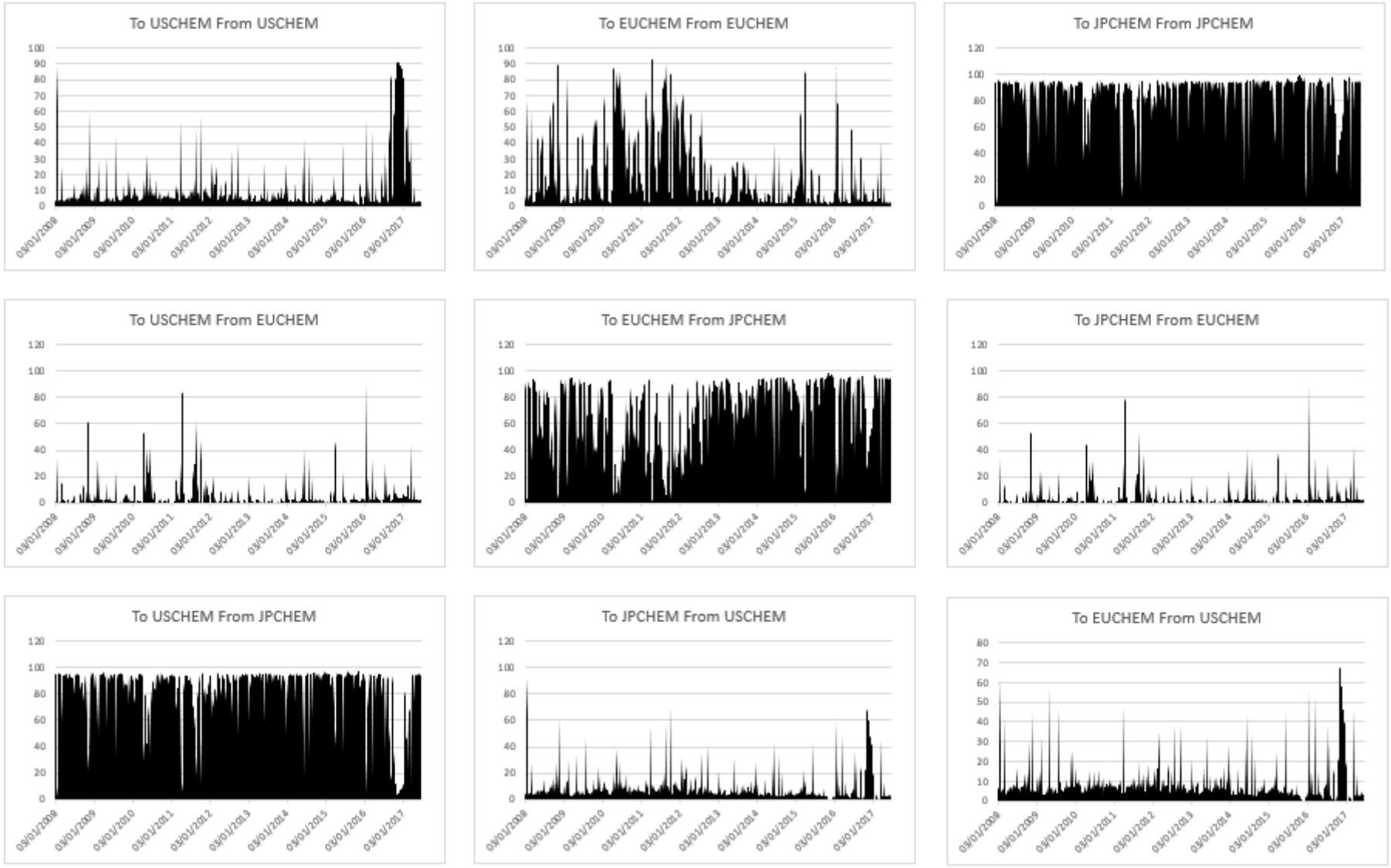


Figure 491: Net Pairwise Directional Connectedness Chemicals

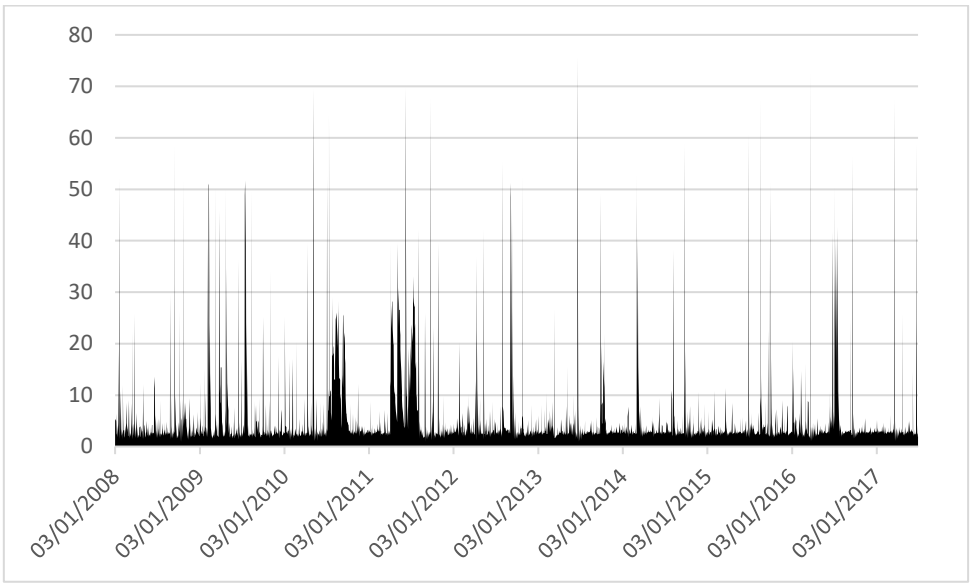


Figure 492: Total Average Dynamic Connectedness Conglomerate Diversified Mfg

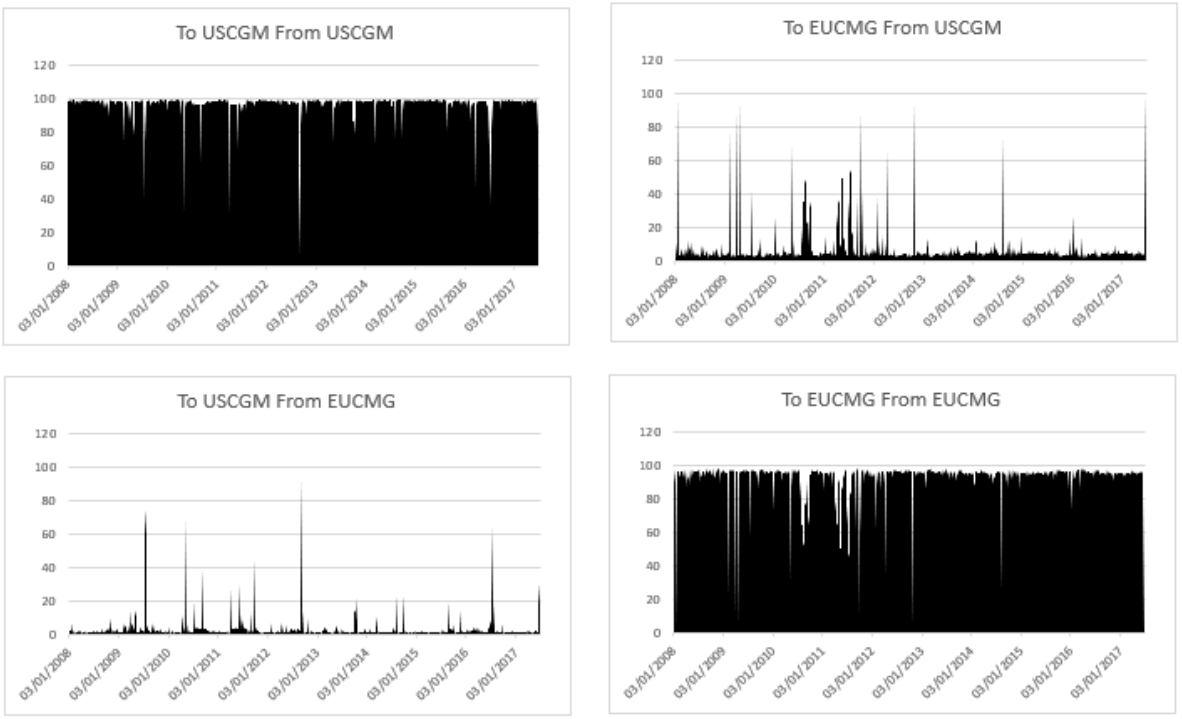


Figure 493: Net Pairwise Directional Connectedness Conglomerate Diversified Mfg

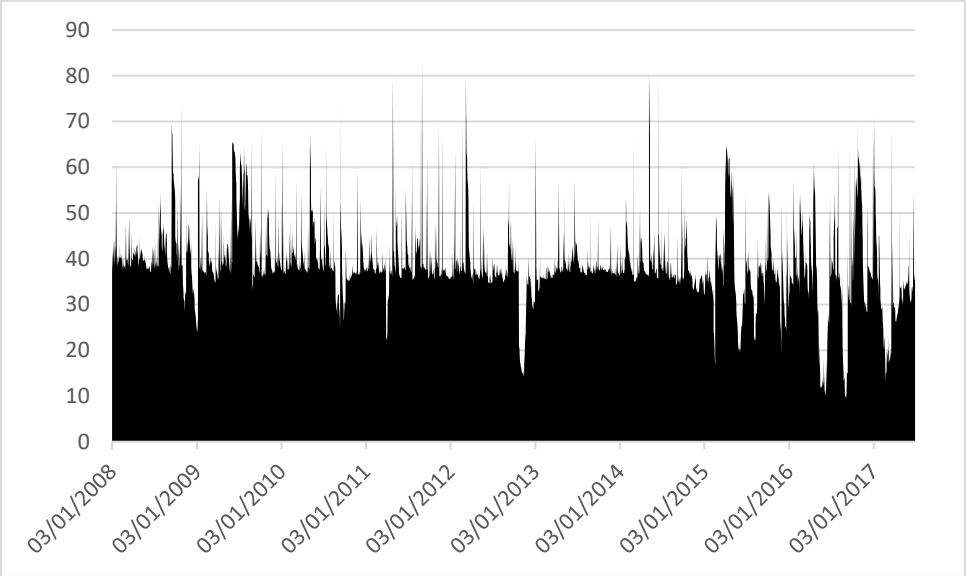


Figure 494: Total Average Dynamic Connectedness Electronics

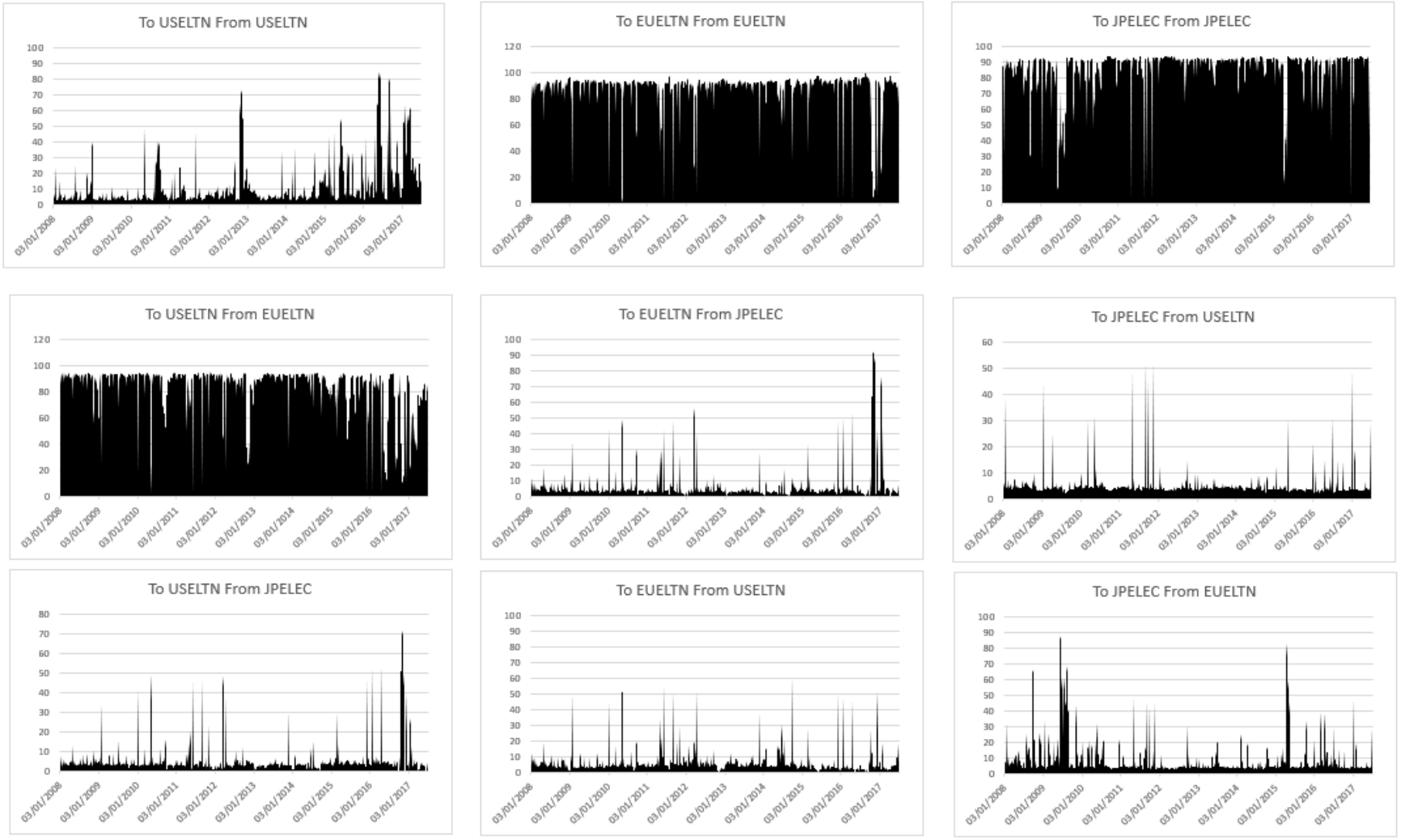


Figure 495: Net Pairwise Directional Connectedness Electronics

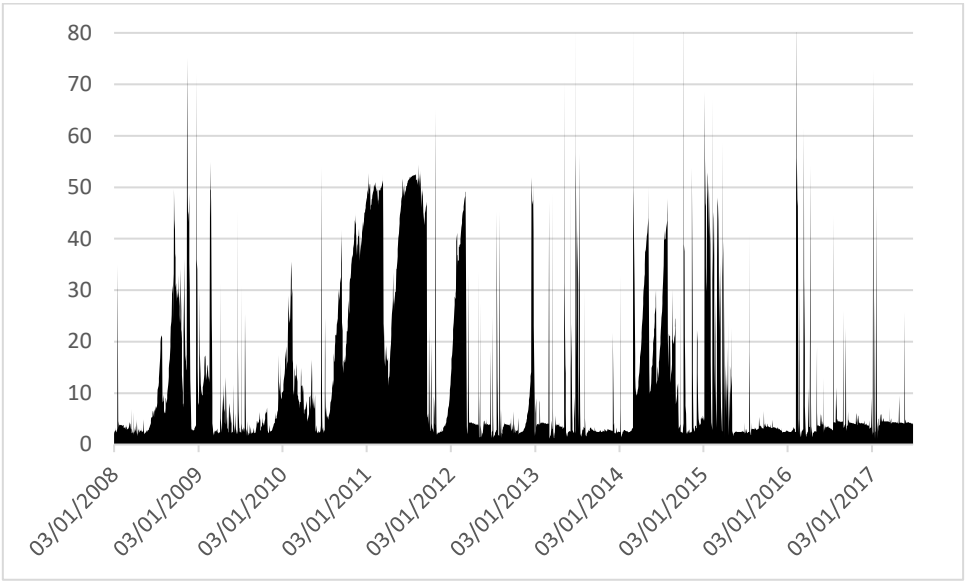


Figure 496: Total Average Dynamic Connectedness Industrials

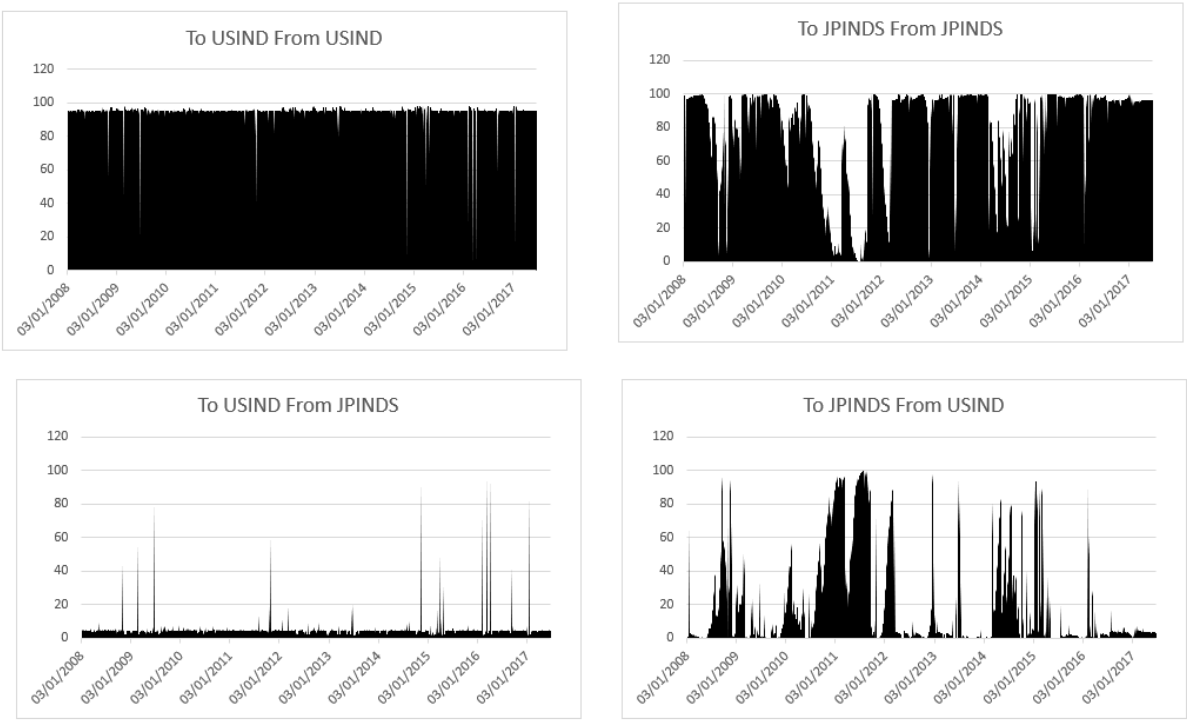


Figure 497: Net Pairwise Directional Connectedness Industrials

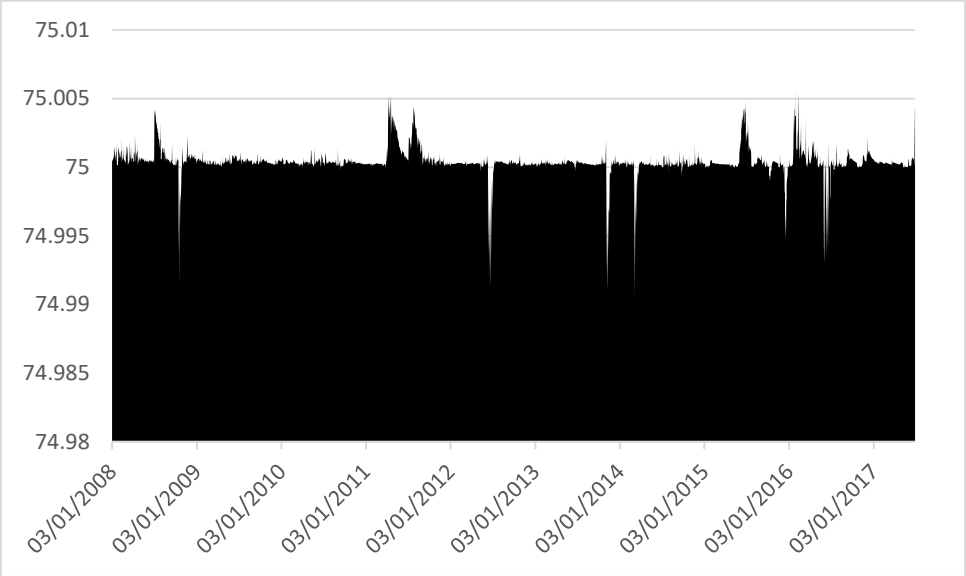


Figure 498: Total Average Dynamic Connectedness Other Consumer Services

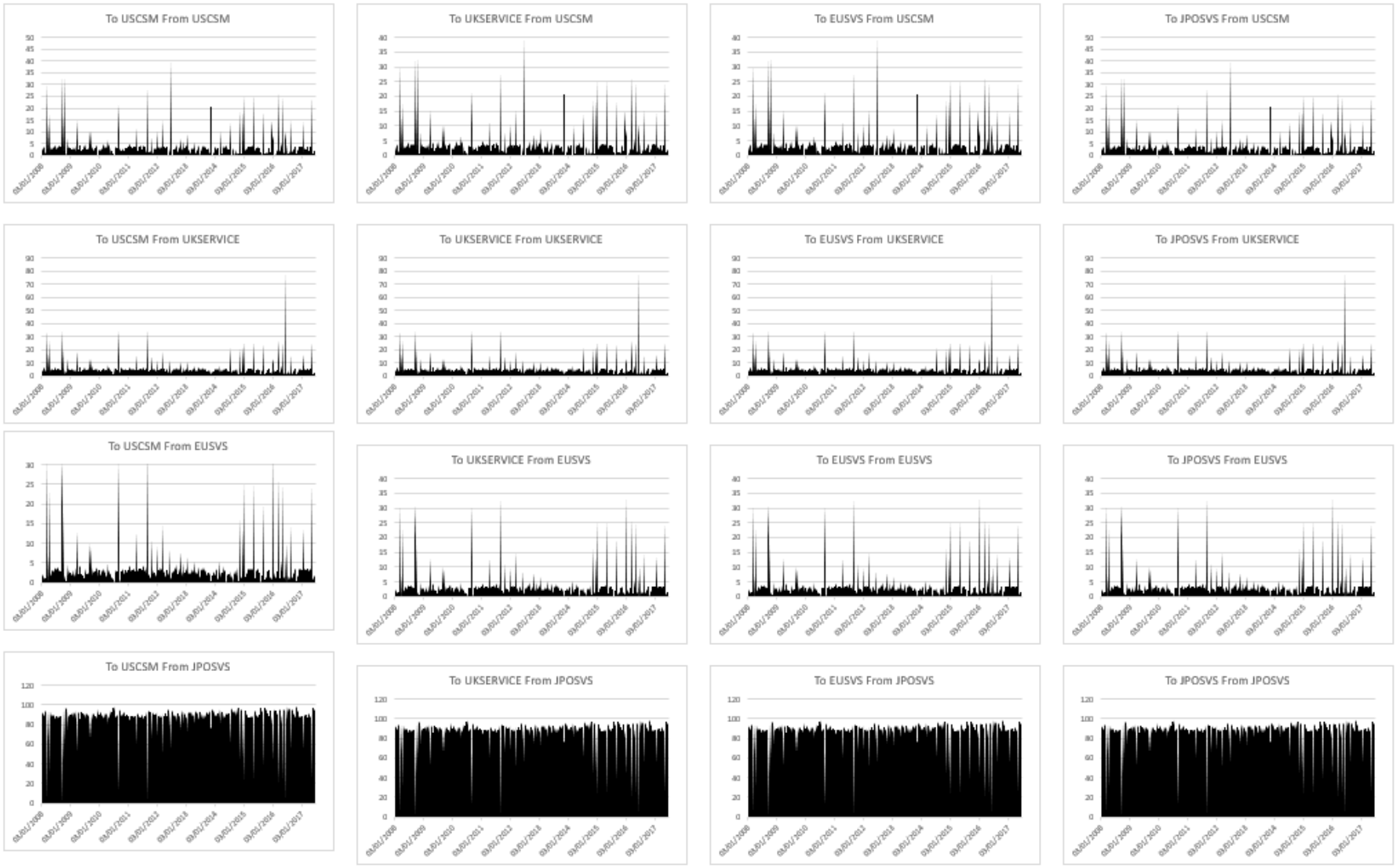


Figure 499: Net Pairwise Directional Connectedness Other Consumer Services

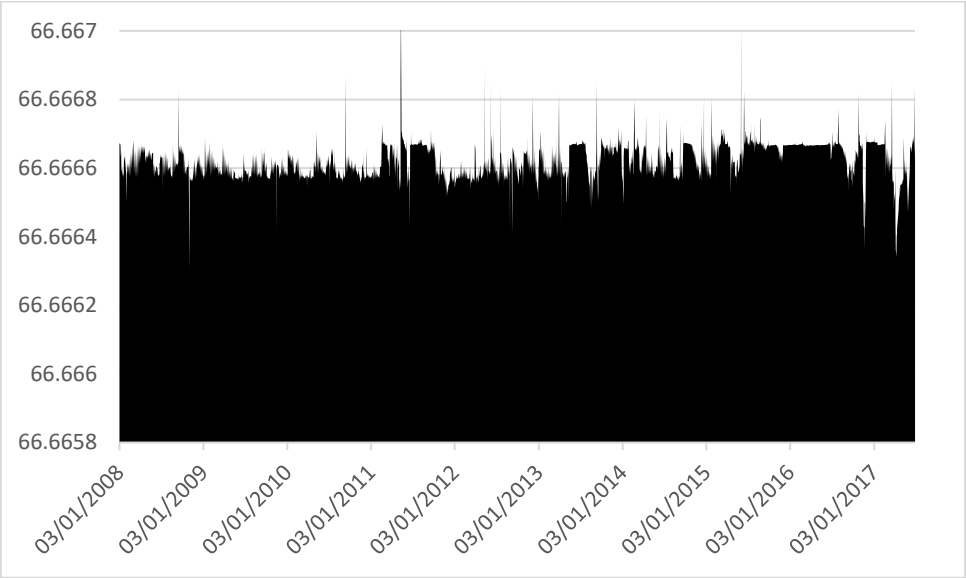


Figure 500: Total Average Dynamic Connectedness Other Financials II

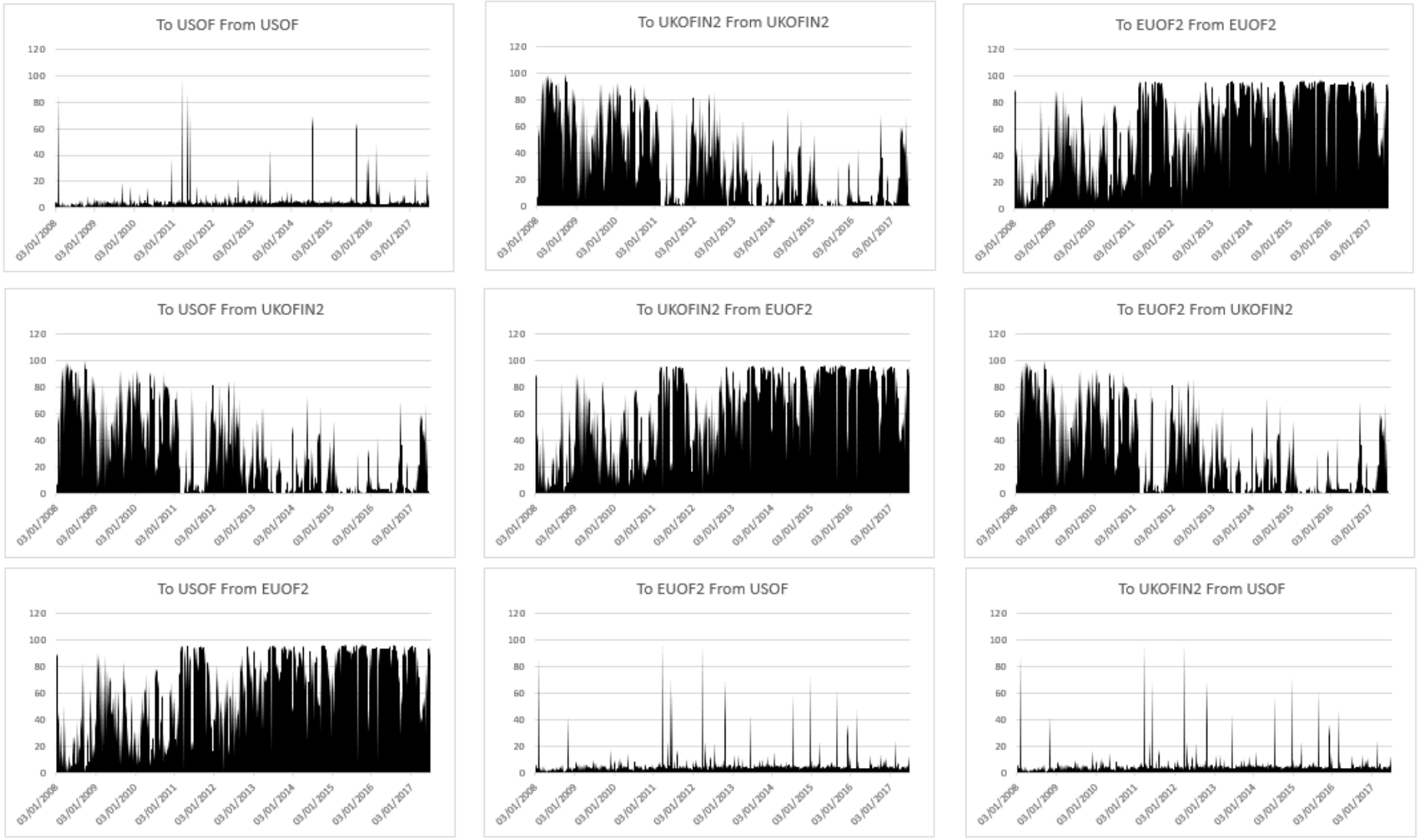


Figure 501: Net Pairwise Directional Connectedness Other Financials II

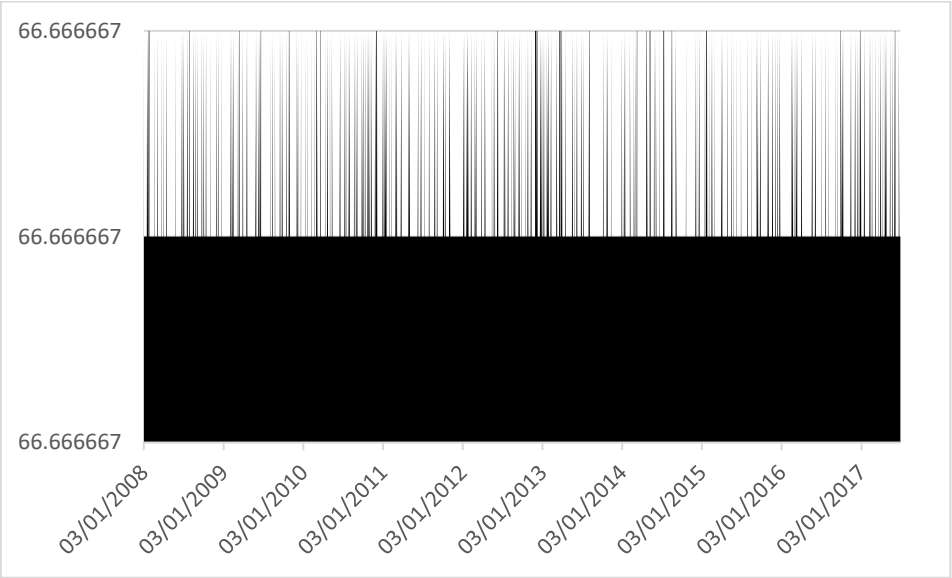


Figure 502: Total Average Dynamic Connectedness Retail Stores

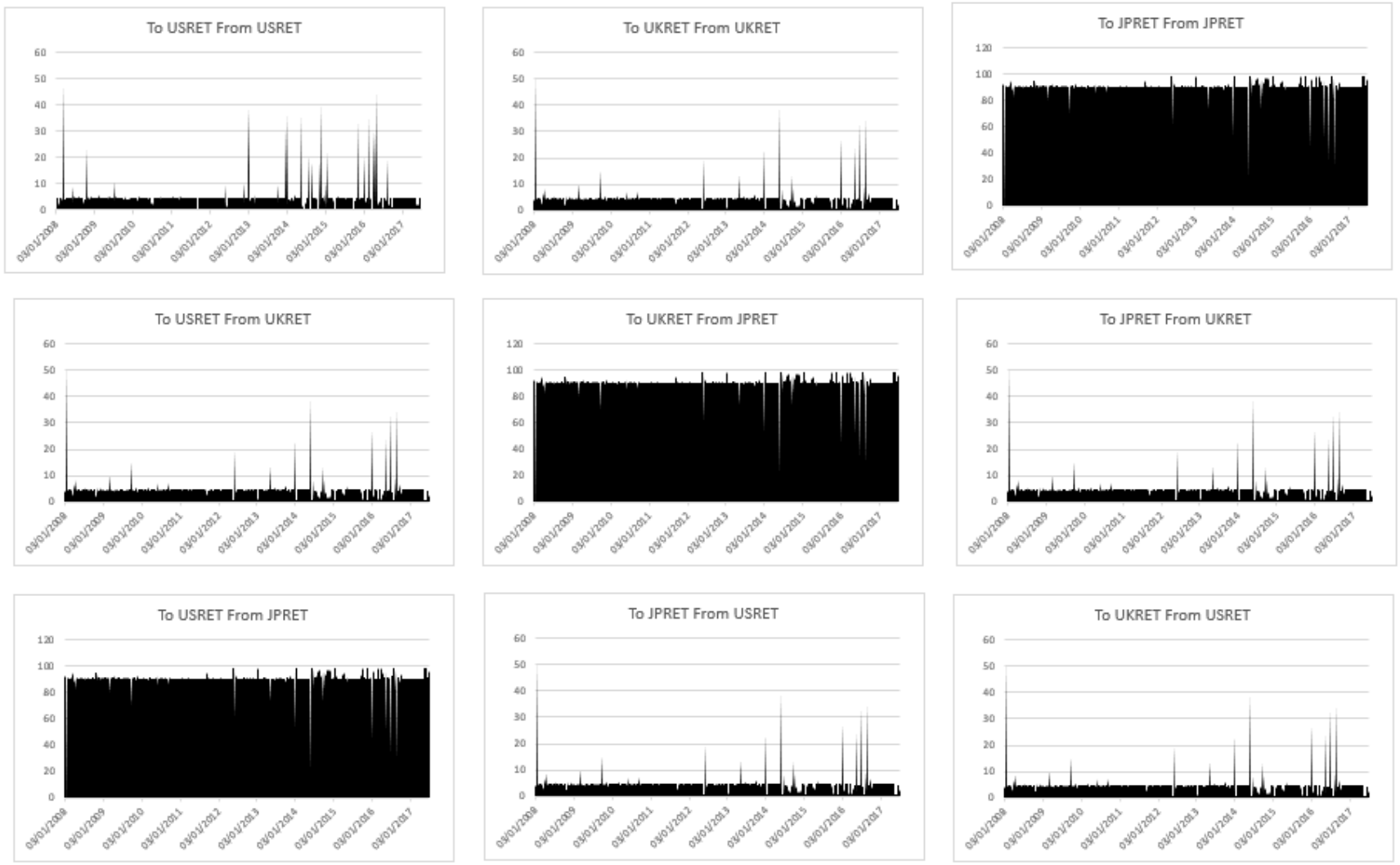


Figure 503: Net Pairwise Directional Connectedness Retail Stores

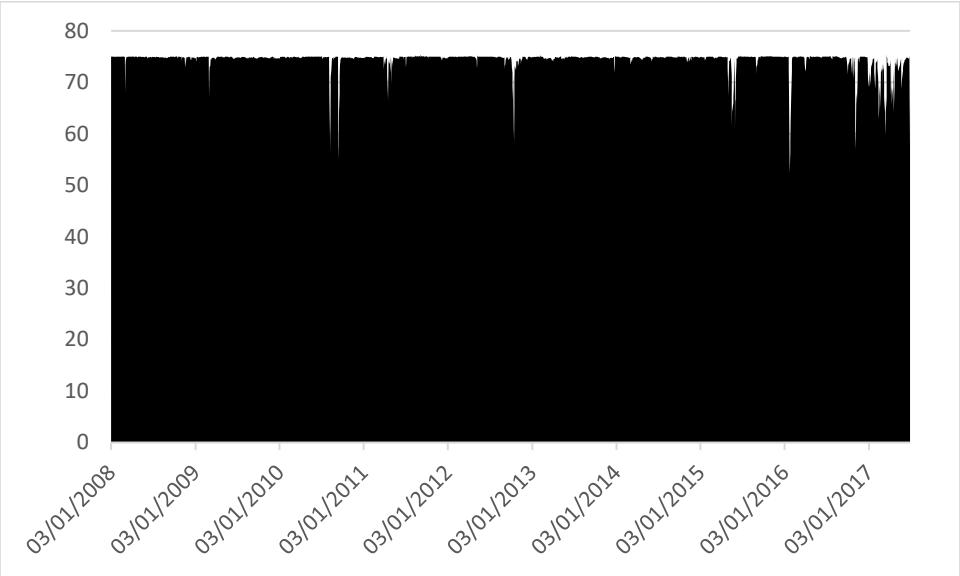


Figure 504: Total Average Dynamic Connectedness Other Telecommunications

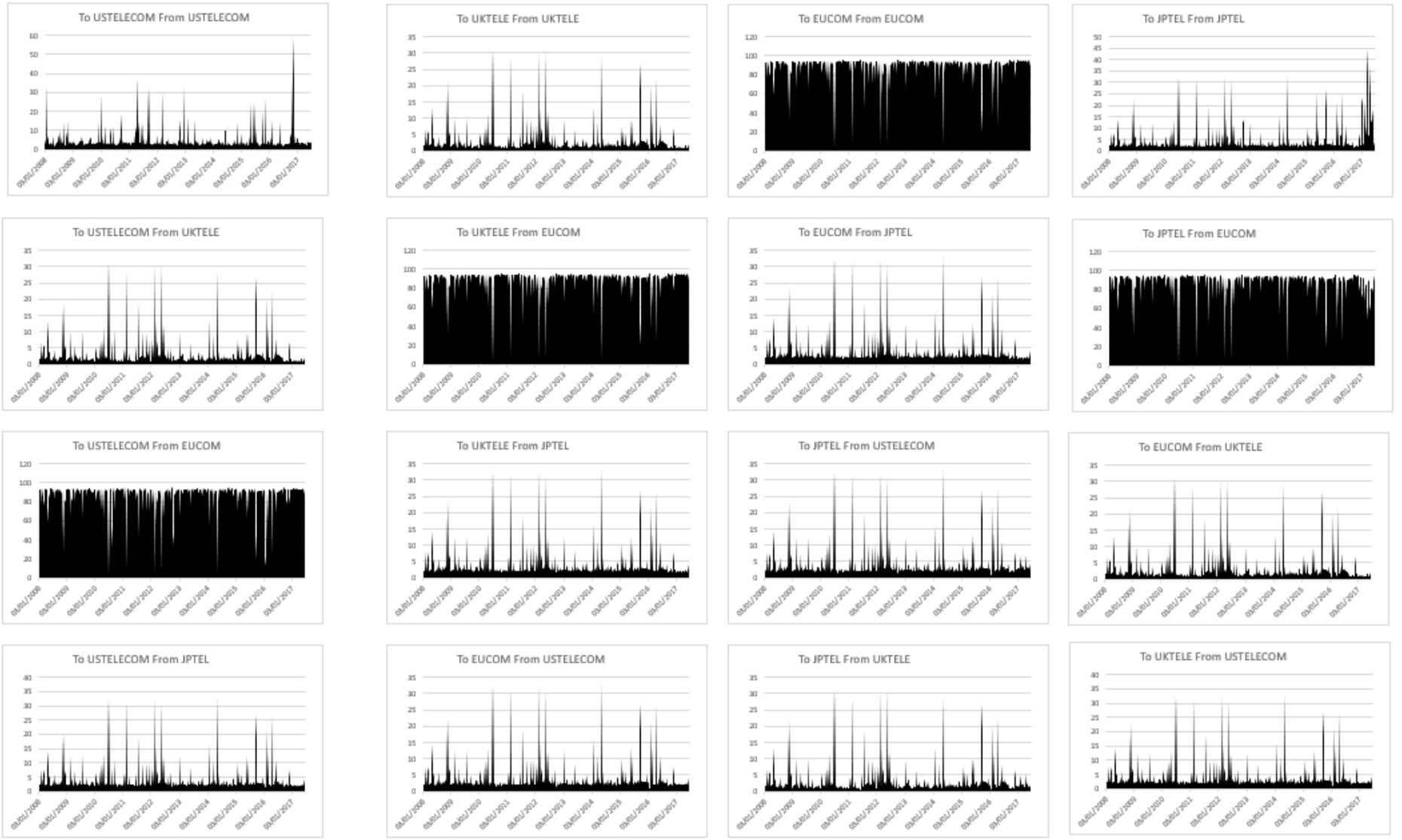


Figure 505: Net Pairwise Directional Connectedness Other Telecommunications

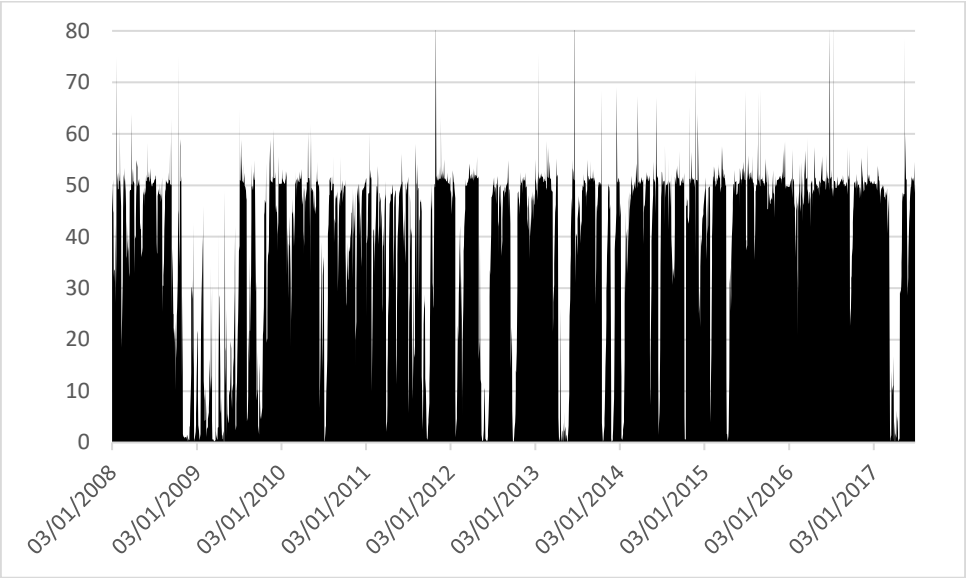


Figure 506: Total Average Dynamic Connectedness Leisure

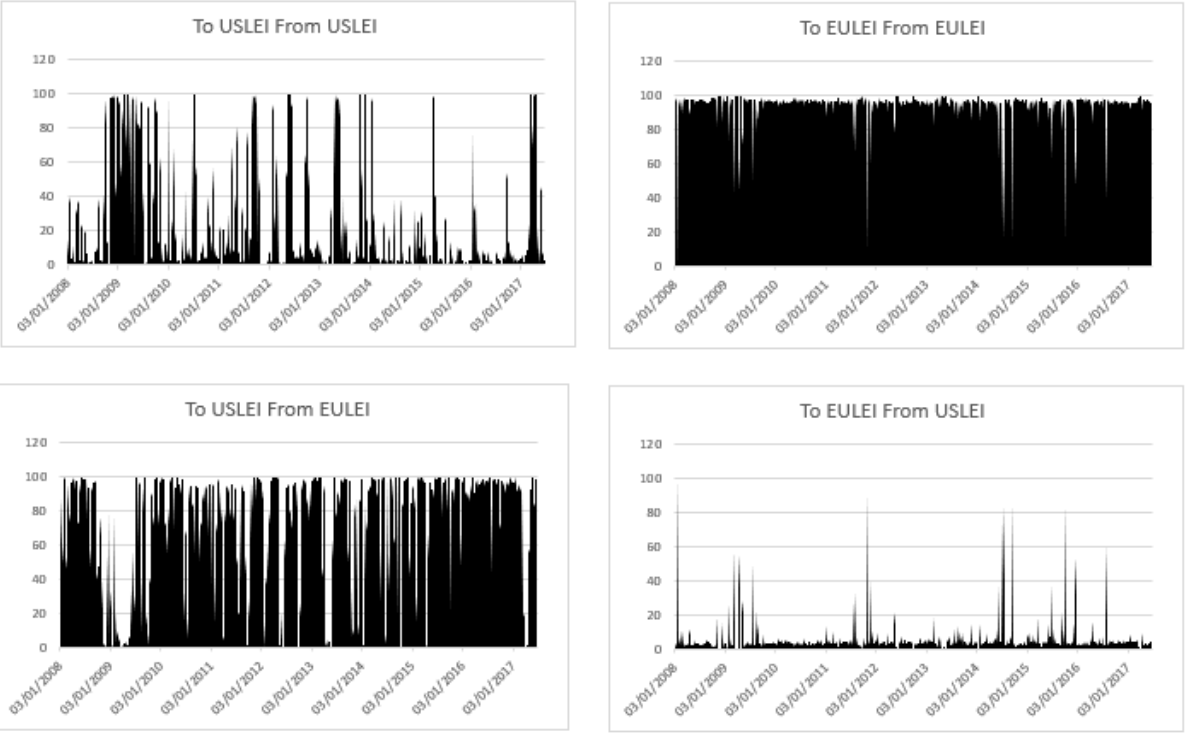


Figure 507: Net Pairwise Directional Connectedness Leisure

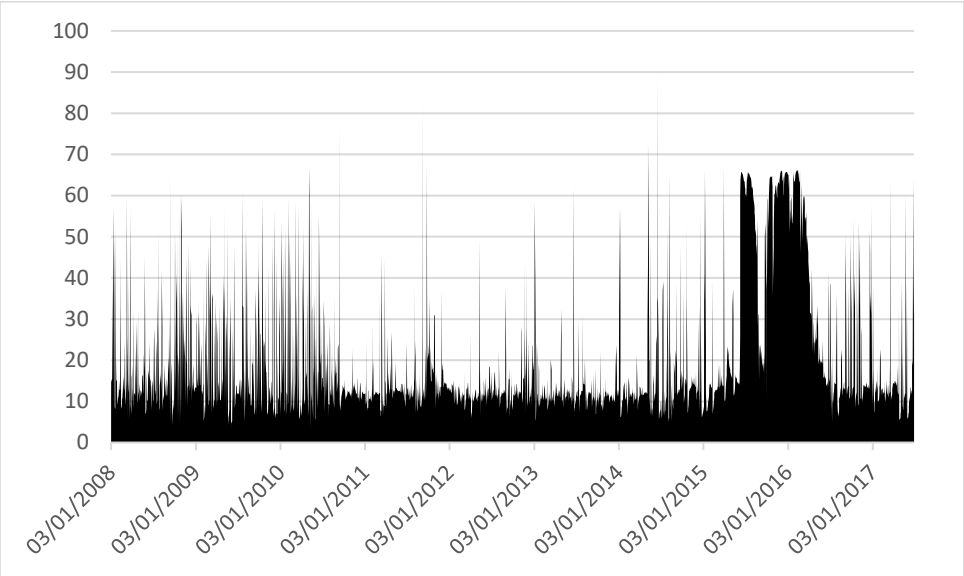


Figure 508: Total Average Dynamic Connectedness Metals & Mining

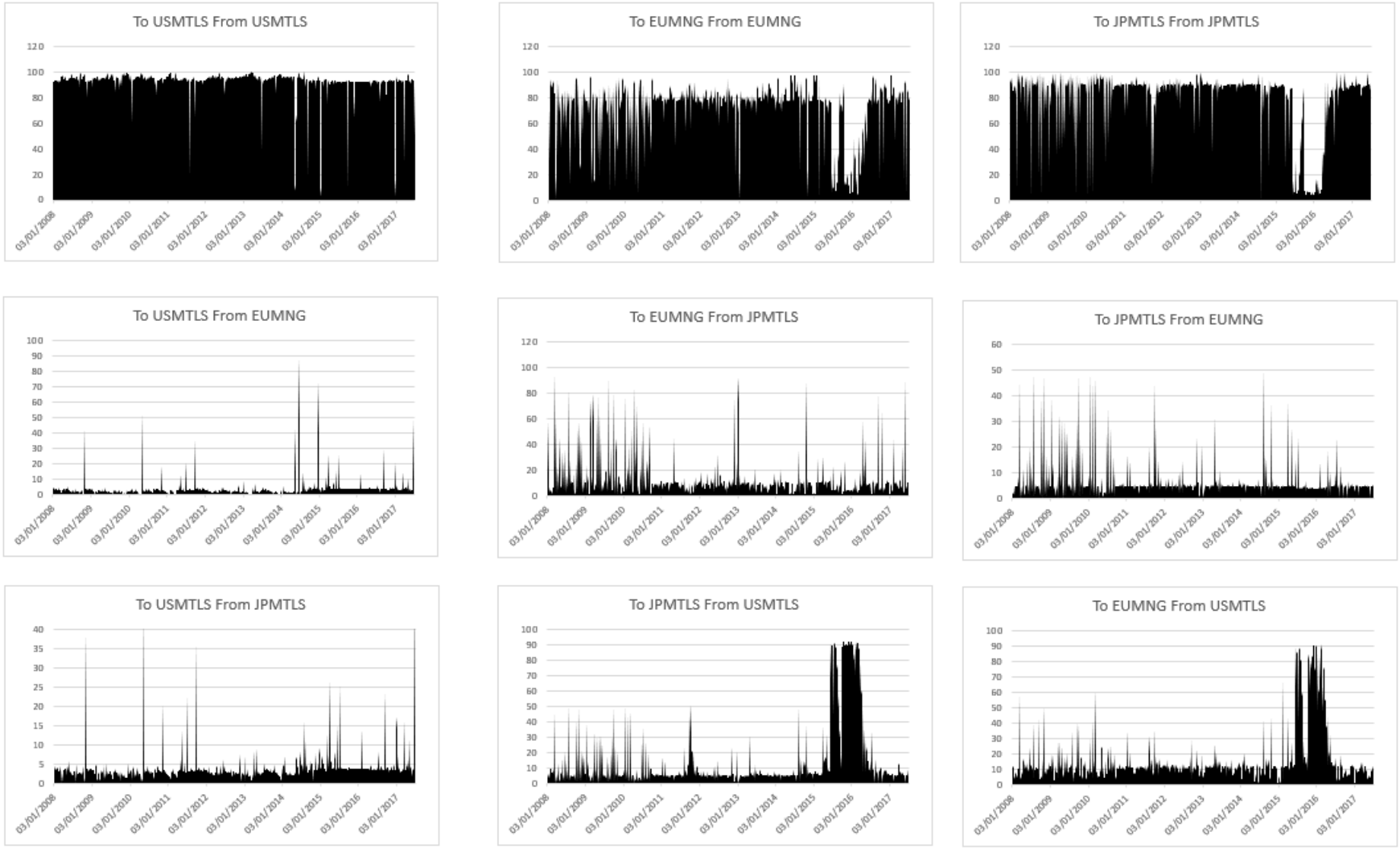
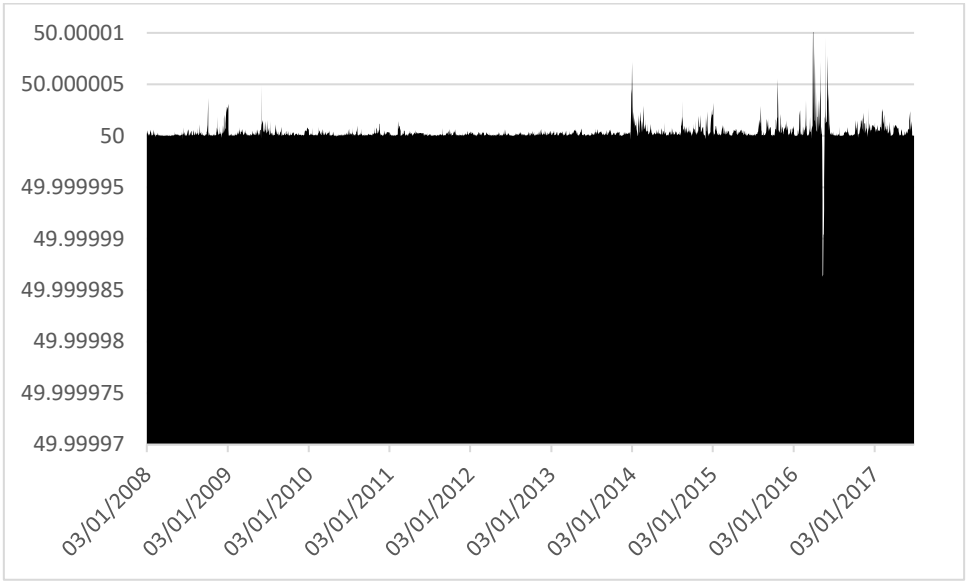


Figure 509: Net Pairwise Directional Connectedness Metals & Mining



Total Average Dynamic Connectedness Oil & Gas

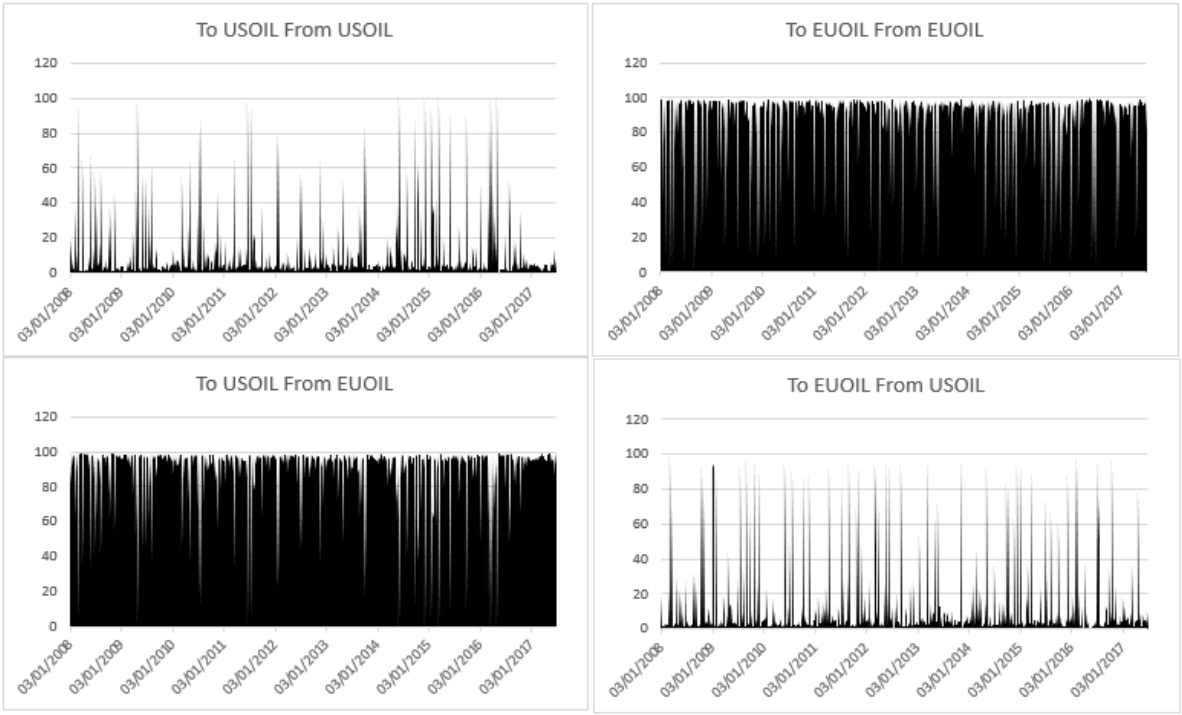


Figure 510: Net Pairwise Directional Connectedness Oil & Gas

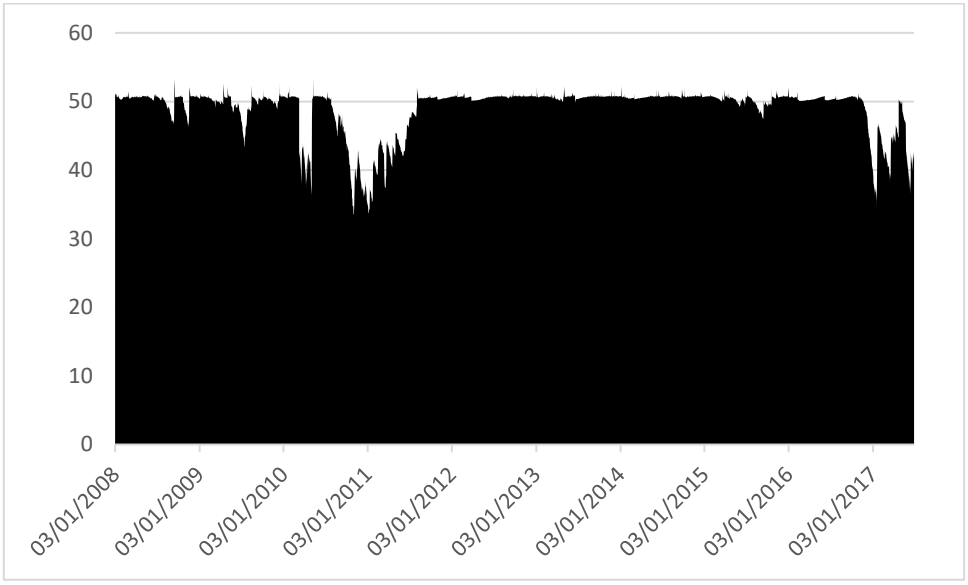


Figure 511: Total Average Dynamic Connectedness Rail Roads

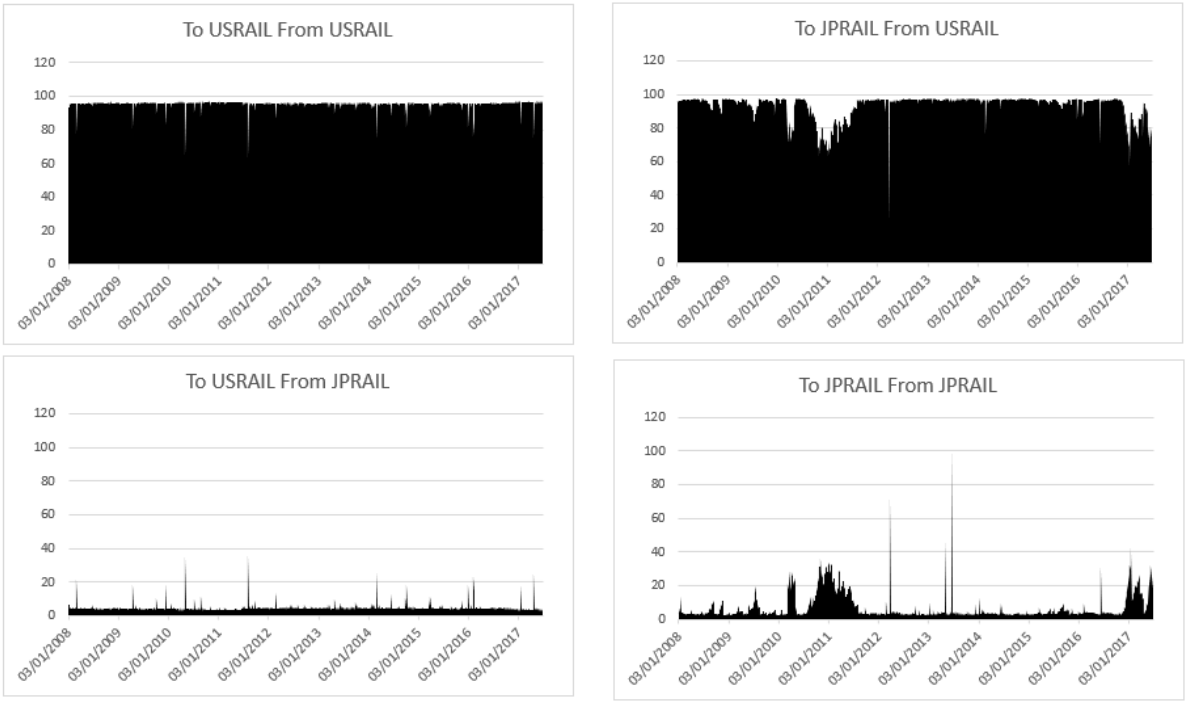


Figure 512: Net Pairwise Directional Connectedness Rail Roads

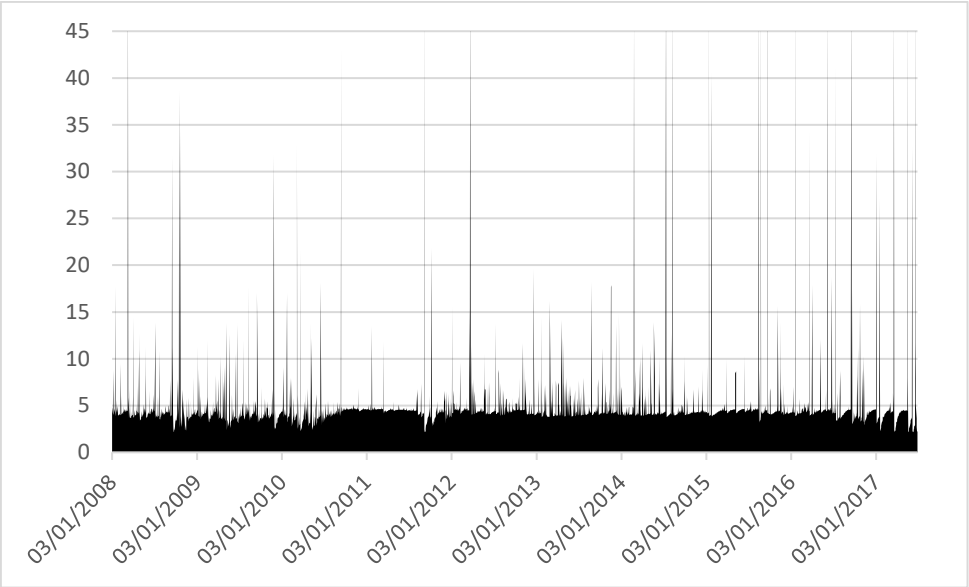


Figure 513: Total Average Dynamic Connectedness Other Transportation

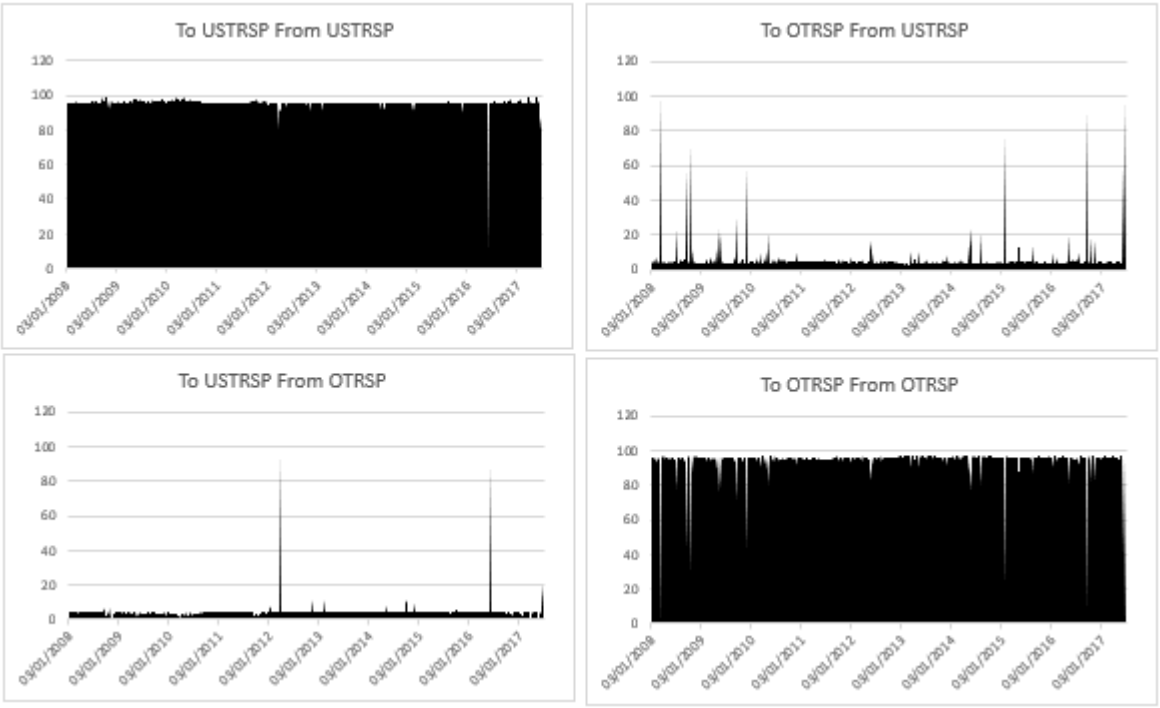


Figure 514: Net Pairwise Directional Connectedness Other Transportation

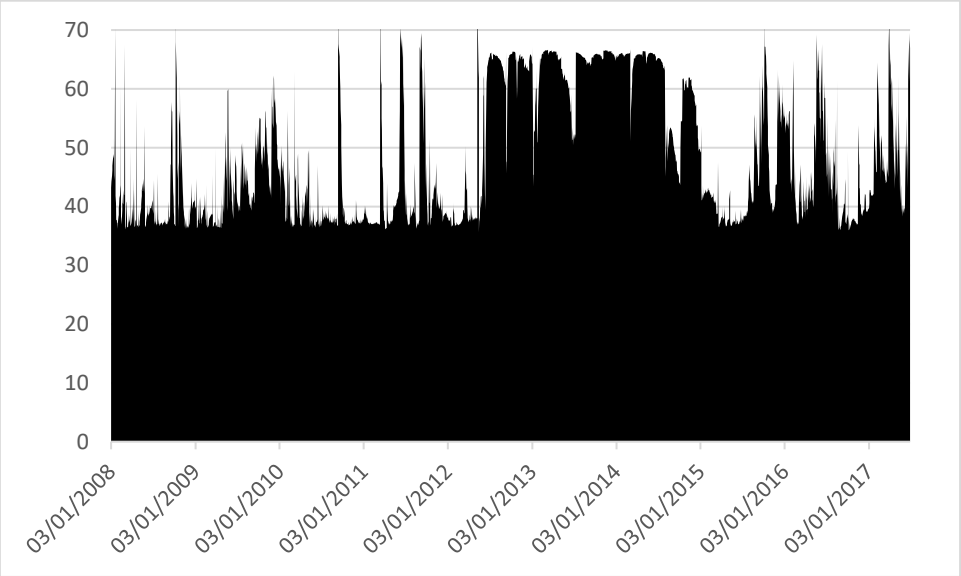


Figure 515: Total Average Dynamic Connectedness Utilities

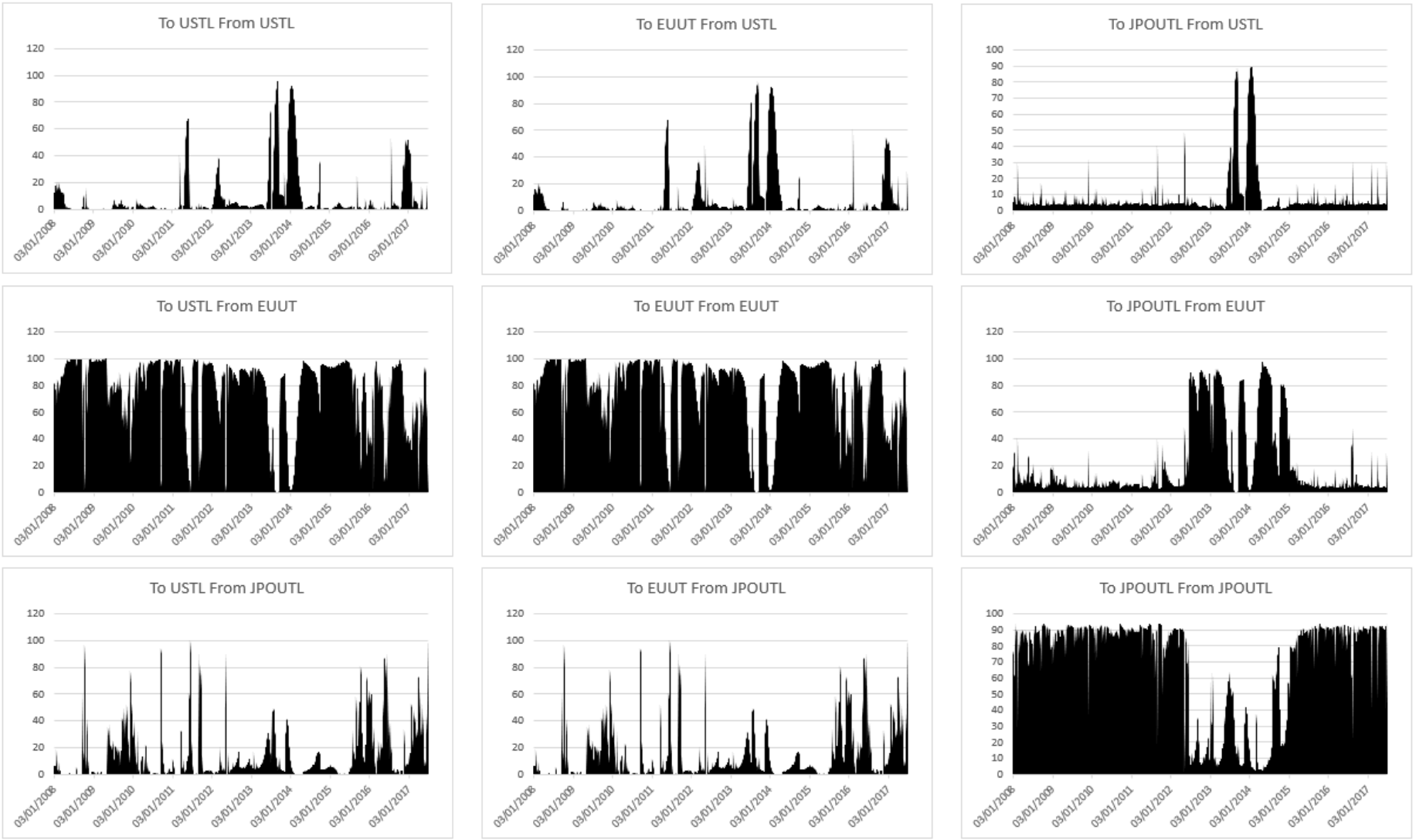


Figure 516: Net Pairwise Directional Connectedness Utilities

EQUITY

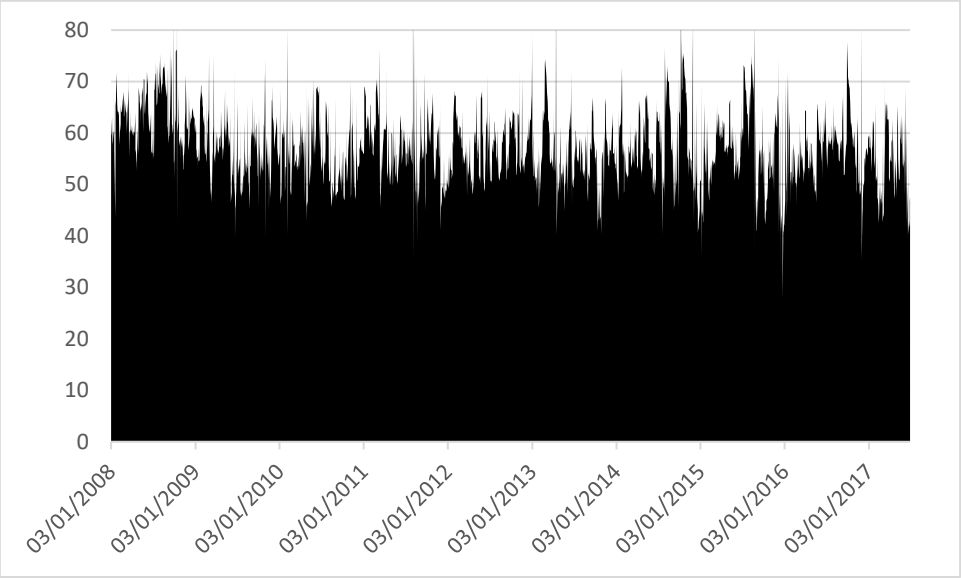


Figure 517: Total Average Dynamic Connectedness Oil and Gas

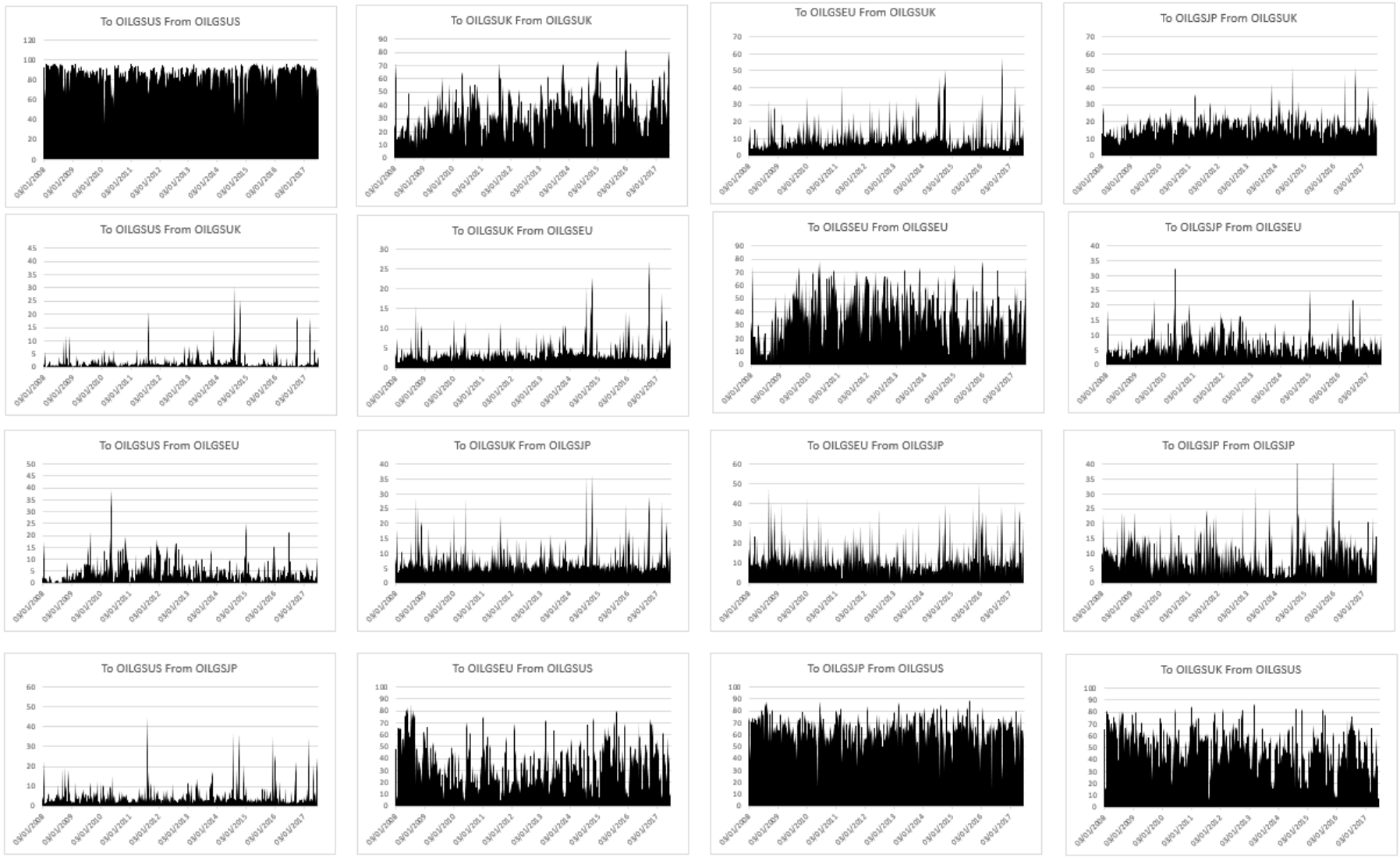


Figure 518: Net Pairwise Directional Connectedness Oil & Gas

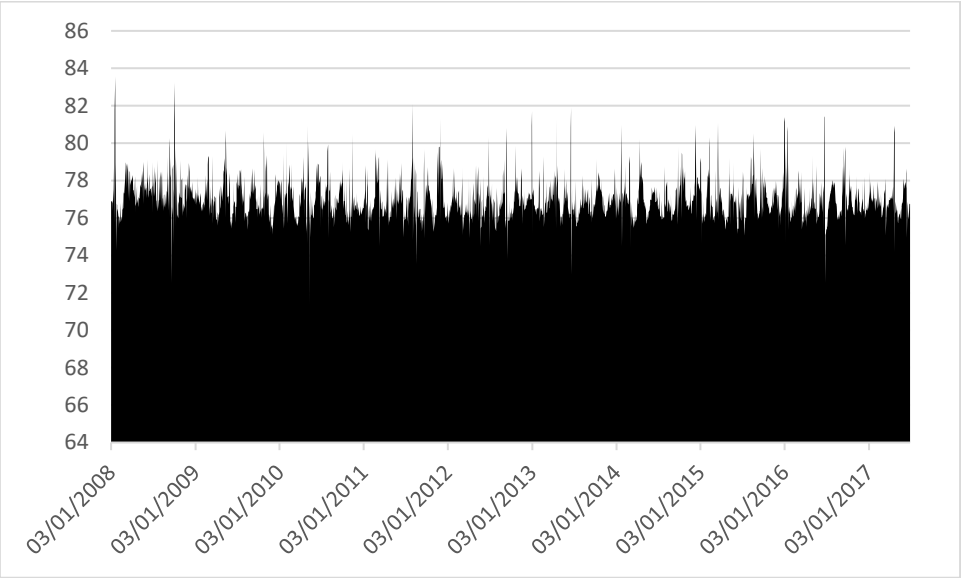


Figure 519: Total Average Dynamic Connectedness Basic Materials

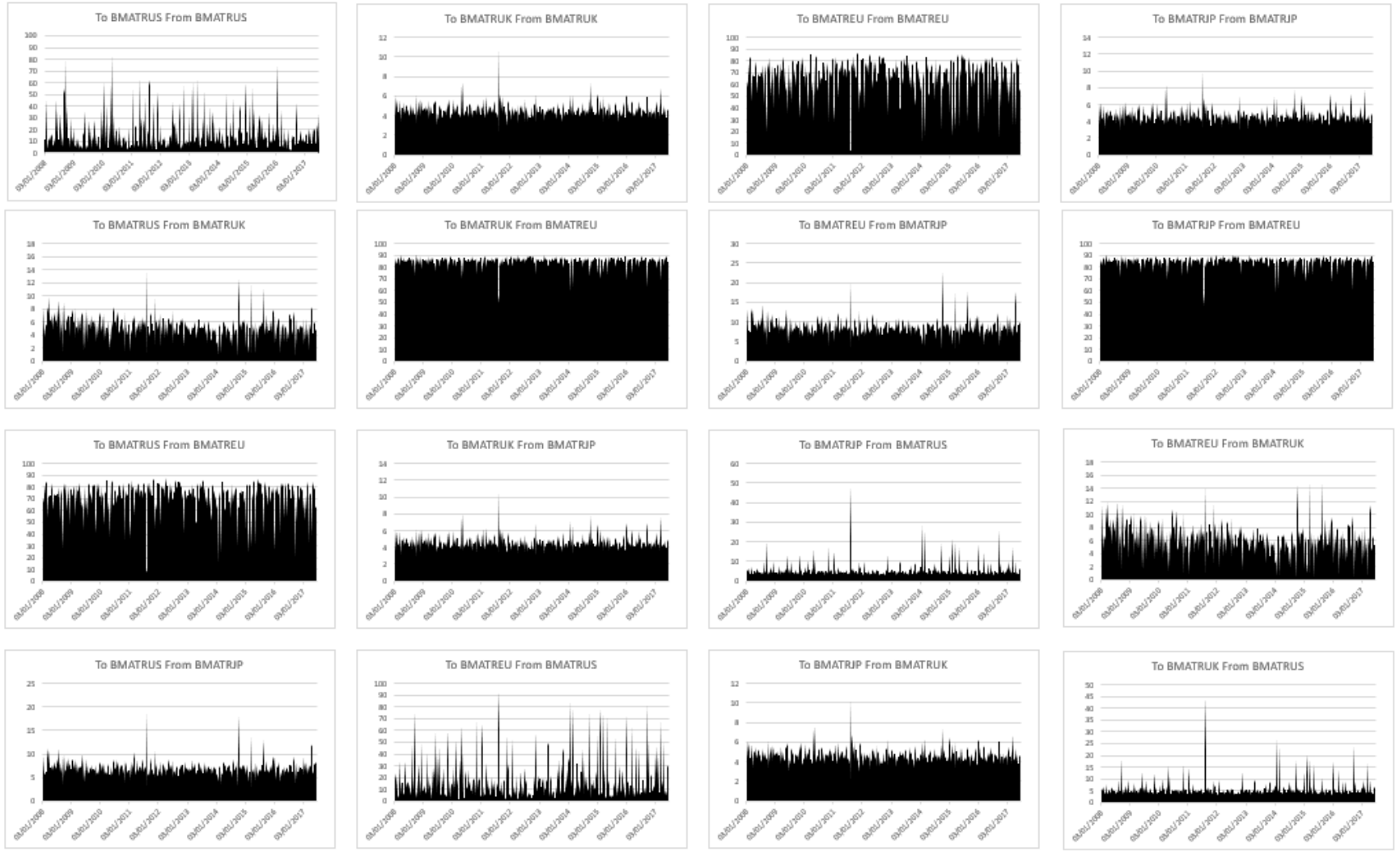


Figure 520: Net Pairwise Directional Connectedness Basic Materials

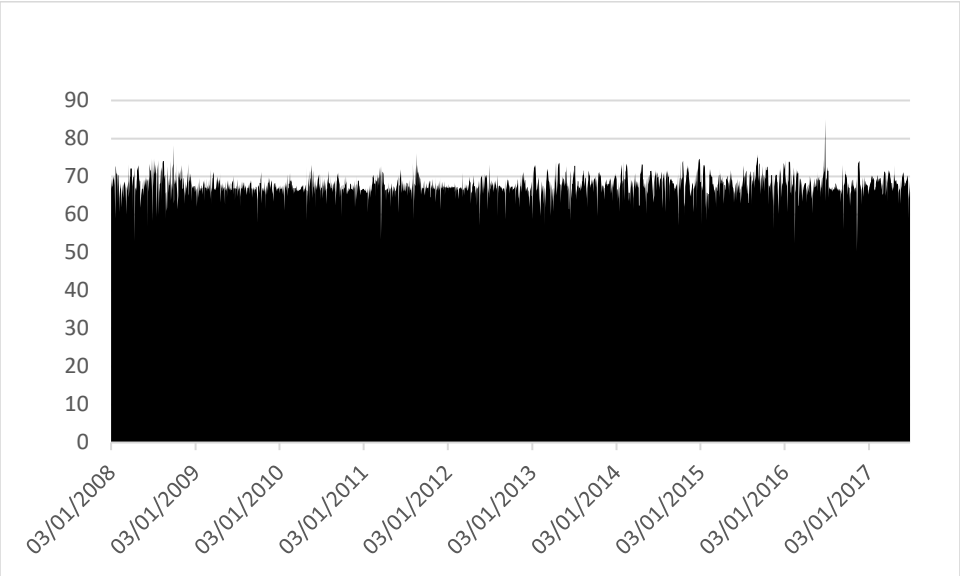


Figure 521: Total Average Dynamic Connectedness Industrials

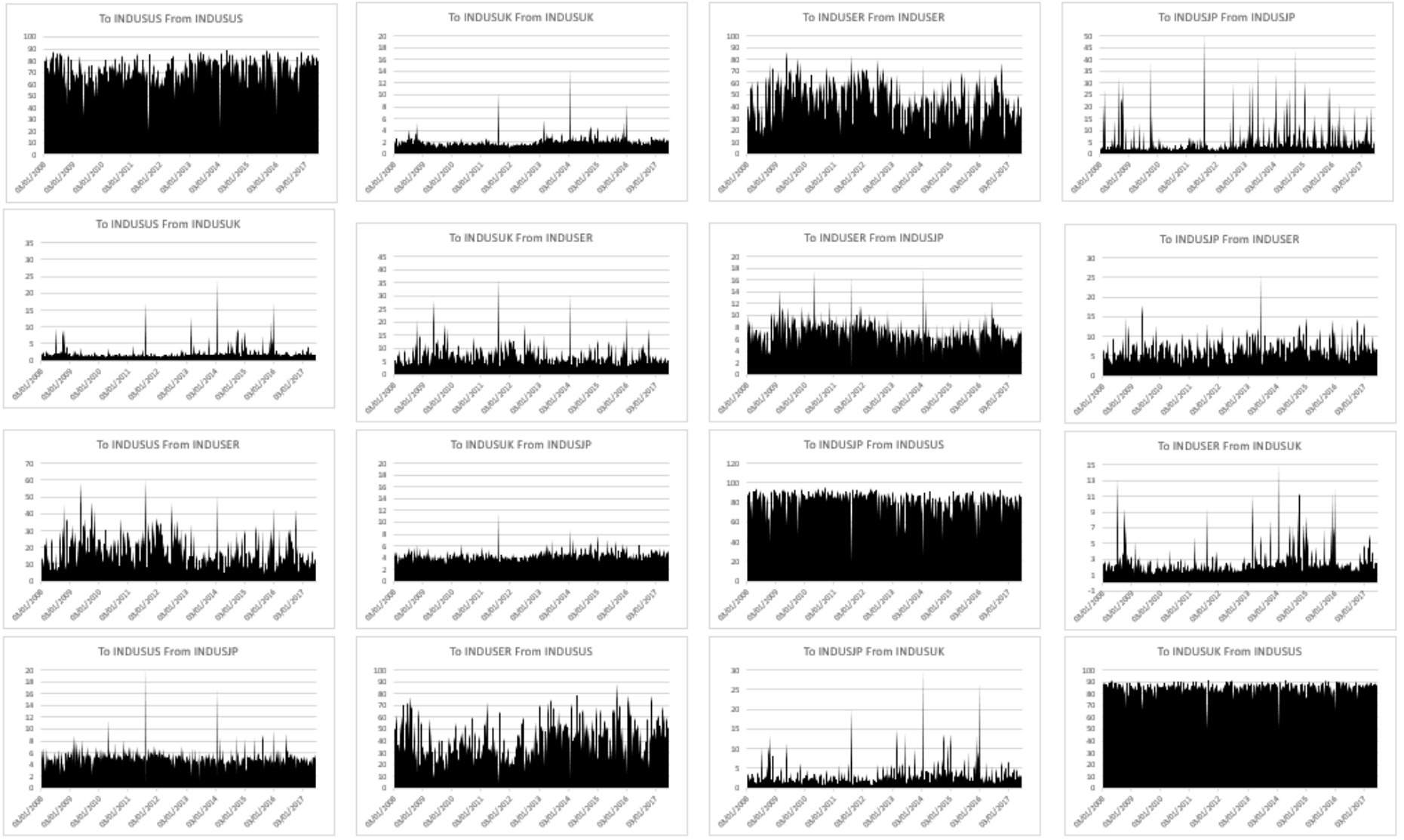


Figure 522: Net Pairwise Directional Connectedness Industrials

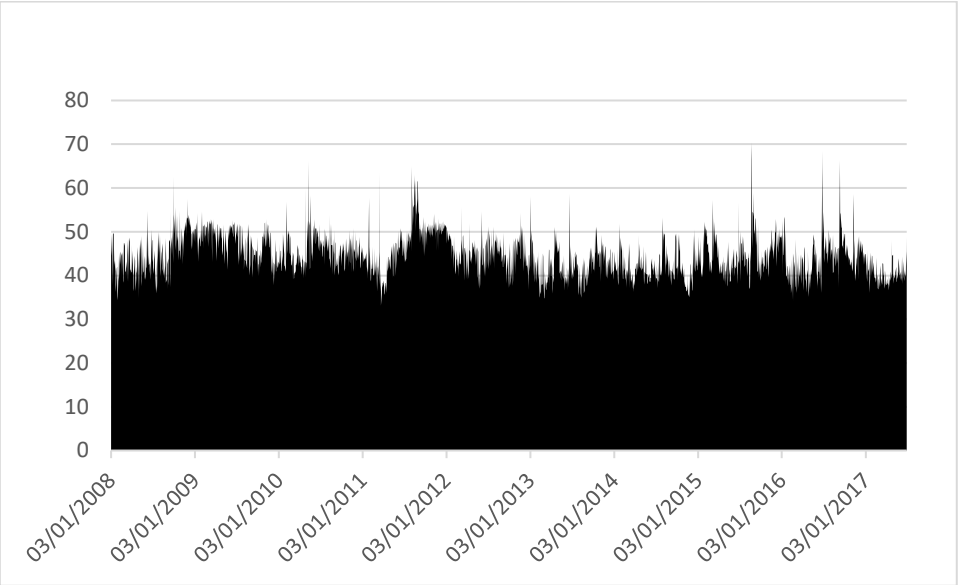


Figure 523: Total Average Dynamic Connectedness Consumer Goods

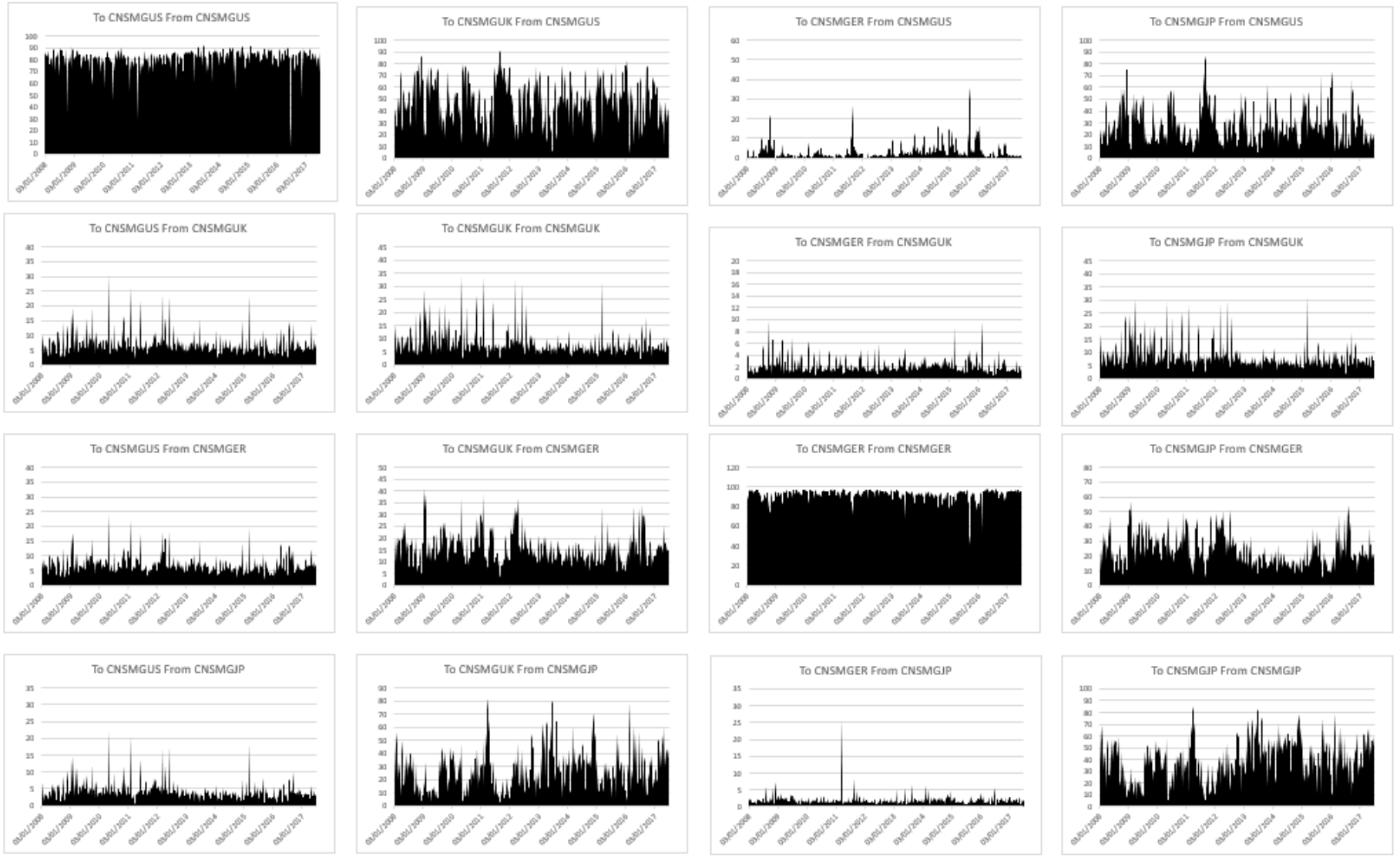


Figure 524: Net Pairwise Directional Connectedness Consumer Goods

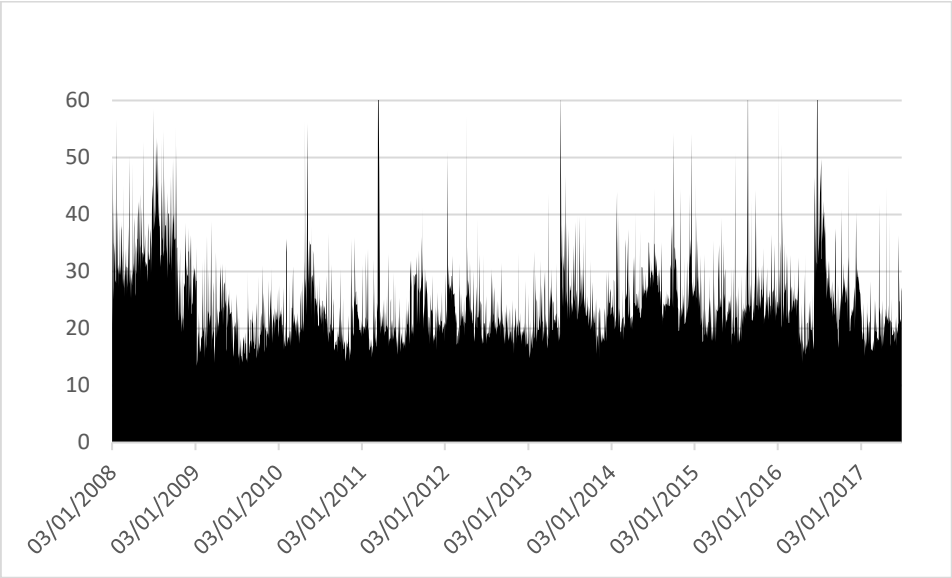


Figure 525: Total Average Dynamic Connectedness Consumer Services

Figure 526: Net Pairwise Directional Connectedness Consumer Services

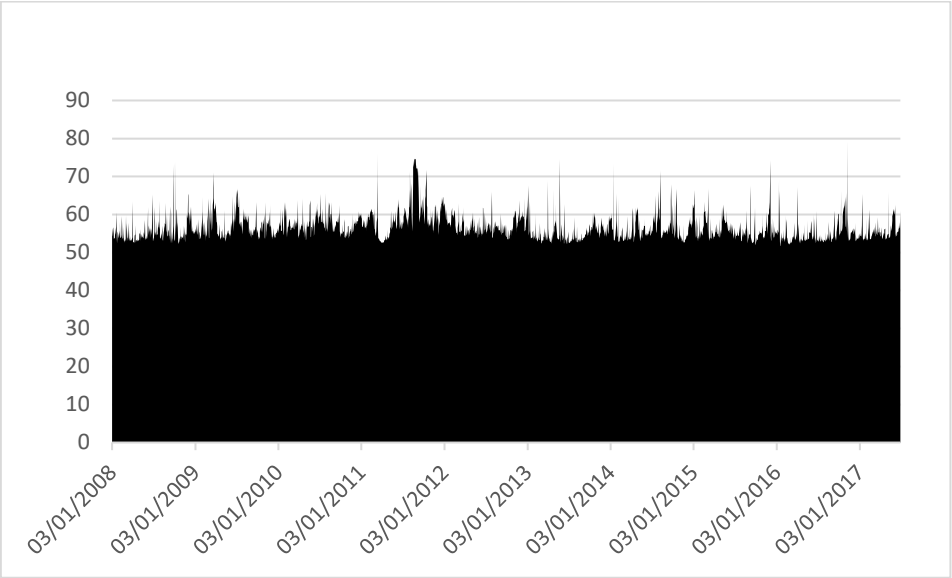


Figure 527: Total Average Dynamic Connectedness Healthcare Services

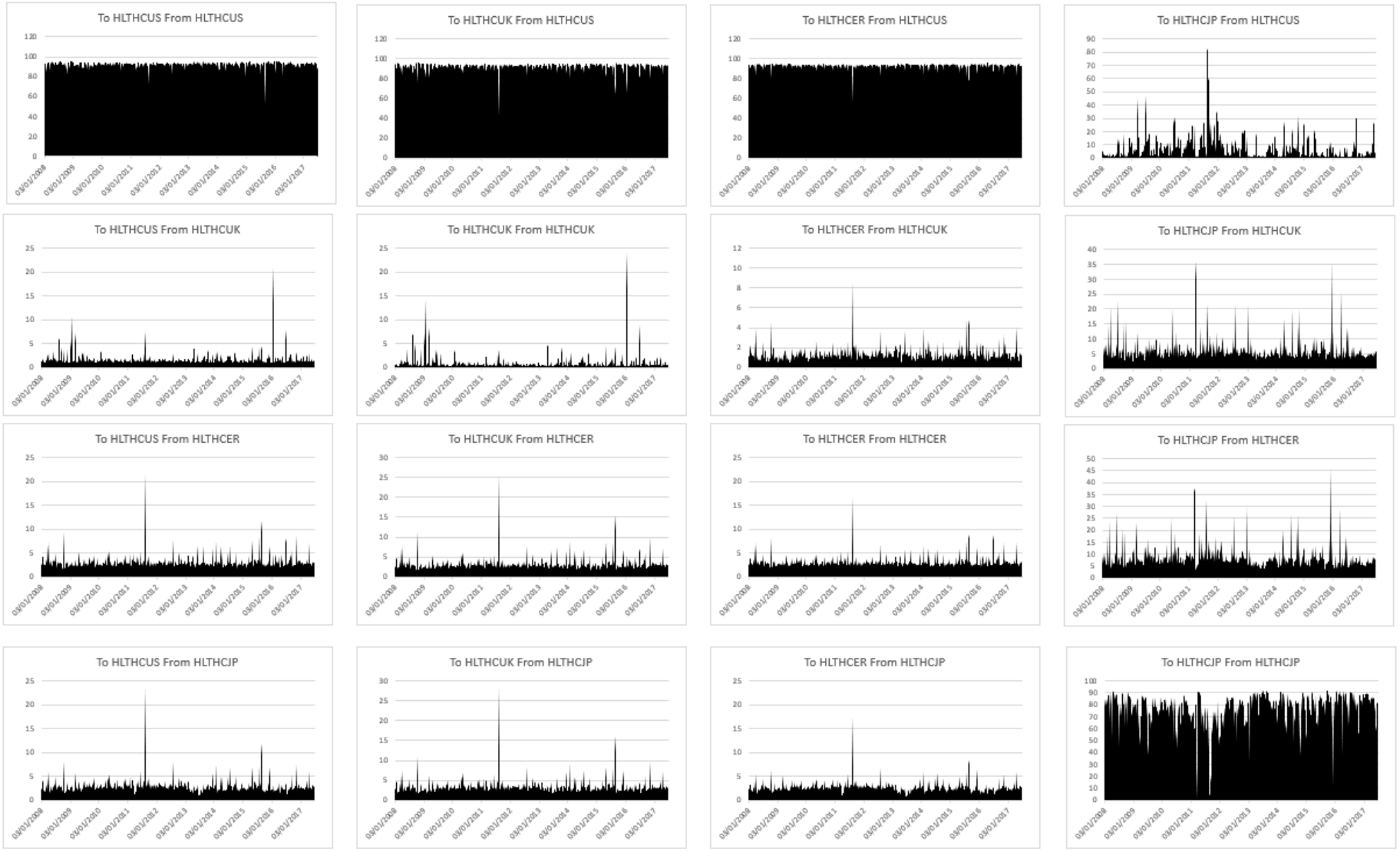


Figure 528: Net Pairwise Directional Connectedness Healthcare Services

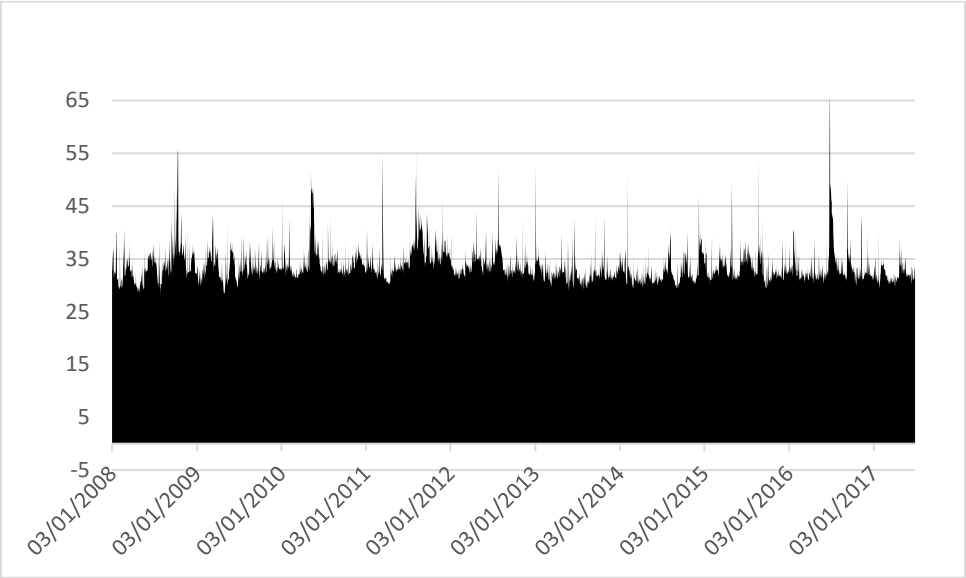


Figure 529: Total Average Dynamic Connectedness Telecommunications Services

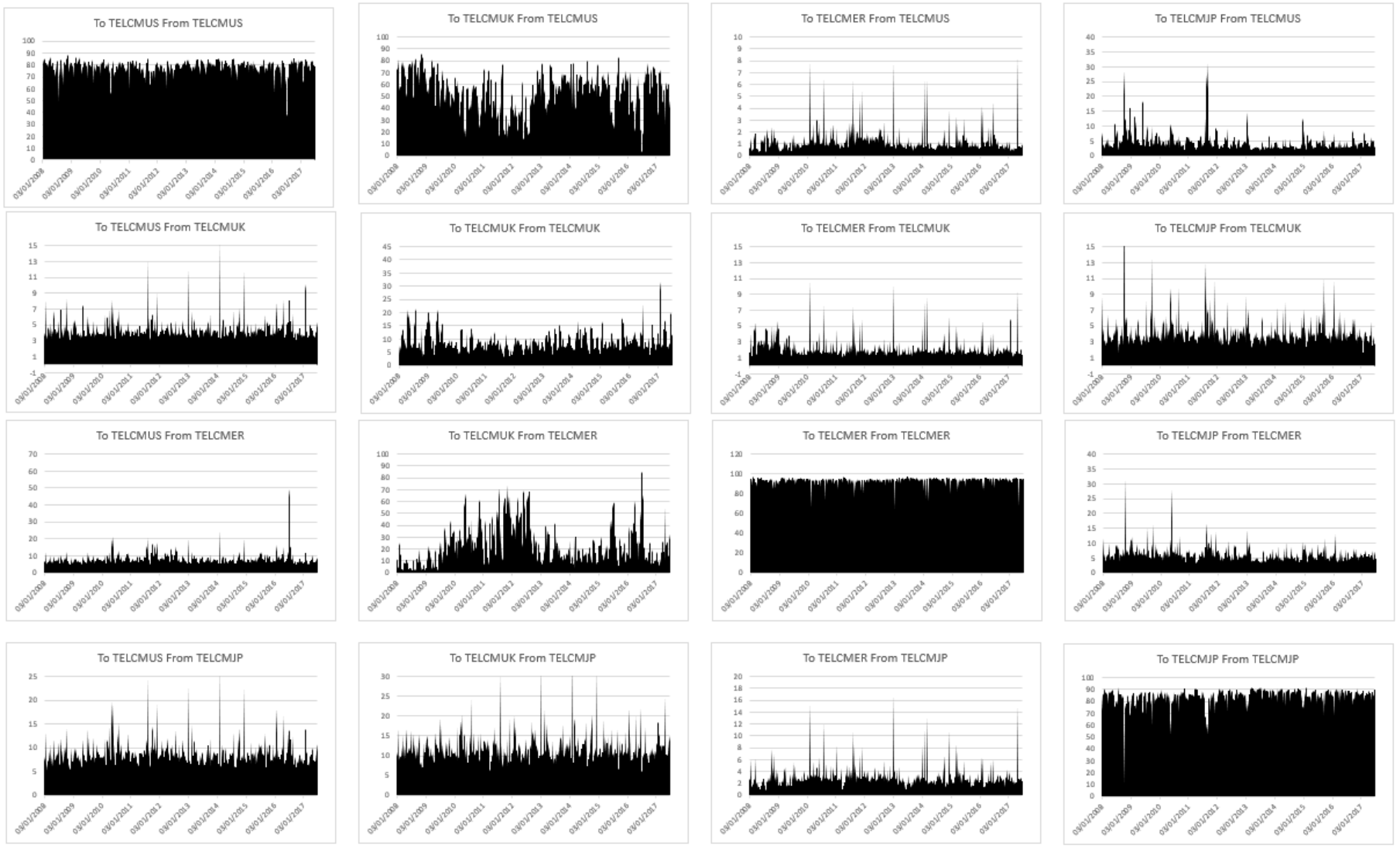


Figure 530: Net Pairwise Directional Connectedness Telecommunications Services

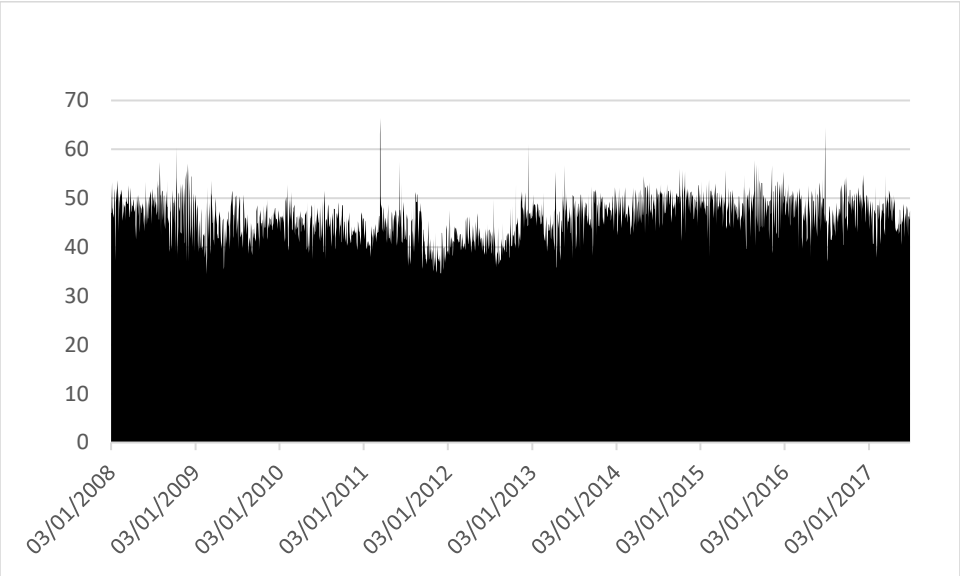


Figure 531: Total Average Dynamic Connectedness Utilities

Figure 532: Net Pairwise Directional Connectedness Utilities

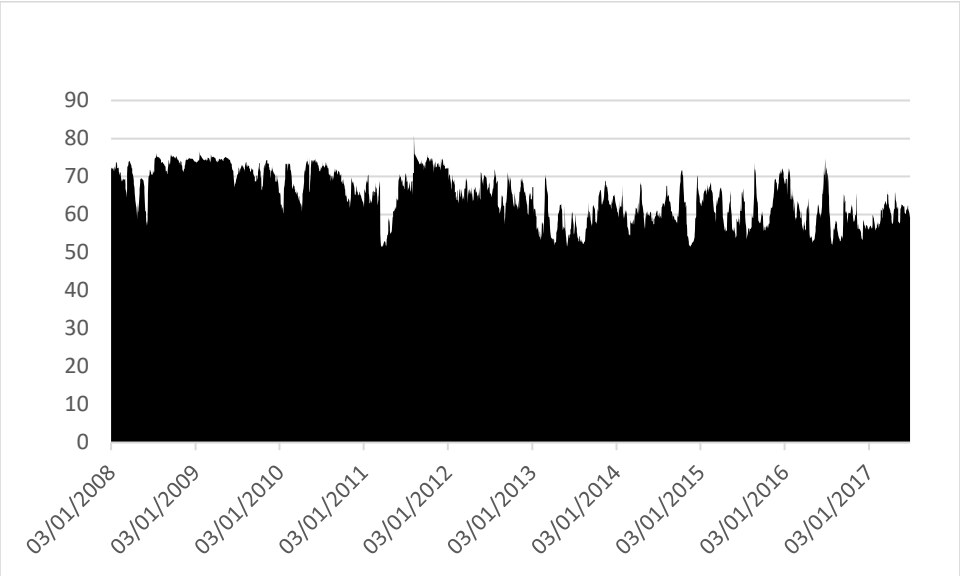


Figure 533: Total Average Dynamic Connectedness Financials

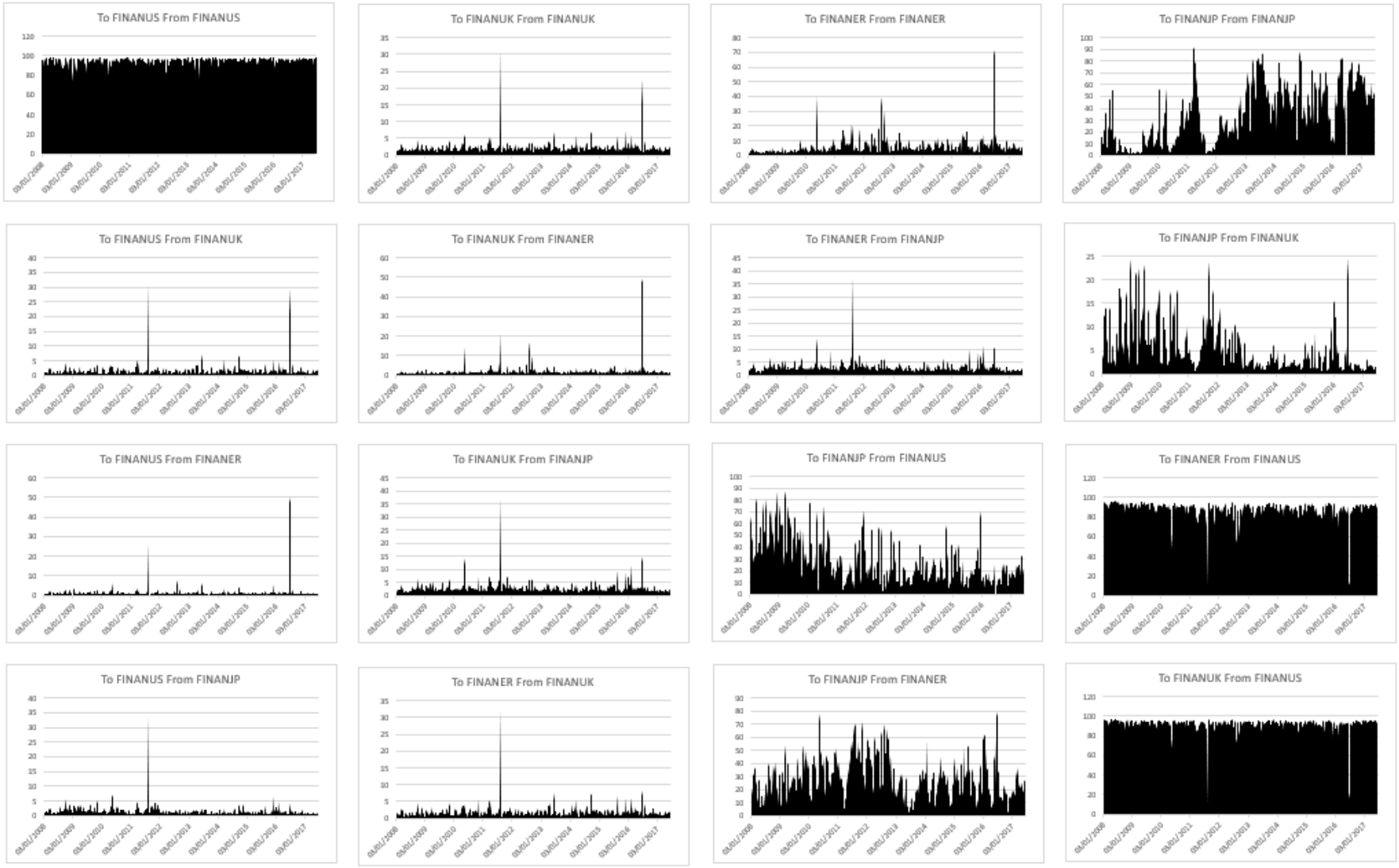


Figure 534: Net Pairwise Directional Connectedness Financials

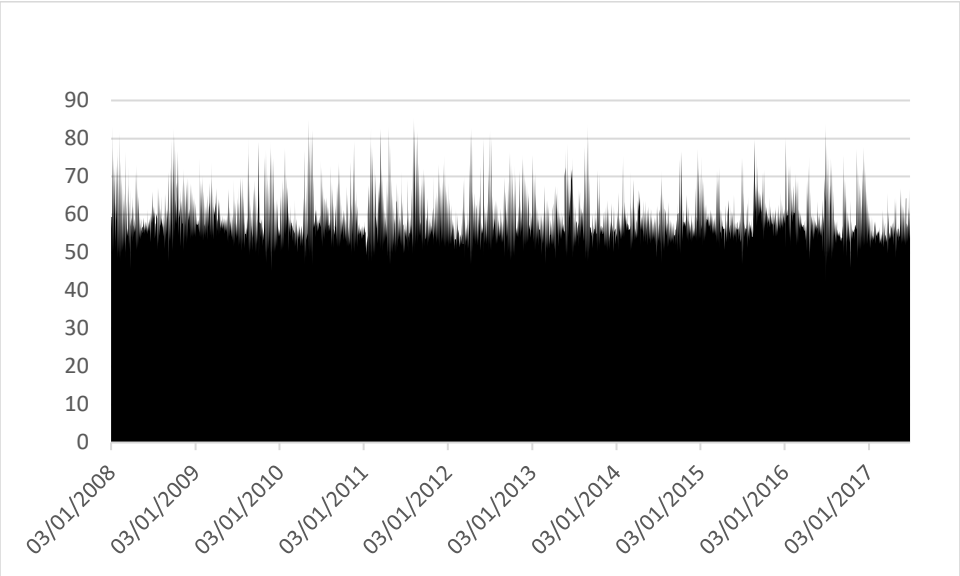


Figure 535: Total Average Dynamic Connectedness Technology

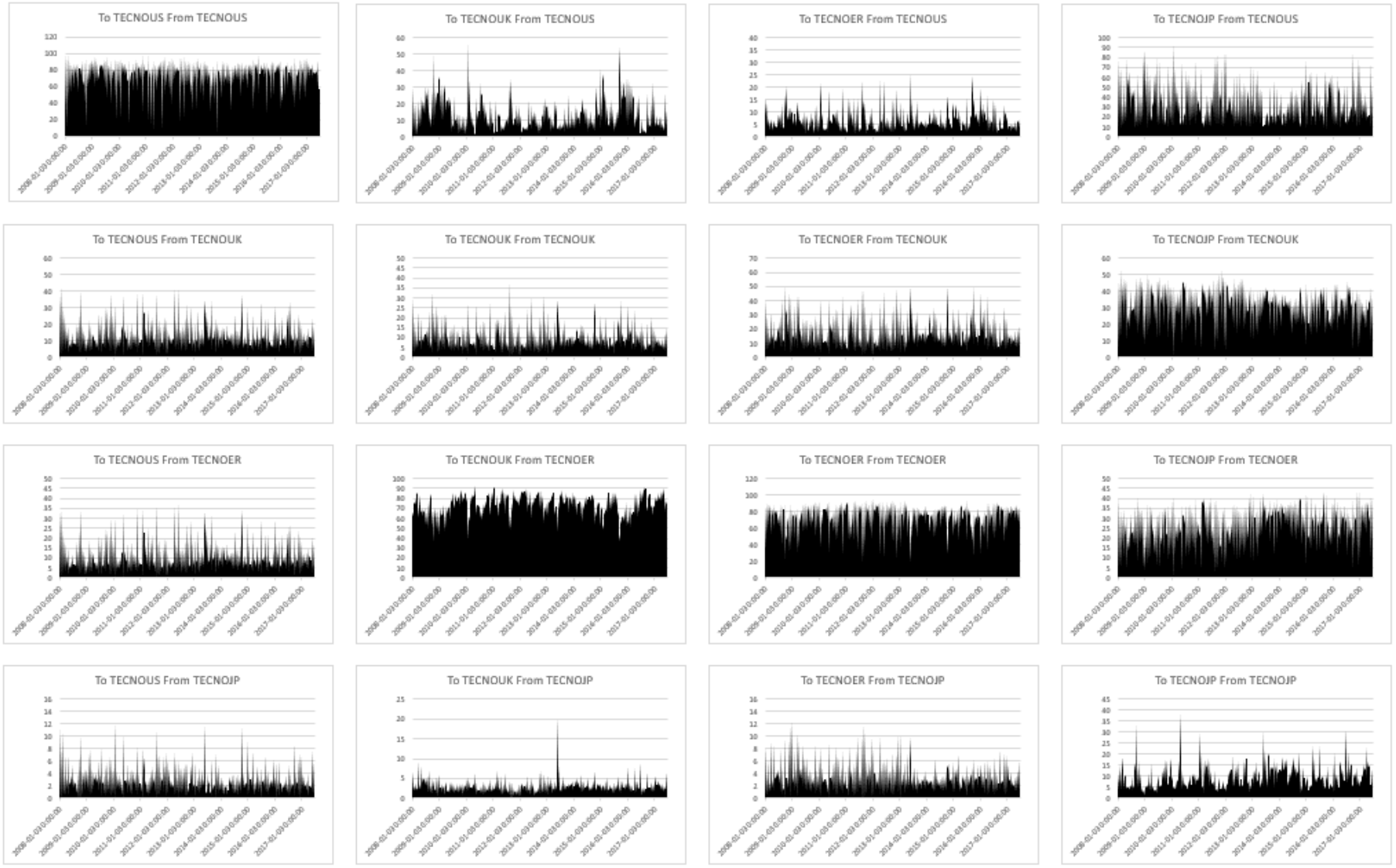


Figure 536: Net Pairwise Directional Connectedness Technology

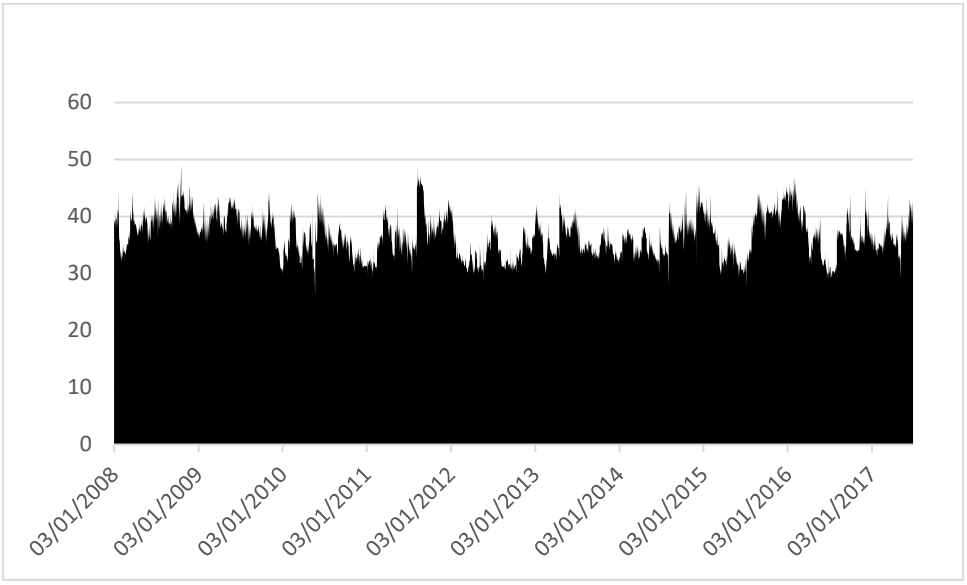


Figure 537: Total Average Dynamic Connectedness Oil and Gas Other

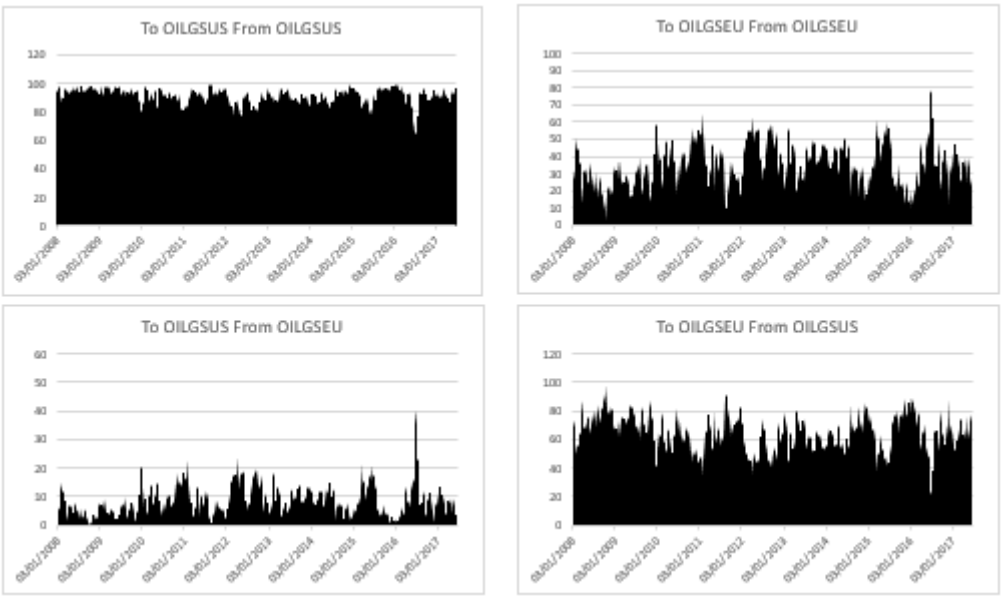


Figure 538: Net Pairwise Directional Connectedness Oil and Gas Other

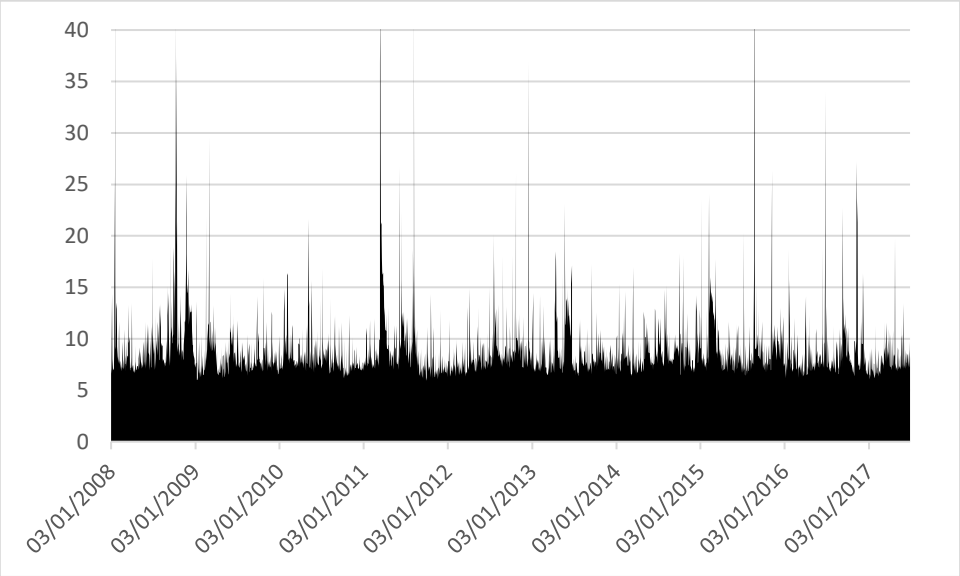


Figure 539: Total Average Dynamic Connectedness Utilities Other

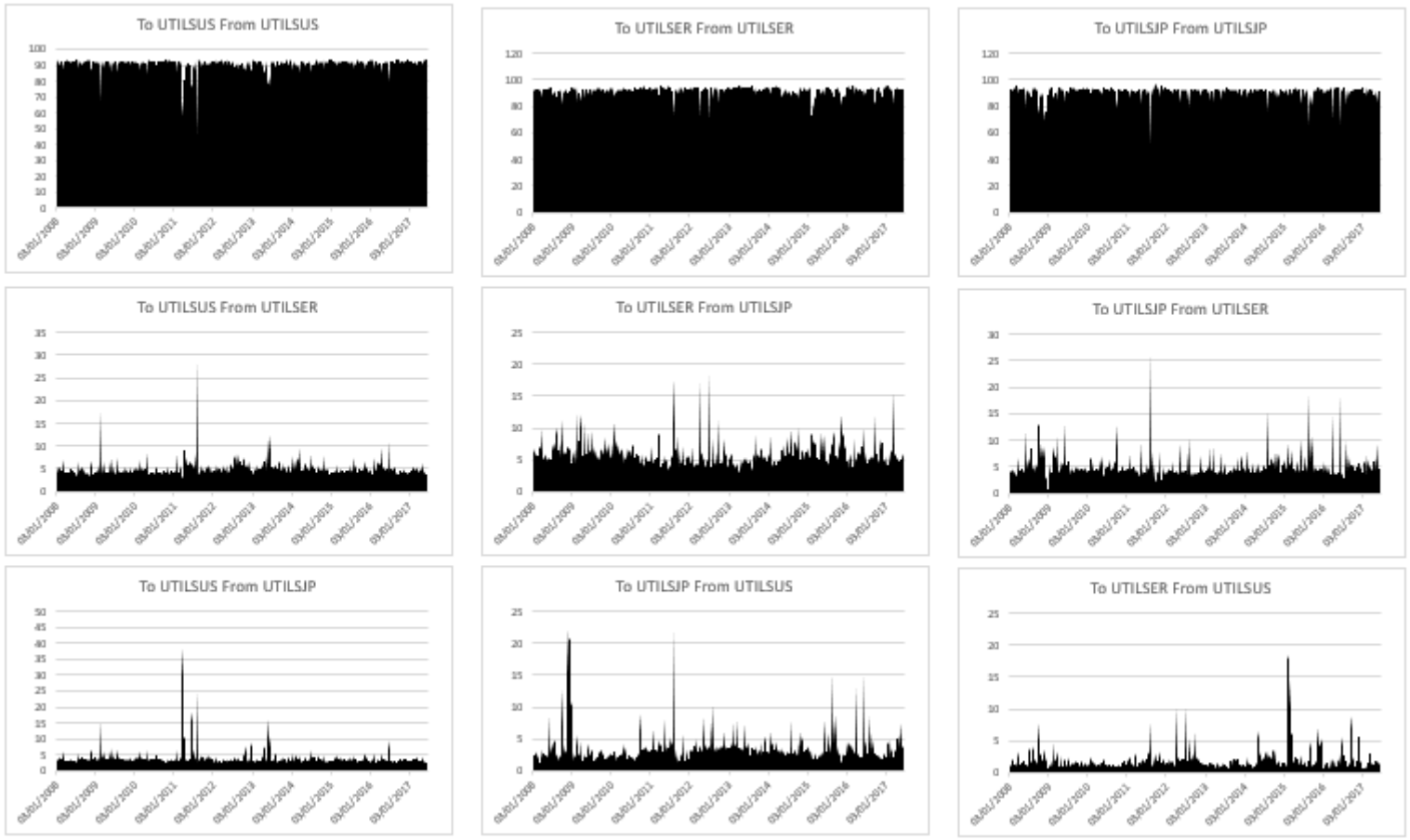


Figure 540: Net Pairwise Directional Connectedness Utilities Other

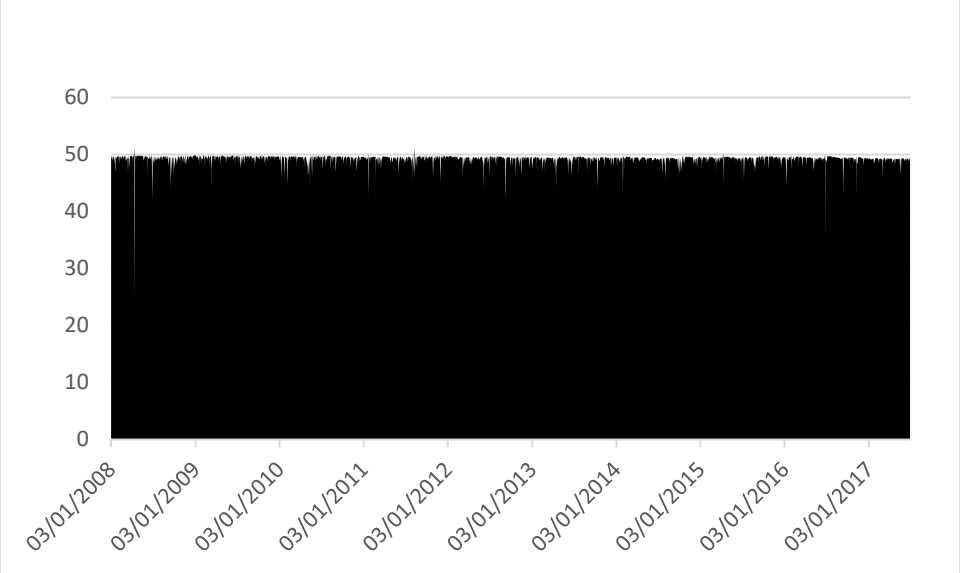


Figure 541: Total Average Dynamic Connectedness Conglomerate Diversified Mfg

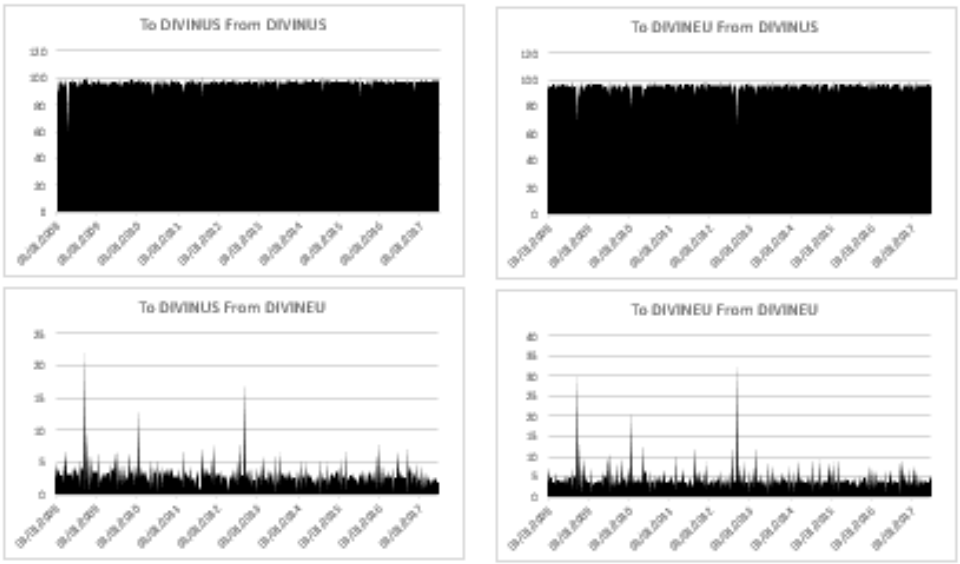


Figure 542: Net Pairwise Directional Connectedness Conglomerate Diversified Mfg

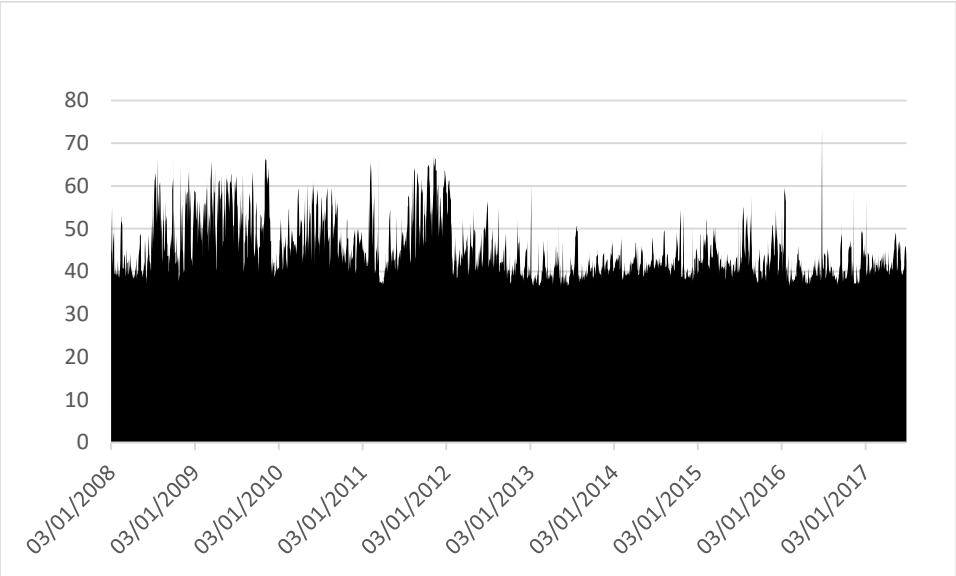


Figure 543: Total Average Dynamic Connectedness Automotive Manufacturer

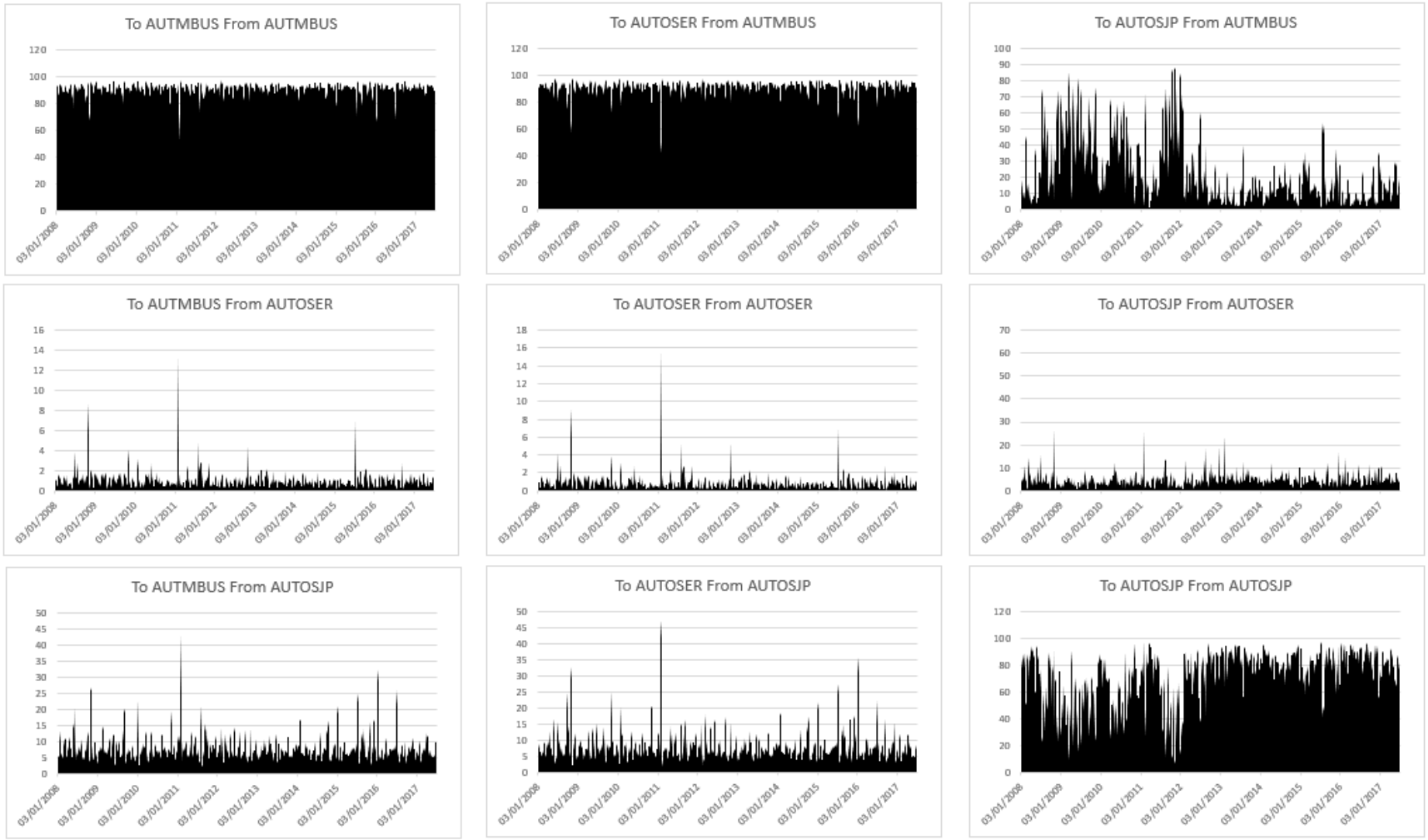


Figure 544: Net Pairwise Directional Connectedness Automotive Manufacturer

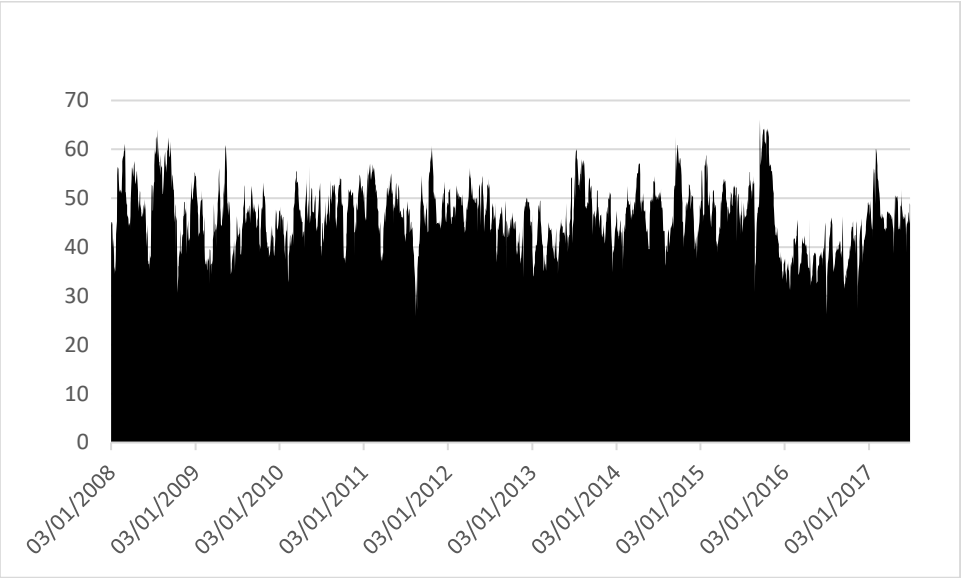


Figure 545: Total Average Dynamic Connectedness Beverages & Bottling

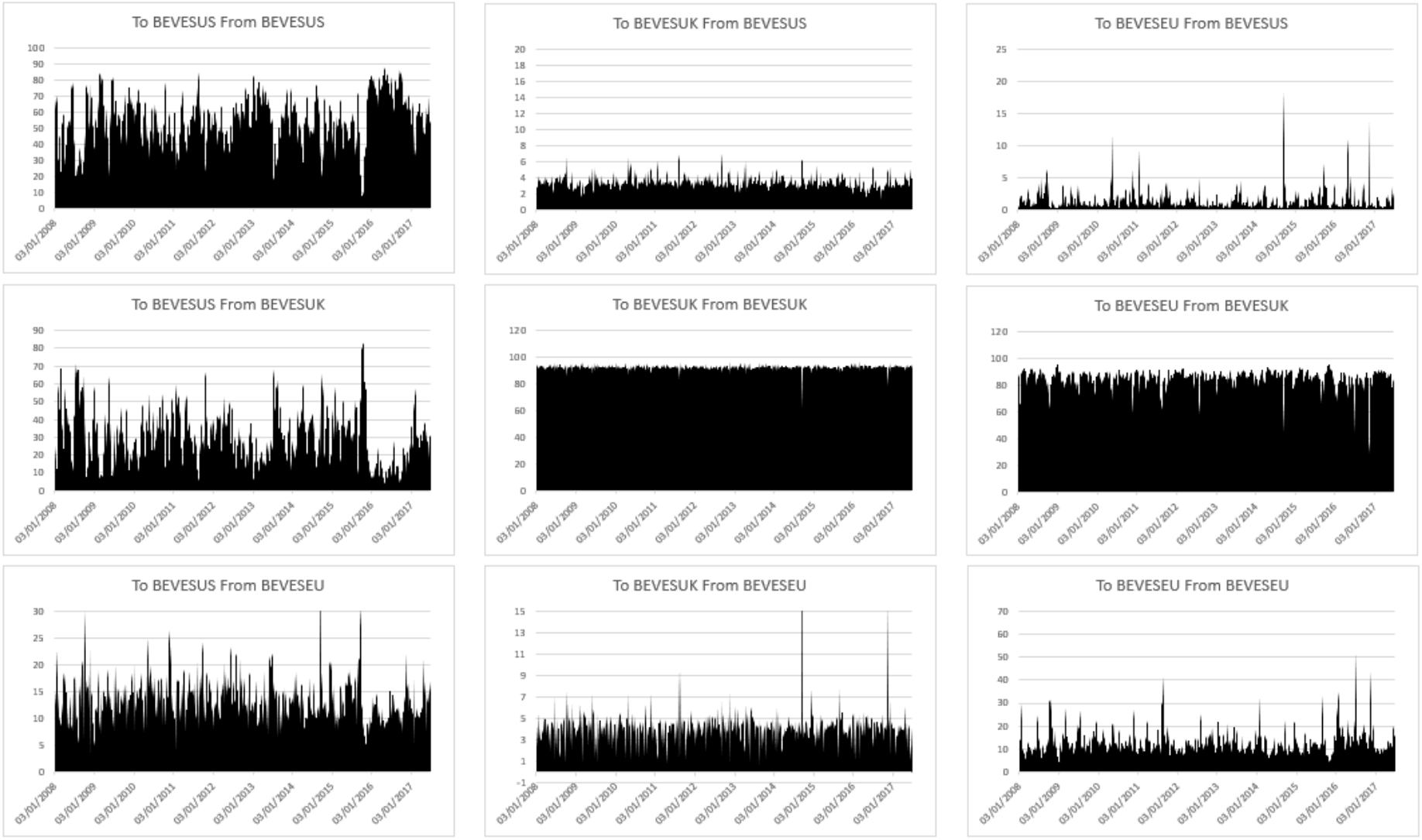


Figure 546: Net Pairwise Directional Connectedness Beverages & Bottling

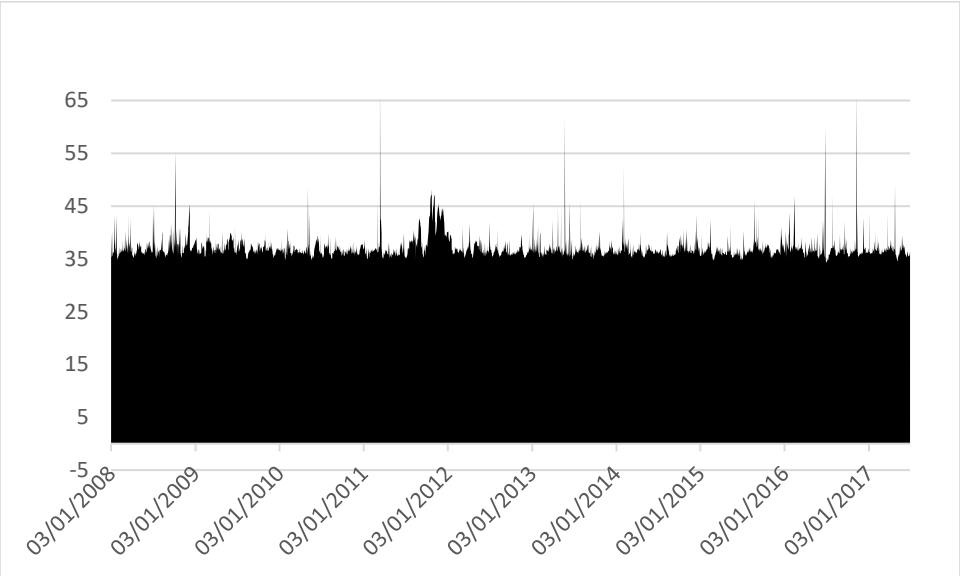


Figure 547: Total Average Dynamic Connectedness Chemicals

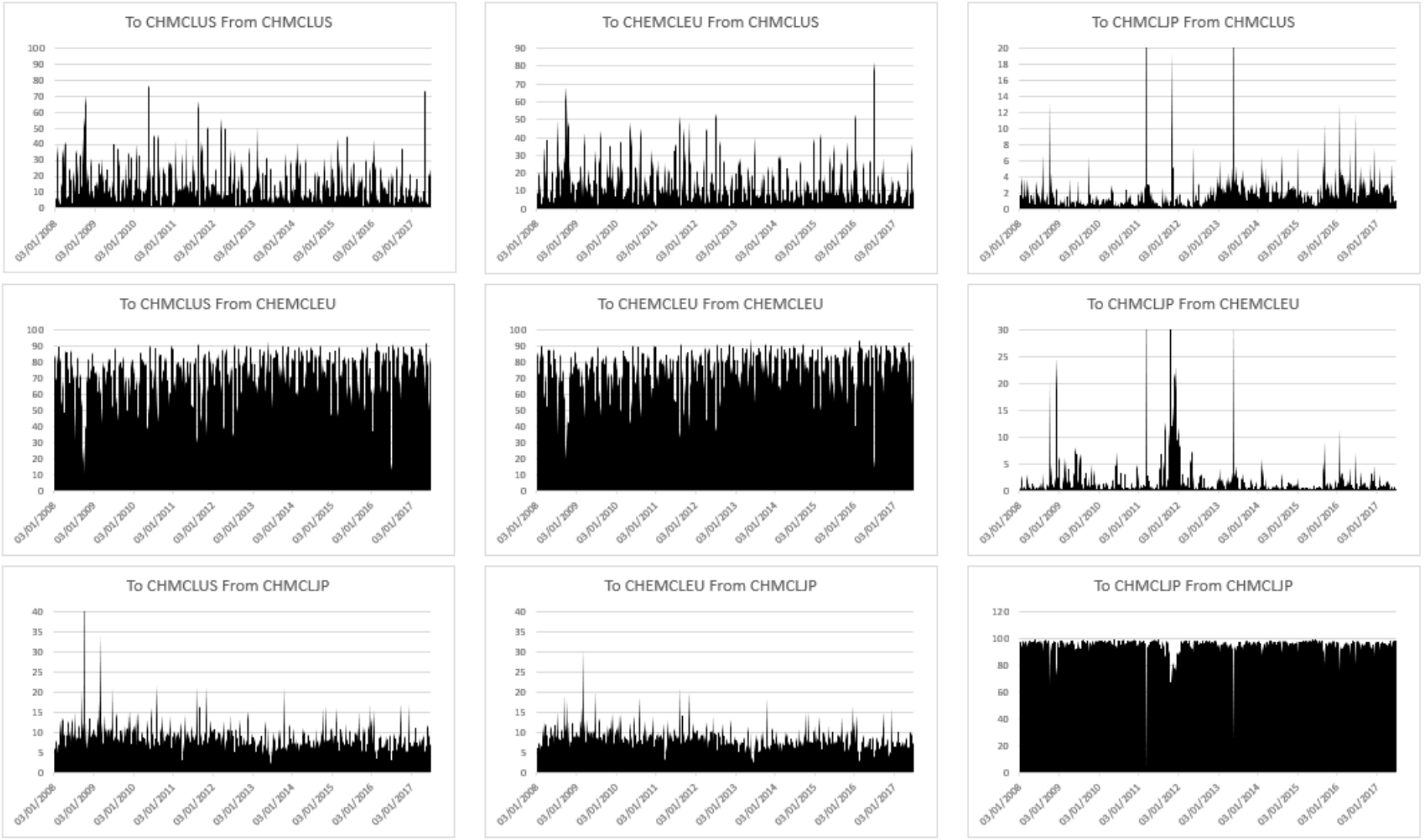


Figure 548: Net Pairwise Directional Connectedness Chemicals

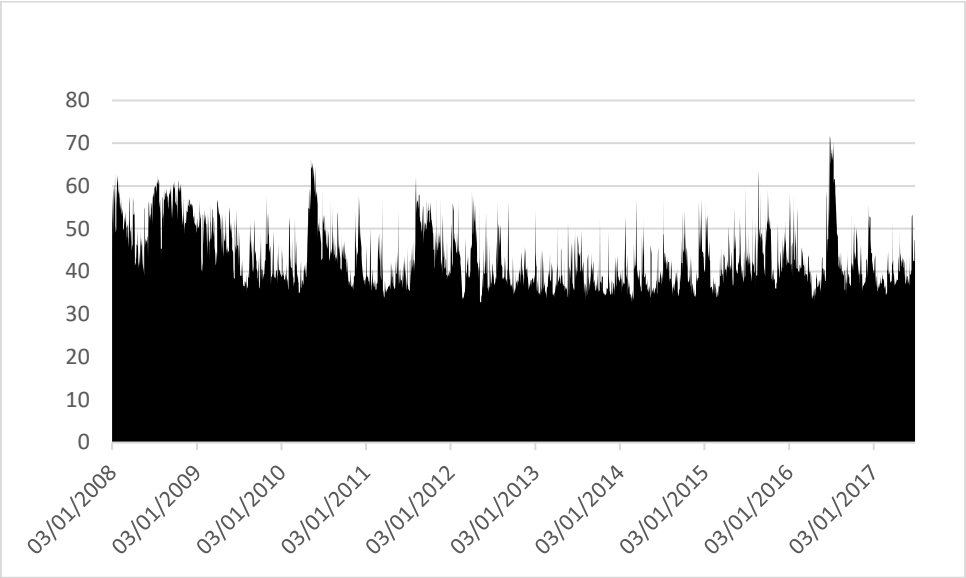


Figure 549: Total Average Dynamic Connectedness Other Consumer Services

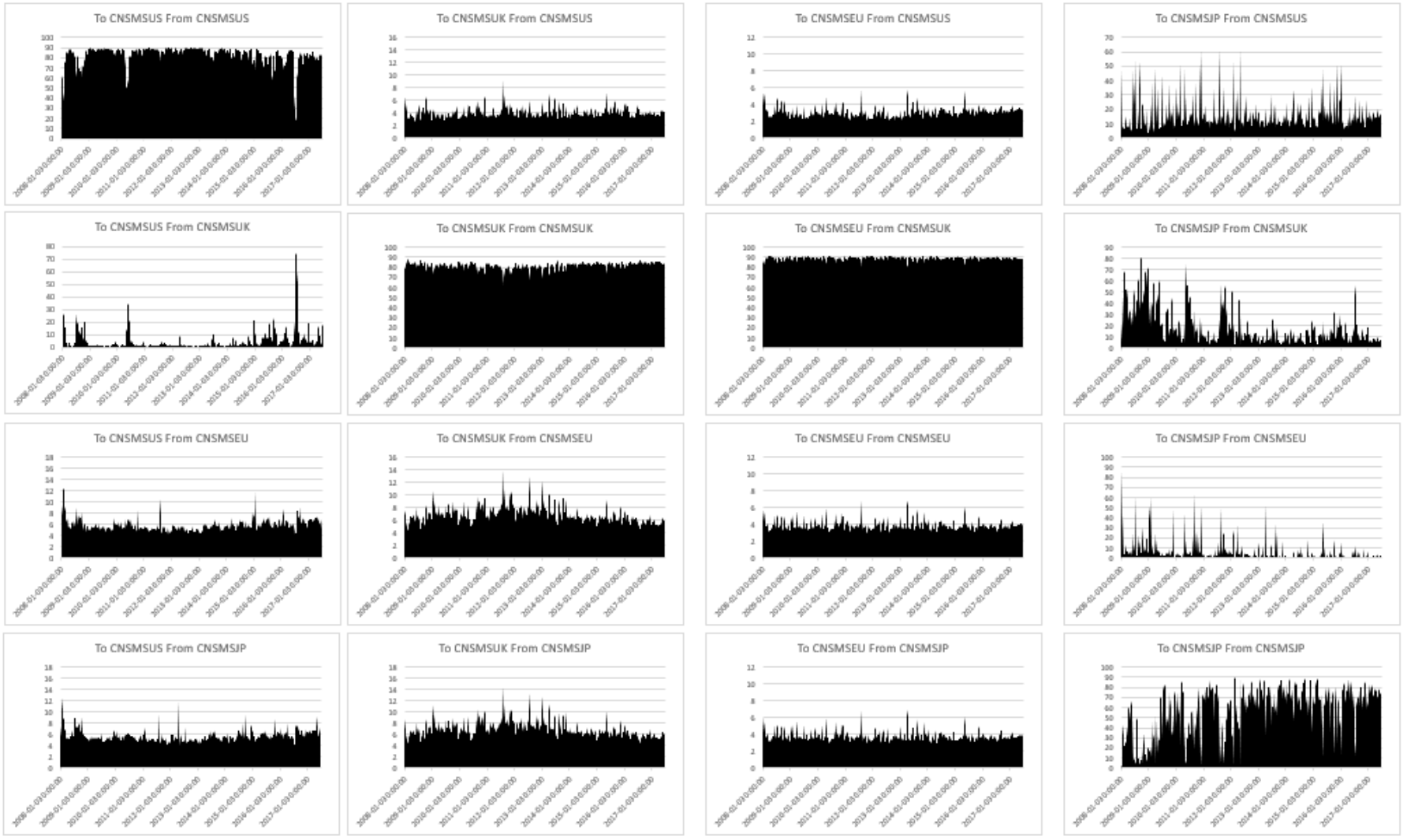


Figure 550: Net Pairwise Directional Connectedness Other Consumer Services

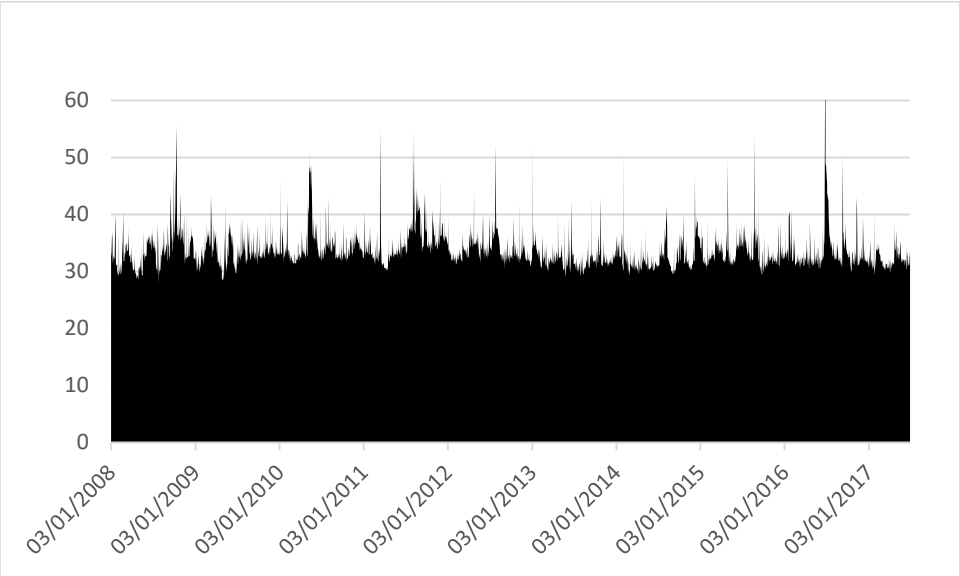


Figure 551: Total Average Dynamic Connectedness Other Telecommunications Services

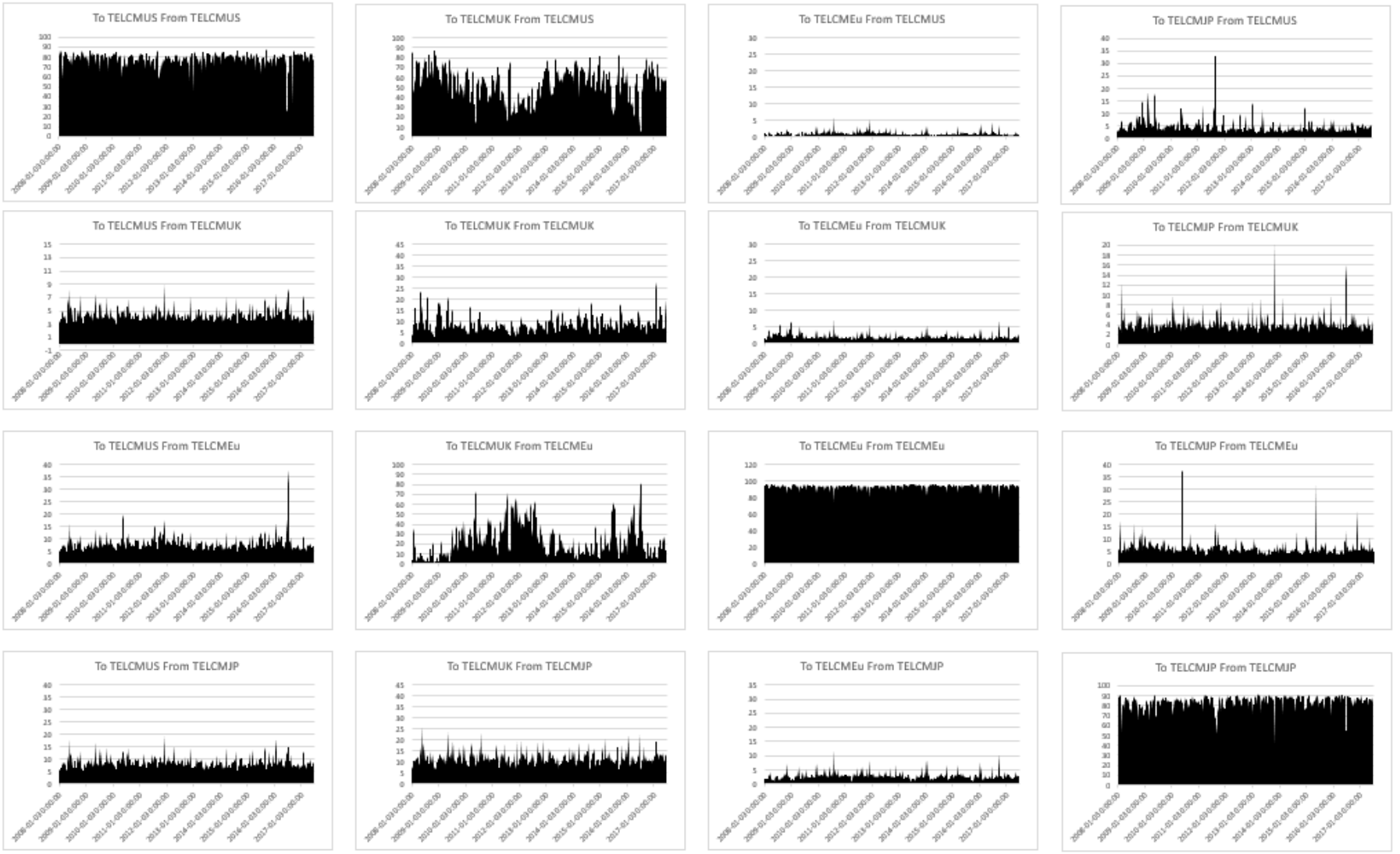


Figure 552: Net Pairwise Directional Connectedness Other Telecommunications Services

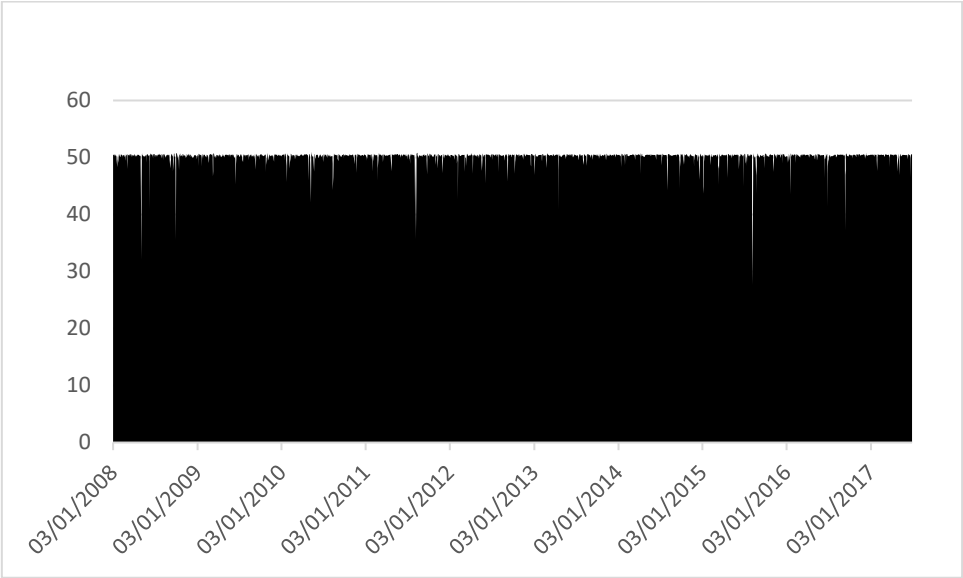


Figure 553: Total Average Dynamic Connectedness Cable Media

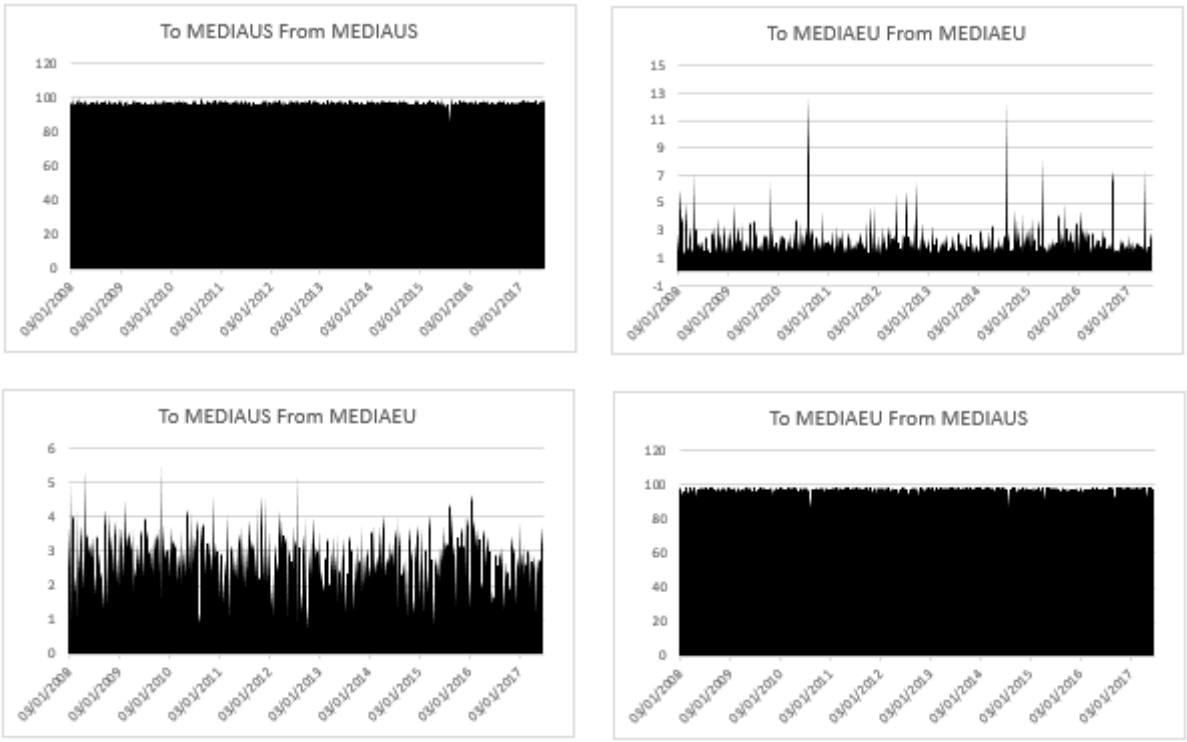


Figure 554: Net Pairwise Directional Connectedness Cable Media

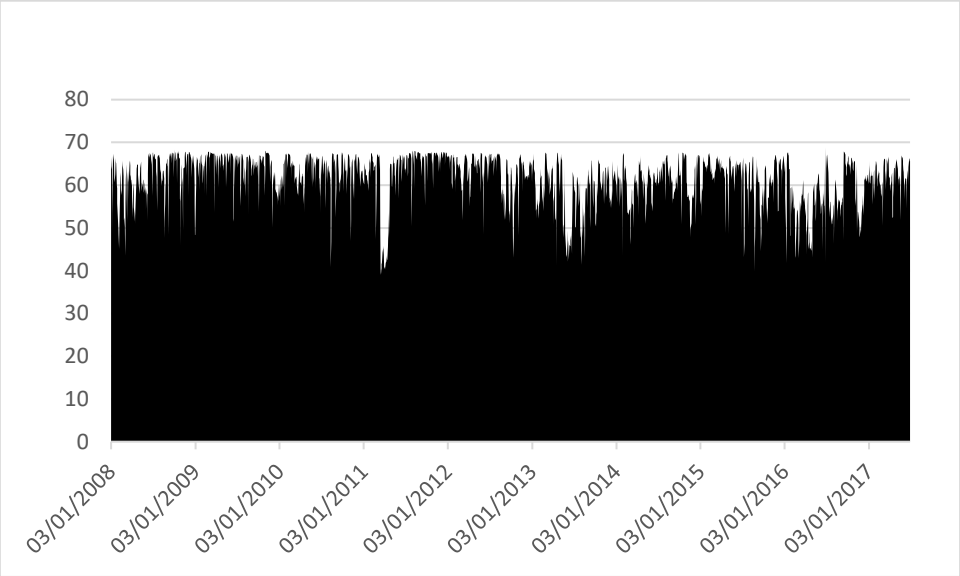


Figure 555: Total Average Dynamic Connectedness Electronics

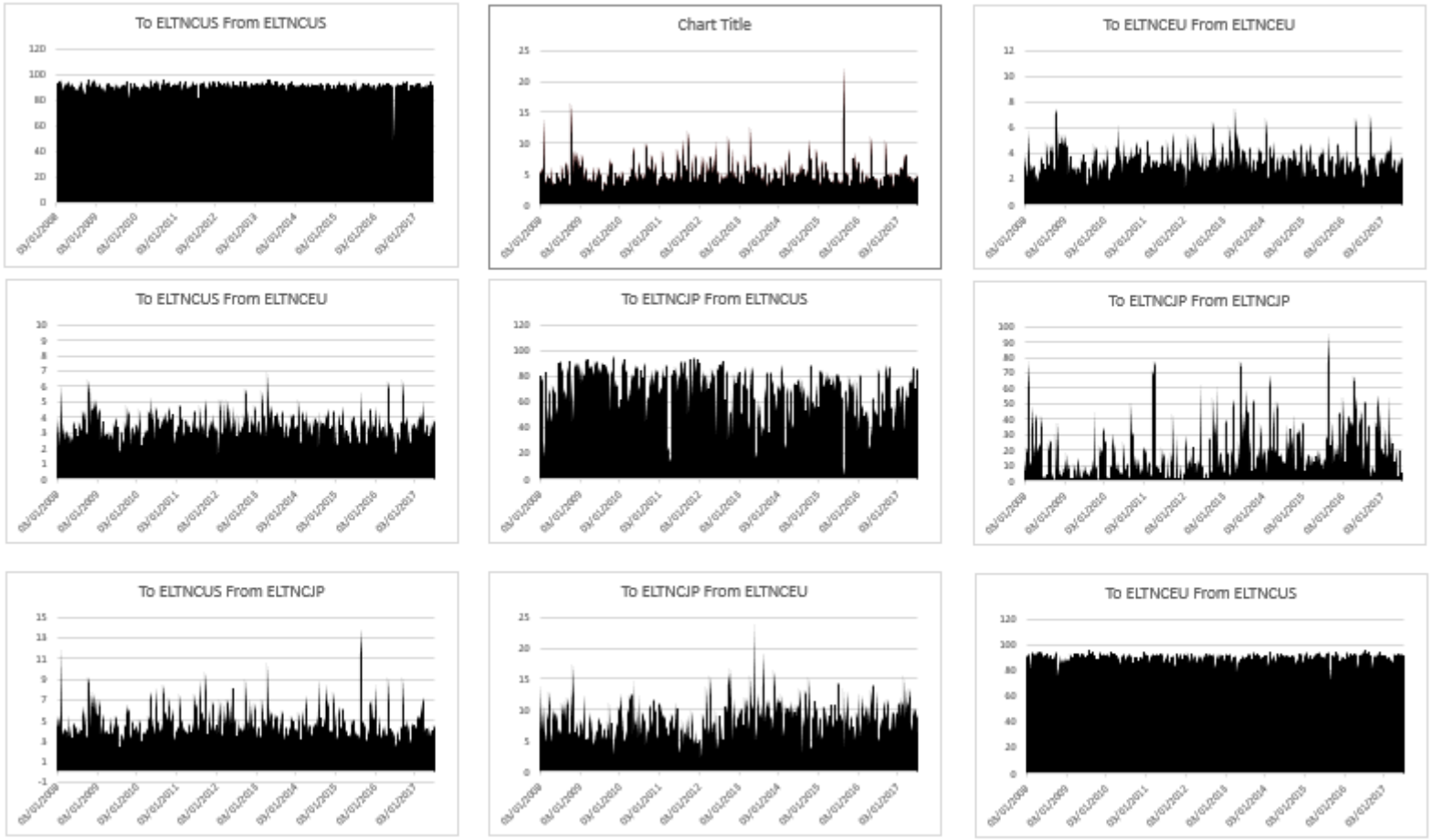


Figure 556: Net Pairwise Directional Connectedness Electronics

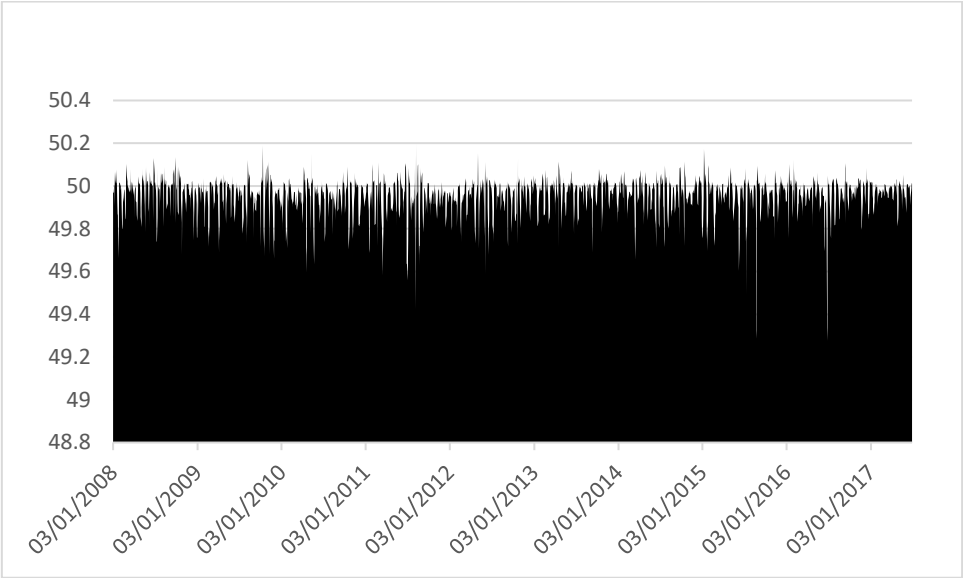


Figure 557: Total Average Dynamic Connectedness Leisure

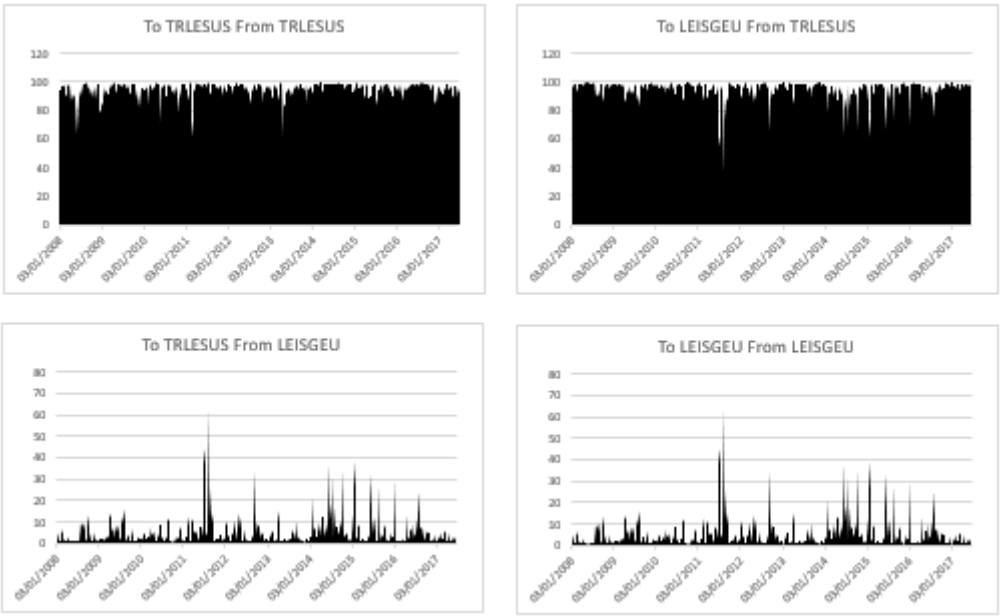


Figure 558: Net Pairwise Directional Connectedness Leisure

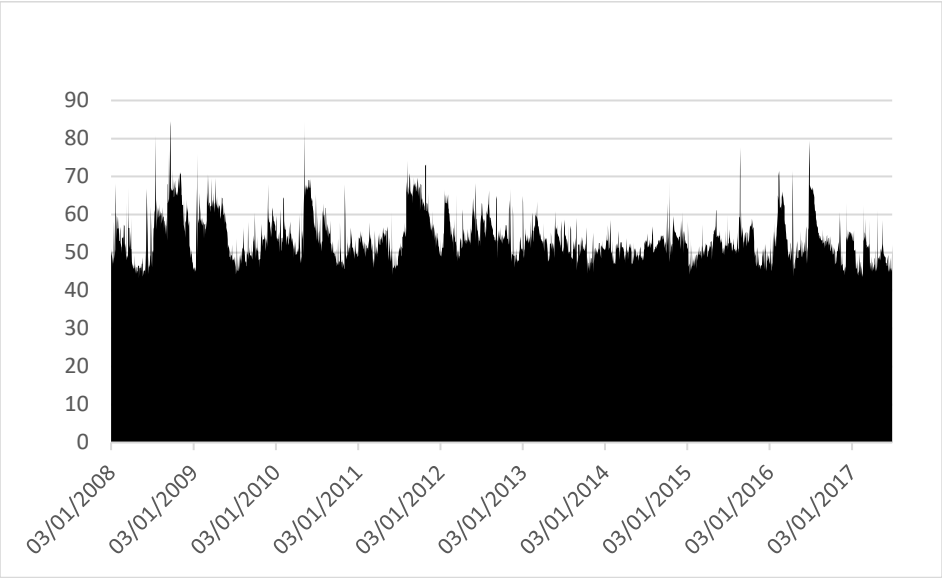


Figure 559: Total Average Dynamic Connectedness Banking

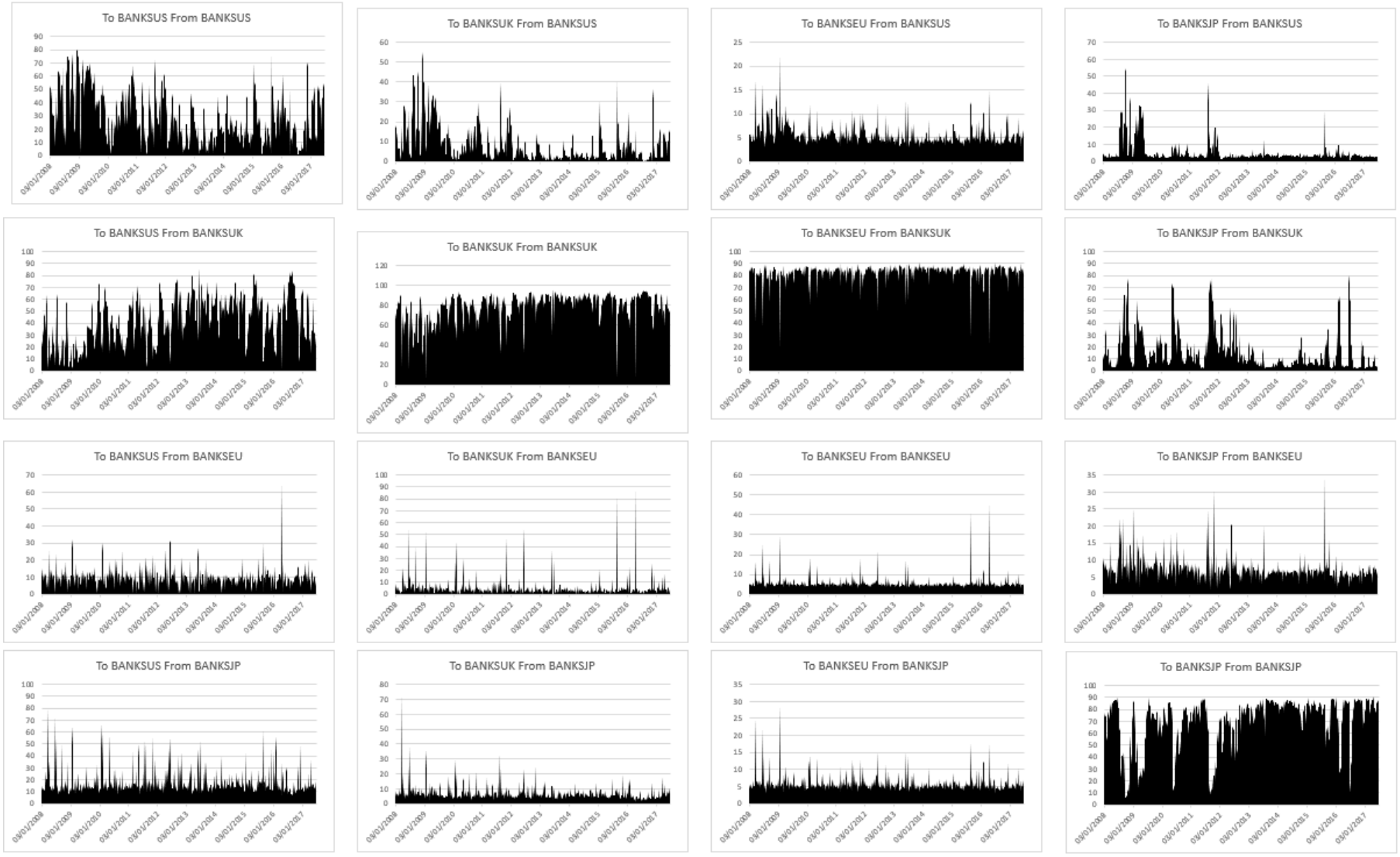


Figure 560: Net Pairwise Directional Connectedness Banking

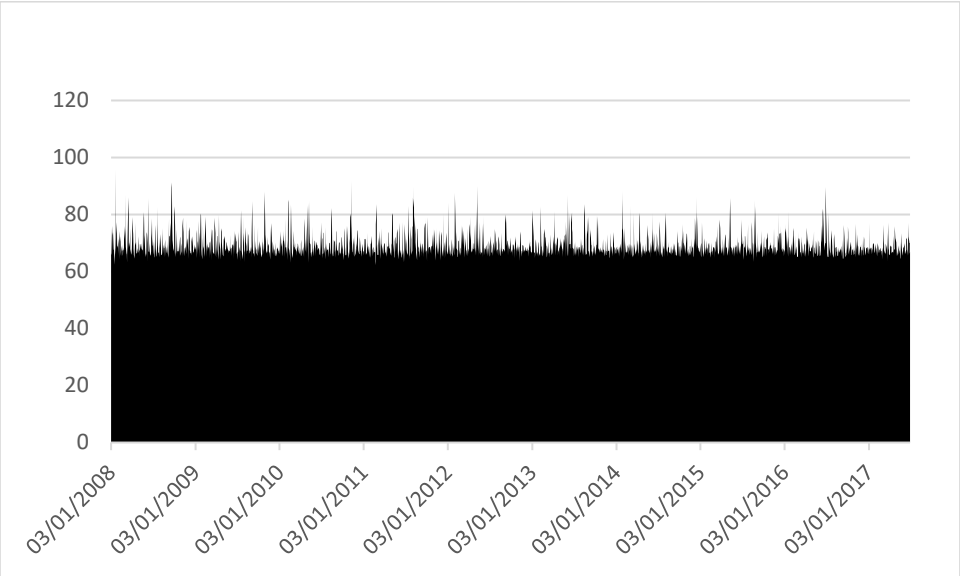


Figure 561: Total Average Dynamic Connectedness Other Financials

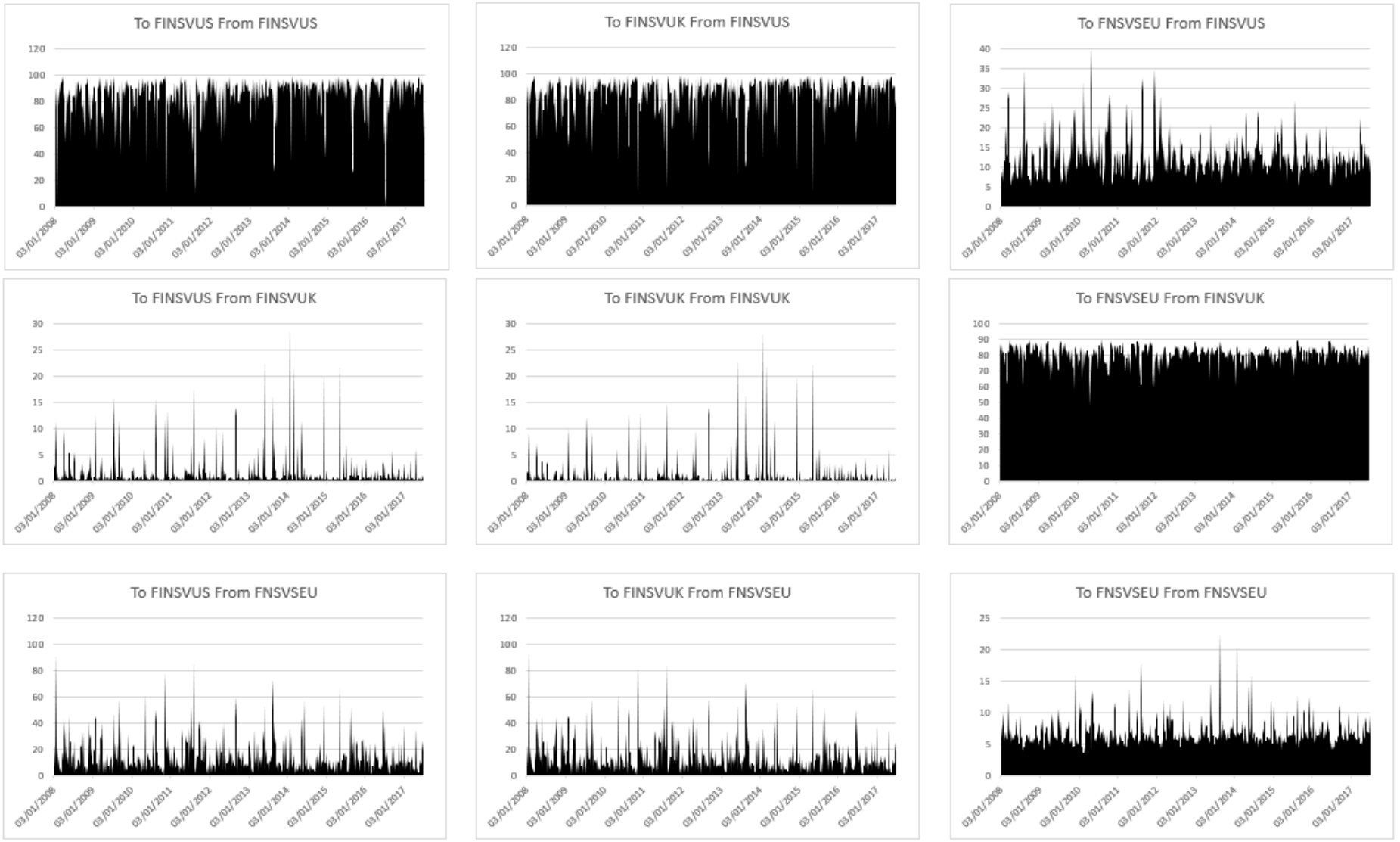


Figure 562: Net Pairwise Directional Connectedness Other Financials

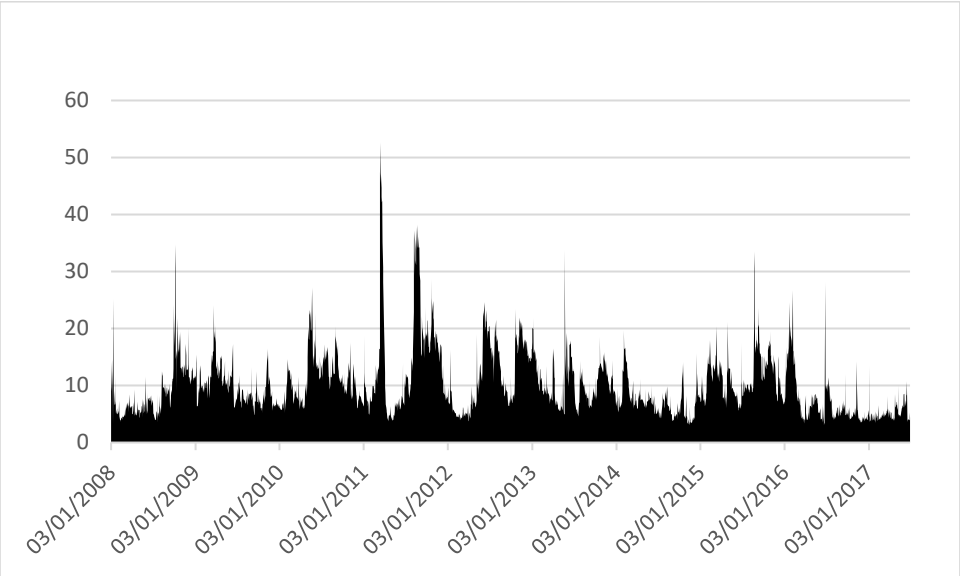


Figure 563: Total Average Dynamic Connectedness Other Retail Stores

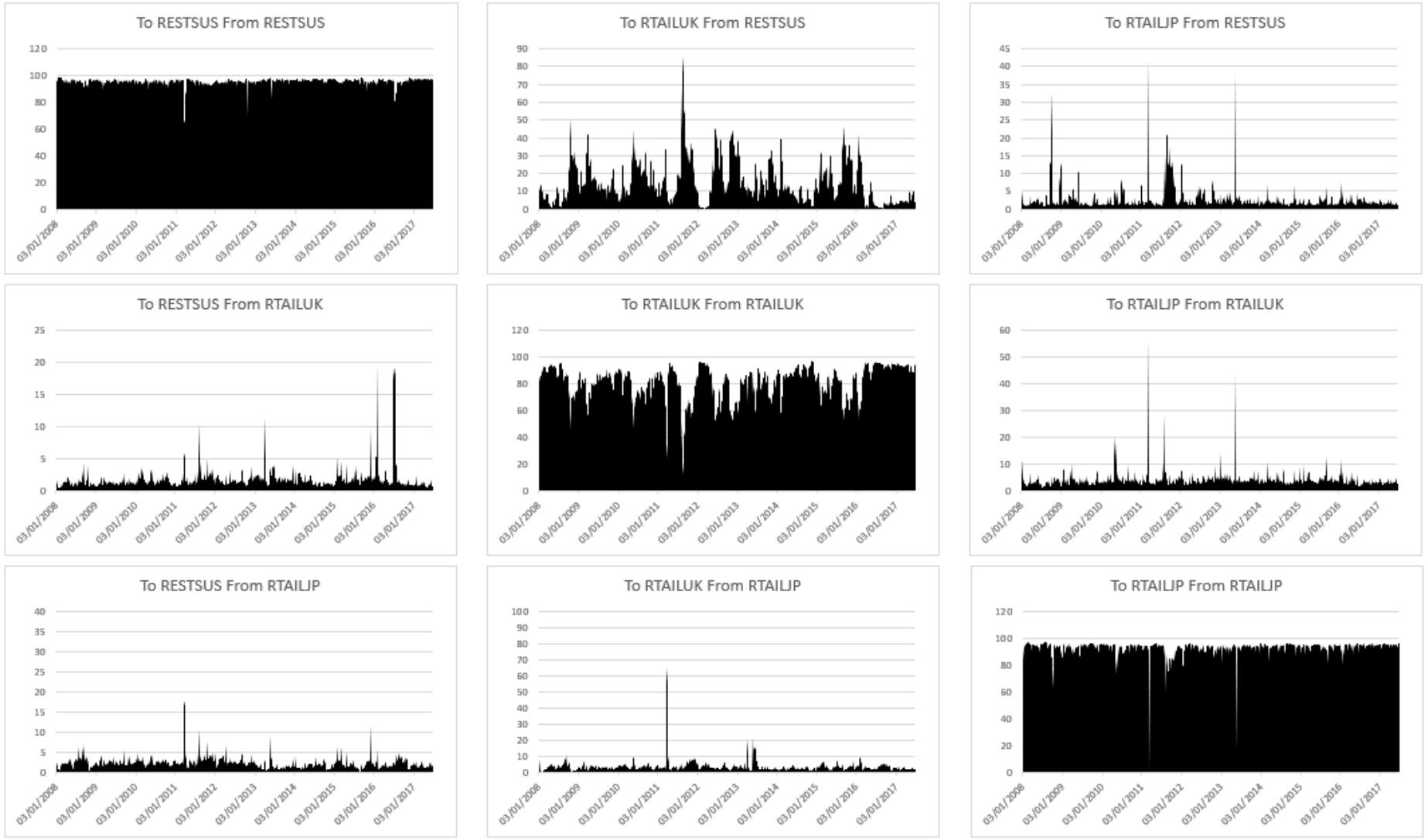


Figure 564: Net Pairwise Directional Connectedness Other Retail Stores

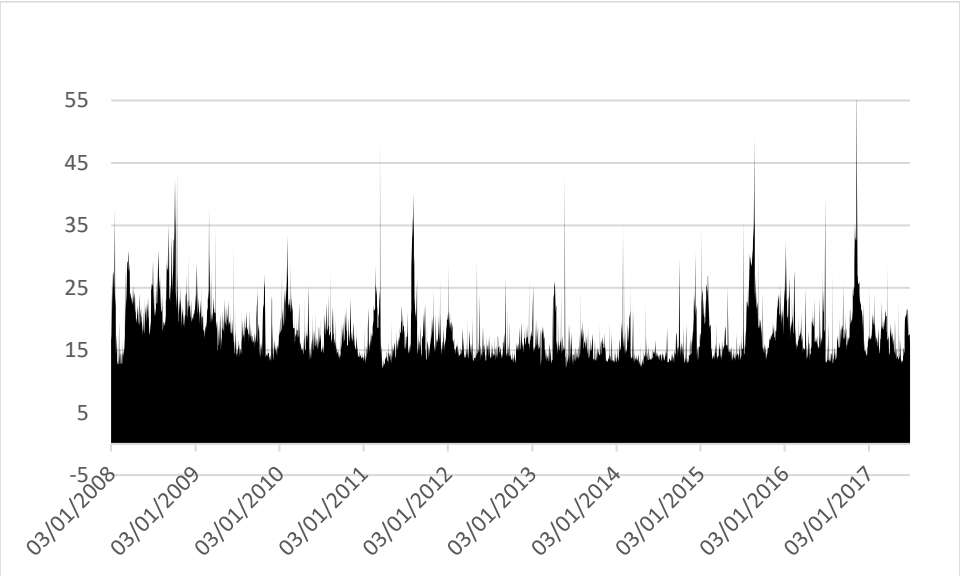


Figure 565: Total Average Dynamic Connectedness Metals & Mining

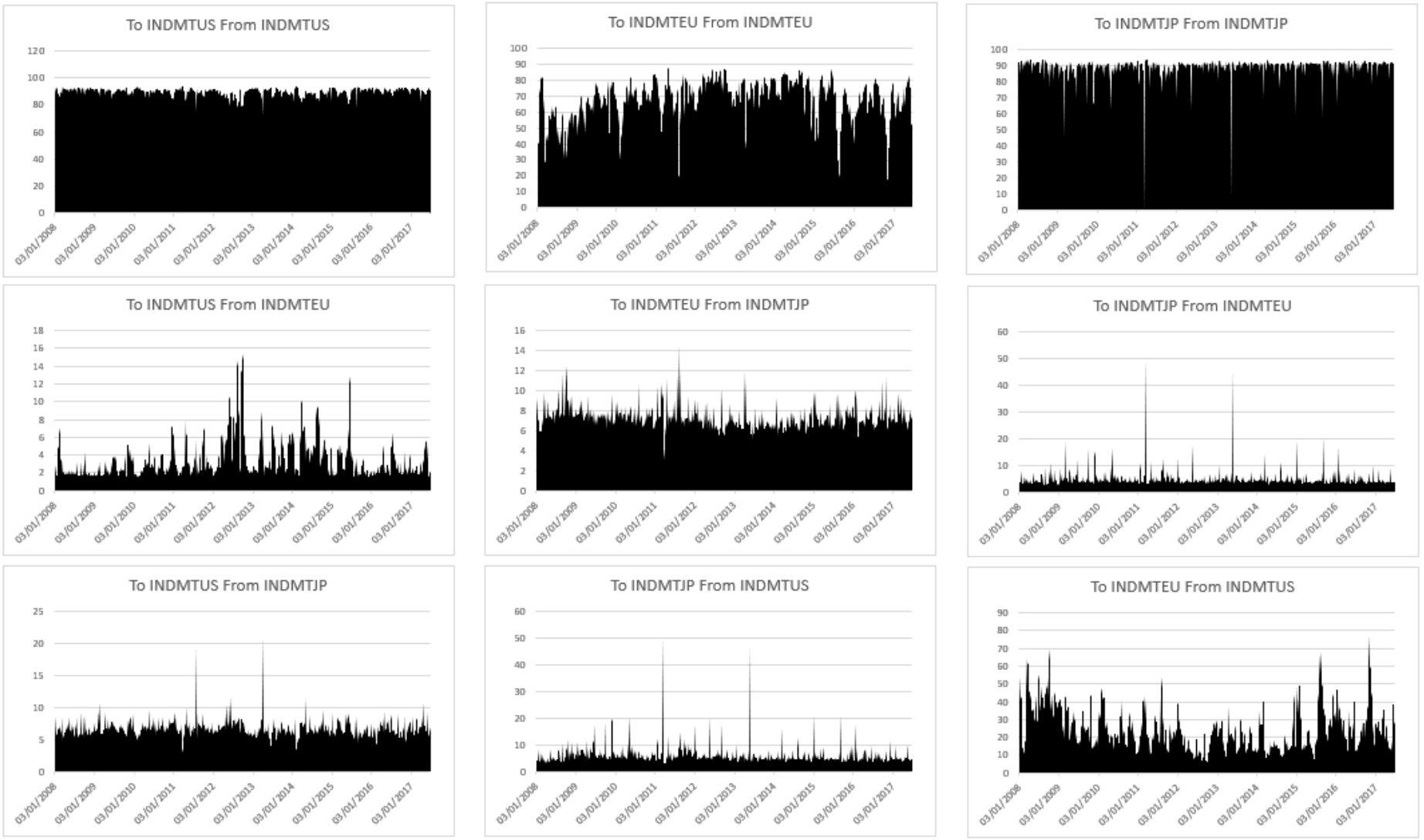


Figure 566: Net Pairwise Directional Connectedness Metals & Mining

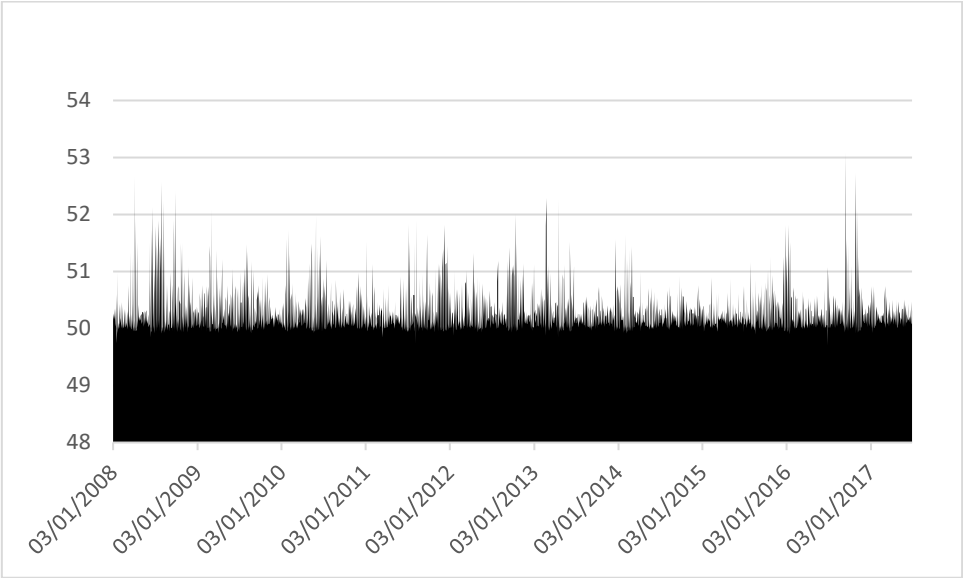


Figure 567: Total Average Dynamic Connectedness Building Products

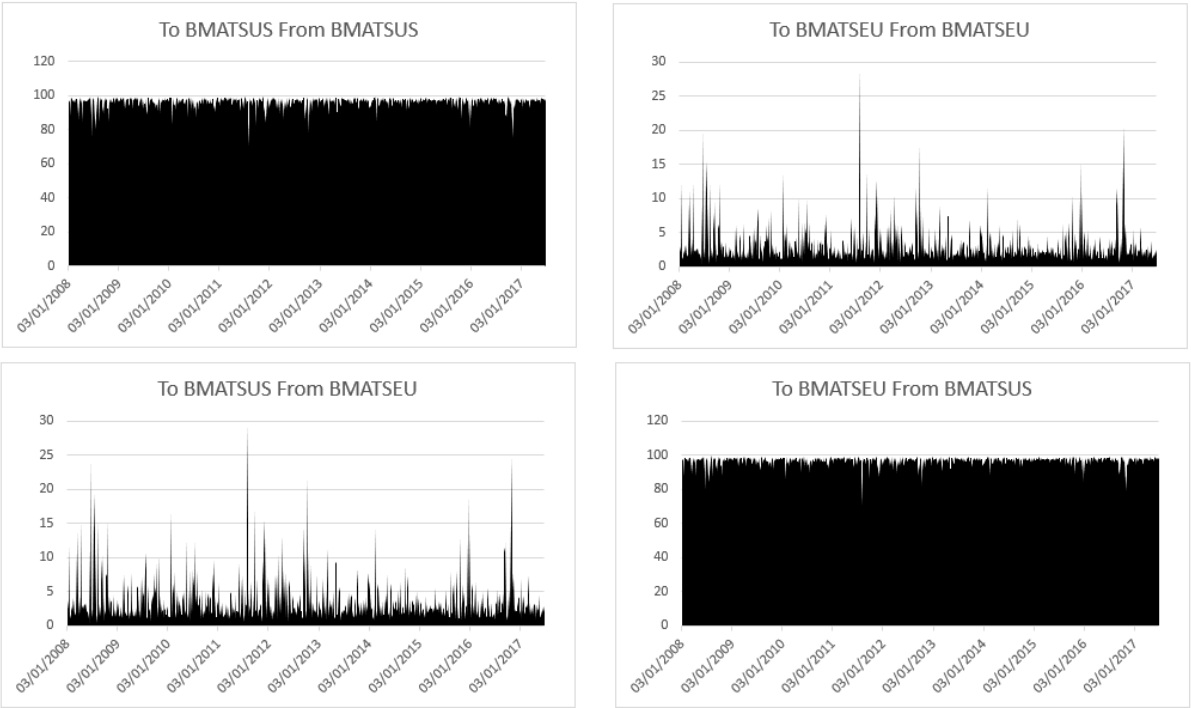


Figure 568: Net Pairwise Directional Connectedness Building Products

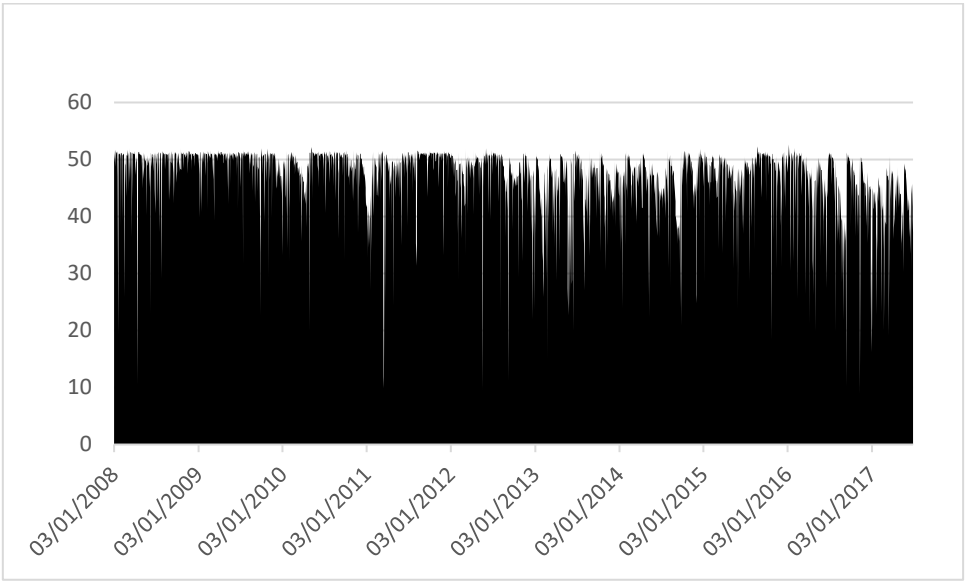


Figure 569: Total Average Dynamic Connectedness Other Industrials

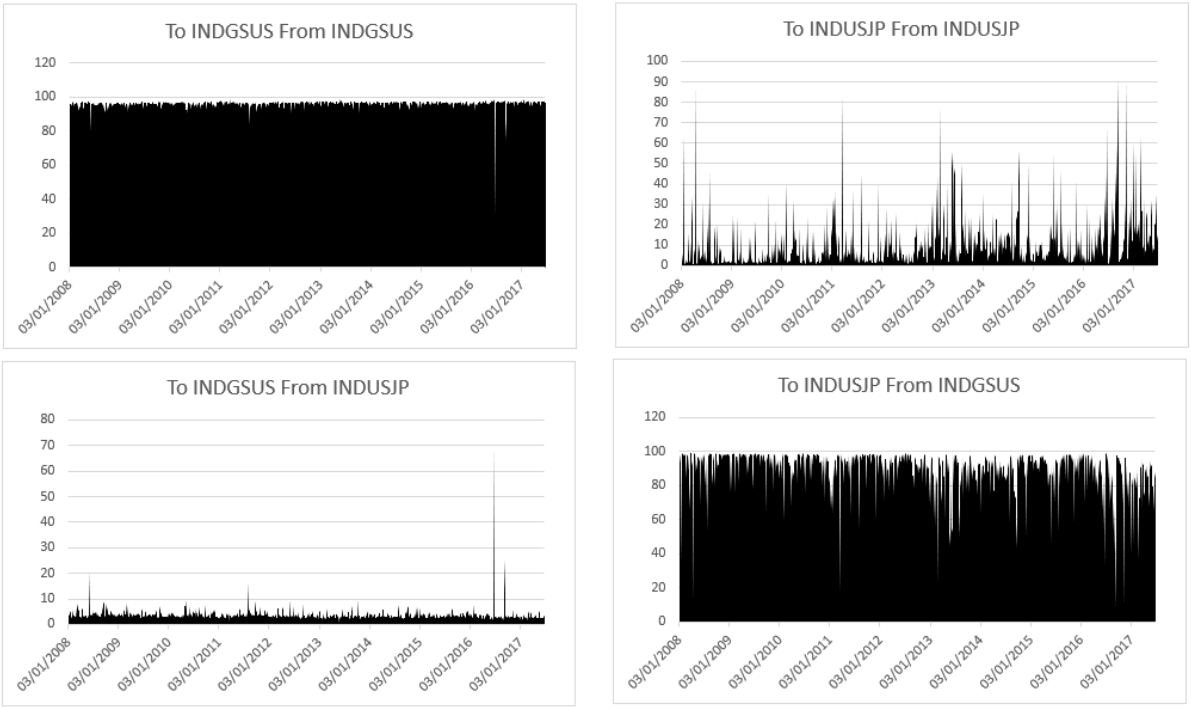


Figure 570: Net Pairwise Directional Connectedness Other Industrials

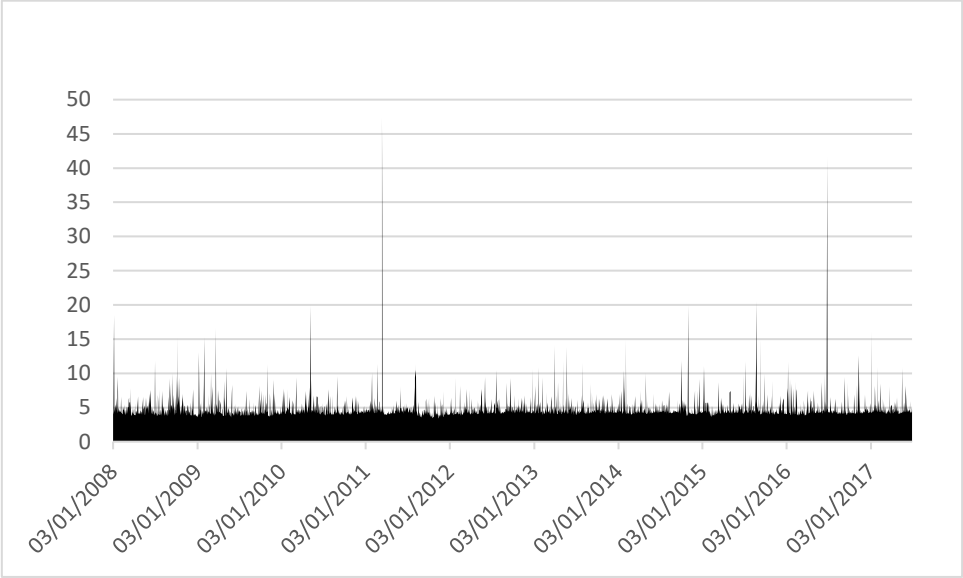


Figure 571: Total Average Dynamic Connectedness Other Transportation

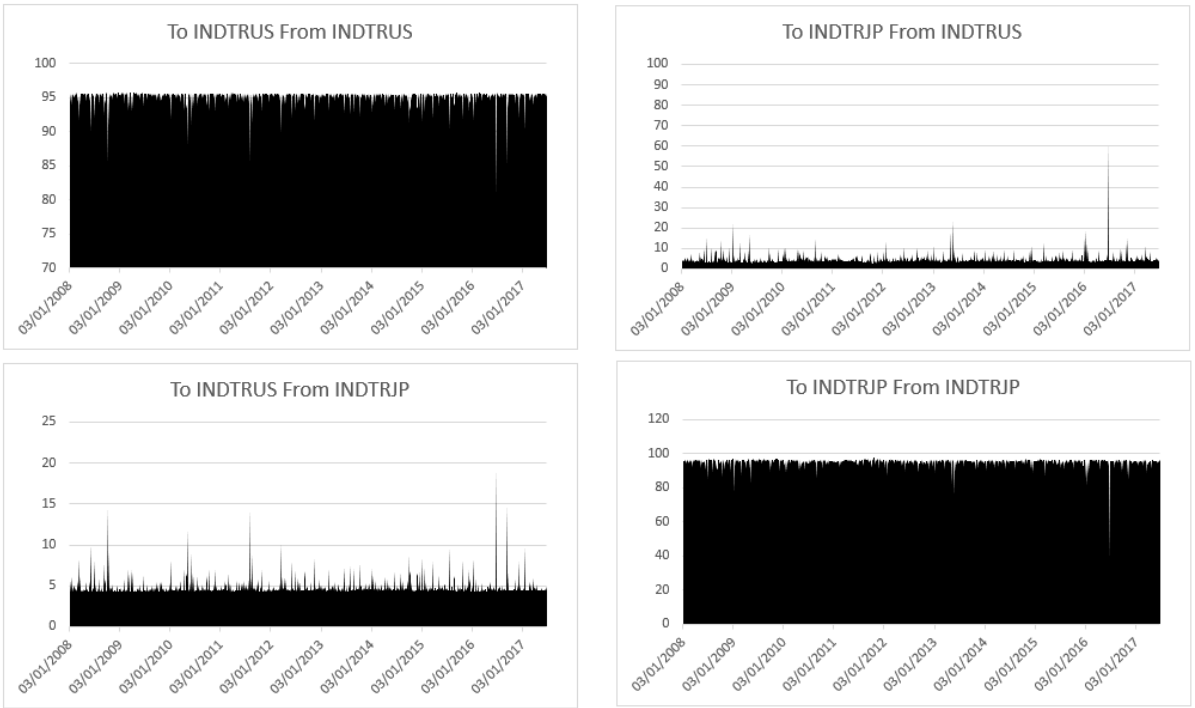


Figure 572: Net Pairwise Directional Connectedness Other Transportation

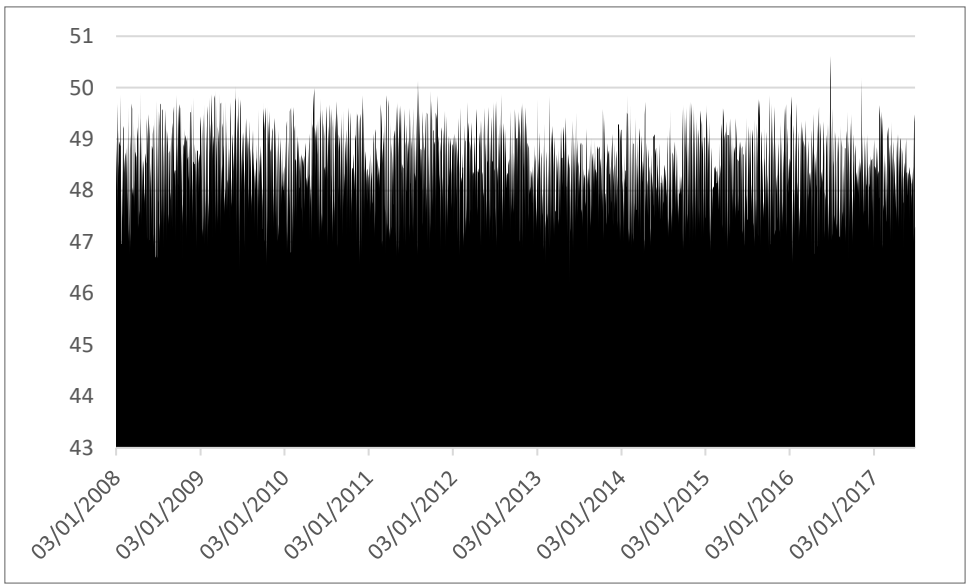


Figure 573: Total Average Dynamic Connectedness Machinery

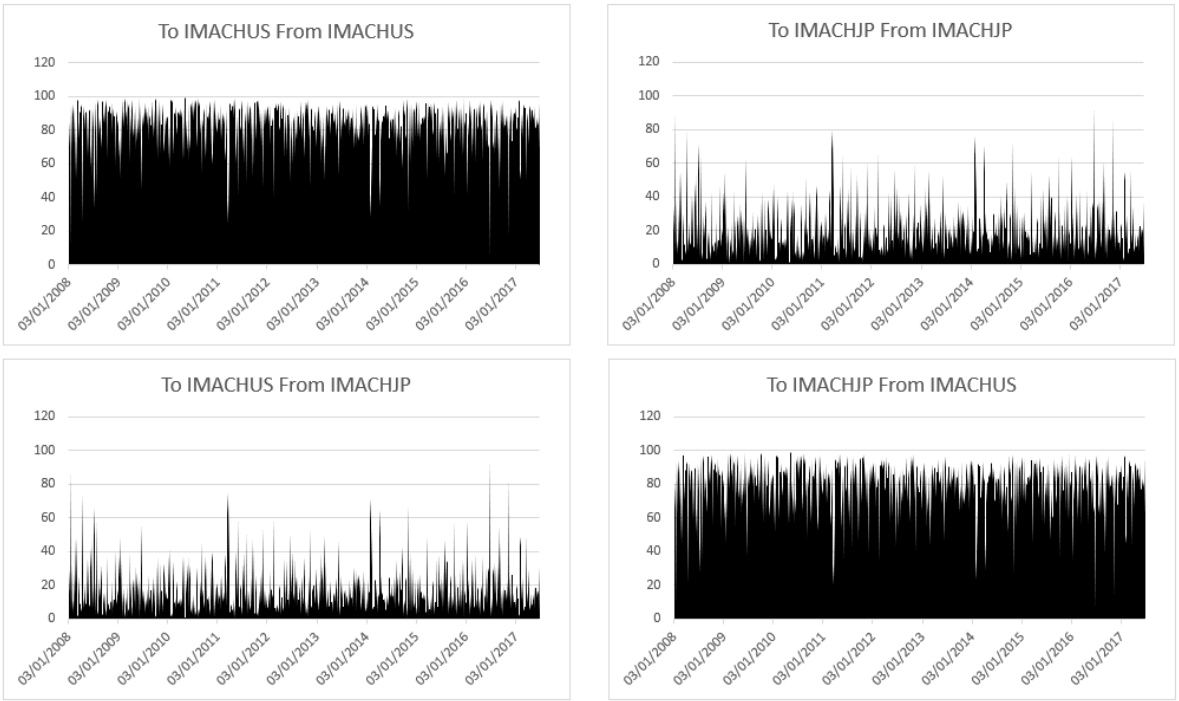


Figure 574: Net Pairwise Directional Connectedness Machinery

Credit Default Swap and Equity Connectedness

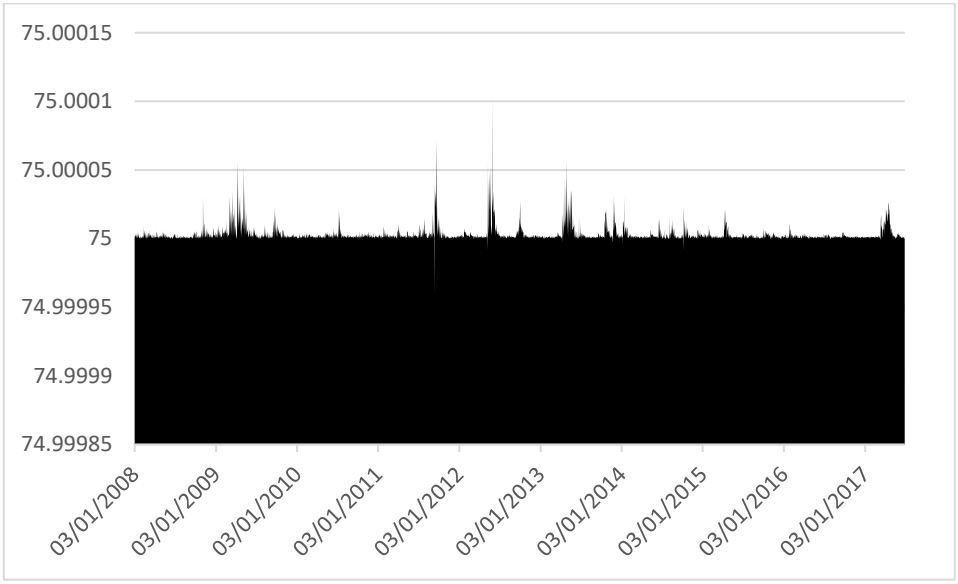


Figure 575: Total Average Dynamic Connectedness Leisure

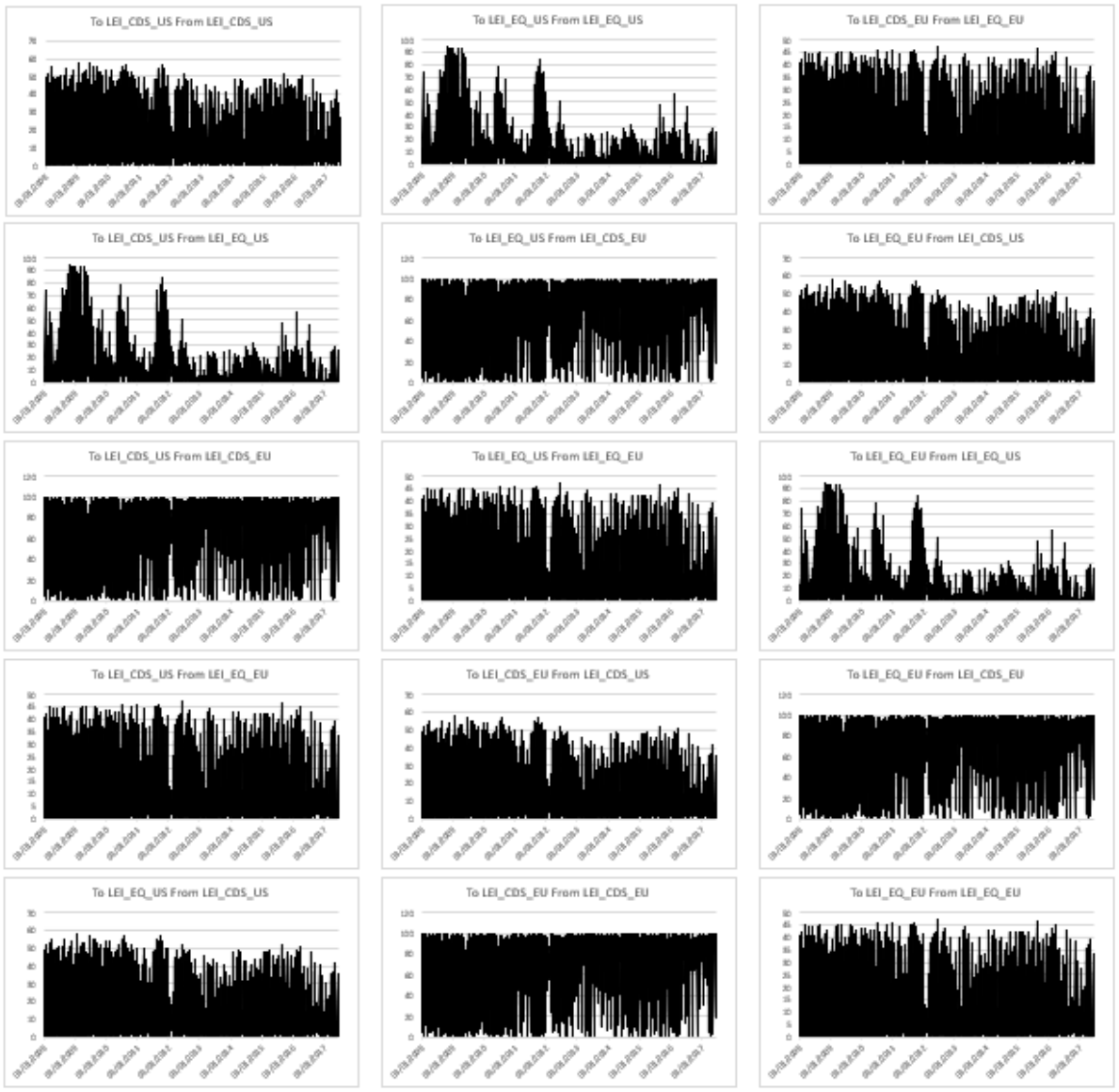


Figure 576: Net Pairwise Directional Connectedness Leisure

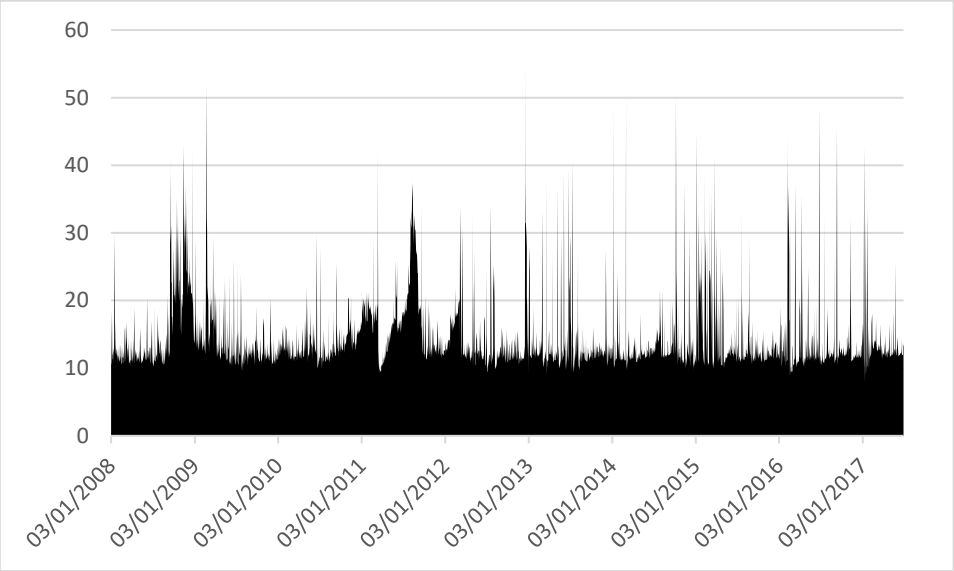


Figure 577: Total Average Dynamic Connectedness Industrials

Figure 578: Net Pairwise Directional Connectedness Industrials

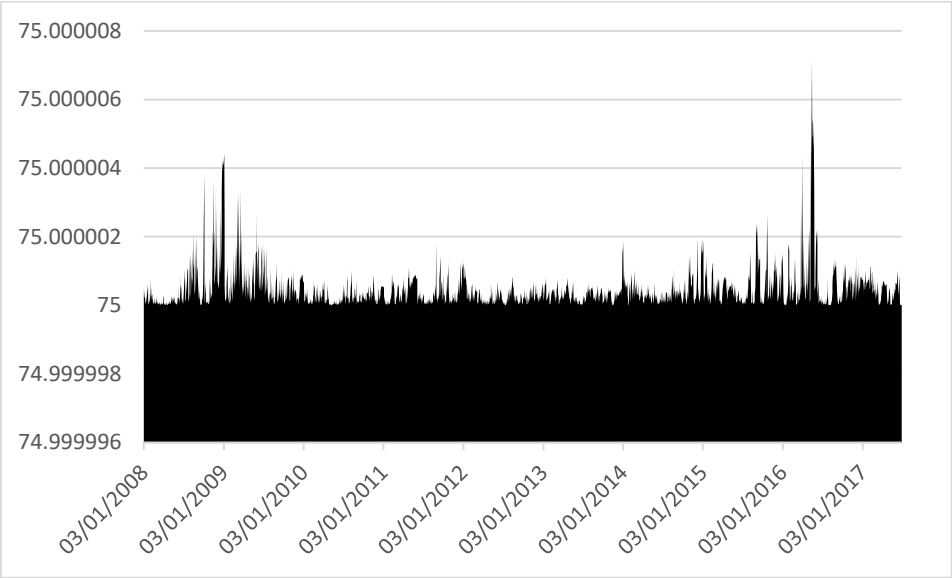


Figure 579: Total Average Dynamic Connectedness Oil & Gas

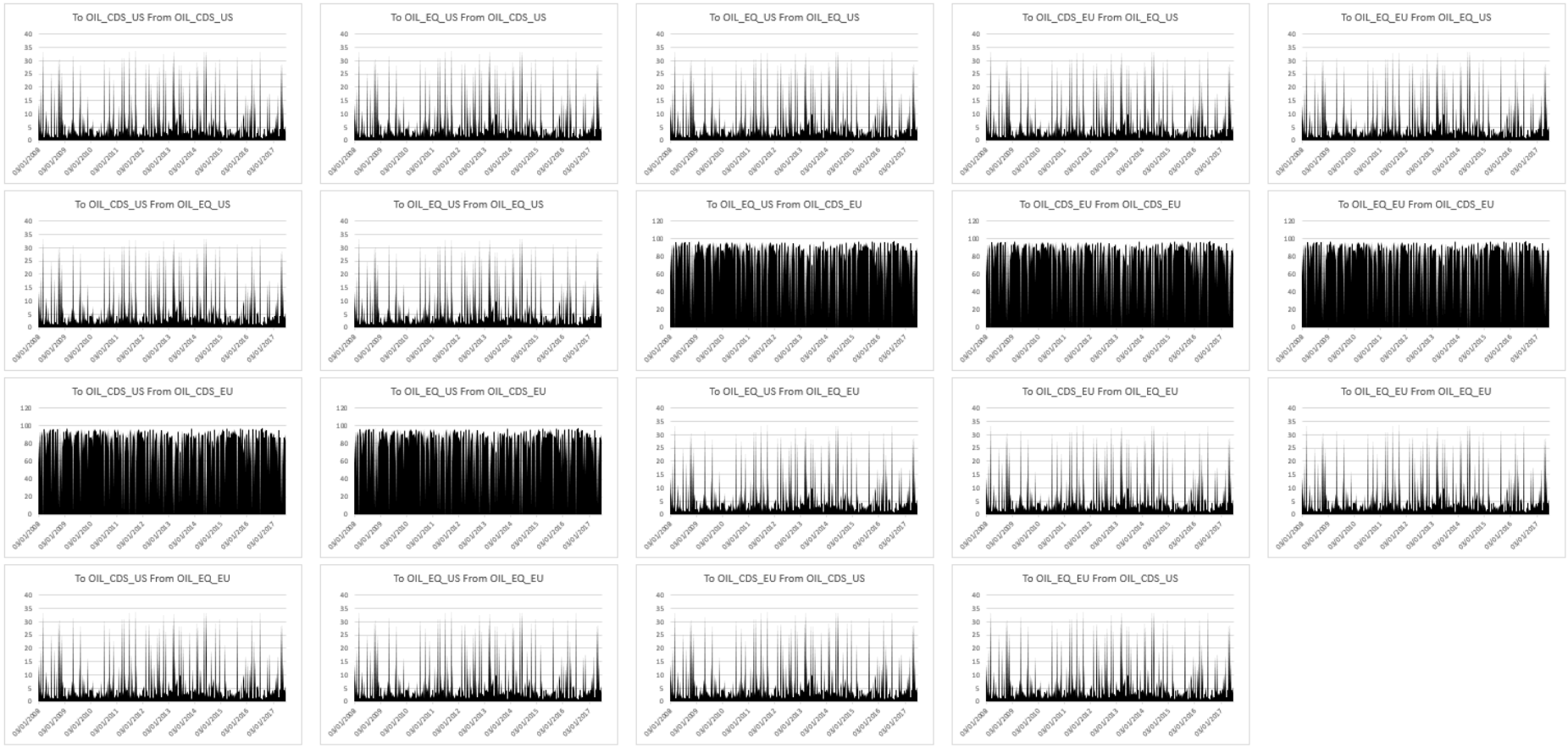


Figure 580: Net Pairwise Directional Connectedness Oil & Gas

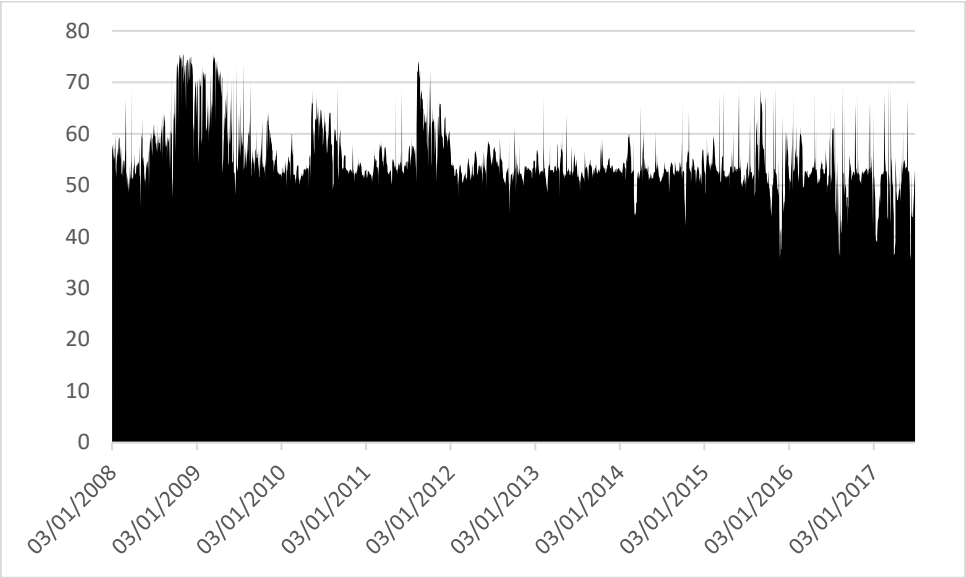


Figure 581: Total Average Dynamic Connectedness Cable Media

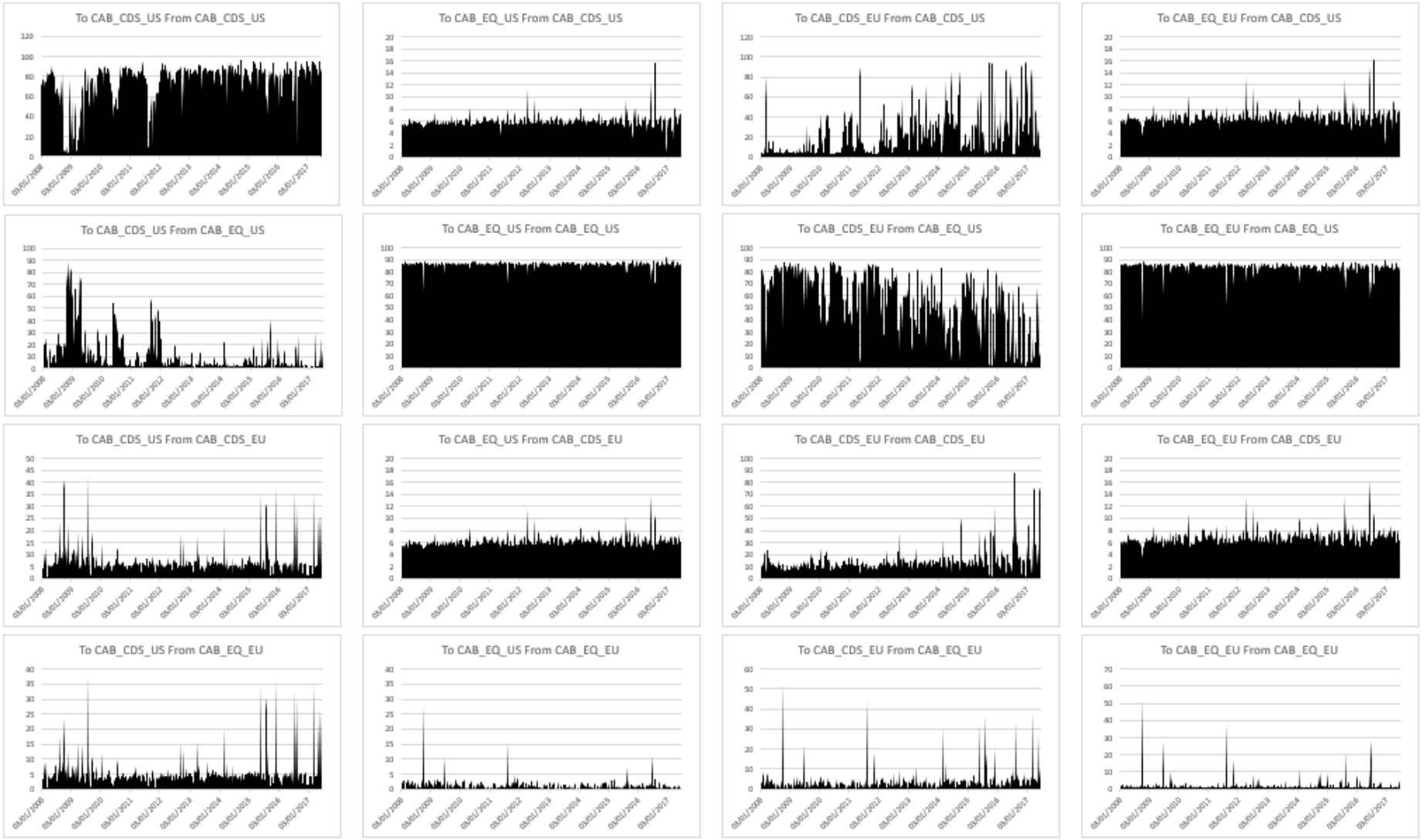


Figure 582: Net Pairwise Directional Connectedness Cable Media

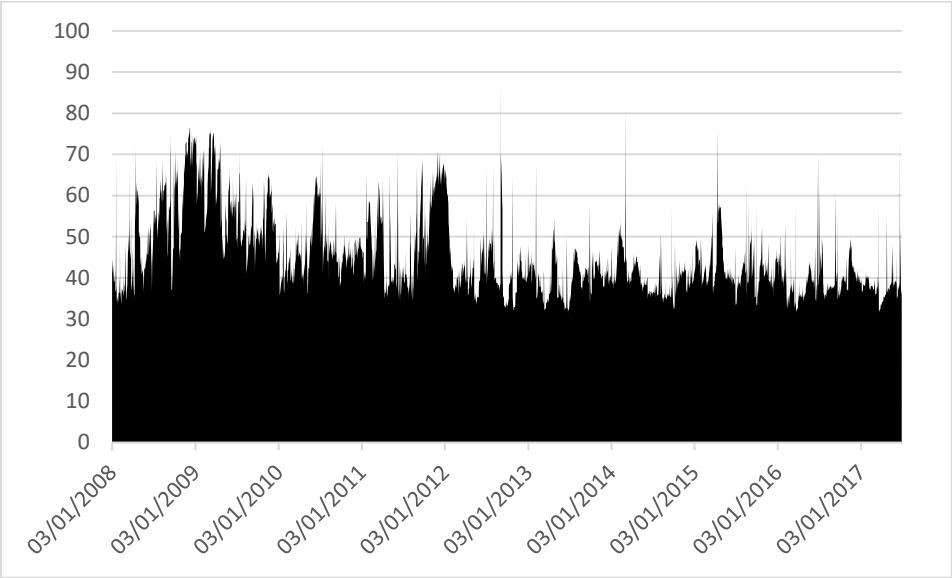


Figure 583: Total Average Dynamic Connectedness Conglomerate Diversified

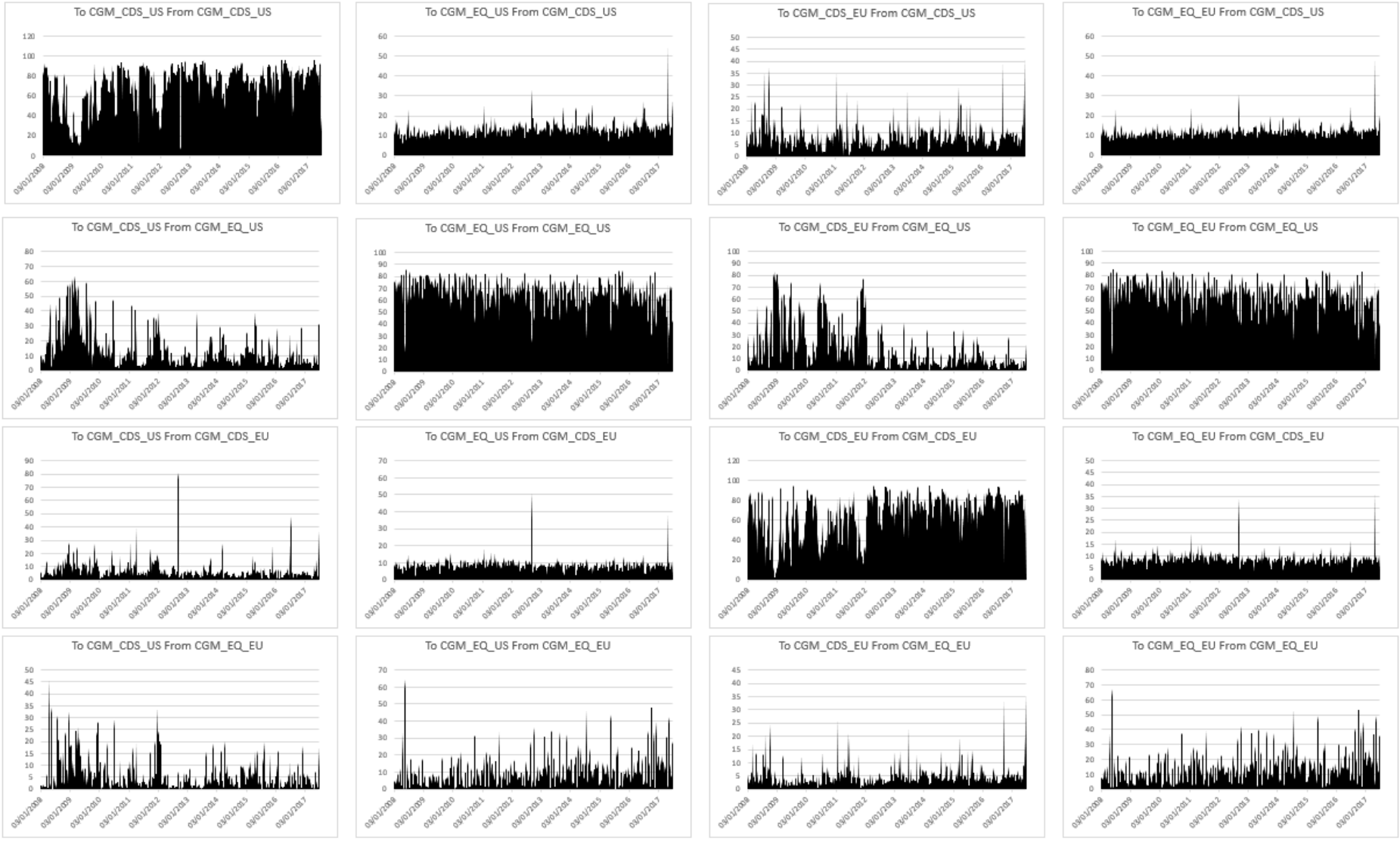


Figure 584: Net Pairwise Directional Connectedness Conglomerate Diversified Mfg

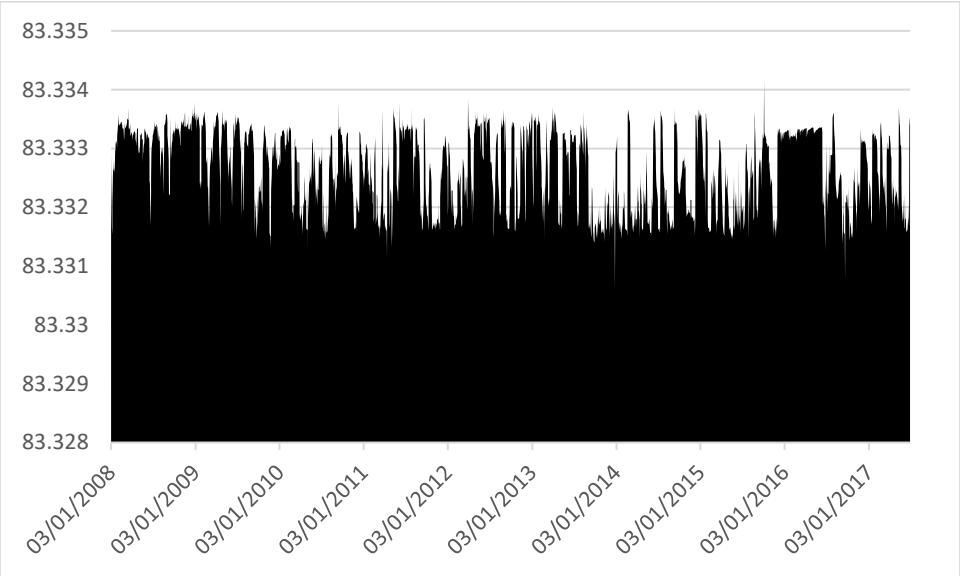


Figure 585: Total Average Dynamic Connectedness Other Financials II

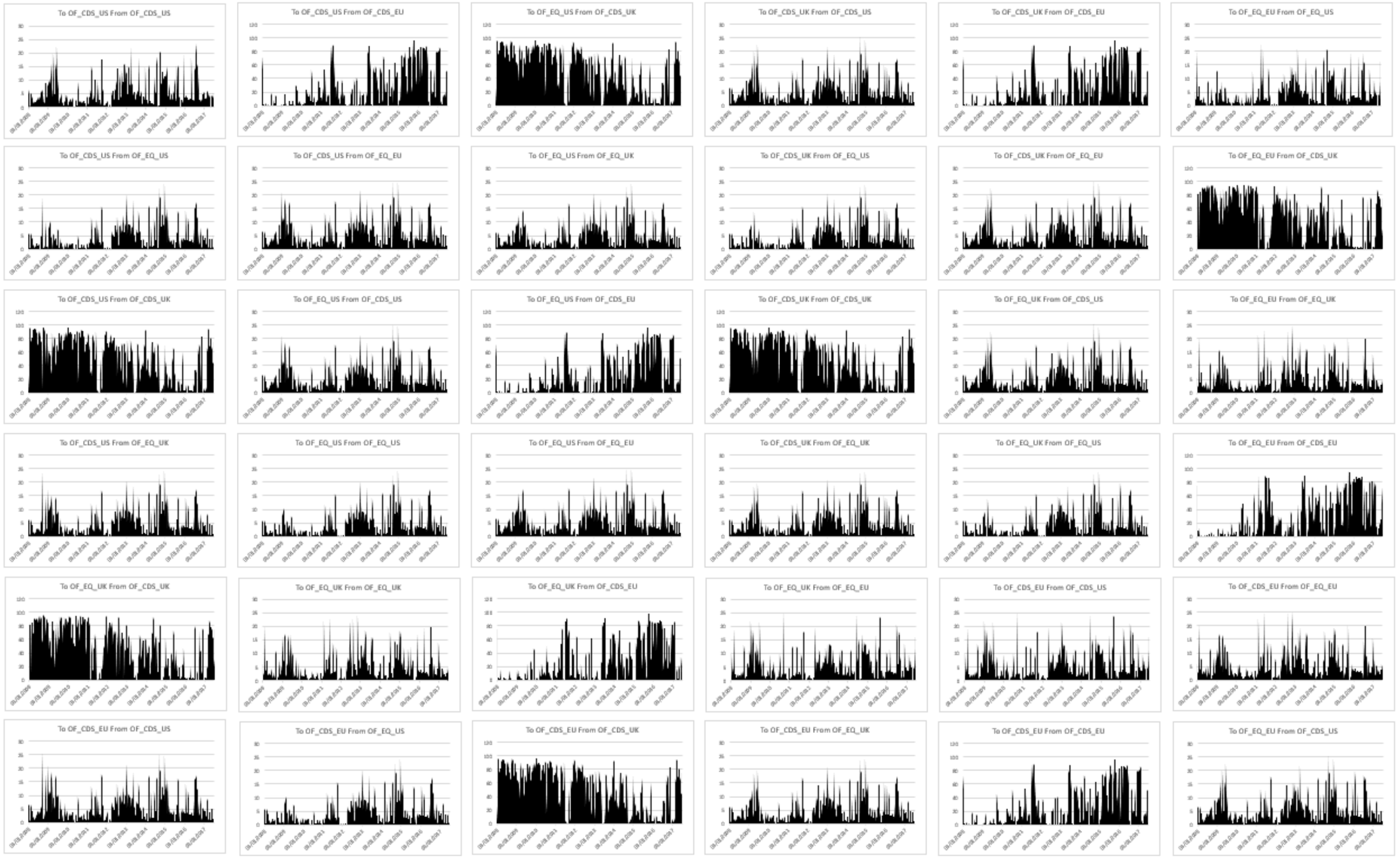


Figure 586: Net Pairwise Directional Connectedness Conglomerate Diversified Other Financials II

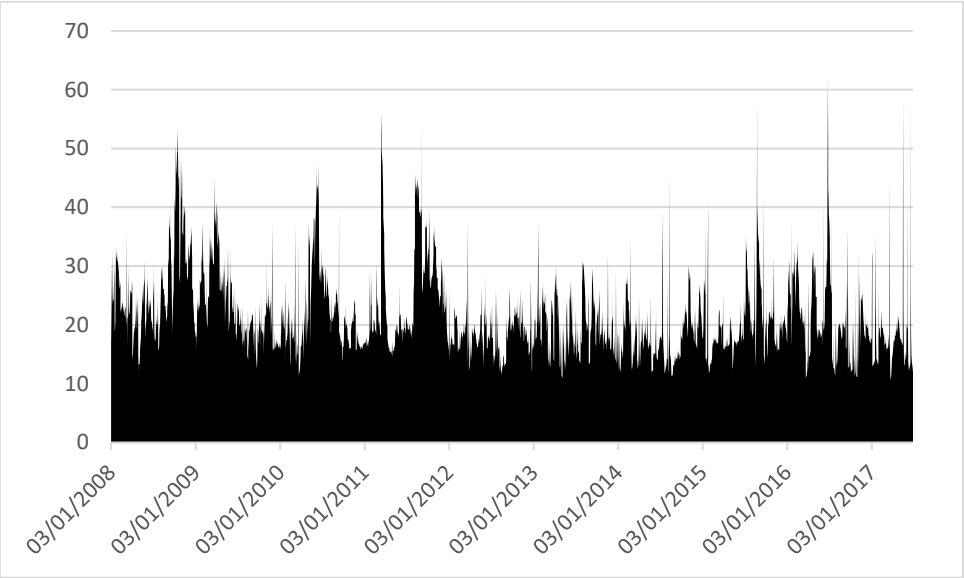


Figure 587: Total Average Dynamic Connectedness Transportation

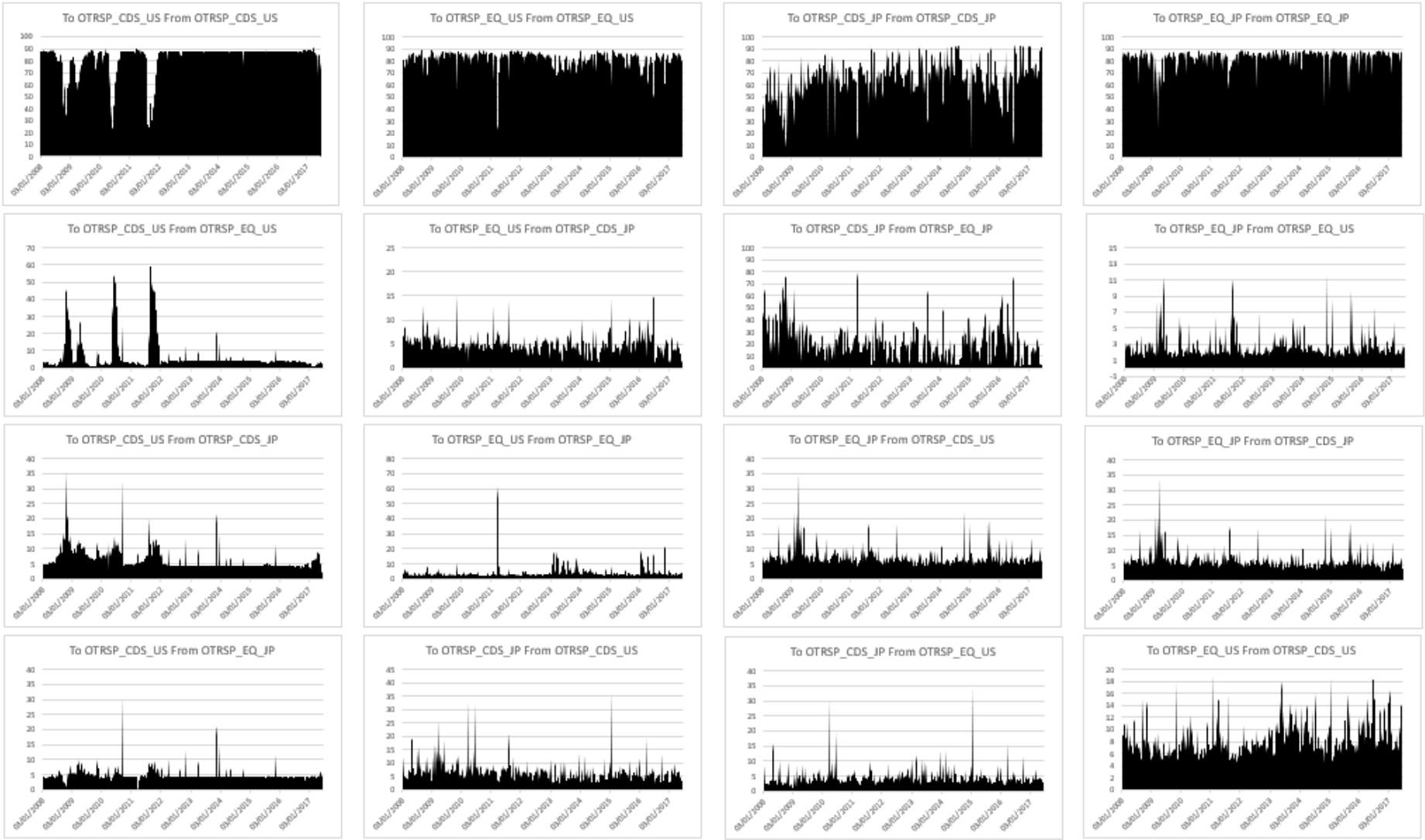


Figure 588: Net Pairwise Directional Connectedness Conglomerate Diversified Other Financials II

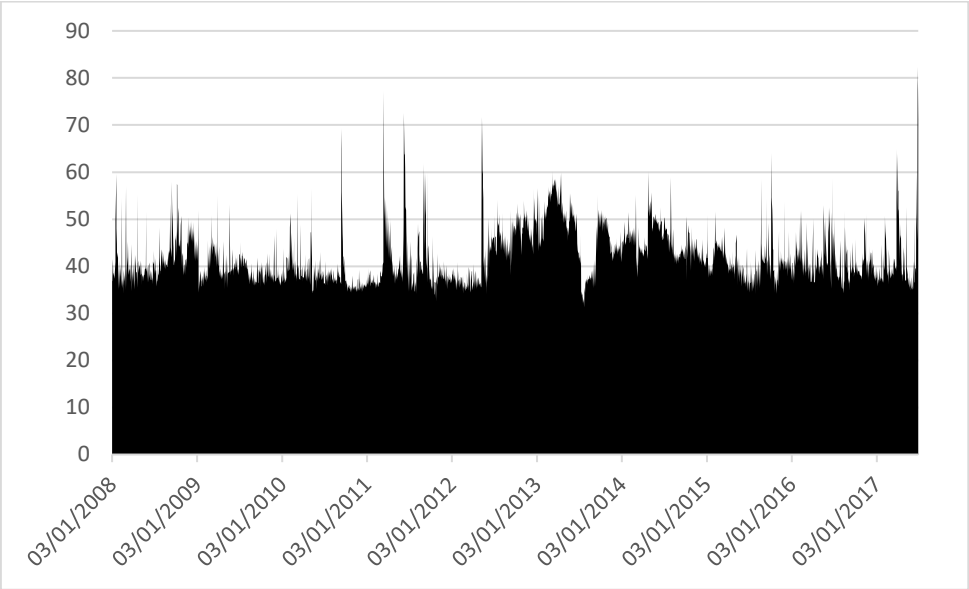


Figure 589: Total Average Dynamic Connectedness Utilities

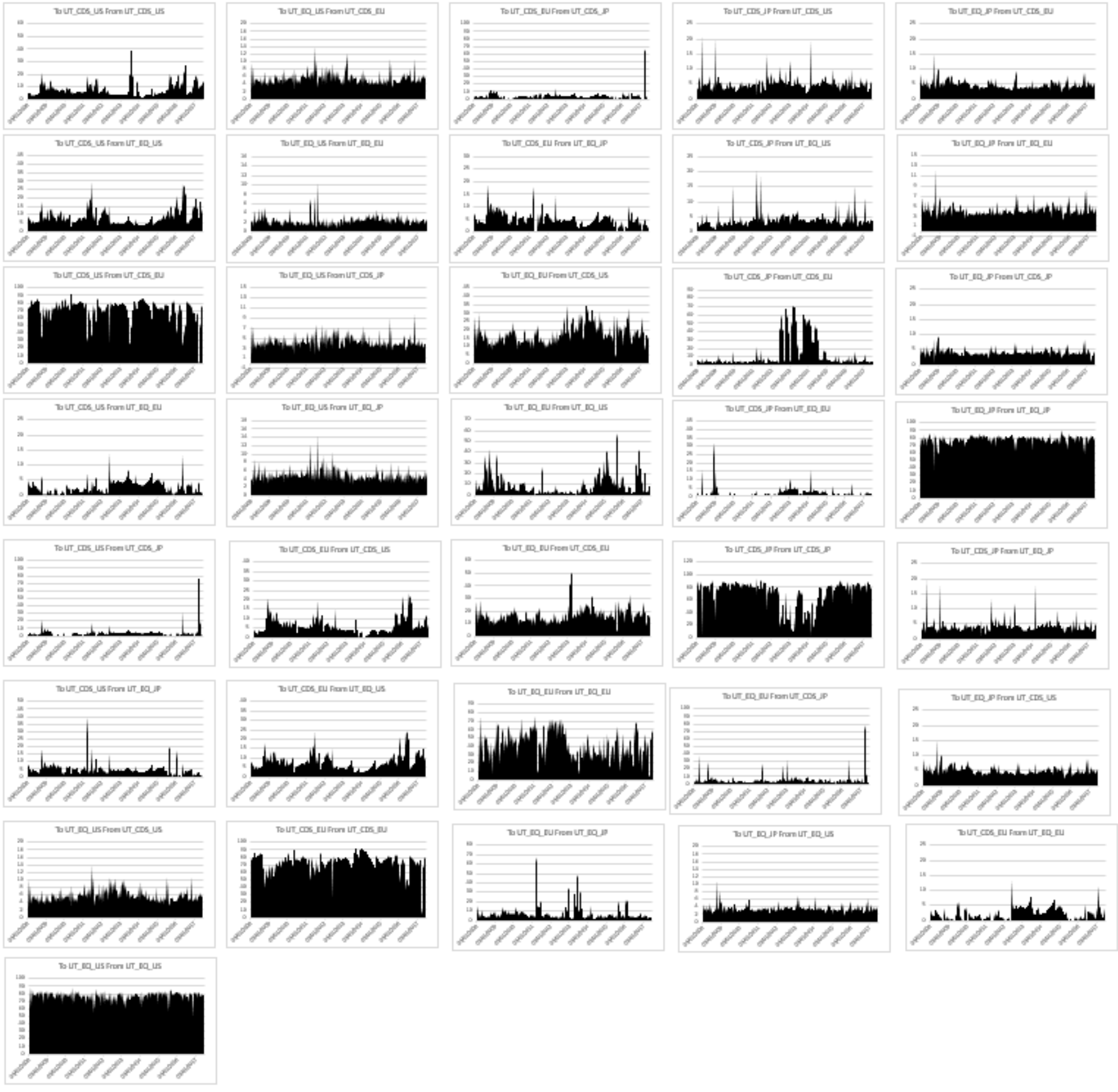


Figure 590: Net Pairwise Directional Connectedness Utilities

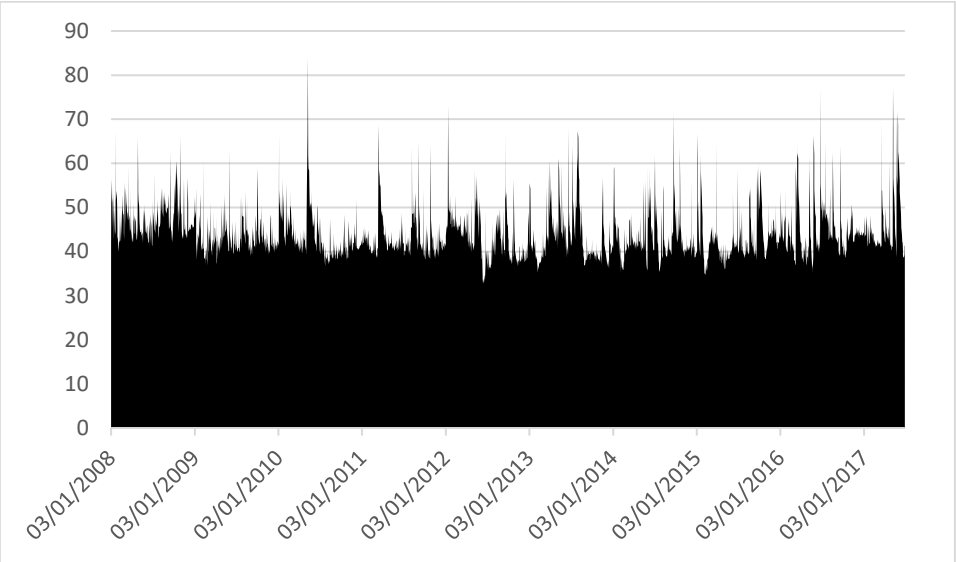


Figure 591: Total Average Dynamic Connectedness Retail Stores

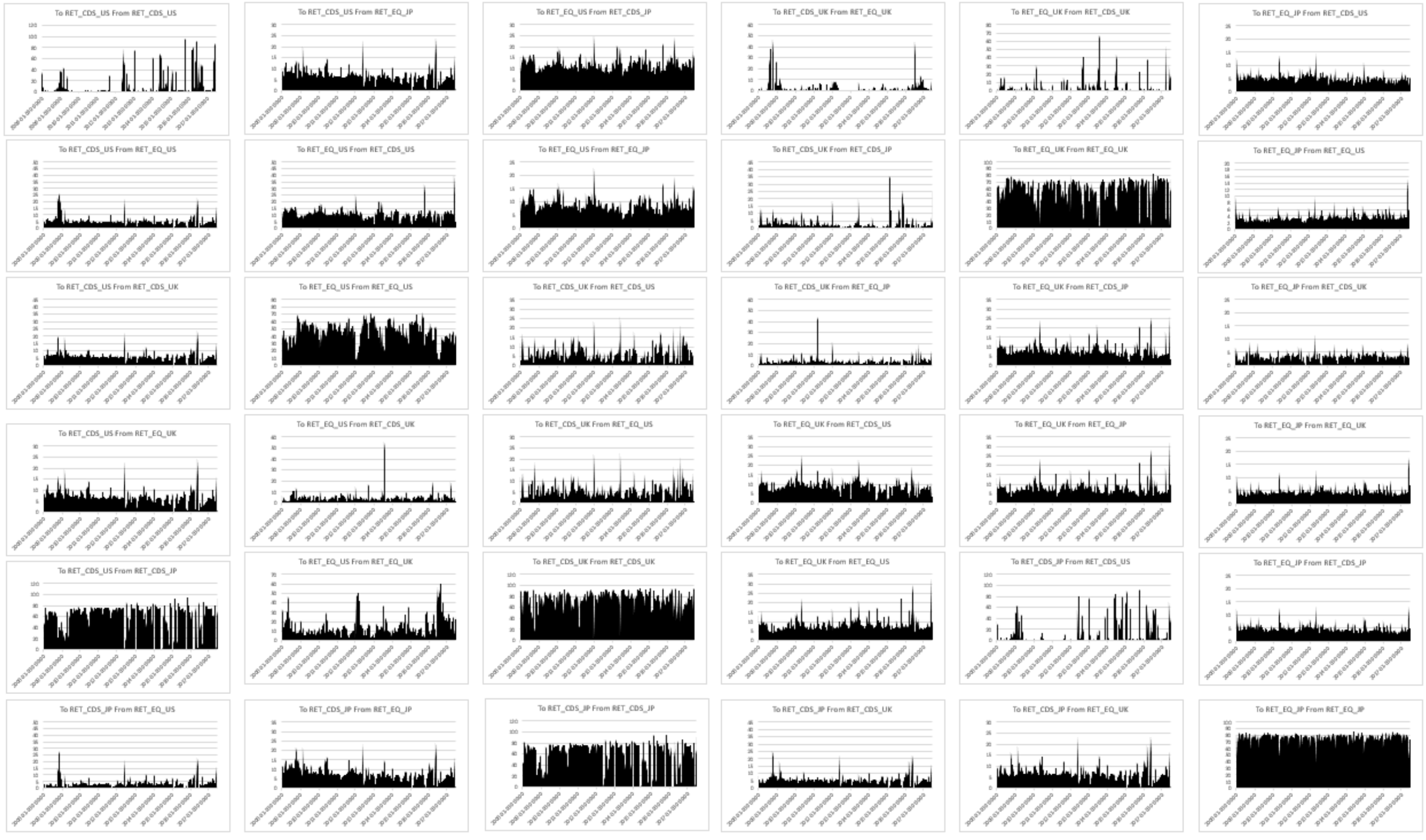


Figure 592: Net Pairwise Directional Connectedness Retail Stores

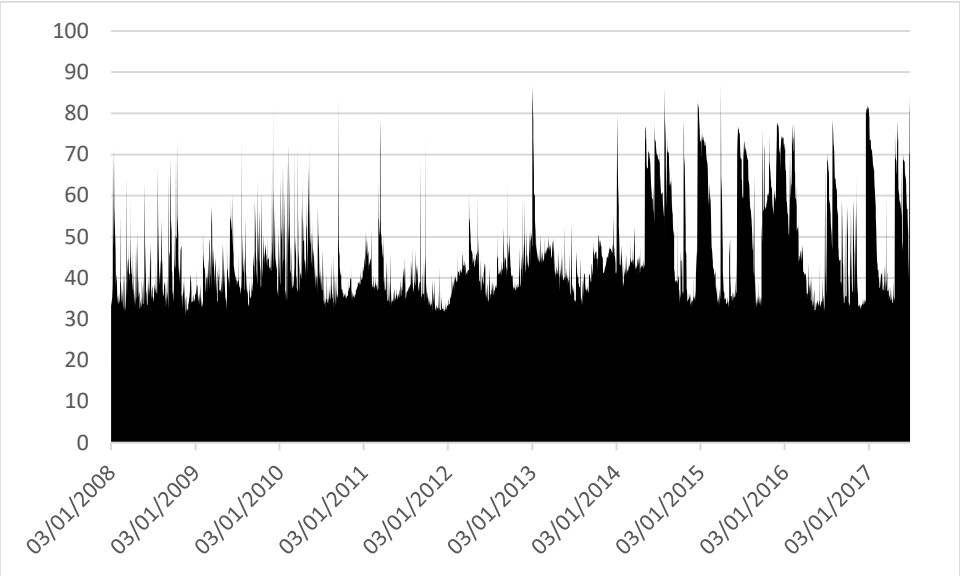


Figure 593: Total Average Dynamic Connectedness Metals & Mining

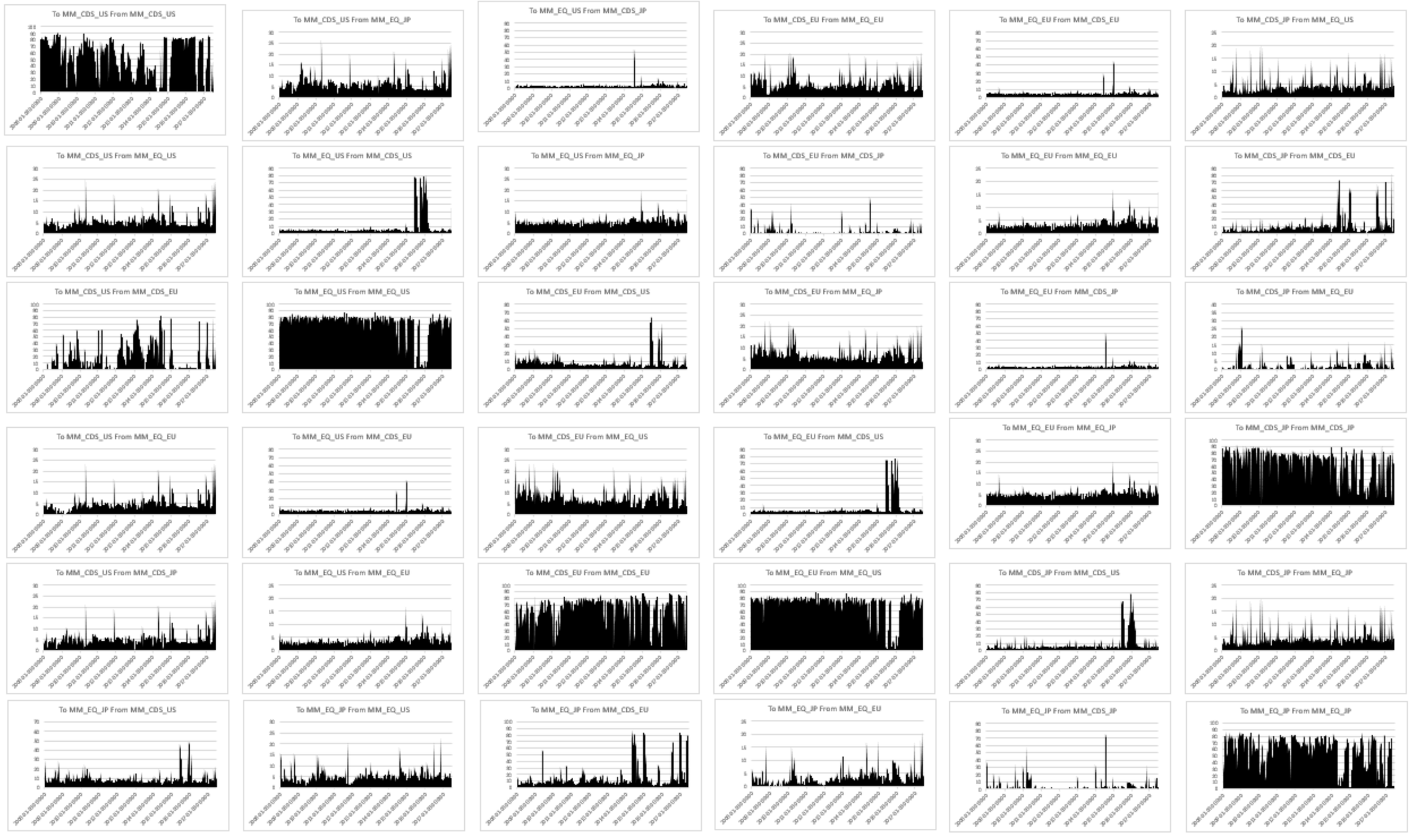


Figure 594: Net Pairwise Directional Connectedness Metals & Mining

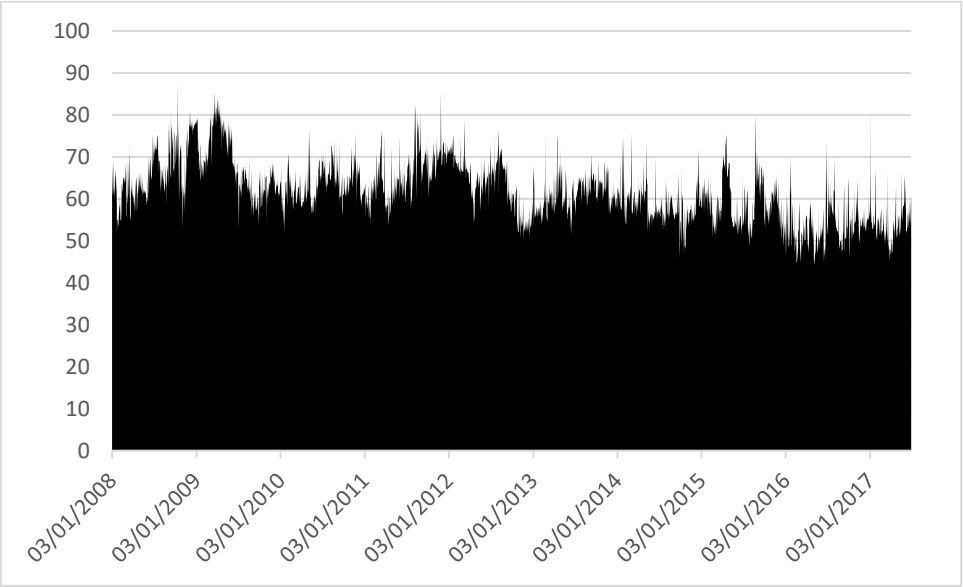


Figure 595: Total Average Dynamic Connectedness Electronics

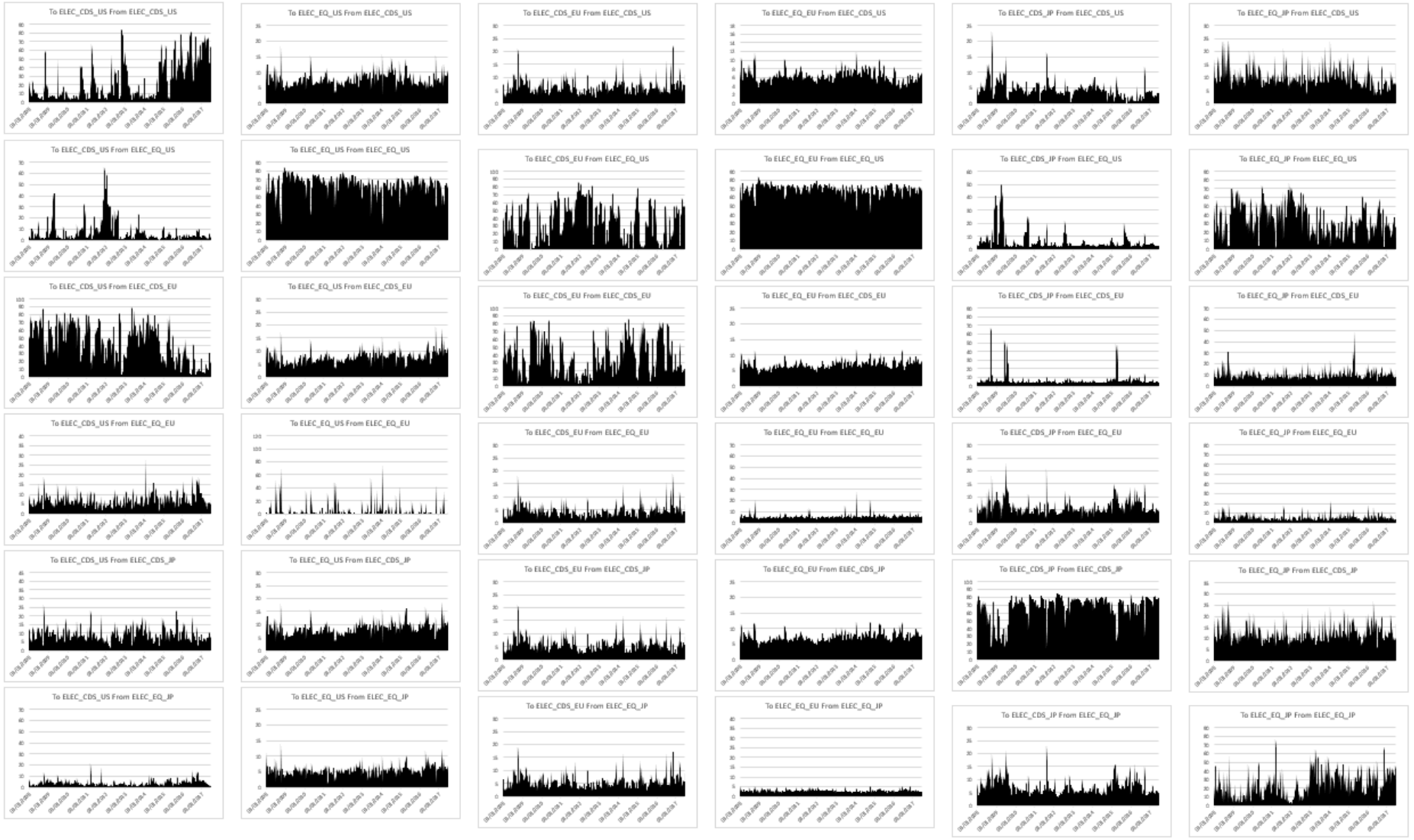


Figure 596: Net Pairwise Directional Connectedness Electronics

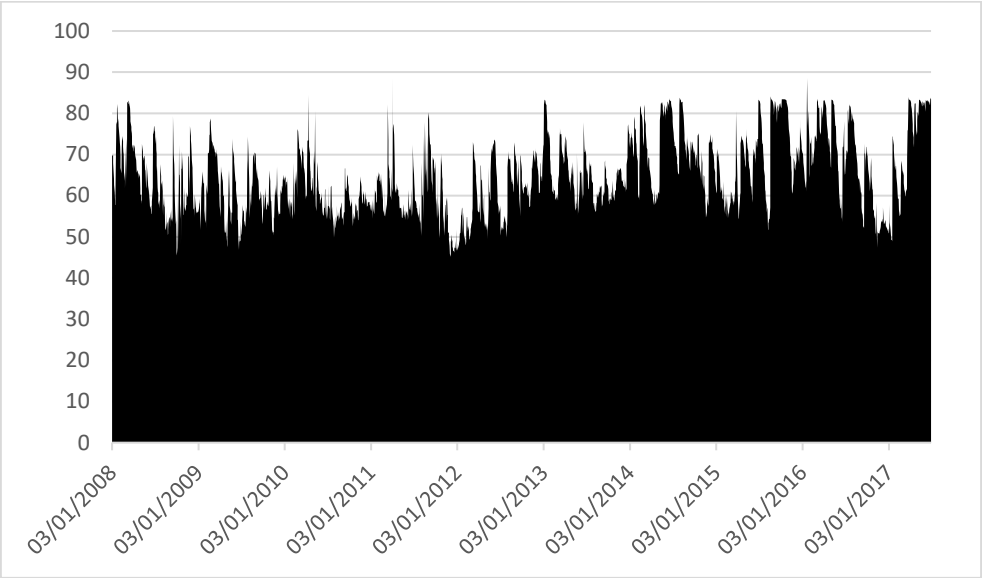


Figure 597: Total Average Dynamic Connectedness Chemicals

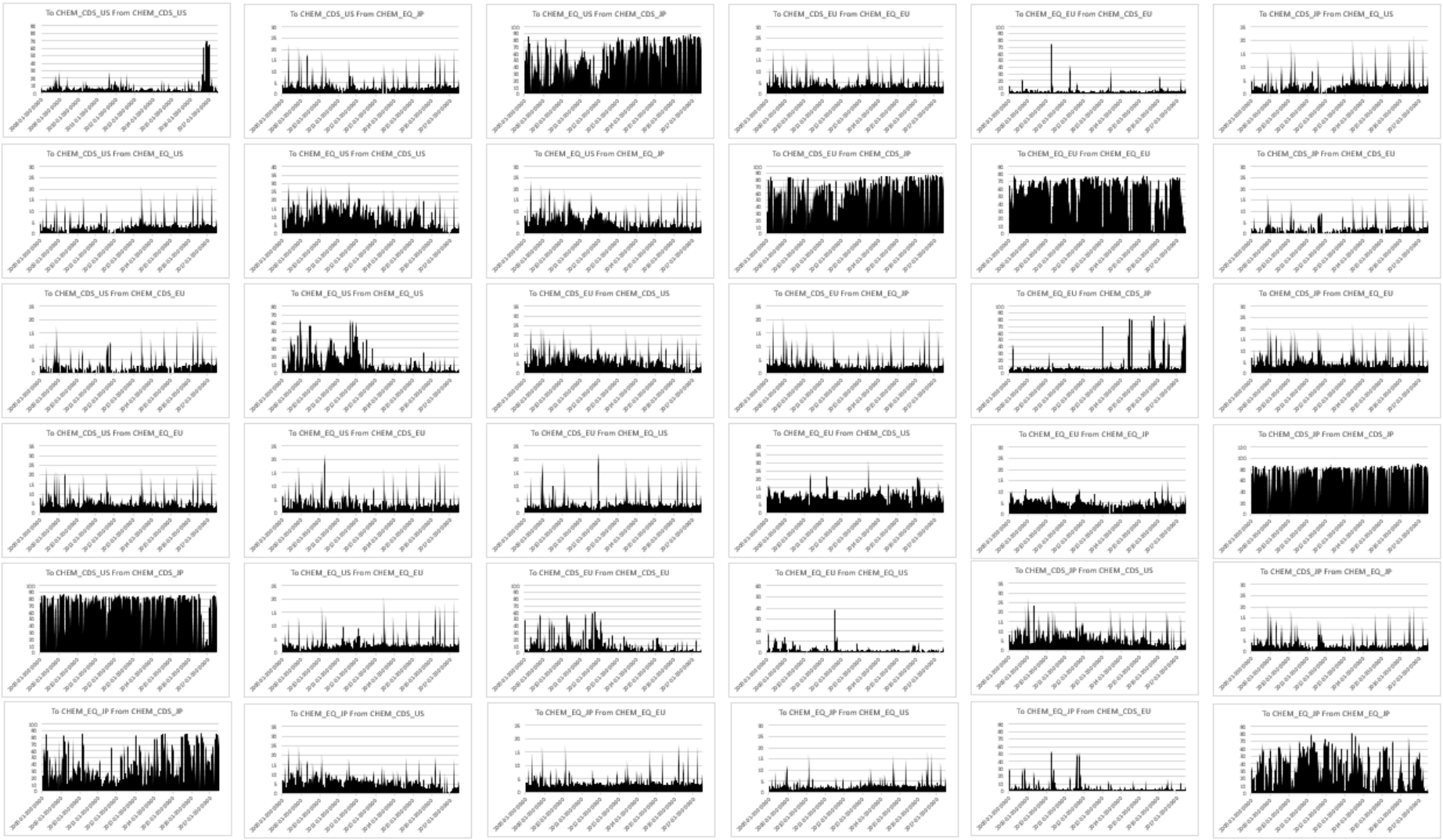


Figure 598: Net Pairwise Directional Connectedness Chemicals

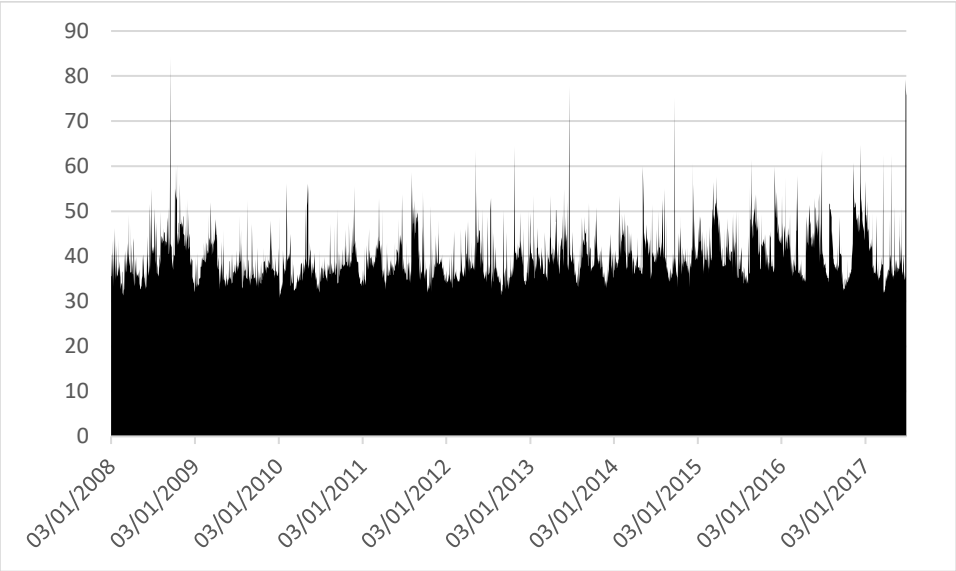


Figure 599: Total Average Dynamic Connectedness Consumer Goods

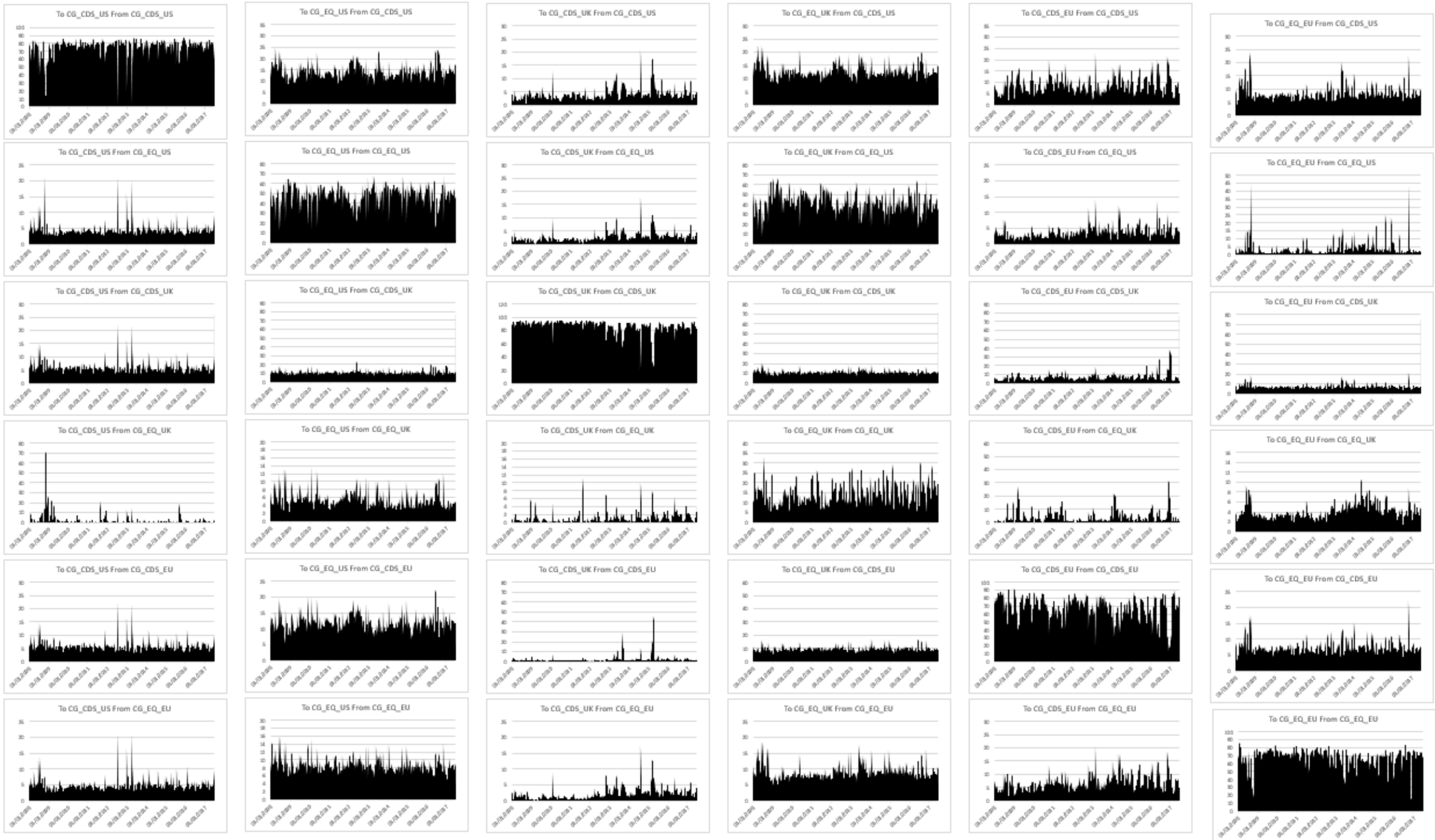


Figure 600: Net Pairwise Directional Connectedness Consumer Goods

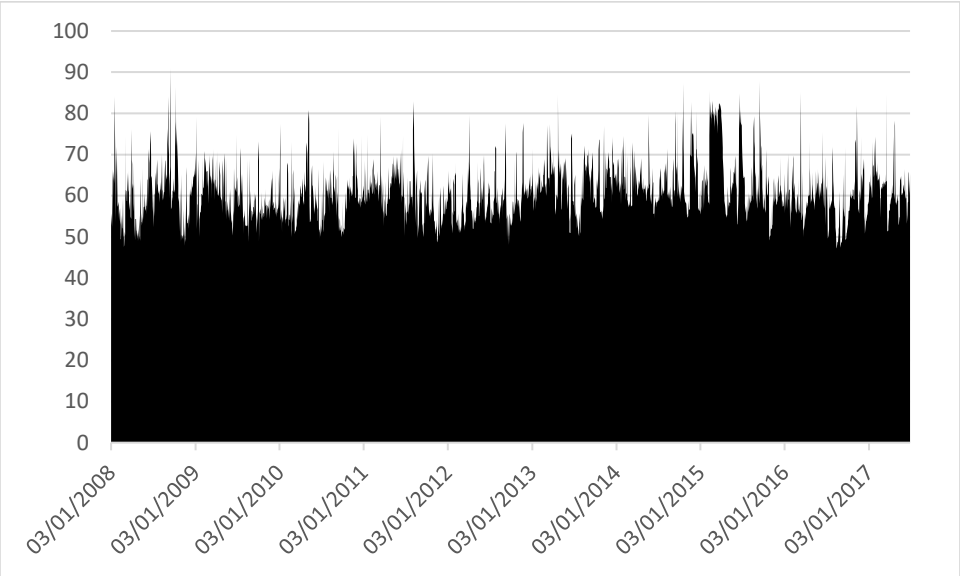


Figure 601: Total Average Dynamic Connectedness Beverages and Bottling

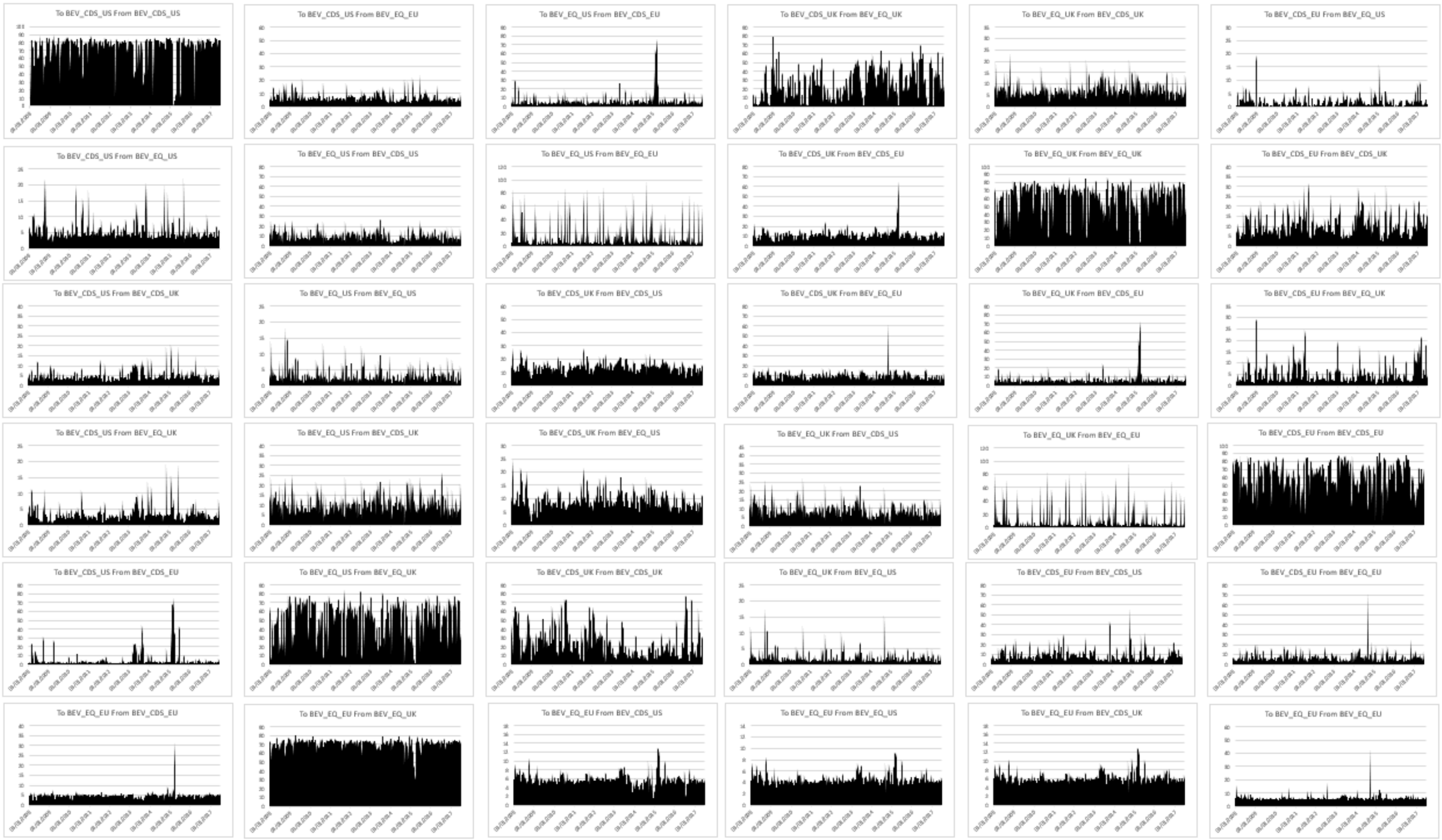


Figure 602: Net Pairwise Directional Connectedness Beverages and Bottling

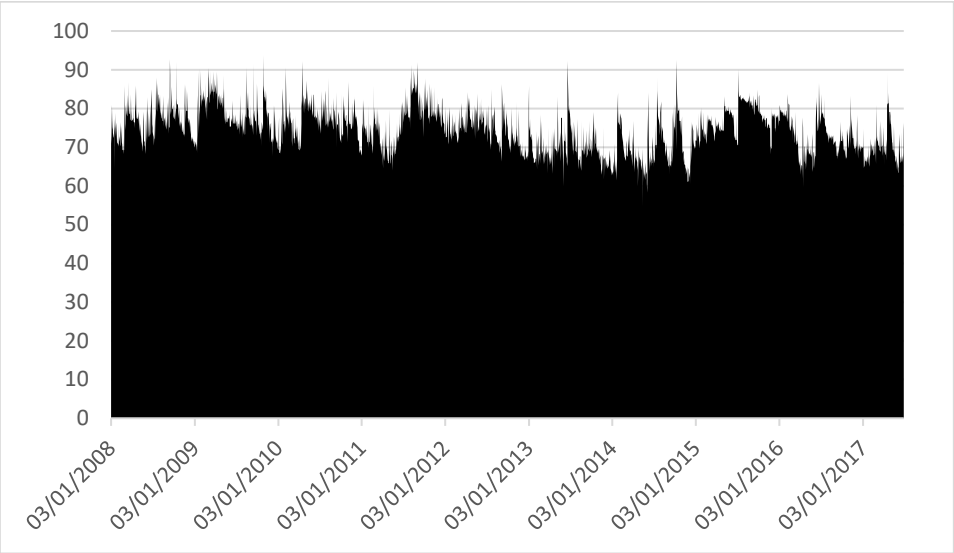


Figure 603: Total Average Dynamic Connectedness Banking

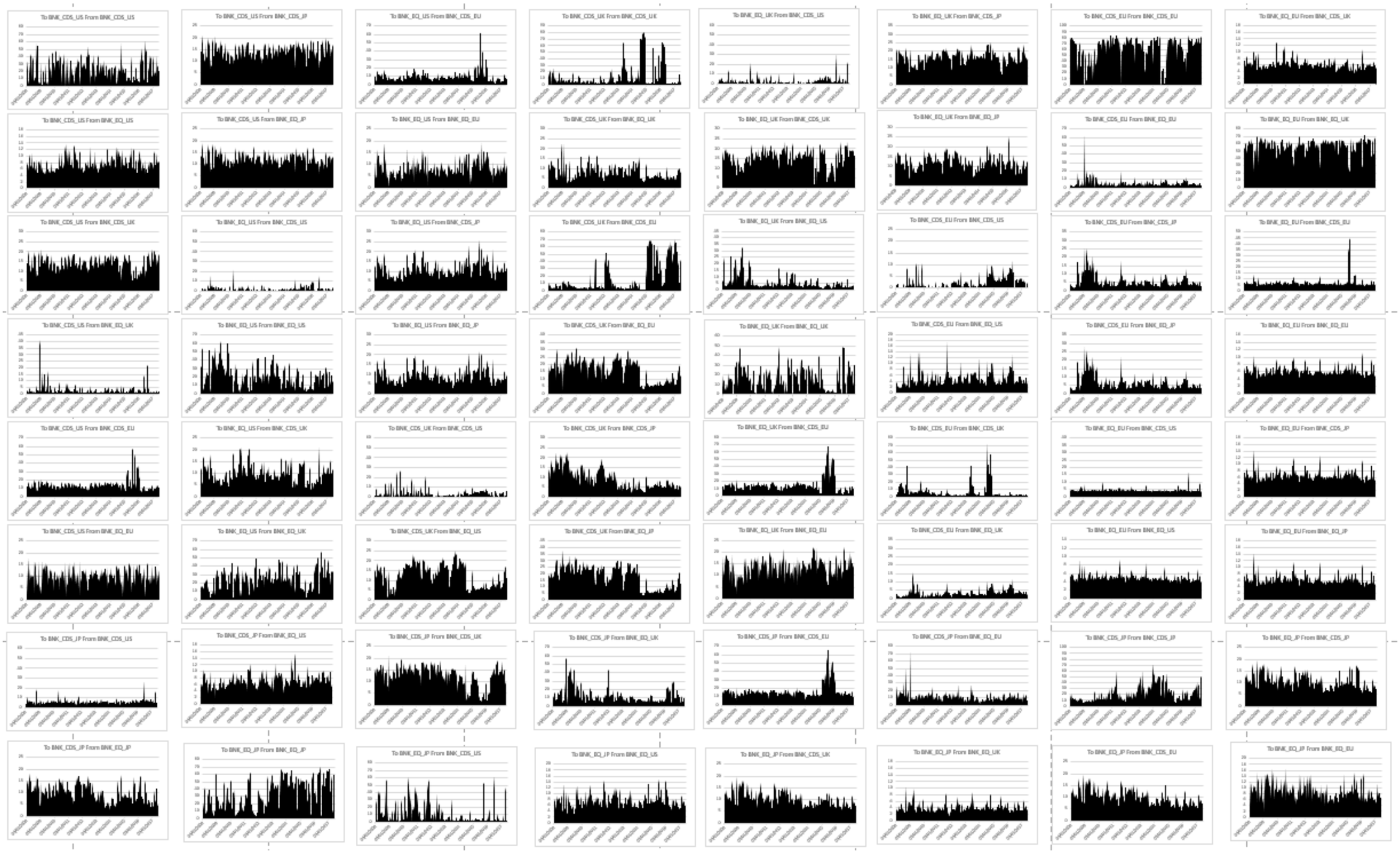


Figure 604: Net Pairwise Directional Connectedness Banking

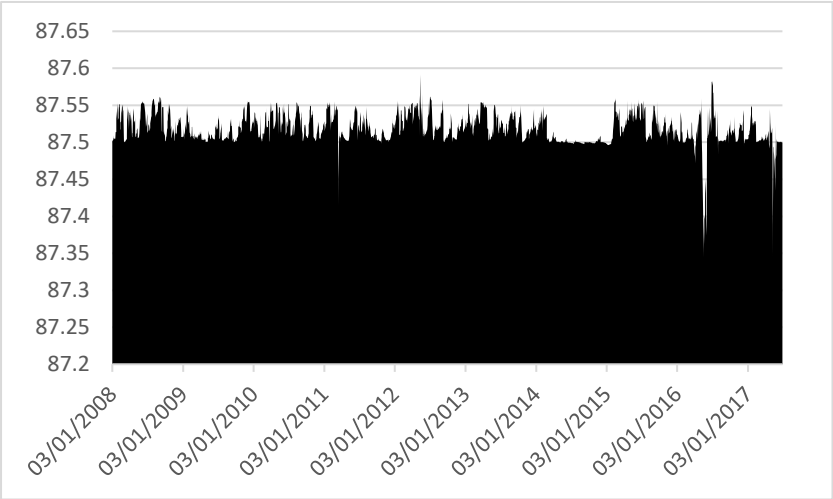


Figure 605: Total Average Dynamic Connectedness Consumer Services

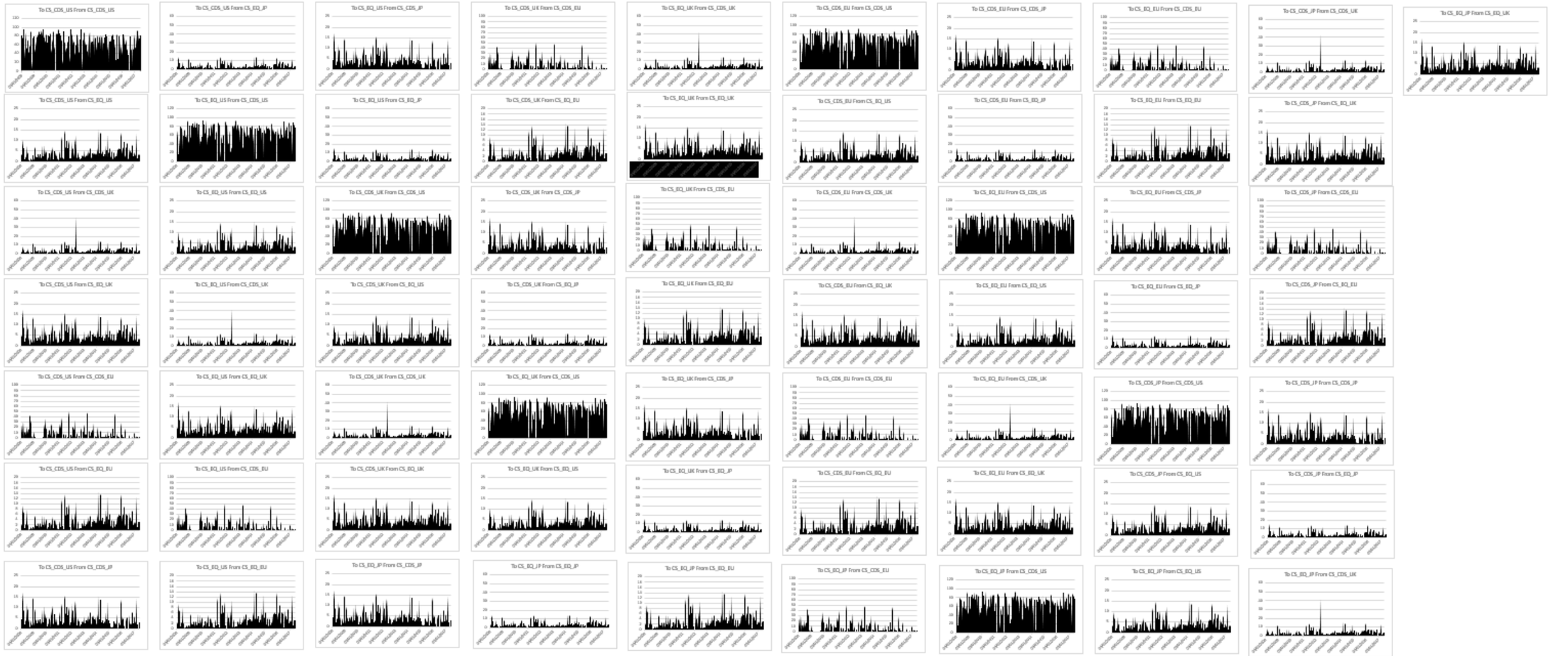


Figure 606: Net Pairwise Directional Connectedness Consumer Services

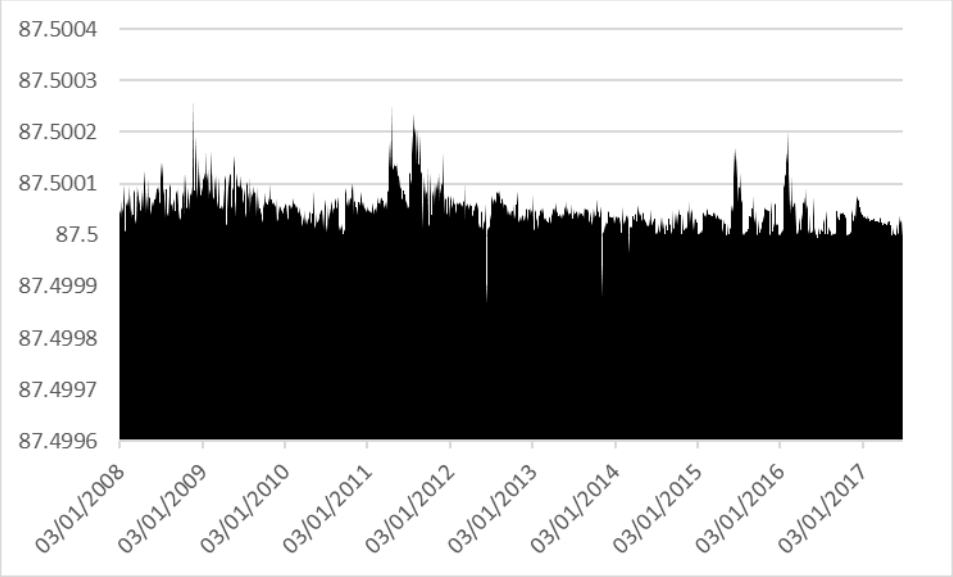


Figure 607: Total Average Dynamic Connectedness Other Consumer Services

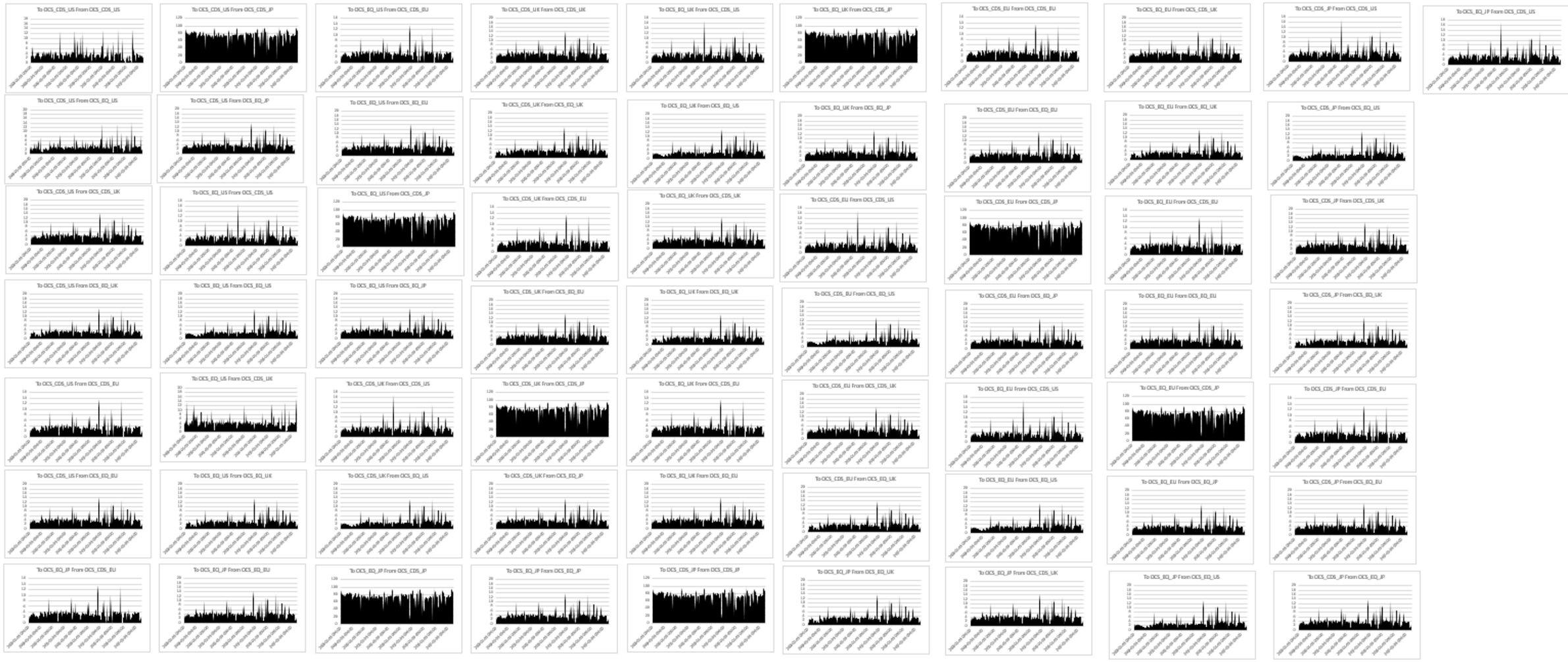


Figure 608: Net Pairwise Directional Connectedness Other Consumer Services

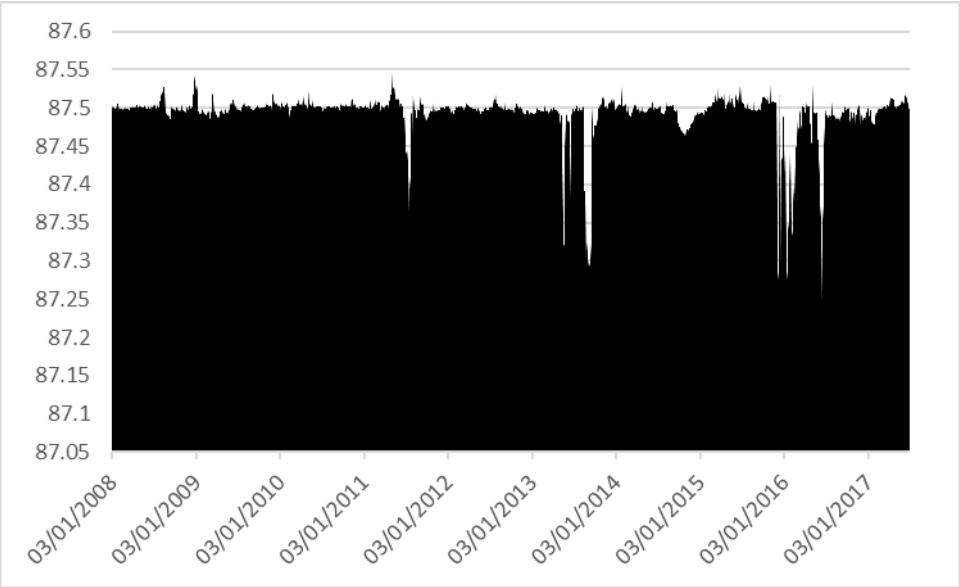


Figure 609: Total Average Dynamic Connectedness Other Financials

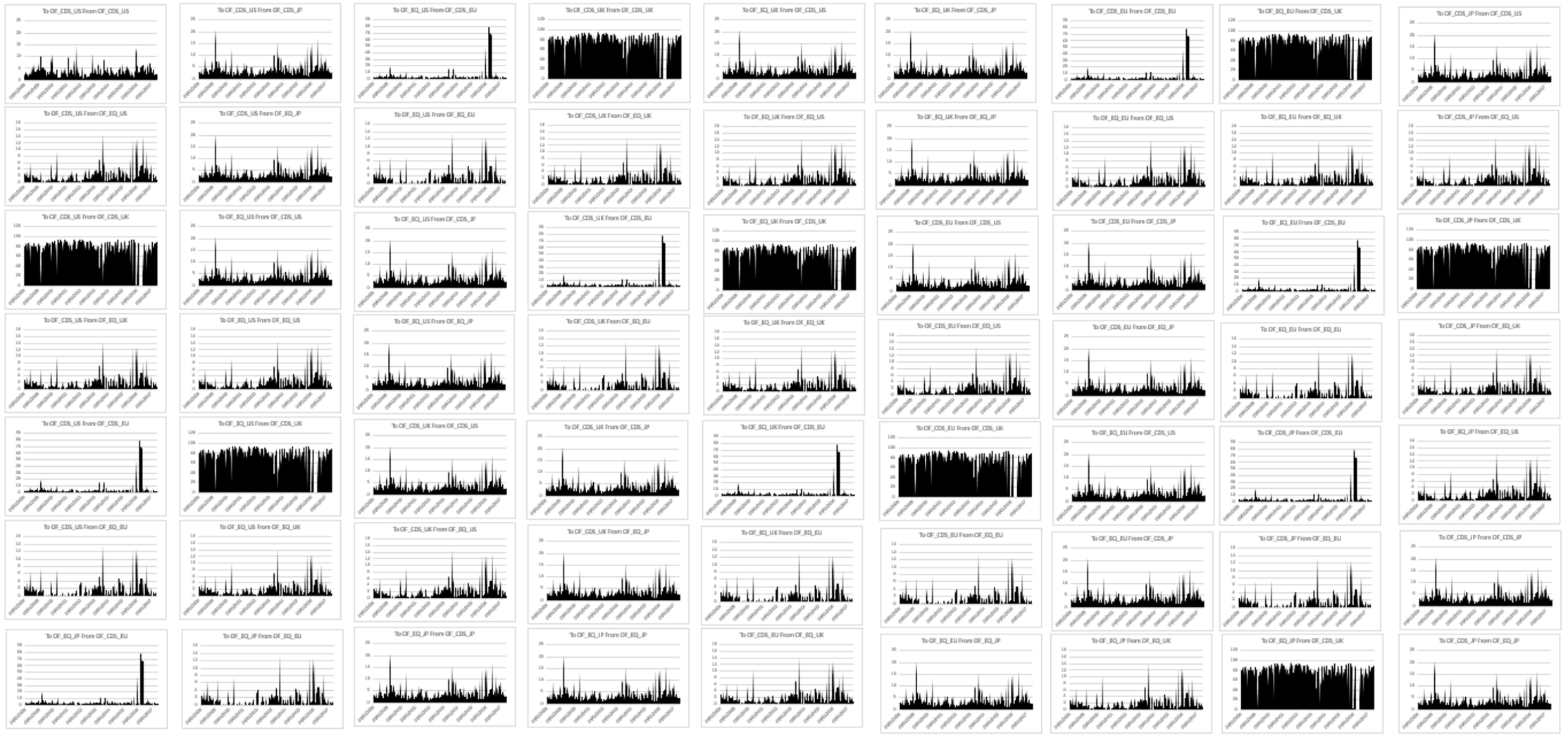


Figure 610: Net Pairwise Directional Connectedness Other Financials

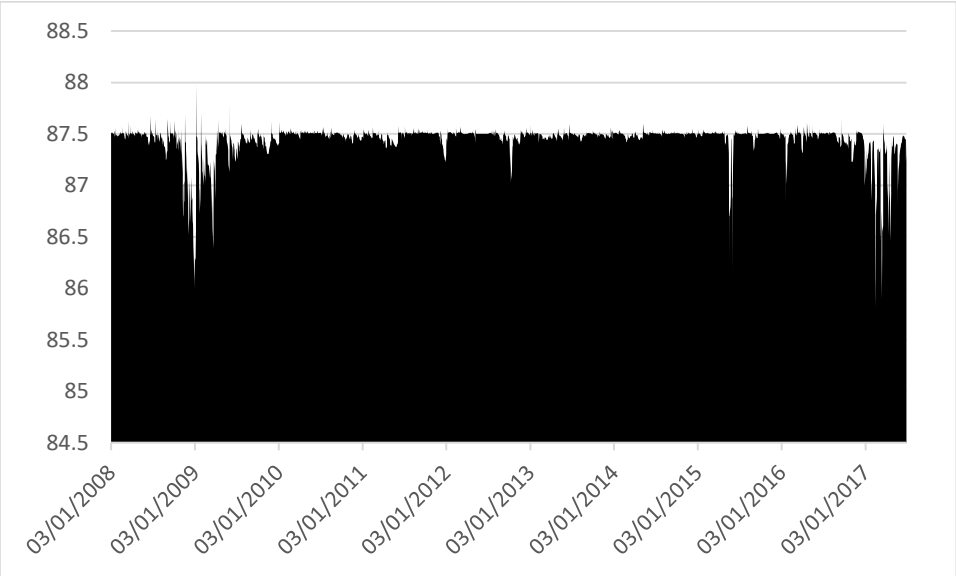


Figure 611: Total Average Dynamic Connectedness Telecommunications

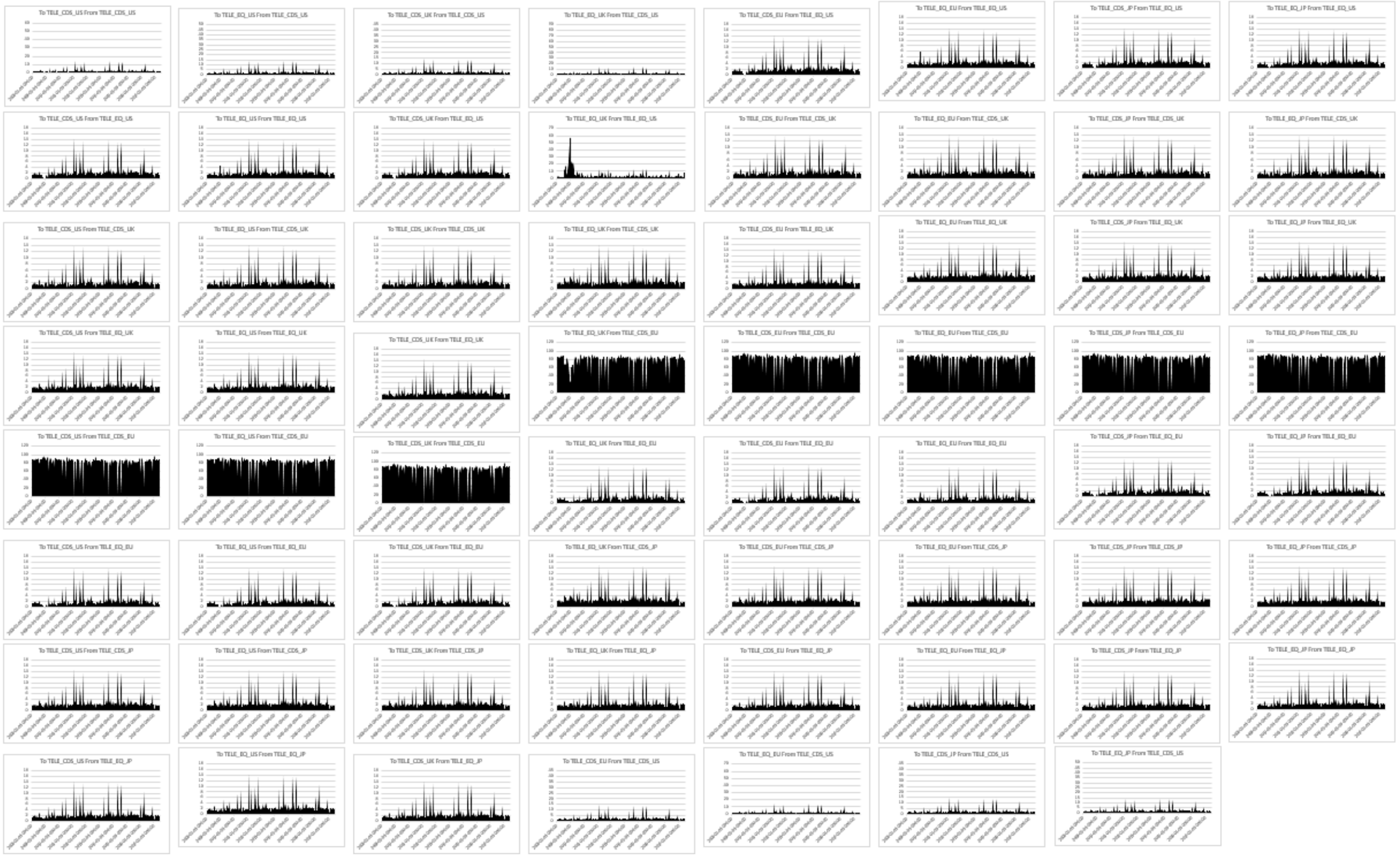


Figure 612: Net Pairwise Directional Connectedness Telecommunications

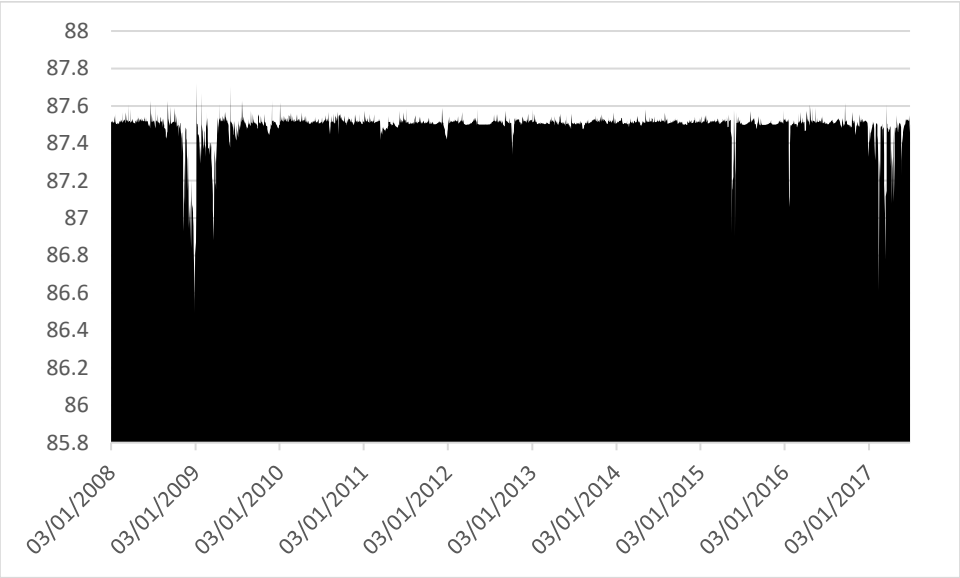


Figure 613: Total Average Dynamic Connectedness Other Telecommunications

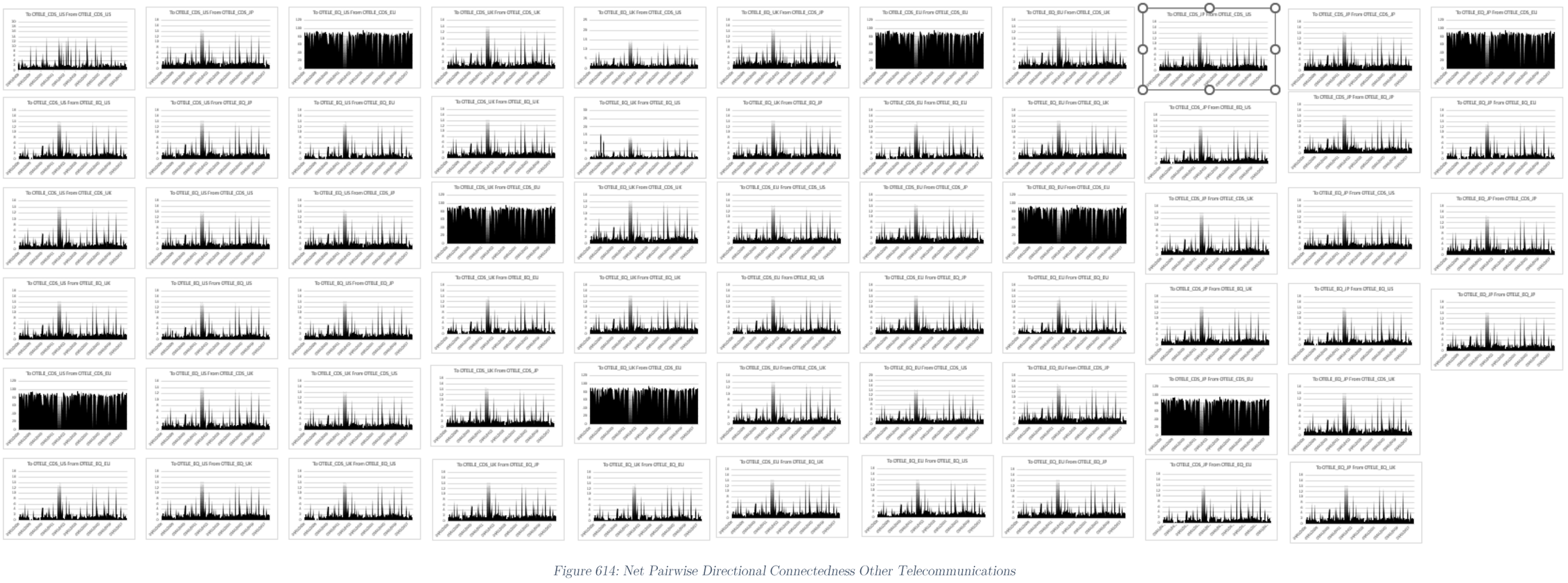


Figure 614: Net Pairwise Directional Connectedness Other Telecommunications

Appendix H

H.1 Dynamic Conditional Correlation GARCH Model

United States

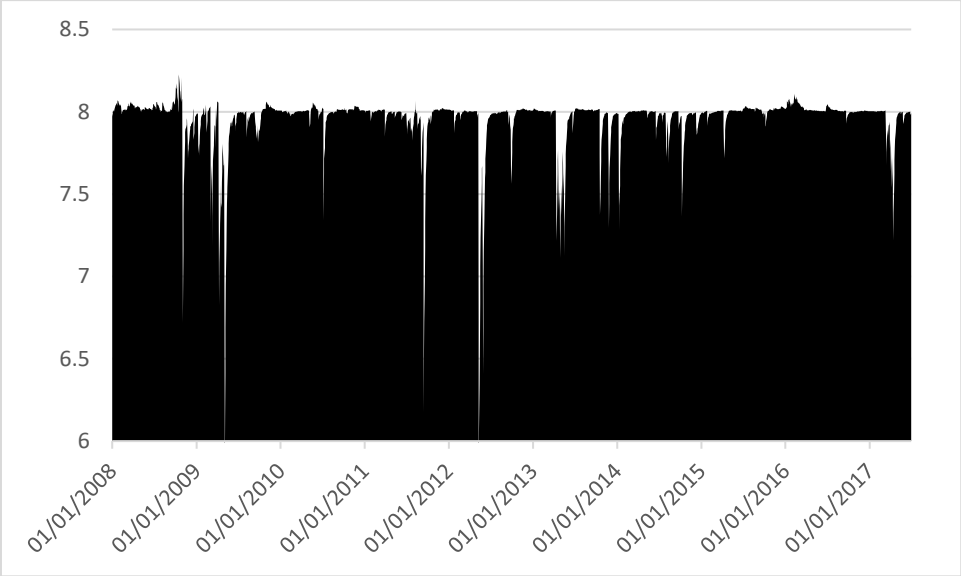


Figure 615: Total Average Dynamic Connectedness Leisure

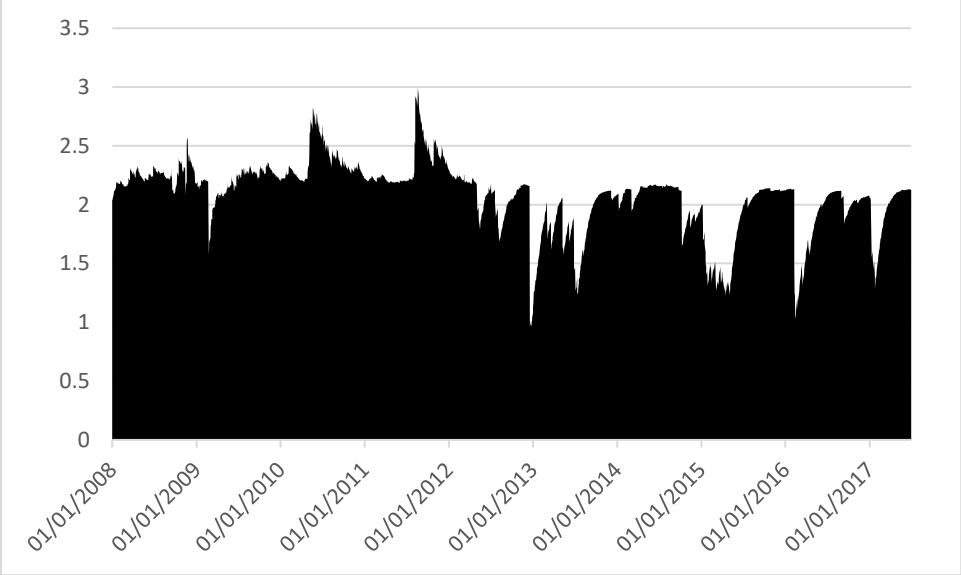


Figure 616: Total Average Dynamic Connectedness Industrials

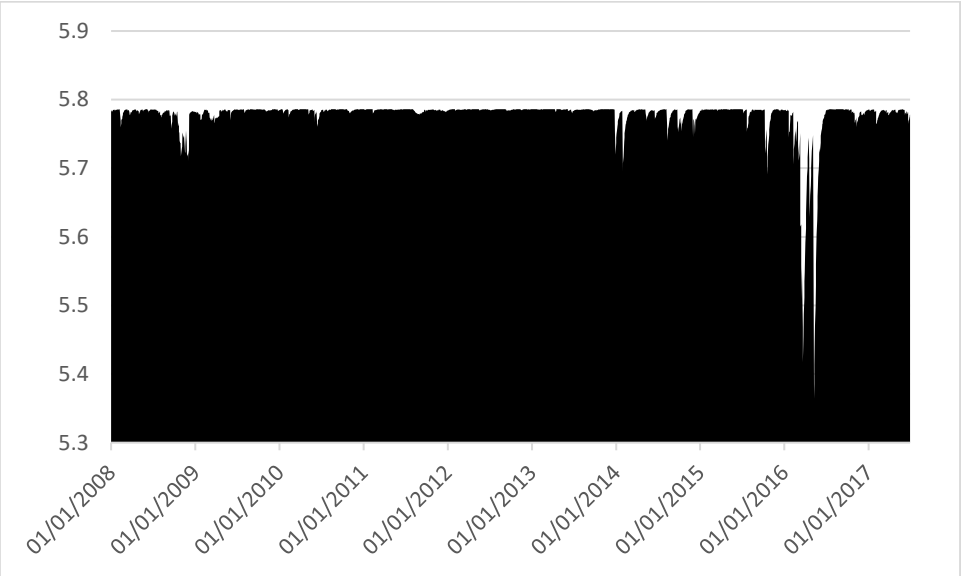


Figure 617: Total Average Dynamic Connectedness Oil & Gas

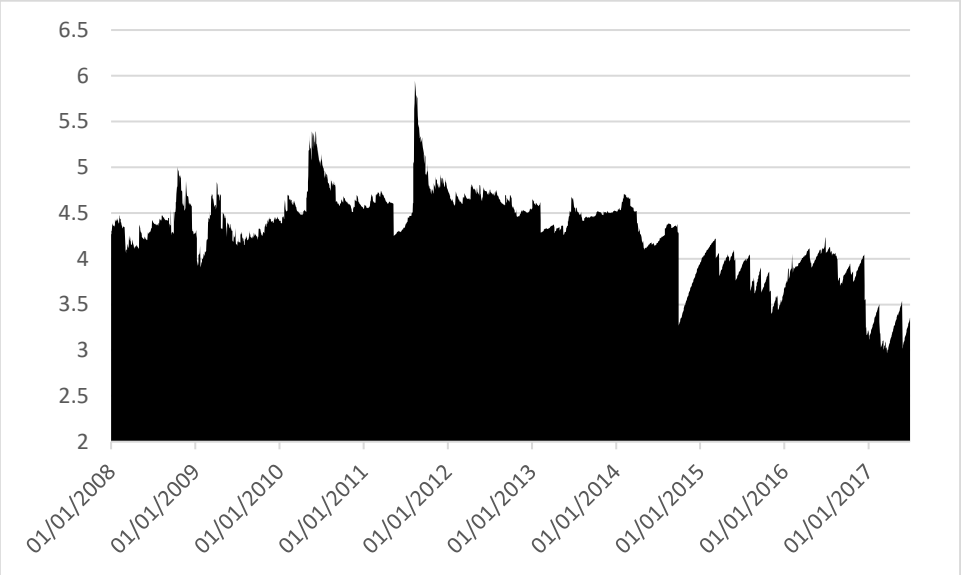


Figure 618: Total Average Dynamic Connectedness Cable Media

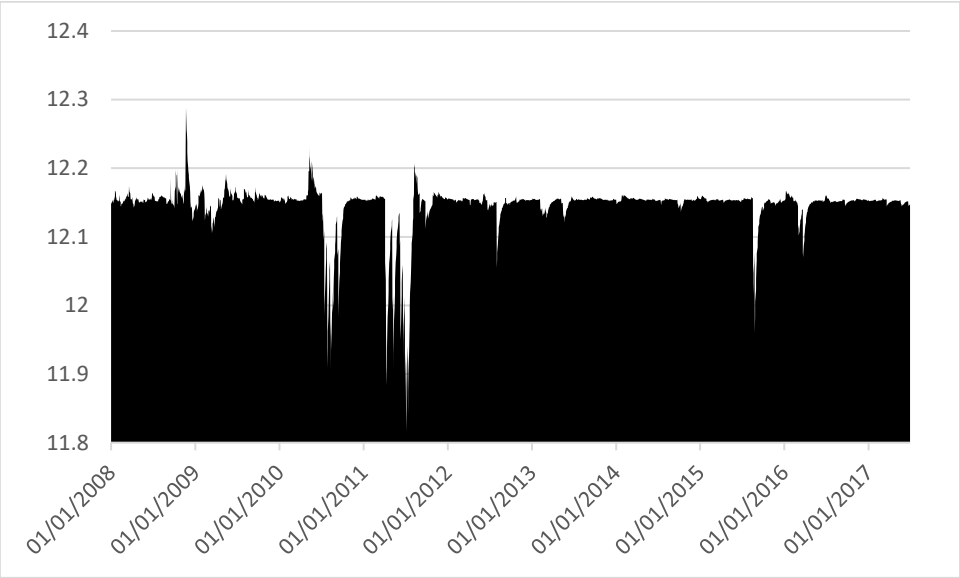


Figure 619: Total Average Dynamic Connectedness Conglomerate Diversified Mfg

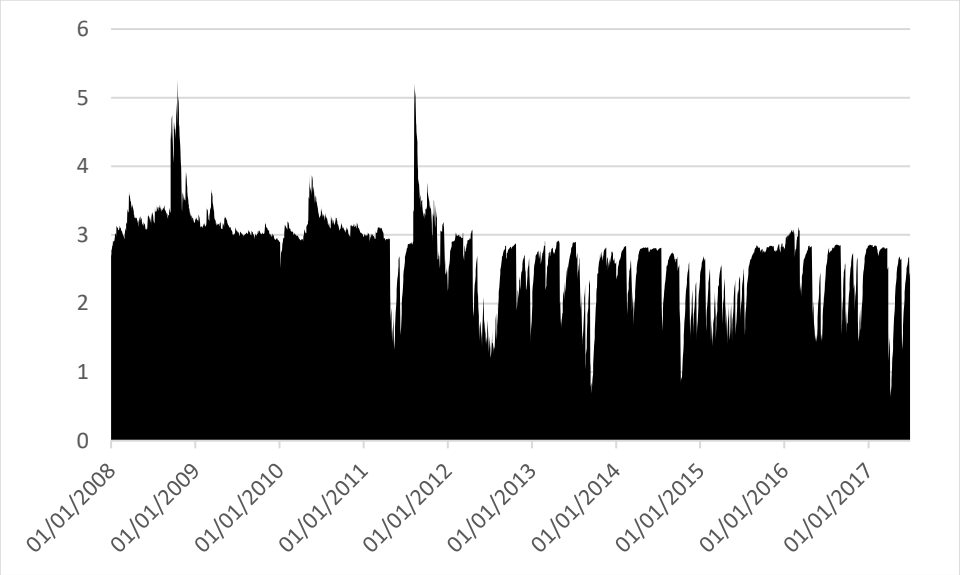


Figure 620: Total Average Dynamic Connectedness Other Financials II

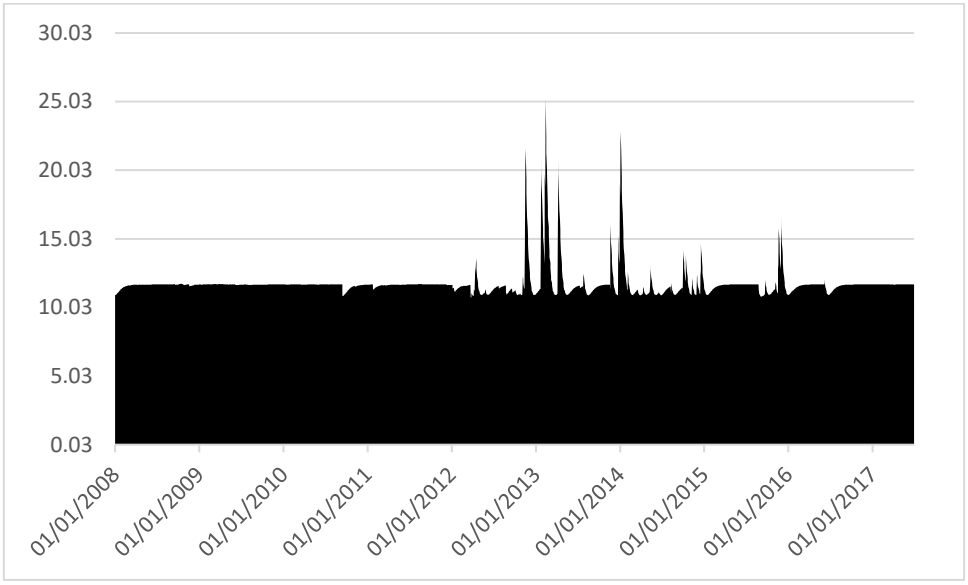


Figure 621: Total Average Dynamic Connectedness Transportation

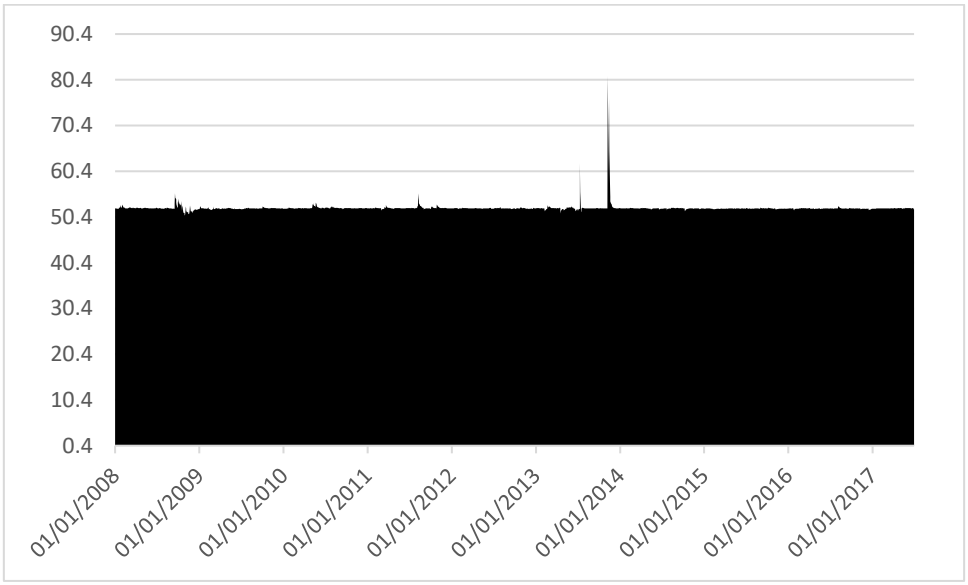


Figure 622: Total Average Dynamic Connectedness Utilities

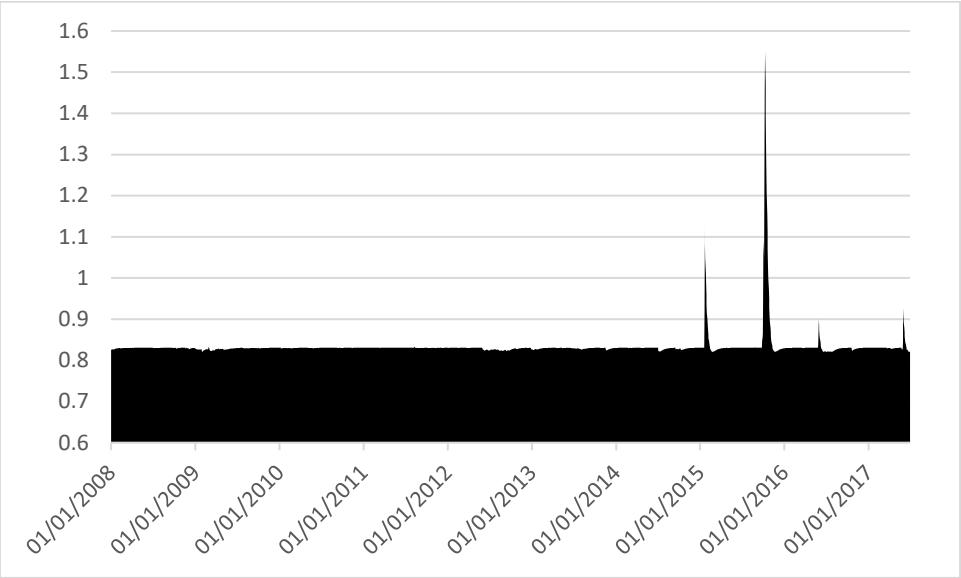


Figure 623: Total Average Dynamic Connectedness Retail Stores

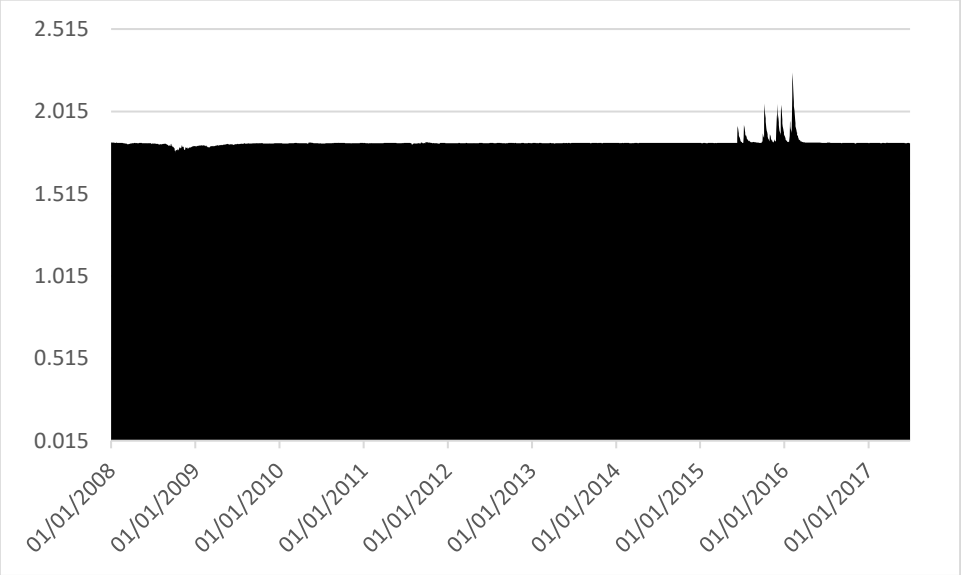


Figure 624: Total Average Dynamic Connectedness Metals & Mining

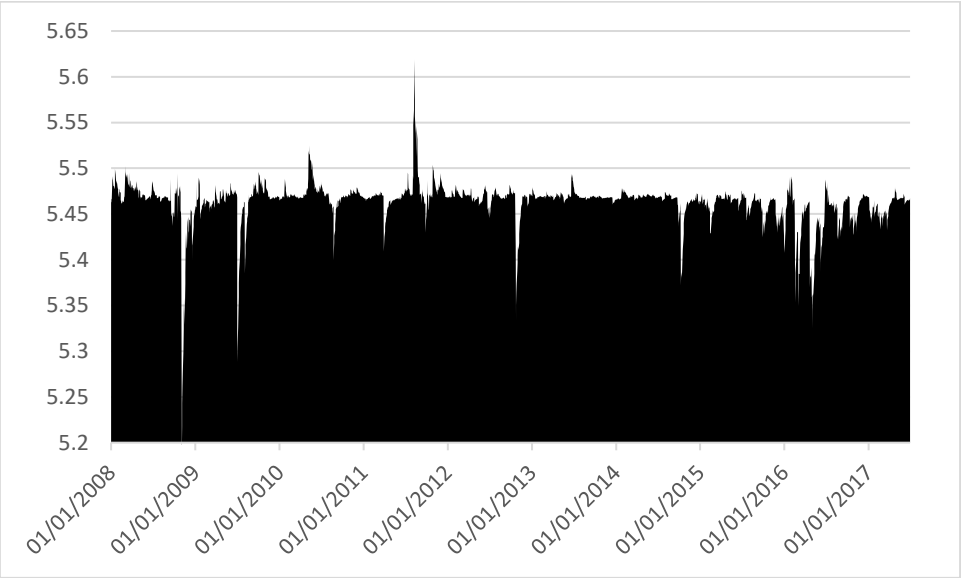


Figure 625: Total Average Dynamic Connectedness Electronics

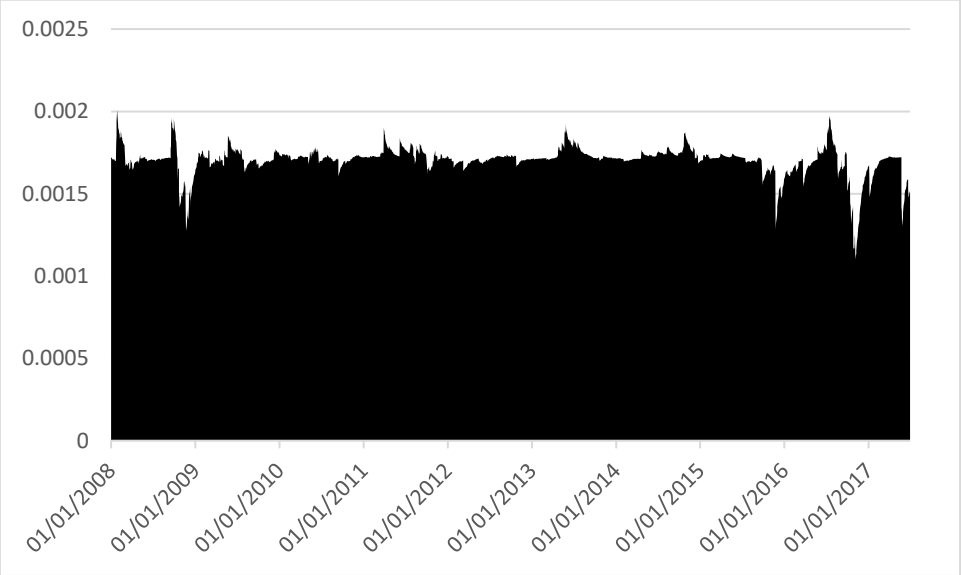


Figure 626: Total Average Dynamic Connectedness Chemicals

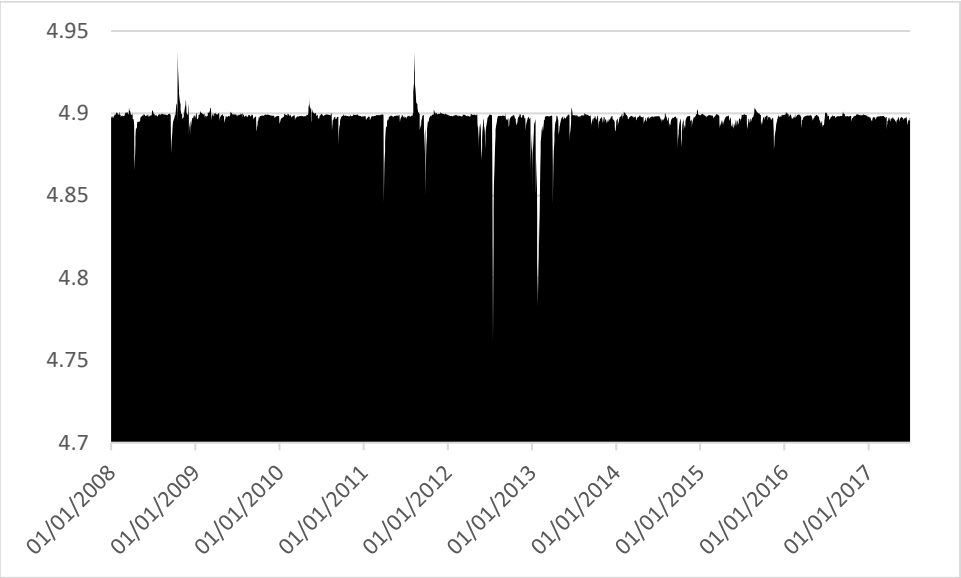


Figure 627: Total Average Dynamic Connectedness Consumer Goods

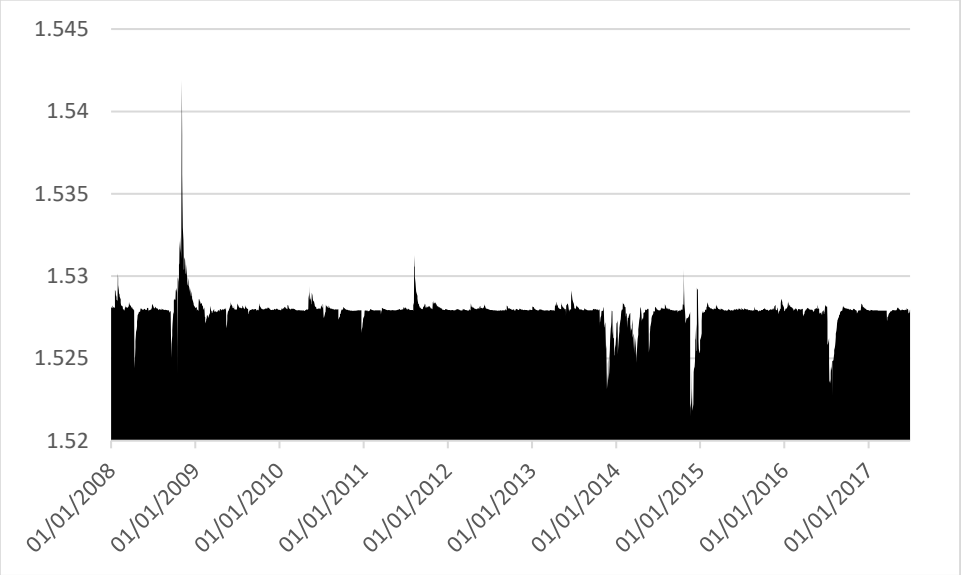


Figure 628: Total Average Dynamic Connectedness Beverages and Bottling

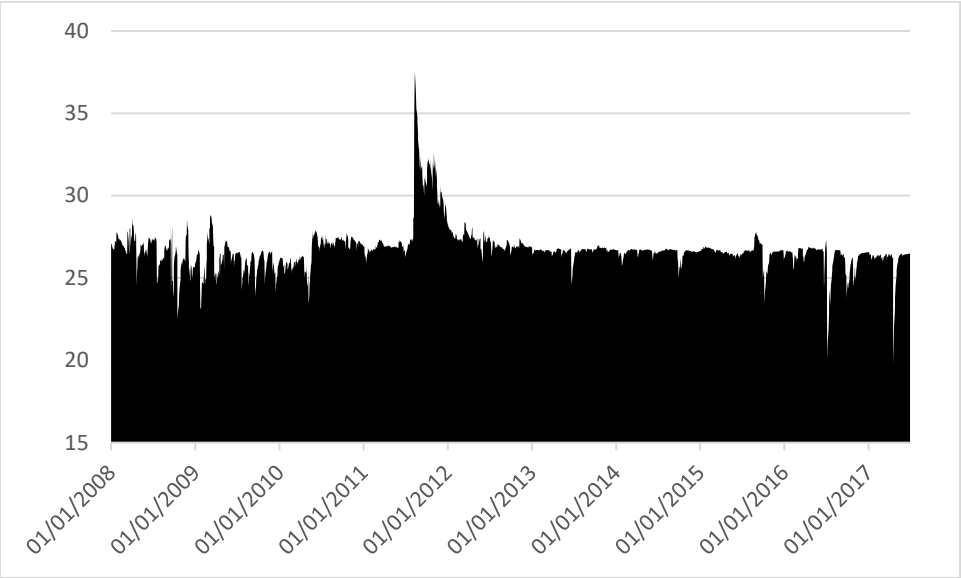


Figure 629: Total Average Dynamic Connectedness Banking

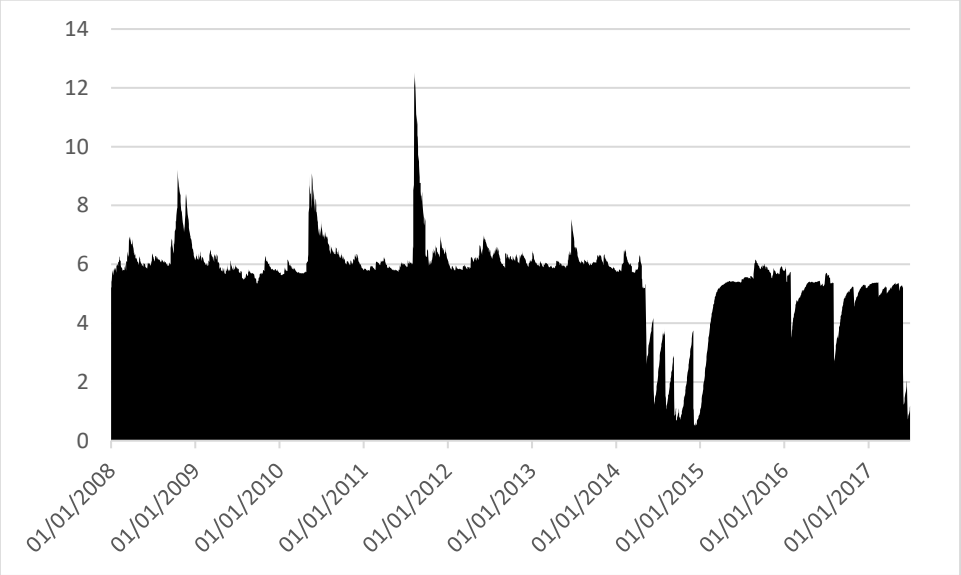


Figure 630: Total Average Dynamic Connectedness Consumer Services

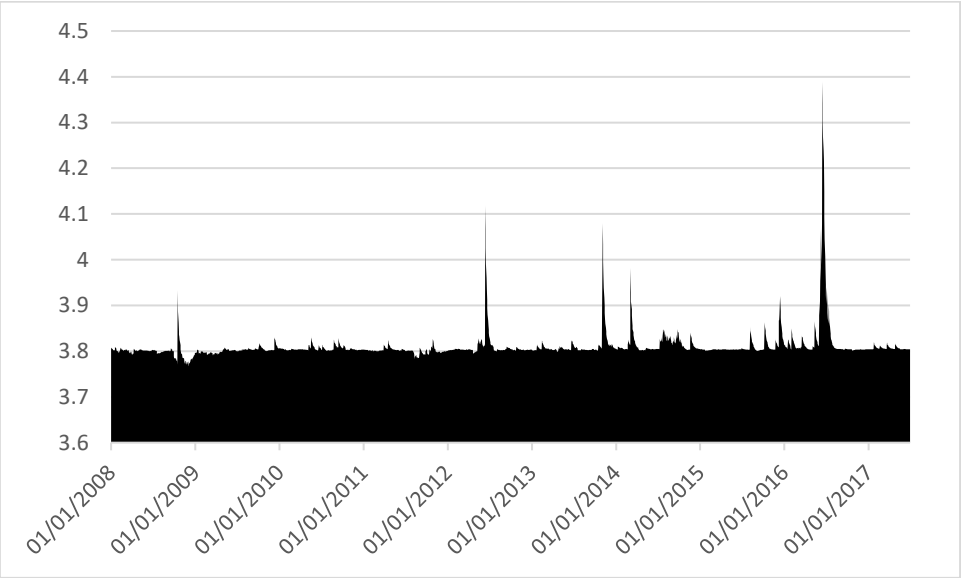


Figure 631: Total Average Dynamic Connectedness Other Consumer Services

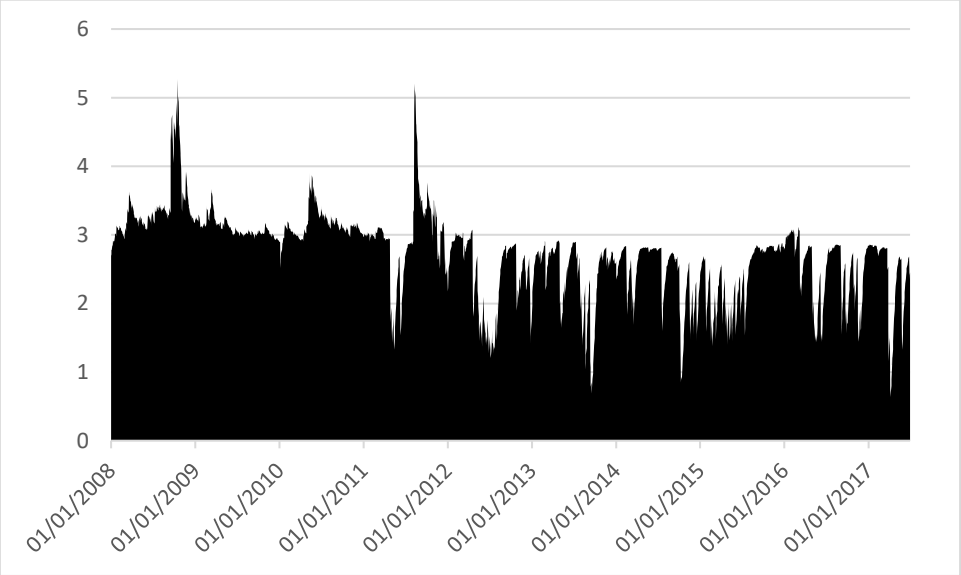


Figure 632: Total Average Dynamic Connectedness Other Financials

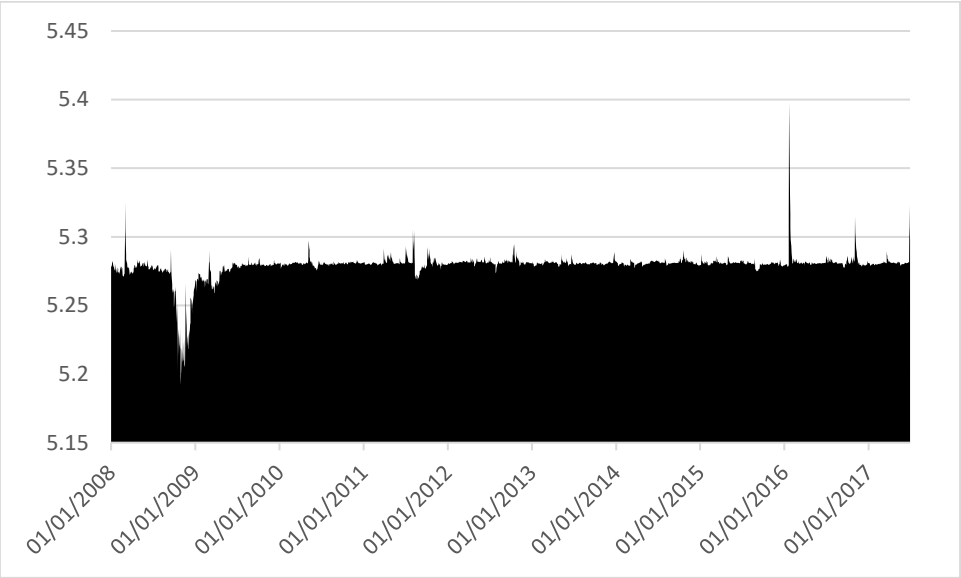


Figure 633: Total Average Dynamic Connectedness Telecommunications

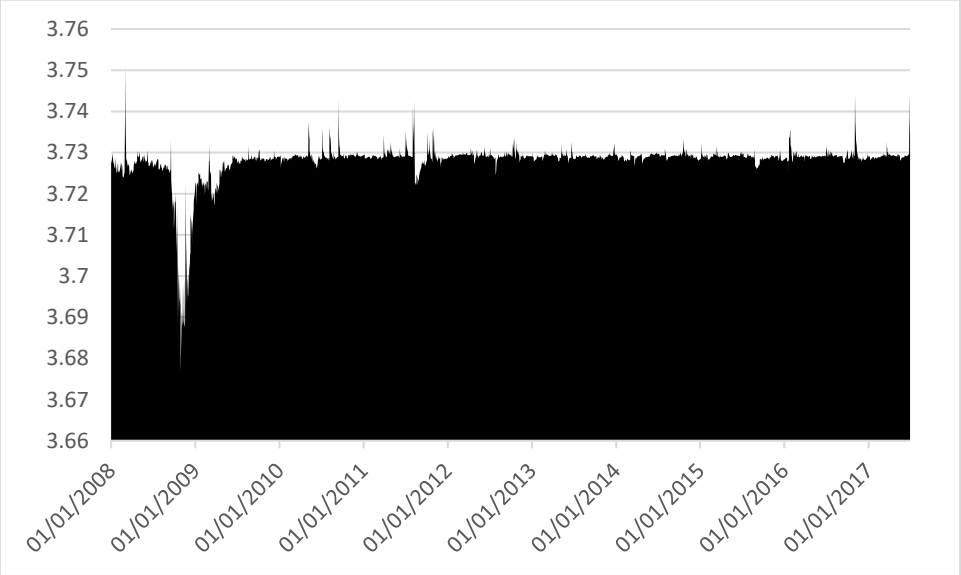


Figure 634: Total Average Dynamic Connectedness Other Telecommunications

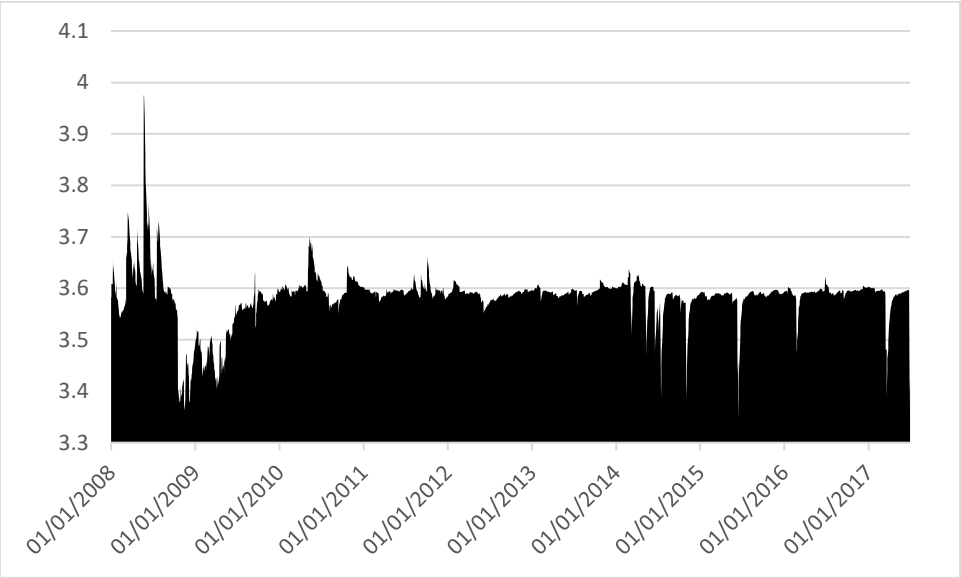


Figure 635: Total Average Dynamic Connectedness Airlines

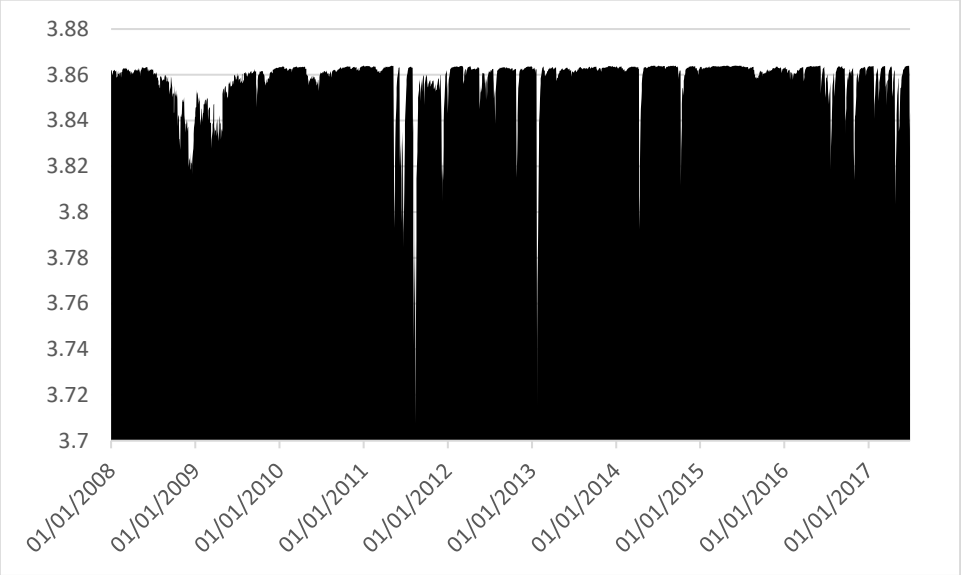


Figure 636: Total Average Dynamic Connectedness Building Products

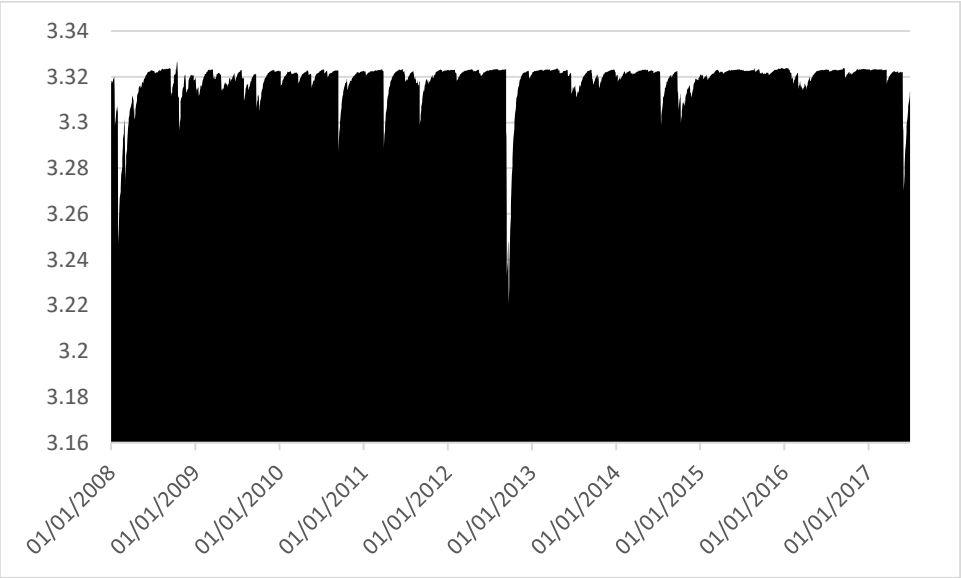


Figure 637: Total Average Dynamic Connectedness Building Containers

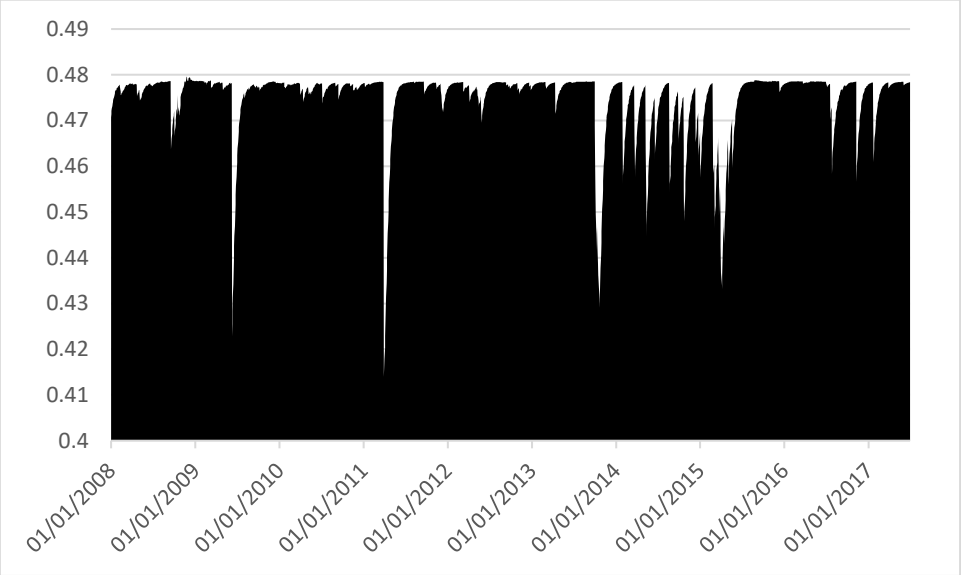


Figure 638: Total Average Dynamic Connectedness Electric Power

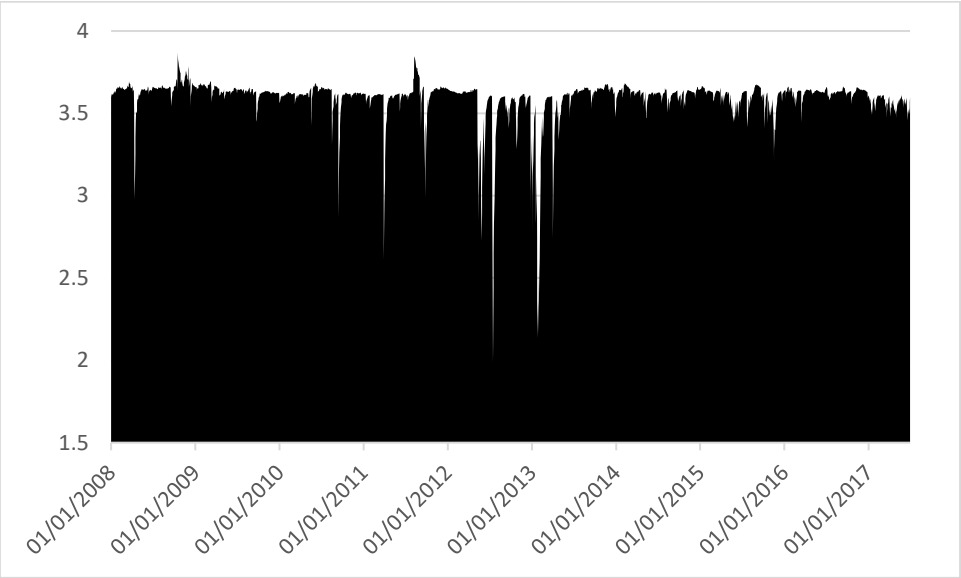


Figure 639: Total Average Dynamic Connectedness Food Processors

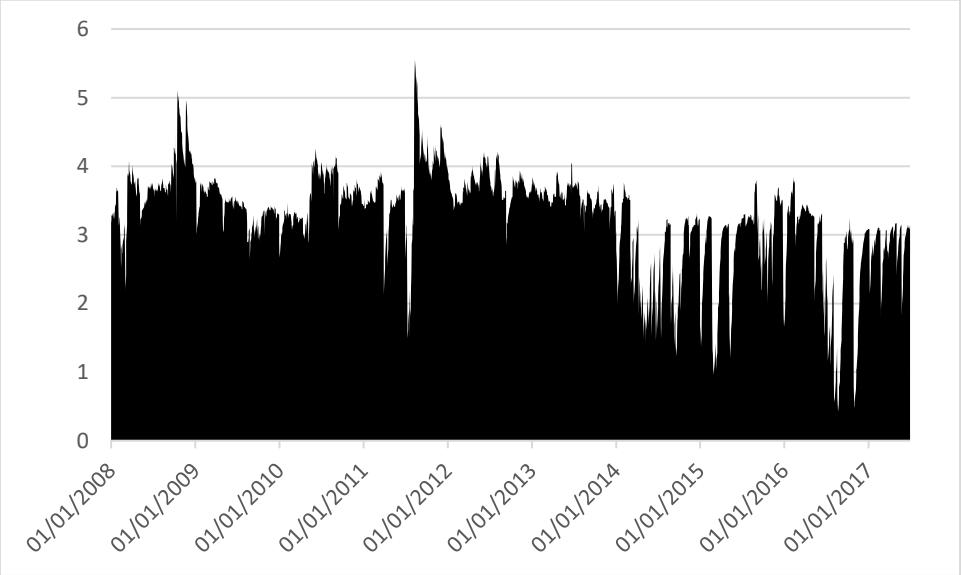


Figure 640: Total Average Dynamic Connectedness Healthcare Services

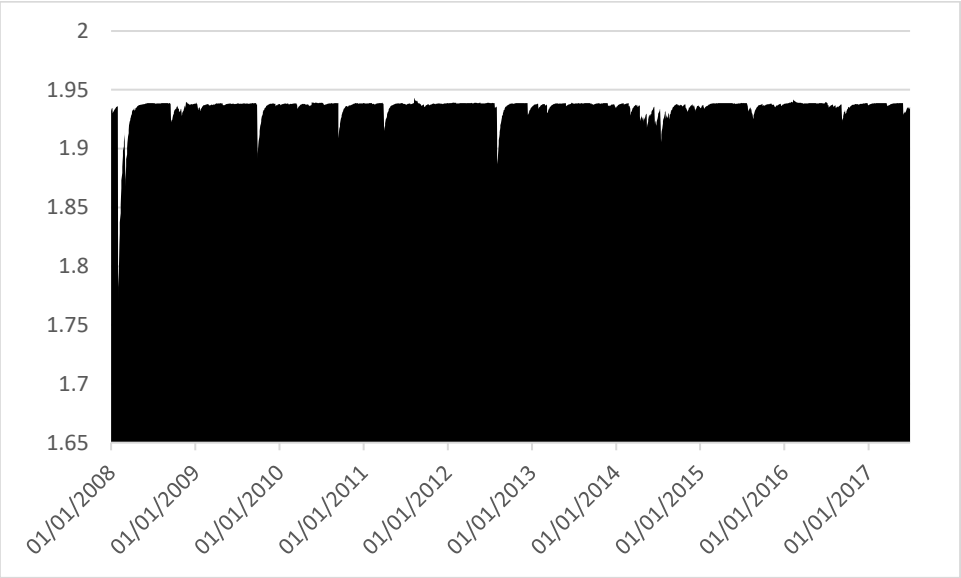


Figure 641: Total Average Dynamic Connectedness Healthcare Supplies

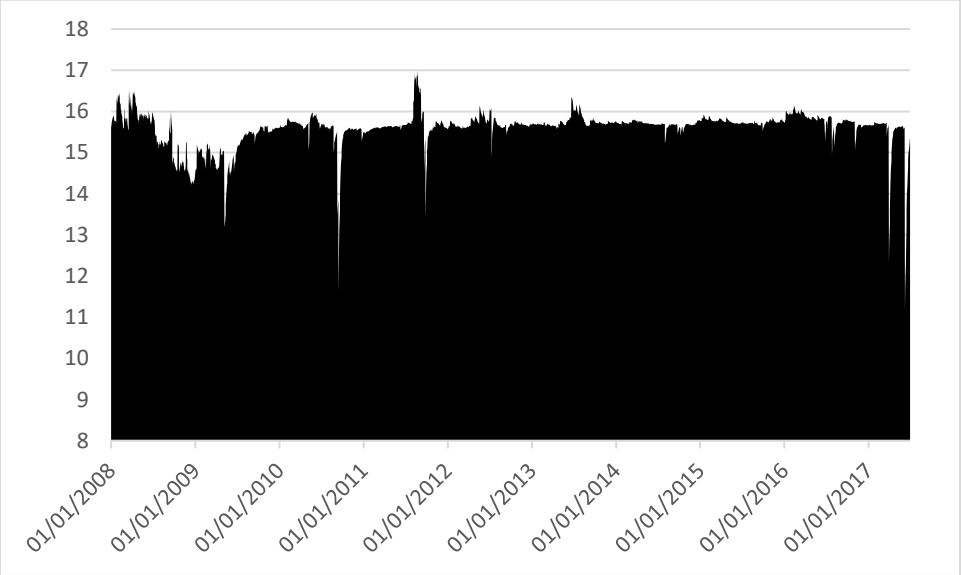


Figure 642: Total Average Dynamic Connectedness Home Builders

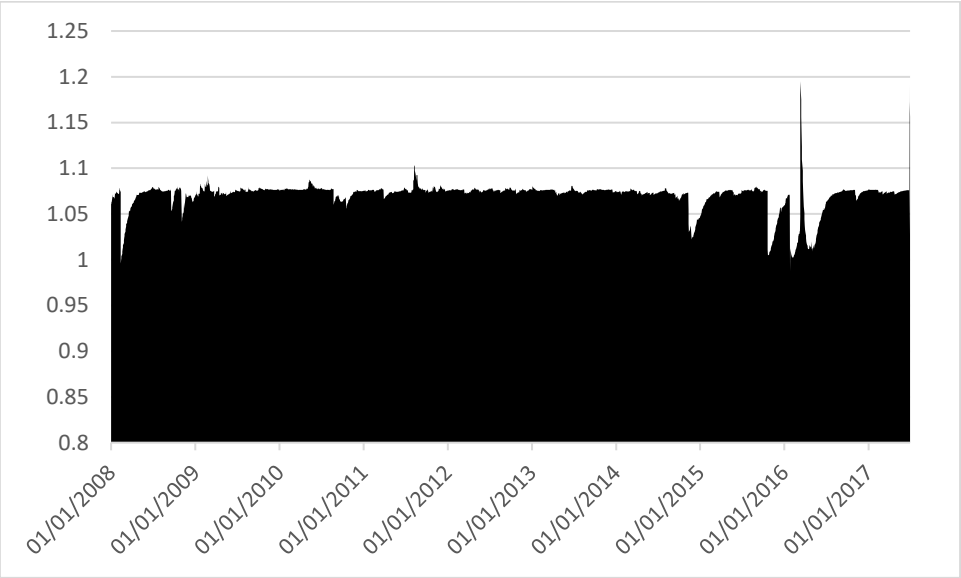


Figure 643: Total Average Dynamic Connectedness Informational Technology

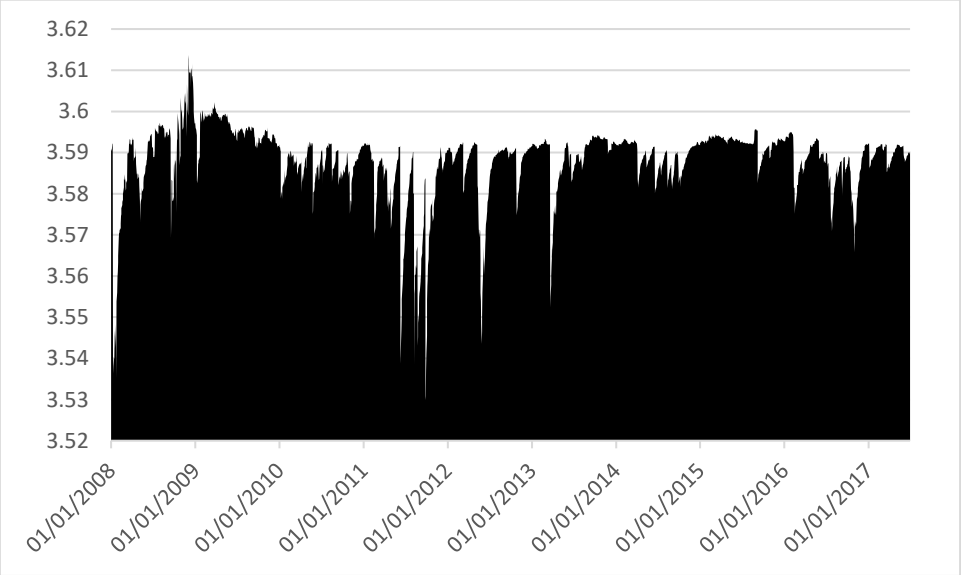


Figure 644: Total Average Dynamic Connectedness REITS

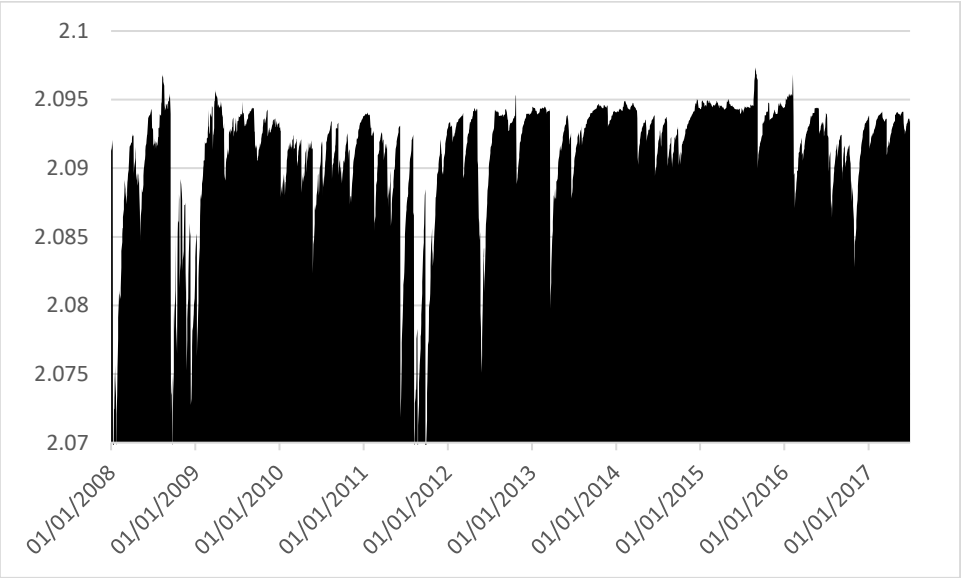


Figure 645: Total Average Dynamic Connectedness Restaurants

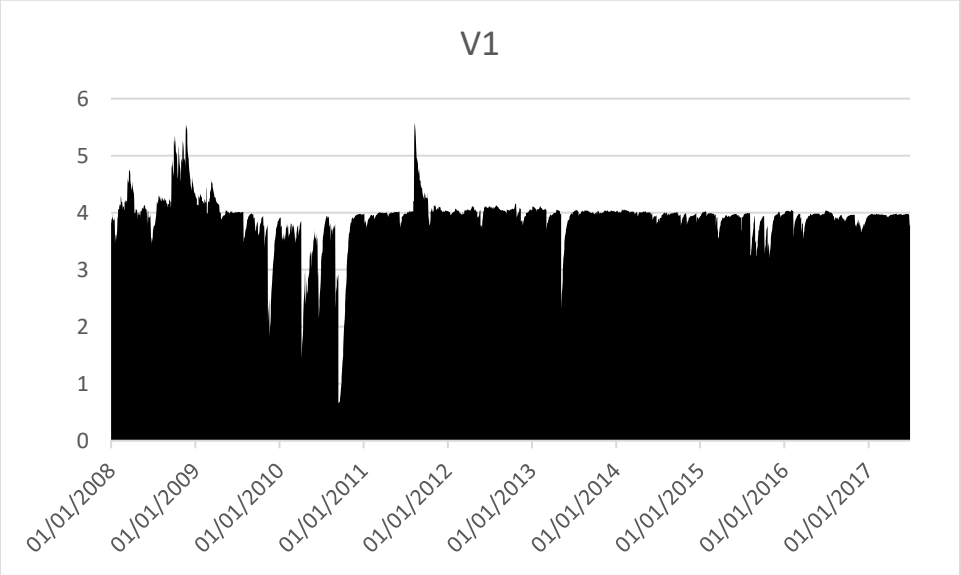


Figure 646: Total Average Dynamic Connectedness Property & Casualty

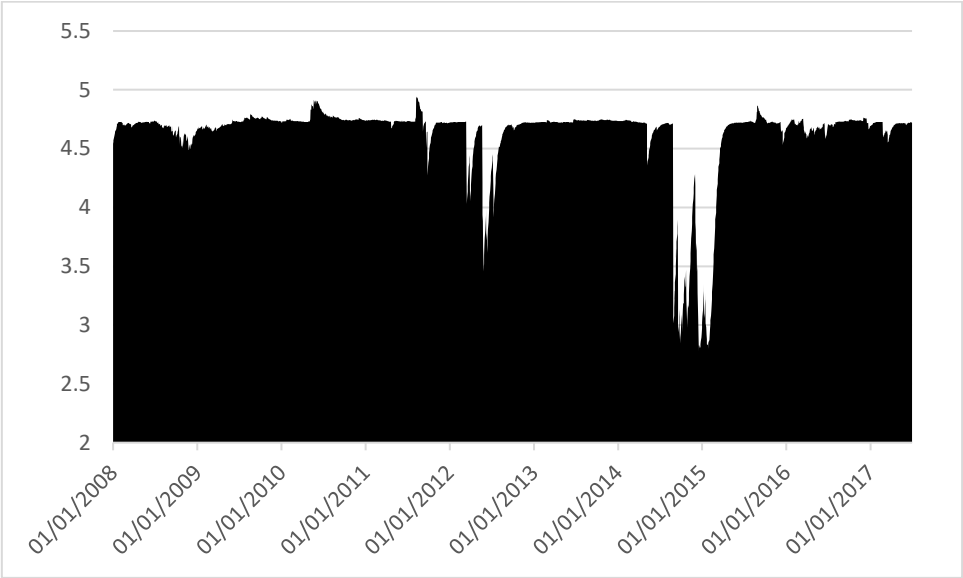


Figure 647: Total Average Dynamic Connectedness Oilfield Machinery & Products

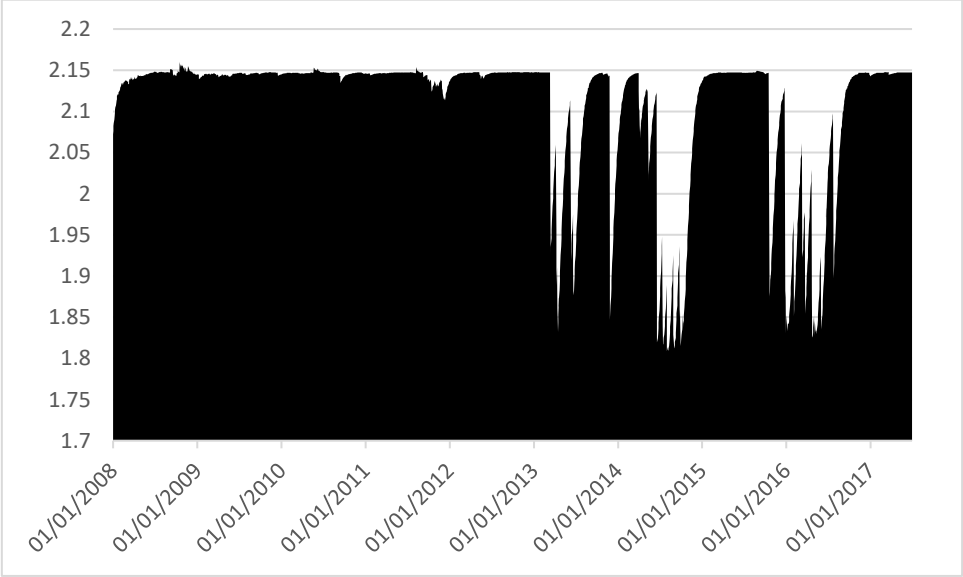


Figure 648: Total Average Dynamic Connectedness Machinery

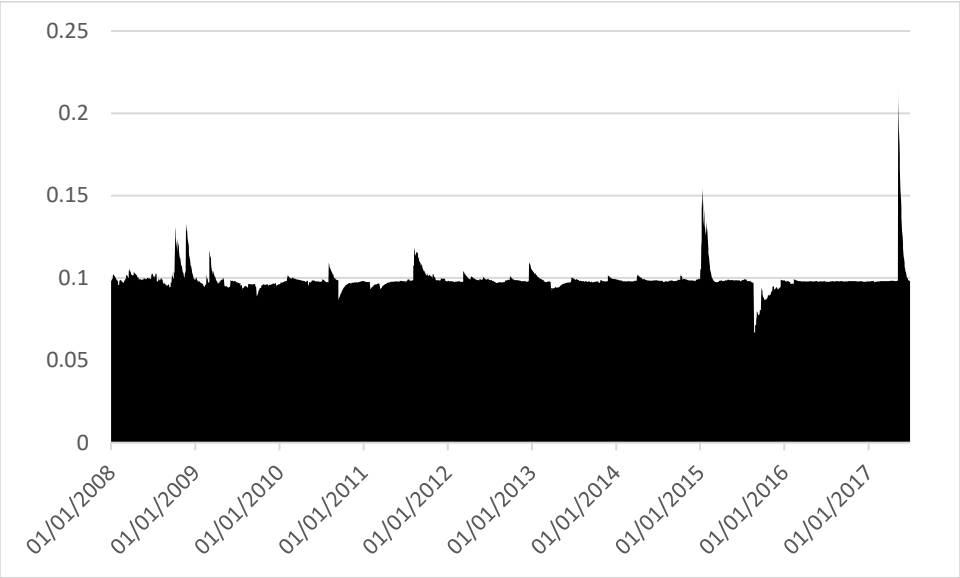


Figure 649: Total Average Dynamic Connectedness Lodging

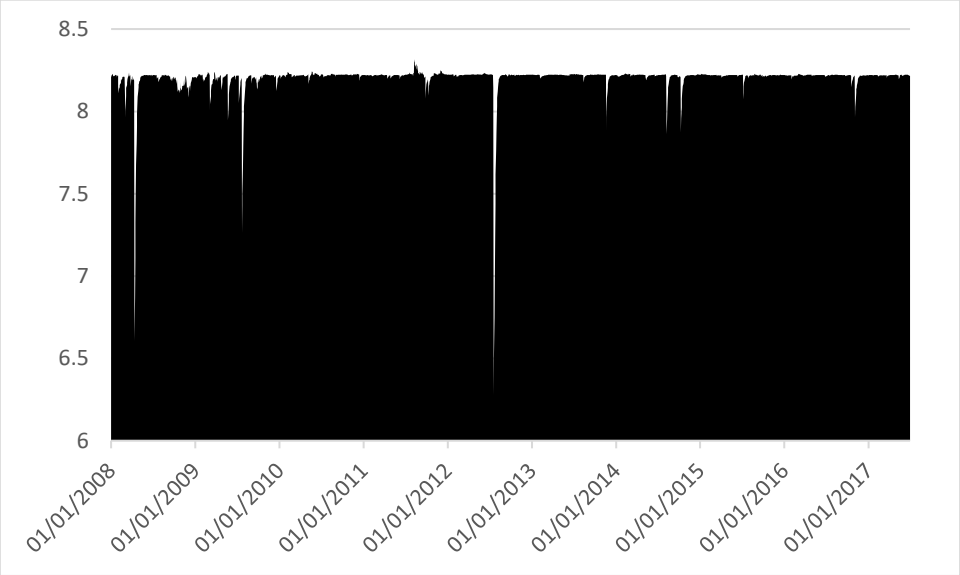


Figure 650: Total Average Dynamic Connectedness Publishing

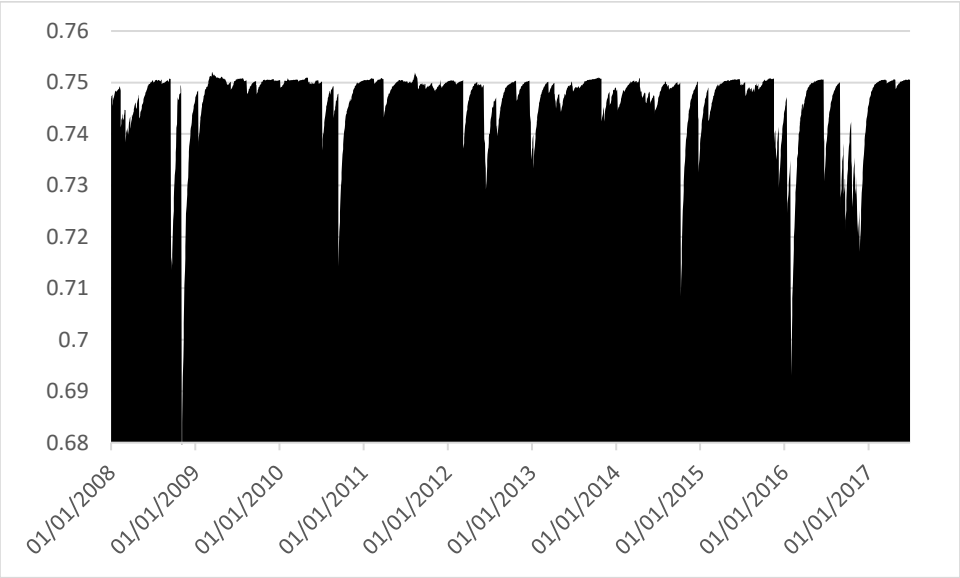


Figure 651: Total Average Dynamic Connectedness Pharmaceuticals

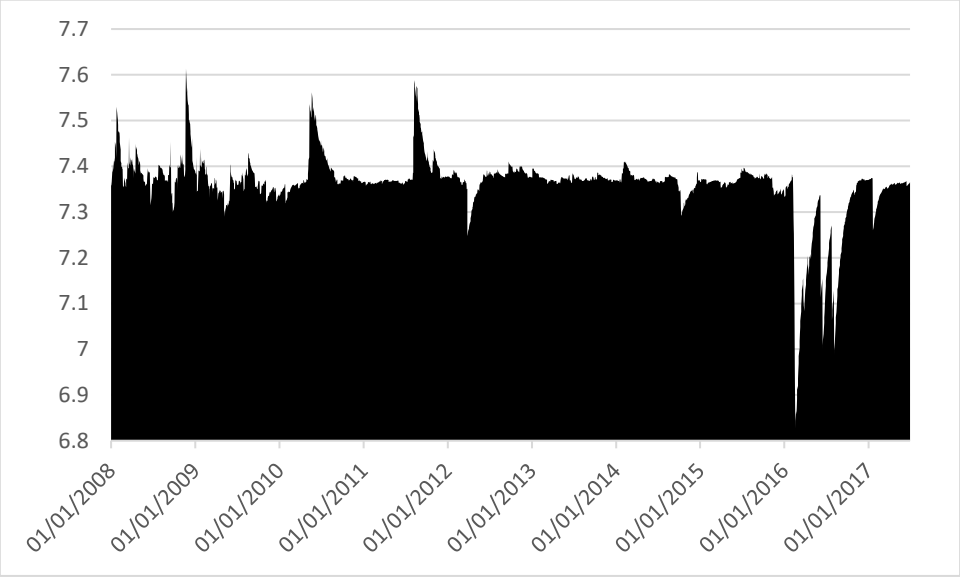


Figure 652: Total Average Dynamic Connectedness Railroads

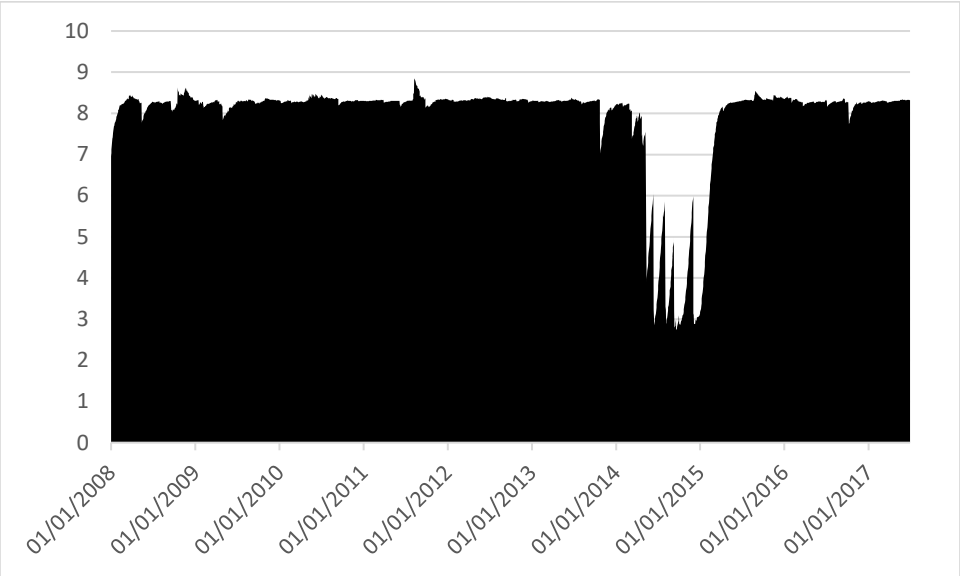


Figure 653: Total Average Dynamic Connectedness Other Retail Stores

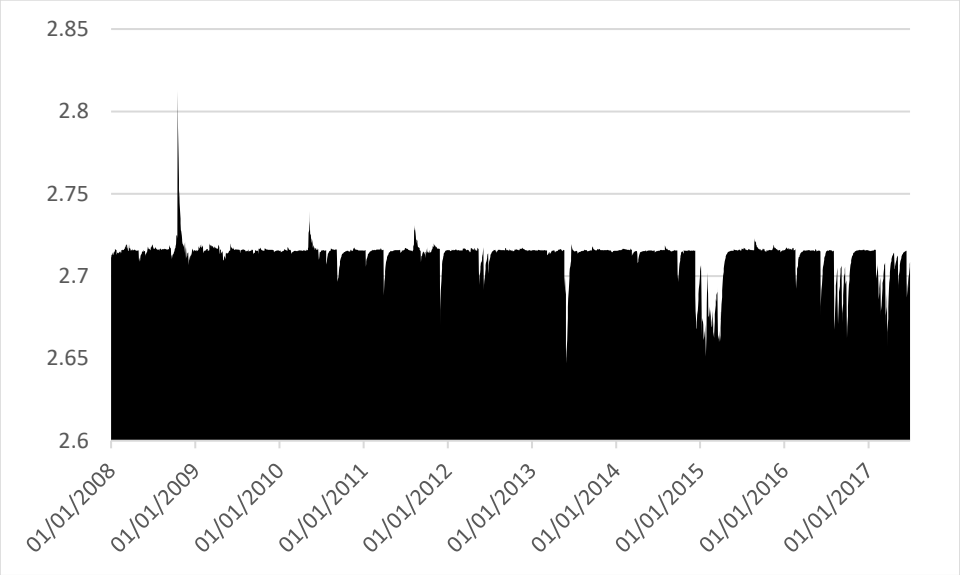


Figure 654: Total Average Dynamic Connectedness Textiles/Apparel/Shoes

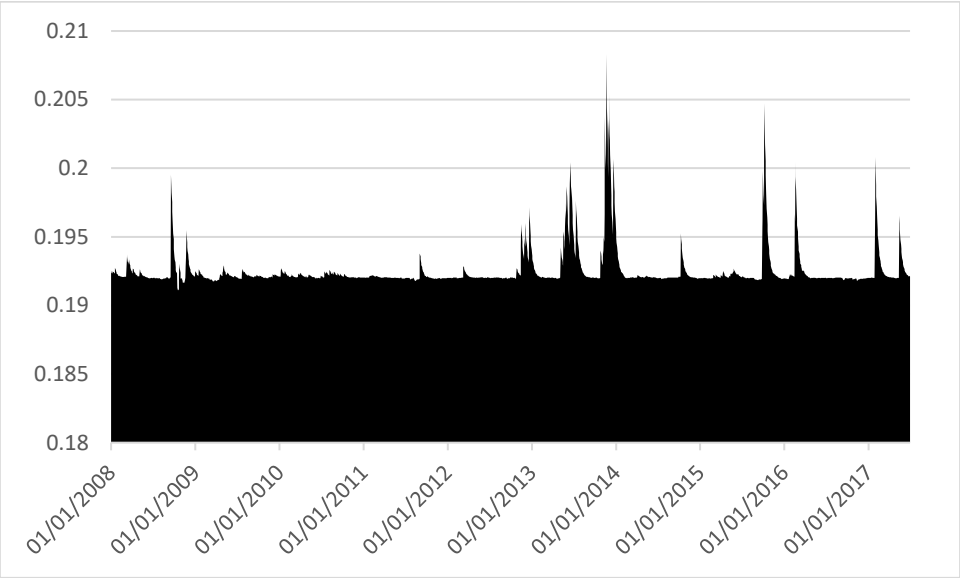


Figure 655: Total Average Dynamic Connectedness Tobacco

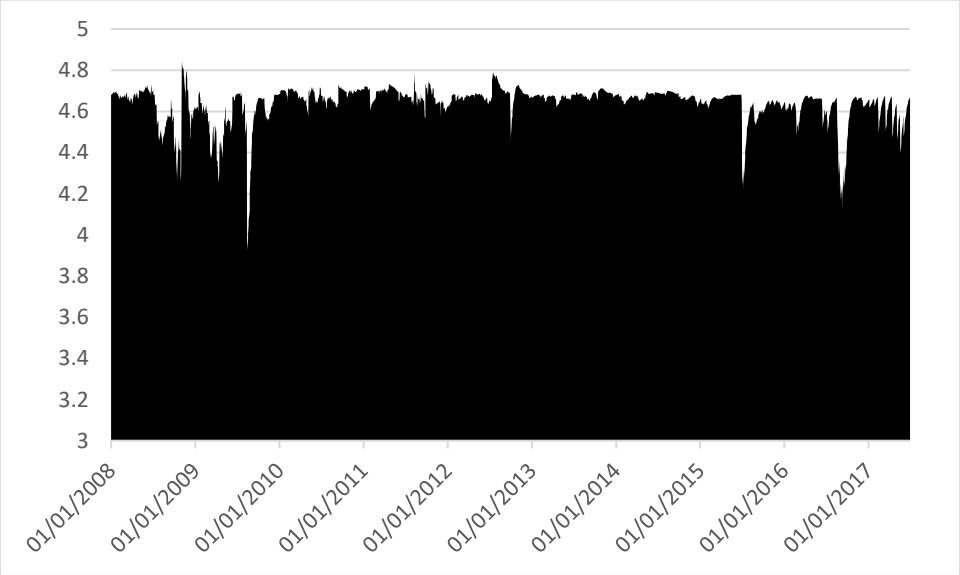


Figure 656: Total Average Dynamic Connectedness Automotive Manufacturer

United Kingdom

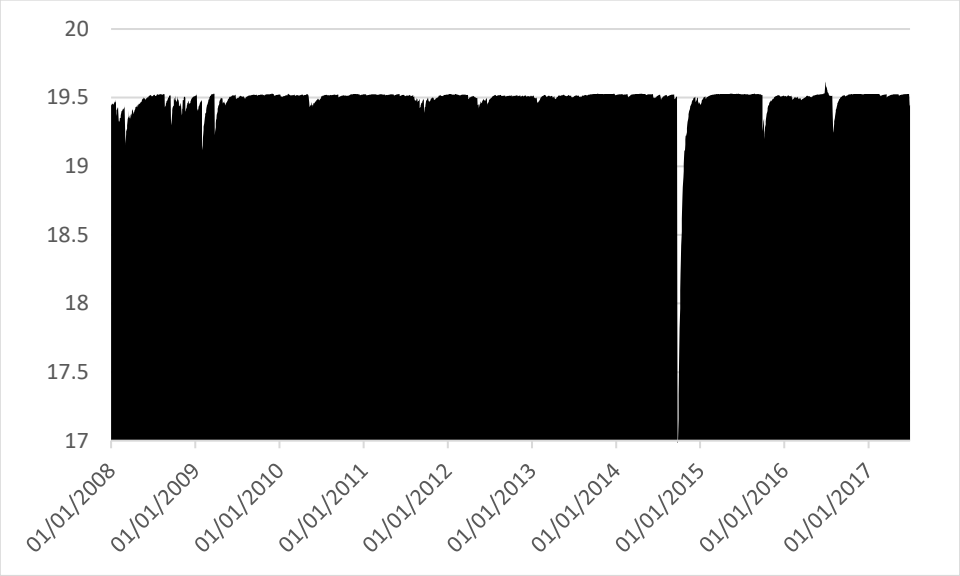


Figure 657: Total Average Dynamic Connectedness Other Financials II

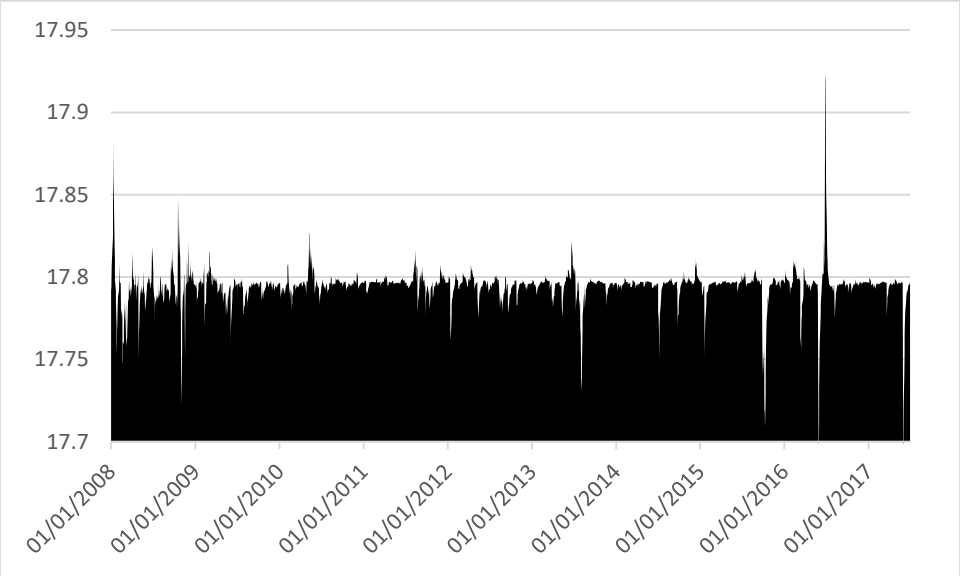


Figure 658: Total Average Dynamic Connectedness Retail Stores

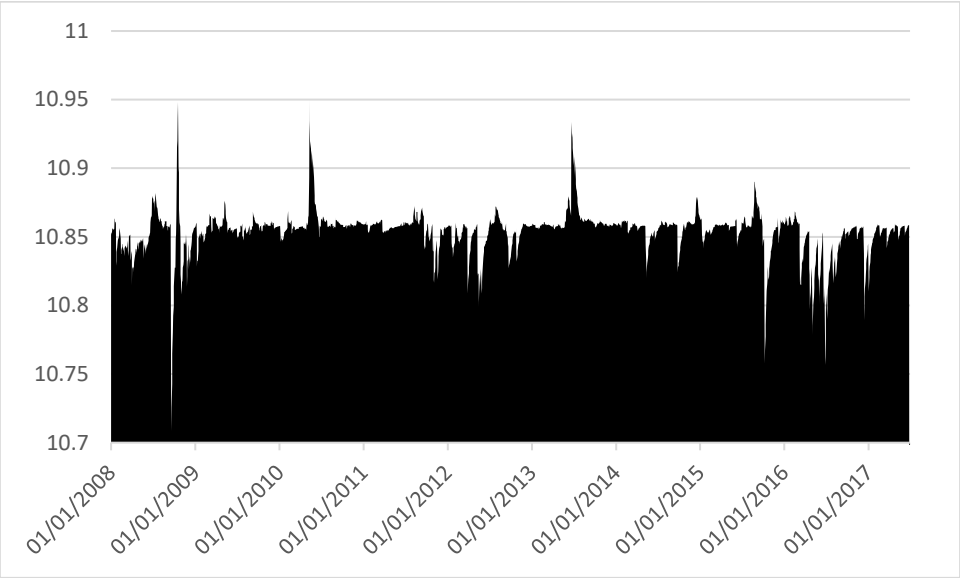


Figure 659: Total Average Dynamic Connectedness Consumer Goods

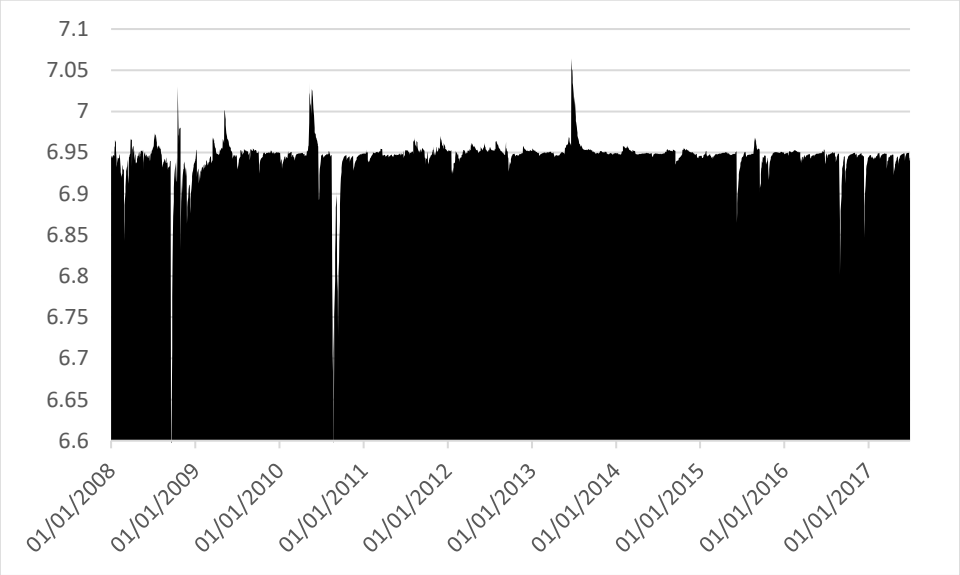


Figure 660: Total Average Dynamic Connectedness Beverages and Bottling

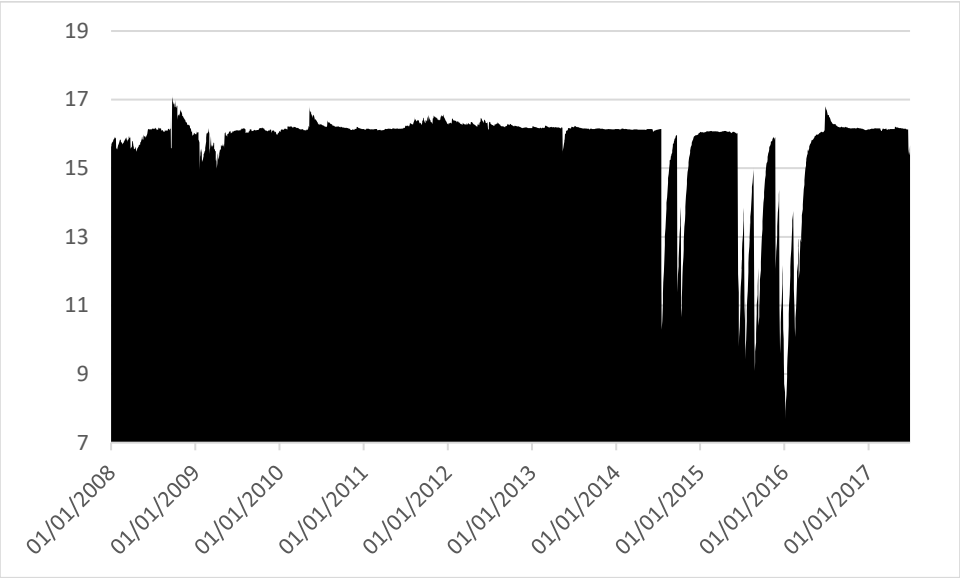


Figure 661: Total Average Dynamic Connectedness Banking

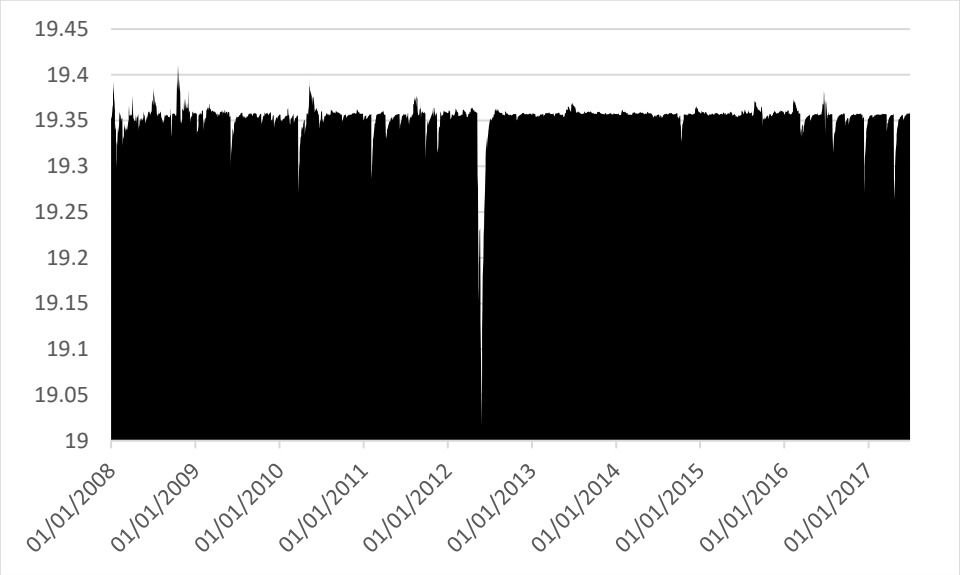


Figure 662: Total Average Dynamic Connectedness Consumer Services

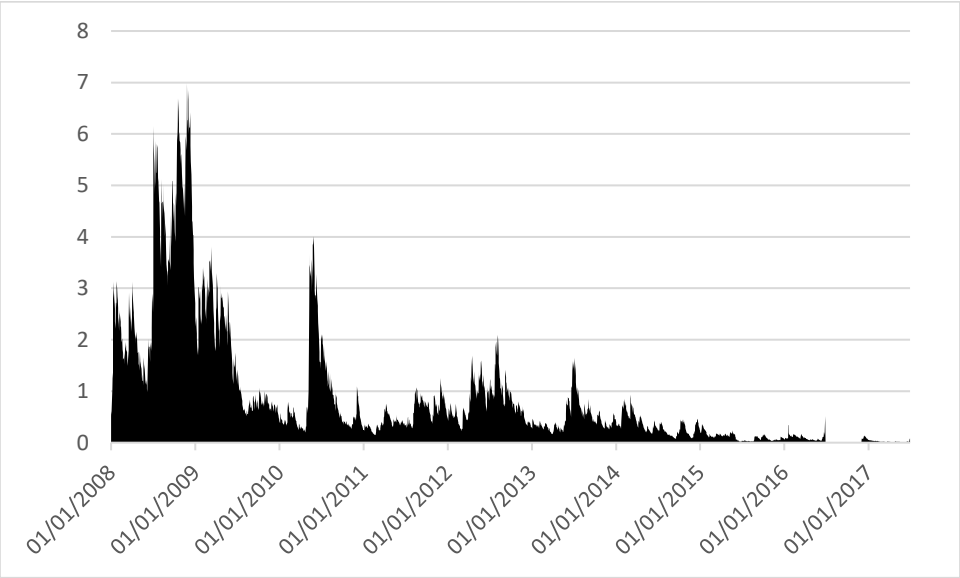


Figure 663: Total Average Dynamic Connectedness Other Consumer Services

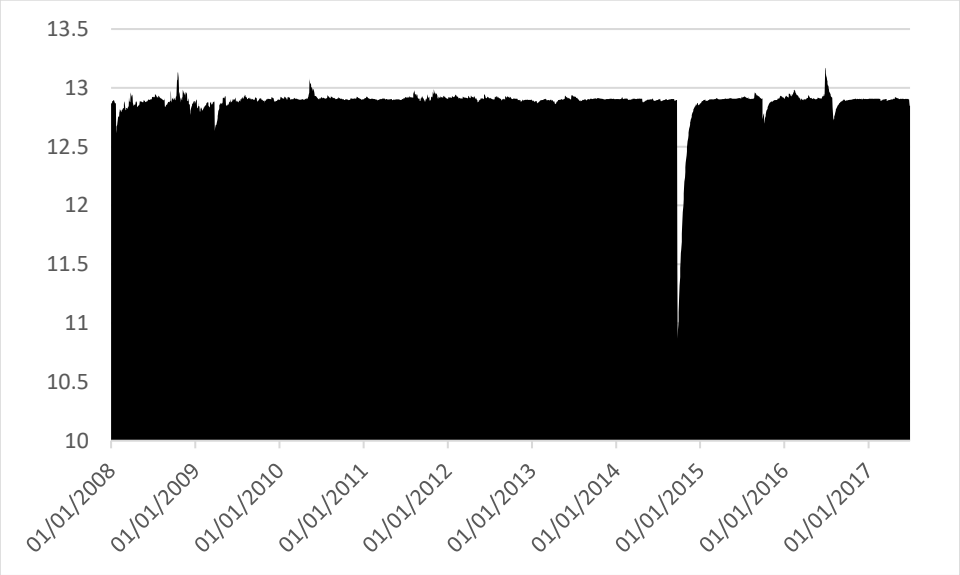


Figure 664: Total Average Dynamic Connectedness Other Financial

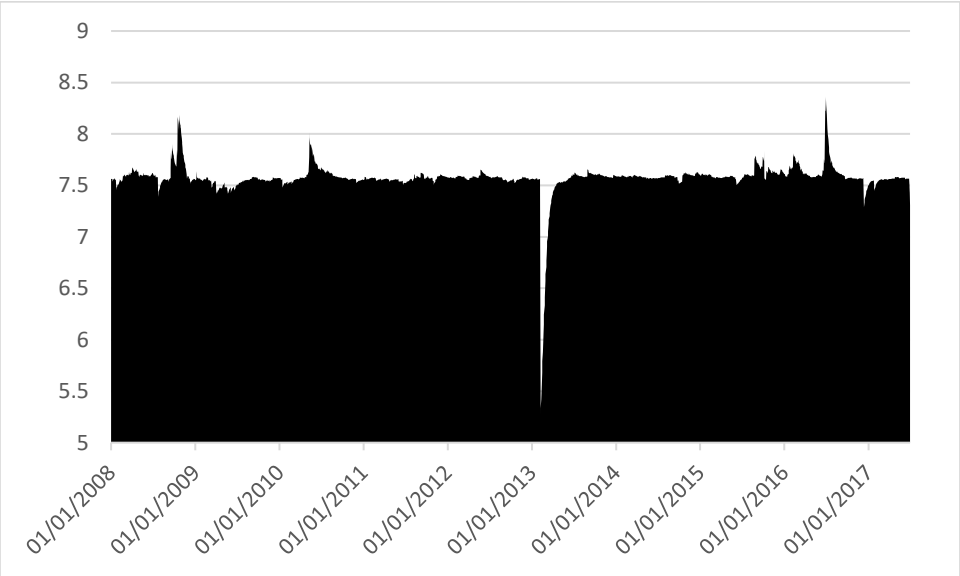


Figure 665: Total Average Dynamic Connectedness Telecommunications

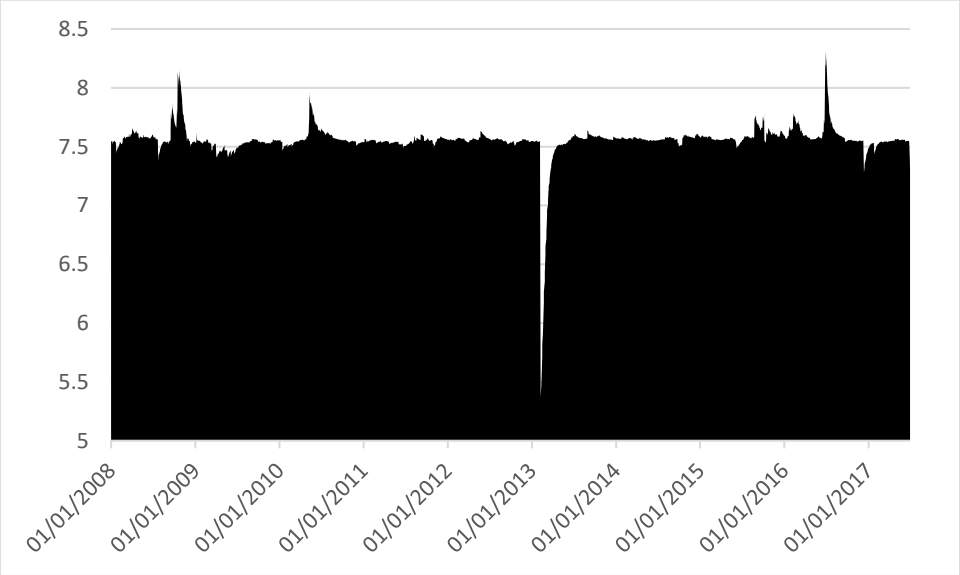


Figure 666: Total Average Dynamic Connectedness Other Telecommunications

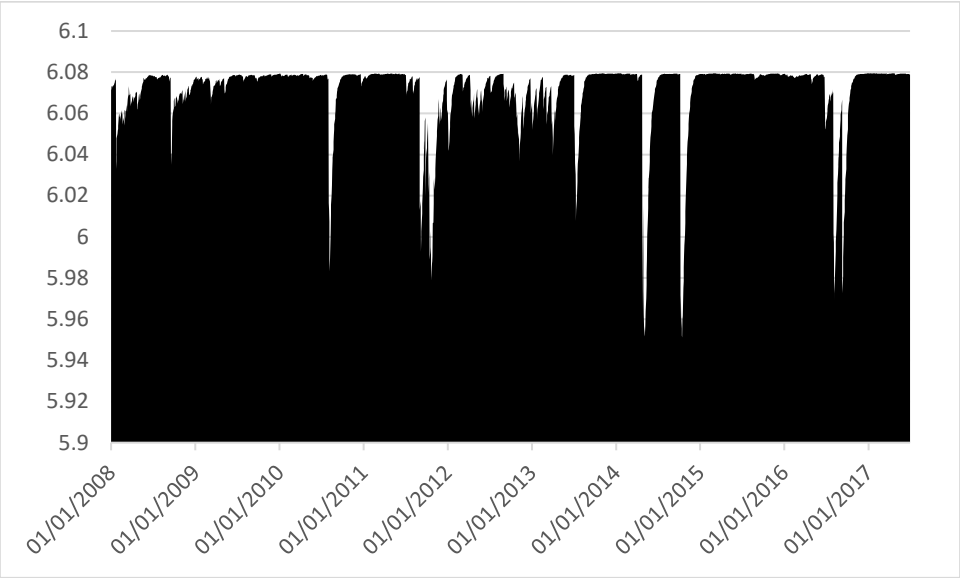


Figure 667: Total Average Dynamic Connectedness Life Insurance

Europe

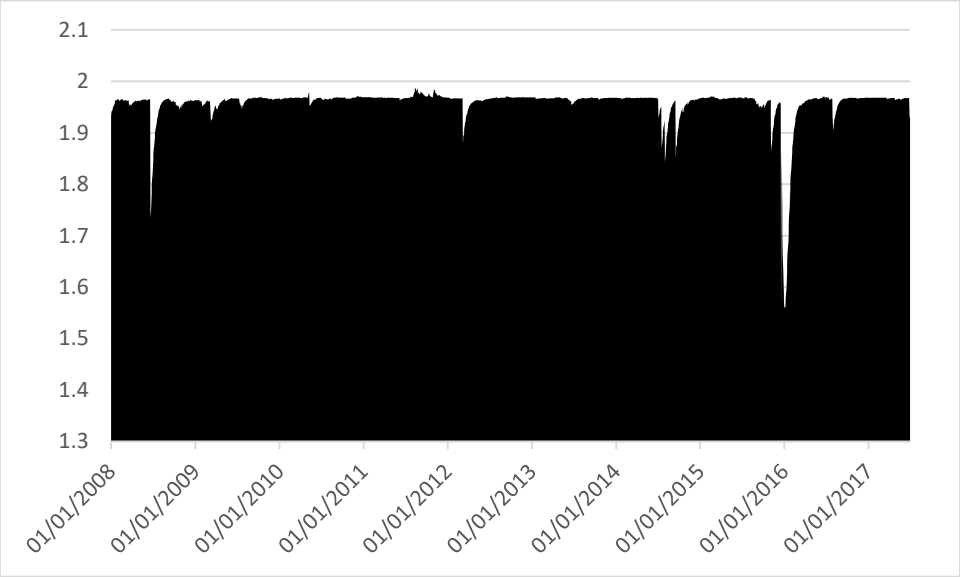


Figure 668: Total Average Dynamic Connectedness Leisure

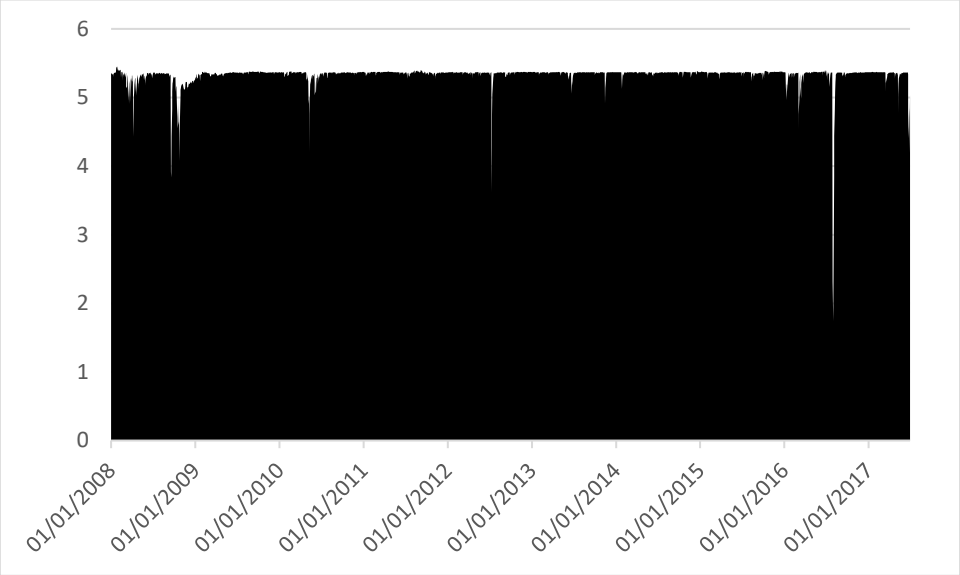


Figure 669: Total Average Dynamic Connectedness Oil & Gas

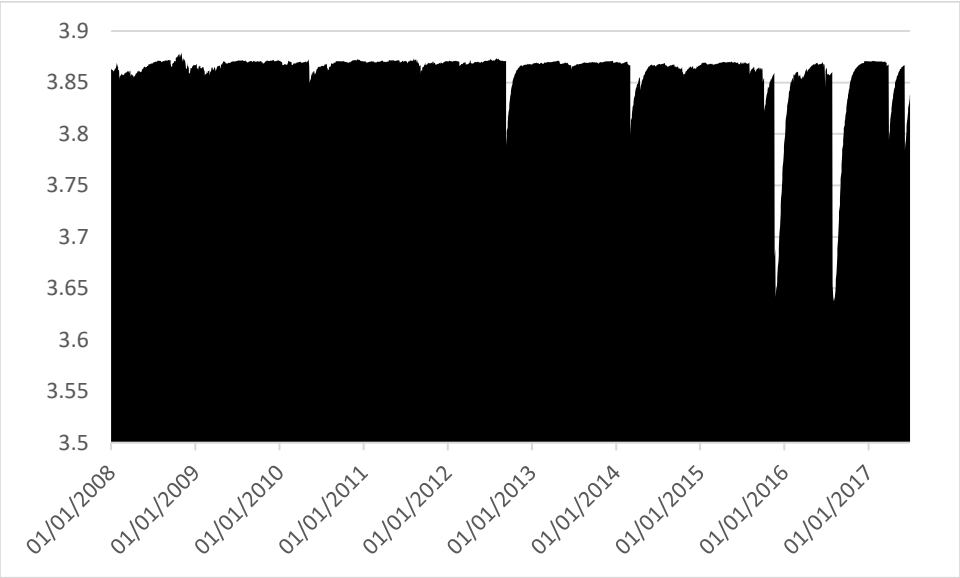


Figure 670: Total Average Dynamic Connectedness Cable Media

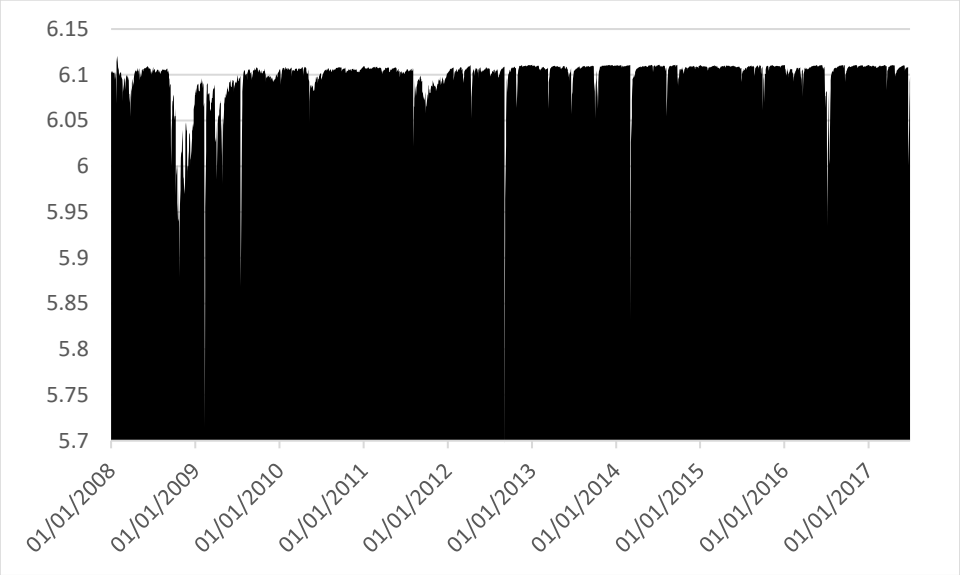


Figure 671: Total Average Dynamic Connectedness Conglomerate Diversified

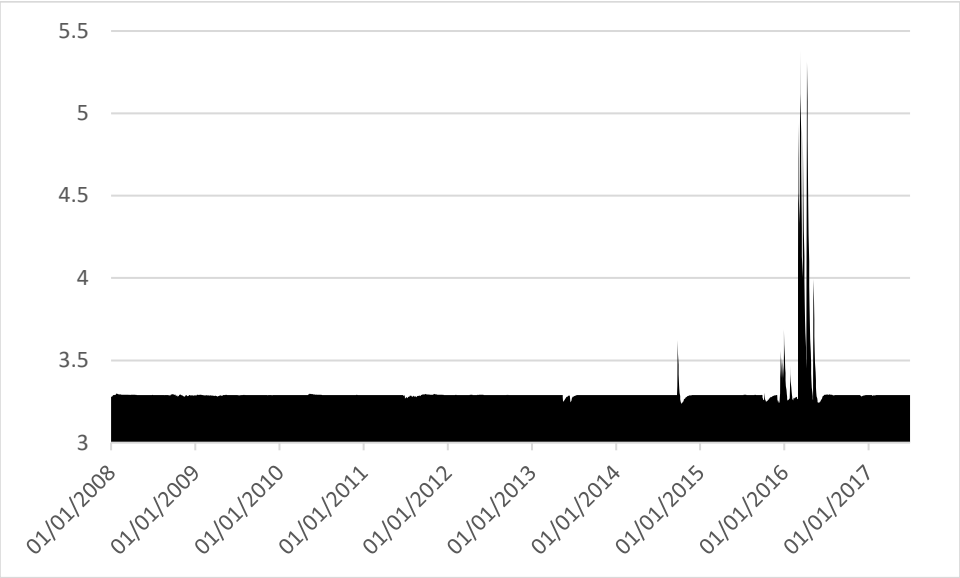


Figure 672: Total Average Dynamic Connectedness Other Financials II

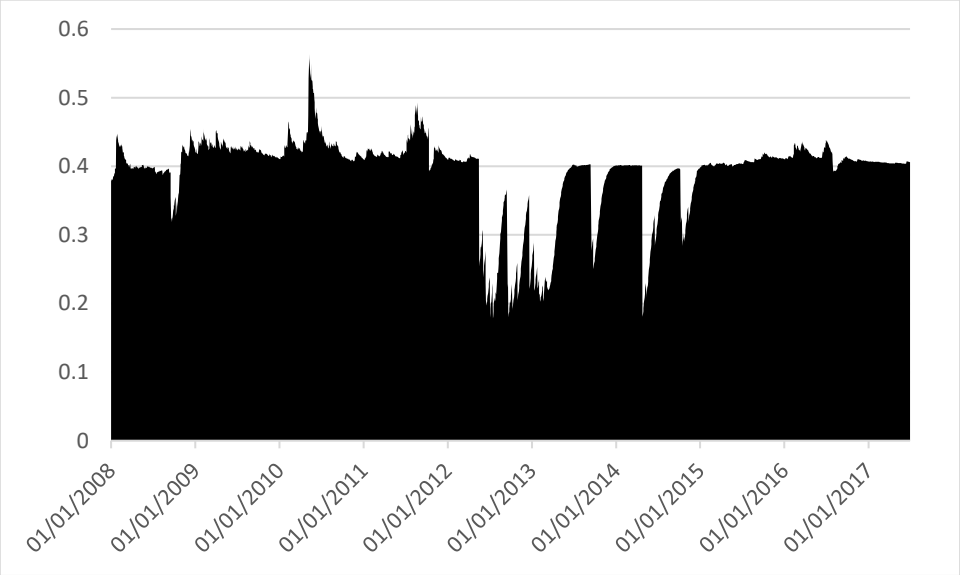


Figure 673: Total Average Dynamic Connectedness Utilities

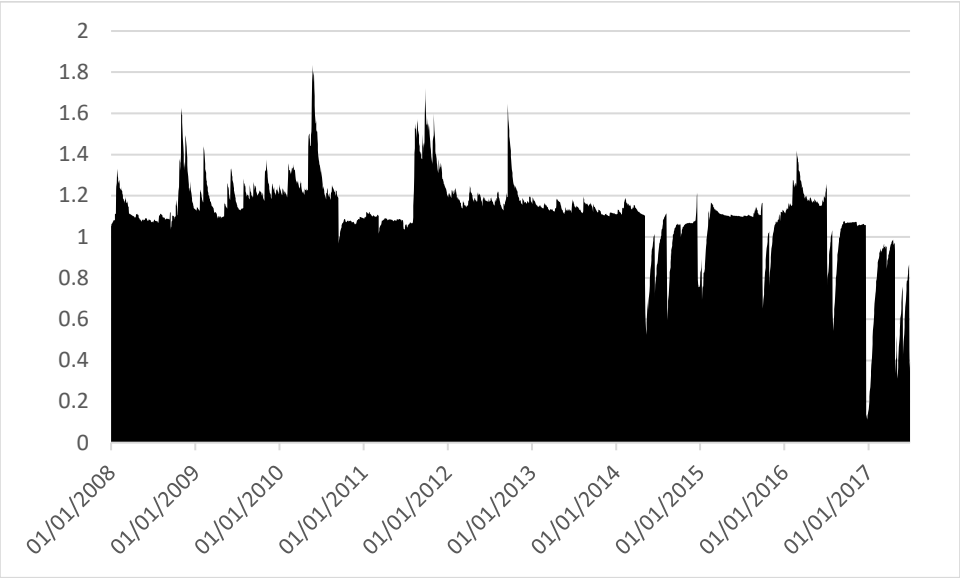


Figure 674: Total Average Dynamic Connectedness Metals & Mining

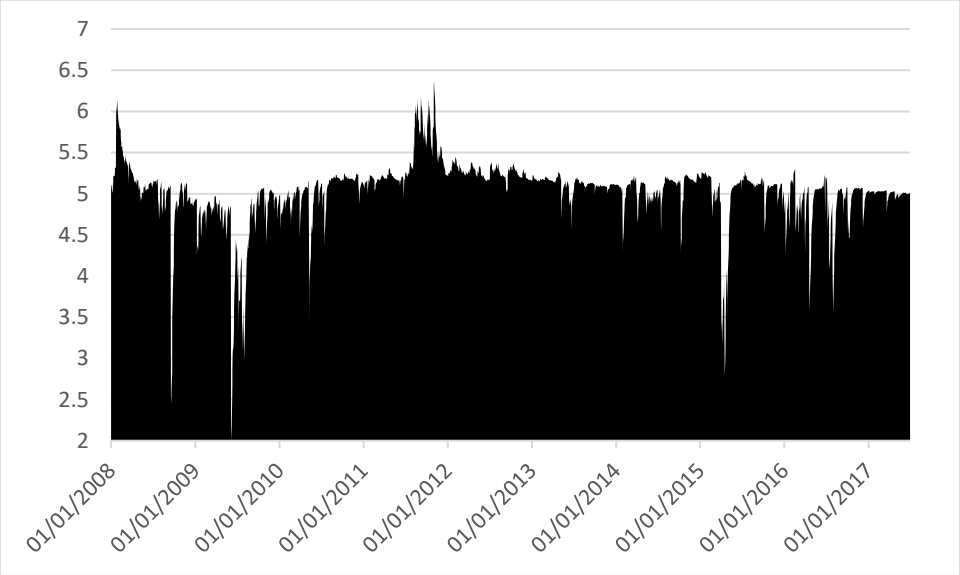


Figure 675: Total Average Dynamic Connectedness Electric Power

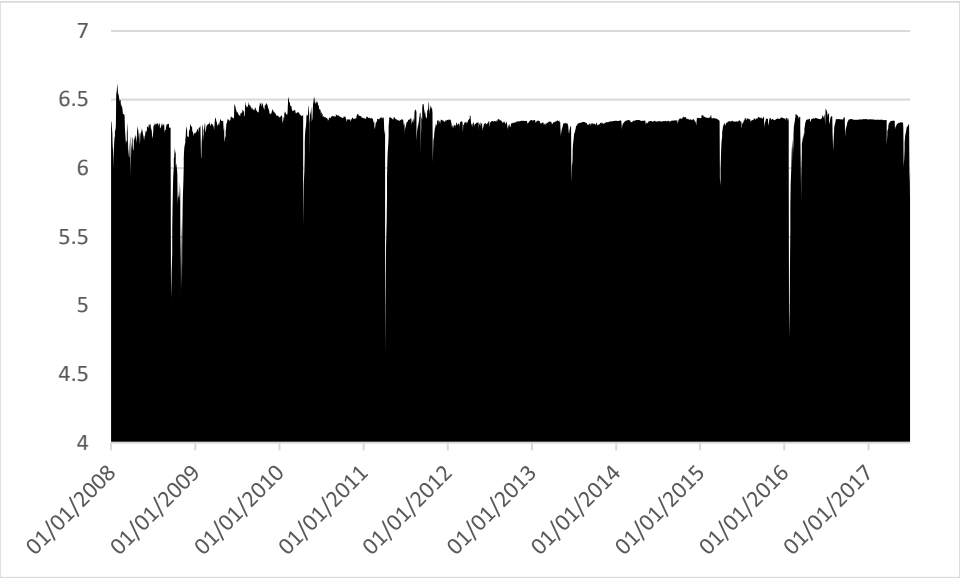


Figure 676: Total Average Dynamic Connectedness Chemicals

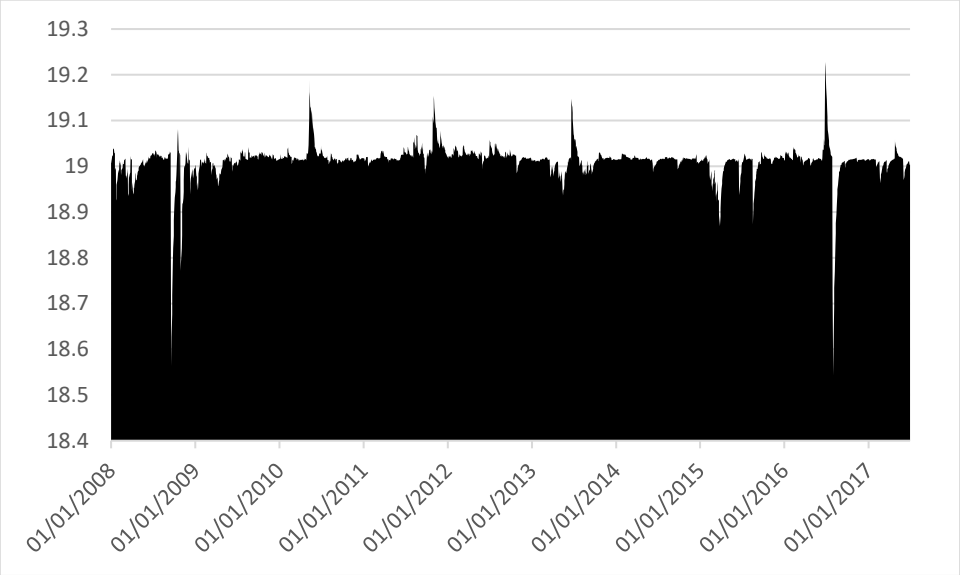


Figure 677: Total Average Dynamic Connectedness Consumer Goods

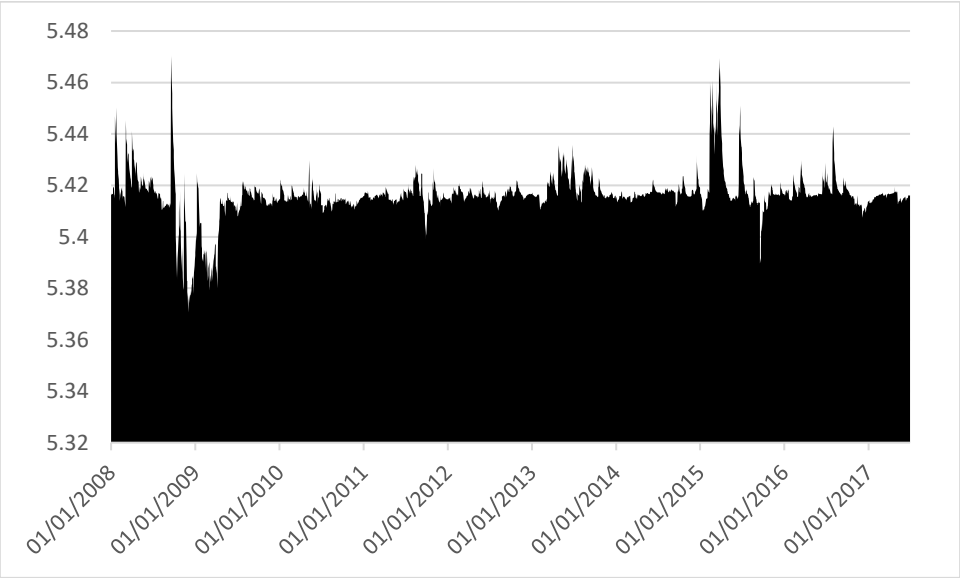


Figure 678: Total Average Dynamic Connectedness Beverages and Bottling

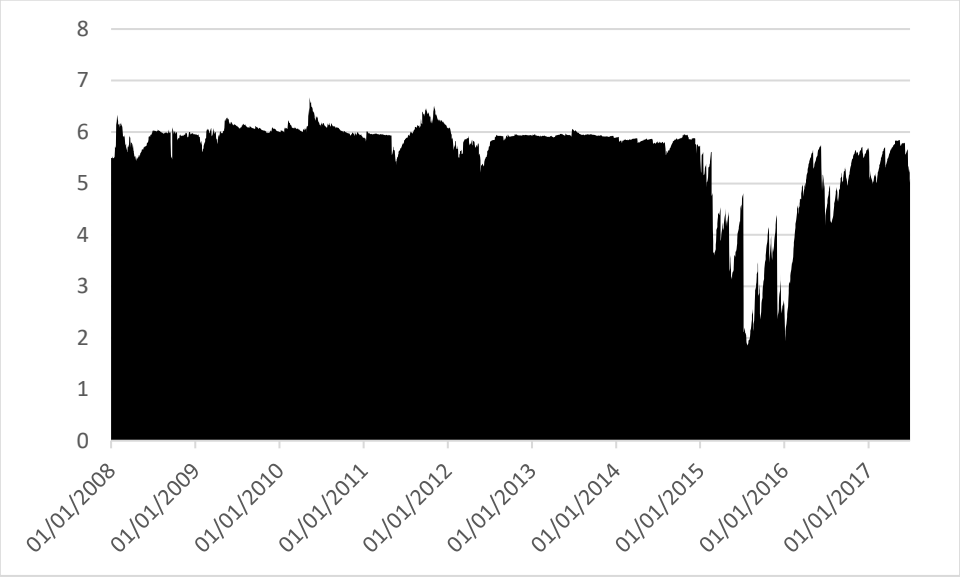


Figure 679: Total Average Dynamic Connectedness Banks

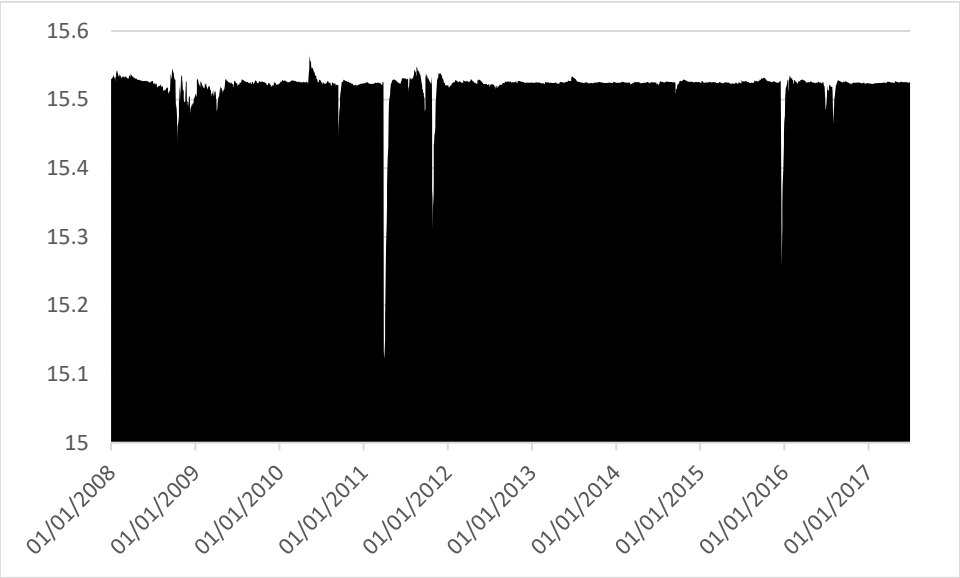


Figure 680: Total Average Dynamic Connectedness Consumer Services

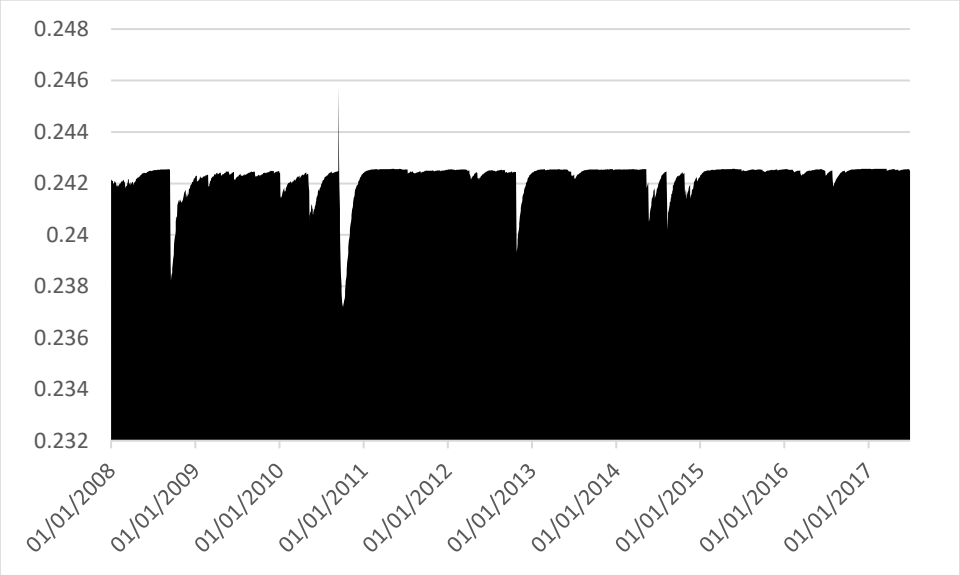


Figure 681: Total Average Dynamic Connectedness Other Consumer Services

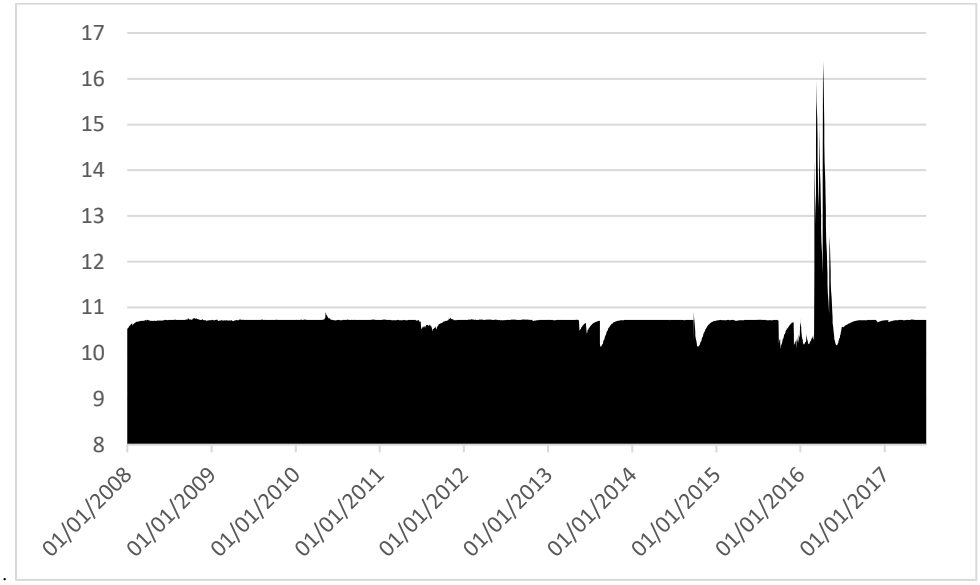


Figure 682: Total Average Dynamic Connectedness Other Financials

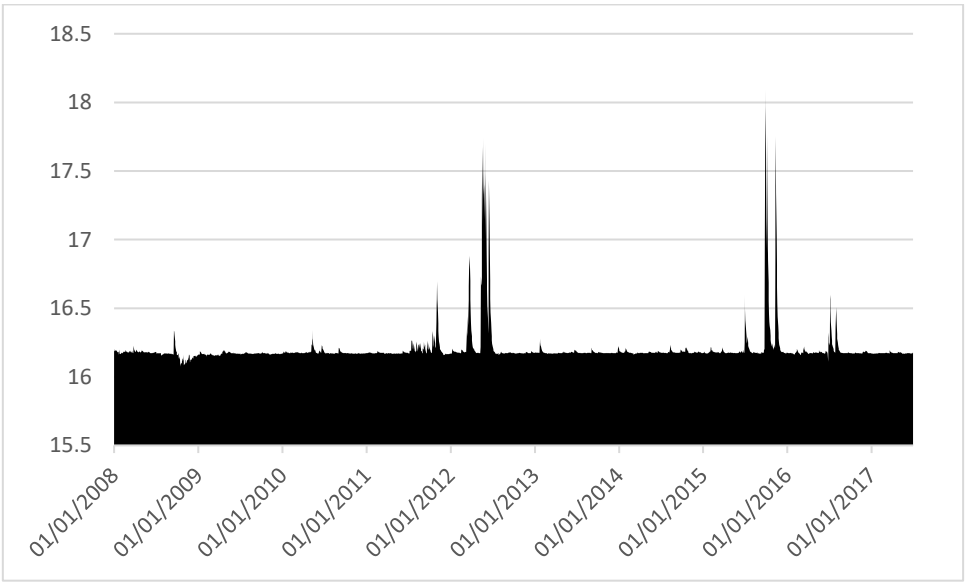


Figure 683: Total Average Dynamic Connectedness Telecommunications

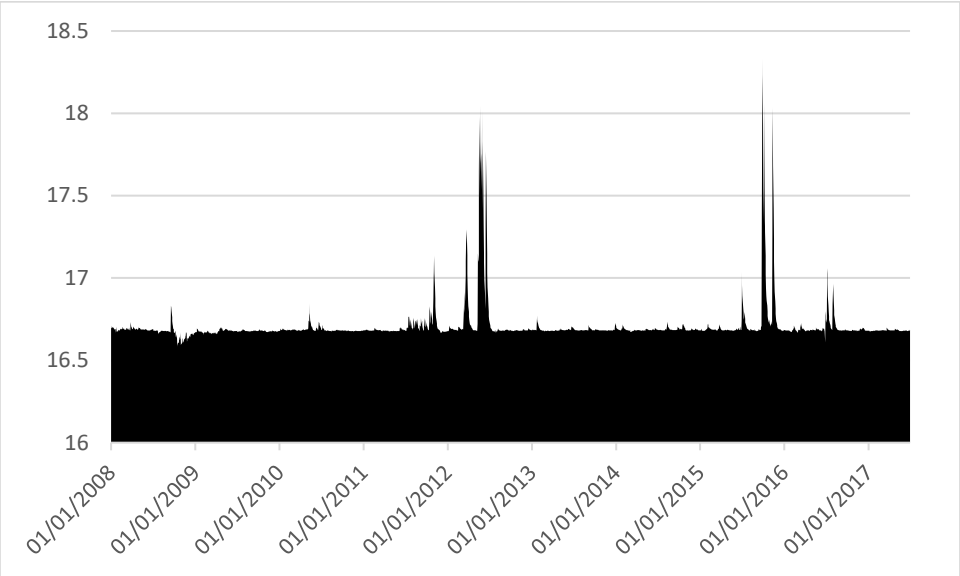


Figure 684: Total Average Dynamic Connectedness Other Telecommunications

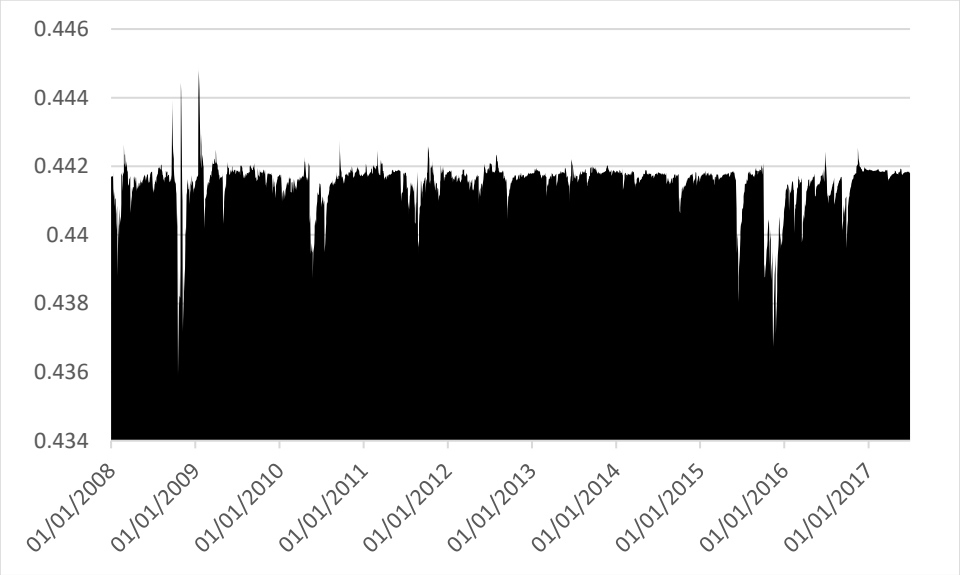


Figure 685: Total Average Dynamic Connectedness Building Products

Japan

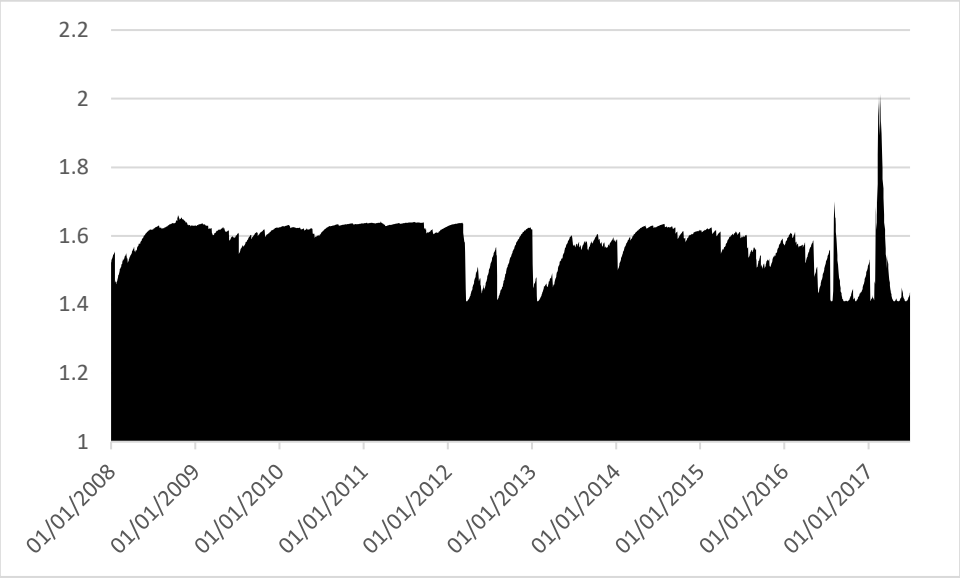


Figure 686: Total Average Dynamic Connectedness Industrials

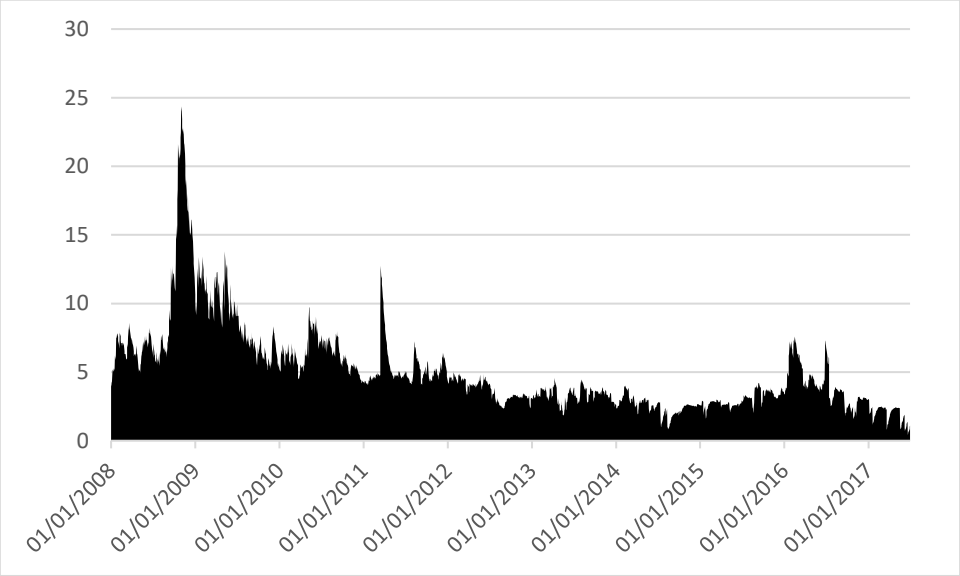


Figure 687: Total Average Dynamic Connectedness Transportation

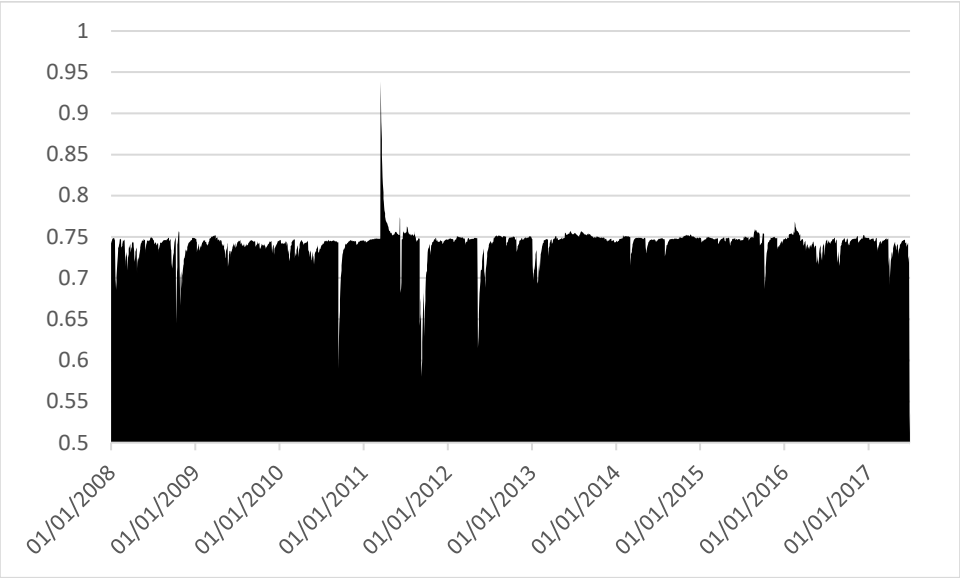


Figure 688: Total Average Dynamic Connectedness Utilities

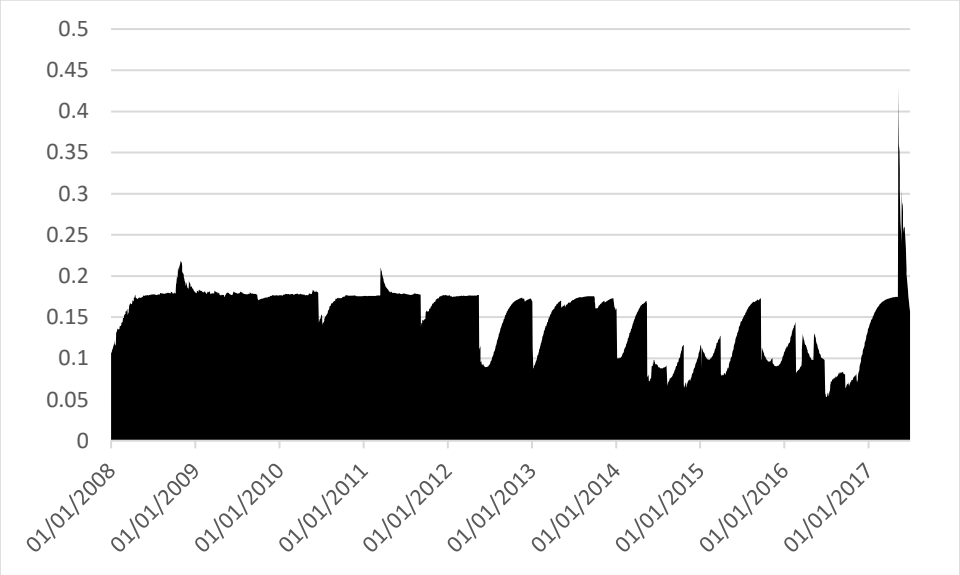


Figure 689: Total Average Dynamic Connectedness Retail Stores

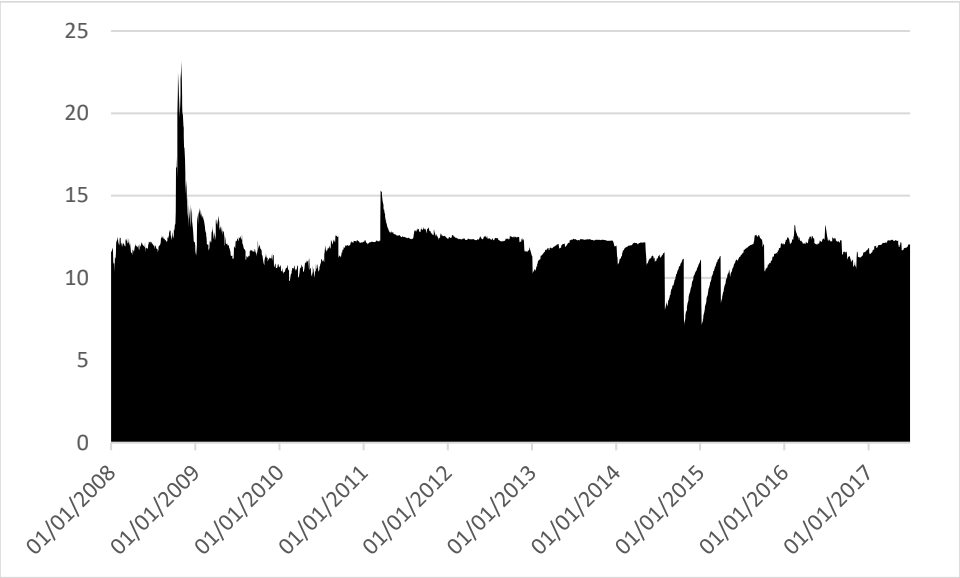


Figure 690: Total Average Dynamic Connectedness Metals & Mining

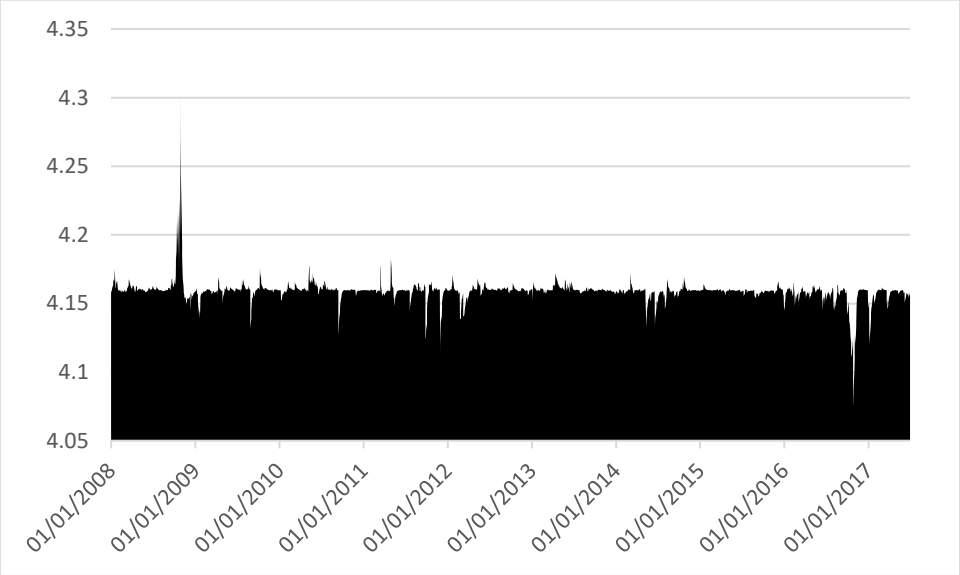


Figure 691: Total Average Dynamic Connectedness Electric Power

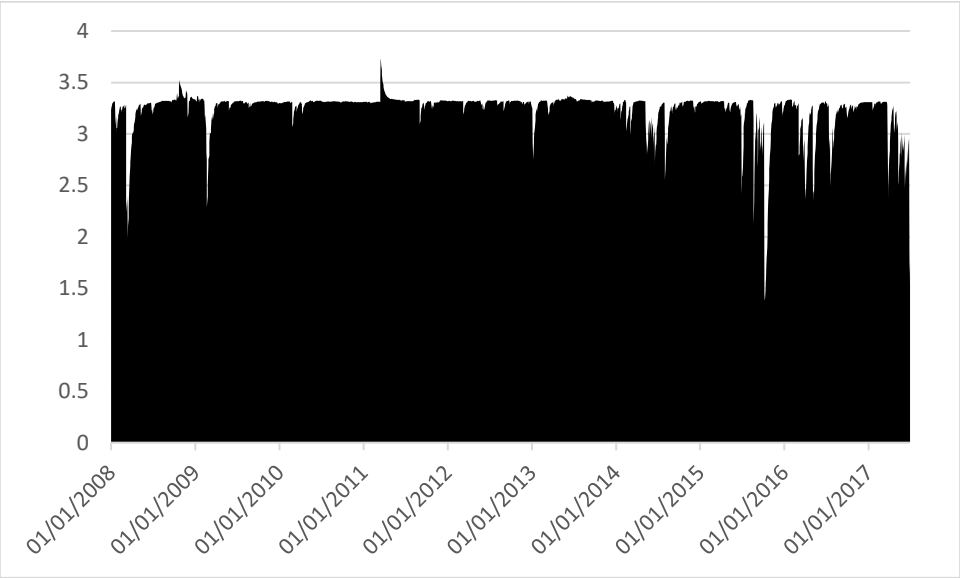


Figure 692: Total Average Dynamic Connectedness Chemicals

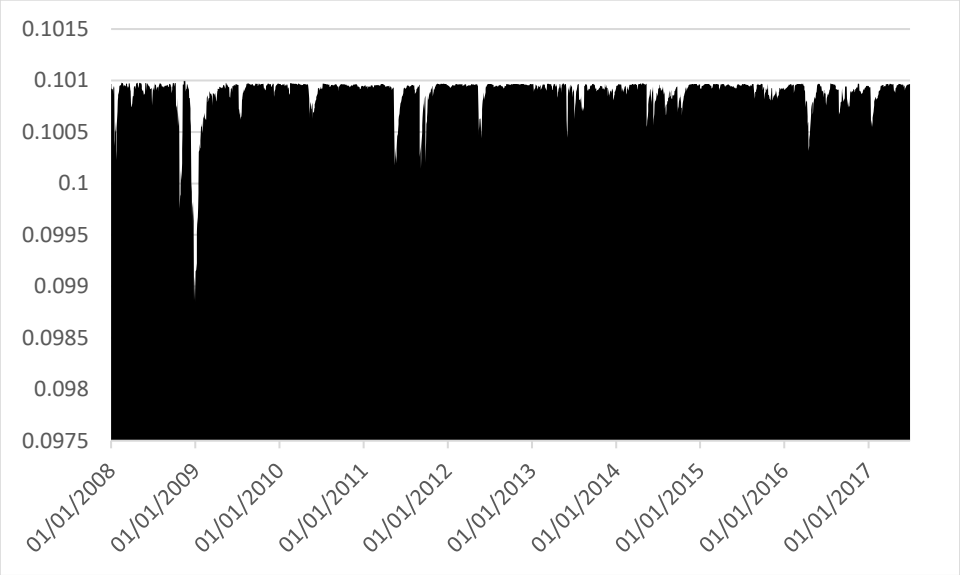


Figure 693: Total Average Dynamic Connectedness Banks

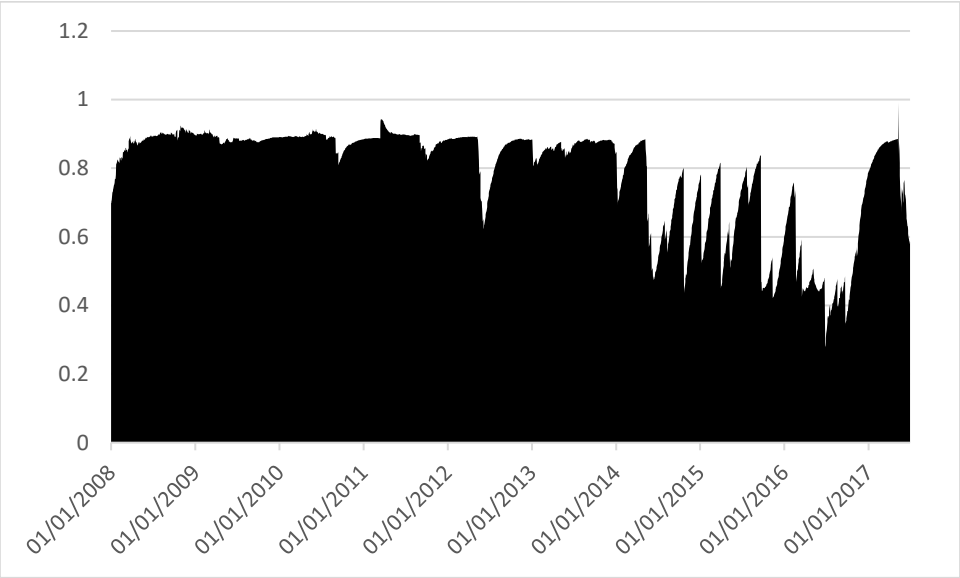


Figure 694: Total Average Dynamic Connectedness Consumer Services

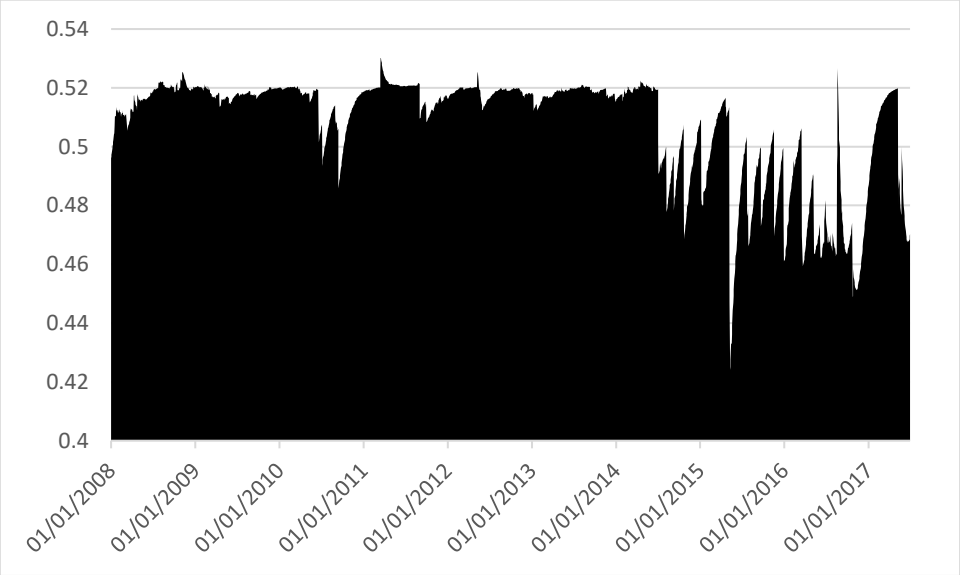


Figure 695: Total Average Dynamic Connectedness Other Consumer Services

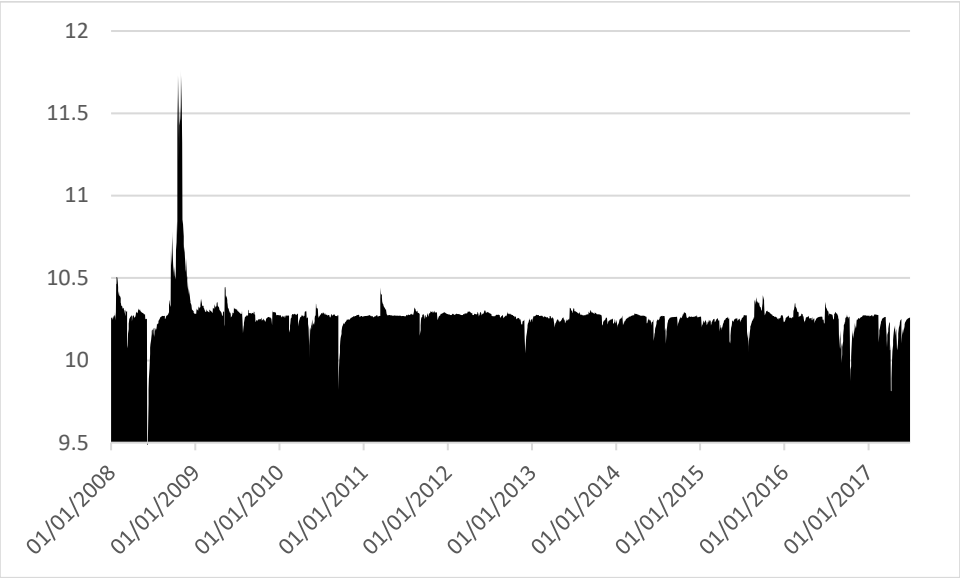


Figure 696: Total Average Dynamic Connectedness Other Financials

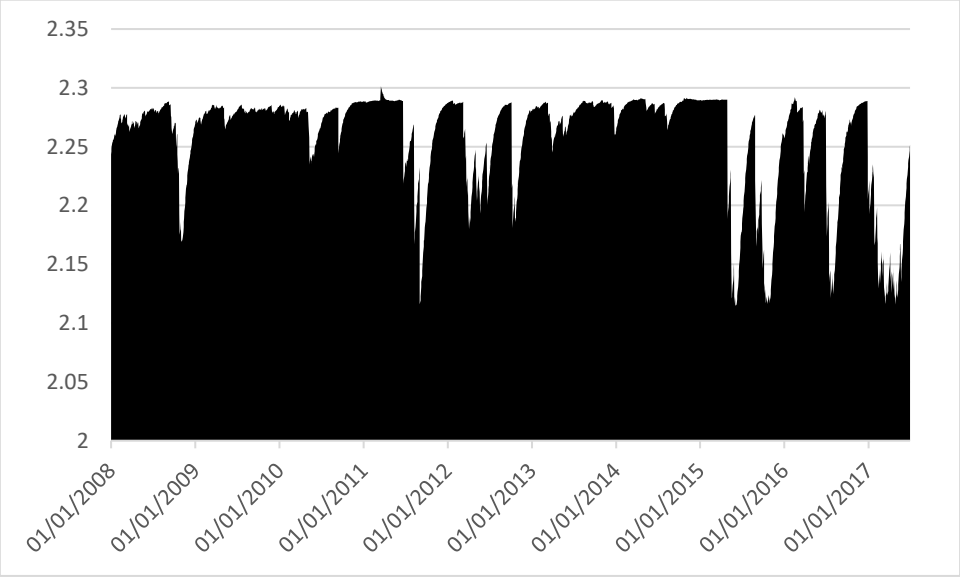


Figure 697: Total Average Dynamic Connectedness Telecommunications

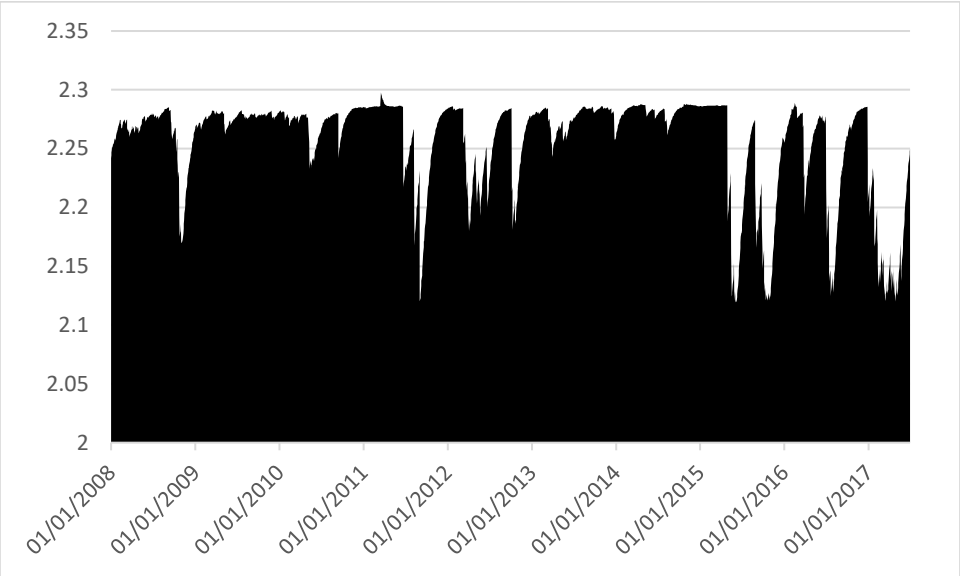


Figure 698: Total Average Dynamic Connectedness Other Telecommunications

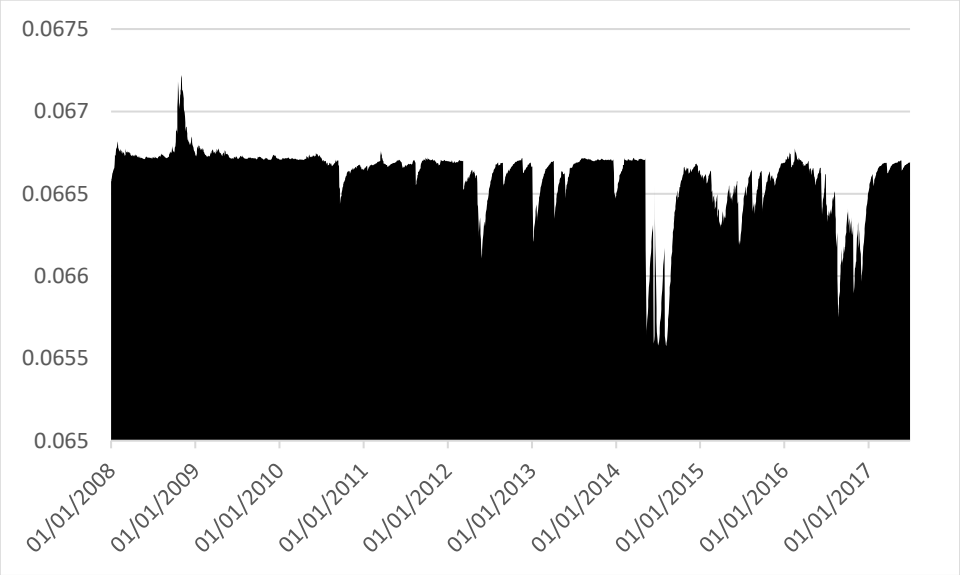


Figure 699: Total Average Dynamic Connectedness Machinery

H.2 Full-BEKK GARCH Model

United States

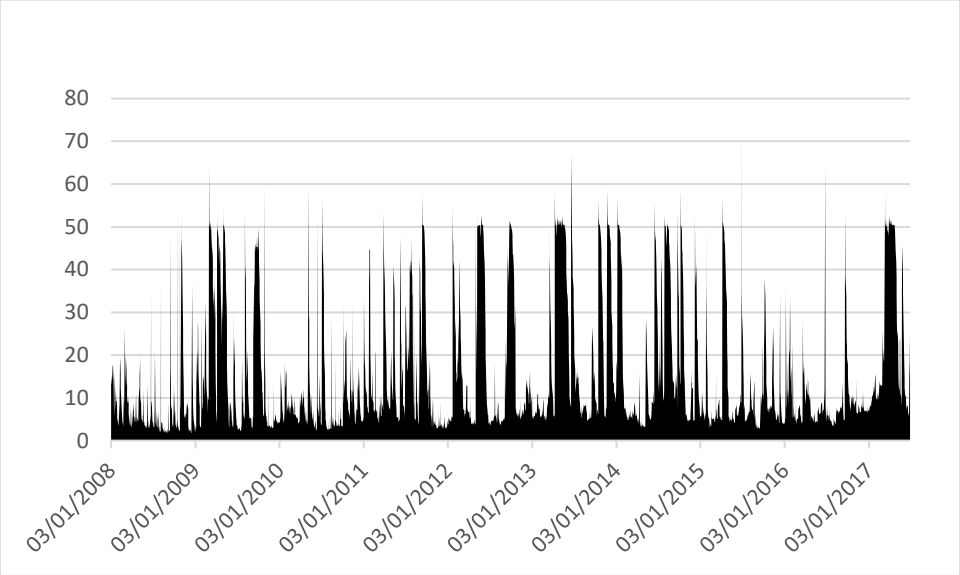


Figure 700: Total Average Dynamic Connectedness Leisure

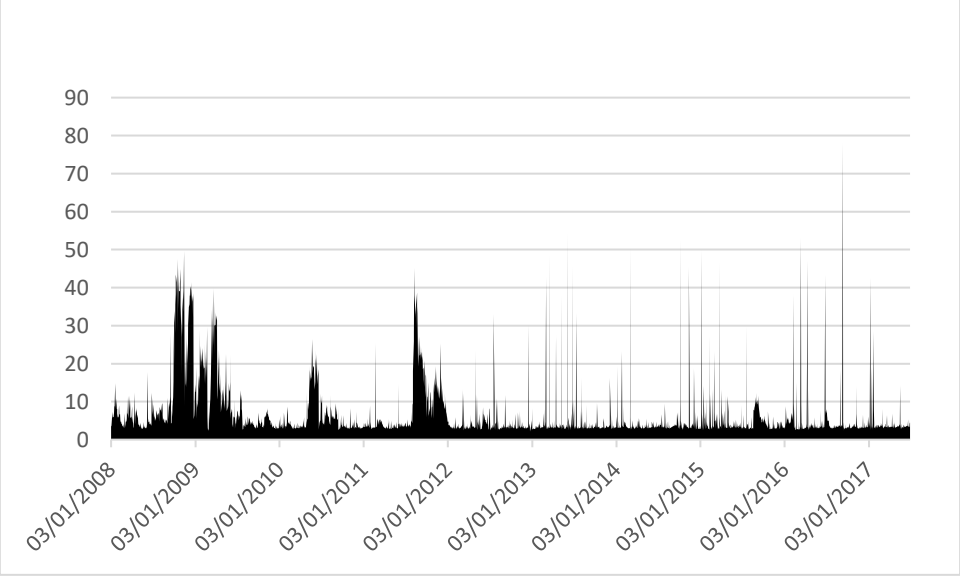


Figure 701: Total Average Dynamic Connectedness Industrials

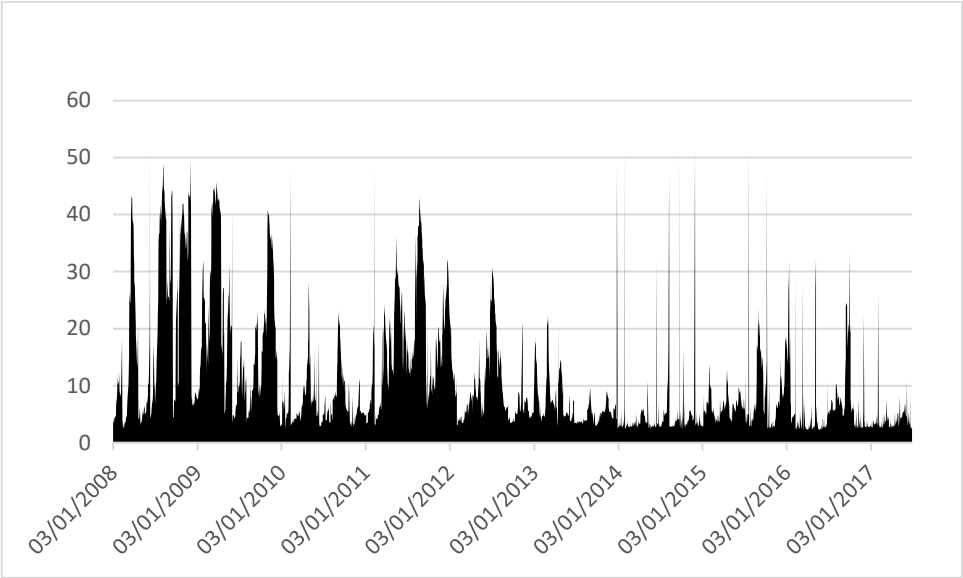


Figure 702: Total Average Dynamic Connectedness Oil & Gas

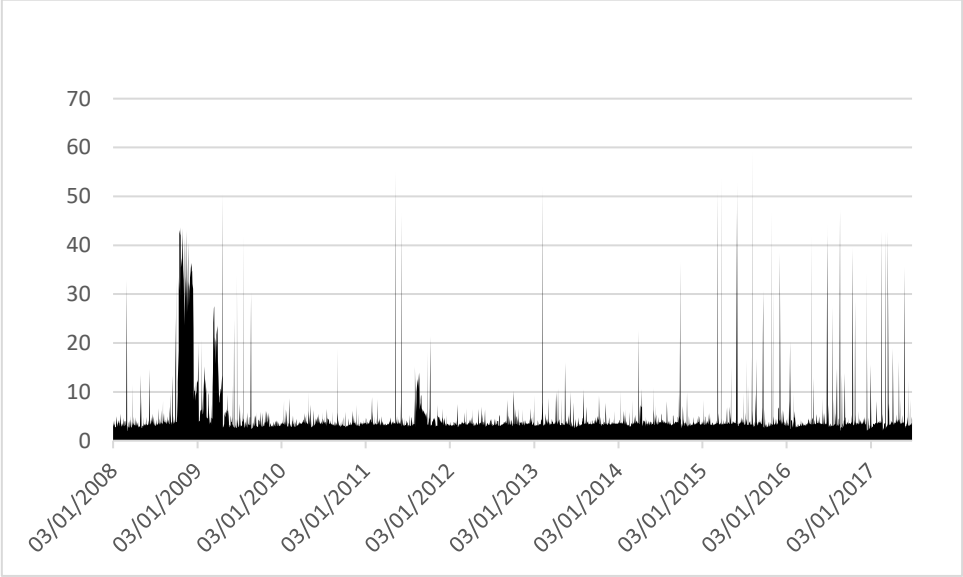


Figure 703: Total Average Dynamic Connectedness Cable Media

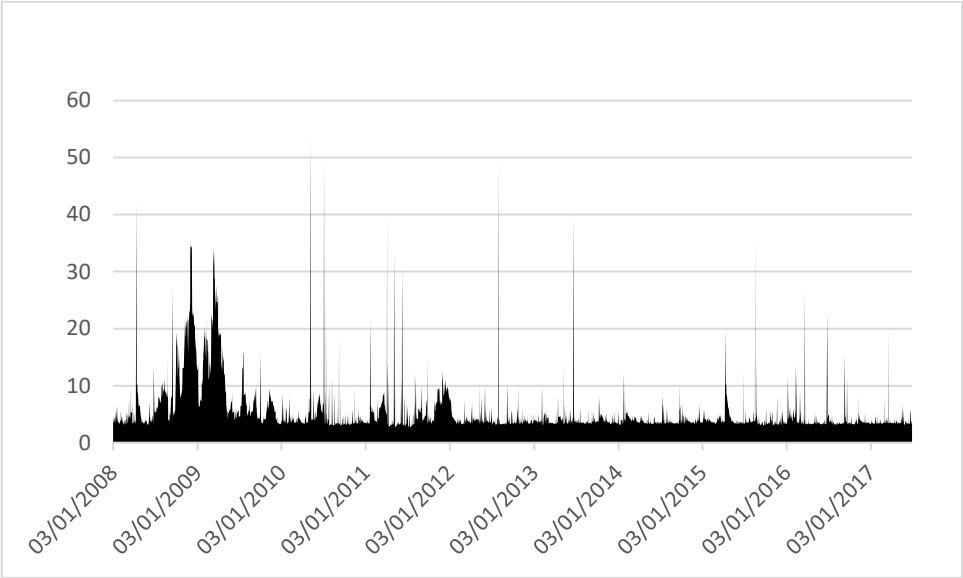


Figure 704: Total Average Dynamic Connectedness Conglomerate Diversified Mfg

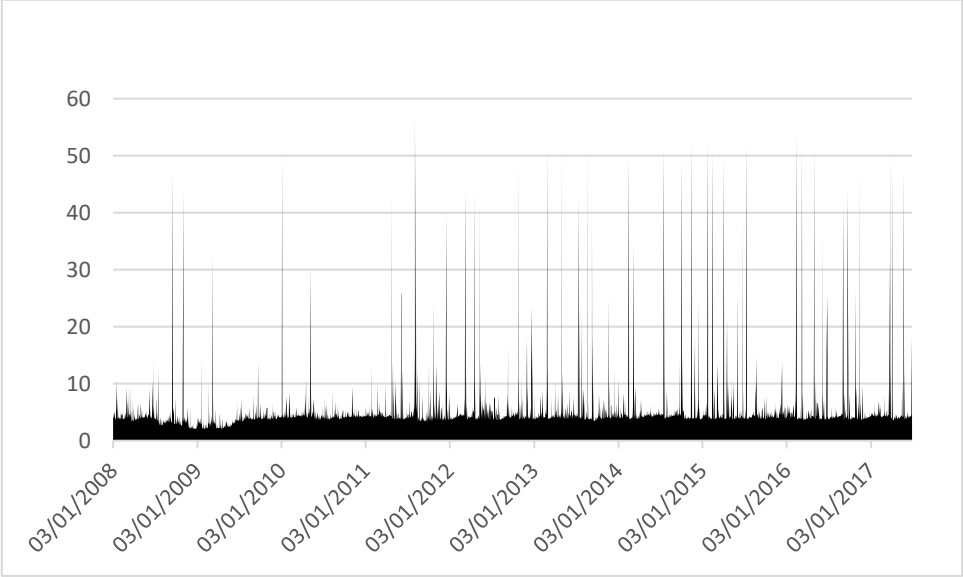


Figure 705: Total Average Dynamic Connectedness Other Financials II

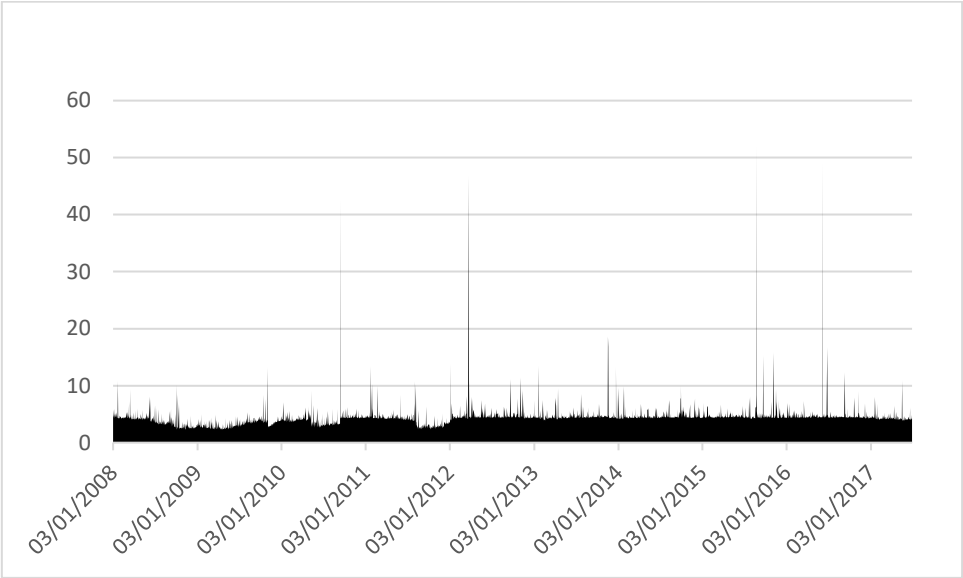


Figure 706: Total Average Dynamic Connectedness Transportation

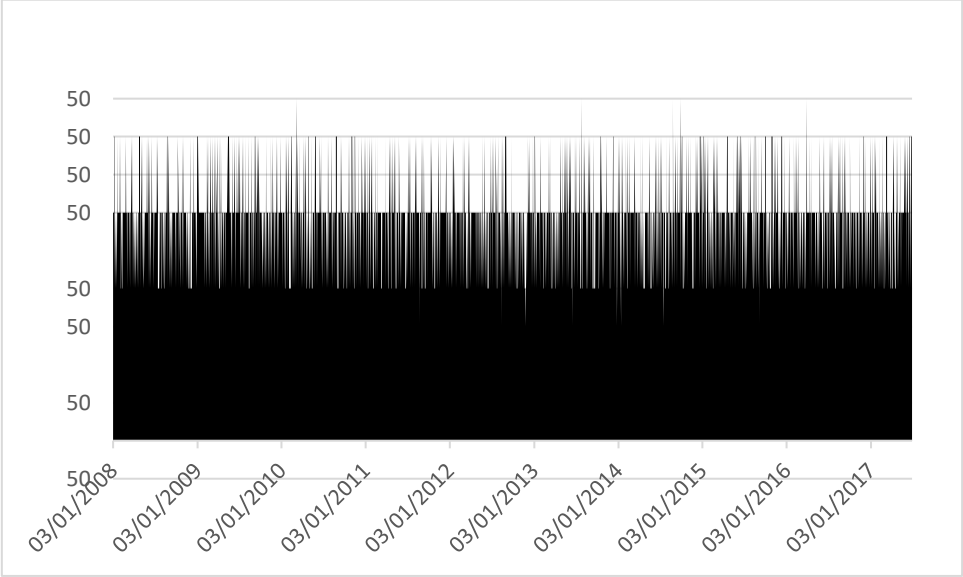


Figure 707: Total Average Dynamic Connectedness Utilities

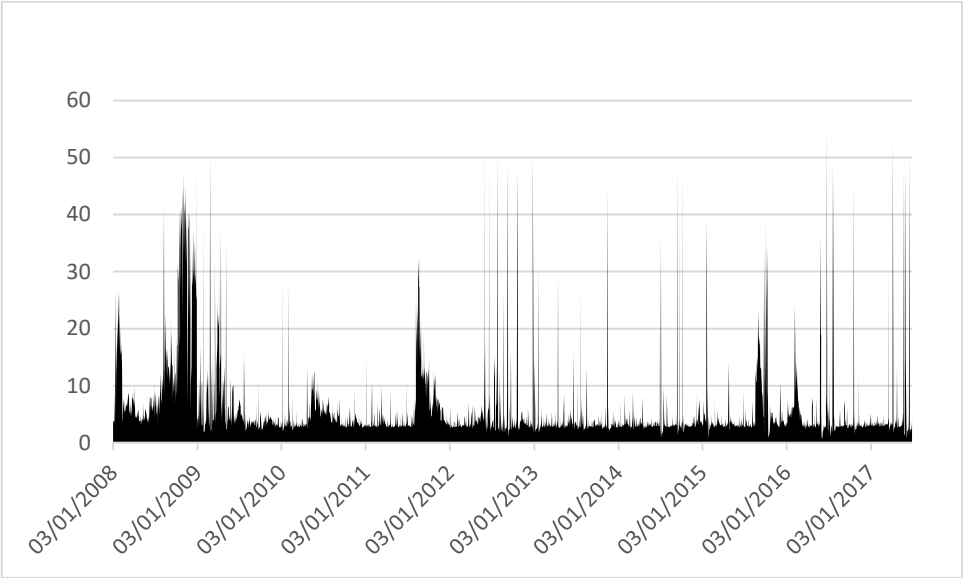


Figure 708: Total Average Dynamic Connectedness Retail Stores

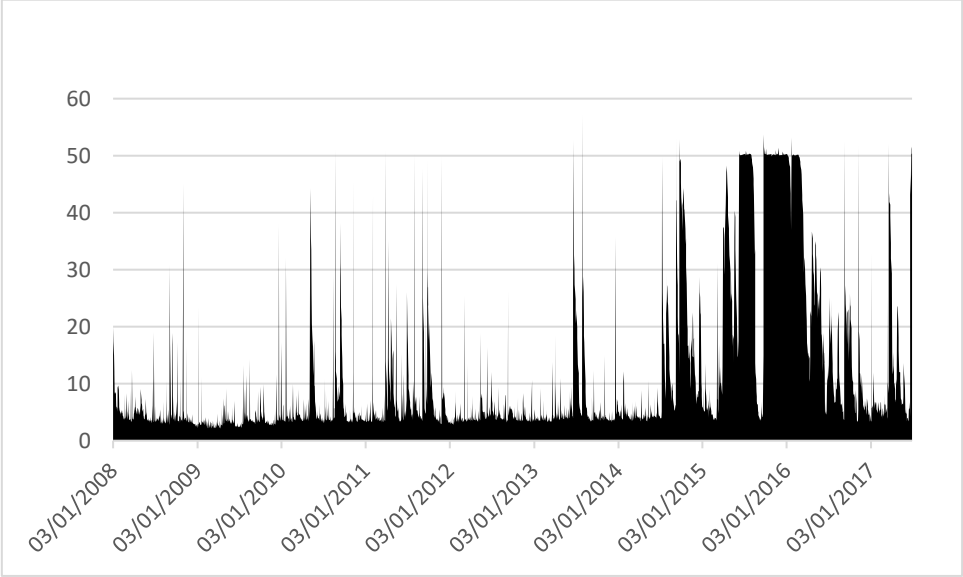


Figure 709: Total Average Dynamic Connectedness Metals & Mining

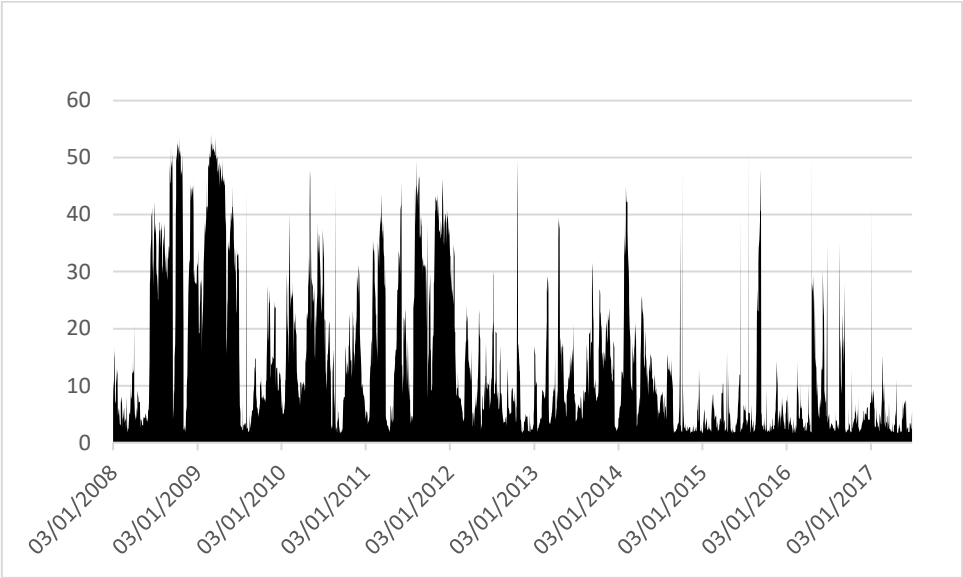


Figure 710: Total Average Dynamic Connectedness Electronics

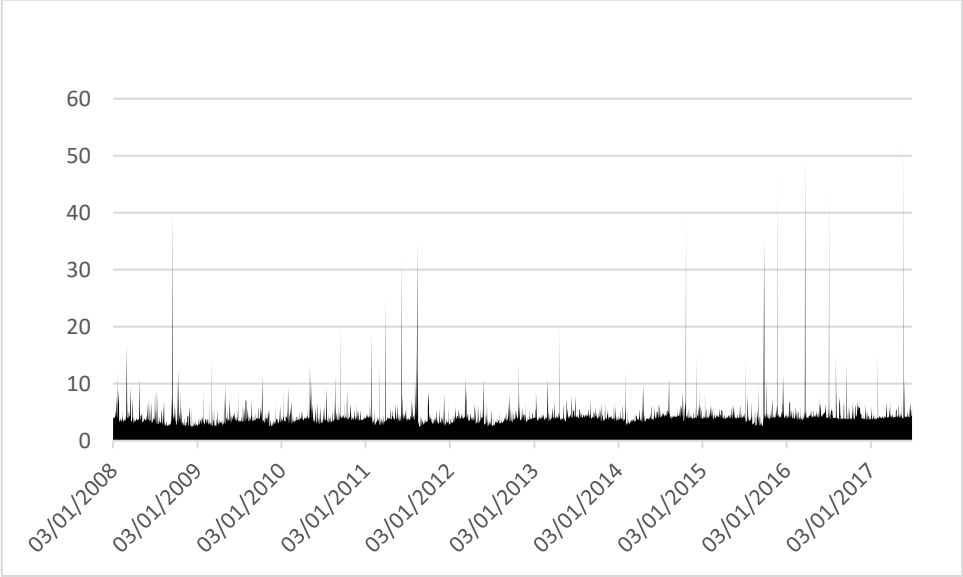


Figure 711: Total Average Dynamic Connectedness Chemicals

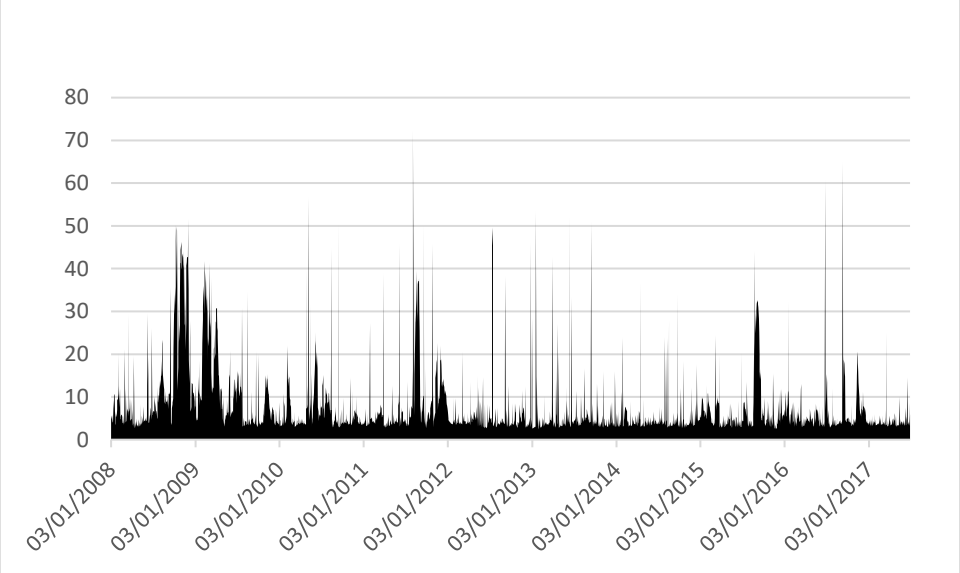


Figure 712: Total Average Dynamic Connectedness Consumer Goods

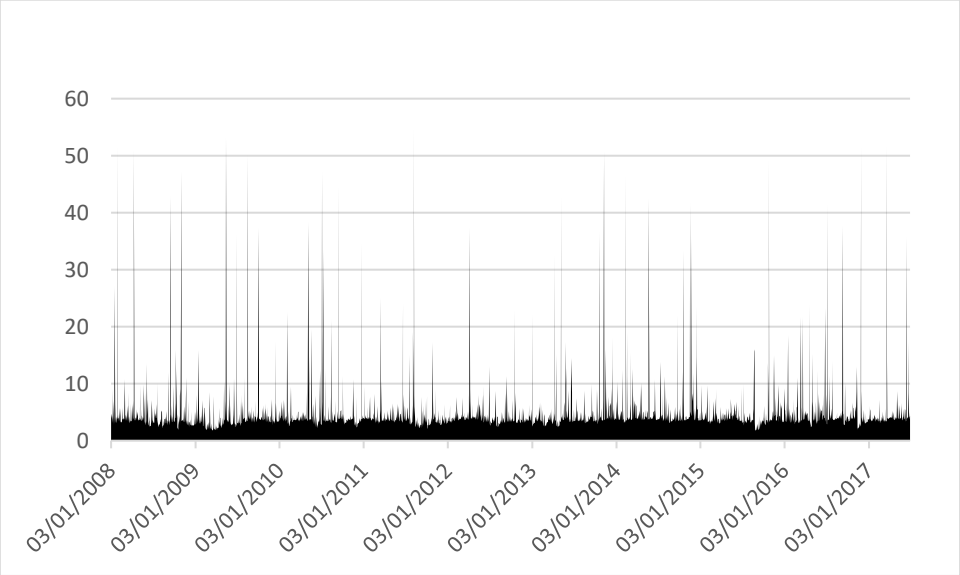


Figure 713: Total Average Dynamic Connectedness Beverages and Bottling

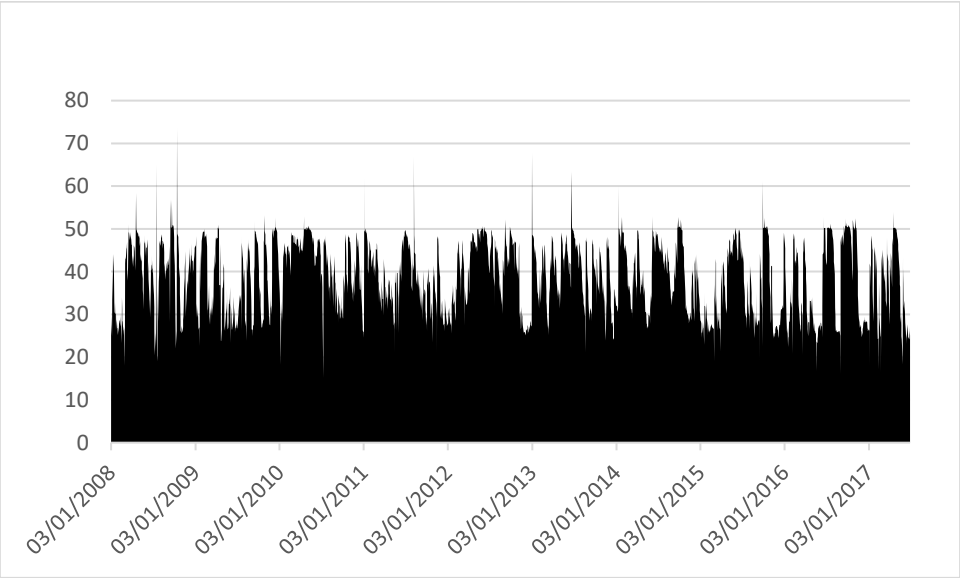


Figure 714: Total Average Dynamic Connectedness Banking

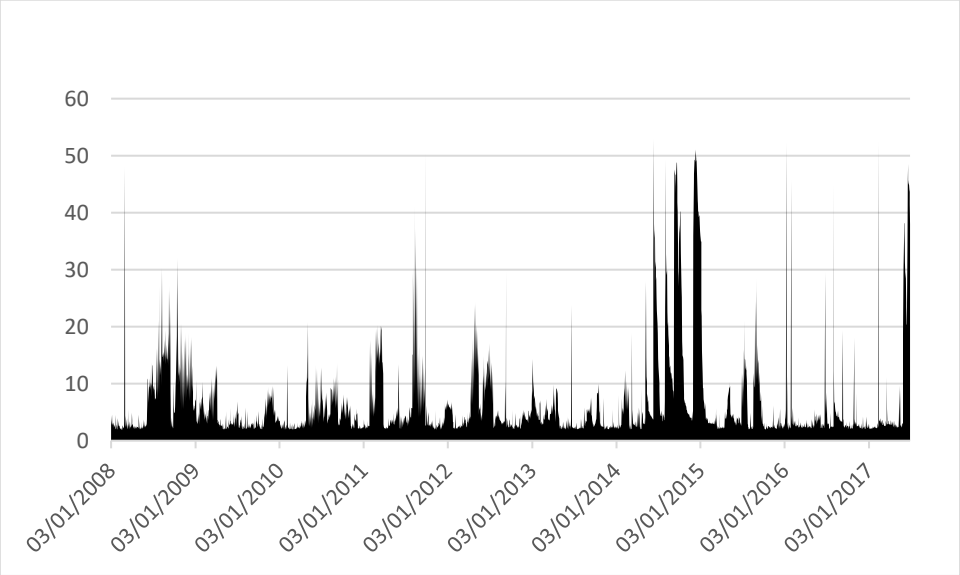


Figure 715: Total Average Dynamic Connectedness Consumer Services

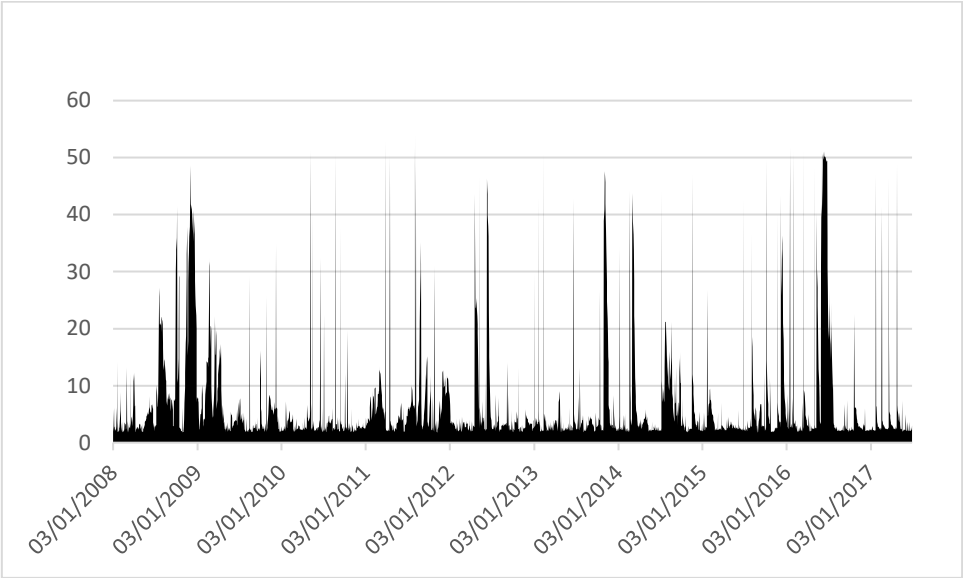


Figure 716: Total Average Dynamic Connectedness Other Consumer Services

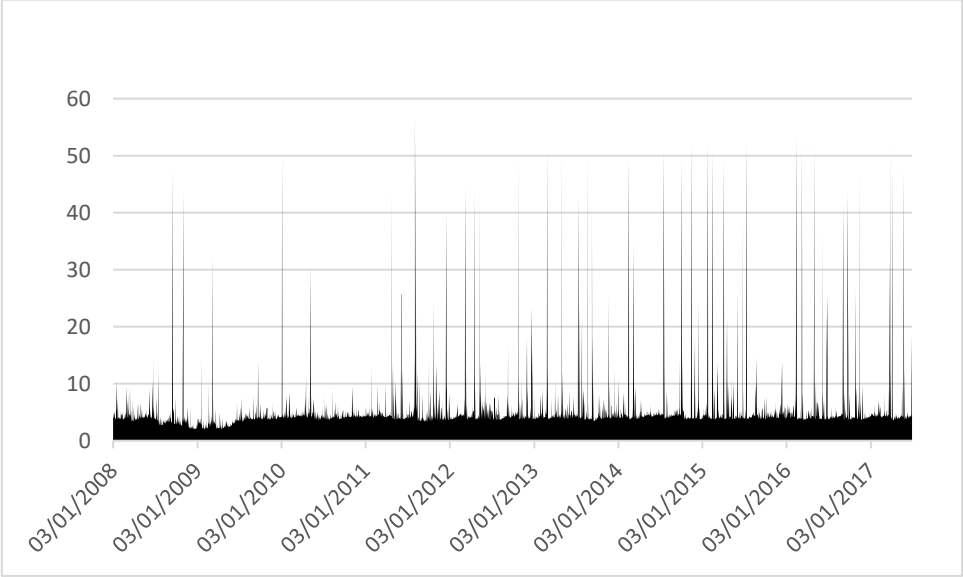


Figure 717: Total Average Dynamic Connectedness Other Financials

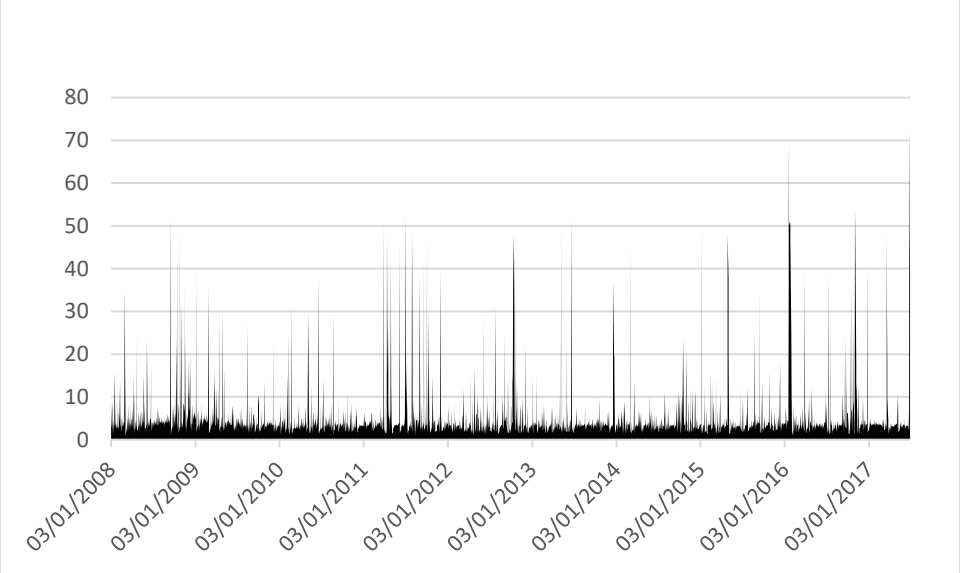


Figure 718: Total Average Dynamic Connectedness Telecommunications

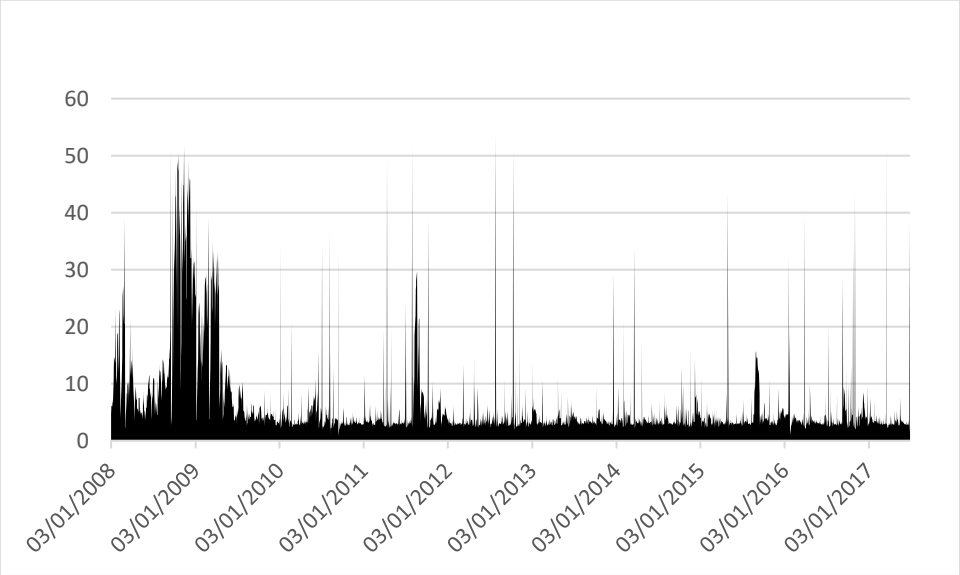


Figure 719: Total Average Dynamic Connectedness Other Telecommunications

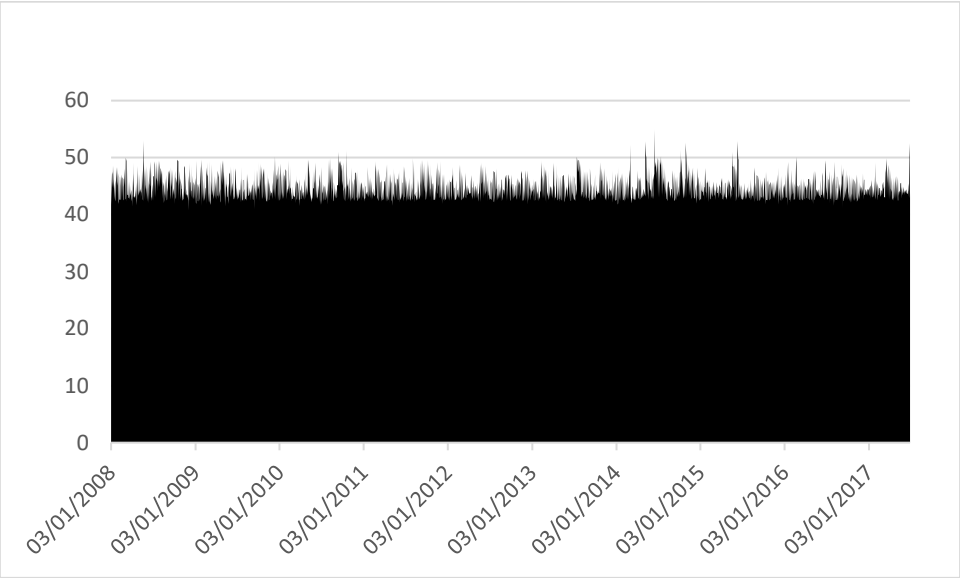


Figure 720: Total Average Dynamic Connectedness Airlines

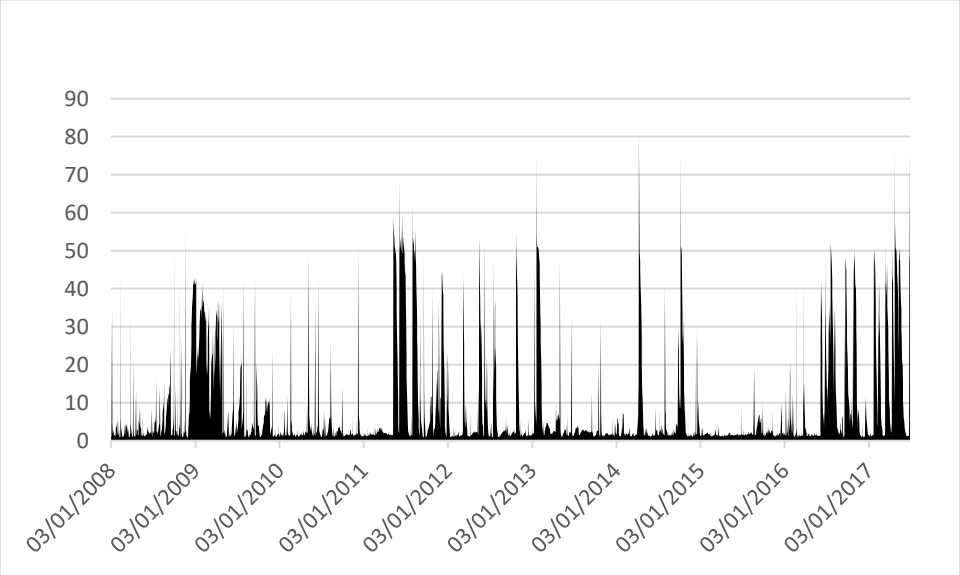


Figure 721: Total Average Dynamic Connectedness Building Products

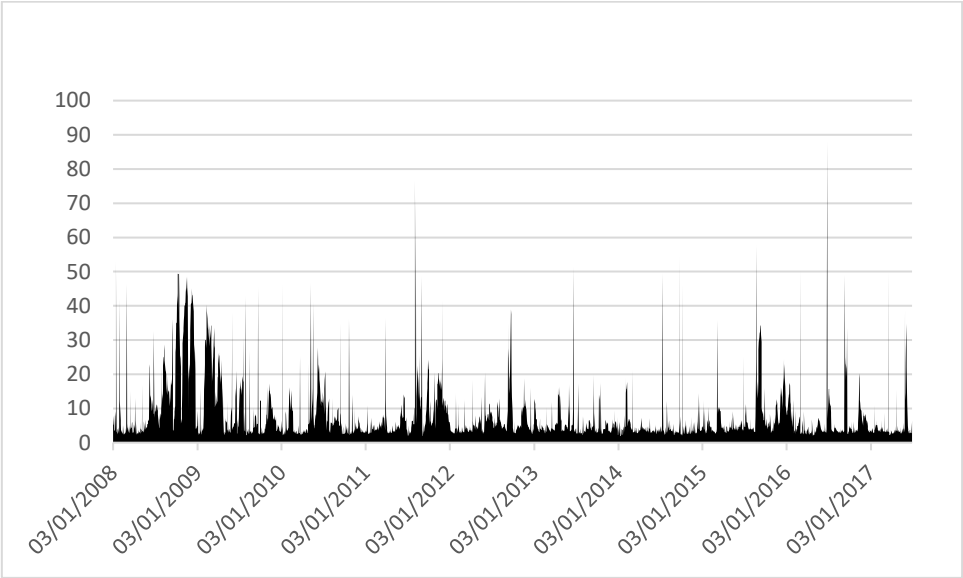


Figure 722: Total Average Dynamic Connectedness Containers

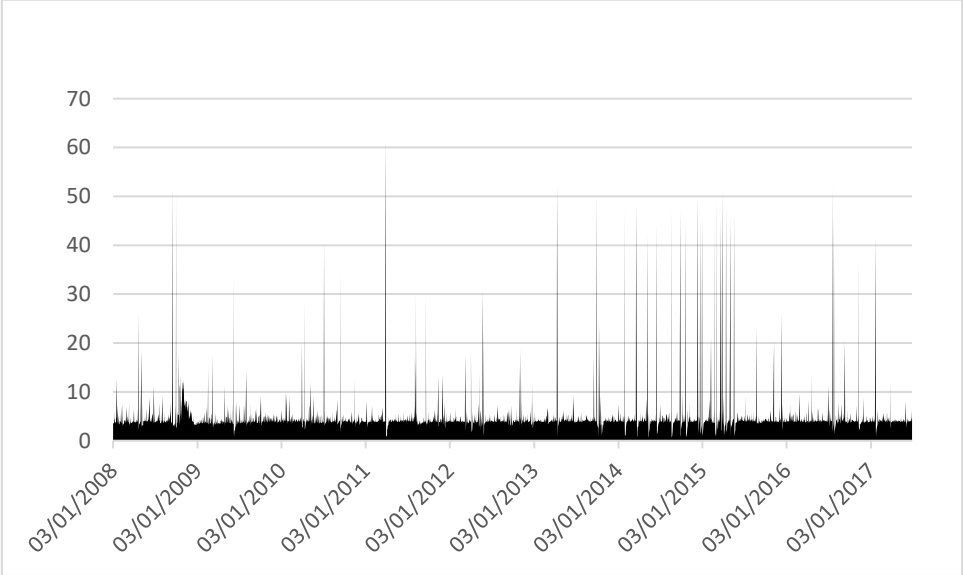


Figure 723: Total Average Dynamic Connectedness Electric Utility Mid Quality

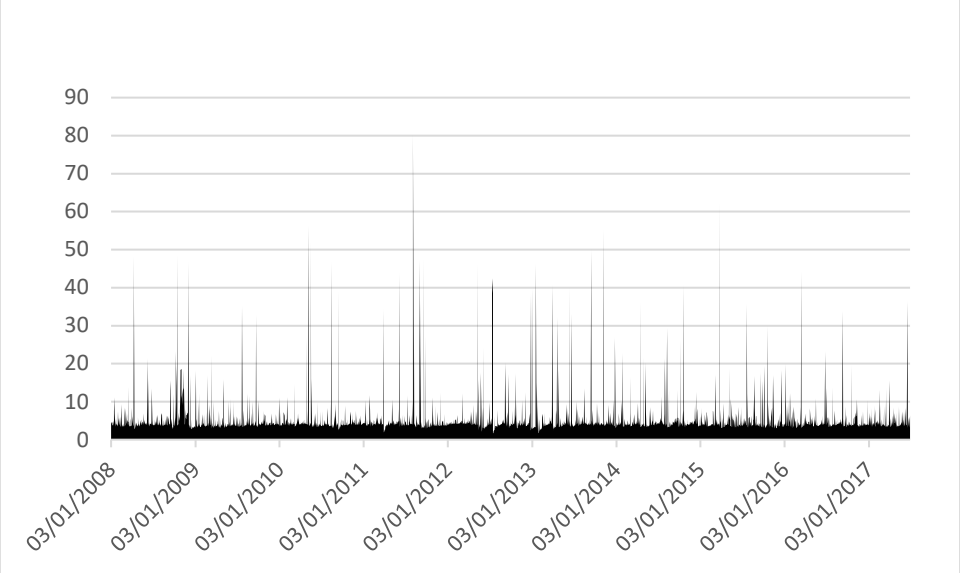


Figure 724: Total Average Dynamic Connectedness Food Processors

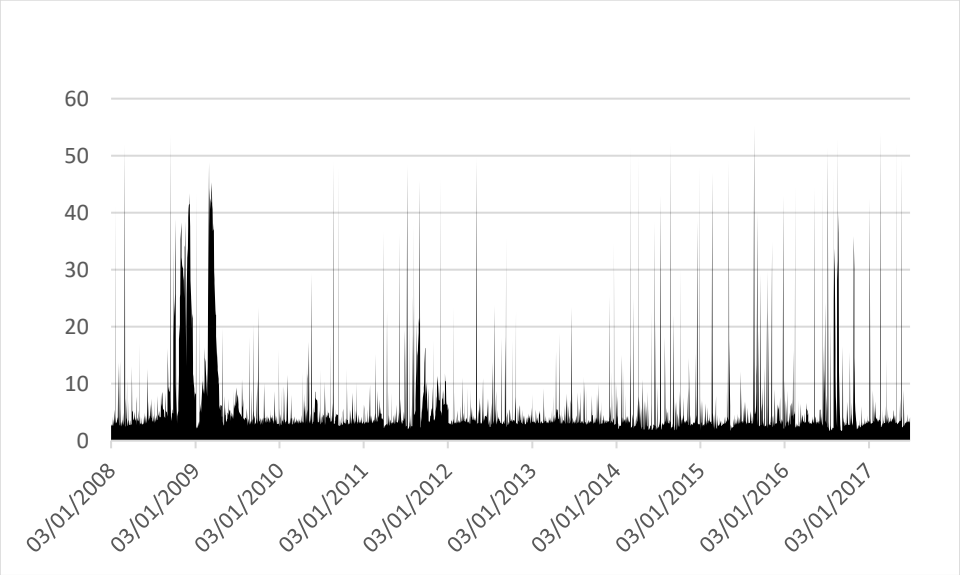


Figure 725: Total Average Dynamic Connectedness Healthcare Services

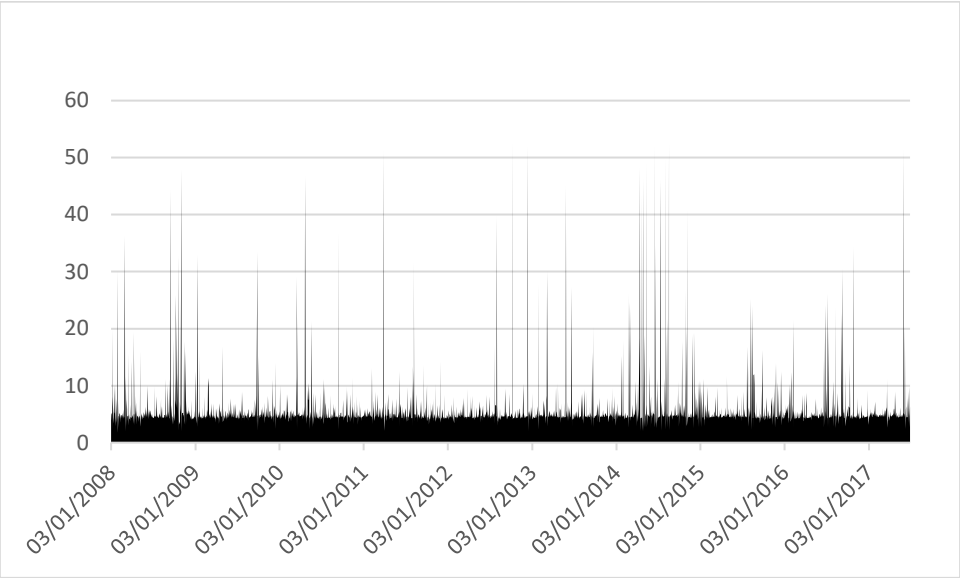


Figure 726: Total Average Dynamic Connectedness Healthcare Supplies

United Kingdom

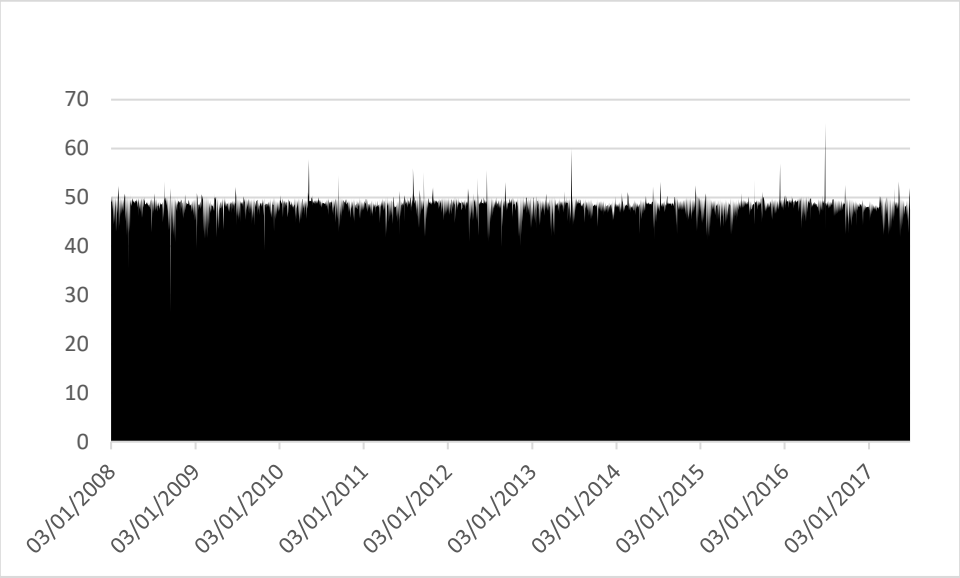


Figure 727: Total Average Dynamic Connectedness Other Financials II

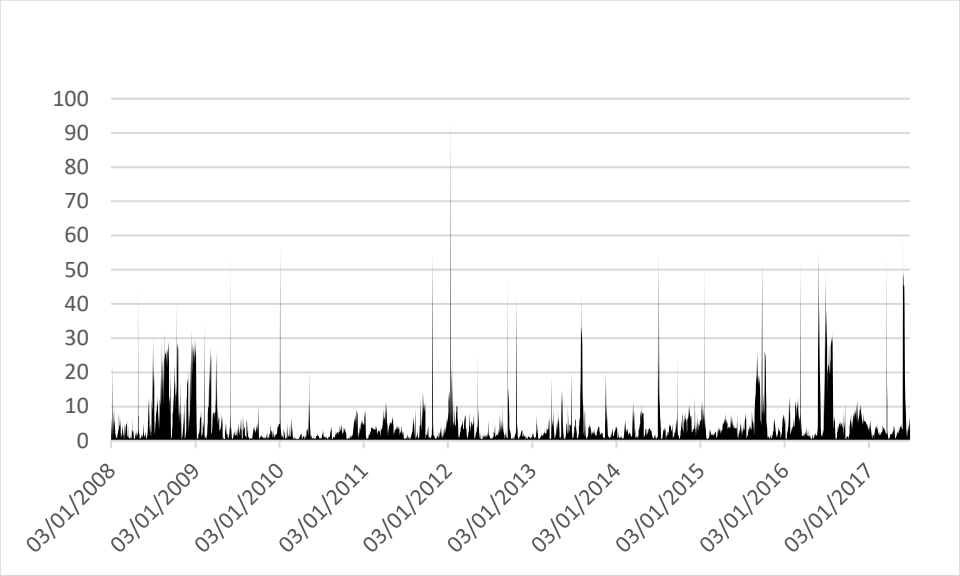


Figure 728: Total Average Dynamic Connectedness Retails Stores

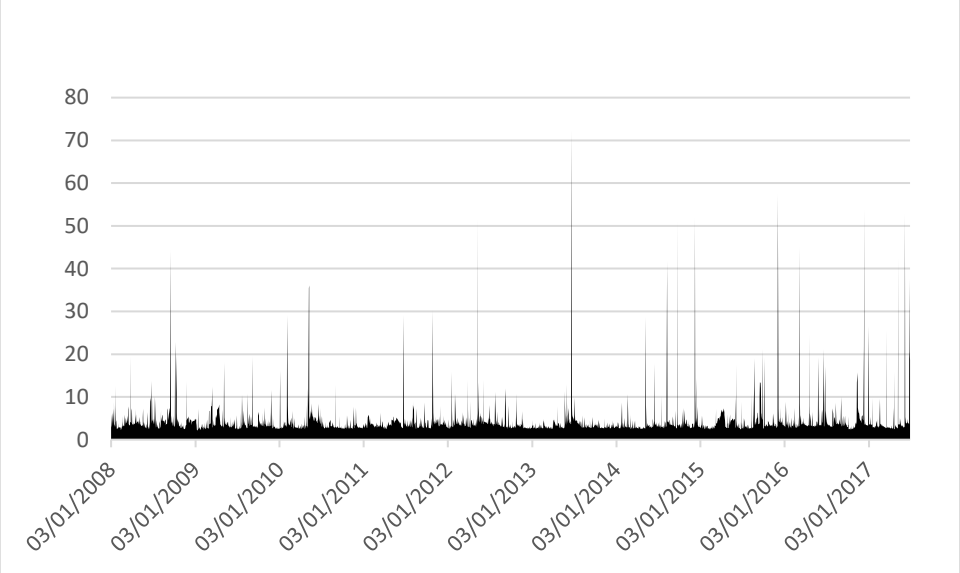


Figure 729: Total Average Dynamic Connectedness Consumer Goods

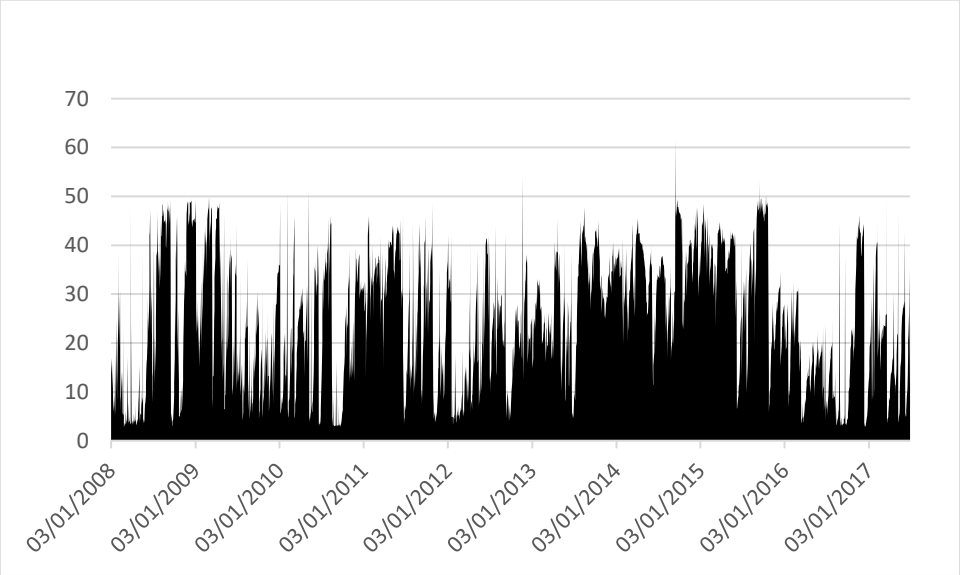


Figure 730: Total Average Dynamic Connectedness Beverages and Bottling

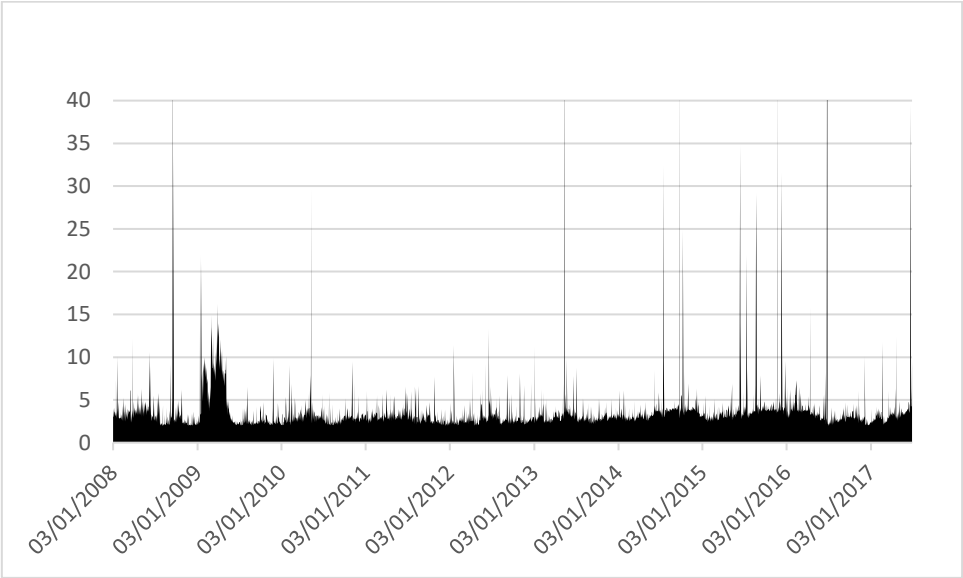


Figure 731: Total Average Dynamic Connectedness Banking

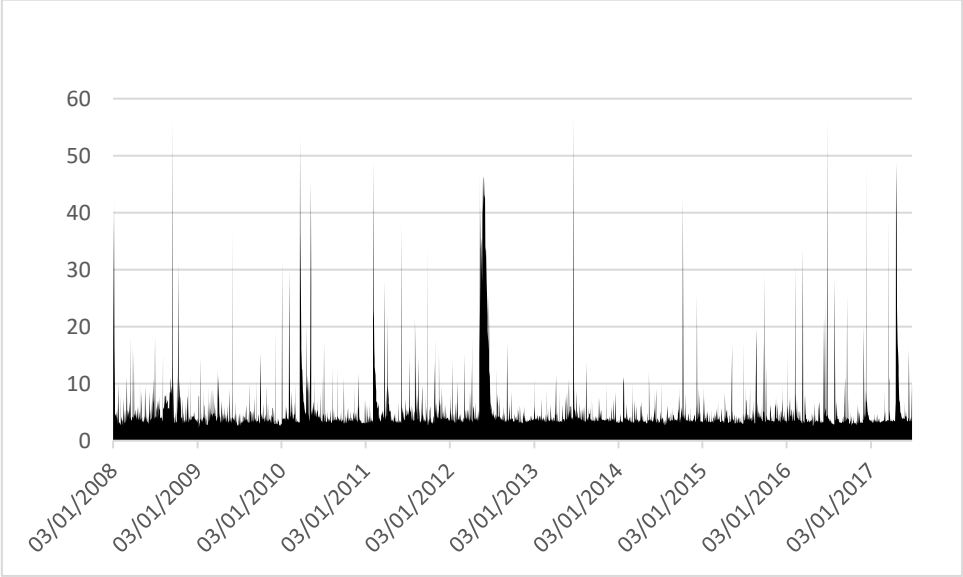


Figure 732: Total Average Dynamic Connectedness Consumer Services

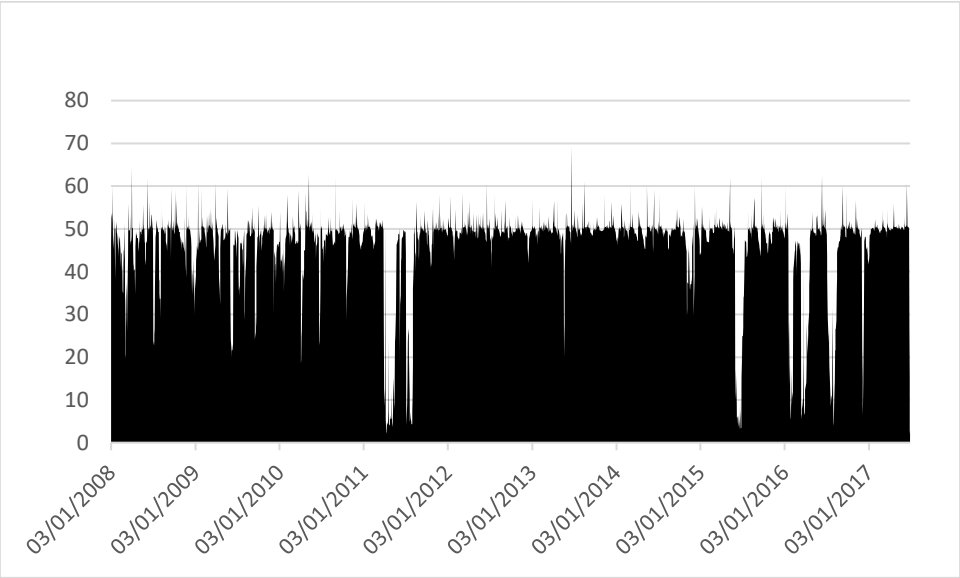


Figure 733: Total Average Dynamic Connectedness Other Consumer Services

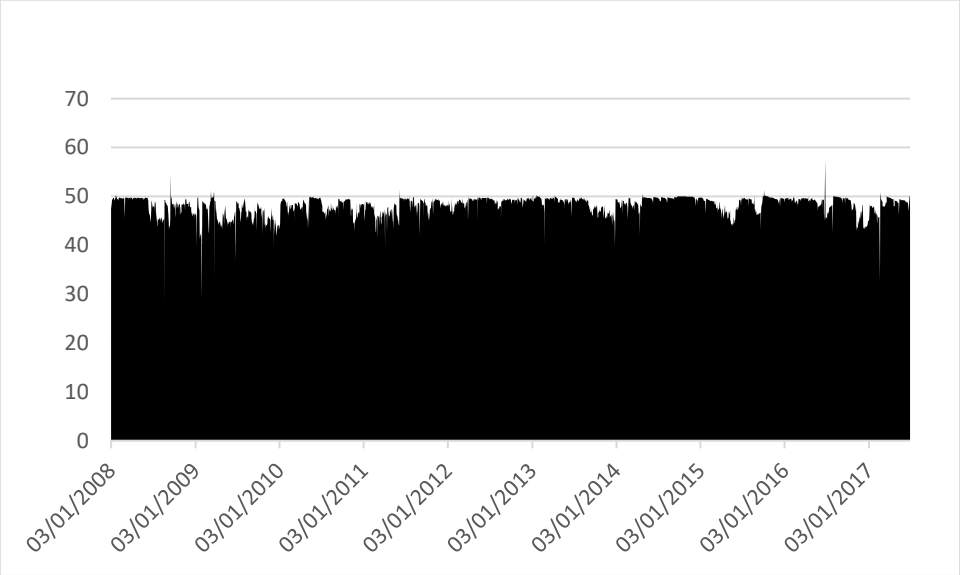


Figure 734: Total Average Dynamic Connectedness Other Financials

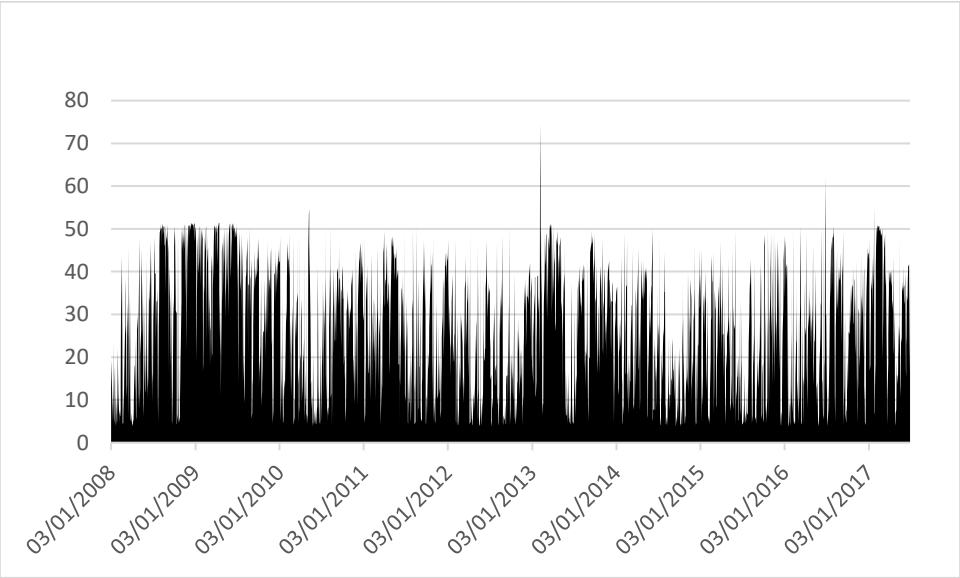


Figure 735: Total Average Dynamic Connectedness Telecommunications

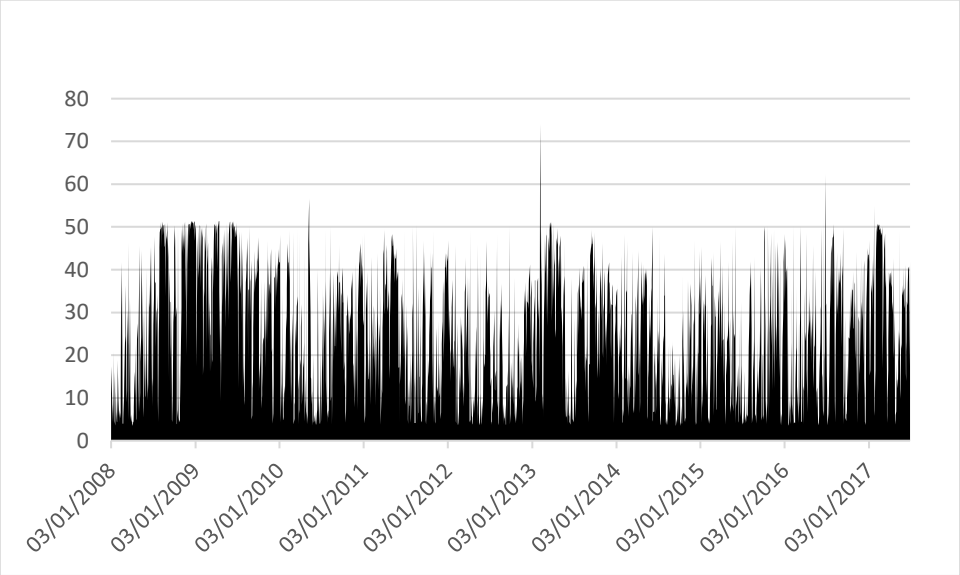


Figure 736: Total Average Dynamic Connectedness Other Telecommunications

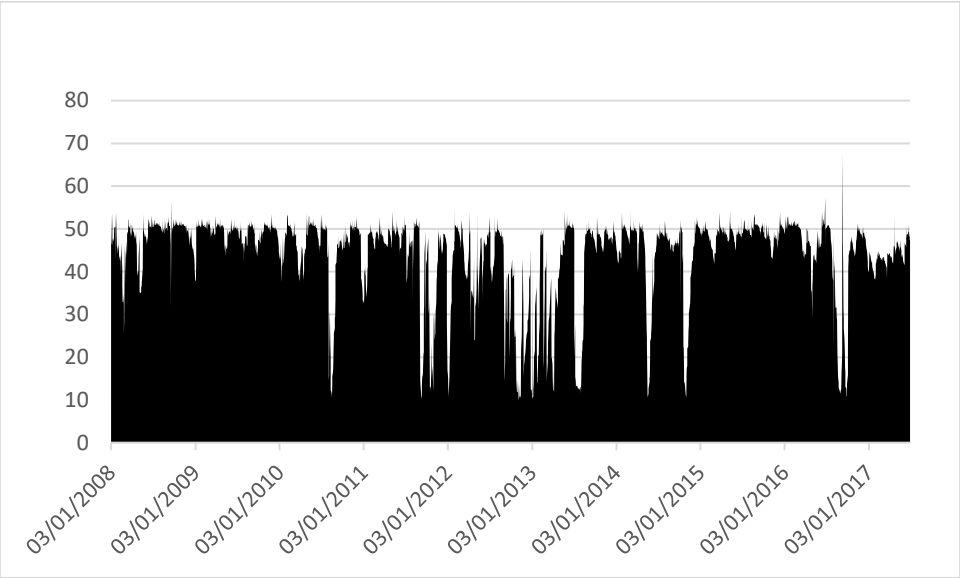


Figure 737: Total Average Dynamic Connectedness Life Insurance

Europe

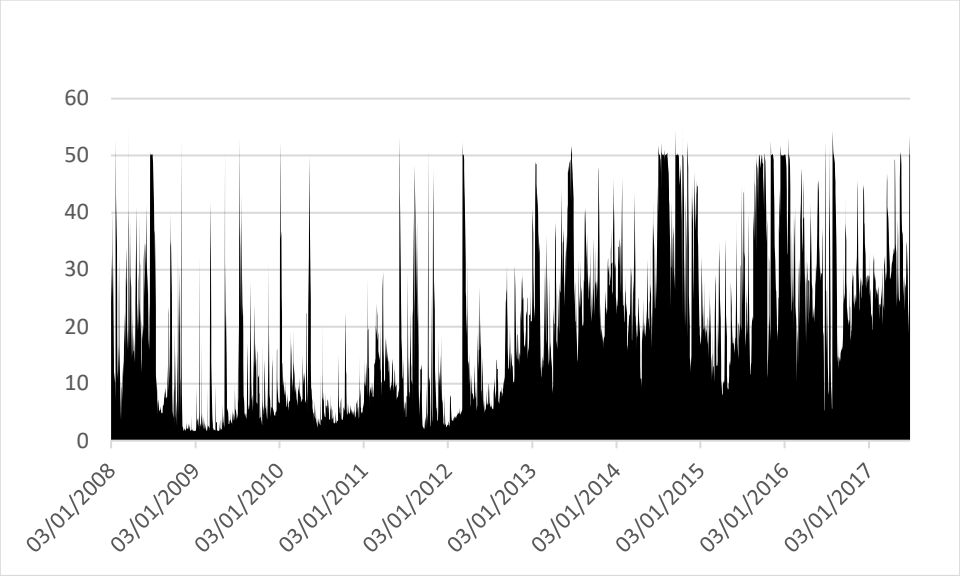


Figure 738: Total Average Dynamic Connectedness Leisure

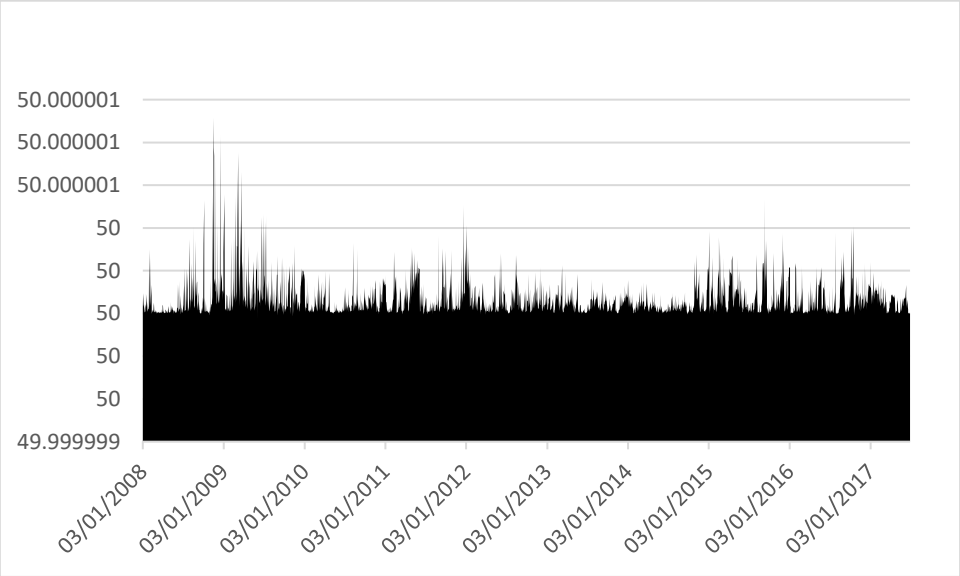


Figure 739: Total Average Dynamic Connectedness Oil & Gas

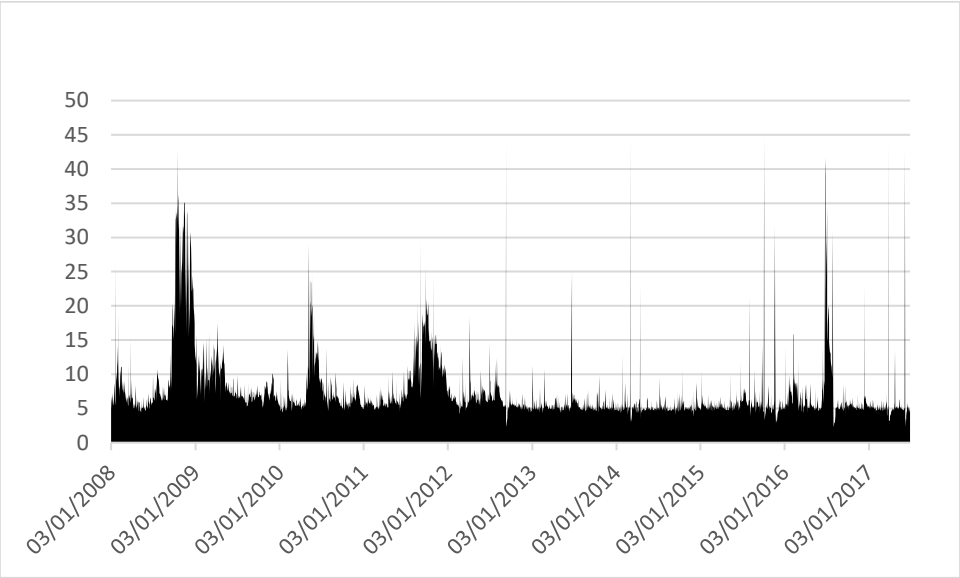


Figure 740: Total Average Dynamic Connectedness Cable Media

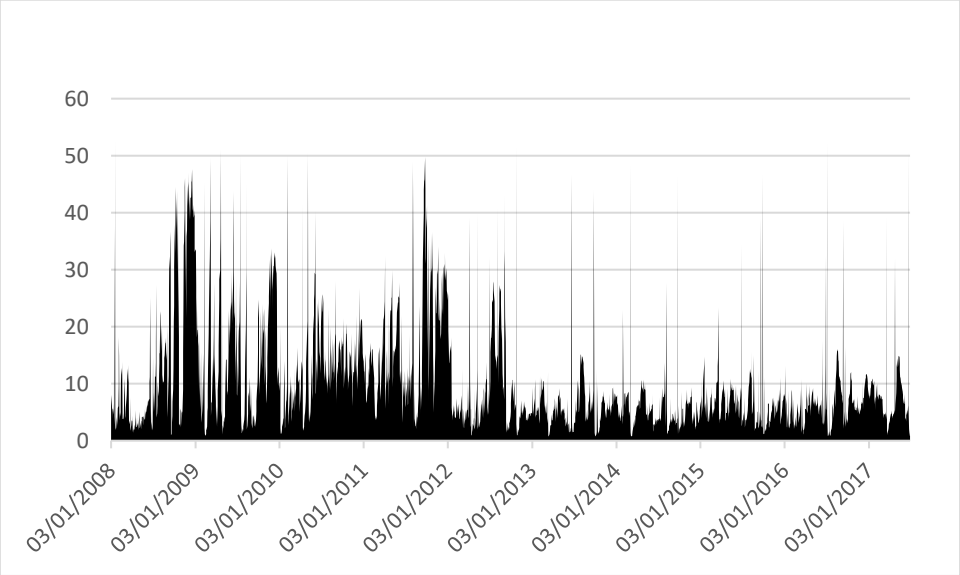


Figure 741: Total Average Dynamic Connectedness Conglomerate Diversified Mfg

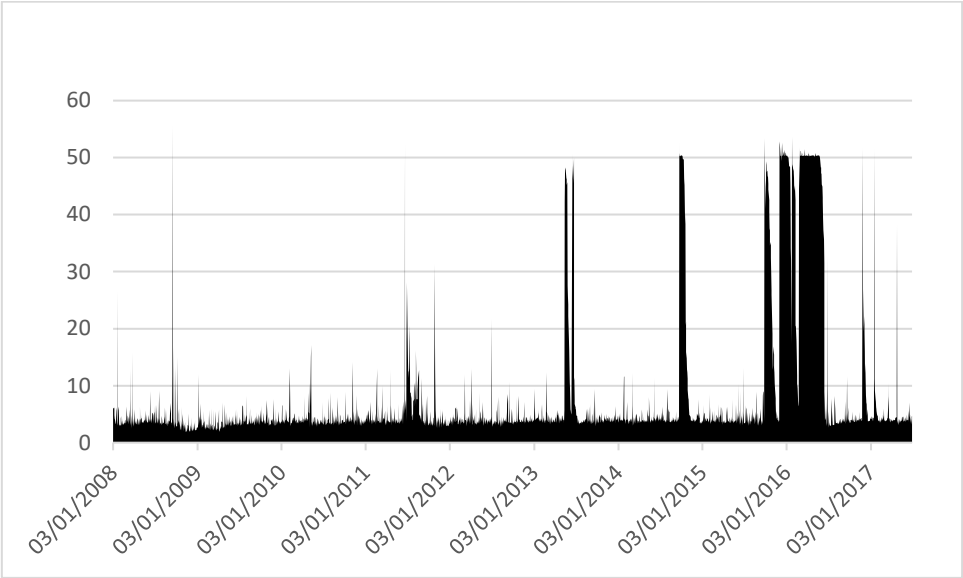


Figure 742: Total Average Dynamic Connectedness Other Financials II

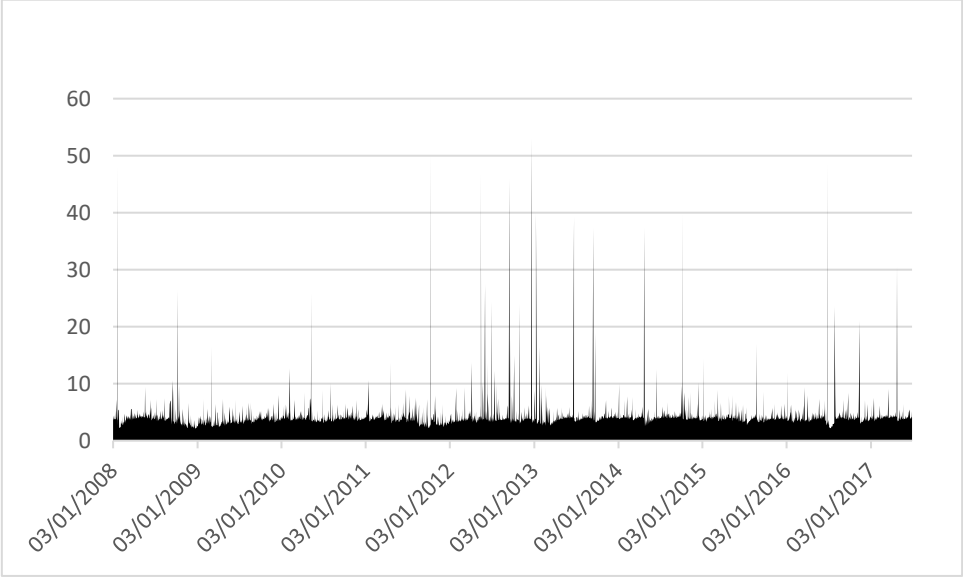


Figure 743: Total Average Dynamic Connectedness Utilities

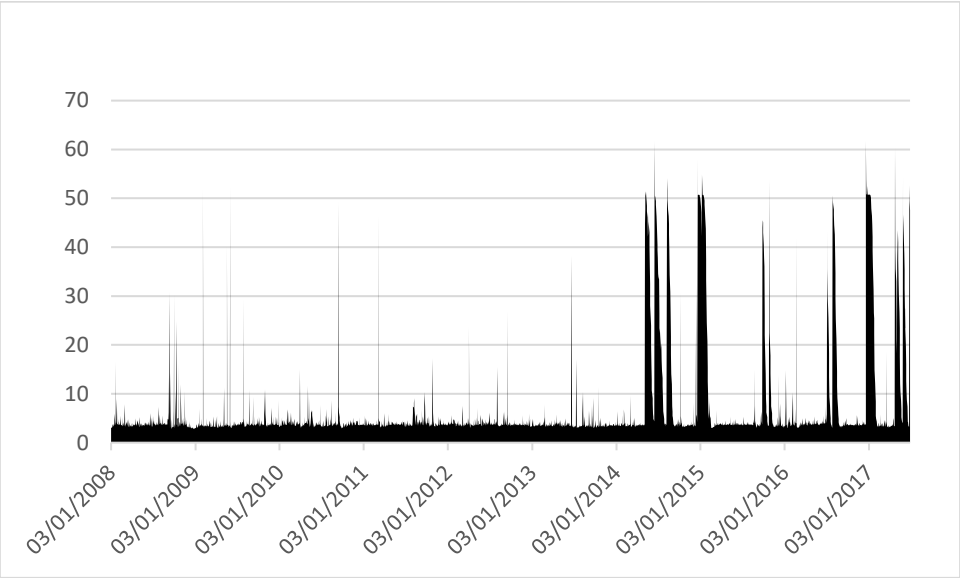


Figure 744: Total Average Dynamic Connectedness Metals & Mining

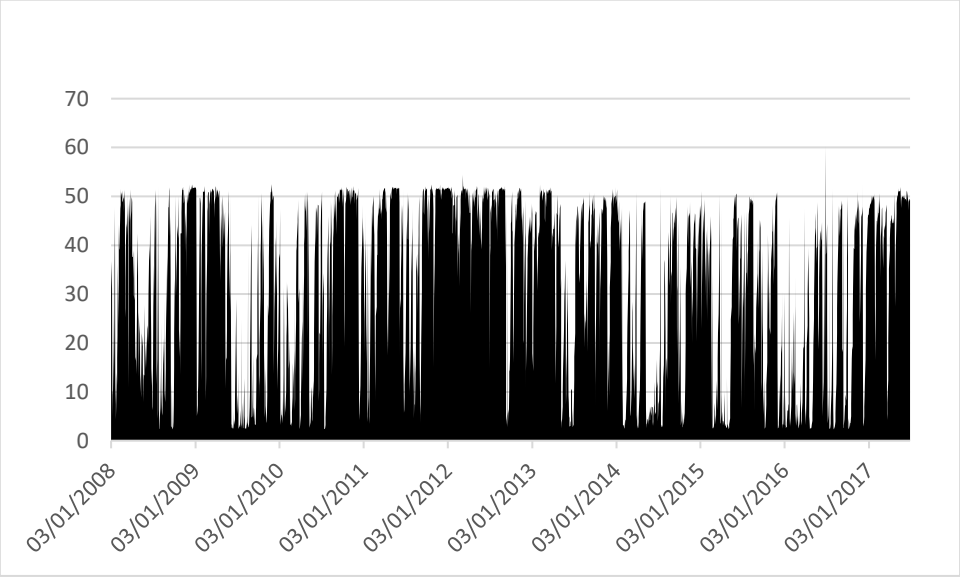


Figure 745: Total Average Dynamic Connectedness Electronics

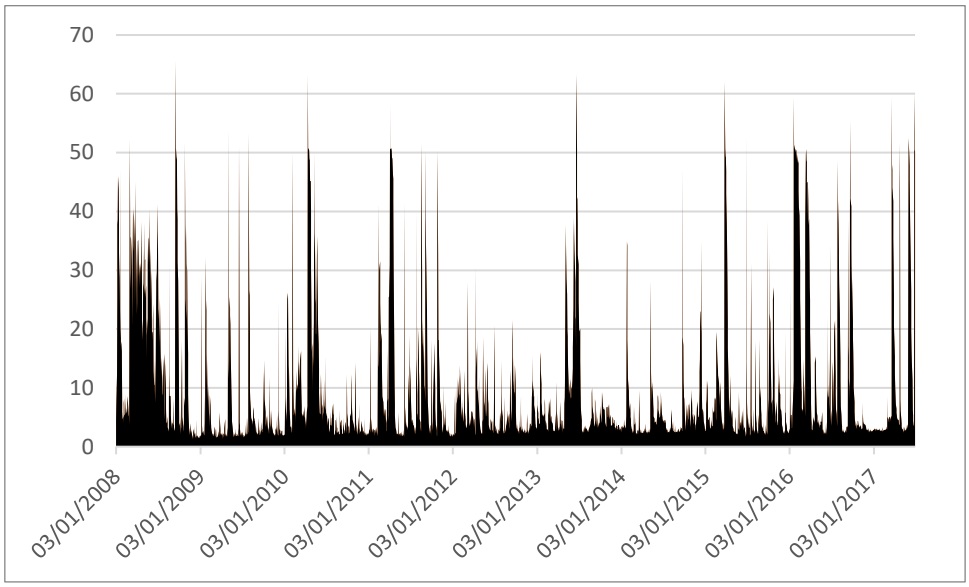


Figure 746: Total Average Dynamic Connectedness Chemicals

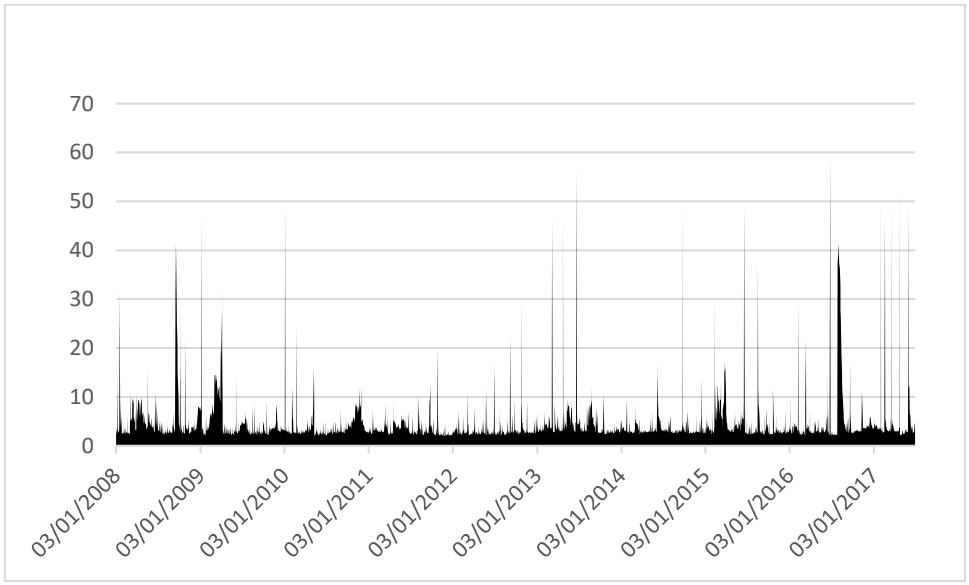


Figure 747: Total Average Dynamic Connectedness Consumer Goods

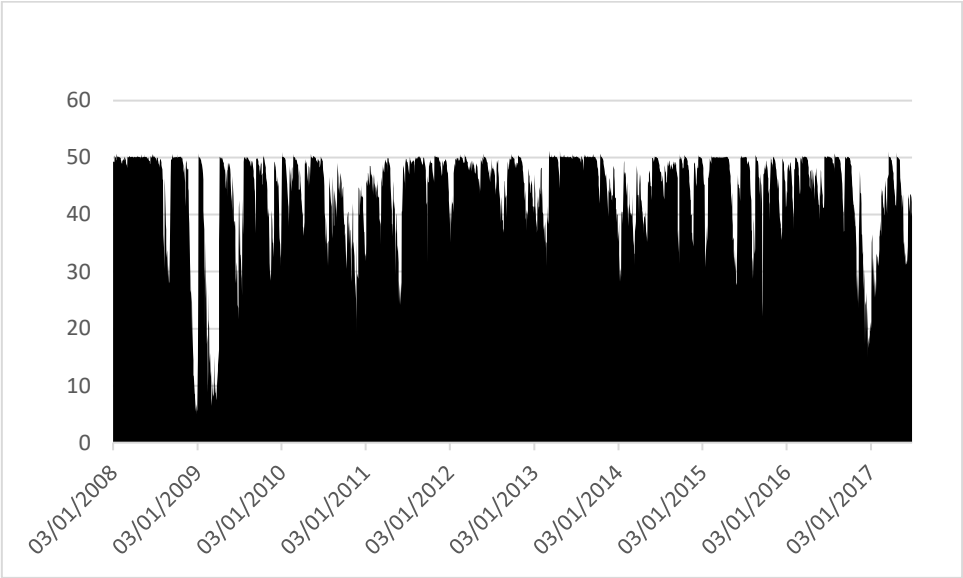


Figure 748: Total Average Dynamic Connectedness Beverages and Bottling

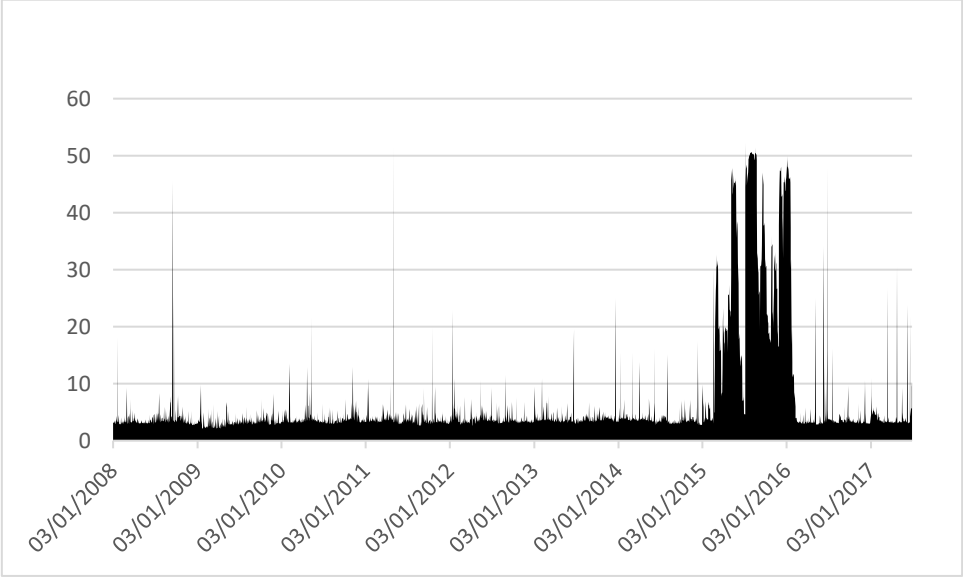


Figure 749: Total Average Dynamic Connectedness Banking

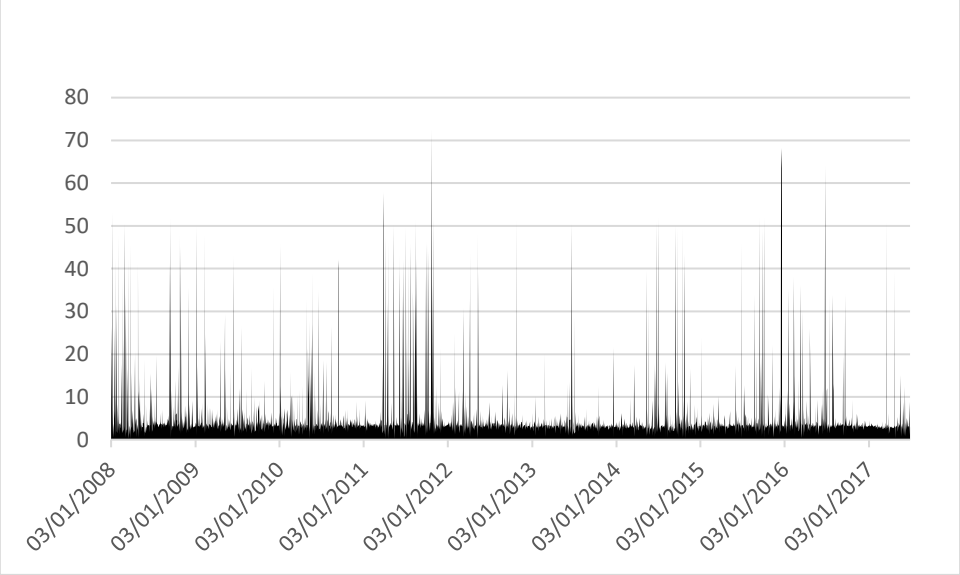


Figure 750: Total Average Dynamic Connectedness Consumer Services

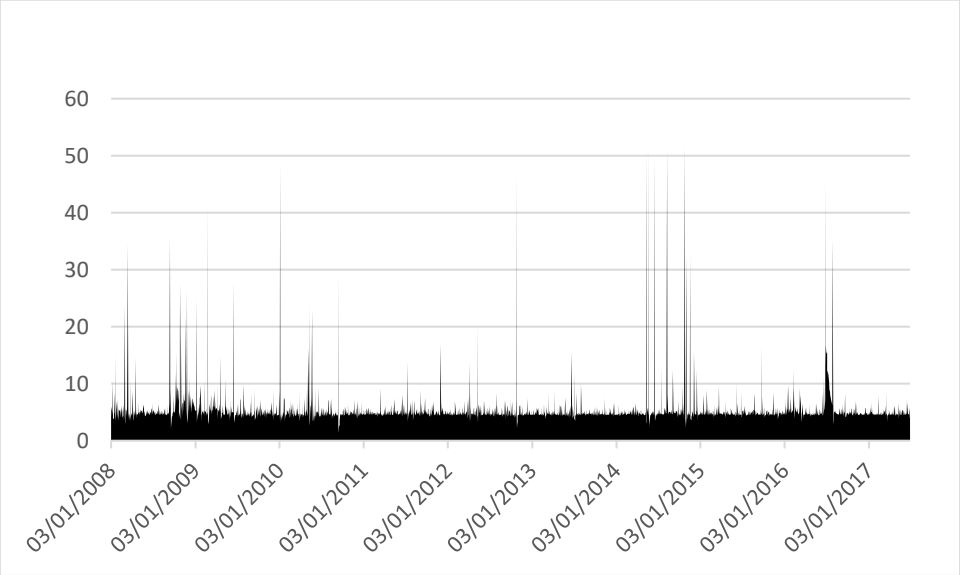


Figure 751: Total Average Dynamic Connectedness Other Consumer Services

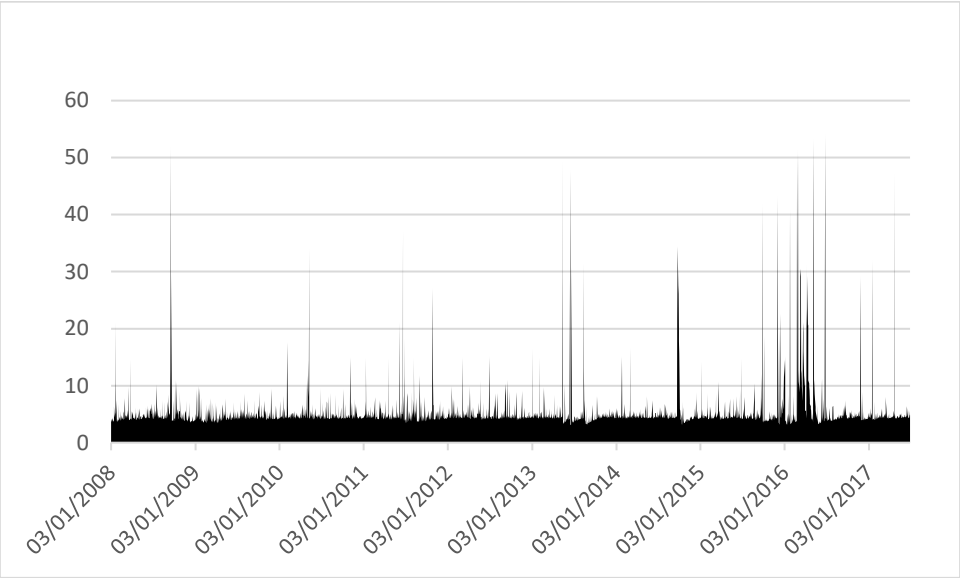


Figure 752: Total Average Dynamic Connectedness Other Financials

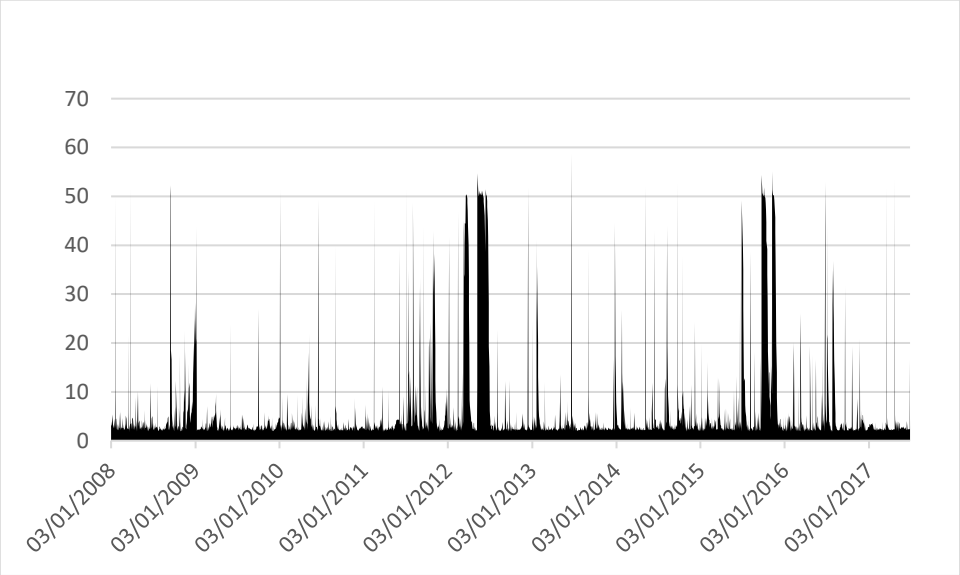


Figure 753: Total Average Dynamic Connectedness Telecommunications

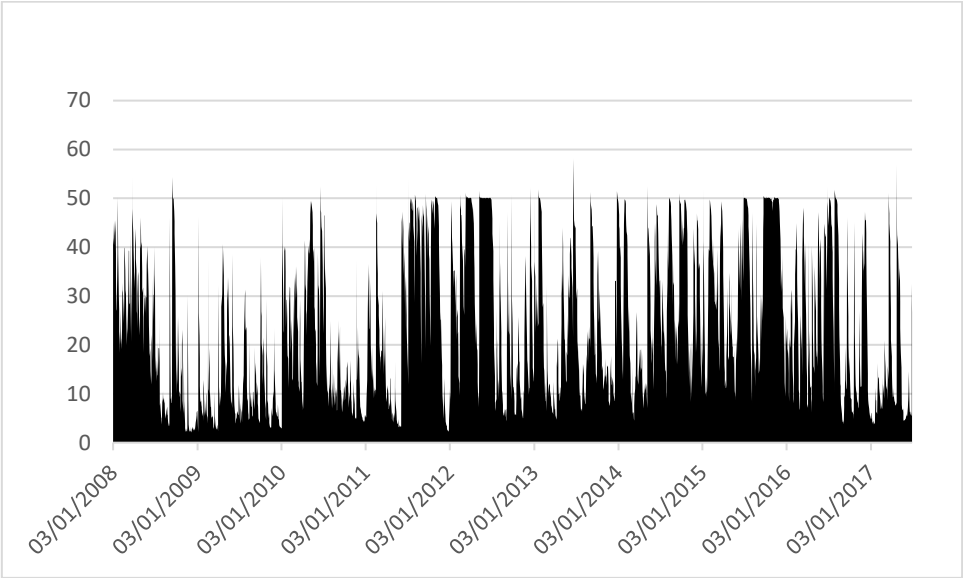


Figure 754: Total Average Dynamic Connectedness Other Telecommunications

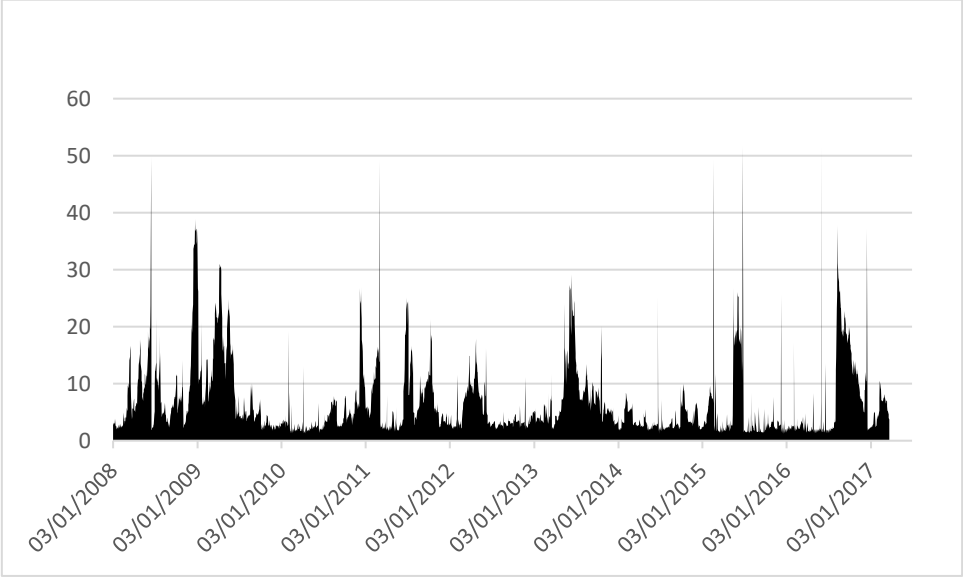


Figure 755: Total Average Dynamic Connectedness Building Products

Japan

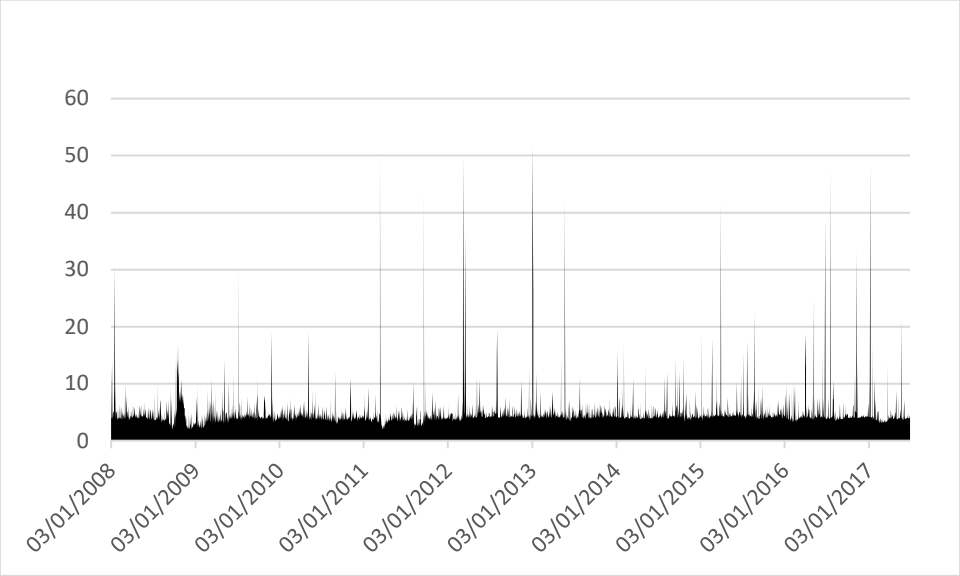


Figure 756: Total Average Dynamic Connectedness Industrials

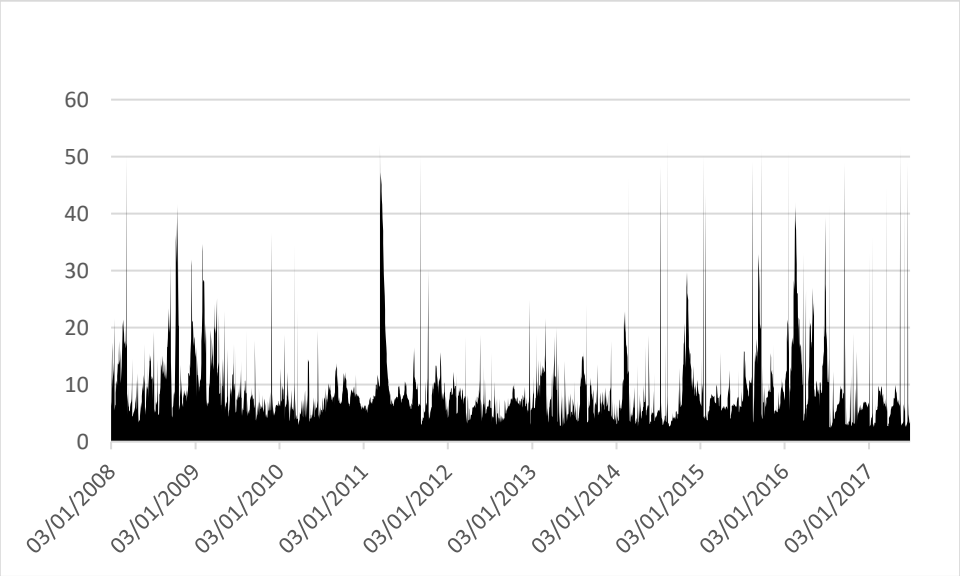


Figure 757: Total Average Dynamic Connectedness Transportation

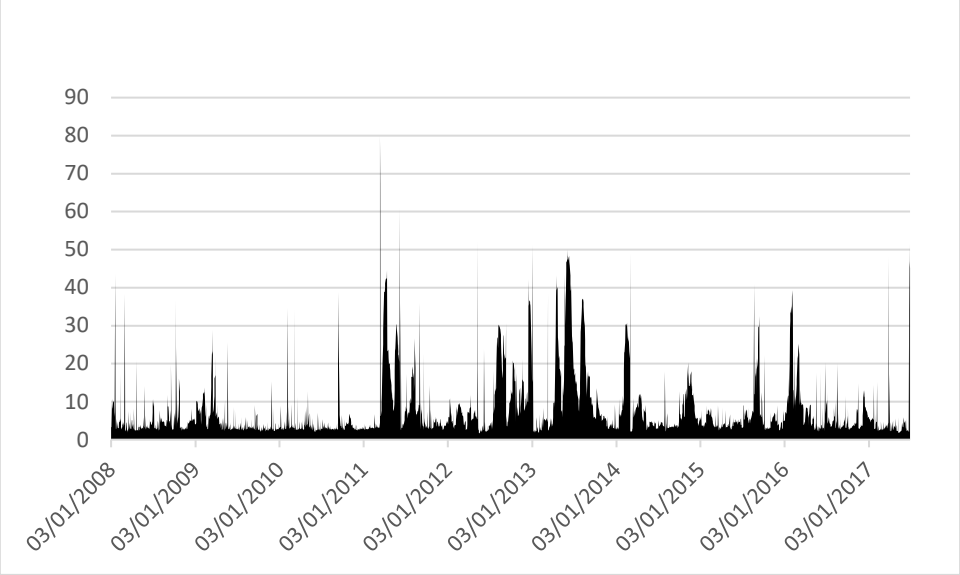


Figure 758: Total Average Dynamic Connectedness Utilities

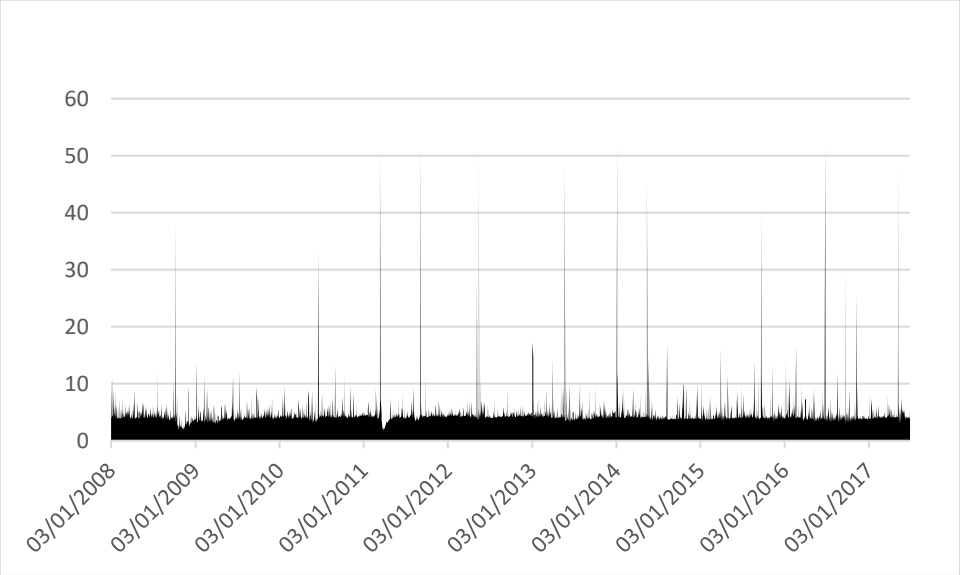


Figure 759: Total Average Dynamic Connectedness Retail Stores

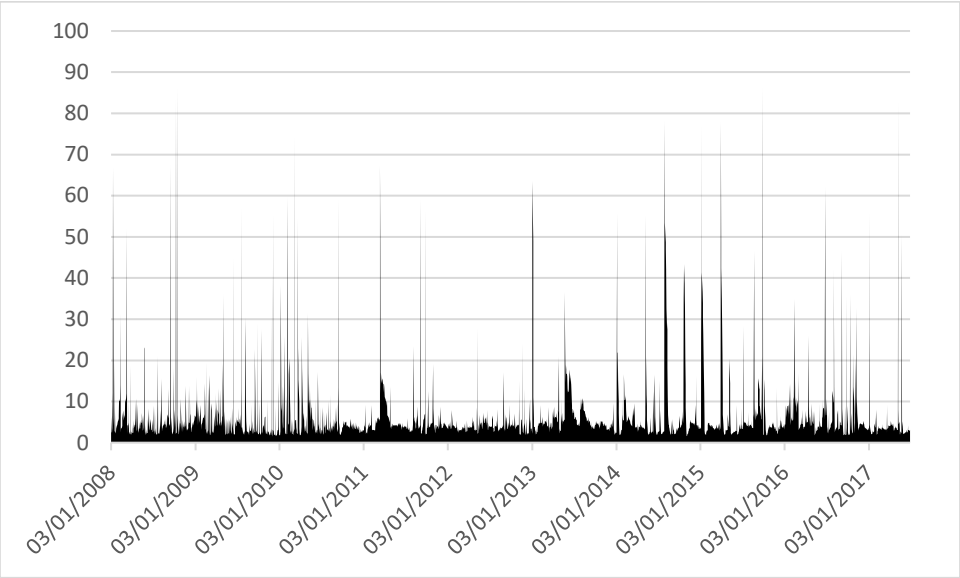


Figure 760: Total Average Dynamic Connectedness Metals & Mining

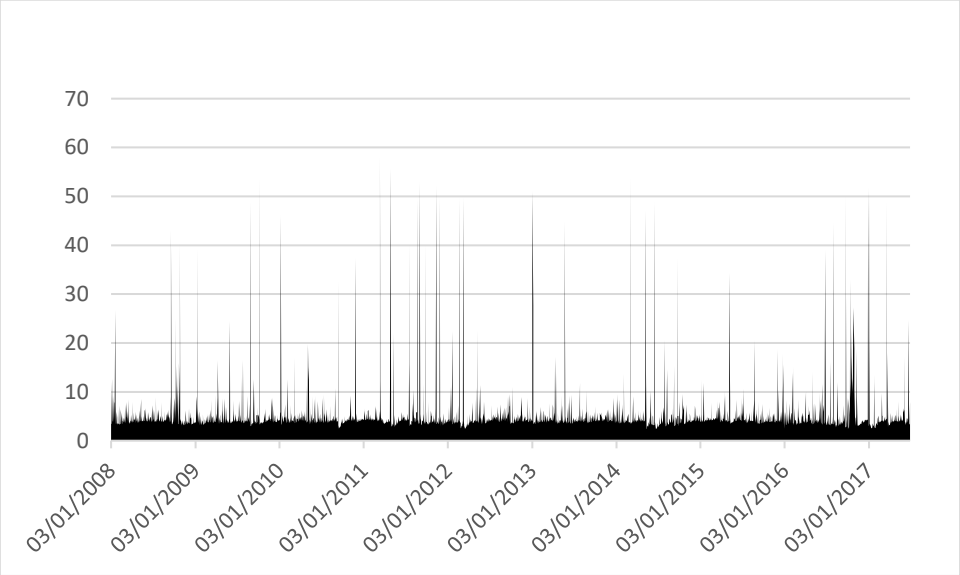


Figure 761: Total Average Dynamic Connectedness Electronics

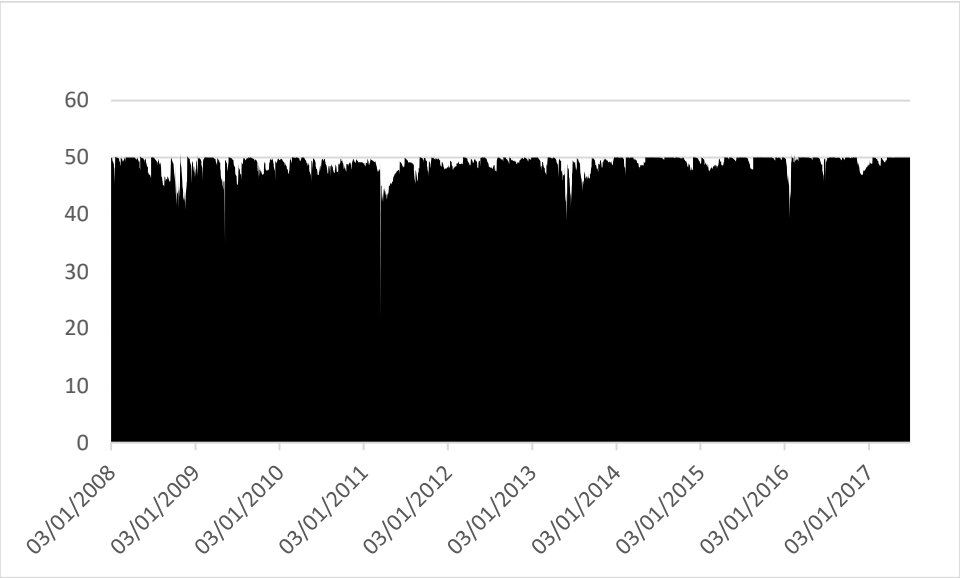


Figure 762: Total Average Dynamic Connectedness Chemicals

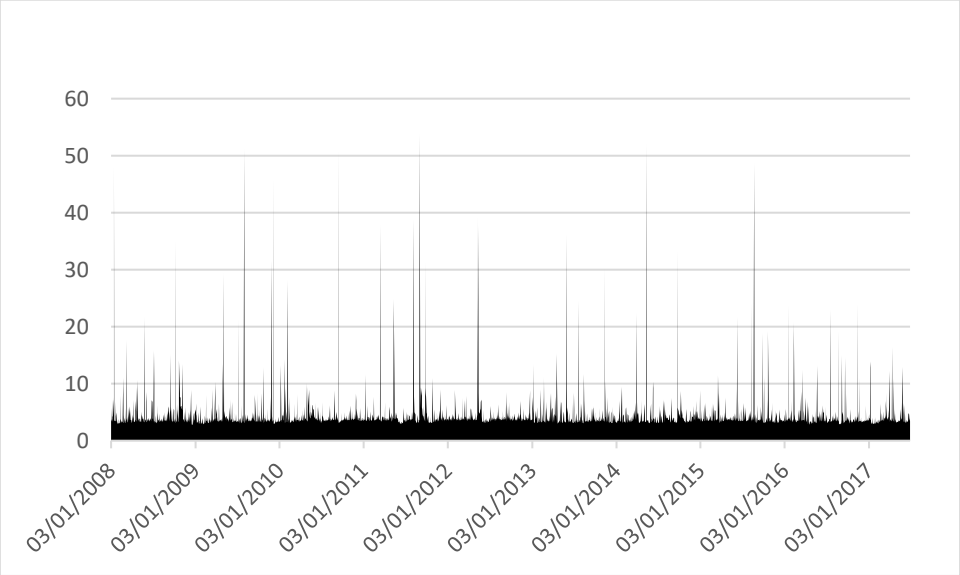


Figure 763: Total Average Dynamic Connectedness Banks

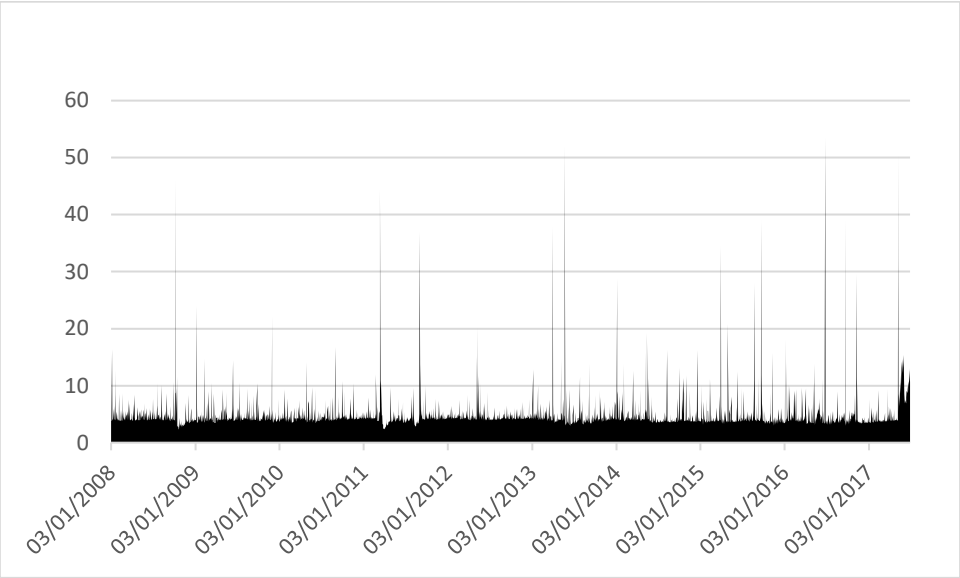


Figure 764: Total Average Dynamic Connectedness Consumer Services

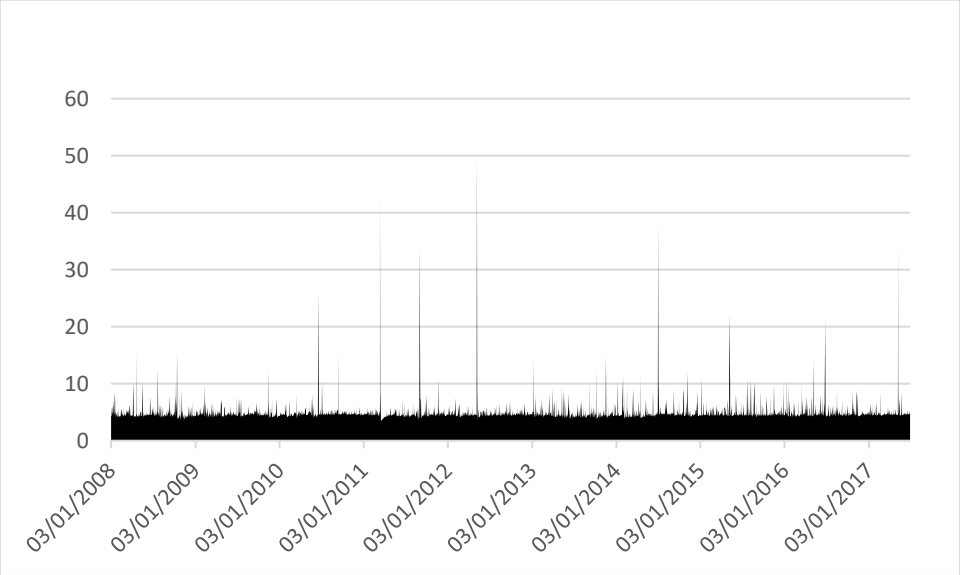


Figure 765: Total Average Dynamic Connectedness Other Consumer Services

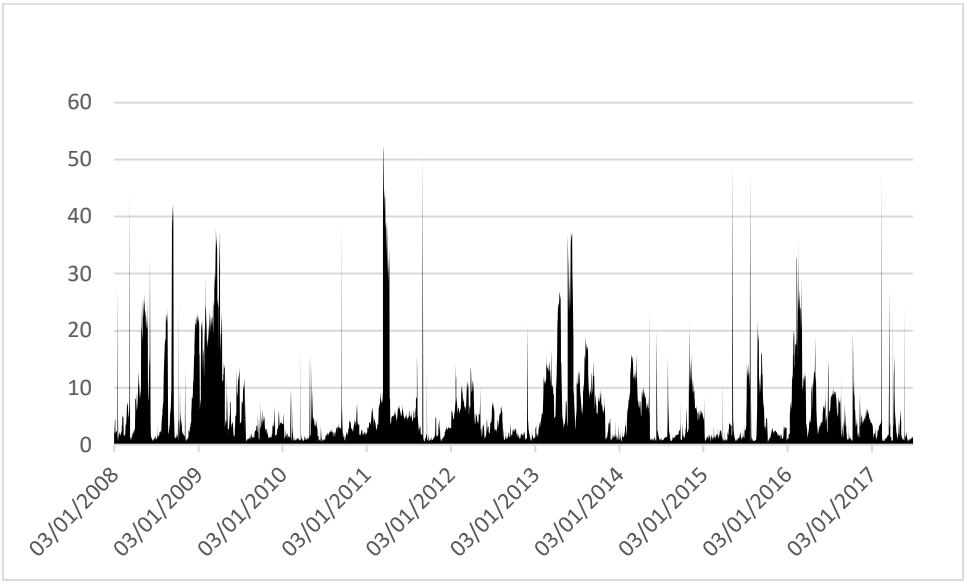
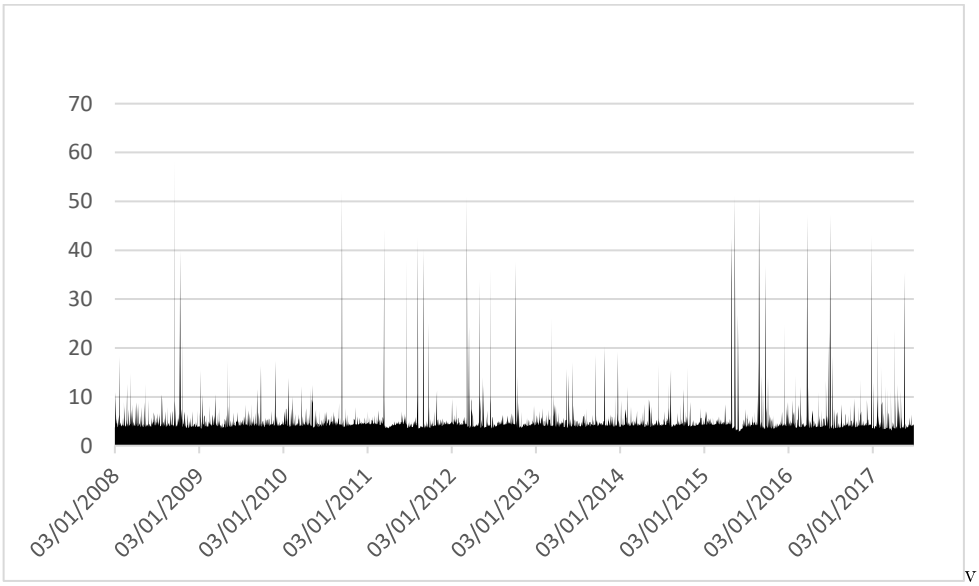


Figure 766: Total Average Dynamic Connectedness Other Financials



v

Figure 767: Total Average Dynamic Connectedness Telecommunications

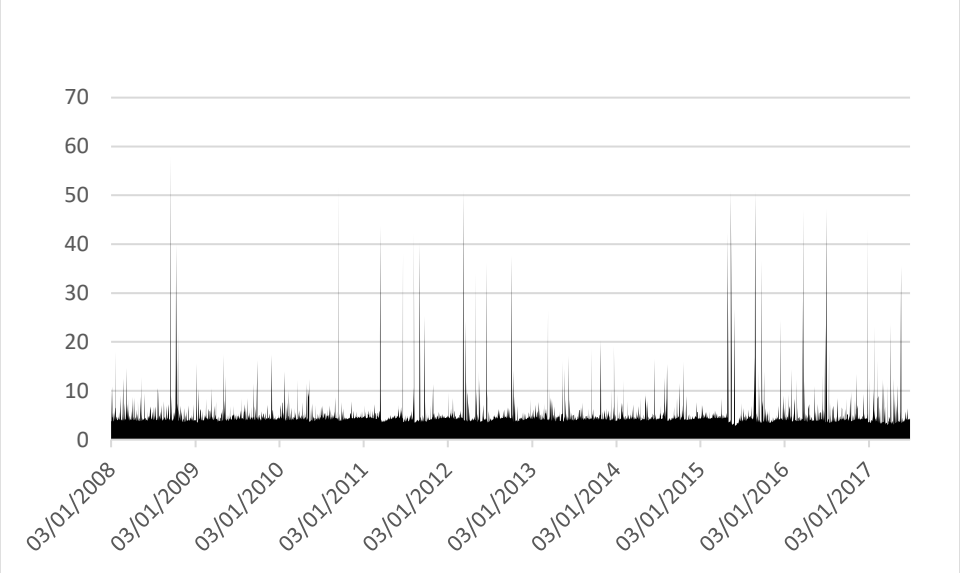


Figure 768: Total Average Dynamic Connectedness Other Telecommunications

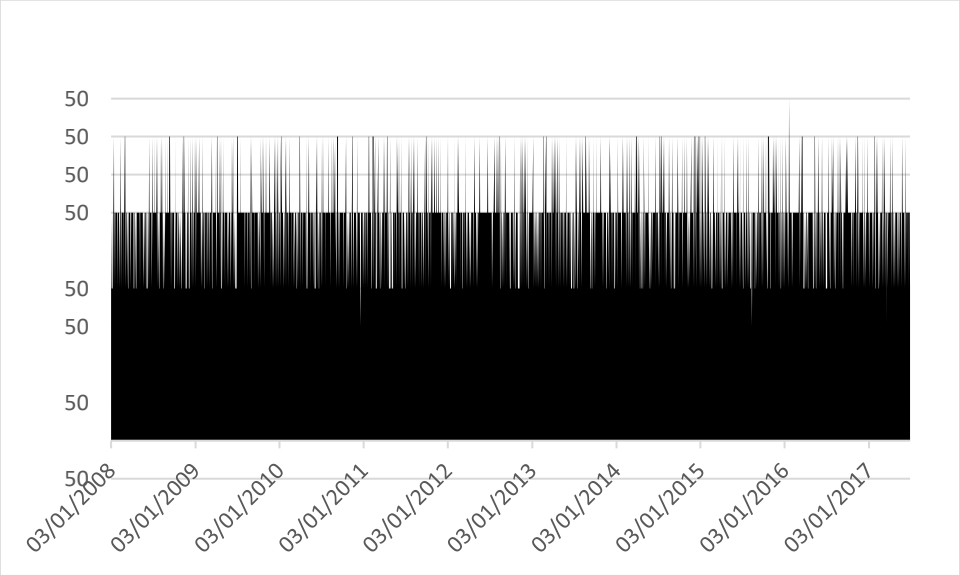


Figure 769: Total Average Dynamic Connectedness Machinery