

Aggregate Manager Sentiment and Corporate Merger and Acquisition Activities

By

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Submitted in accordance with the requirement for the degree of

Doctor of Philosophy

University of Leeds

Leeds University Business School

Accounting and Finance Division

Centre for Advanced Studies in Finance (CASIF)

April 2023

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Acknowledgements

First, I would like to thank the almighty Allah for giving me strength and patience to complete the thesis. I would also like to sincerely thank my supervisors, Dr Ali Altanlar and Professor Shima Amini, without whose continuous support it would have been impossible to pursue my PhD. The journey of my PhD was not easy, especially because of the Corona related uncertainties. During those difficult times, my supervisors were very supportive and helped me get rid of the stresses and anxieties that were affecting my works and motivations. They supported me beyond my expectations and I will always be very grateful to them. Next, I would like to thank my parents and siblings for their continuous support and unconditional love.

My deepest gratitude goes to my lovely wife, Suha Rahman Chowdury, who has been very patient and supportive throughout my PhD journey. Her love, understanding and emotional support throughout and beyond this study helped me reach this far today.

I would also like to thank all the staffs in Leeds University Business School, other fellow PGRs in CASIF and my friends for supporting me and helping me from time to time. Finally, my gratitude goes to Leeds University Business School for the financial support which enabled me to pursue this PhD.

Abstract

Prior literature document that investor sentiment and behavioural biases of individual managers (e.g., overconfidence) have significant impacts on corporate mergers and acquisition (M&A) activities. Nevertheless, researchers in psychology, sociology and behavioural finance fields also argue that sentiment is actually a social rather than individual bias where individuals make decisions following the aggregate sentiment of their affiliates. This thesis examines the impact of aggregate manager sentiment on three aspects of corporate M&A activities: market-level M&A activities, individual acquiring firm's choice of M&A payment method and acquirers' abnormal stock returns upon M&A announcements. Using monthly manager sentiment index of Jiang et al. (2019) as a measure of aggregate manager sentiment, first it finds that aggregate manager sentiment has significant positive impact on aggregate value of cash only financed M&A activities. This impact is short-lived in case of small and medium firms whereas it is long-lived in case of large firms. Next, it finds that aggregate manager sentiment has a significant positive (negative) relationship with the likelihood of using fully cash (fully stock) by individual acquiring firms in takeover deals. Additionally, the analysis finds that increased number of directors on acquiring firm's board enhances whereas higher CEO age attenuates the impact of aggregate manager sentiment on such choices. Finally, it finds that stock market reacts negatively when acquiring firms announce M&A after a period of high aggregate manager sentiment and stock payment method enhances such negative reactions. The thesis contributes to the behavioural finance literature and M&A literature by showing that aggregate manager sentiment is an important determinant of M&A activities and announcement returns. It also contributes to the governance literature by documenting the roles of certain board and CEO characteristics in alternating the impact of aggregate manager sentiment on M&A payment decisions.

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List of Abbreviations

AMEX	American Stock Exchange
BHAR	Buy and Hold Abnormal Return
BIC	Business Confidence Index
BL	Book Leverage
CAPE	Cyclically Adjusted Price Earnings Ratio
CAR	Cumulative Abnormal Return
CBOE	Chicago Board Option Exchange
CD	Challenge Dummy
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CRSP	Center for Research in Security Prices
CTL	Cash to Total Asset
DD	Diversifying Dummy
FF3FM	Fama French Three Factor Model
FE	Fixed Effect
GFC	Global Financial Crisis
HD	Hostile Dummy
IPO	Initial Public Offering
ISI	Investor Sentiment Index
LOT-R	Life Oriented Test-Revised
M&A	Merger and Acquisition
M/B	Market/Book Ratio
MSI	Manager Sentiment Index
NASDAQ	National Association of Securities Dealers Automated Quotations
NFIB	National Federal of Independent Business
NYSE	New York Stock Exchange
OECD	The Organization for Economic Cooperation and Development
OLS	Ordinary Least Square
R&D	Research and Development
ROA	Return on Asset
RV	Relative Deal Value
S&P	Standard and Poor's
SEC	Securities and Exchange Commission

SEO	Seasoned Equity Offering
SIC	Standard Industrial Classification
UK	United Kingdom
US	United States
VIF	Variance Inflation Factors
VIX	Volatility Index

Chapter 1

1 Introduction

“Clearly there are substantial methodological bridges to cross to more closely link the models of acquisition performance adopted in the finance and strategy literatures with the human and organizational insights from behavioral studies”

(Cartwright and Schoenberg, 2006)

“There is little research on corporate managers’ sentiment. This is somewhat surprising given managers’ information advantage about their companies over outside investors.”

(Jiang et al., 2019)

1.1 Introduction and Background

Traditionally, decisions taken by corporate managers are seen as driven by changes in firm’s fundamentals. Although different papers¹ focus on how firms take various corporate finance decisions based on their individual characteristics and other macroeconomic factors, Baker (2009) states that traditional corporate finance is less convincing in explaining some features such as time series of issuance, capital structure, pay-out policy and investment. This thesis aims to explore the issue of managerial behavioural biases in corporate merger and acquisition (M&A) activities, one of the most important and largest corporate investment decisions².

Corporate M&A activities have been continually rising over the past few decades. By the end of 2021, the global M&A deal value and count reached USD 5.22 trillion and 57,947, respectively, the highest ever since 1985 as reported in imaa-institute (2023). Although both deal value and count decreased by approximately 35 percent and 14 percent, respectively in the following year, they are still positioned within the top ten largest ever global M&A activities. The North America remains the most sought region for M&A activities with 24,480 deals completed, reaching a total value of USD 2.34 trillion in 2022 (imaa-institute, 2023). Because of their sheer magnitude, mergers and acquisitions have always received attention from many academics, policy makers and practitioners.

¹ For example, Corwin (2003), Frank and Goyal (2003), Korkeamaki (2005) and Baker et al. (2009).

² As stated in Fuller et al. (2002), Hackbarth and Morellec (2008) and Bessler et al. (2011).

There is extensive literature discussing the impact of acquiring firm- and deal-specific characteristics on M&A decisions and M&A performance³. Neoclassical theories suggest that firms engage in M&A activities for various purposes such as to gain synergy, generate innovation, or adapt to changes in business cycle and industry shocks. (Maksimovic and Phillips, 2001; Harford, 2005; Komlenovic et al., 2011; Devos et al., 2009; Maksimovic et al., 2013; Bena and Li, 2014). Going forward, some researchers find that corporate M&A decisions such as the choice of M&A payment method depend on firm-specific factors for example, financial leverage, growth opportunities and firm size (Faccio and Masulis, 2005; Baker et al., 2007; Uysal, 2011; Di Guili, 2013; Yang et al., 2019) and deal-specific factors for example, relative deal value, hostility and industry relatedness (Fishman, 1989; Berkovitch and Narayanan, 1990; Faccio and Masulis, 2005). In case of M&A performance, the extant literature such as Moeller et al. (2004), Masulis et al. (2007), Gao (2010), Uysal (2011), Schmidt (2015) and Alexandridis et al. (2017) document that acquiring firms' M&A announcement returns are related to the factors such as firm size, profitability, financial leverage, prior stock returns, relative deal size and the choice of deal payment method.

On the contrary, some researchers provide an alternative explanation for acquiring firms' M&A activities and announcement returns from the capital market perspective. Presenting a model of stock market driven acquisition, Shleifer and Vishny (2003) state that neoclassical theory of merger has considerable explanatory power, however, it is incomplete. They propose a theory of acquisition in which the transactions are driven by stock market valuation of the merging firms. In addition, stating that merger activity spikes during the high market valuation, Rhodes-Kropf et al. (2004) find that misvaluation drives merger activity. Although a number of factors have been documented in the literature to explain acquiring firms' M&A activities and announcement returns, Danbolt et al. (2015) state that little empirical investigation has been undertaken on the significance of behavioural aspects. Previously, Arif and Lee (2014) find that aggregate corporate investment is positively associated with investor sentiment. In case of M&A decisions and performance, Petmezas (2009), Danbolt et al. (2015) and Tsai et al. (2021) empirically show that investor sentiment has significant impact on the choice of M&A payment method and acquirers' abnormal stock returns surrounding the M&A announcement date.

³ For example, Touch and O'Sullivan (2007), Eckbo (2009), Sankar and Leepsa (2018) and Renneboog and Vansteenkiste (2019).

Although a number of papers document the significance of investor sentiment in corporate finance activities including firms' M&A decisions and outcomes, Jiang et al. (2019) state that there is little research on managers' sentiment whereas corporate managers, like investors, are not immune from behavioural biases. According to them, the lack of substantial attention on managers' sentiment in academic research is surprising given that managers have information advantage about their companies over outside investors. Using textual tone analysis method, the authors construct a monthly manager sentiment index, which reflects managers' overly optimistic or pessimistic beliefs about the future cash flows, and find evidence of overinvestment at both aggregate- and firm-level following high manager sentiment. In case of M&A, Martynova and Renneboog (2008) state that aggregate M&A activities can be associated with general economic and stock market condition and such activities can be influenced by managers' personal objectives and behaviour.

Historically, different researchers show that behavioural biases of individual acquiring firms' managers have significant impact on their M&A decisions and performance. In a seminal contribution to behavioural corporate finance, Roll (1986) proposes the hubris hypothesis as an explanation of corporate acquisition activities⁴. The author suggests that successful acquirers may be overconfident and optimistic in their synergy gain assessment. In his theoretical paper, Nofsinger (2005) argues that aggregate merger activity is positively related to the level of CEO optimism during the period of high social mood. Later, Malmendier and Tate (2008) empirically find that the likelihood of making an acquisition is 65 percent higher if the CEO of the acquiring firm is classified as overconfident and these overconfident managers tend to use cash more as a medium of finance. Similar finding is also evident in Ferris et al. (2013) in case of international merger activities. According to them, overconfident CEOs are more averse to use equity as a financing option in M&A deals. Conducting textual tone analysis of acquiring firms financial statement, recently An et al. (2022) find that manager sentiment of individual acquiring firm is positively associated with the likelihood of making an acquisition. In addition, these authors find that acquiring firms with overconfident or optimistic managers are more likely to choose cash as a choice of M&A payment method. In case of M&A performance, several studies for example, Malmendier and Tate (2008), Kose et al. (2011) and Kolasinski and Li (2013) empirically find that acquiring firms with

⁴ Hubris is a type of cognitive bias that can influence decisions (Kahneman et al., 1982).

overconfident or optimistic managers experience significantly negative abnormal stock returns upon M&A announcements. Although previous research suggests that behavioural biases of individual managers have significant association with respective firms' M&A decisions and performance, it is yet to be investigated whether aggregate manager sentiment in the market can affect such decisions and outcomes. Several studies for example, Nofsinger (2005), Johnson and Fowler (2011) and Proeger and Meub (2014) argue that overconfidence or optimism, which spread very quickly among interacting entities, is a social rather than individual bias.

Studies in psychology field report that sentiment of individuals has an impact on their judgement. In this regard, Mitchell and Phillips (2007) argue that even a small change in sentiment can have impact on individual's ability to plan and think creatively. Sharot et al. (2011) report that unrealistic optimism of people, caused by diminished neural coding of undesirable information regarding the future, can influence their finance related decisions. A number of papers from psychology and sociology fields argue that individual's decision making is shaped by collective social processes (Chambers and Windschitl, 2004; Bennett, 2011). Lucey and Dowling (2005) argue that individuals often make decisions in a social context where they get influenced by expectations, views or beliefs of others. Olson (2006) states that people spontaneously take on the goals of others in an unconscious manner and produce similar emotional states of their affiliates. According to the author, individuals' optimism level is influenced by the collective optimism of their peers. Different lab based experiments in psychology and behavioural finance fields also show that individuals sometimes take various decisions (including investment decisions) by observing the behaviour of others and by getting influenced by others' emotions and confidence (Proeger and Meub, 2014; Darai et al., 2017).

The extant literature argue that individuals' optimism level is not only a function of their own internal cognitive processes but also a function of external social processes that is shaped by the views and perceptions of others (Chambers and Windschitl, 2004). According to Bandura (1998) and Bénabou (2012), collective optimism is an important source of information to decision makers, especially when uncertainty is high and objective information is scarce. Individuals often consider the optimism of their peers in determining how optimistic they should be while taking financial decisions by looking at others who they view as similar or who are in similar situations to validate their beliefs (Anglin et al., 2018). Moreover, social contagion research also indicates the spread of beliefs throughout a population and the influence of these collective beliefs on individual

action (Aral and Walker, 2011). Social contagion occurs when individuals use the emotions and beliefs of others as information cues which make these individuals to act in a similar manner (Angst et al., 2010).

A number of literature in different fields investigate the impact of collective optimism and social contagion on various types of decision making behaviour. For example, Ludvigson (2004) explains the trends in consumer behaviour, Ginwright (2007) investigates how social movement propagate among the population, Gino et al. (2009) examine the spread of unethical behaviour, and Angst et al. (2010) study the adoption of new products and innovations. In case of investment activities, Anglin et al. (2018) investigate whether collective entrepreneurial optimism has any impact on the creation and growth of new ventures and find positive and significant associations between collective optimism and venture creation as well as business growth. Jiang et al. (2019) also show that aggregate investment growth is followed by higher level of aggregate manager sentiment. Recently, Nauhaus et al. (2021) investigate how the collective sentiment of experts affects individual firm's capital allocation decision and report that expert sentiment about a strategic business unit is positively related to higher level of capital allocation to that strategic business unit by individual firms. In case of M&A activities, Nofsinger (2005) reports that during the period of high social mood, many financial decision makers such as investors and executives are optimistic and thus biased financial decisions are more likely to correlate across various types of financial decisions including decisions about M&A activities. Later, Shue (2013) argues that managers are likely to be influenced by their social experiences in addition to being guided by their own beliefs. The author shows that acquisitions following the interactions among managers' peers are more likely to be diversified into industries that are different from the acquiring firms' industries. Hence, based on the findings of previous literature about the impact of collective sentiment of peers on individual decision making behaviour regarding the firm's investment activities and social contagion issue, it can be argued that aggregate sentiment of managers can also affect individual firm's M&A activities.

Following the arguments in different psychology and sociology papers as well as the findings in various lab experiments that individual decision making can be shaped by the aggregate sentiment of one's peers, this thesis investigates if aggregate manager sentiment can affect acquiring firm's M&A decisions and announcement returns in three empirical chapters. Using the monthly manager sentiment index constructed by Jiang et al. (2019), first empirical chapter investigates if aggregate manager sentiment affects time

series variations of M&A activities in the market. It extends the analysis by examining whether such impacts vary across different sizes of firms as Vancil and Lorange (1997) and Ekanem (2005) mention that strategic planning procedure in small companies differs from large companies. Next empirical chapter investigates if aggregate manager sentiment has any significant association with individual acquiring firm's choice of M&A payment method as different researchers such as Jensen (1986), Andrade et al. (2001) and Kalinowska and Mielcarz (2014) show that such choices can affect firm value and general performance. Here, it also examines if certain board and CEO characteristics can alternate the impact of aggregate manager sentiment on M&A payment choices as Gordon (2007), Mohamed et al. (2012), Yim (2013) and Bochkay et al. (2019) show that different board and CEO characteristics significantly affect corporate investment decisions and can attenuate or enhance respective firm's managerial optimism level. The final empirical chapter investigates the impact of aggregate manager sentiment on acquiring firm's abnormal stock returns upon M&A announcement. It extends the analysis by examining the role of payment method in alternating the impact of aggregate manager sentiment on such returns as Travlos (1987), Andrade et al. (2001) and Ben-David et al. (2015) previously show that the choice of M&A payment method can also significantly affect the announcement return. In summary, the thesis addresses three major empirical questions:

- (1) What is the impact of aggregate manager sentiment on market-level M&A activities and how does the impact vary across different sizes of acquiring firms?
- (2) How does aggregate manager sentiment affect individual acquiring firm's choice of M&A payment method and to what extent certain board and CEO characteristics do play roles on such impacts?
- (3) What is the relation between aggregate manager sentiment and acquiring firms' M&A announcement returns and to what extent M&A payment method does affect such relationship?

The empirical analysis of this thesis first finds that aggregate manager sentiment has significant explanatory power beyond investor sentiment about the market-level M&A activities that is financed by fully cash payment. In addition, it finds that the impact of aggregate manager sentiment lasts for longer time in the case of large firms' fully cash M&A activities, whereas such impact lasts only contemporaneously in the case of small and medium firms. Next, it finds that the likelihood of cash payment in M&A deals by individual acquiring firms increases following periods of high aggregate manager

sentiment. This higher likelihood of cash payment following high aggregate manager sentiment period is enhanced if the acquiring firm has larger board size and lower CEO age. Finally, the thesis reports that investor reacts negatively if the acquiring firms announce M&A deals following periods of high aggregate manager sentiment and stock payment method enhances such negative reactions. The extant literature documents the significant impact of individual managerial biases (e.g., Malmendier and Tate, 2008; Ferris et al., 2013; Kolasinski and Li, 2013) and investor sentiment (Petmezas, 2009; Tsai et al., 2021) on M&A activities and announcement stock returns. The findings of this thesis adds to the literature by providing evidence that in addition to some other previously identified determinants, aggregate manager sentiment can also explain acquiring firm's M&A activities and short-term announcement stock returns. The most important findings of this thesis is that aggregate manager sentiment provides additional and complementary information beyond investor sentiment about both market-level and firm-level certain M&A decisions and announcement returns.

1.2 Contribution of the Thesis

The studies in this thesis contribute to the literature in several ways. The studies contribute to the growing body of behavioural finance literature by examining the impact of aggregate manager sentiment on one of the major corporate investment decisions. In addition, they contribute to the M&A literature by documenting another determinant of aggregate M&A activities and the choice of M&A payment method. The studies also report how aggregate manager sentiment affects acquiring firms' abnormal stock return upon their M&A announcements. Although a number of literature document significant association between investor sentiment and M&A activities and/or performance (e.g. Rosen, 2006; Danbolt et al., 2015, Tsai et al., 2021) as well as association between individual manager sentiment and M&A activities and/or performance (e.g. Malmendier and Tate, 2008; Ferris et al., 2013), the study about the impact of aggregate manager sentiment on acquiring firms' M&A activities is limited in the literature. By addressing the above mentioned questions empirically, this thesis attempts to fill this gap in the literature. Finally, the studies contribute to the corporate governance literature by extending the research to analyse the role of certain board and CEO characteristics in alternating the impact of aggregate manager sentiment on certain M&A decision.

The findings of this thesis should encourage the financial decision makers of acquiring firms to consider the impact that aggregate sentiment of their peers makes while taking

M&A decisions and, henceforth, evaluate their decisions keeping aggregate manager sentiment factor on mind along with other factors. Moreover, financial decision makers of acquiring firms should contemplate their board structure and CEO characteristics as the findings suggest that certain board and CEO characteristics either attenuate or enhance the impact of aggregate manager sentiment on M&A decisions. Also, the findings of this thesis should encourage the scholars in behavioural finance discipline to consider the relationship between aggregate manager sentiment and other significant corporate finance decisions. Lastly, the findings should motivate the researchers in corporate governance discipline to consider the moderating role of board and CEO characteristics in various corporate finance decisions.

The following three sub-sections briefly provide a summary of the main findings in each chapter and discuss about their individual contributions.

1.2.1 Aggregate Manager Sentiment and Market-Level Merger and Acquisition Activities

The findings in the first empirical chapter suggest that aggregate manager sentiment does not have any significant association with the aggregate value of market-level M&A activities when the study considers all deals irrespective of their payment method. On the other hand, it finds that aggregate manager sentiment positively and significantly affects the time series variation of cash only financed aggregate M&A deal value. In addition, the study finds that such impacts are short-lived in case of small and medium firms whereas the impacts last longer in case of large firms.

The study contributes to the behavioural corporate finance strand of the literature as it shows that in addition to investor sentiment (e.g., Arif and Lee, 2014), aggregate manager sentiment also has significant association with corporate investment activities. In addition, it contributes to the M&A literature by documenting another determinant of market-level M&A activities, conditional on the choice of M&A payment method. Moreover, the study sheds some light on the ‘hubris hypothesis’ proposed by Roll (1986) which suggests that overconfidence is an important factor for firms’ acquisition activities. The study in this thesis shows that aggregate overconfidence and/or optimism of the peers of acquiring firms’ managers also play roles in their M&A related decisions. Finally, the study indicates that the financial disclosures of firms contain important information about the sentiment level of the managers. The manager sentiment index of Jiang et al. (2019), which the study uses as a proxy for aggregate manager sentiment, has been developed by

analysing the tones of corporate financial disclosures, and the findings in this study suggest that such index has significant explanatory power about the acquiring firm's market-level M&A activities. Hence, the disclosures provide important information about the sentiment level of the firm's managers which potentially affects the acquiring firm's M&A related decisions.

1.2.2 Aggregate Manager Sentiment and the Choice of Mergers and Acquisitions Payment Method

The findings in the second empirical chapter suggest that the probability of using fully cash increases while the probability of using fully stock decreases as choices of M&A payment method by individual acquiring firms following periods of high aggregate manager sentiment. The study also finds that aggregate manager sentiment is positively associated with the percentage of cash payment while it is negatively associated with the percentage of stock payment in M&A deals. In addition, it finds that larger board size enhances whereas higher CEO age attenuates the impact of aggregate manager sentiment on the choice of M&A payment method.

The study first contributes to the behavioural corporate finance literature by reporting that in addition to investor sentiment, aggregate manager sentiment can explain why acquiring firms sometimes prefer cash over stock or vice versa as choices of payment method while undertaking M&A deals. Second, it contributes to the M&A literature by documenting another determinant of the choice of M&A payment method i.e. aggregate manager sentiment. Third, the study contributes to the psychology and sociology literature by empirically showing that individual decision making can be shaped by the aggregate sentiment of one's peers. Previously, many theoretical and lab-based experimental studies in psychology, sociology and behavioural finance field report that individuals often take various decisions including financial decisions after getting influenced by emotions or beliefs of their affiliates (Lucey and Dowling, 2005; Olson, 2006; Bennett, 2011; Darai et al., 2017). Nevertheless, empirical investigations of such nature of studies are limited in the literature. This study contributes to those literature by providing empirical evidence that aggregate sentiment plays a role on individual's decision making behaviour. Lastly, it contributes to the corporate governance literature by showing that board size and CEO age play important roles on acquiring firm's choice of M&A payment method that is driven by aggregate manager sentiment in the market.

1.2.3 Aggregate Manager Sentiment and Acquiring Firms' Announcement Returns

The findings in the last empirical chapter show that acquiring firms experience significant negative abnormal stock returns upon M&A announcement following periods of high aggregate manager sentiment in the short-run. In addition, the study finds that acquiring firms which undertake M&A deals with fully stock payment, experience higher negative abnormal announcement returns following periods of high aggregate manager sentiment.

The study contributes to the behavioural finance literature by documenting that acquiring firms stock returns upon M&A announcement can significantly depend on the level of aggregate manager sentiment, a type of cognitive bias, during the announcement period. It also contributes to the M&A literature by explaining why sometimes stock market reacts negatively upon M&A announcements. The previous findings of Malmender and Tate (2008) suggest that investors can potentially identify if M&As are announced by firms with overconfident CEOs and thus they react negatively in such cases. This study contributes to the literature by suggesting that investors can also potentially identify if M&As are announced following high aggregate manager sentiment periods and react negatively, perhaps thinking that such deals are motivated purely because of the sentiment of managers' peers rather than value creation motive. Additionally, it contributes to the M&A literature by reporting the role of deal payment method in creation or destruction of acquiring firm's value.

1.3 Structure of the Thesis

The remainder of the thesis is structured as follows. Chapter 2 discusses about the impact of aggregate manager sentiment on market-level M&A activities. It also discusses about the relationship between aggregate manager sentiment and aggregate M&A activities considering the firm size. Chapter 3 discusses about the impact of aggregate manager sentiment on the choice of M&A payment method and how certain board and CEO characteristics moderate the impacts with a firm-level study. Chapter 4 investigates the relationship between aggregate manager sentiment and both short- and long-run abnormal stock returns of acquiring firms upon M&A announcements. The chapter also analyses how the choice of M&A payment method affects that relationship. Lastly, chapter 5 provides a conclusion summarising the findings with their implications, providing limitations of the research and suggesting the direction for future research.

Chapter 2

2 Aggregate Manager Sentiment and Market-Level Merger and Acquisition Activities

2.1 Introduction

The extant literature in finance field theoretically and empirically document how firms take various corporate finance decisions⁵. Traditional corporate finance theories suggest that firms take decisions based on their changes in fundamentals. Nevertheless, Baker (2009) states that traditional corporate finance is less convincing in explaining corporate investment decisions. Prior literature in behavioural finance area such as Malmendier and Tate (2005a, 2005b) and Arif and Lee (2014) provide evidence that behavioural biases of investors and individual managers play roles in firm's corporate investment decisions. This study investigates the relationship between managerial behavioural biases and one of the biggest and most important corporate investment decisions, merger and acquisition (M&A). Unlike other studies that examine the association between individual managerial bias and respective firm's M&A activities, this study investigates whether aggregate manager sentiment can explain time series variations of market-level M&A activities.

The aggregate volume of capital reallocations of firms through M&As alone is estimated to be around \$1.34 trillion per year (Bonaime et al., 2018). Because of their sheer magnitude, M&As have always received attention from many academics, policy makers and practitioners. Historically, explaining different corporate finance theories, many researchers attempt to identify the determinants of M&A activities and investigate why M&A activities vary substantially over time. Neoclassical theory suggests that firms engage in M&A activities to gain synergy or generate innovation (Devos et al., 2009; Maksimovic et al., 2013; Bena and Li, 2014). Other determinants of time series variations of M&As are related to industry shocks (Harford, 2005; Nguyen and Phan, 2017), change in business cycle (Maksimovic and Phillips, 2001; Komlenovic et al., 2011), corporate liquidity (Almeida et al., 2011), CEO demographics (Yim, 2013; Serfling, 2014), mispricing in the market (Shleifer and Vishny, 2003; Rhodes-Kropf et al., 2005), etc. Although these studies assume managers take rational decisions for their firms, some studies investigate whether managerial behavioural biases drive M&A decisions of acquiring firms. Referring hubris hypothesis, Roll (1986) finds evidence that managerial

⁵ For example, Heaton (2002), Corwin (2003), Frank and Goyal (2003), Shleifer and Vishny (2003), Baker et al. (2009) and Korkeamaki (2005).

overconfidence plays a role in firms' M&A decisions. Malmendier and Tate (2008) also find that overconfident CEOs are more likely to engage in M&A activities. In addition, Rosen (2006) states that corporate managers may be permeated with the same optimism as investors during the period when recent mergers by other firms have been received well in the market. According to him, managers in such a market might overestimate the synergy gains from a merger and make more bad acquisitions. Arif and Lee (2014) find that investor sentiment significantly affects aggregate corporate investment and argue that managers also get influenced by market sentiment. On the other hand, some researchers investigate whether sentiment can transmit from one person to another. Nofsinger (2005) argues that societal sentiment can transmit from one person to another through social interaction and sentiment can influence the actions of financial decision makers. Moreover, Proeger and Meub (2014) as well as Jochem and Peters (2020) state that human bias is a societal rather than individual bias and this bias can ripple across the economy contributing to financing cycle. Thus, in this study we investigate whether aggregate manager sentiment affects time series variations of M&A activities in the market.

We start our analysis by examining the relationship between aggregate manager sentiment and monthly aggregate M&A deal value during the period between 2003 and 2017 for all US domestic deals announced by public non-financial and non-utility firms. Next, we investigate the impact of aggregate manager sentiment on monthly aggregate cash only financed M&A deals. Ferris et al. (2013) state that overconfident CEOs overestimate their projects' value and tend to view their firms as undervalued. According to them, these overconfident CEOs are more averse to use equity as a financing option in M&A deals. Like overconfident managers, since optimistic managers also overestimate the mean outcome of investment⁶, we investigate whether aggregate manager sentiment has significant impact on cash only financed M&A deals. Lastly, we investigate whether impacts of aggregate manager sentiment on total M&A activities vary across different sizes of firms. Vancil and Lorange (1997) claim that unlike large firms, strategic planning in small companies is almost a continuous process. Thus, we check whether the impact of aggregate manager sentiment on large firms lasts longer than that on small firms.

From our empirical analysis, we find that aggregate manager sentiment does not have any significant impact on aggregate value of market-level M&A activities when we consider all deals regardless of their choice of payment method. However, we find significantly

⁶ As reported in Baker and Wurgler (2013).

positive association between aggregate manager sentiment and cash only financed M&A deal value. Our results suggest that one standard deviation increase in aggregate manager sentiment is associated with approximately 16 percent increase in monthly aggregate cash only financed M&A deal value in contemporaneous case. We also find similar results when we analyse the impact on cash only financed M&A deal value using lag and average of last 3- and 6-month of aggregate manager sentiment. These findings are consistent with Malmendier and Tate (2008) who report that overconfident managers are more likely to use cash as a medium of finance as well as with Nofsinger (2005), Proeger and Meub (2014) and Jochem and Peters (2020) who argue that optimism is a social rather than individual bias where managerial biases can ripple across the economy contributing to financing decisions. Additionally, we find that aggregate manager sentiment has a significant positive impact on cash only financed deals by small and medium sized acquiring firms only contemporaneously. The impact becomes statistically insignificant for future period deals of such small and medium sized firms. This is consistent with Vancil and Lorange (1997) who report that strategic planning of small companies is a continuous process and sometimes relatively large but undiversified companies are also allowed to take strategic decisions on an ad hoc basis. On the other hand, we find significant positive associations between aggregate manager sentiment and cash only financed M&A deals announced by large acquiring firms in contemporaneous, lag effect and average effect analysis. Hence, the impact of aggregate manager sentiment on cash only financed M&A deal value is short-lived in case of small and medium firms whereas the impact of such sentiment on M&A deal value is comparatively long-lived in case of large firms.

Our study contributes to the behavioural finance literature by applying manager sentiment index of Jiang et al. (2019) for the first time, as of our knowledge, in M&A research. Although Yan (2015), Berns et al. (2019) and An et al. (2022) analyse M&A related SEC filings and financial statements, by applying manager sentiment index developed by Jiang et al. (2019), this study covers not only financial statements but also earning call transcripts and captures the managerial tone more comprehensively that better reflects the level of managerial optimism⁷.

⁷ As Jiang et al. (2019) mention that although both monthly aggregated conference call tone and monthly aggregated financial statement tone capture manager sentiment, the correlation between them is not high indicating that both the disclosures likely contain complementary information about manager sentiment.

Next, the study contributes to the M&A literature by documenting another determinant of market-level M&A activities, conditional on medium of finance. Previous literature such as Malmendier and Tate (2008), Yan (2015) and Berns et al. (2019) investigate fixed or time varying individual managerial biases and their impacts on M&A decisions. Nevertheless, our study finds that time varying aggregate managerial bias significantly affects cash only financed market-level M&A deals values, and hence it is another important determinant of such type of M&A activities.

Lastly, our study contributes to the M&A literature in line with the ‘hubris hypothesis’ proposed by Roll (1986) which implies that overconfidence is an important driver of corporate acquisitions⁸. Previously, Berkovitch and Narayanan (1993), Hayward and Hambrick (1997), Hietala et al. (2002), Mueller and Sirower (2003), Moeller et al. (2004) and Malmendier and Tate (2008) also find evidence in favour of hubris hypothesis of M&A activities. The paper contributes to M&A literature in line with this hypothesis by studying whether high aggregate sentiment influences managers to engage in M&A activities with higher deal values since, similar to overconfident managers, optimistic managers also overestimate the value they generate for firms.

The remainder of the paper is organized as follows: section 2.2 includes literature review where we discuss both traditional and behavioural theories about the determinant of M&A activities. The section also discusses about our three research hypotheses. In section 2.3, we discuss our data and methodology. We present and discuss our descriptive statistics and empirical results in section 2.4. Section 2.5 concludes the chapter.

2.2 Literature Review and Hypothesis Development

Discussions about the motives of M&A activities of acquiring firms have rich contents in academic literature. This section first discusses various theories that attempt to explain M&A motives and also why M&A activities in the market show substantial variations over time. Research about the motivations of M&A activities in the market has mixed findings in the academic literature. According to Lin et al. (2009), the actual motivations of firms for engaging in M&A activities are not completely known. Nguyen et al. (2012) state that motivation behind merger is largely inconclusive despite extensive amount of

⁸ Baker and Nofsinger (2010, P. 417) state that “despite the fact that overconfidence and optimism are technically distinct, the two biases are often taken to mean the same thing in the finance literature. In the context of capital budgeting, this turns out to be legitimate, as only information that leads to new investments affects firm value”.

research in this field and show that about 80 percent of mergers in their sample involve multiple motives⁹. The following segments discuss about the determinants of M&A activities from both traditional and behavioural corporate finance perspectives that are found in prior literature. Additionally, it includes discussion about our three main hypotheses that we empirically investigate in this study.

2.2.1 Neoclassical Theory of M&A Activities

The neoclassical theory suggests that firms engage in M&A activities to create positive synergies which increase firm value or firm profitability. The synergy gain motives of firm's M&A activity are evident in Bradley et al. (1983, 1988), Jensen and Ruback (1983), Healy et al. (1992), Berkovitch and Narayanan (1993), Weston et al. (2004), Devos et al. (2009) and Maksimovic et al. (2013). The theory also suggests that firms sometimes engage in M&A activities to cultivate innovation (Phillips and Zhdanov, 2013; Bena and Li, 2014). However, Cunningham et al. (2019) find that some firms acquire innovative targets only to discontinue the target's innovation project and thereby avert competition. Other motivations of firm's M&A activities that are consistent with the neoclassical view include change in business cycle or procyclicality (Maksimovic and Phillips, 2001), life cycle of firms (Arikan and Stulz, 2016), product market consideration (Hoberg and Phillips, 2010; Sheen, 2014), human capital relatedness (Lee et al., 2018; Chen et al., 2018), firm size (Gorton et al., 2009), macroeconomic shock (Mitchell and Mulherin, 1996; Harford, 2005; Bonaime et al., 2018) and cash flow uncertainty (Garfinkel and Hankins, 2011). Again, some researchers find that CEO traits, particularly age, and managerial personal objectives significantly affect their respective firms' M&A decisions (Jensen, 1986; Yim, 2013; Serfling, 2014; Jenter and Lewellen, 2015).

Some researchers attempt to particularly identify the determinants of market-level or industry M&A activities. Studying M&A data from 1981 to 2006, Komlenovic et al. (2011) find that business cycle positively affects aggregate merger activity and provide evidence that mergers are procyclical. Lambrecht (2004) provides a theoretical explanation of the procyclicality of merger waves. Using continuous-time real options techniques and game theoretic concepts, the author examines the timing of mergers motivated by economies of scale and shows that firms have motivations to engage in merger activity during the periods of economic expansion. In line with Lambrecht (2004), Maksimovic et al. (2013) empirically investigate a panel data of approximately 40,000

⁹ 73 percent are related to market timing, 59 percent are related to agency motives and/or hubris, and 3 percent are responses to industry and economic shocks.

firms over the period from 1977 to 2004 and find mergers that occur during the waves are associated with greater productivity gains and these gains are more prominent in public firms. Jovanovic and Rousseau (2002) argues that reallocation opportunities might have resulted in the merger waves of 1920s, 1980s and 1990s.

Again, studying 35 waves from 28 industries during 1980s and 1990s, Harford (2005) finds that economic, regulatory and technological shocks accompanied by capital liquidity drive industry merger waves. The finding is consistent with the neoclassical view that firms of specific industry simultaneously react to certain shocks and their collective reaction is such that industry assets are reallocated through M&As. According to him, sufficient amount of capital liquidity needs to be present for industry shocks to generate a wave. He also finds that macro-level liquidity component plays a vital role in the formation of multiple simultaneous cluster of industry waves that further results in the creation of aggregate merger wave. Following Harford (2005), Bonaime et al. (2018) provide a different perspective on variation of M&A activity by investigating the relation between policy uncertainty shock and M&A activity during the period between 1985 and 2014. In case of aggregate M&A activity, they find that total M&A deal value and the number of deals during the next 12 months period decrease by 6.6 percent and 3.9 percent, respectively when there is one standard deviation increase in policy uncertainty. Similarly, Nguyen and Phan (2017) find that policy uncertainty negatively affects industry M&A activities in terms of both total deal number and aggregate deal value. Both studies are similar to Bhagwat et al. (2016) who show that market wide implied volatility is negatively related to M&A activity. They hypothesize that increases in overall economic uncertainty lead to decrease in deal activity. Using M&A data from 1990 to 2013, they find that one standard deviation increase in VIX¹⁰, a proxy for interim uncertainty, is associated with 6 percent decrease in public deal activity in the subsequent month which equates to a monthly drop in deals of about \$4 billion.

In addition, analysing quarterly cash flow data from 1975 to 2006, Garfinkel and Hankins (2011) report that cash flow uncertainty contributes to the start of merger wave. Finally, Denes et al. (2018) examine the relation between innovation cycle and aggregate merger activity. Using data of 111 patent expiration waves between 1980 and 2010, they find that such waves are generated by bursts of innovation following significant technological

¹⁰ A volatility index created by Chicago Board Option Exchange (CBOE) to represent the market's expectation of 30-day forward-looking volatility (Kuepper, 2019)

breakthrough and the probability of industry merger waves increases by 4.4 percent following industry patent expirations wave. Moreover, after controlling for other determinants of merger wave¹¹, they find a 0.2 percent additional increase in the likelihood of merger wave following patent expiration waves. Consistent with Harford (2005), they also find that capital liquidity plays a significant role in generating these waves. The next segment discusses literature that investigate the determinants of M&A activities from behavioural perspective.

2.2.2 Behavioural Perspective of M&A Activities

In the behavioural studies of M&A, there are two broad perspectives which the researchers have primarily focused on to determine the M&A motives. The first perspective is that the corporate managers generally take rational decisions and take advantage of stock market inefficiencies, in part through M&A decisions. On the other hand, the second perspective is that managers suffer from behavioural biases and sometimes take irrational M&A decisions. In this section, first we discuss the market misvaluation theories in which the fundamental assumption is that managers are completely rational and they operate in inefficient market.

Although different researchers find that the primary motives of M&A activities are consistent with neoclassical theory, Shleifer and Vishny (2003) argue that neoclassical theory is difficult to reconcile with some capital market evidence. In this regard, they discuss the findings of Loughran and Vijh (1997) who show that stock market does not react correctly to the news of a merger, with bidders making cash tender offers and stock acquisitions earning positive and negative long-run abnormal returns, respectively. They also note that although neoclassical theory has considerable explanatory power, it is incomplete and the evidence of the central prediction of this theory that mergers increase profitability is inconclusive. They propose a model suggesting that mispricing in the stock market drives M&A activities. Polk and Sapienza (2004) study how stock market mispricing influences firms' investment decisions and find that investor sentiment affects real investment through a catering rather than an equity-issuance channel. This observation is not completely new in the literature. De Bondt and Thompson (1992) provide evidence that is consistent with stock market mispricing as a merger motive. Their empirical analysis show that in some cases acquiring firms takeover other firms that are undervalued in the stock market. In case of merger wave, Rhodes-Kropf and

¹¹ Such as investment opportunities, returns, liquidity and economic shocks.

Viswanathan (2004) show that even when there is no underlying reason for mergers, a wave can occur in the period of overvaluation and be ceased in the period of undervaluation of the stock market. Later, Gugler, Mueller and Weichselbaumer (2012) investigate both listed and unlisted firms in the United States, United Kingdom and Continental Europe over the period between 1991 and 2004. They also find evidence in support of the hypothesis which claims that waves are driven by stock market overvaluation. Investigating US mergers during the period from 1985 to 2008, Gugler, Mueller, Weichselbaumer and Yurtoglu (2012) also find the similar result. Nevertheless, surveying the literature on the determinants of M&A activity and compiling findings for major five complete waves since the end of 19th century in US, UK, Continental Europe and Asia, Martynova and Renneboog (2008) state that motives behind M&A waves cannot be explained by a single factor. They show that aggregate M&A activity can be associated with general economic and stock market condition as well as it can be influenced by managers' personal objectives or behaviour.

Historically, different researchers investigate the impact of managerial biases on different corporate finance decisions. Baker and Wurgler (2013) survey academic articles and find growing body of evidence that managerial biases affect firm's capital structure decisions, dividend policy, features of IPO, equity issuance policy, compensation decisions, etc. In case of firm's financial policy, prior literature show that managerial biases can significantly affect firm's leverage decision (Hackbarth, 2002; Gombola and Marciukaityte, 2007; Malmendier et al., 2007; Graham et al., 2013), dividend policy (Malmendier and Tate, 2005a; Cordeiro, 2009; Deshmukh et al., 2013), IPO pricing policy (Boulton and Campbell, 2016) and employee compensation contract (Gervais et al., 2011; Otto, 2014; Humphery-Jenner et al., 2016). In case of corporate investment policy, managerial bias has significant association with real investment (Cooper et al., 1988; Scarpetta et al., 2002; Malmendier and Tate, 2005a, 2005b; Landier and Thesmar, 2009; Ben-David et al., 2013, Malmendier and Tate, 2015) and investment in research and development (Hirshleifer et al., 2012; Baker and Wurgler, 2013; Chen et al., 2014; Mohamed and Shehata, 2017). In these studies, all the authors primarily focus on managerial bias, however, some of them specifically focus on managerial optimism while others focus on managerial overconfidence¹².

¹² For example, Hackbarth (2002) and Otto (2014) focus on managerial optimism whereas Cordeiro (2009) and Malmendier and Tate (2015) focus on managerial overconfidence.

Although optimism and overconfidence have been used interchangeably in corporate finance literatures, various researchers point out some distinctions between these two biases. Hackbarth (2008) report that optimistic managers overestimate the growth rate of earnings while overconfident managers underestimate the riskiness of earnings. Baker and Wurgler (2013) also provide similar definitions and state that optimism is an overestimation of a mean ability or outcome and overconfidence is an underestimation of a variance. In addition, empirically distinguishing between overconfidence and overoptimism, Hilary et al. (2016) state that both overconfidence and overoptimism are related but distinct. According to them (p. 46), “overoptimism creates an upward bias in the mean of the distribution while overconfidence creates an upward bias in its precision”. They also claim that even though there is now an established literature on managerial overconfidence, still much less is known about managerial overoptimism. Thus, investigating the impact of aggregate managerial sentiment on corporate M&A activities, we aim to contribute to the literature.

Like the impact of managerial optimism on other financing and investment decisions as discussed before, the impact of managerial optimism is also evident on M&A related decisions. Nevertheless, studies about the impact of managerial optimism on aggregate M&A activities are limited in the literature. In his theoretical paper, Nofsinger (2005) argues that aggregate merger activity is positively related to the level of CEO optimism which originates from high social mood. This high social mood during a specific time causes more CEOs to be optimistic and thus they undertake more acquisitions, causing a merger wave in the market. Comparing announcement return to long-term performance of 6,259 completed acquisitions by US public firms announced between 1982 and 2001, Rosen (2006) argues that managers could be imbued with the market sentiment during high market valuation and indicates the possibility of managerial irrationality as a determinant of market M&A activity. Again, examining changes in tone in each firm’s annual 10-K corporate disclosure from 2002 to 2014, Berns et al. (2019) study the impact of time varying firm-level managerial biases on M&A activity and find positive association with industry merger waves. Later, Jochem and Peters (2020) use management forecast dataset to measure time varying managerial bias and find that optimistic forecasts are associated with greater corporate investment. Using textual analysis technique based on 10-K and 10-Q filings of firms that announced M&As between January 2003 and June 2018, An et al. (2022) investigate how individual

manager sentiment affect takeover characteristics. Their findings suggest that manager sentiment is a strong predictor of takeover waves.

All these studies thus imply that both fixed and time varying managerial biases can significantly influence corporate finance decisions including M&A activity. Although several researchers study the impact of both fixed and time varying firm-level individual managerial biases on M&A activity, it is yet to investigate whether the impact of aggregate managerial optimism on market-level M&A activities is conditional on the choice of financing medium and whether the duration of impact differs among various sizes of firms. We want to contribute to the literature by addressing this issue. We discuss our particular research objectives in the next section.

2.2.3 Hypothesis Development

Before we formulate our specific hypothesis, we first need to understand why aggregate managerial sentiment can have an impact on market wide M&A activity. Reviewing various academic papers from finance and psychology fields, this section first discusses why aggregate manager sentiment affects market-level M&A activities.

Different researchers study how social communication takes place and whether general social sentiment affects people in the society including decision makers. Nofsinger (2005) states that societal sentiment is transmitted through social interaction and sentiment exogenous to the decision at hand can influence the actions of financial decision makers. He notes that extremes in social mood are characterized by optimistic or pessimistic aggregate investment and business activities including firm expansion, capital structure decision, IPO design, stock market fluctuation, trading volume and M&A activity.

Sharot et al. (2011) argue that unrealistic optimism of people can influence their finance related decisions. Focusing on the underestimation of future negative events, the authors attempt to study how people maintain unrealistic optimism. Their study shows that people tend to update their beliefs more in response to better-than-expected information and unrealistic optimism is caused by diminished neural coding of undesirable information regarding the future. The authors also note that any benefit that arises because of unrealistic optimism is likely to come at a cost.

Studying how a particular human trait -overconfidence- evolve and remain stable in a population of competing strategies, Johnson and Fowler (2011) state that population are likely to become overconfident as long as the benefits from competing resources are

sufficiently larger than the cost of the competition. Presenting an evolutionary model, the authors also report that overconfidence can arise and spread very quickly among humans by means such as imitation or learning which may also generate different ecological contexts such as cultures or organizations. These processes of cultural selection may affect how overconfidence emerge and spread among interacting entities including individuals, groups and firms. Again, conducting an experimental study, Proeger and Meub (2014) compare the overconfidence of an individual alone and in a social context. Although they find realistic confidence levels in the individual setting on average, in case of social setting where individuals can observe others' decisions, the authors find that even individuals with realistic confidence level demonstrate a much higher level of overconfidence. Their result suggests that overconfidence is a social rather than individual bias. In addition, Jochem and Peters (2020) document that managerial biases can ripple across the economy contributing to financing and business cycles. Analysing management forecast dataset of US public firms over the period between 2003 and 2016, they find that managerial biased beliefs spread along supply chains and these propagated bias prompts interconnected firms to change their corporate finance policies. Following the above mentioned arguments, we can say that corporate managers can get influenced by optimism from their peers and may eventually take biased corporate finance decisions. We formulate our specific research objectives in the subsequent three segments about the impact of aggregate manager sentiment on all market-level M&A activities, cash only financed M&A activities and M&A activities announced by different sizes of firms.

2.2.3.1 Aggregate Manager Sentiment and Market-Level M&A Activities

Hackbarth (2008) as well as Baker and Wurgler (2013) report that managers who take irrational decisions based on their beliefs or expectations overestimate the growth rate of earnings or the mean outcome. Using US financial statement data over the period between 1962 and 2009, Arif and Lee (2014) investigate the relation between aggregate corporate investment, future equity returns and market wide sentiment. They find a significant positive relationship between investor sentiment and aggregate level of corporate investment. In addition, referring "expectation bias" hypothesis, they argue that managers can also get influenced by market sentiment. According to the hypothesis, managers make more capital investment during high sentiment period and vice versa because they overestimate (underestimate) the present value of future expected cash flows during the high (low) sentiment period. Their empirical results provide strong support in favour of this hypothesis. Since M&A is a kind of corporate investment, therefore, we can say that

optimistic managers may also irrationally inflate their expectation of gains from their respective M&A activities.

In case of M&A, Roll (1986) proposes hubris hypothesis¹³ and argues that successful acquirers may be overconfident and optimistic in their assessment of synergy gains. Later, Berkovitch and Narayanan (1993) and Hayward and Hambrick (1997) also find evidence of hubris motive of firms' M&A activities. More recently, Malmendier and Tate (2008) provide evidence that if a firm has an overconfident CEO, the likelihood of making an acquisition by that firm increases by 65 percent. In case of aggregate level, Nofsinger (2005) provides theoretical explanations and argues that aggregate M&A activity is positively related to the level of CEO optimism which originates from high social mood. In addition, Rosen (2006) indicates that in addition to investor sentiment, managerial optimism may also drive market-wide M&A activity. Recently, An et al. (2022) find that there is a strong association between manager sentiment and takeover waves. Therefore, following the literature that provide evidence that managerial optimism influences M&A activities and that managers can get influenced by optimism from their peers, we purport that aggregate manager sentiment can positively affect market M&A activities. From the discussion we can formulate our first hypothesis as follows:

Hypothesis 1: There is positive and significant association between aggregate manager sentiment and market-level M&A activities.

2.2.3.2 Aggregate Manager Sentiment and Cash Only Financed M&A Activities

Previous literature document the significance of choice of M&A payment method that depends on the relative valuations of the stock market. Presenting a model of M&A that is based on the stock market misvaluation, Shleifer and Vishny (2003) predict that during the period of high (low) aggregate or industry valuation, acquisitions are disproportionately for stock (cash). Again, comparing with cash financed M&As, Rhodes-Kropf et al. (2005) find that stock financed M&As are highly impacted by sector wide misvaluation. However, these findings are based on the assumption that managers are rational in a rather inefficient capital market. In case of M&As undertaken by irrational managers, Malmendier and Tate (2008) find that overconfident CEOs are more likely to finance M&As using cash. They report that the odd ratios of financing an M&A using only cash versus only stock and other medium of payment are 1.09 and 1.10, respectively. Malmendier et al. (2011) report that CEOs who believe that their firms are

¹³ A type of cognitive bias that can influence decisions (Kahneman et al., 1982).

undervalued, issue less equity than CEOs of other firms when they have access to external capital. Their results show that depending on the inclusion of various types of control variables in the model, overconfident CEOs are 37 percent to 49 percent less likely to issue equity than non-overconfident CEOs. According to them, these overconfident CEOs overestimate firm's future cash flows and perceive equity financing to be costly. Ferris et al. (2013) argue that overconfident CEOs overestimate the value they create and tend to view their firms as undervalued. According to them, these overconfident CEOs are more averse to use equity as a financing option in M&A deals. Their empirical analysis suggests that overconfidence plays significantly positive role in M&As that are paid in cash. They conclude that (p. 157), "it is overconfidence that affects the subsequent choice of merger financing". Using vested option holding measures to identify CEO optimism, Huang-Meier et al. (2016) also find that firms with optimistic managers use relatively more cash compared to firms with non-optimistic managers during the acquisition activities. Recently, An et al. (2022) analyse the managerial tone in 10-K and 10-Q corporate financial disclosure to identify the level of managerial optimism and report that firms with high manager sentiment tend to acquire target firms with fewer stock payment. Since overoptimistic managers also overestimate the value they create as reported in Hackbarth (2008) as well as in Baker and Wurgler (2013), we can say that managerial sentiment can affect the choice of medium of payment in M&A deals.

Although these studies focus on the impact of individual managerial bias on M&A payment choice, some researchers argue that aggregate sentiment and managerial social experiences influence acquiring firm's M&A related decisions. In this regard, Nofsinger (2005) argues that general optimistic or pessimistic mood of society is transmitted through social interaction and this mood influences all types of decisions including M&A decisions. In addition, Shue (2013) argues that managers are likely to be influenced by their social experiences in addition to being guided by their own beliefs since managers are extremely networked and social agents. Having argued that managerial decisions can be affected by their peers as information and beliefs travel through social networks, Shue (2013) finds a strong impact of social interactions among peers on individual manager's acquisition strategy. Accordingly, it can be argued that the role of optimism on the likelihood of choosing cash as means of M&A payment cannot necessarily be confined only to the individual CEO level. It is highly likely that there is also a significant part the aggregate manager sentiment plays in such decisions. Hence, we purport that during the period of high managerial optimism, more firms tend to use cash as a financing option in

M&A deals, leading to higher aggregate cash only financed M&A deals in the market. Therefore, we purport our second hypothesis as follows:

Hypothesis 2: The impact of aggregate manager sentiment is higher for cash only financed M&A activities.

2.2.3.3 Manager Sentiment and M&A Activities of Different Sizes of Firms

Different researchers investigate how strategic planning including investment decisions differ among different sizes of firms and whether determinants of corporate investments affects differently in different sizes of firms. Ang (1991) mentions that entrepreneurial optimism may result in overinvestments and argues that this potential upward bias could stem from the lack of complete management team in the small businesses. Discussing how strategic planning differ among diversified companies, Vancil and Lorange (1997) mention that unlike large companies, strategic planning in smaller companies is a less formal and almost a continuous process. They also mention that because of their functional structure, even in relatively large but undiversified companies managers are allowed to take strategic decisions on an ad hoc basis. Cowling (2003) states that many small firms have relatively unsophisticated and non-complex governance structure compared to large firms. This non-complex structure of small firms' governance allows them to take corporate decisions in relatively less time. According to Ekanem (2005), managers in small firms sometimes take decisions based on habit or custom and often they adopt a 'good enough' approach instead of an optimal decision approach. In addition, Danielson and Scott (2006) state that optimal investment evaluation procedures between large and small firms differ. They find that large firms rely on discounted cash flow analysis, whereas many small firms use relatively unsophisticated tools such as simple payback period technique or even owner's gut feelings. Thus, from these findings, assuming unsophisticated evaluation techniques take less time, we can infer that small firms take relatively less time to execute M&As deals compared to large firms.

In addition, the duration and the magnitude of the impact of aggregate manager sentiment on the M&A activities of different sizes of firm can vary for several other reasons. First, the CEOs of larger firms are generally more socially connected to their peers and hence they are arguably more knowledgeable about the aggregate sentiment of their peers. In this context, Fang et al. (2018) argue that large firms provide wider networks and higher diversity of social ties to their CEOs. Accordingly, the impact of aggregate manager sentiment on large firm's M&A activities could last longer than small and medium firms.

Next, larger firm have larger board size (Linck et al., 2008). Lipton and Lorsch (1992) argue that when the number of members on a board increases, several problems such as the possibility of less meaningful conversation and the lack of cohesiveness among the board members also increase. In addition, Mohamed et al. (2012) empirically find that the level of CEO optimism increases when the number of directors on a board increases. Hence, because of the board inefficiency that results from the large board size of large firms, the M&A activities of these firms could get more affected by the aggregate manager sentiment compared to smaller size firms. Finally, managers of large firms are generally subject to loose scrutiny, and boards of directors give managers considerable flexibility in choosing investment projects (Morck et al., 1990). Hence, managers of large firms potentially engage in M&A activities with higher deal value after getting influenced by the aggregate sentiment of their peers without much scrutiny from their board whereas the M&A activities undertaken by managers of smaller firms following periods aggregate manager sentiment could sometimes be withhold by the boards of these firms. Because of these above mentioned reasons, we purport that the impact of aggregate manager sentiment on market-level M&A activities differs among different sizes of firms. Our hypothesis in case of different sizes of firms is as follows:

Hypothesis 3: The effect of aggregate manager sentiment on M&A activities of small acquiring firms is short-lived than that of large acquiring firms.

Therefore, in this study we empirically investigate our three research hypotheses as mentioned above. The next section discusses the data and methodology that we use in this study to find the validity of these hypotheses using various statistical analysis.

2.3 Data and Methodology

This section discusses about the data and the methodology that we use in this study. The first segment discusses about all the variables of this study with a particular focus on the significance of our main variable of interest that is manager sentiment index. The next segment discusses the methodology that we use in our market-level M&A analysis.

2.3.1 Data

This segment first includes discussion about the manager sentiment index that we use as a proxy to measure aggregate managerial sentiment. Some researchers use the tone in financial statements to measure managerial optimism, nevertheless, in this study, for the first time as of our knowledge, we apply manager sentiment index developed by Jiang et al. (2019) which captures aggregate managerial optimism more comprehensively in the

market¹⁴. Next, the section discusses about the M&A data that we use in this study. It also includes discussions about various control variables that we use in our multiple regression analysis.

2.3.1.1 Manager Sentiment Index (Man. Sen.)

To analyse the relationship between aggregate manager sentiment and market-level M&A activities, this study uses the updated version of monthly manager sentiment index from January 2003 to December 2017 that is available at the faculty website of Professor Guofu Zhou¹⁵. This index is based on aggregated textual tone in conference call transcripts as well as 10-K and 10-Q statements of US public limited firms covering all industries except financial and utility industries. To construct the manager sentiment index, Jiang et al. (2019) first calculate the number of positive words and number of negative words in these corporate disclosures using Loughran and McDonald (2011) dictionary. Next, they divide the difference between the number of positive words and negative words by total word count in each filing held in the respective month. Subsequently, they take the simple cross-sectional average of firm-level textual tone for both kinds of corporate disclosures. To remove the seasonality and the possibility of idiosyncratic jump, the authors smoothen their monthly index using a four-month moving average weighted by the number of conference calls and financial reports in each month. Finally, to construct the composite manager sentiment index, they take the simple average of the aggregated textual tone in conference call and in financial statements (Jiang et al., 2019).

Since manager sentiment index of Jiang et al. (2019) is constructed by subtracting negative words from the positive words and then dividing the resulting difference by the total number of words in the corporate financial disclosures, we argue that the higher value of the index thus indicate the higher level of optimism and lower value indicates the lower level of optimism¹⁶. In the extreme, very high value of the index indicates

¹⁴ Berns et al. (2019) investigate whether average change in tone in 10-K corporate disclosure can predict industry M&A activity. However, they only analyse MD&A section of annual 10-K corporate disclosures. Again, An et al. (2022) study how manager sentiments affect takeover characteristics using only 10-K and 10-Q filings. On the other hand, composite manager sentiment index of Jiang et al. (2019) is developed by analysing tone in 10-K, 10-Q and conference call transcripts. Jiang et al. (2019) argue that although financial statements and conference call transcripts both capture manager sentiment, they contain complementary information about manager sentiment and show that the correlation between these two is only 0.21.

¹⁵ Available at <http://apps.olin.wustl.edu/faculty/zhou/>

¹⁶ Lee et al. (2017) find tone in financial statements an appropriate proxy for managerial hubris. According to them, on average more overconfident/optimistic managers will demonstrate a higher level of tone compared to less overconfident/optimistic managers.

managerial overoptimism and very low value indicates managerial pessimism. Although some researchers investigate the impact of firm-level time varying managerial biases on corporate policies by considering proxies such as forecast accuracy and tone in annual financial statement, we use manager sentiment index of Jiang et al. (2019) to measure aggregate managerial optimism level at different times in the market¹⁷. We consider this proxy to investigate the impact of managerial biases on M&A activities because of three stylized facts.

First, manager sentiment index captures aggregate and short-term time varying managerial optimism in the market whereas other measures such as overconfidence (Malmendier and Tate, 2005a, 2005b, 2008; Ferries et al., 2013) and preference (Jenter and Lewellen, 2015) focus on long-term individual managerial biases during their respective firms' M&A activities. In addition, Jiang et al. (2019) show that manager sentiment index not only can provide strong empirical evidence on stock return predictability but also can predict other fundamental factors such as aggregate investment growth in the market. Since M&A is an important form of investment and accounts for a large fraction of corporate investment, we use this index in our market-level M&A study.

Second, as Fuller et al. (2002), Hackbarth and Morellec (2008) and Bessler et al. (2011) state that M&A activities are one of the most important and largest corporate investment decisions, the question arises whether this particular investment decision depends on personal characteristics or beliefs of one single person, the CEO. Glaser et al. (2008) attempt to tackle this question empirically by analysing 835 non-financial German CDAX stocks between the year 2001 and 2006. Their results suggest that managers are optimistic and optimism of all insiders has explanatory power when compared to pure CEO optimism. In addition, Serfling (2014) predicts that CEO alone does not usually determine corporate finance policies, instead, they make choices as a member of a team. Investigating 2,346 unique firms over the period from 1992 to 2010, the author finds that certain profile of both CEO and the next most influential executive together can explain various corporate policies such as R&D expenditures, financial leverage, etc. Using a sample of US public firms over the period between 2002 and 2013, Shi and Chen (2019) also find that CEO-CFO relative optimism affects firm's acquisition activities. Therefore,

¹⁷ Using Loughran and McDonald (2011) financial sentiment dictionary, Bochkay and Dimitrov (2015) also construct an aggregate management optimism index from managers' qualitative disclosure in annual and quarterly financial reports and show that this index varies with market wide sentiment. However, unlike Jiang et al. (2019) they do not use conference call transcripts that contain additional and complementary information about manager sentiment.

we can assume that the combined optimism of all insiders significantly affects firm's M&A decisions because in reality corporate investment decisions processes are complex. Since manager sentiment index of Jiang et al. (2019) is based on the managerial tone embedded in both financial statements and conference call transcripts, we can say that the index captures the level of optimism of all insiders of individual firm rather than CEO alone and ultimately reflects the aggregate managerial optimism level in the market. Hence, by using this index we can investigate the impact of optimism level of all decision makers on corporate M&A activities.

Third, although many researchers investigate the impact of overconfidence on various corporate finance decisions in the last two decades, Moore and Healy (2008) argue that the overconfidence has been studied in inconsistent ways and the most common paradigms of study related to overconfidence are overestimation and overprecision. In their study, the author first defines overconfidence as the overestimation of one's actual ability or chance of success. On the contrary, Hackbarth (2008), Baker and Wurgler (2013), and Hilary et al. (2016) term the overestimation of one's ability or outcome as optimism. Moore and Healy (2008) also defines overconfidence as the excessive certainty regarding the accuracy of one's beliefs which Hackbarth (2008), Baker and Wurgler (2013), and Hilary et al. (2016) term it as the overconfidence. On the other hand, Baker and Nofsinger (2010) state that even though overconfidence and optimism are technically distinct, this turns out to be legitimate in the context of capital budgeting as only information that leads to new investments affects firm value. Because of the presence of inconsistencies in the literature, Moore and Healy (2008) conduct an experimental study and document that different types of overconfidence including overestimation and overprecision are not different manifestations of the same underlying construct. The authors (P.514) conclude that "different types of overconfidence are conceptually and empirically distinct". Although in the M&A literature, the impact of both overconfidence (Malmendier and Tate, 2008; Ferris et al., 2013) and optimism (Huang-Meier et al., 2016; An et al., 2022) of individual managers on M&A activities have been studied before, the studies about the impact of aggregate managerial optimism on such activities are limited. Manager sentiment index of Jiang et al. (2019) is distinct from the existing variety of overconfidence measures in the sense that other measures proxy for the individual manager's overestimation and/or overprecision level, whereas the manager sentiment index of Jiang et al. (2019) captures the average overestimation level of all the managers

in a given period of time. Therefore, we use this index to proxy for aggregate managerial optimism level in our study.

2.3.1.2 Mergers and Acquisitions Data

We collect mergers and acquisition data for US firms from Thomson One Banker database. Our sample includes all domestic M&A data announced between January 2003 and December 2017 to match with the availability of manager sentiment index. We restrict our data for domestic M&As only and exclude cross-border M&As since international M&As are more complex in nature and take more times from planning stage to deal execution stage¹⁸. We also restrict our sample to non-financial and non-utility firms since manager sentiment index of Jiang et al. (2019) is based on the disclosures of only non-financial and non-utility firms. Moreover, the business model between financial and non-financial firms differs in certain circumstances¹⁹. On the other hand, the decisions of utility firms are often highly influenced by the government. Thus, we exclude M&A activities of financial and utility firms from our sample. Finally, we remove those observations from our sample for which the deal values are missing.

In order to identify different sizes of firms, we match our M&A data with firms' total asset that we collect from Compustat²⁰. Following Baum et al. (2011), we classify firms as small and large according to their corresponding total assets one year prior to M&A announcements having less than 30 percentile and more than 70 percentile, respectively in the total sample. Consequently, we classify firms as medium according to their corresponding total assets one year prior to M&A announcements having between 30 percentile and 70 percentile. Table 2-1 shows the summary statistics of our full M&A sample.

<Insert Table 2-1 Here>

After applying the conditions, we find a final sample of total 21,529 observations for all M&As irrespective of their choice of payment method. This is comparable to other studies such as Bonaime et al. (2018) who investigate the impact of policy uncertainty on

¹⁸ Erel et al. (2012) state that unlike domestic mergers, cross-border mergers are associated with an additional set of frictions that can affect the deals.

¹⁹ Fama and French (1992) indicate the differences in business models between the financial firms and the non-financial firms by arguing that high leverage for financial firms is normal whereas high leverage for non-financial firms often indicates distress.

²⁰ To test our hypotheses for different sizes of firms, from total sample we remove those observations whose total asset data are missing after matching with Compustat data. Thus, our number of total observations in the sample in this case for all M&As and cash only deals reduces to 15,673 and 9,075, respectively.

takeover activities. The number of observations in their sample for US domestic M&A is 26,680. Although their sample period is between 1985 and 2014 and consider all public firms including financial and utility firms, they exclude those observations for which the deal value is less than \$1 million and for which bidders acquire more than 50 percent of the target firms. In contrast, we consider all domestic M&As by US public non-financial and non-utility firms between 2003 and 2017 since optimistic managers does not necessarily make M&As of large deal values in all cases. The total deal value in our sample is \$12.60 trillion (\$1.05 trillion per year on average) during the sample period. The average deal size for all US M&As is \$585.24 million whereas the median is only \$48.00 million. Thus, the distribution is skewed. From panel A of the table we can see that percentages of cash only financed M&A deals are around 55 percent for all US deal and for deals announced by medium size firms whereas these percentages increase to almost 60 percent for deals announced by small and large size firms.

Because of the sheer size of cash only deals compared to all M&As, we further divide our sample into cash only financed deals. The average and median size for cash only deals for all US M&As are \$645.30 million and \$75.00 million, respectively. The following figures show the monthly total number of deals and monthly total deal value of US domestic M&As for all and cash only financed deals along with the manager sentiment index from January 2003 to December 2017.

<Insert Figure 2-1 Here>

From the graphs, we can see somewhat positive associations between monthly manager sentiment index and monthly total number of deals as well as monthly aggregate deal value for all M&A deals. However, for cash only financed M&A deals, we can see higher correlations between manager sentiment index and monthly total number of deals as well as monthly aggregate deal values. In our study, we investigate the impact of manager sentiment on monthly aggregate nominal deal value since the deal value can largely indicate the economic significance of our findings. However, in our robustness test, we also check the impact of manager sentiment on monthly aggregate real deal value which is adjusted based on December 2017 price. In the regression, we use the natural logarithm of the 3-month rolling values of aggregate M&A value to deal with the idiosyncratic volatility.

2.3.1.3 Control Variables

To investigate the impact of aggregate manager sentiment on market-level M&A activity, we include total five explanatory variables in the regression among which manager sentiment index is our main variable of interest. Other four variables are included in the model to control for alternative explanations that why market M&A activities show substantial variations over time. The presence of these four control variables are evident in the prior M&A literature. The description and the sources of the control variables are as follows.

Investor sentiment index (Inv. Sen.): Like managers, investors also sometimes exhibit irrational behaviour in the market. Several studies such as De Long et al. (1990) and Barberis et al. (1998) develop theoretical argument and claim that investors' irrationality could cause a divergence of short-term market price of assets from their fundamental values. This irrationality of investors can have significant impacts on takeover waves by causing mispricing in the market where rational managers could exploit this mispricing in the market. Since sentiment is a social phenomenon and it can ripple across the economy as reported in Jochem and Peters (2020), both manager sentiment and investor sentiment can coexist in the market at the same time. Thus, we include this investor sentiment index in our regression as a control variable to isolate the effect of manager sentiment from investor sentiment on aggregate M&A values. Here, we use the investor sentiment index of Baker and Wurgler (2006) that is based on first principal component of five standardised sentiment proxies. We collect investor sentiment index from the faculty website of Professor Jeffrey Wurgler²¹.

CAPE ratio (CAPE): Rational managers could take advantage of market mispricing between the acquiring firms and the target firms. Managers of acquiring firms tend to make stock payment in exchange of their overvalued equity for undervalued or comparatively lower overpriced asset of the target firms (An et al., 2022). Previously, Shleifer and Vishny (2003) as well as Rhodes-Kropf and Viswanathan (2004) report that market misvaluation affects M&A activities. Investigating US mergers during the period from 1985 to 2008, Gugler, Mueller, Weichselbaumer and Yurtoglu (2012) empirically find similar result that market valuation drives M&A activities. In this study, we include Robert J. Shiller's cyclically adjusted price earnings ratio to control for the alternative

²¹ Available at <http://people.stern.nyu.edu/jwurgler/>

explanation that market misvaluation affects aggregate M&A activities as Park (2021) finds that cyclically adjusted price earnings ratio better reflects mispricing in the market. We collect this data from the faculty website of Professor Robert J. Shiller²².

CRSP value-weighted market index (CRSP): Lambrecht (2004) reports that takeover waves that have taken places in the past century coincided with the economic expansion. Using continuous-time real options techniques and game theoretic concepts, the author examines the timing of mergers motivated by economies of scale and shows that firms have motivations to engage in merger activity during the periods of economic expansion. Thus, to control for general economic condition, we include CRSP value-weighted market index in our analysis as a control variable. Following Bonaime et al. (2018), we use value weighted index instead of equal weighted index since the former one adjusts for the market capitalization. We collect this data from The Center for Research in Security Prices (CRSP) database.

Aggregate cash holding (AgC): When firms have excess liquidity, they could use these cash or cash equivalents for their corporate expansion through M&As. Harford (2005) finds that economic, regulatory and technological shocks accompanied by capital liquidity drive industry merger wave. According to him, sufficient capital liquidity must be present for industry shocks to propagate a wave. In addition, investigating the relation between corporate liquidity and asset reallocation opportunities, Almeida et al. (2011) argue that corporate liquidity is another important determinant of M&A activities. In case of merger wave, Alexandridis et al. (2012) find evidence that sixth merger wave, which started in 2003 and ended in around 2007, was primarily driven by the availability of abundant liquidity. This liquidity awash, resulted from the rich cash balances and low rate of financing, led firms to engage in M&As with more pronounced cash financing. Following the prior findings, our study includes this variable as a control for availability of corporate liquidity. We collect this variable from the Compustat selecting Cash and Short-Term Investment (CHE) option. In our analysis, we take the natural logarithm of this variable.

All these control variables are collected from January 2003 to December 2017 to match with the availability of our main variable of interest i.e. manager sentiment index. Thus, we get a total sample of 180 monthly observations to be used in the empirical analysis.

²² Available at <http://www.econ.yale.edu/~shiller/data.htm>

The following section discusses the methodology that we use in our study to find the impact of aggregate manager sentiment on market M&A activities.

2.3.2 Methodology

This section discusses the methodology that we use in our study. We conduct our empirical analysis by examining how aggregate manager sentiment affects market-level M&A activities announced by US public non-financial and non-utility firms. In our analysis, we use different forms of same independent variables defined by various types of lags or averages. Broadly, we can divide our analysis into three categories: 1) contemporaneous effect, 2) lag effect and 3) average effect. In all the contemporaneous and lag effect cases, we consider 3-month rolling values of both dependent and independent variables to deal with outliers and idiosyncratic jumps. In case of average effect cases, we use 3-month rolling values of dependent variables and last 3 or 6 months' averages of independent variables.

We conduct the analysis using regression with Newey-West estimation time series model. This model provides a technique for determining a positive semidefinite covariance matrix that is consistent in the presence of unknown forms of heteroscedasticity and autocorrelation in time series data (Smith and McAleer, 1994). Thus, to overcome autocorrelation and heteroscedasticity issues in our analysis, we apply this Newey-West regression model. Following Greene (2003) and Wooldridge (2012), we use the rule of thumb $\sqrt[4]{T}$ to select the lag length in our regression model where T refers to the number of observations in our sample. Since we have 180 observations, following the rule of thumb we get the value of 3.66. Hence, in our baseline regressions we use the lag length of 3. Nevertheless, in our robustness test, we use lag length 4 to check that whether our results remain consistent. The equations that we use in our regression in those above mentioned three categories are described in the following sub-sections.

2.3.2.1 Regression Analysis for Contemporaneous Effect of Independent Variables

First, we check the contemporaneous effect of manager sentiment index on aggregate value of M&As. Our model for contemporaneous analysis has the following specification:

$$Y_t = \alpha + \beta_1 X_t + \beta_{2j} X'_{tj} + \mu_t \quad (1)$$

Here, Y_t is the dependent variable which is natural logarithm of monthly aggregate nominal deal value in our analysis. X_t represents the value of manager sentiment index of Jiang et al. (2019) and X'_{tj} denotes our choice of control variables. α , β_1 and β_{2j}

represent coefficients of intercept, manager sentiment index and control variables, respectively. In the equation, t represents the number of observations in the sample and j represents the selection of control variables. Finally, μ_t denotes the error term of the model. Using this methodology, we investigate three separate cases to test our three hypotheses.

In the first case, we conduct regressions to check the contemporaneous impact of manager sentiment on the aggregate value of all M&As. In the second case, we repeat the regression for the aggregate value of cash only financed M&As. In the third case, we repeat regressions using the same equation to check the impacts of manager sentiment on aggregate deal value of cash only financed M&As in case of different sizes of firms. In all cases, our main independent variable and control variables remain same.

2.3.2.2 Regression Analysis for Lag Effect of Independent Variables

In our study, we also check the effect of i -month lag values of independent variables to investigate whether aggregate manager optimism has any impact on future M&A activities. In this case, the regression equation has the following specification:

$$Y_t = \alpha + \beta_1 X_{t-i} + \beta_{2j} X'_{t-i,j} + \mu_t \quad (2)$$

In equation (2), i takes the value of 1, 2 and 3 through which we check the impact of 1-month, 2-month and 3-month lag values of manager sentiment, respectively on monthly M&A activities. Here, all the control variables are also measured at $t-i$. Like the contemporaneous analysis, we repeat this lag effect analysis for all M&As, cash only financed M&As and M&As that are announced by different sizes of firms.

2.3.2.3 Regression Analysis for Average Effect of Independent Variables

Finally, we check the effect of i -month average value of independent variables on aggregate value of M&A in case of all M&A, cash only financed M&A and M&As announced by different sizes of firms. In this case, we have the following specification of the equation:

$$Y_t = \alpha + \beta_1 X_{[(t-1)+(t-2)\dots+(t-i)]/i} + \beta_{2j} X'_{[(t-1)+(t-2)\dots+(t-i)]/i,j} + \mu_t \quad (3)$$

In equation (3), i takes the value of 3 and 6 in our analysis. Hence, we check the impact of last 3-month and 6-month average values of independent variables on aggregate value of M&As. We also, repeat this analysis for all M&A deals, cash only financed deals and

deals announced by different sizes of firms. We report our descriptive statistics and empirical results in the next section.

2.4 Results and Discussions

This section discusses the descriptive statistics of the variables that we use in this study and presents the empirical results. The section is broadly divided into three parts. In the first part, we discuss the summary statistics. In the second part, we present and discuss the results of our regression analysis. Finally, in the third part we discuss our results of some robustness tests.

2.4.1 Descriptive Statistics

The following table 2-2 shows the summary statistics of the variables that we use in this study. We present the standard summary statistics that include mean, median, standard deviation, minimum and maximum values in the table. Here, we present the summary statistics of the rolling values of all the variables since for majority of the regressions we use 3-month rolling values. Summary statistics of the original value of the variables are provided in table 2-A1 in the appendix. In case of all dependent variables and aggregate cash holding variable, we show the descriptive statistics of their logarithmic form since we use the natural log of these variables in the regression.

<Insert Table 2-2 Here>

From table 2-2 we see that the mean and median values of the variables are not widely dispersed for any of the variables. In case of manager sentiment index, the standard deviation is quite large compared to its mean and median value even after taking 3-month rolling values. It indicates frequent fluctuations in the monthly manager sentiment. In all the cases, number of total monthly observation is 180.

We also include the correlation coefficients among the 3-month rolling values of all variables here. The table 2-3 and table 2-4 present the coefficient matrices for all M&As and cash only financed M&As, respectively. Correlations among the original values that is without transformation to rolling values for both all M&As and cash only financed M&As are presented in table 2-A2 and 2-A3, respectively in the appendix.

<Insert Table 2-3 Here>

From table 2-3 we can see that in case of all deals and all firms, our M&A deal value is positively correlated with manager sentiment index, investor sentiment index, CAPE ratio and aggregate cash holdings. These correlations are significant at 1 percent level. Thus,

M&A activities are positively associated with manager and investor sentiments as well as with market misvaluation and corporate liquidity. In case of all deals by different sizes of firms, M&A values are also positively and significantly correlated with these variables except the aggregate cash holding in case of all deals that are announced by small and medium size firms. Our main variable of interest that is manager sentiment index is also positively and significantly correlated with investor sentiment index and the correlation coefficient between them is 0.52. This moderately high correlation between these two sentiment indexes largely indicates managers get influenced by market sentiment as mentioned in Arif and Lee (2014). We can also see a positive and moderately high correlation of 0.45 between CAPE ratio and investor sentiment index. The following table shows the correlation among the variables in case of cash only financed M&As.

<Insert Table 2-4 Here>

From table 2-4 we can see that in case of cash only financed M&A deals, manager sentiment index shows higher positive and significant correlations with deal values of M&As for all firms as well as for different sizes of firms. All these correlation coefficients are significant at 1 percent level. Similarly, investor sentiment index also shows higher correlations with cash only deals compared to all deals except for medium size firms. However, the correlations between CAPE ratio and M&A deal values decrease for cash only deals compared to all deals in case of both all firms and different sizes of firms. Although these tables show association between manager sentiment index and M&A deal values, we conduct further empirical tests to check whether any causal relationships exist between them.

2.4.2 Empirical Results

This section discusses the empirical results of this study in three segments. In the first segment, it discusses the findings for all M&As irrespective of their choice of payment method. In the second segment, it discusses the findings only for those M&As in which deals use 100 percent cash payment method. Finally, in the third segment, it discusses empirical results for three different sizes of firms. In all the sections, we include results for contemporaneous effect, lag effects and average effects.

2.4.2.1 Impact of Aggregate Manager Sentiment on All M&A Deals

Table 2-5 reports the results of regression with Newey-West standard error for US domestic all M&As announced by public non-financial and non-utility firms in two separate panels. Panel A shows the result of simple regression analysis in which we put

only manager sentiment index as the independent variable. Next, Panel B reports the results of multiple regression analysis in which we put our selected control variables along with manager sentiment index. In both panels, we report regression results for contemporaneous effect, lag effect and average effect of independent variables.

<Insert Table 2-5 Here>

From panel A of table 2-5 we can see that manager sentiment index generates positive and statistically significant result in the simple regression model. In case of contemporaneous effect, 1-month lag effect and 2-month lag effect, one standard deviation increase in manager sentiment index corresponds to 23.58 percent, 21.27 percent and 16.68 percent increase, respectively in aggregate M&A deal value. We find similar results for average effects also where one standard deviation increase in manager sentiment index results in positive change of around 18 percent in all M&A deal values. The results are significant at 1 percent levels in case of contemporaneous effect and 1-lag effect. On the other hand, the results are significant at 5 percent levels in case of 2-month lag, 3-month and 6-month average effects. However, we do not find any statistically significant result in case of 3-month lag effect.

On the other hand, in case of multiple regressions from panel B we can see that manager sentiment index does not generate any significant results when we include other control variables. From the table we can see that among the control variables, investor sentiment index and aggregate cash holding by corporations generate significant results. One standard deviation increase in investor sentiment index leads to around 22 percent increase in all M&A deal value in case of different lag or average effect analysis. These results are significant at 5 percent levels except for 6-month average effect case where the result is significant at 10 percent level. These findings are consistent with Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004) who report that market misvaluation affects M&A activities and argue that investor sentiment can be a potential source of mispricing in the market. We also find that aggregate M&A deal value increases by around 10 percent when there is 1 percent increase in aggregate cash holding and these results are significant at 1 percent levels. These findings are consistent with Almeida et al. (2011) who report that a one standard deviation change in transferable assets positively affects the ratio of credit lines to total liquidity by 0.10 and argue that lines of credit are frequently used to finance liquidity mergers. Hence, we can say that aggregate manager sentiment does not have any significant impact on market M&A activities when we

consider all deals announced by public non-financial non-utility firms irrespective of their choice of payment methods. Therefore, we do not find evidence to support our first hypothesis when we include control variables in our analysis.

The insignificant results potentially stem from the fact that aggregate deal value of all M&A includes both fully cash and fully stock deals as well as deals that include a mix of both cash and stock payment method. The extant literature documents that acquiring firms with overconfident or optimistic managers are more likely to engage in M&A deals with more cash payment (Malmendier and Tate, 2008; Huang-Meier et al., 2016) and are more averse to pay with equity (Ferris et al., 2013; An et al., 2022). Since the aggregate deal value of all M&A includes all deals with both cash and stock payment method, the impact of higher level of aggregate manager sentiment on cash only deals potentially offsets by such impact on stock only deals or deals that includes both cash and stock payment method. Hence, the empirical analysis does not reveal any statistically significant result for aggregate deal value of all M&A activities. Although we do not find any significant impact of aggregate manager sentiment on deal values of all M&As, in the next section we check the impact of aggregate manager sentiment on cash only financed M&As and investigate about our second hypothesis.

2.4.2.2 Impact of Aggregate Manager Sentiment on Cash Only Financed M&A Deals

Table 2-6 reports the Newey-West regression outcomes in case of cash only financed US domestic M&As announced by public non-financial and non-utility firms during our sample period. Like table 2-5, table 2-6 also shows results in two separate panels for simple and multiple regressions. For contemporaneous effect, lag effects and average effects, coefficients as well as significance levels for their corresponding independent variables are reported in six separate columns.

<Insert Table 2-6 Here>

From the outcome of simple regression analysis we can see that, aggregate manager sentiment has positive and statistically significant association with aggregate monthly deal value in case of cash only financed M&As. These findings about the positive associations are consistent in contemporaneous, lags and average effect cases. From panel A of the table we can see that, one standard deviation increase in manager sentiment index corresponds to around 33 percent increase in cash only financed M&A deal values when we analyse contemporaneous, 1-month lag and 6-month average effects. Again, in case of 2-month lag, 3-month lag and 3-month average effects, one standard deviation increase

in manager sentiment index results in 30.05 percent, 25.94 percent and 30.54 percent increase in cash only financed M&A deal values, respectively. All of these findings are statistically significant at 1 percent level.

From panel B of the table we can see that in case of multiple regression when we include control variables, aggregate manager sentiment still shows positive and significant association with cash only financed M&A deal values. The table reports that manager sentiment has contemporaneous effect on deal value and when there is one standard deviation increase in aggregate manager sentiment, cash only financed M&A deal value increases by 16.57 percent. The result is significant at 5 percent level. We find similar outcomes in case of lags and averages of independent variables effects. In case of 1-month lag, 2-month lag and 3-month lag analysis, we find that one standard deviation change in aggregate manager sentiment is positively associated with 18.00 percent, 17.34 percent and 15.59 percent change in deal values, respectively. Here, the former one finding is significant at 5 percent level whereas the latter two findings are significant at 10 percent level. Again, one standard deviation change in manager sentiment results in 17.68 percent and 23.47 percent increase in aggregate deal value when we analyse using 3-month and 6-month averages of manager sentiment indexes, respectively. The results that we obtain using average effect are significant at 5 percent levels. Hence, we find that the impact of aggregate manager sentiment is more pronounced for cash only deals than that of deals when we consider all M&As. From the goodness of fit test we find that, our models explain around 40 percent variations in the dependent variables for all cases except 3-month lag effect where the model explains 31.70 percent variations in the dependent variable of our study.

These findings are largely consistent with the claims of Malmendier and Tate (2008) and Ferris et al. (2013) that overconfident CEOs tend to finance M&As using cash. Thus, we can say that manager sentiment plays significant roles in case of cash only financed M&A and during the period of high aggregate manager sentiment, firms announce cash only financed M&As with higher deal values. Therefore, we find significant evidence in favour of our second hypothesis that the impact of aggregate manager sentiment is more pronounced for M&A deals which are financed with 100 percent cash payment.

From the results of multiple regression we also find that like all M&As, investor sentiment plays role on cash only financed M&A deal values as well. The table reports that one standard deviation change in investor sentiment index is positively associated with 41.48

percent, 38.17 percent, 33.82 percent and 28.99 percent change in cash only financed M&A deal values in case of contemporaneous, 1-month lag, 2-month lag and 3-month lag effects analysis, respectively. Similar results are also evident in case of average effect analysis. Their impacts are significant at 1 percent level except for 6-month average effect which is significant at 5 percent level. Moreover, we can see that CRSP index has positive and significant impacts on cash only financed M&As for all cases except for contemporaneous case. This findings indicate that general economic conditions of previous months also play roles in announcing cash only financed M&A deals with higher value. This finding is consistent with Lambrecht (2004) who argue that firms have motivations to engage in M&A activities during the period of economic expansions. Finally, we find that aggregate cash holdings also play role in cash only financed M&A similar to all M&A, however, their impacts are significant at 10 percent levels and only significant in case of average effects. Hence, from this analysis we can say that along with other factors such as investor sentiment, general economic condition and corporate cash holdings that affect cash only financed M&A deal value, managers' sentiment also has significant positive impacts on these types of deal values.

As an additional analysis, we extend our study to investigate whether the impact of aggregate manager sentiment on cash only financed M&A activities varies across different types of industries. Previously, Salhin et al. (2016) argue that the impact of managerial sentiment depends on the industry characteristics and report that managerial sentiment affects stock returns of manufacturing and construction sector. They also report that such impacts are not significant in case of retail trade and services sector. To examine the industry level impact in our study, we divide our sample into different industries based on the 2-digit SIC code. In our sample, 19.41 percent M&As fall into business services industries which is the highest in our sample, followed by electronic and electrical component industry that makes up 8.74 percent M&As in our sample. The communication industry makes up for 4.29 percent M&As in the sample. For the interest of readability, we report the result for M&A of those industries which make up more than 4 percent in our sample. The regression results are provided in table 2-A4 in the appendix.

From the results we find that the impact of aggregate manager sentiment on monthly M&A deal value is highest for oil and gas extraction industry, followed by machinery and computer component industry and electronic and other electrical equipment industry. We also find significant result for communication industry as well as measuring, photographic, medical, and optical goods and clock industries. However, we do not find

any significant result in case of chemicals and allied product industry and business services industry although the M&A activities of the business service industry makes up the highest percentage in our sample. Our findings are largely consistent with Salhin et al. (2016) who report that the impact of managerial sentiment on stock returns are significant in case of manufacturing and construction industry and insignificant in case of services industries. In case of control variables, we do not find highly consistent results for any variable across all types of industries. From the analysis, we can conclude that aggregate manager sentiment affects the M&A activities of manufacturing and communication industries significantly whereas it does not have any significant impact on the M&A activities of service industry.

2.4.2.3 Impact of Aggregate Manager Sentiment on Cash Only Financed M&As Deals by Various Sizes of Firm

In this section, we discuss our time series regression results about the impact of aggregate manager sentiment on cash only financed M&A activities announced by three different sizes of firms²³. Table 2-7, 2-8 and 2-9 present the regression results for small, medium and large firms, respectively. Similar to previous tables, Panel A and panel B in each table show the regression results without and with control variables, respectively.

<Insert Table 2-7 Here>

From panel A of table 2-7 we can see that in case of small firms, aggregate manager sentiment has positive and significant associations with cash only financed M&A activities for up to 2-month lags. However, the impacts gradually diminish from contemporaneous to higher lag cases. In case of contemporaneous effects, one standard deviation increase in manager sentiment results in 22.54 percent increase in cash only financed M&A deal values whereas it gradually decreases to 12.59 percent in case of 2-month lag cases. The results for contemporaneous, 1-month lag and 2-month lag effects are significant at 1 percent, 5 percent and 10 percent levels, respectively. However, we do not find any significant results for 3 or higher lag cases in case of small firms.

In case of multiple regression, from panel B of table 2-7 we can see that the impact of manager sentiment is still positive and significant for small firms in case of contemporaneous case only. One standard deviation change in manager sentiment is

²³ Consistent with the results of all M&As by all public non-financial non-utility firms, we do not find any significant results for all M&As in case of different sizes of firms also in case of multiple regression analysis. The regression results for all M&As announced by small, medium and large firms are provided in table 2-A5, 2-A6 and 2-A7, respectively in the appendix.

positively associated with 12.21 percent change in case of small firms. We do not find significant results for higher lag cases and average of previous 3-month or 6-month cases. The result in contemporaneous case is significant at 10 percent levels. Thus, the impact of aggregate manager sentiment on cash only financed M&As for small firms is short-lived. This is consistent with Vancil and Lorange (1997) who claim that strategic planning in smaller companies is almost a continuous process. Next, table 2-8 reports the findings in case of medium firms.

<Insert Table 2-8 Here>

In case of medium firms, from panel A of table 2-8 we can see that unlike small firms, the impacts of aggregate manager sentiment last longer and are significant in all regression cases in our analysis. However, similar to small firms, the effects gradually decrease as we increase the lags in case of medium firms.

In case of multiple regression, from panel B of table 2-8 we can see that, similar to the impact on small firms, the impact of aggregate manager sentiment is positive and significant for medium firms in case of contemporaneous case only. Here, one standard deviation change in manager sentiment is positively associated with 11.13 percent change in case of medium firms. Like the cases in small firms, we do not find significant results for higher lag cases and average effect cases. The result in contemporaneous case is significant at 10 percent levels. Finally, table 2-9 reports the regression result in case of large firms.

<Insert Table 2-9 Here>

From panel A of table 2-9 we can see that, unlike the small and medium firms, large firms do not show any gradual decrease in the impact of aggregate manager sentiment on their cash only financed M&A announcements. The impacts are statistically significant at 1 percent level.

Again, from panel B we can see that, in case of large firms aggregate manager sentiment has significant positive impacts in contemporaneous, lags and average effect cases. These results are significant at 10 percent levels in case of contemporaneous, 2-month lag, 3-month lag and 3-month average effect cases whereas the results in case of 1-month lag and 6-month average effect are significant at 5 percent level. Thus, we can say that the impact of aggregate manager sentiment on cash only financed M&As announced by large acquiring firms are long-lived than that by small and medium acquiring firms. Managers

of small and medium firms update their sentiment levels according to the current aggregate sentiment level in the market and announce M&A deals based on their current state of optimism. However, managers of large firms sometimes take times to announce the M&A deals even when they are affected by current aggregate manager sentiment in the market because of their respective firms' complex governance structure. Hence, empirical results show considerable evidence in support of our third hypothesis.

In addition, from our empirical results we can see that the impact of aggregate manager sentiment on market-level M&A deal value is higher in the case of large firm compared to that of small and medium firm. Here, one standard deviation increase in aggregate manager sentiment corresponds to approximately 19 percent increase in aggregate M&A deal value for large firms whereas one standard deviation increase in aggregate manager sentiment corresponds to around 12 percent increase in aggregate M&A deal value for small and medium firms. This higher level of impact on large firms could result from several reasons including CEOs' social connection, acquiring firm's board size and/or level of scrutiny that the manager of large firms face while taking corporate investment decisions as discussed before.

2.4.3 Robustness Test

We conduct a series of robustness tests for our cash only financed M&A findings. First, we conduct the similar regression on all cash only financed US domestic M&A deal values announced by all firms of all industries between January 2003 and December 2017. These include both public and private firms of all industries including financial, non-financial, utility and non-utility firms. Second, we repeat the analysis for cash only financed M&As using maximum lags of 4 in Newey-West regression instead of maximum lag of 3 which we use in our main analysis. Finally, we conduct the analysis again using real deal value of cash only financed M&As instead of nominal deal value that we use in our previous analysis. The real deal value is presented in December 2017 price. In all three cases, our independent variables remain same and we repeat the regression for all cases which are contemporaneous effect, lag effects and average effects. The following sub-sections exhibit the results of our robustness tests.

2.4.3.1 Impact of Aggregate Manager Sentiment on Cash Only Financed M&A Activities of All Firms

In case of US domestics M&As announced by both public and private firms in all industries, the total number of cash only financed deals in our sample is 20,318. The mean

and median of monthly cash only financed M&A deal values are approximately 59.23 billion and 52.98 billion, respectively. We also find the correlation coefficient between natural log of 3-month rolling values of cash only financed M&A deals and 3-month rolling values of our main variable of interest that is manager sentiment index is 0.49. This correlation coefficient is significant at 1 percent level. Table 2-10 shows the outcomes of simple and multiple regression results in panel A and panel B, respectively.

<Insert Table 2-10 Here>

From panel A of table 2-10 we can see that manager sentiment has positive and significant impact on deal values of cash only financed M&A even when we consider all firms. Here, one standard deviation increase in manager sentiment index corresponds to 29.68 percent, 30.17 percent, 29.07 percent and 25.58 percent increase in deal values in case of contemporaneous, 1-month lag, 2-month lag and 3-month lag effect analysis, respectively. We find similar results in case of average effect analysis also where one standard deviation increase in manager sentiment index corresponds to 29.44 percent and 31.41 percent increase in deal values for 3-month and 6-month average analysis, respectively. All these results are statistically significant at 1 percent level. These findings are very close to results that we find from analysis with cash only financed M&A deals announced by only public non-financial and non-utility firms.

In case of multiple regression, from panel B we can see that manager sentiment does not have any significant contemporaneous effect in this case unlike cash only deals by public non-financial and non-utility firms. However, in case of 1-month lag, 2-month lag, 3-month lag and 3-month average effect analysis, we find that one standard deviation change in manager sentiment index is positively associated with 13.34 percent, 14.08 percent, 12.81 percent and 14.30 percent changes, respectively. These results are significant at 10 percent level. On the other hand, in case of 6-month average effect analysis we find that when there is one standard deviation increase in manager sentiment index, cash only financed M&A deal value announced by all types of firms increases by 18.45 percent. This finding is significant at 5 percent level. Thus, we can say that aggregate manager sentiment plays role in cash only financed M&A deal values irrespective of types of firms. Since manager sentiment index of Jiang et al. (2019) is based on financial disclosures of only public non-financial and non-utility firms, we can say that these findings for all types of firms are consistent with the claims of Nofsinger (2005), Proeger and Meub (2014) and Jochem and Peters (2020) that managerial biases

can ripple across the economy contributing to financing decisions and overconfidence or optimism is a social rather than individual bias. In case of other independent variables, we can see that investor sentiment index, CRSP index and aggregate cash holdings have positive and significant impacts on cash only financed M&As announced by all types of firms. Thus, the results about the impact of manager sentiment on cash only financed M&A deal values between all types of firms and previously selected firms are consistent. Therefore, we can say that our findings for public non-financial and non-utility firms are robust to the findings of all types of firms as well.

2.4.3.2 Impact of Aggregate Manager Sentiment on Cash Only Financed M&A Activities with Newey-West Maximum Lag of 4

In this section, we present the Newey-West regression results for US domestic cash only financed M&A deal values announced by public non-financial and non-utility firms considering a maximum lag of 4. The findings for simple and multiple regressions are presented in panel A and panel B, respectively in table 2-11.

<Insert Table 2-11 Here>

From panel A of table 2-11 we can see that like Newey-West regression with a maximum lag of 3, aggregate manager sentiment has positive and significant impacts on cash only financed M&A deal values even when we consider a maximum lag of 4 in the regression. The results are significant at 1 percent level in all cases in panel A. On the other hand, from panel B we can see that in case of multiple regression, manager sentiment index still has positive and significant impacts on cash only financed M&A deal value in case of contemporaneous, 1-month lag, 2-month lag, 3-month average and 6-month average effect analysis. However, unlike the previous case with a maximum lag of 3, we find that the result loses its significance even at 10 percent level when we analyse 3-month lag effect. Since in majority of the cases we find consistent results, we can say that our findings are robust to the case when we consider a maximum lag of 4 in the Newey-West regression model.

2.4.3.3 Impact of Aggregate Manager Sentiment on Real Value of Cash Only Financed M&A Activities

Finally, we repeat the regression to check the impact of manager sentiment on the real deal values of US domestic cash only financed M&As announced by public non-financial and non-utility firms. We consider the real values in December 2017 price. The following table 2-12 presents the findings.

<Insert Table 2-12 Here>

From panel A of the table we can see that, manager sentiment index is significantly and positively associated with the real value of cash only financed M&A deals. Although the coefficients are slightly less than the coefficients that we get in nominal deal value analysis, the results are significant at 1 percent level.

We find similar results in case of multiple regressions as well. From panel B we can see that coefficients in real value analysis cases are very close to nominal value analysis cases and are also significant at 5 percent level except 3-month lag effect analysis case in which it is significant at 10 percent level. We can see the similar results for other independent variables also. However, we can see a slight increase in adjusted R-square value in when we consider real deal value instead of nominal deal value. Hence, we can say that our findings between nominal value and real value of cash only financed M&As are consistent. All these findings from our empirical analysis suggest that aggregate manager sentiment has a significant and positive association with cash only financed market-level M&A activities.

2.4.3.4 Impact of Aggregate Manager Sentiment on Cash Only Financed M&A Activities and Consideration of Global Financial Crisis

Global financial crisis of 2007-09 negatively affected the global M&A activities (Reddy et al., 2014). Since our sample that starts from January 2003 to December 2017 includes the global financial crisis (GFC) of 2007-09 period, we conduct our analysis by including GFC as a control variable to test if our results are driven by this financial crisis. To conduct our analysis, following Lang et al. (2012) we define GFC dummy is equal to 1 if the M&A period is in the month between January 2007 and December 2009, otherwise 0. We consider this 2007-2009 time period to control for GFC following the study of Flannery et al. (2013). The results are provided in table 2-13.

<Insert Table 2-13 Here>

From the table, we can see that our results remain consistent after controlling for the global financial crisis impact on cash only M&A deal value. In all the cases, the impact of manager sentiment is positive and significant at 5 percent level except 3-lag effect case and 6-month average effect case where the impact is significant at 10 percent level and 1 percent level, respectively. In case of GFC dummy, we find that the variable is negative and highly significant at 1 percent level in all the cases, suggesting that the aggregate

M&A deal value decreases significantly during the financial crisis period between 2007 and 2009. Other control variables also show consistent results. Since, the impact of aggregate manager sentiment remains consistent after including the financial crisis variable, we can say that our results are robust to the consideration of global financial crisis in our study.

2.4.3.5 Impact of Aggregate Manager Sentiment on Cash Only Financed M&A Activities with Alternative Proxy

Different researchers analyse the tones of conference call transcripts (e.g., Price et al., 2012; Lee et al., 2017) and financial disclosures (e.g., Feldman, 2010; Li, 2010; Loughran and McDonalds, 2011) and use these tones to proxy for managerial sentiment. On the other hand, Jiang et al. (2019) construct the manager sentiment index by analysing and combining the tones of both conference call transcripts and financial disclosures. In their study, Jiang et al. (2019) show that their sentiment index can negatively predict the general stock return. They also show that high (low) manager sentiment are accompanied by high (low) aggregate investment growth and claim that higher manager sentiment index captures managers' overly optimistic beliefs about future returns to investment. Nevertheless, the authors do not specifically test whether their sentiment index is a true measure of aggregate sentiment in the market. Therefore, to check the validity of our findings, we use US Business Confidence Index (BCI) provided by The Organization for Economic Cooperation and Development (OECD) instead of manager sentiment index of Jiang et al. (2019) as an alternative measure of aggregate manager sentiment and conduct the analysis again²⁴. This index is based upon opinion surveys on developments in production, orders and stocks of finished goods in the industry sector and provides information on future developments. The results are provided in table 2-14.

<Insert Table 2-14 Here>

From the table we can see that the coefficients of the business confidence index is positive and significant at 5 percent level in all the cases except the contemporaneous case. Since in most of the cases, we find positive and significant results, we can say that aggregate managerial optimism, proxied by the business confidence index of OECD, has significant impact on aggregate deal value of cash only M&A activities. The results about the other

²⁴ Available at <https://data.oecd.org/leadind/business-confidence-index-bci.htm>

control variables also show consistent findings. Therefore, our findings are robust to the alternative measure of aggregate manager sentiment.

2.5 Conclusion

Being one of the largest and most important corporate finance decisions, historically mergers and acquisitions (M&As) received major attention from many researchers. Many researchers devoted considerable amount of time in finding the determinants of M&A activities. Our study finds that aggregate manager sentiment is an important factor for which some types of M&A activities exhibit substantial variations over time in the market. Managers get influenced by the aggregate optimism in the market that come from their peers and undertake M&A activities accordingly. Using manager sentiment index of Jiang et al. (2019), we find that aggregate manager sentiment positively and significantly affects market M&A activities that are financed with only cash payment. However, we do not find significant relation between aggregate manager sentiment and M&A activities when we consider all deals in the market. Nevertheless, our findings for cash only deals are economically significant since cash only deals account for more than half of total market M&A deals in our sample and one standard deviation increase in aggregate manager sentiment results in approximately \$7 billion increase in monthly aggregate cash only financed M&A deal value. Lastly, we find that this impact of aggregate manager sentiment on cash only financed M&A deal value is short-lived in case of small and medium firms whereas such impact stays for comparatively longer time in case of large firms. Hence, unlike managers of large firms, managers of small and medium firms get influenced by only current period's aggregate manager sentiment and undertake M&A activities immediately. Although in this study we focus only on market-level M&A activities and find that aggregate sentiment has significant impact on cash only financed market-level M&A activities, it is tempting to know whether such sentiment level can affect individual acquiring firm's choice of M&A payment method. We conduct this analysis in our next chapter.

Tables – Chapter 2

Table 2-1 Summary Statistics of M&A

The table exhibits the summary statistics of US domestic M&As announced between January 2003 and December 2017 that are reported in Thomson One Banker Database. The sample contains only those observations for which deals are announced by non-financial and non-utility US public firms. The sample also removes those observations for which the deal value is missing. Here, all US deal indicates M&As by all size of firms altogether. Firms are categorized as small, medium and large based on their total assets that have less than 30 percentile, 30 to 70 percentile and more than 70 percentile asset, respectively of the total sample. In this case, we also remove M&As of those firms whose total asset data are missing. Real deal value is reported in December 2017 price.

	Total number of deals	Average monthly number of deals (approx.)	Average monthly nominal deal value (in \$ billion)	Average monthly real deal value (in \$ billion)	Percentage of cash only deals
Panel A: All types of payment deal					
All US deal	21,529	120	70.00	78.10	54.56
Small Firms	4,541	25	0.76	0.89	59.94
Medium Firms	6,591	36	6.01	7.50	55.11
Large Firms	4,541	25	48.11	53.45	59.92
Panel B: Only cash payment deal					
All US deal	11,746	65	42.11	47.14	100
Small Firms	2,722	15	0.51	0.60	100
Medium Firms	3,632	20	4.22	4.79	100
Large Firms	2,721	15	30.98	34.60	100

Table 2-2 Summary Statistics of the Variables

The table exhibits the summary statistics of 3-month rolling values of both dependent and independent variables that the study uses in the regression analysis. The summary statistics of dependent variables and aggregate cash holding variable are presented after transforming them into their natural logarithm. All the variables are collected for the time period ranging from January 2003 to December 2017 and the total number of observation of each variable is 180.

Variable	Mean	Median	Std. Dev.	Min.	Max.
All M&A Deal Value, All Firms, ln(\$ billion)	11.04	11.07	0.49	9.69	12.30
All M&A Deal Value, Small Firms, ln(\$ billion)	6.50	6.48	0.54	5.26	7.64
All M&A Deal Value, Medium Firms, ln(\$ billion)	8.71	8.70	0.41	7.51	9.92
All M&A Deal Value, Large Firms, ln(\$ billion)	10.60	10.66	0.65	8.13	11.86
Cash Only Financed M&A Deal Value, All Firms, ln(\$ billion)	10.51	10.62	0.55	8.81	11.74
Cash Only Financed M&A Deal Value, Small Firms, ln(\$ billion)	6.05	6.10	0.65	4.03	7.48
Cash Only Financed M&A Deal Value, Medium Firms, ln(\$ billion)	8.26	8.36	0.45	6.68	9.14
Cash Only Financed M&A Deal Value, Large Firms, ln(\$ billion)	10.14	10.27	0.69	7.77	11.64
Manager Sentiment Index	-0.00	0.18	0.93	-3.92	1.56
Investor Sentiment Index	-0.22	-0.22	0.29	-0.87	0.54
CAPE Ratio	24.11	25.11	3.41	14.14	31.69
CRSP Index	0.01	0.01	0.03	-1.12	0.09
Aggregate Cash, ln(\$ billion)	12.06	11.67	1.43	10.04	15.11

Table 2-3 Correlation Matrix for All M&A Deal

The following table shows the correlation among the 3-month rolling values of the variables that we use in this study for all M&A deals. Here, the dependent variables and aggregate cash holding variables are transformed into their natural log format. P-values are given in the parenthesis. *, ** and *** represents significance level at 10, 5 and 1 percent level, respectively.

Variables	Deal Value, All Firm	Deal Value, Small Firm	Deal Value, Medium Firm	Deal Value, Large Firm	Manager Sentiment Index	Investor Sentiment Index	CAPE Ratio	CRSP Index	Aggregate Cash Holding
Deal Value, All Firm, ln(\$ billion)	1.00								
Deal Value, Small Firm, ln(\$ billion)	-0.00 (0.99)	1.00							
Deal Value, Medium Firm, ln(\$ billion)	0.38*** (0.00)	0.49*** (0.000)	1.00						
Deal Value, Large Firm, ln(\$ billion)	0.95*** (0.000)	-0.03 (0.68)	0.30*** (0.00)	1.00					
Manager Sentiment Index	0.43*** (0.00)	0.15** (0.05)	0.36*** (0.00)	0.46*** (0.00)	1.00				
Investor Sentiment Index	0.50*** (0.00)	0.42*** (0.00)	0.65*** (0.00)	0.45*** (0.00)	0.52*** (0.00)	1.00			
CAPE Ratio	0.37*** (0.00)	0.23*** (0.00)	0.40*** (0.00)	0.27*** (0.00)	0.07 (0.37)	0.45*** (0.00)	1.00		
CRSP Index	-0.05 (0.50)	-0.09 (0.21)	-0.18** (0.03)	-0.06 (0.45)	-0.26*** (0.00)	-0.19*** (0.01)	0.13* (0.09)	1.00	
Aggregate Cash Holding ln(\$ billion)	0.31*** (0.00)	-0.17** (0.02)	-0.06 (0.41)	0.29*** (0.00)	0.22*** (0.00)	-0.05 (0.49)	0.06 (0.42)	0.07 (0.32)	1.00

Table 2-4 Correlation Matrix for Cash Only Financed M&A Deal

The following table shows the correlation among the 3-month rolling values of variables that we use in this study for cash only financed M&A deals. Here, the dependent variables and aggregate cash holding variables are transformed into their natural log format. P-values are given in the parenthesis. *, ** and *** represents significance level at 10, 5 and 1 percent level, respectively.

Variables	Deal Value, All Firm	Deal Value, Small Firm	Deal Value, Medium Firm	Deal Value, Large Firm	Manager Sentiment Index	Investor Sentiment Index	CAPE Ratio	CRSP Index	Aggregate Cash Holding
Deal Value, All Firm, ln(\$ billion)	1.00								
Deal Value, Small Firm, ln(\$ billion)	0.07 (0.37)	1.00							
Deal Value, Medium Firm, ln(\$ billion)	0.49*** (0.00)	0.33*** (0.00)	1.00						
Deal Value, Large Firm, ln(\$ billion)	0.97*** (0.00)	0.05 (0.53)	0.42*** (0.00)	1.00					
Manager Sentiment Index	0.52*** (0.00)	0.31*** (0.00)	0.48*** (0.00)	0.49*** (0.00)	1.00				
Investor Sentiment Index	0.58*** (0.00)	0.33*** (0.00)	0.57*** (0.00)	0.54*** (0.00)	0.53*** (0.00)	1.00			
CAPE Ratio	0.22** (0.00)	-0.07 (0.36)	0.09 (0.21)	0.16** (0.03)	0.07 (0.37)	0.45*** (0.00)	1.00		
CRSP Index	-0.06 (0.46)	-0.14* (0.06)	-0.09 (0.26)	-0.05 (0.51)	-0.26*** (0.00)	-0.19*** (0.01)	0.13* (0.09)	1.00	
Aggregate Cash, ln(\$ billion)	0.14* (0.05)	-0.12* (0.10)	0.02 (0.80)	0.14* (0.06)	0.22*** (0.00)	-0.05 (0.49)	0.06 (0.42)	0.07 (0.32)	1.00

Table 2-5 Aggregate Manager Sentiment and All M&As

The table represents the Newey-West regression results of aggregate manager sentiment impact on all US domestic M&As announced by public non-financial non-utility firms between January 2003 and December 2017. Here, the dependent variable is natural logarithm of 3-month rolling values of all M&A deal volume. The dependent variable and aggregate corporate cash holding variable are transformed into their natural logarithm. The regression considers maximum lag of 3. P-values are provided in the parenthesis. *, ** and *** represent significance level at 10, 5 and 1 percent, respectively.

Variable	Contemp. Effect	1-Lag Effect	2-Lag Effect	3-Lag Effect	Last 3- Month Average Effect	Last 6- Month Average Effect
Panel A: Without Control Variables						
Man. Sen.	0.226*** (0.001)	0.206*** (0.002)	0.165** (0.019)	0.126 (0.108)	0.173** (0.013)	0.187** (0.018)
Constant	11.043*** (0.000)	11.048*** (0.000)	11.054*** (0.000)	11.060*** (0.000)	11.050*** (0.000)	11.055*** (0.000)
F-Statistics	11.610*** (0.001)	9.800*** (0.002)	5.580** (0.019)	2.620 (0.108)	6.260** (0.013)	5.750** (0.018)
R-Square	0.184	0.154	0.101	0.061	0.110	0.116
Adj. R-Sq.	0.179	0.149	0.096	0.055	0.105	0.111
Panel B: With Control Variables						
Man. Sen.	0.096 (0.198)	0.087 (0.255)	0.044 (0.600)	0.009 (0.924)	0.053 (0.529)	0.087 (0.374)
Inv. Sen.	0.575** (0.021)	0.573** (0.026)	0.608** (0.021)	0.625** (0.015)	0.602** (0.022)	0.508* (0.073)
CAPE	0.026 (0.115)	0.027 (0.130)	0.026 (0.189)	0.024 (0.238)	0.026 (0.184)	0.029 (0.205)
CRSP	0.334 (0.852)	1.901 (0.269)	2.126 (0.207)	1.740 (0.313)	2.354 (0.162)	3.799* (0.098)
Ln(AgC)	0.093*** (0.001)	0.100*** (0.000)	0.103*** (0.000)	0.076*** (0.010)	0.104*** (0.000)	0.085** (0.015)
Constant	9.412*** (0.000)	9.299*** (0.000)	9.301*** (0.000)	9.692*** (0.000)	9.277*** (0.000)	9.391*** (0.000)
F-Statistics	10.380*** (0.000)	9.140*** (0.000)	8.580*** (0.000)	8.710*** (0.000)	8.84*** (0.000)	8.350*** (0.000)
R-Square	0.397	0.395	0.359	0.283	0.366	0.317
Adj. R-Sq.	0.379	0.377	0.340	0.262	0.347	0.297
N	180	179	178	177	179	179

Table 2-6 Aggregate Manager Sentiment and Cash Only Financed M&As

The table represents the Newey-West regression results of aggregate manager sentiment impact on all US domestic M&As announced by public non-financial non-utility firms between January 2003 and December 2017. Here, the dependent variable is natural logarithm of 3-month rolling values of cash only financed M&A deal volume. The dependent variable and aggregate corporate cash holding variable are transformed into their natural logarithm. The regression considers maximum lag of 3. P-values are provided in the parenthesis. *, ** and *** represent significance level at 10, 5 and 1 percent, respectively.

Variable	Contemp. Effect	1-Lag Effect	2-Lag Effect	3-Lag Effect	Last 3- Month Average Effect	Last 6- Month Average Effect
Panel A: Without Control Variables						
Man. Sen.	0.305*** (0.000)	0.301*** (0.000)	0.280*** (0.000)	0.246*** (0.003)	0.284*** (0.000)	0.304*** (0.000)
Constant	10.515*** (0.000)	10.520*** (0.000)	10.526*** (0.000)	10.534*** (0.000)	10.523*** (0.000)	10.531*** (0.000)
F-Statistics	20.170*** (0.000)	18.990*** (0.000)	14.260*** (0.000)	9.390*** (0.003)	14.960*** (0.000)	13.040*** (0.000)
R-Square	0.266	0.259	0.226	0.182	0.233	0.240
Adj. R-Sq.	0.262	0.255	0.222	0.177	0.229	0.236
Panel B: With Control Variables						
Man. Sen.	0.164** (0.035)	0.177** (0.036)	0.171* (0.057)	0.155* (0.093)	0.174** (0.049)	0.225** (0.020)
Inv. Sen.	0.888*** (0.000)	0.840*** (0.002)	0.773*** (0.003)	0.693*** (0.004)	0.771*** (0.003)	0.633** (0.019)
CAPE	-0.004 (0.853)	-0.001 (0.953)	0.001 (0.942)	0.004 (0.867)	0.002 (0.938)	0.003 (0.899)
CRSP	2.195 (0.263)	3.920* (0.098)	4.851* (0.070)	4.874* (0.072)	4.927* (0.061)	8.451*** (0.008)
Ln(AgC)	0.039 (0.242)	0.045 (0.145)	0.054 (0.102)	0.042 (0.225)	0.055* (0.100)	0.061* (0.090)
Constant	10.315*** (0.000)	10.152*** (0.000)	9.958*** (0.000)	10.058*** (0.000)	9.950*** (0.000)	9.768*** (0.000)
F-Statistics	8.390*** (0.000)	8.010*** (0.000)	7.320*** (0.000)	6.300*** (0.000)	7.610*** (0.000)	9.080*** (0.000)
R-Square	0.414	0.419	0.395	0.336	0.402	0.405
Adj. R-Sq.	0.397	0.402	0.378	0.317	0.385	0.388
N	180	179	178	177	179	179

Table 2-7 Aggregate Manager Sentiment and Cash Only Financed M&As by Small Firms

The table represents the Newey-West regression results of aggregate manager sentiment impact on US domestic cash only financed M&As announced by small public non-financial and non-utility firms between January 2003 and December 2017. Firms have been categorized based on their total asset holdings one year prior to the announcements where small firms are those firms that have total assets below 30 percentile in the sample. Here, the dependent variable is natural logarithm of 3-month rolling values of cash only financed M&A deal volume by small firms. The dependent variable and aggregate corporate cash holding variable are transformed into their natural logarithm. The regression considers maximum lag of 3. P-values are provided in the parenthesis. *, ** and *** represent significance level at 10, 5 and 1 percent, respectively.

Variable	Contemp. Effect	1-Lag Effect	2-Lag Effect	3-Lag Effect	Last 3- Month Average Effect	Last 6- Month Average Effect
Panel A: Without Control Variables						
Man. Sen.	0.217*** (0.008)	0.186** (0.014)	0.127* (0.079)	0.067 (0.360)	0.129* (0.072)	0.087 (0.226)
Constant	6.050*** (0.000)	6.053*** (0.000)	6.056*** (0.000)	6.056*** (0.000)	6.055*** (0.000)	6.056*** (0.000)
F-Statistics	7.080*** (0.009)	6.110** (0.014)	3.120* (0.079)	0.840 (0.360)	3.280* (0.072)	1.480 (0.226)
R-Square	0.096	0.071	0.033	0.009	0.034	0.014
Adj. R-Sq.	0.091	0.065	0.027	0.004	0.029	0.008
Panel B: With Control Variables						
Man. Sen.	0.130* (0.100)	0.084 (0.216)	-0.005 (0.945)	-0.097 (0.261)	0.000 (0.993)	-0.090 (0.372)
Inv. Sen.	0.736* (0.057)	0.815** (0.036)	0.998*** (0.010)	1.219*** (0.004)	0.994*** (0.010)	1.309*** (0.007)
CAPE	-0.042 (0.182)	-0.038 (0.242)	-0.038 (0.247)	-0.041 (0.227)	-0.038 (0.250)	-0.047 (0.211)
CRSP	0.216 (0.899)	-0.130 (0.944)	0.003 (0.999)	1.381 (0.501)	0.148 (0.937)	2.524 (0.406)
Ln(AgC)	-0.061 (0.189)	-0.073 (0.129)	-0.084* (0.083)	-0.066 (0.155)	-0.083* (0.085)	-0.125** (0.017)
Constant	7.962*** (0.000)	8.028*** (0.000)	8.198*** (0.000)	8.099*** (0.000)	8.183*** (0.000)	9.006*** (0.000)
F-Statistics	3.080** (0.011)	3.050** (0.012)	3.090** (0.011)	3.860*** (0.002)	3.080** (0.011)	5.050*** (0.000)
R-Square	0.196	0.189	0.196	0.204	0.195	0.240
Adj. R-Sq.	0.173	0.166	0.172	0.181	0.172	0.218
N	180	179	178	177	179	179

Table 2-8 Aggregate Manager Sentiment and Cash Only Financed M&As by Medium Firms

The table represents the Newey-West regression results of aggregate manager sentiment impact on US domestic cash only financed M&As announced by medium public non-financial and non-utility firms between January 2003 and December 2017. Firms have been categorized based on their total asset holdings one year prior to the announcements where medium firms are those firms that have total assets between 30 and 70 percentile in the sample. Here, the dependent variable is natural logarithm of 3-month rolling values of cash only financed M&A deal volume by medium firms. The dependent variable and aggregate corporate cash holding variable are transformed into their natural logarithm. The regression considers maximum lag of 3. P-values are provided in the parenthesis. *, ** and *** represent significance level at 10, 5 and 1 percent, respectively.

Variable	Contemp. Effect	1-Lag Effect	2-Lag Effect	3-Lag Effect	Last 3- Month Average Effect	Last 6- Month Average Effect
Panel A: Without Control Variables						
Man. Sen.	0.236*** (0.000)	0.199*** (0.000)	0.168*** (0.003)	0.144** (0.015)	0.178*** (0.001)	0.182*** (0.002)
Constant	8.260*** (0.000)	8.270*** (0.000)	8.278*** (0.000)	8.283*** (0.000)	8.272*** (0.000)	8.276*** (0.000)
F-Statistics	25.950*** (0.000)	16.280*** (0.000)	9.300*** (0.003)	6.080** (0.015)	10.540*** (0.001)	9.890*** (0.002)
R-Square	0.234	0.177	0.132	0.099	0.144	0.135
Adj. R-Sq.	0.229	0.172	0.127	0.094	0.139	0.130
Panel B: With Control Variables						
Man. Sen.	0.113* (0.098)	0.081 (0.221)	0.055 (0.438)	0.036 (0.618)	0.071 (0.327)	0.070 (0.434)
Inv. Sen.	0.876*** (0.000)	0.790*** (0.000)	0.753*** (0.001)	0.727*** (0.004)	0.742*** (0.002)	0.731** (0.020)
CAPE	-0.024 (0.113)	-0.015 (0.371)	-0.010 (0.590)	-0.006 (0.747)	-0.009 (0.609)	-0.008 (0.736)
CRSP	1.873 (0.220)	-0.061 (0.972)	0.026 (0.992)	0.842 (0.748)	0.466 (0.849)	2.497 (0.405)
Ln(AgC)	-0.000 (0.996)	-0.026 (0.361)	-0.029 (0.272)	-0.016 (0.515)	-0.028 (0.304)	-0.015 (0.587)
Constant	9.027*** (0.000)	9.125*** (0.000)	9.030*** (0.000)	8.780*** (0.000)	8.984*** (0.000)	8.788*** (0.000)
F-Statistics	13.190*** (0.000)	10.190*** (0.000)	7.420*** (0.000)	5.570*** (0.000)	7.740*** (0.000)	6.070*** (0.000)
R-Square	0.405	0.356	0.316	0.268	0.311	0.268
Adj. R-Sq.	0.388	0.337	0.296	0.247	0.291	0.247
N	180	179	178	177	179	179

Table 2-9 Aggregate Manager Sentiment and Cash Only Financed M&As by Large Firms

The table represents the Newey-West regression results of aggregate manager sentiment impact on US domestic cash only financed M&As announced by large public non-financial and non-utility firms between January 2003 and December 2017. Firms have been categorized based on their total asset holdings one year prior to the announcements where large firms are those firms that have total assets above 70 percentile in the sample. Here, the dependent variable is natural logarithm of 3-month rolling values of cash only financed M&A deal volume by large firms. The dependent variable and aggregate corporate cash holding variable are transformed into their natural logarithm. The regression considers maximum lag of 3. P-values are provided in the parenthesis. *, ** and *** represent significance level at 10, 5 and 1 percent, respectively.

Variable	Contemp. Effect	1-Lag Effect	2-Lag Effect	3-Lag Effect	Last 3- Month Average Effect	Last 6- Month Average Effect
Panel A: Without Control Variables						
Man. Sen.	0.364*** (0.000)	0.372*** (0.000)	0.353*** (0.000)	0.318*** (0.001)	0.354*** (0.000)	0.391*** (0.000)
Constant	10.139*** (0.000)	10.143*** (0.000)	10.148*** (0.000)	10.158*** (0.000)	10.148*** (0.000)	10.157*** (0.000)
F-Statistics	15.880*** (0.000)	18.820*** (0.000)	16.260*** (0.000)	11.840*** (0.000)	16.830*** (0.000)	15.500*** (0.000)
R-Square	0.239	0.249	0.225	0.188	0.228	0.250
Adj. R-Sq.	0.235	0.245	0.220	0.183	0.224	0.246
Panel B: With Control Variables						
Man. Sen.	0.187* (0.068)	0.208** (0.047)	0.206* (0.058)	0.187* (0.074)	0.204* (0.055)	0.271** (0.019)
Inv. Sen.	1.137*** (0.002)	1.102*** (0.002)	1.022*** (0.004)	0.920*** (0.006)	1.023*** (0.004)	0.825** (0.020)
CAPE	-0.018 (0.438)	-0.017 (0.468)	-0.014 (0.561)	-0.011 (0.668)	-0.014 (0.560)	-0.010 (0.729)
CRSP	3.008 (0.202)	5.220* (0.051)	6.110** (0.032)	5.433* (0.066)	6.063** (0.030)	8.809** (0.019)
Ln(AgC)	0.051 (0.196)	0.072* (0.051)	0.083* (0.061)	0.066 (0.161)	0.083* (0.061)	0.097** (0.048)
Constant	10.189*** (0.000)	9.881*** (0.000)	9.665*** (0.000)	9.781*** (0.000)	9.670*** (0.000)	9.291*** (0.000)
F-Statistics	6.740*** (0.000)	7.300*** (0.000)	6.510*** (0.000)	5.460*** (0.000)	6.730*** (0.000)	7.930*** (0.000)
R-Square	0.373	0.401	0.381	0.317	0.384	0.380
Adj. R-Sq.	0.356	0.384	0.363	0.297	0.366	0.362
N	180	179	178	177	179	179

Table 2-10 Robustness Test Results for Aggregate Manager Sentiment and Cash Only Financed M&A Activities of All Firms

The table represents the Newey-West regression results of aggregate manager sentiment impact on US domestic cash only financed M&As announced by all firms including public, private, financial, non-financial, utility and non-utility firms between January 2003 and December 2017. Here, the dependent variable is natural logarithm of 3-month rolling values of cash only financed M&A deal volume by all firms. The dependent variable and aggregate corporate cash holding variable are transformed into their natural logarithm. The regression considers maximum lag of 3. P-values are provided in the parenthesis. *, ** and *** represent significance level at 10, 5 and 1 percent, respectively.

Variable	Contemp. Effect	1-Lag Effect	2-Lag Effect	3-Lag Effect	Last 3- Month Average Effect	Last 6- Month Average Effect
Panel A: Without Control Variables						
Man. Sen.	0.277*** (0.000)	0.281*** (0.000)	0.272*** (0.000)	0.243*** (0.001)	0.275*** (0.000)	0.291*** (0.000)
Constant	10.868*** (0.000)	10.872*** (0.000)	10.877*** (0.000)	10.886*** (0.000)	10.876*** (0.000)	10.882*** (0.000)
F-Statistics	16.800*** (0.000)	17.350*** (0.000)	15.120*** (0.000)	11.220*** (0.001)	15.770*** (0.000)	14.080*** (0.000)
R-Square	0.241	0.248	0.234	0.195	0.240	0.241
Adj. R-Sq.	0.237	0.244	0.229	0.190	0.236	0.237
Panel B: With Control Variables						
Man. Sen.	0.110 (0.133)	0.134* (0.085)	0.141* (0.069)	0.129* (0.087)	0.143* (0.060)	0.181** (0.020)
Inv. Sen.	1.032*** (0.000)	0.959*** (0.000)	0.865*** (0.000)	0.780*** (0.000)	0.864*** (0.000)	0.769*** (0.001)
CAPE	0.013 (0.435)	0.017 (0.318)	0.021 (0.226)	0.022 (0.210)	0.021 (0.224)	0.019 (0.319)
CRSP	1.707 (0.295)	3.522* (0.079)	4.610** (0.039)	5.119** (0.021)	4.664** (0.034)	9.173*** (0.000)
Ln(AgC)	0.019 (0.509)	0.035 (0.202)	0.059** (0.036)	0.063** (0.027)	0.059** (0.035)	0.078*** (0.010)
Constant	10.530*** (0.000)	10.229*** (0.000)	9.821*** (0.000)	9.718*** (0.000)	9.815*** (0.000)	9.551*** (0.000)
F-Statistics	14.250*** (0.000)	13.780*** (0.000)	13.840*** (0.000)	12.500*** (0.000)	14.260*** (0.000)	17.170*** (0.000)
R-Square	0.519	0.528	0.523	0.486	0.528	0.543
Adj. R-Sq.	0.505	0.515	0.509	0.471	0.515	0.530
N	180	179	178	177	179	179

Table 2-11 Robustness Test Results for Aggregate Manager Sentiment and Cash Only Financed M&As with Maximum Lag of 4

The table represents the Newey-West regression results of aggregate manager sentiment impact on US domestic cash only financed M&As announced by public non-financial and non-utility firms between January 2003 and December 2017. Here, the dependent variable is natural logarithm of 3-month rolling values of cash only financed M&A deal volume. The dependent variable and aggregate corporate cash holding variable are transformed into their natural logarithm. The regression considers maximum lag of 4. P-values are provided in the parenthesis. *, ** and *** represent significance level at 10, 5 and 1 percent, respectively.

Variable	Contemp. Effect	1-Lag Effect	2-Lag Effect	3-Lag Effect	Last 3- Month Average Effect	Last 6- Month Average Effect
Panel A: Without Control Variables						
Man. Sen.	0.305*** (0.000)	0.301*** (0.000)	0.280*** (0.001)	0.246*** (0.005)	0.284*** (0.000)	0.304*** (0.001)
Constant	10.515*** (0.000)	10.520*** (0.000)	10.526*** (0.000)	10.534*** (0.000)	10.523*** (0.000)	10.531*** (0.000)
F-Statistics	17.900*** (0.000)	16.770*** (0.000)	12.530*** (0.001)	8.120*** (0.005)	13.150*** (0.000)	11.230*** (0.001)
R-Square	0.266	0.259	0.226	0.182	0.233	0.240
Adj. R-Sq.	0.262	0.255	0.222	0.177	0.229	0.236
Panel B: With Control Variables						
Man. Sen.	0.164** (0.040)	0.177** (0.042)	0.171* (0.066)	0.155 (0.108)	0.174* (0.058)	0.225** (0.029)
Inv. Sen.	0.888*** (0.002)	0.840*** (0.003)	0.773*** (0.003)	0.693*** (0.005)	0.771*** (0.003)	0.633** (0.023)
CAPE	-0.004 (0.860)	-0.001 (0.955)	0.001 (0.944)	0.004 (0.873)	0.002 (0.941)	0.003 (0.903)
CRSP	2.195 (0.267)	3.920 (0.107)	4.851* (0.076)	4.874* (0.078)	4.927* (0.067)	8.451** (0.011)
Ln(AgC)	0.039 (0.245)	0.045 (0.145)	0.055 (0.101)	0.042 (0.222)	0.055* (0.098)	0.061* (0.097)
Constant	10.315*** (0.000)	10.152*** (0.000)	9.958*** (0.000)	10.058*** (0.000)	9.950*** (0.000)	9.768*** (0.000)
F-Statistics	7.380*** (0.000)	7.060*** (0.000)	6.580*** (0.000)	5.740*** (0.000)	6.840*** (0.000)	8.290*** (0.000)
R-Square	0.414	0.419	0.395	0.336	0.402	0.405
Adj. R-Sq.	0.397	0.402	0.378	0.317	0.385	0.388
N	180	179	178	177	179	179

Table 2-12 Robustness Test Results for Aggregate Manager Sentiment and Real Values of Cash Only Financed M&As

The table represents the Newey-West regression results of aggregate manager sentiment impact on real aggregate values (in December 2017 price) of US domestic cash only financed M&As announced by public non-financial and non-utility firms between January 2003 and December 2017. Here, the dependent variable is natural logarithm of 3-month rolling values of cash only financed M&A deal volume. The dependent variable and aggregate corporate cash holding variable are transformed into their natural logarithm. The regression considers maximum lag of 3. P-values are provided in the parenthesis. *, ** and *** represent significance level at 10, 5 and 1 percent, respectively.

Variable	Contemp. Effect	1-Lag Effect	2-Lag Effect	3-Lag Effect	Last 3- Month Average Effect	Last 6- Month Average Effect
Panel A: Without Control Variables						
Man. Sen.	0.289*** (0.000)	0.285*** (0.000)	0.265*** (0.000)	0.231*** (0.001)	0.267*** (0.000)	0.279*** (0.000)
Constant	10.641*** (0.000)	10.645*** (0.000)	10.650*** (0.000)	10.657*** (0.000)	10.649*** (0.000)	10.655*** (0.000)
F-Statistics	24.700*** (0.000)	23.010*** (0.000)	16.760*** (0.000)	10.900*** (0.001)	17.410*** (0.000)	14.380*** (0.000)
R-Square	0.273	0.265	0.229	0.180	0.235	0.232
Adj. R-Sq.	0.268	0.261	0.225	0.176	0.231	0.227
Panel B: With Control Variables						
Man. Sen.	0.153** (0.019)	0.167** (0.021)	0.161** (0.040)	0.146* (0.069)	0.162** (0.036)	0.207** (0.016)
Inv. Sen.	0.886*** (0.000)	0.835*** (0.000)	0.764*** (0.000)	0.678*** (0.003)	0.763*** (0.001)	0.629** (0.016)
CAPE	-0.004 (0.809)	-0.002 (0.928)	0.001 (0.944)	0.004 (0.846)	0.001 (0.943)	0.003 (0.894)
CRSP	2.322 (0.200)	4.000* (0.069)	4.883* (0.052)	4.883* (0.056)	4.908** (0.047)	8.318*** (0.006)
Ln(AgC)	0.025 (0.398)	0.032 (0.255)	0.042 (0.180)	0.027 (0.401)	0.042 (0.179)	0.038 (0.271)
Constant	10.621*** (0.000)	10.445*** (0.000)	10.244*** (0.000)	10.343*** (0.000)	10.241*** (0.000)	10.179*** (0.000)
F-Statistics	11.490*** (0.000)	10.490*** (0.000)	9.190*** (0.000)	7.490*** (0.000)	9.520*** (0.000)	10.590*** (0.000)
R-Square	0.440	0.443	0.413	0.348	0.419	0.406
Adj. R-Sq.	0.424	0.427	0.396	0.329	0.402	0.388
N	180	179	178	177	179	179

Table 2-13 Robustness Test Results for Aggregate Manager Sentiment and Cash Only Financed M&As and Consideration of Global Financial Crisis (GFC)

The table represents the Newey-West regression results of aggregate manager sentiment impact on nominal aggregate values of US domestic cash only financed M&As announced by public non-financial and non-utility firms between January 2003 and December 2017. Here, the dependent variable is natural logarithm of 3-month rolling values of cash only financed M&A deal volume. Global Financial Crisis (GFC) dummy is equal to 1 if the month of the M&A deal is between January 2007 and December 2017, otherwise 0. The dependent variable and aggregate corporate cash holding variable are transformed into their natural logarithm. The regression considers maximum lag of 3. P-values are provided in the parenthesis. *, ** and *** represent significance level at 10, 5 and 1 percent, respectively.

Variable	Contemp. Effect	1-Lag Effect	2-Lag Effect	3-Lag Effect	Last 3- Month Average Effect	Last 6- Month Average Effect
Man. Sen.	0.182** (0.018)	0.195** (0.021)	0.189** (0.036)	0.172* (0.058)	0.192** (0.030)	0.248*** (0.010)
Inv. Sen.	1.039*** (0.000)	1.039*** (0.000)	1.018*** (0.000)	0.991*** (0.000)	1.014*** (0.000)	0.955*** (0.000)
GFC	-0.392*** (0.002)	-0.419*** (0.001)	-0.441*** (0.000)	-0.475*** (0.000)	-0.439*** (0.000)	-0.482*** (0.000)
CAPE	-0.027 (0.142)	-0.026 (0.137)	-0.025 (0.151)	-0.025 (0.158)	-0.025 (0.155)	-0.027 (0.166)
CRSP	1.704 (0.300)	3.467* (0.065)	4.454** (0.034)	4.506** (0.029)	4.562** (0.028)	7.741*** (0.001)
Ln(AgC)	0.034 (0.302)	0.040 (0.184)	0.048 (0.125)	0.035 (0.283)	0.049 (0.122)	0.048 (0.160)
Constant	11.038*** (0.000)	10.952*** (0.00)	10.826*** (0.000)	10.993*** (0.000)	10.810*** (0.000)	10.819*** (0.000)
F-Statistics	8.930*** (0.000)	9.650*** (0.000)	9.230*** (0.000)	7.750*** (0.000)	9.450*** (0.000)	10.540*** (0.000)
R-Square	0.473	0.486	0.470	0.424	0.475	0.487
Adj. R-Sq.	0.455	0.469	0.451	0.403	0.456	0.469
N	180	179	178	177	179	179

Table 2-14 Robustness Test Results for Aggregate Manager Sentiment and Cash Only Financed M&As with Alternative Proxy

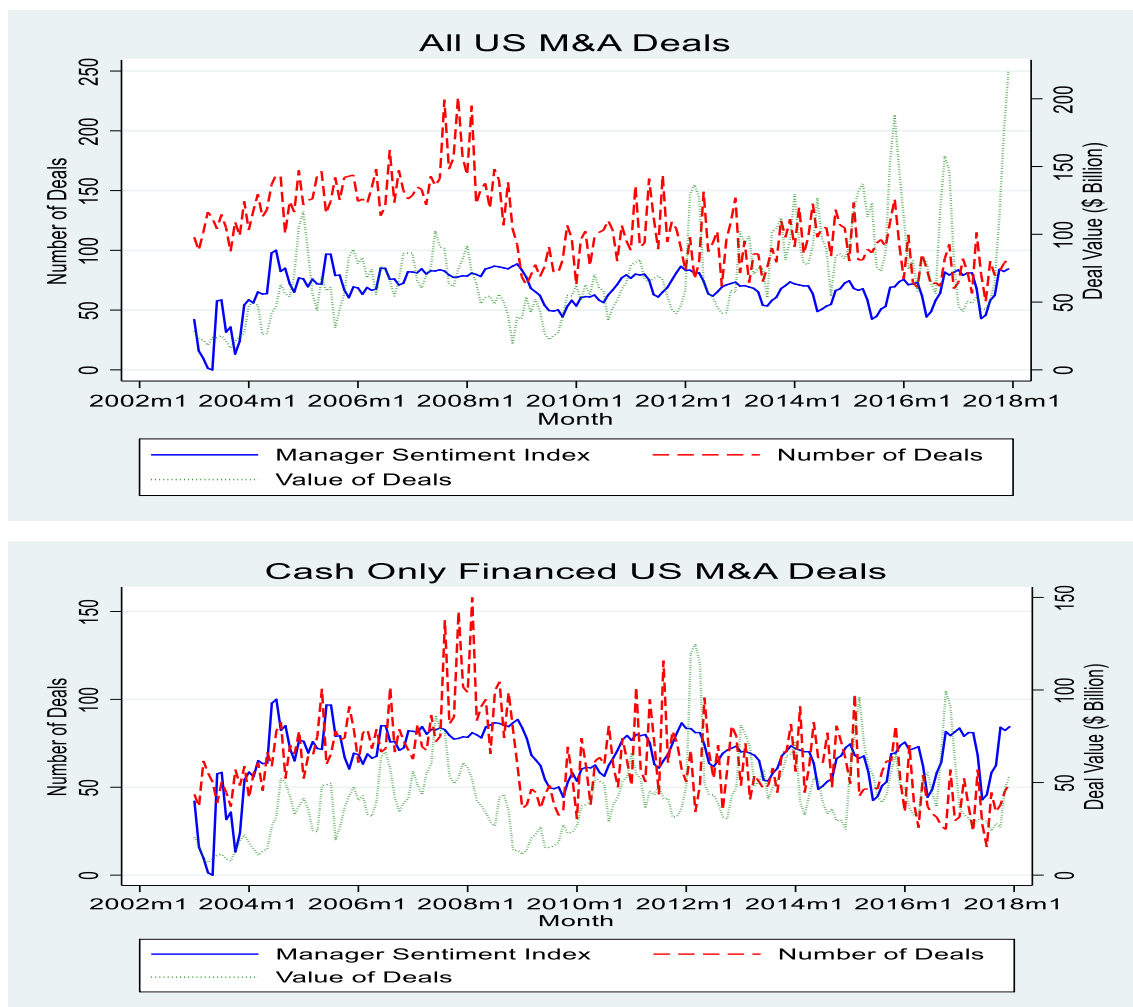
The table represents the Newey-West regression results of aggregate manager sentiment impact on nominal aggregate values of US domestic cash only financed M&As announced by public non-financial and non-utility firms between January 2003 and December 2017. Here, aggregate manager sentiment is proxied by the US Business Confidence Index (BCI) of OECD. The dependent variable is natural logarithm of 3-month rolling values of cash only financed M&A deal volume. The dependent variable and aggregate corporate cash holding variable are transformed into their natural logarithm. The regression considers maximum lag of 3. P-values are provided in the parenthesis. *, ** and *** represent significance level at 10, 5 and 1 percent, respectively.

Variable	Contemp. Effect	1-Lag Effect	2-Lag Effect	3-Lag Effect	Last 3- Month Average Effect	Last 6- Month Average Effect
BCI	0.108 (0.116)	0.128** (0.049)	0.141** (0.023)	0.148** (0.014)	0.142** (0.023)	0.166** (0.011)
Inv. Sen.	1.319*** (0.000)	1.322*** (0.000)	1.261*** (0.000)	1.160*** (0.000)	1.269*** (0.000)	1.284*** (0.000)
CAPE	-0.038* (0.090)	-0.041* (0.071)	-0.042* (0.069)	-0.042* (0.080)	-0.042* (0.067)	-0.050* (0.052)
CRSP	0.507 (0.782)	2.013 (0.273)	2.876 (0.133)	2.922 (0.157)	2.996 (0.113)	4.954* (0.059)
Ln(AgC)	0.074** (0.013)	0.083*** (0.002)	0.091*** (0.004)	0.076** (0.034)	0.093*** (0.004)	0.111*** (0.005)
Constant	-0.021 (0.997)	-2.065 (0.740)	-3.454 (0.565)	-3.993 (0.500)	-3.513 (0.558)	-6.024 (0.338)
F-Statistics	7.900*** (0.000)	9.060*** (0.000)	9.140*** (0.000)	8.260*** (0.000)	9.320*** (0.000)	9.520*** (0.000)
R-Square	0.397	0.407	0.396	0.352	0.400	0.398
Adj. R-Sq.	0.379	0.390	0.378	0.333	0.383	0.380
N	180	179	178	177	179	179

Figures – Chapter 2

Figure 2-1 Monthly Total Number and Aggregate Value of M&As

The figures show monthly total number and aggregate value of US domestic M&As in case of all payment type deals (top panel) and cash only financed deals (bottom panel) announced by public non-financial and non-utility firms between January 2003 to December 2017. The figure shows 3-month moving averages of total number of monthly deals (red dashed line), monthly aggregated nominal deal value in billion USD (green dotted line) together with the normalized value of Jiang et al. (2019) manager sentiment index (blue solid line). For the interest of readability, normalized value of manager sentiment index is multiplied by 100.



Chapter 3

3 Aggregate Manager Sentiment and the Choice of Mergers and Acquisitions Payment Method

3.1 Introduction

The choice of payment method in mergers and acquisitions (M&As) has been a subject of major interest for both researchers and financial decision makers over the last many years. Acquiring firms, in general, use either cash or stock to pay to the target firms during the takeover processes, while some firms use a mixture of both cash and stock as a choice of M&A payment method (Karampatsas et al., 2014). Prior literature document both positive and negative impacts of using cash as well as using stock payment method on firm's value and profitability in the post-merger period²⁵. Because of their profound impacts on firm value and profitability, choices of M&A payment method have received substantial attention from numerous researchers, many of whom attempt to identify the factors that drive acquiring firms to choose either cash or stock or a mixed payment method during their M&A activities.

Historically, many researchers theoretically and empirically identify various determinants of acquiring firm's choice of M&A payment method. Traditional theories suggest that whether acquirers would choose all cash or all stock or a mix payment method depends on different factors including information asymmetry (Hansen, 1987; Eckbo et al., 1990; Boone et al., 2014), financial leverage (Uysal, 2011; Boateng and Bi, 2014), cash availability (Martin, 1996), growth opportunities (Faccio and Masulis, 2005; Di Guili, 2013; Yang et al., 2019), tax considerations (Ayers et al., 2004), managerial ownership (Amihud et al., 1990; Martynova and Renneboog, 2009), firm size (Faccio and Masulis, 2005; Baker et al., 2007), business cycle (Martin, 1996), credit rating (Karampatsas et al., 2014), policy uncertainty (Nguyen and Phan, 2017; Bonaime et al., 2018), and various deal characteristics such as relative deal value, hostility, competition among bidders and

²⁵ The use of cash as a choice of M&A payment method increases firm value, improves general performance and yields higher profitability in the post-merger period while such payment method increases intrinsic business risk and is more costly than stock payment method because of the instant tax liability (Jensen, 1986; Eckbo and Langohr, 1989; Andrade et al., 2001; Tichy, 2001; André et al., 2004; Kalinowska and Mielcarz, 2014). In case stock payment method, Schlingemann (2004) finds that acquiring firms' gains are positively related to the amount of stock financing prior to the M&A announcement. However, stock payment method is more costly than cash payment method in terms of transaction costs, and acquiring firms experience negative long-term abnormal return when they use stocks as means of M&A payment (Myers and Majluf, 1984; Loughran and Vijh, 1997; Mitchel and Stafford, 2000).

industry relatedness (Fishman, 1989; Berkovitch and Narayanan, 1990; Faccio and Masulis, 2005). On the other hand, some researchers find behavioural bias motives as determinants of M&A payment method. In this regard, some researchers find evidence that mispricing of the firm in the market plays significant roles in determining such decisions (Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004; Rhodes-Kropf et al., 2005; Dong et al., 2006; Ben-David et al., 2015). Rhodes-Kropf and Viswanathan (2004) indicate that the overvaluation of acquiring firm is likely to result from the market wide optimism and Tsai et al. (2021) empirically show that investor sentiment has a direct effect on acquiring firm's choice of M&A payment method.

Although researchers who find mispricing as a driving factor of M&A payment method consider managers to be rational agents of the firm, some researchers find that managers sometimes take M&A payment decisions based on beliefs which stem from their behavioural biases. In this regard, Malmendier and Tate (2008) show that conditional on conducting a merger, overconfident CEOs are more likely to use cash as means of M&A payment. Similarly, Ferris et al. (2013) find that in case of firms with overconfident CEOs, the probability of the use of cash payment method relative to other types of payment method in M&A deals is higher. In addition, Huang-Meier et al. (2016) find that firms with optimistic managers use relatively more cash compared to firms with non-optimistic managers during the acquisition activities.

In turn, different papers from psychology and sociology fields claim that individual decision making is shaped by collective social processes (Chambers and Windschitl, 2004; Bennett, 2011). Lucey and Dowling (2005) argue that individuals often make decisions in a social context where they get influenced by expectations, views as well as beliefs of others. In addition, Olson (2006) states that people spontaneously take on the goals of others in an unconscious manner and produce similar emotional states of their affiliates. Their arguments indicate that a key source of individual sentiment is the aggregate sentiment of one's peers. Existence of peer effect on various corporate finance and investment policies is evident in finance literature (Leary and Roberts, 2014; Park et al., 2017; Chen, Chan and Chang, 2019; Grennan, 2019). Discussing how a particular bias, overconfidence, evolves among population of competing strategies, Johnson and Fowler (2011) state that overconfidence can arise and spread very quickly among interacting entities including individuals, groups or firms by means such as imitation or learning. Moreover, some researchers from psychology and behavioural finance fields conduct lab based experiments and show that individuals sometimes take various

decisions including investment decision by observing the behaviour of others and by getting influenced by others' emotions and confidence (Proeger and Meub, 2014; Darai et al., 2017). Although different lab based experiments provide evidence about the impact of aggregate sentiment of one's peers on individual decision making behaviour, the empirical findings about such impacts are limited in the literature²⁶. In case of M&A, Nofsinger (2005) argues that during the period of high social mood, many financial decision makers including investors and executives are optimistic and thus biased financial decisions are more likely to correlate across various types of financial decisions including decisions about M&A activities.

Following the findings that individual decision making behaviour can be affected by aggregate sentiment and people are likely to adjust their behaviour following the emotional states of their affiliates, in this study we investigate whether aggregate manager sentiment has any impact on individual firm's choice of M&A payment method. Since overconfident or optimistic managers prefer cash payment method over stock payment method during the takeover activities, we predict that aggregate manager sentiment has a positive (negative) association with the likelihood of using cash (stock) by individual acquiring firms as means of M&A payment. We extend our study to investigate whether acquiring firm's board structure alternates the impacts of aggregate manager sentiment on M&A payment choices as different researchers, for example, Gordon (2007) and Mohamed et al. (2012), claim that certain board characteristics can attenuate or enhance respective firm's managerial sentiment or confidence level. We further extend our study to examine whether acquiring firm's CEO characteristics influence the impacts of aggregate manager sentiment on such payment choices given the evidence provided by several researchers including Yim (2013), Serfling (2014) and Bochkay et al. (2019) that certain CEO characteristic can affect corporate investment policies as well as respective CEO's optimism level.

Using the updated version of monthly manager sentiment index developed by Jiang et al. (2019) as a proxy for aggregate manager sentiment, we investigate a sample of 3,437 domestic acquisitions announced by non-financial and non-utility US public firms between April 2003 and December 2017 to empirically test our predictions. Our findings

²⁶ Anglin et al. (2018) show that collective entrepreneurial optimism plays role on creation and growth of business. However, they investigate the impact only at aggregate level, not at individual firm level. In addition, Jiang et al. (2019, p.145) also claim that "periods of high (low) manager sentiment is accompanied by high (low) aggregate investment growth".

suggest that the likelihood of using fully cash as a choice of M&A payment method increases whereas the likelihood of using fully stock as a choice of M&A payment method decreases following a period of high aggregate manager sentiment. Among the control variables, we find strong significant impacts of investor sentiment, firm size, ROA, market-to-book ratio, growth opportunities, relative deal value and industry diversification on the choice of M&A payment method. In addition, we find that the percentage of cash (stock) payment in M&A deals increases (decreases) following a period of high aggregate manager sentiment. We find consistent results after including additional market-level control variables in the regression model. The robust empirical results of our study provide evidence that, in addition to other previously documented determinants, aggregate manager sentiment plays significant roles in determining individual acquiring firm's choice of M&A payment method.

The empirical results about the role of board characteristics show that the impacts of aggregate manager sentiment on the choice of M&A payment method increase with the increase of board size. On the other hand, we find that the impact of aggregate manager sentiment on the choice of M&A payment method decreases with the increase of CEO age. These findings suggest that certain board and CEO characteristics play important roles in alternating the M&A payment decisions that are particularly driven by aggregate manager sentiment.

Our study contributes to the literature in several ways. First, it contributes to the behavioural corporate finance literature by providing evidence that aggregate manager sentiment provides additional and complementary information beyond existing investor sentiment about the choice of M&A payment method which is an important corporate finance decision for firms. The findings are consistent with Jiang et al. (2019) who find that manager sentiment is distinct from existing investor sentiment and strongly tied to investment related activities. Again, the empirical findings of this study suggest that aggregate manager sentiment dominates the investor sentiment in some cases, implying that managers are more likely to get influenced by their peer's sentiment rather than investor sentiment in the market and take decisions accordingly. This finding indicates the presence of peer effect in M&A payment decisions and is consistent with the previous findings of Leary and Roberts (2014), Chen, Chan and Chang (2019) and Grennan (2019) among others who document the existence of peer effect in various corporate finance decisions. Second, it contributes to the M&A literature by introducing another determinant of choice of M&A payment method. Previous literature identify several

driving factors of such decision including investor sentiment, individual manager's bias, different firm level and deal level characteristics. Our study documents a new sentiment based determinant, aggregate manager sentiment, significantly affecting M&A payment decision. Finally, our study contributes to the corporate governance literature by showing that certain board and CEO characteristics can significantly alternate respective firm's choice of M&A payment method that is driven by the aggregate manager sentiment.

The remainder of the paper is organized as follows: section 3.2 discusses about the previous literature that document various determinants of M&A payment method. The section also discusses about the particular research hypotheses that we empirically examine in this study. Section 3.3 and 3.4 discuss about the data and methodology, respectively that we use to test our hypotheses. We present and discuss our findings in section 3.5 and section 3.6 concludes the chapter.

3.2 Literature Review and Research Hypothesis

Historically, many researchers investigate various aspects of M&A including the method of payment in takeover activities. Since there is no single unified theory about the determinant of M&A payment yet, studies about the driving factors of different means of M&A payment still receive substantial attention from researchers and other interested parties. In this section, we discuss the literature that investigate the determinants of M&A payment method and present our research hypotheses in two different segments. In the first segment, we broadly discuss the literature that investigate the determinants of M&A payment from both traditional and behavioural perspectives. In the second segment, we develop our particular research hypotheses.

3.2.1 Determinants of M&A Payment Method

From the review of prior literature we can see that there is no single determinant of why some acquiring firms prefer cash over stock or vice versa or a mix payment method in takeover deals. Over the past many years, researchers attempted to identify various determinants and explain the relevance of those determinants in choosing cash, stock or mix payment method in M&A activities. In this section, we discuss those determinants in the following sub-sections.

3.2.1.1 Information Asymmetry

In his theoretical paper, Hansen (1987) investigates the method of payment in M&A deals and develops a model for the choice of either cash or stock payment in takeover process. The underlying assumption of the model is that the payment process is a two way

bargaining game between acquirer and target under the presence of information asymmetry. The author argues that conditional on the fact that acquiring firms have proprietary information on their own value, they will not offer stock to the targets in M&A deals if the acquirers possess information that their assets are more valuable than what the targets believe. In such a state, according to the model equilibrium, the acquirers are more likely to use stock when their firms' stock is considered overvalued and cash when their firms' stock are considered undervalued. Additionally, the model yields that the probability of stock finance increases with the increase of acquiring firm's debt and decreases with the increase of target firm's debt. The findings are consistent with the model formulated by Myers and Majluf (1984) which suggests that in a world of asymmetric information, bidding firms prefer cash offers if they believe that their firms are undervalued whereas the firms prefer stock offers if they believe that their firms are overvalued. Similarly, Fishman (1989) and Eckbo et al. (1990) theoretically show that information asymmetry plays an important role in the choice of payment method in M&A deals where the private information held by the bidder and target about their own intrinsic value may drive the choice between cash and stock payment in the transaction process.

Unlike many researchers who attempt to explain the role of asymmetric information on the choice of payment in M&A deals by developing theoretical models, some researchers conduct empirical analysis using historical M&A data to investigate whether the findings are consistent with those theoretical assumptions. In this context, using 817 US public acquisitions data between 1978 and 2004, Chemmanur et al. (2009) empirically investigate that whether overvalued acquirers use stock offers and undervalued acquirers use cash offers in the presence of asymmetric information. Consistent with the theoretical predictions of Hansen (1987), Fishman (1989) and Eckbo et al. (1990), the authors find that the probability of stock as a medium of exchange increases with the increase of the extent of acquirer overvaluation based on insiders' private information. Their result suggests that depending on the valuation model, for an average firm, one standard deviation increase in the acquirer valuation error corresponds to a decrease of between 6.6 and 18.5 percent in the likelihood of choosing cash as a takeover payment method. Moreover, they find that the probability of using cash in M&A deals by an acquirer increases with the increase of the information asymmetry faced by that acquirer when evaluating a target. Also, examining 2,590 acquisitions announced between January 1985 and October 2013, Boone et al. (2014) find that the likelihood of using cash in M&A transaction decreases with the increase of standard deviation of acquirer returns. Their

result suggests that when the uncertainty about the acquirer own value is higher, they make all stock or partial stock offers. The authors argue that since inside information is particularly valuable in the presence of higher valuation uncertainty, acquirers use stock (cash) as a medium of payment when they have (do not have) information advantage and believe that they are overvalued (undervalued) in the market.

de La Bruslerie (2013) states that successful takeovers are contractual agreements in which bidder and target agree on both takeover premiums and means of payment. According to them, empirical literature often consider these two variables independently although they have an endogenous relationship in a contractual settings and thus they should not be investigated separately. Investigating a sample of 528 European Union M&As between January 2000 and May 2010 and using simultaneous linear equation model, the author investigates the determinants of M&A payment method when the offer premiums and means of payment are jointly set. Consistent to Hansen (1987), his result suggests that information asymmetry plays a significant role in determining the payment method even when examining it jointly with the offer premium and the result is significant at one percent level. Although different papers, both theoretical and empirical, find that information asymmetry is a significant driving factor of the means of payment in takeover activities, investigating mergers by US public companies from 1985 to 2004, Ismail and Krause (2010) find no evidence of asymmetric information to be one of the determinants of means of payment in M&A deals. They report that the return correlation of stocks between the acquirer and the target is one of the economically important determinants in M&A transaction.

3.2.1.2 Financial Leverage

Since the means of payment in M&A mainly include cash and stock, financial leverage condition of an acquiring firm sometimes affects the choice of payment in M&A transaction. This is because most bidders have limited cash and liquid asset as reported in Faccio and Masulis (2005), and the cash components of offers are predominantly financed by debt issuance as reported in Bharadwaj and Shivdasani (2003). In this context, Uysal (2011) reports that if the acquiring firms are overleveraged relative to their respective target firms, the likelihood of using cash as an M&A medium of payment decreases in their offers. Using a sample of 7,814 domestic completed acquisitions by US non-financial non-utility public firms between 1990 and 2007, the author finds that the average marginal effect of leverage deficit of bidder firms on the probability of a cash only offer is negative and leverage deficit decreases the percentage of use of cash in the

deal. In addition, the probability to make an all cash offer is decreased by 5.6 percent in case of overleveraged firms which is 19.0 percent less than the sample average. This finding is robust to both firm acquisitions and asset acquisitions where the likelihood of all cash offer decreases by 9.7 percent and 3.1 percent, respectively. On the contrary, the author does not find any statistically significant impact of the firm leverage on the choice of M&A payment method in case of underleveraged firms.

Previously, Faccio and Masulis (2005) argue that although majority of the M&A research is based on US, investigating primarily the US data has the drawback of holding certain institutional factors relatively fixed including corporate laws, securities regulation and market condition. Instead, they focus on 13 European countries where stock market rules and regulations, trading activity and industry concentration levels are different than the US. Investigating 3,667 acquisitions announced by 1,349 European bidders between 1997 and 2000, the authors find that firms with high leverage are more likely to use stock as a means of M&A payment. Their findings are robust to the alternative statistical model and the inclusion of additional control variables in the model. In all the models, they find that their results are significant at 1 percent level and contradict the finding of Martin (1996) which shows that bidding firm leverage does not have any statistically significant impact on the choice of M&A payment method. Later, Boateng and Bi (2014) argue that if an acquirer has high level of leverage, it limits the acquirer's ability to raise sufficient debt whereas a low level of leverage increases the chances of raising the necessary debt to pay during the takeover process. Using a sample of 1,370 domestic acquisitions by Chinese firms during the period between 1998 and 2007, the authors find that acquirers with low pre-event leverage are more likely to use cash in the takeover process. According to them, most of the acquiring firms are owned by the state and have low leverage which enable these firms to borrow the money that is required to pay for the acquisition.

3.2.1.3 Free Cash Flow and Cash Availability

Free cash flow theory implies that managers of firms with large free cash flows are more likely to make low-benefit M&A deals and predicts that M&As that are financed with cash will generate larger benefits than those financed with stocks. According to the theory, cash financed M&As create net benefits even if the deal generates operating inefficiencies because these types of deals involve less waste of resources than if the funds had been internally invested in other unprofitable business (Jensen, 1986). Since the theory purports that free cash flow is one of the motives of low-benefit or sometimes even value-destroying corporate takeover activities and cash financed M&As generate greater

benefits, some researchers attempt to investigate if acquiring firms with higher cash availability are more likely to undertake cash financed mergers or vice versa.

Using a sample of 846 domestic acquisitions by firms that are listed in the New York Stock Exchange or American Stock Exchange and completed between 1978 and 1988, Martin (1996) provides some evidence of cash availability hypothesis. His result suggests that if the acquiring firms have greater cash balances relative to the value of the deal, the probability that the acquisition will be financed with stock (cash) decreases (increases). He also reports statistically significant results for cash flow variable, however, the variable generates inconsistent results where it shows negative impact when analysing mixed versus cash payment method and positive impact when analysing stock versus mixed payment method. This is inconsistent with Di Giuli (2013) who finds statistically significant result for cash flow variable but insignificant result for acquirer cash reserve variable when he includes both variables in the regression to check their impact on the means of M&A payment. The author, however, claims that cash reserve variable is correlated with cash flows and reports that greater the size of the acquirer cash flow relative to their asset, lower the probability that the deal will be financed with stocks. Similarly, Karampatsas et al. (2014) also find that the likelihood of using cash in a merger increases with the increase of the size of acquirer cash flow relative to their asset.

3.2.1.4 Growth Opportunities

Finding links between a firm's investment opportunities and its various corporate finance activities in past literature, Martin (1996) investigates if acquirer's growth opportunities have any impact on the means of payment during a takeover deal. Using three proxies²⁷ to measure acquiring firm's growth opportunities, the author finds that growth opportunities play significant roles on determining the means of M&A payment and shows that the probability of stock payment in a takeover deal increases with the increase of acquiring firm's growth opportunities. Their results suggest that growth opportunity measured by acquiring firm's market-to-book ratio or Tobin's Q is positive and highly significant when the binary dependent variables are stock versus cash, stock versus mixed as well as stock versus mixed and cash payment method. Other measures of growth opportunities also show qualitatively similar results although growth opportunity measured by sales growth gives statistically insignificant result in case of stock versus

²⁷ Three measures are: 1. market-to-book ratio, 2. average annually compounded sales growth rate over the 5-year period prior to the acquisition announcement and 3. stock price run-up measured by the cumulative abnormal return over the 250 days preceding five days prior to the acquisition announcement.

mixed payment method analysis. The findings are consistent with the idea of Jung et al. (1996) who argue that firms with valuable investment opportunities tend to avoid underinvestment inducing debt financing used to raise cash and are more likely to issue equity.

Faccio and Masulis (2005) argue that acquirers who have high growth opportunities can make an attractive equity investment for target shareholders. Measuring growth opportunities by acquirer's market-to-book ratio and analysing acquisitions between 1997 and 2000 by bidders from 13 European countries, the authors find that the proportion of cash payment in takeover deals is inversely related to acquirer's growth opportunities. The results are significant at 1 percent level and consistent even when the authors divide the whole sample into UK and Irish bidders group and continental European bidders group. They also argue that high market-to-book is correlated with firm's high levels of tax-deductible R&D expenditures, current earnings and cash dividend which decreases the firm's need for additional tax shield. These traits of an acquirer make the cash payment even less attractive during M&A activities.

Later, Alshwer et al. (2011) analyse 3,335 observations of both completed and uncompleted acquisitions announced by US public companies between 1985 and 2007 and report that both acquirer's Q and target's Q, measured by market-to-book ratio, are negatively related to the probability of using cash in takeover deals. Additionally, the authors divide their whole sample into financially constrained and unconstrained firms and find that the acquirer's Q is only significant for constrained firms. They also show that the average proportion of cash transaction drops between 17 and 23 percent and between 6 and 8 percent for low Q group and high Q group, respectively in case of constrained firms whereas it drops between 15 and 28 percent and between 15 and 20 percent for low Q group and high Q group, respectively in case of unconstrained firms. According to them, the greater sensitivity of means of payment for constrained firms results from the fact that such firms with more valuable investment opportunities face higher opportunity cost of cash as Denis and Sibilkov (2010) state that cash holdings reserve allows firms to finance growth opportunities and avoid underinvestment in case if no cheaper external financing is available. Their findings are qualitatively similar to the alternative measure of acquirer's growth opportunities²⁸.

²⁸ The alternative measure uses 3-year future sales growth of the median firm in the acquiring firm's 2-digit SIC industry.

Although some literature which investigate the M&A payment method use Tobin's Q or other market-to-book values as proxies to measure acquiring firm's growth opportunities, Di Giuli (2013) argues that the use of Tobin's Q in this context is questionable since this measure is used to proxy for both investment opportunities and misvaluation of the firm²⁹. Separating misvaluation from investment opportunities by using an alternative measure of investment opportunities based on the capital expenditures in the four years following the takeover, the author investigates 1,187 mergers completed by US public firms between 1990 and 2005 to check the impact of this new measure of investment opportunities on the method of merger payment. The author uses this post-merger measure of investment as a proxy of investment opportunities arguing that planned investment should represent an unbiased estimate of actual future investment under rational expectations³⁰. His empirical analysis suggests that investment opportunities have positive and significant relation with the probability of using stock as a means of M&A payment where one standard deviation increase in capital expenditure over the four-year post-merger period is associated with 8.0 percent increase in the probability of using stock. The findings remain significant even when the authors include acquirer's pre-merger market-to-book ratio which also generates highly significant results suggesting that higher the market-to-book value of the acquirer, higher the likelihood that M&A payment will be made using stock. The latter is consistent with Martin (1996) and Faccio and Masulis (2005) who also find that acquirer's market-to-book ratio plays role in determining M&A payment method. Similar findings that investment opportunities measured by Tobin's Q have significant impact on the M&A payment method are evident in Boateng and Bi (2014) and Ben-David et al. (2015). Nevertheless, Ben-David et al. (2015) claim that cash acquirers are motivated by growth opportunities whereas stock acquirers are motivated by overvaluation.

More recently, investigating M&A activities of 2,013 Chinese listed firms over the period between 1998 and 2015, Yang et al. (2019) find that bidder's investment opportunities measured by Tobin's Q are significantly and negatively associated with the probability of cash payment in takeover activities. Their result suggests that when a bidder's Tobin's Q increases by one standard deviation, the probability of using cash in acquisitions by

²⁹ Ben-David et al. (2015) also argue that Tobin's Q and other measures of misvaluation may be confounded with firm's growth opportunities.

³⁰ Also, Lamont (2000) shows that planned investments and actual investments are strongly correlated. In addition, Di Giuli (2013) argues that managers should know the value of their firms and misvaluation should not affect their assessment about investment opportunities.

that bidder decreases by 3.0 percentage point. They also report that when the bidder's Tobin's Q rises by one standard deviation, the likelihood of using cash as a means of M&A payment declines by additional 3.1 percentage points for financially constrained firms relative to financially healthy firms. Moreover, by further dividing financially constrained and unconstrained firms into high and low Q groups, they show that financially constrained firms with low investment opportunities tend to use cash more to pay their takeover deals. These findings are consistent with Alshwer et al. (2011) who similarly investigate the impact of growth opportunities by distinguishing high and low Q value groups between financially constrained and financially unconstrained firms.

3.2.1.5 Tax Consideration

Wansley et al. (1983) argues that cash offers in M&As create capital gain tax obligations for the shareholders of the target firms whereas stock offers generally do not generate any tax obligations for them, at least until the shareholders decide to sell those stocks. According to them, because of these tax implications which depend on the method of payment, the acquiring firms have to pay higher price in case of a cash offer to compensate for the tax burden of the target shareholders. Later, investigating 565 taxable cash-for-stock acquisitions and 370 tax free stock-for-stock acquisition over the period between 1975 and 2000, Ayers et al. (2003) empirically find significant and positive associations between capital gain taxes for individual shareholders and acquisition price. However, they report that this positive relationship is mitigated by target institutional ownership suggesting that the effect of capital gain taxes on acquisition premium depends on the taxability of target firm's shareholders. In line with their previous findings, Ayers et al. (2004) also investigate the impact of differential capital gain tax rate on the method of M&A payment and find consistent results. Their findings show a positive relationship between individual investor's capital gain tax rate and the use of tax free stock-for-stock payment method in acquisitions. Additionally, they report that the effect for individual's tax rate declines with the target institutional ownership.

More recently, Boone et al. (2014) investigate a sample 2,590 acquisitions announced between January 1985 and October 2013, and using maximum capital gains tax rate at the time of the takeover as a proxy for capital gains tax rate, they find mixed evidence about the impact of capital gain tax effect on the choice of payment method. Consistent with the previous findings, their result suggests that the likelihood of both all-cash offers and mixed offers relative to all-stock offers decreases with increase of capital gains tax rate. On the contrary, they find a positive association between the probability of all-cash

offers relative to mixed offers and the capital gains tax rate which is somewhat inconsistent with the previous findings. Nevertheless, their graphical analysis shows that more cash deals were completed than other types of deals during the week around the capital gains tax increases in 1987 and 2013, suggesting that cash deals were expedited before the rise of capital gains tax rates which would otherwise have put more tax burden on target shareholders. Overall, their findings imply that capital gains tax rate has significant impact on the method of M&A payment. Although the findings of some researcher indicate that capital gains tax rate plays role determining the choice of M&A payment method, Ismail and Krause (2010) investigate M&As announced by US public firms between January 1985 and April 2004 and find no evidence of their associations.

3.2.1.6 Managerial Ownership

Stulz (1988) theoretically argues that managers are reluctant to finance the acquisitions by issuing stocks if doing so dilutes their ownership because managers do not want to relinquish their control over the firms. Using 209 acquisitions between 1981 and 1983 by 165 Fortune 500 companies that appeared in the 1980 list, Amihud et al. (1990) empirically investigate the impact of managerial control on the choice of M&A payment method. Their results suggest that firms that have comparatively large insiders' ownership tend to finance their acquisitions with cash more than with stock. Consistent with Stulz (1988), they also find that managers who have large ownerships in their firms prefer not to risk the loss of control over their firms by issuing stocks in acquisitions. In this context, Martin (1996) reports that managers who have low ownership and very high ownership, particularly less than 5 percent and more than 25 percent stakes, respectively, are not concerned about the loss of control over the firm. However, managers with higher stakes, specifically those who have ownership stakes between 5 percent and 25 percent, consider loss of control issue while determining the choice of M&A payment method. His result suggests that the probability of stock payment method relative to cash payment method in acquisitions decreases when the manager holds between 5 percent and 25 percent ownership of their firms. He also finds consistent and significant results when he investigates the stock versus mixed offers as well as stock versus mixed and cash offers.

Again, analysing 225 cash acquisitions and 84 stock acquisitions during the period between 1979 and 1988, Yook et al. (1999) report significantly more insider selling of the stocks by the management of the acquiring firms before any stock acquisitions compared to any cash acquisitions. According to them, if the managers of the acquiring firms hold large insider holdings, they are more likely to offer cash as the acquisition

payment even after considering the fact that more insider selling takes place before stock offers relative to cash offers.

In case of European mergers, Faccio and Masulis (2005) find that the percentage of cash payment decreases with the increase of corporate control which they measure by the percentage of the votes under the control of the largest shareholders. The squared and cubed values of this variable generate significantly positive and negative results, indicating that firms with intermediate corporate control are more likely to pay for an acquisition by using cash whereas firms with high level of corporate control tend to pay for an acquisition more by using stocks. Although their findings are consistent with the findings of past literature, the transition points of managerial ownership in their samples are 15.79 percent and 61.67 percent which are significantly higher than the cases of US mergers as previously discussed in Martin (1996). Similarly, Martynova and Renneboog (2009) investigate 1,361 M&As completed between 1993 and 2001 by firms from 26 European countries and report that if the largest shareholders of an acquiring firm control an intermediate voting stake which is between 20 percent and 60 percent, then the likelihood of cash payment in an acquisition by that acquirer increases significantly. To retain their ownership control after the takeover, large shareholders of acquiring firms with medium voting rights do not prefer stock as a means of M&A payment.

Unlike other literature that study the impact of acquiring firms' managerial ownership on the choice of M&A payment method, Ghosh and Ruland (1998) primarily focus on the managerial ownership of target firms. They argue that managers of target firms who hold larger ownership of their firms prefer to receive stock in acquisitions because they often value their voting rights in the merged firms. Analysing 50 largest acquisitions for each year from 1981 to 1988, the authors find that the probability of using stock in acquisitions has positive and significant association with the managerial ownership of the target firms. Similar to the findings of Martin (1996), they find that when the managerial ownership of target firms increases above 3 percent, the impact becomes statistically significant whereas the result generates insignificant result when the ownership is below 3 percent. Their findings remain consistent even after including the managerial ownership proxy of the acquiring firms. Thus, managerial ownerships of both acquiring and target firms play significant roles on the choice of M&A payment method.

3.2.1.7 Firm Size

When the size of the acquirers increases, their capacity to borrow also increases which results in lower bankruptcy cost for them. In this context, Faccio and Masulis (2005) find that acquirer's financial condition, measured by the book value of their asset, has a significant impact on the choice of M&A payment method. Their results show that the percentage of using cash in a deal increases with the increase of acquirer's asset size. Di Giuli (2013) uses book value of common equity as a proxy for firm size and reports that the likelihood of stock payment method relative to cash payment method decreases with the increase of acquirer size. However, the author does not find any significant result when he analyses the impact of acquirer's firm size on the likelihood of stock payment method relative to mixed payment method in M&A deals. Moreover, his result shows that the target size also has significant impact on the choice of payment method and their impact is opposite to the acquirer size impact, suggesting that the probability of stock payment method relative to cash payment method increases with the increase of target size. In addition, Nguyen and Phan (2017) report that the probability of using stock as well as the percentage of using stock in a takeover deal decreases significantly with the increase of book value of the acquirer's asset.

On the other hand, Baker et al. (2007) use the market capitalization of both acquirer and target as proxies of their sizes to investigate the size impact on M&A payment choice. Their findings suggest that the probability of using stock as a choice of M&A payment method decreases significantly with the increase of acquirer's size whereas the probability of using stock for such payment increases significantly with the increase of target's size. Later, Boateng and Bi (2014) also use acquirer's market value instead of book value of their asset as a proxy for firm size and investigate its impact on the choice of payment in Chinese takeover deals. Their findings show that larger acquirers, in terms of their market capitalizations, are more likely to use cash as means of M&A payment. According to them, larger firms have better access to the debt market and thus they tend to offer cash during the takeover activities. However, their findings are inconsistent with Martynova and Renneboog (2009) who find no significant association between acquirer's market capitalization and the choice of M&A payment method.

Although some researchers use the book value of the acquirer's asset as a proxy for firm size, other researchers use the ratio of the book value of acquirer asset or their market value and the book value of target asset or their market value to investigate the impact of firm size on the choice of M&A payment method. Using the relative market values of

acquirers and targets, Dong et al. (2006) find significantly positive and negative associations between the relative size and the likelihood of using cash and using stock, respectively in M&A deals. Although the authors use relative values to check the impact of firm size, Di Giuli (2013) argues that the ratio partially reflects the relative overvaluation of the two firms instead of being a pure measure of firm size.

3.2.1.8 Deal Characteristics

Not only acquiring and target firms' attributes but also some specific characteristics of the takeover deals affect the choice of M&A payment method. In this context, Fishman (1989) theoretically argues that in case of some specific types of takeovers, for example, hostile takeover, tender offer and competing bids, the probability of bid's success increases with the increase of cash offers. Thus, in such types of transactions, acquirers prefer cash payment method over other means of payment. Again, developing a theoretical model, Berkovitch and Narayanan (1990) show that the use of cash in acquisition increases when the competition among the bidders increases. Following the argument of Fishman (1989) and Berkovitch and Narayanan (1990), Martynova and Renneboog (2009) empirically investigate if such deal characteristics have any impact on the choice of M&A payment method. They report a positive relationship between the bid hostility and the choice of cash payment during the takeover activities. Their result suggests that the probability of cash offer in a deal increases if that deal is opposed by the target shareholder or if that offer is made directly to the target shareholders. Moreover, they report that the probability of cash payment increases when the takeover extends the country's boundary and decreases when the target is a publicly listed firm. Nevertheless, the results of their multinomial logit model, which assumes that acquirers tend to finance from four mutually exclusive alternatives³¹, show that no specific deal characteristics but bid hostility have significant impact on the choice of M&A payment method. Similar findings are also reported in Ismail and Krause (2010) and Karampatsas et al. (2014) which show that the choice of medium of payment in M&A deal depends on whether the takeover is hostile along with some other firm level characteristics.

In a different context, some researchers argue that when bidders attempt to acquire targets from industries which are different from the bidders' industries, they face extra difficulty in evaluating the targets because of the lack of information about the targets' future. In these circumstances, bidders are more likely to offer stock as a means of M&A payment

³¹ Four alternatives are: 1. cash, 2. debt, 3. debt-and-equity and 4. equity.

to avoid adverse selection costs (Tsai et al., 2021). In contrast, Faccio and Masulis (2005) previously argue that because of their familiarity with industry risks and prospects, sellers tend to accept a continuing equity position in an intra-industry merger. Thus, if merger occurs between two unrelated industries, target firms are likely to be reluctant to accept stock as a method of payment since they are not well acquainted with bidder's industry risks and prospects. The empirical analysis of European mergers by Faccio and Masulis (2005) show that the percentage as well as the probability of using cash in M&A deals significantly decreases when the merger occurs between firms from same industries. Later, Karampatsas et al. (2014) include this diversifying industry variable in their analysis of determinants of M&A payment method, however, they do not find any statistically significant impact of this diversifying dummy on the fraction and probability of cash payment in takeover deals.

3.2.1.9 Market Misvaluation

Historically, some researchers theoretically and empirically investigate whether valuation of the acquiring firm in the market plays any role in determining the method of payment during the takeover activities. Stating that neoclassical theory of acquisition does not explain the variations of payment method in takeover activities, Shleifer and Vishny (2003) propose a theoretical model which is related to neoclassical theory but includes some additional stock market evidence to explain the M&A payment method. The model assumes that financial markets are inefficient but managers are rational agent of the firm. These rational managers take advantage of the misvaluation of the firms which occurs due to the market inefficiencies partly through M&A activities. Considering both short-run and long-run observed returns, the model theoretically predicts that when aggregate or industry valuations are high, acquisitions are disproportionately for stocks. On the contrary, acquisitions are disproportionately for cash when such valuations are low. Their model also predicts that in case of stock acquisitions, acquiring firms exhibit signs of overvaluation relative to their fundamental values whereas targets are undervalued relative to the value of the acquirers. On the other hand, in case of cash acquisitions, targets are undervalued relative to their fundamental values. Although the model yields predictions which imply that acquiring and target firm valuations in the market play roles in determining the choice of M&A payment method, the authors do not test these firm level predictions directly in their study. Similarly, Rhodes-Kropf and Viswanathan (2004) theoretically argue that in the overvalued stock market, managers of acquiring firms perceive stock acquisitions to be more valuable for them whereas cash acquisitions do not

add any additional benefit for the acquiring firms. Therefore, in an overvalued market, stock acquisitions are more likely to occur whereas in undervalued market, cash acquisitions are more likely to take place. Although their theory assumes that all participants in M&A take decisions correctly on average, the authors argue that the target firms mistakenly do not reject the stock offers which are not valuable to them and these mistakes are correlated with market-wide misvaluation. Later, Rhodes-Kropf et al. (2005) empirically test the central predictions yielded from theoretical models of Shleifer and Vishny (2003) as well as Rhodes-Kropf and Viswanathan (2004) and find consistent results. Investigating M&As announced by 4,325 acquirers during the period between 1978 and 2001, the authors find that cash acquirers are less overvalued than the stock acquirers whereas cash targets are undervalued and stock targets are overvalued. Moreover, they report that misvaluation, measured by firm-specific error, is positively related with the likelihood of using stock as a choice of M&A payment method.

Following the predictions of Myers and Majluf (1984) and Hansen (1987) that acquiring firms are more likely to use stock (cash) in acquisitions when they consider their stock overvalued (undervalued) as previously discussed, Faccio and Masulis (2005) empirically investigate if misvaluation of the acquiring firm in the market plays any role in determining the M&A payment method. They argue that in case of stock payment method, the shareholders of the acquiring firm experience lower dilution of their voting right if the firm experience stock price gain prior to the takeover activities. Hence, using acquirer's buy and hold cumulative stock return over the year prior to the M&A announcement as a proxy for acquiring firm's misvaluation, the authors find that the percentage and the probability of cash payment in M&A deals are negatively and significantly related to the acquiring firms valuation in the market. Their result suggest that overvalued acquirers are more likely to use stock whereas undervalued acquirers tend to use cash as M&A payment method.

Using two proxies, price-to-book value of equity and price to residual income value, to measure firm misvaluation, Dong et al. (2006) empirically test the valuation hypothesis of M&A payment method. Analysing 2,922 successful and 810 unsuccessful US acquisitions announced between 1978 and 2000, the authors find that both bidder and target valuations have significant impact in determining the choice of M&A payment method. Their results show that the probability of using stock (cash) as means of M&A payment increases (decreases) with the increase of acquirer valuation. The differences in the probability of using stock between the highest valuation acquirers and lowest

valuation acquirers are 24.7 percent and 14.7 percent when valuations are measured by price-to-book value of equity and price to residual income value proxies, respectively. On the other hand, the differences in the fraction of using cash between the highest valuation acquirers and lowest valuation acquirers are -14.3 percent and -6.4 percent when measured by these two proxies, respectively. The authors also report that the likelihood of using stock increases and cash decreases during the takeover activities with the increase of target valuation.

On the other hand, Di Giuli (2013) shows that the combined mispricing of acquiring and target firms in both pre-merger and post-merger period plays roles in determining the M&A payment method. His results suggest that, a one standard deviation in pre-merger mispricing of the merged entity³² increases the likelihood of using stock relative to cash payment by 13.5 percent and using stock relative to mixed method payment by 14 percent. On the other hand, a one standard deviation increase in the post-merger mispricing of the merged entity is significantly associated with the increase of using stock by 15 percent as means of M&A payment method.

Arguing that it is difficult to distinguish between misvaluation theory and Q theory of mergers since both theory predict that overvalued firms relative to their fundamental values tend to engage in stock acquisitions more, Ben-David et al. (2015) use adjusted short interest as a proxy for misvaluation which allows them to distinguish between two motives for mergers and investigate its impact on the M&A payment method³³. According to them, short interest in a stock reflects the investors' belief about the firms' valuation, however, it does not reflect firm investment opportunities. Investigating 8,406 US mergers announced between 1989 and 2007, the authors find that overvaluation is positively associated with stock acquisitions whereas it is negatively associated with cash acquisitions. They report that firms with higher short interest prefer to engage in stock mergers rather than cash mergers in the following 6 months. Their results remain consistent even after including other methods of measuring valuation that are found in the previous literature. These findings are consistent with the predictions implied by the

³² Measured by the combined market value of both acquiring and target firms over the combined book value of the common equity of both acquiring and target firms.

³³ Adjusted Short Interest is calculated as the Short Interest Ratio minus the average Short Interest Ratio of other firms traded on the NYSE, AMEX or NASDAQ exchange in the same month (Ben-David et al., 2015).

theoretical models of Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004) that mispricing in the market affects the choice of M&A payment method.

3.2.1.10 Other Determinants

Although many researchers agree that firm's leverage condition, investment opportunities, firm valuation, etc. have significant impacts on the choice of M&A payment method, upon further investigations some researchers find that such decisions depend on various other factors as well. Choe et al. (1993) theoretically and empirically show that the likelihood of stock financing in investment increases with the increase in overall economic activity. According to them, firms face more investment opportunities, less adverse selection costs and less uncertainty about their assets when there is a boost in overall economic activity and thus they prefer stock financing relative to debt financing. In this regard, Martin (1996) investigates if business cycle plays any significant role in determining the choice of payment method in case of takeover activities. Measuring business cycle with five proxy variables³⁴, the author finds that business cycle has positive and significant impact on the likelihood of using stock payment method relative to cash or mixed payment method in takeover activities. Consistent with Choe et al. (1993), the results in Martin (1996) suggest that the probability of using stock payment method in M&A investment increases when there is an overall increase in stock market activity. However, in his results, only the change in the Standard and Poor's 500 proxy generates predicted and consistent results in case of stock versus cash, stock versus mixed as well as stock versus cash and mixed payment method analysis. According to the author, the inconsistencies in the findings result from the fact that the sample of his study contains cash financed acquisitions which do not directly involve the issuance of bonds.

Along with other factors as previously described, Faccio and Masulis (2005) also analyse if relative deal size has any impact on the choice of M&A payment method. The authors measure the relative deal size by dividing the deal offer size by the combined value of deal offer size and acquirer's pre-offer market capitalization. According to them, in case of stock financing in relatively larger deal, there is a more serious dilution of dominant shareholder's control position. On the other hand, they argue that concerns about acquirers' financing constraints decrease with the increase of their equity capitalization. Their result suggests that relative deal size is negatively and significantly associated with

³⁴ Five proxies are: 1. the change in the Standard and Poor's 500, 2. the change in Moody's BAA bond yield, 3. the change in the index of 11 leading economic indicators, 4. the change in the index of 4 coincident indicators and 5. the change in industrial production.

the proportion of cash used as M&A payment method. This is to some extent consistent with Hansen (1987) who predicts that acquirers tend to use stock in takeover deals when there is an increase of acquirer's information asymmetry with regard to the target's market value. The authors further find that the probability of using cash payment method decreases significantly with the increase of relative deal size.

In turn, Ismail and Krause (2010) argue that while many researchers investigate whether misvaluation, asymmetric information, budget constraints, etc. play roles in determining the choice of M&A payment method, synergy effects, which is the main named reason for conducting mergers, along with investment characteristics receive little attention in such investigations. Stating that the omissions of synergy effects and investment characteristics in determining the M&A payment method seem surprising given their importance on the merger rationale and on investors' decision taking, the authors investigate M&As announced by US non-financial public listed firms between January 1985 and April 2004 to examine the impact of such factors on the choice of M&A payment method. Their results suggest that along with some other previously reported determinants like cash holdings of acquirer or hostility, the return correlation of the stocks between the acquirer and the target plays a significant role on the fraction of the stock offered in takeover activities. Their instrumental variable Tobit regression shows that an increase in this correlation by 0.2 increases the fraction of share offered by approximately 10 percent. According to them, firms who are involved in M&A activities take investors considerations into account since investors often have to approve the transactions and are foremost affected by such decisions. Nevertheless, the authors do not find any statistically significant impact of synergy effects on the choice of M&A payment method. Later, Di Giuli (2013) reports that perceived synergies, measured by the differences between the pre- and post-merger market value over firm size of merged entities, have significant impact on the choice of M&A payment method where a one standard deviation increase in perceived synergies increases the likelihood of using stock by 6 percent.

Karampatsas et al. (2014) argue that acquirers who hold credit ratings have better access to public debt markets which make them less reluctant to spend cash since they face less financial constraints to borrow money whenever they need. They also mention that just having credit ratings, however, does not necessarily imply that these firms have higher debt capacity than firms that do not have any credit ratings. According to them, acquirers with better credit qualities level face lower cost and higher demand for their debt securities for which they get better opportunities if they need to borrow. In line with their

argument, the authors investigate whether firms with higher credit ratings prefer cash as a choice of M&A payment method. Analysing 6,819 US domestic acquisitions announced between 1998 and 2009, the authors find a positive and significant relationship between the acquirer's credit rating level and the probability of using cash as a choice of M&A payment. Their result shows that one point rise in the ratings level corresponds to 7.04 percent increase in the likelihood of using cash payment method in the acquisitions. However, the authors do not find any significant impact of the mere existence of credit rating of the acquiring firms on their choice of M&A payment method.

Past papers for example, Pástor and Veronesi (2013) and Brogaard and Detzel (2015) argue that policy uncertainty can negatively affect firm's financial constraints and increase the cost of financing if external financing is required. In this regard, Nguyen and Phan (2017) claim that such uncertainty makes it harder for acquiring firms to raise funds from external sources to support M&A deals and increases the firm's future cash flow volatility. Using a sample of 6,376 M&A deals by 2,950 non-financial non-utility US firms over the period between 1986 and 2014, the authors empirically investigate if policy uncertainty affects the choice of payment medium in M&A deals and find that policy uncertainty is positively and significantly associated with the likelihood of using stock in M&A deals. Their results suggest that during the period of high uncertainty, acquirers are more likely to use stock instead of cash as means of M&A payment and the percentage of this stock payment also increases with the increase of policy uncertainty. Similar findings are also evident in Bonaime et al. (2018) who investigate US public M&As from 1985 to 2014. Analysing the relationship between policy uncertainty and M&A payment method, they claim that policy uncertainty is positively related with the probability of stock financing for acquiring firms that are least likely to be overvalued³⁵.

3.2.1.11 Investor Sentiment

Although Shleifer and Vishny (2003) argue that market misvaluation affects firm's M&A decisions including the choice of payment method, they do not mention the source of this misvaluation. On the other hand, Rhodes-Kropf and Viswanathan (2004) indicate that the overvaluation of acquiring firm is more likely to result from the market wide optimism. Again, Baker and Wurgler (2006) claim that sentiment-based demands have some profound impacts on the valuation of the stocks. Arguing that market sentiment plays role in the M&A payment decisions and sentiment-based demand can be contagious among

³⁵ Their empirical results, however, are not reported in the paper.

investors, Tsai et al. (2021) investigate if investor sentiment has any direct impact on the choice of M&A payment method rather than through its effect on the valuation of acquirer stock. In their research, the authors use investor sentiment index developed by Baker and Wurgler (2006) and analyse 4,466 domestic M&A deals announced by 2,204 US firms between April 1985 and December 2014 to check the impact of investor sentiment on stock, cash and mixed methods of M&A payment. Their results from logistic model regression show that investor sentiment has strong positive impact on the probability of using stock while it has strong negative impact on the probability of using cash as means of M&A payment. These impacts are significant at 1 percent levels. However, the authors do not find any statistically significant result in case of mixed payment method. Additionally, the authors analyse the impact of consumer sentiment index published by the University of Michigan on the choice of payment method and find consistent results. Unlike investor sentiment index, consumer sentiment index is significant at 5 percent level in case of stock payment method. The results show consistent results when the authors put both sentiment measures together in their analysis although consumer sentiment index loses its significance even at 10 percent level in case of cash payment method. Although these researchers find significant association between investor sentiment and the choice of M&A payment method, Petmezas (2009) argue that investor sentiment is not the only force of acquiring firm's M&A decisions and that managerial motives are also likely to play roles in such decisions. Their findings indicates that investor sentiment along with other factors including managerial characteristics plays significant roles in determining the choice of M&A payment method.

3.2.1.12 Managerial Biases

Although some researchers³⁶ consider managers to be rational agents of the firm in a world of rather inefficient capital market and take value maximizing decisions for their firms, some papers show that managers sometimes take decisions that are not in the best interest of their firms. Although these managers believe that they are taking decisions in line with the firm's objective and shareholders interest, their beliefs sometimes involve value destroying corporate finance decisions. These beliefs essentially stem from various behavioural biases of the managers. The impacts of managerial behavioural biases on

³⁶ For example, Shleifer and Vishny (2003), Rhodes-Kropf and Viswanathan (2004) and Rhodes-Kropf et al. (2005).

different corporate finance decisions are evident in many theoretical and empirical papers³⁷.

Historically, many studies about managerial behavioural biases of one kind or another focus on the case of corporate M&A decisions. In a seminal contribution to behavioural corporate finance, Roll (1986) proposes the hubris³⁸ hypothesis as an explanation of corporate acquisition activity. Hubris, which has its origin in Greek mythology, refers to exaggerated self-confidence about one's judgement that may deviate from objective standard (Hiller and Hambrick, 2005; Li and Tang, 2010). Although Russo and Schoemaker (1992) define overconfidence, another behavioural bias, as an overestimation of certainty about being correct, Hiller and Hambrick (2005) propose that both overconfidence and hubris fall under the similar overarching construct of hyper core self-evaluation.

Providing evidence about target firm's value around the takeover activities and interpreting bidding firm's takeover announcement effect, Roll (1986) suggests that successful acquirers may be overconfident and optimistic in their assessment of synergy gains. Berkovitch and Narayanan (1993) also find evidence of hubris motive of takeover when they analyse the subsample of takeovers that resulted in positive total gains. Hayward and Hambrick (1997) investigate the impact of CEO hubris on acquisition premium by using four indicators³⁹ of hubris. Analysing 106 acquisitions during the period between 1989 and 1992, they find that all four indicators are highly positively associated with the size of the acquisition premium. Although these researchers indicate that managerial biases have significant impacts on firm's M&A characteristics, they do not discuss whether such biases affect the choice of M&A payment method.

Later, Malmendier and Tate (2008) address the link between managerial biases and M&A payment choice by using stock option as a proxy to measure CEO overconfidence. Analysing M&A activities of 394 large US firms from 1980 to 1994, they investigate if CEO overconfidence plays role in determining the choice of M&A payment method and

³⁷ For example, Heaton (2002) provides a model of corporate finance that incorporates managerial optimism and efficient capital markets to examine the implications of behavioural biases for free cash flow debate. His model generates the prediction that managerial optimism anticipates the existence of biased cash flow forecasts. Again, Malmendier and Tate (2005a, 2005b) and Ben-David et al. (2013) find that managerial overconfidence as well as optimism helps explain the level of investment as opposed to its sensitivity to cash flow.

³⁸ A type of cognitive bias that can influence decisions (Kahneman et al., 1982).

³⁹ They are: a. acquiring company's recent performance, b. recent media praise for the acquiring CEO, c. a measure of acquiring CEO's self-importance and d. a composite factors of these three variables.

find evidence in favour of hubris hypothesis. Their results show that conditional on conducting a merger, overconfident CEOs are more likely to use cash as a medium of payment where the odd ratios of financing an M&A by overconfident CEOs using only cash versus only stock and other medium of payments are 1.09 and 1.10, respectively. Their results from logistic regression also show that the likelihood of using cash payment method in successful M&A deals increases when the acquiring CEO is overconfident. However, the latter finding is only statistically significant in case of the firms which are unlikely to be overvalued in the market compared to their respective industry average. Again, analysing the beliefs of CEOs of 477 publicly traded US firms during the period from 1980 to 1994, Malmendier et al. (2011) report that CEOs who believe that their firms are undervalued, issue less equity than CEOs of other firms when they have access to external capital. Their logit regressions show that depending on the inclusion of various types of control variables in the model, overconfident CEOs are 37 percent to 49 percent less likely to issue equity than non-overconfident CEOs. According to them, these overconfident CEOs overestimate firm's future cash flows and perceive equity financing to be costly.

In case of international firm-level M&A activity, Ferris et al. (2013) investigate a sample of CEOs of Fortune Global 500 companies over the period from 2000 to 2006 and examine the associations between CEO overconfidence and M&A characteristics. Using global news sources to construct press-based measure of CEO overconfidence, they find that overconfidence plays a significant role in determining the choice of M&A payment method. The positive and significant coefficients in their logistic regression results indicate that in case of firms with overconfident CEOs, the probability of the use of cash payment method relative to other types of payment methods in M&A deals is higher. They argue that overconfident CEOs tend to perceive their firms as undervalued and thus are more averse to use equity of their firms as a medium of payment. The result also holds even for only non-US firm cases, implying that CEO overconfidence is an international phenomenon. In line with these findings about the impact of managerial biases on the choice of M&A payment method, Huang-Meier et al. (2016) investigate if optimistic CEOs and non-optimistic CEOs have different purposes for holding cash. Using vested option holding measures to identify CEO optimism and analysing non-financial and non-utility US firms between 1992 and 2010, the authors find that firms with optimistic managers use relatively more cash compared to firms with non-optimistic managers during the acquisition activities. Their results show consistency with the claims of

Malmendier and Tate (2008) as well as Ferris et al. (2013) that managerial biases have significant impacts on the choice of M&A payment method.

Again, some researchers attempt to analyse the managerial tone in financial statements to identify the level of optimism⁴⁰ of the respective firms' managers and investigate whether optimism level of individual manager can explain firm's M&A decisions. Using data constructed from textual analysis of firms' 10-K and 10-Q filings between January 2003 and June 2018, An et al. (2022) investigate 6,752 M&A deals and analyse how sentiment of individual managers affects their respective firms' takeover characteristics. Their result suggests that firms with high manager sentiment tend to acquire target firms with fewer stock payment because they do not like to exchange their firms' shares for the target firms' share. Therefore, from the literature it is evident that managerial biases have significant impacts on the choice of M&A payment method.

Although past research provide evidence that sentiment of individual managers sometimes affects their respective firms' decisions about the choice of M&A payment method, it is yet to be investigated whether aggregate manager sentiment in the market can affect such decisions given the claims of several researchers⁴¹ that overconfidence or optimism, which spread very quickly among interacting entities, is a social rather than individual bias. Historically, many researchers discuss about the significant associations between individual manager sentiment and various corporate finance decisions. Nevertheless, studies about the impact of aggregate manager sentiment on such decisions are rather limited in finance literature. Following different papers⁴² from psychology and sociology fields which claim that individual decision making is shaped by collective social processes, Anglin et al. (2018) investigate whether collective entrepreneurial optimism has any impact on the creation and growth of new ventures. Using NFIB Small business optimism index as a proxy of collective optimism and analysing new businesses as well as firm growth between 1993 and 2010, the authors find positive and significant relationships between collective optimism and venture creation as well as business growth. Their findings remain consistent when they apply alternative measure of

⁴⁰ Lee et al. (2017) find tone in financial statements an appropriate proxy for managerial hubris. According to them, on average more overconfident CEOs will demonstrate a higher level of tone compared to less overconfident CEOs.

⁴¹ For example, Nofsinger (2005), Johnson and Fowler (2011) and Proeger and Meub (2014).

⁴² For example, Chambers and Windschitl (2004) and Bennett (2011).

collective optimism that is based on the use of positive and negative tones in 242 newspaper articles related to entrepreneurial or small business optimism.

Again, some researchers document that decisions taken by peer firms can influence individual firm's corporate finance decisions. In this regard, Chen, Chan and Chang (2019) report that managers adjust their own firm's cash holding level following such decisions of their peer firms. In case of investment related activities, Park et al. (2017) find evidence of the existence of peer effect on firm's own investment policies. Thus, it is apparent that managers sometimes get influenced by the actions and beliefs of other firms' managers. In this regard, Olson (2006) states that people spontaneously take on the goals of others in an unconscious manner and produce similar emotional states of their affiliates, indicating that a key source of individual sentiment is the aggregate sentiment of one's peers. Following the argument of Lucey and Dowling (2005) that individuals often make decisions in a social context where they get influenced by expectations, views as well as beliefs of others, we want to address the issue of aggregate manager sentiment on individual firm level decisions in this study and fill up the gap in the literature by investigating whether aggregate manager sentiment affects the acquiring firm's choice of M&A payment method. In the next segment, we discuss our particular research hypotheses.

3.2.2 Hypothesis Development

In this section we discuss our specific research hypotheses that we empirically investigate in our study. First, we formulate our hypothesis related to the association between aggregate manager sentiment and acquiring firm's choice of M&A payment method. Next, we extend our analysis and formulate two particular hypotheses to examine whether the impacts of aggregate manager sentiment on such decisions vary with the variations of acquiring firm's board characteristics. Several researchers, for example Malmendier and Tate (2005a) and Chen, Leung, Sing and Goergen (2019) find evidence that corporate board structure has significant impact on firm's investment related decisions. Following the previous findings, we predict that the impacts of aggregate manager sentiment on the choice of M&A payment method vary with the variations of different board characteristics and hence we test our predictions empirically in this study. Particularly, we investigate whether the impact changes with the change of board size and board independence level of the acquiring firms.

Finally, we further extend our analysis and formulate two distinct hypotheses to explore whether the impacts of aggregate manager sentiment on acquiring firm's choice of M&A payment method vary with the changes of characteristics of the CEOs of these firms. Some researchers such as Yim (2013) and Serfling (2014) provide evidence that CEO characteristics have significant impacts on respective firm's corporate investment decisions. Malmendier et al. (2011) also report that managerial characteristics play significant roles in corporate financing decisions. On the other hand, Mohamed et al. (2012) report that personal traits and characteristics of managers including age and tenure along with different board characteristics significantly affect respective manager's level of optimism. Following these findings, we predict that the impacts of aggregate manager sentiment on the choice of M&A payment method vary with the variations of CEO characteristics and therefore we test our predictions empirically in this study. Specifically, we examine if such impacts change with the variations of age and tenure of the CEOs of the acquiring firms. The details of each hypothesis with specific predictions are discussed in the following sub-sections.

3.2.2.1 Aggregate Manager Sentiment and M&A Payment Method

In general, acquiring firms choose to pay for their takeover deals using either only cash or only stock or a mixture of various types of payment media. Firms have the motivations to choose the optimal method of payment depending on various factors including different firm and related deal characteristics. Nevertheless, studies that investigate the impact of behavioural biases of managers on M&A deal characteristics report that CEO overconfidence or optimism sometimes plays roles in determining the choice of medium of M&A financing. In this regard, Malmendier and Tate (2008) and Ferris et al. (2013) provide empirical evidence that overconfident and optimistic⁴³ CEOs are more likely to pay cash during a takeover deal. Although these studies focus on the behavioural bias or sentiment of individual manager, some papers argue that sentiment is a social rather than individual phenomenon, suggesting that aggregate manager sentiment has profound impacts on individual decision making behaviour.

In his theoretical review paper, Nofsinger (2005) argues that general optimistic or pessimistic mood of society is transmitted through social interaction and this mood

⁴³ Baker and Nofsinger (2010, P. 417) state that “despite the fact that overconfidence and optimism are technically distinct, the two biases are often taken to mean the same thing in the finance literature. In the context of capital budgeting, this turns out to be legitimate, as only information that leads to new investments affects firm value”.

influences all types of decision makers. According to him, people obtain information about a decision by communicating with one another and at the peak, these optimistic emotions become extreme which lead people to become overconfident. They also argue that during the period of high social mood, many financial decision makers including investors and executives are optimistic and thus biased financial decisions are more likely to correlate across various types of financial decisions including M&A activities. Again, studying how overconfidence evolve among population of competing strategies, Johnson and Fowler (2011) state that overconfidence can arise and spread very quickly among interacting entities including individuals, groups or firms by means such as imitation or learning. In addition, in their experimental study, Proeger and Meub (2014) find that individuals with realistic confidence level in individual setting show much higher level of overconfidence in social setting where they can observe others' decisions. Also, conducting an experimental study, Darai et al. (2017) claim that aggregate sentiment measure can be as effective as a highly precise exogenous public signal in better coordinating the efficient outcomes. In their experiment, the authors find that when participants can observe the average signal of all participants along with their own private signals, they use this information to shift their behaviour towards an efficient equilibrium with high levels of investment.

Furthermore, Shue (2013) argues that managers are likely to be influenced by their social experiences in addition to being guided by their own beliefs since managers are extremely networked and social agents. According to the author, managerial decision can be affected by their peers as information and beliefs travel through social networks. The author finds strong impact of social interactions among peers on individual manager's acquisition strategy. Moreover, Jochem and Peters (2020) find that managerial biased beliefs prompt interconnected firms to change their corporate finance policies. These studies suggest that even if CEOs are not born overconfident or do not possess biased beliefs because of their past experiences as discussed in past papers⁴⁴, they may make biased decisions by getting influenced by the aggregate sentiment of corporate decision makers. Thus, considering the findings that firms with biased or optimistic managers are more likely to choose cash

⁴⁴ Billett and Qian (2008) report that CEO overconfidence stems from self-attribution bias. Again, Hilary and Hsu (2011) find that managerial attribution bias leads managers who have short term forecasting success experience to become overconfident about their future earnings forecast capability. Similarly, Hilary et al. (2016) report that past successes make managers to issue more optimistic forecasts and conclude that some managers are made overoptimistic rather than just born overconfident. On the other hand, Hwang et al. (2020) find that CEO power is positively associated with the increasing likelihood of a CEO being overconfident.

as means of M&A payment and sentiment can propagate among the financial decision makers, we purport the following hypothesis:

Hypothesis 1: The likelihood of using fully cash (fully stock) as means of M&A payment increases (decreases) with the increase of aggregate manager sentiment in the market.

In the next segments, we build our particular research hypotheses related to the board characteristics as well as the CEO characteristics and their influence on the association between aggregate manager sentiment and the choice of M&A payment method.

3.2.2.2 Aggregate Manager Sentiment, Board Characteristics and M&A Payment Method

Board Size

Historically, some researchers investigate whether the board size, defined by the number of directors on board, has any association with firm's corporate finance activities as well as whether the efficiency of these activities depends on the respective firm's board size. Discussing the factors that affect the board efficiency in firm's performance and monitoring management, Lipton and Lorsch (1992) argue that when the number of members in a board increases, several problems such as the possibility of less meaningful conversation and the lack of cohesiveness among the board members also increase. Specifically, they mention that if a board has more than ten members, it becomes difficult for them to share their ideas and opinions given the limited time available. They suggest that to have more effective discussions among the directors, a small board is more likely to be useful where the number of members should be limited to a maximum of ten directors. Similarly, providing direct evidence of the failure of firm's internal control system by analysing research and development expenditure, capital expenditure and sales performance of 432 firms in between 1980 and 1990, Jensen (1993) argues that the problems with firm's internal control system start with the board since the board has the ultimate responsibility for the functioning of the firm. According to him, along with other factors⁴⁵, a small board can improve its efficiency and the board is less likely to perform effectively if the number of people on board, who in general set the rules for the CEOs, go beyond seven or eight people.

Later, Malmendier and Tate (2005a) find the significant association between board structure and corporate financial policies where corporate governance increases

⁴⁵ Other factors include board culture, information problems, legal liability, etc.

investment cash flow sensitivity. Although they proxy their corporate governance variables by measuring the number of outside directors who are the current CEOs of other companies, the authors state that their proxy for board efficiency by considering boards with fewer than twelve members as efficient boards or otherwise gives the similar results. Therefore, from the literature it is evident that the efficiency of a board and the board size have close links between them where the board efficiency decreases with the increase of number of directors in that board. A small board thus manages the CEO more effectively by aligning CEOs interest to the firm's interest and by reducing the effect of CEOs personal bias while taking corporate finance decisions. In line with this argument, Mohamed et al. (2012) empirically find that board size has positive and significant association with CEO optimism. Investigating 431 manufacturing firms listed at NYSE, the authors find that the level of CEO optimism increases when the number of directors on a board increases. Following the argument of Lipton and Lorsch (1992) and Jensen (1993), they claim that larger board size opens the door to the installation of managerial biases. Hence, following the literature which suggest that board size affects corporate finance decisions and board efficiency decreases with the increase of its size, we predict a significant relationship between the interaction of board size with aggregate manager sentiment and the choice of firm's M&A payment method. The sign of the impact depends on the method of payment and we test the following hypothesis in this study:

Hypothesis 2: Larger board size enhances the impact of aggregate manager sentiment on the choice of M&A payment method.

Board Independence

Past literature document that board independence can influence respective firm's corporate finance decisions. In this regard, Core et al. (1999) investigate whether board independence affects executive compensation of a firm. Analysing 205 publicly traded US firms between 1982 and 1984, the authors find that a one percent decrease in the percentage of linked director on the board and inside directors is associated with a 0.75 percent decrease and a 0.57 percent increase in CEO compensation, respectively. In case of capital investment decisions, Lu and Wang (2015) find that a higher degree of board independence is negatively associated with firm's capital investment decisions. Investigating 1,824 non-financial and non-utility US firms between 1999 and 2009, the authors find that a one standard deviation increase in board independence leads to a decrease of capital investment-to-asset ratio by 0.179 percentage point.

Again, some researchers argue that board independence acts as an effective system for monitoring corporate finance decisions taken by firm's executives and serves the interest of the shareholders⁴⁶. In case of M&A activity, Gordon (2007) argues that board independence better controls certain agency problems of acquiring firm's managers including over-optimism bias. However, the findings about the effectiveness of board independence in firm's value creation is contradictory in the literature⁴⁷. Also, in their theoretical paper, Kumar and Sivaramakrishnan (2008) show that the efficacy of the board monitoring declines when directors are less dependent on the CEO if both adverse selection and moral hazard exist in firm's management. They argue that in such cases, a more independent board generally perform worse than less independent board because directors themselves avoid effort. Again, Lipton and Lorsch (1992) argue that certain factors including time limitations, information complexity and lack of cohesiveness among the directors limit the effectiveness of a board. Since independent directors are the outside directors who rarely meet with each other apart from the board meeting, they face higher difficulties in understanding complex information in a short period of time. Hence, we anticipate that the board efficiency would be lower with higher number of independent directors. Given the findings that board independence affects various corporate finance decisions and the efficiency of board performance changes in certain contexts, we predict a significant association between the level of board independence and the choice of M&A payment method when board members are exposed to different levels of aggregate manager sentiment. Following Lipton and Lorsch (1992) who suggest that independent directors provide breadth of perspective and diversity by considering the wider viewpoint of the society and Nofsinger (2005) who suggests that sentiment is a social phenomenon, we purport that the impact of aggregate manager sentiment on the choice of M&A payment method will be higher with the increase of board independence level. Our specific research hypothesis is as follows:

Hypothesis 3: Higher level of board independence enhances the impact of aggregate manager sentiment on the choice of M&A payment method.

⁴⁶ For example, Fama and Jensen (1983) and Brickley et al. (1994).

⁴⁷ Byrd and Hickman (1992) report that announcement-date abnormal returns for acquiring firms whose board consist of more than 50 percent outside independent directors are significantly less negative than that of other acquiring firms. On the contrary, Subrahmanyam et al. (1997) find that the proportion of outside directors is negatively associated with bidders abnormal returns in case of M&A activity in banking industry.

3.2.2.3 Aggregate Manager Sentiment, CEO Characteristics and M&A Payment Method

CEO Age

Some researchers from psychology and finance fields provide evidence that age of individuals significantly affects their level of behavioural biases and investment related decisions. Conducting four sets of experimental studies with 50 older and 51 younger people⁴⁸, Kovalchik et al. (2005) find that younger individuals are more biased than older individuals in decision making behaviour. They also report that younger individuals in general are more overconfident. They argue that older individuals temper their overconfidence because they learn through experience. Again, investigating the confidence level of new-venture managers of New York City's Silicon Alley community of internet firms, Forbes (2005) finds that younger entrepreneurs are more overconfident than older ones. Later, Mohamed et al. (2012) investigate the factors that affect the level of CEO optimism and find that CEO age significantly affects their optimism level. Their findings suggest that the level of CEO optimism decreases with the increase of CEO age. More recently, conducting a study on a sample of 9,711 people to find the age differences in the LOT-R mean scores⁴⁹, Hinz et al. (2017) find that younger people are more optimistic than older people. Their findings are consistent with the previous findings of Armbruster et al. (2015) who conduct a similar LOT-R test on 4,046 primary care patients and report that older people show significantly less optimism or pessimism relative to younger people.

Age impact is also evident in various corporate finance decisions. Analysing decision making behaviour of 4,492 CEOs from 2,356 US firms about different corporate policies, Serfling (2014) finds that CEO age is negatively associated with firm's R&D expenditure and operating leverage. Their results suggest that a 25 percent increase in CEO age leads to a decrease in firm's R&D expenditure and operating leverage by 8 percent and 12.9 percent, respectively. Additionally, they report that older CEOs sometimes inhibit firm risk by diversifying their firms. In case of M&A activities, Yim (2013) analyses the CEO age effect on acquisition propensity of S&P 1500 firms from 1992 to 2007 and finds that CEO age is negatively related with the likelihood of making an acquisition. The author

⁴⁸ Average age of older and younger individuals are 82 and 20, respectively.

⁴⁹ The Life Oriented Test-Revised (LOT-R) test is used for assessing individuals' dispositional optimism (Hinz et al, 2017).

reports that a CEO who is 20 years older relative to other CEOs has 32 percent lower probability of making an acquisition.

Grennan (2019) discusses a potential channel, reputation building, which can generate peer effects and argues that younger CEOs as well as early tenured CEOs have greater incentives to invest in reputation building. According to the author, executives have incentives to build their reputation by taking actions that will make them more reliable which, in turn, will improve their employment prospects and rents. Hence, young and early tenured CEOs have motivations to build their reputation in order to improve their employment prospects by adjusting their corporate finance related decisions following their peers. Previously, Scharfstein and Stein (1990) argue that the labour market favourably evaluates managers if they follow the decision of peers than if they behave in contrarian manner provided that the absolute profitability of the investment choice is fixed. Thus, unlike older and long tenured CEOs who have already secured reputations, young and early tenured CEOs are more likely to take corporate finance decisions following the aggregate sentiment level of their peers to build up their reputation which will ultimately improve their employment prospects.

Following the literature which provide evidence that individuals' age has profound relationship with their level of optimism and young CEOs are more likely to follow their peers in order to build their reputation, we anticipate that CEO age significantly affects the intensity to which aggregate manager sentiment drives the choice of M&A payment method. We purport that the intensity of the impact of aggregate manager sentiment on the choice of M&A payment method decreases with the increase of CEO age. Particularly, we test the following hypothesis in this study:

Hypothesis 4: Higher CEO age attenuates the impact of aggregate manager sentiment on the choice of M&A payment method.

CEO Tenure

The extant literature document that the level of CEO optimism and CEO tenure at firms have significant relationship between them. In this regard, Campbell et al. (2011) investigate whether overly optimistic or under optimistic CEOs face higher forced turnover compared to CEOs who display moderate level of optimism. They argue that CEOs with moderate level of optimism invest at first-best level that maximizes firm value whereas CEOs with higher and lower optimism level tend to overinvest and underinvest, respectively than the value maximizing level of investment. According to them, because

of their investment behaviour at different optimism level, CEOs with higher or lower optimism level face greater forced turnover risk than CEOs with moderate optimism level when the boards act in the interest of shareholders. To test their prediction, the authors investigate 3,352 CEO-firm combinations among which 294 CEOs face forced turnover during the period from 1992 to 2005 and find that CEOs with high and low optimism levels are, on average, 48 percent and 81 percent more likely to face forced turnover than CEOs with moderate level of optimism. From their findings, we can infer that CEOs who are not driven by sentiments generally have longer tenure in their firms. Recently, Bochkay et al. (2019) analyse the changes in disclosure style in earnings conference call over the tenure of CEOs and find that relative optimism of disclosures by CEOs gradually decreases over their tenure. Their result suggests that the level of CEO optimism declines when the CEOs stay longer in the firms. Therefore, following the literature which indicate that CEO tenure has profound relationship with their level of optimism and short-tenured CEOs are more likely to follow their peers in order to build their reputation as previously discussed, we predict that the intensity of the impact of aggregate manager sentiment on the choice of M&A payment method decreases with the increase of CEO tenure. Particularly, we test the following hypothesis:

Hypothesis 5: Longer CEO tenure attenuates the impact of aggregate manager sentiment on the choice of M&A payment method.

In the next section, we discuss the data that we use in this study to test our hypotheses.

3.3 Data

In this section we discuss our data in two broad subsections. First, we discuss about merger and acquisition (M&A) payment data which we use to develop our dependent variables. Next, we discuss about all the independent variables that we use in our regressions. Following past literature and theoretical arguments, we also generate our specific predictions about the signs of each variables that we expect to see in the regression results.

3.3.1 Mergers and Acquisitions Payment Data

We collect our M&A payment data for US public firms from Thomson One Banker database. Our sample includes M&A data from April 2003 to December 2017 to match with the availability of monthly manager sentiment index of Jiang et al. (2019) and to

match with our research methodology⁵⁰. From our sample, we exclude cross-border M&A data and restrict our sample to domestic M&As only since cross-border M&As are more complex in nature and take longer time from planning to deal announcement stage⁵¹. We also restrict our sample to non-financial and non-utility firms since the business model of these types of firms are somewhat different from other types of firms⁵². In addition, decisions taken by managers of utility firms are often heavily influenced by the government. We then exclude those observations whose deal value information are missing since we include deal level characteristics in our regression. Next, we exclude those observations for which payment data are missing. Finally, we match our M&A data with various firm characteristics. After matching with our independent variables, we get a final sample of 3,437 domestic observations that are announced by 1,236 unique non-financial and non-utility US public firms between April 2003 and December 2017. Our sample size is comparable with Karampatsas et al. (2014) who analyse a sample of 3,823 and 1,120 observations in their Probit regressions to investigate the impact of credit ratings existence and level on the choice of M&A payment method. Table 3-1 shows the number of M&As in our sample by year.

<Insert Table 3-1 Here>

From the table we can see that the frequencies of M&A activities are relatively higher in the year 2004, 2006 and 2011 with the highest in 2011. These findings are similar to Nguyen and Phan (2017) who investigate the impact of policy uncertainty on M&A activities and document that the frequency of M&As in their sample is the highest in year 2011. In addition, consistent with their findings, we observe that the number of M&A deals in our sample gradually drops during the period from 2007 to 2009 due to the financial crisis and increases again from 2010. The total deal value in our sample is USD 3.16 trillion with an average deal value of USD 17.88 billion per month. Again, the average deal value in our sample is USD 921.02 million by observations and USD 2.56

⁵⁰ Although the updated version of manager sentiment index developed by Jiang et al. (2019) is available from January 2003 to December 2017, we use M&A payment data from April 2003 since as our independent variable we include 3-month average of manager sentiment index prior to M&A announcement excluding the specific announcement month.

⁵¹ Erel et al. (2012) state that unlike domestic mergers, cross-border mergers are associated with an additional set of frictions that can affect the deals.

⁵² Fama and French (1992) indicate the differences in business models between the financial firms and the non-financial firms by arguing that high leverage for financial firms is normal whereas high leverage for non-financial firms often indicates distress.

billion by firms. The following table shows the number of M&A deals in our sample by variations of industry.

<Insert Table 3-2 Here>

From the table we can see that M&As are more concentrated in some industries such as business services; measuring, photographic, medical and optical goods, and clocks; industrial and commercial machinery and computer equipment; electronic and electrical equipment related products; and chemicals and allied products. This is also consistent with Nguen and Phan (2017) who report that M&As are more frequent in such industries. To test our hypotheses, we formulate dependent variables from this sample of 3,427 observations. The following figures show the fluctuations in the number of fully cash and fully stock M&A deals per month in our sample along with the manager sentiment index of Jiang et al. (2019) between April 2003 and December 2017.

<Insert Figure 3-1 Here>

From the top panel in the graph, we can see a somewhat positive association between the number of M&A deals that is paid by 100 percent cash and 3-month moving average of manager sentiment index. Thus, from these line graphs, we can observe that the number of fully cash (fully stock) M&A deals increases (decreases) following a period of high aggregate manager sentiment and vice versa.

3.3.2 Independent Variables

In this subsection we discuss our independent variables including sentiment related variables, firm level variables, deal specific variables as well as board and CEO characteristics variables in detail.

3.3.2.1 Sentiment Variables

We use two types of sentiment variables in our regressions including our main variable of interest, manager sentiment index. The details are as follows:

Manager Sentiment Index (MSI): To examine the impact of aggregate manager sentiment on the choice of M&A payment method, we use the updated version of monthly manager sentiment index of Jiang et al. (2019) that is available at the faculty website of Professor Guofu Zhou⁵³. Previously, different papers conduct textual analysis and analyse the tone embedded in various types of corporate disclosures. In this regard, Price et al. (2012) and

⁵³ Available at <http://apps.olin.wustl.edu/faculty/zhou/>

Lee et al. (2017) analyse the tones of conference call transcripts and use the tone of such disclosures as proxies to measure managerial sentiment or confidence. Again, Feldman et al. (2010), Li (2010) and Loughran and McDonalds (2011), among others analyse the tones of financial statements to measure managerial sentiments. On the other hand, Jiang et al. (2019) claim that conference call transcripts and financial statements contain complementary information about manager sentiment and hence analyse the tones of both types of disclosure to construct their monthly aggregated manager sentiment index. In addition, Jiang et al. (2019) argue that manager sentiment index, which contains additional and complementary sentiment information beyond investor sentiment index, reflects management's overly optimistic or pessimistic beliefs about the future cash flows and find evidence of overinvestment at both aggregate and firm level following high manager sentiment. Therefore, following their argument, we use manager sentiment index of Jiang et al. (2019) in our study as a proxy for aggregate manager sentiment in the market. In our regression analysis, we expect a positive (negative) relationship between aggregate manager sentiment and likelihood of using fully cash (fully stock) as a method of M&A payment in our sample to get consistent results with our first research hypothesis.

Investor Sentiment Index (ISI): Like managers, investors also sometimes exhibit irrational behaviour in the market. Several studies such as De Long et al. (1990) and Barberis et al. (1998) develop theoretical argument and claim that investors' irrationality could cause a divergence of short-term market price of assets from their fundamental values. Rhodes-Kropf and Viswanathan (2004) indicate that overvaluation of firms tend to be caused by market wide optimism. During this overvaluation period, managers of acquiring firms tend to exchange their overvalued stock with target stock and hence they are more likely to choose stock compared to cash as a method of M&A payment. Recently, Tsai et al. (2021) empirically find that investor sentiment has a negative (positive) and significant association with the likelihood of cash (stock) payment in M&A deals. Hence, we also expect a negative (positive) relationship between investor sentiment and probability of using fully cash (fully stock) as a method of M&A payment in our sample. In our regression, we use the investor sentiment index of Baker and Wurgler (2006) that is based on first principal component of five standardized sentiment proxies. We collect investor sentiment index from the faculty website of Professor Jeffrey Wurgler⁵⁴.

⁵⁴ Available at <http://people.stern.nyu.edu/jwurgler/>

3.3.2.2 Firm Level Variables

We use six firm level variables in our regressions. We collect firm level annual data from Compustat database except the cumulative stock return data which we collect from CRSP database. Details of these variables with specific predictions of signs are discussed below.

Firm Size (Size): A firm's capacity to borrow increases with the increase of its size. Previous literature such as Faccio and Masulis (2005), Baker et al. (2007), Boateng and Bi (2014), among others find that the probability of cash (stock) financing in M&A deal increases (decreases) with the increase of acquiring firm's size. Thus, we expect a positive (negative) association between firm size and the likelihood of fully cash (fully stock) payment in our sample. Following Faccio and Masulis (2005), we measure firm size using the book value of their asset. In the regression, we use the natural logarithm of firm size.

Return on Asset (ROA): According to the free cash flow theory, managers are more likely to make low-benefit M&A deals if they have access to large free cash flow. In addition to the likelihood of making an acquisition, previous literature document that the choice of M&A payment sometimes depends on acquiring firm's cash flow. In this regard, Gao (2010) reports that firms with higher ROA are less likely to use equity as a method of payment during the takeover activities. Recently, An et al. (2022) also find similar result. Thus, following the past findings, we expect a positive (negative) association between acquiring firm's ROA and the likelihood of using fully cash (fully stock) as a method of M&A payment in our sample. Following Bonaime et al. (2018), we calculate acquiring firm's ROA by adding income before extraordinary items, interest expense and income taxes and then dividing the resulting outcome by total asset of the firm⁵⁵.

Book Leverage (BL): High levels of existing leverage limit the ability of firms to further raise sufficient debt if necessary to pay during their investment activities. In this context, Faccio and Masulis (2005) find that acquiring firms with high leverage are less likely to choose cash and Boateng and Bi (2014) find that acquiring firms with low pre-event leverage are more likely to use cash as means of their M&A payment. Following past literature, we predict a negative (positive) association between acquiring firms' pre-event leverage status and their likelihood of using fully cash (fully stock) as means of payment during the takeover process. Following Bonaime et al. (2018), we calculate acquiring firms' book leverage by adding their book value of long-term debt with the book value of

⁵⁵ $ROA = (IB + XINT + TXT) / AT$; Source: Compustat

debt in current liabilities and then dividing this book value of total debt by the book value of their asset⁵⁶.

Cash to Total Asset (CTL): High level of internal cash reserve allows firm to rely less on external financing if it is necessary during the takeover activities. In case of M&A, Martin (1996) provides evidence that the probability of stock financing decreases while the probability of cash financing increases during takeover activities when the acquiring firms have greater cash balances. In addition, Karampatsas et al. (2014) show that the probability of using cash as means of M&A payment method is positively associated with the size of acquirer cash flow relative to their asset. Hence, we expect a positive (negative) relationship between acquirer's cash reserve and the likelihood of using fully cash (fully stock) in M&A deals. Again, following Bonaime et al. (2018), we calculate acquirer's cash reserve by dividing their total value of cash and short-term investment with the total book value of their asset⁵⁷.

Market-to-Book Ratio (M/B Ratio): Acquiring firms with overvalued stocks are likely to exchange their overvalued stocks with the undervalued stocks of the targets. In such a case where the acquiring firm's stocks are overvalued, the managers of these acquiring firms tend to use stock more as means of M&A payment method. Again, different researchers such as Martin (1996), Faccio and Masulis (2005), Di Giuli (2013), among others report that acquiring firm's growth opportunities are positively associated with the likelihood of using stock as means of M&A payment method. Following past literature, we use acquiring firm's market-to-book ratio to proxy for both mispricing and growth opportunities and expect a negative (positive) association with the likelihood of using fully cash (fully stock) in our regression outcome. To calculate the acquiring firm's market-to-book ratio, we follow Chen et al. (2020) who use this ratio in their multivariate regressions. To calculate the firm's market value, we first subtract the book value of common equity from the book value of total asset and add the market value of common equity where the market price of equity is the closing price on the last trading day of respective firms fiscal year preceding the M&A announcement. Next, we divide the resulting market value by the book value of firm's total asset to calculate the respective firm's market-to-book ratio⁵⁸.

⁵⁶ $BL = (DLTT + DLC) / AT$; Source: Compustat

⁵⁷ $CTL = CHE / AT$; Source=Compustat

⁵⁸ $M/B \text{ Ratio} = (AT - CEQ + PRCC_F * CSHO) / AT$; Source=Compustat

Stock Return (Ret): If acquiring firms experience a high stock price gains prior to M&A activities, the existing shareholders of respective firms face lower dilution of their voting power in case of stock financing during the takeover process. Following the argument, Faccio and Masulis (2005) find that percentage and probability of cash financing decreases in M&A payment when acquiring firm's experience a stock price gain prior to the announcement. Therefore, we expect a negative (positive) relationship between the past stock return and the probability of using fully cash (fully stock) as means of M&A payment method in our regression outcome. In this study, following Bonaime et al. (2018), we calculate stock return as the cumulative stock returns during the 12-month period ending at the end of firm's fiscal year preceding an M&A announcement.

3.3.2.3 Deal Specific Variables

Following past literature, we include four variables that are related to the characteristics of a specific M&A deal. We collect these deal specific variables from Thomson One Banker database.

Relative Deal Value (RV): Arguing that larger deals create more dilution of dominant shareholders control position in case of stock financing and increase of acquirer's equity capitalization decreases their financing constraints, Faccio and Masulis (2005) find that relative deal size is negatively associated with the proportion of cash used in M&A payment. Following Faccio and Masulis (2005), we calculate relative deal value by dividing the deal value by the combined value of the deal and the acquirer's market capitalization. Here, we use acquirer's market capitalization four weeks prior to the M&A announcement. We predict a negative (positive) relationship between the relative deal value and the likelihood of using fully cash (fully stock) as means of M&A payment method in our regressions.

Hostile Dummy (HD): In case of a hostile deal, the offer needs to be sufficiently generous so that the shareholders of the target firms surrender their shares. Acquiring firms in hostile takeovers intend to complete the deal as promptly as possible. Previously, Martynova and Renneboog (2009) find that the probability of the use of cash as means of M&A payment is higher in case of hostile takeovers. Thus, we expect a positive (negative) association between the hostile deal dummy and the likelihood of using fully cash (fully stock) in takeover deals in our study. Following Nguyen and Phan (2017), we define hostile dummy being equal to 1 if the M&A deal is a hostile takeover and 0 otherwise.

Challenge Dummy (CD): If a takeover attempt is challenged by other competing bidders, the original acquirer needs to be generous enough in their offer so that the shareholders of the target firms accept their offer and reject other offers. Previously, Berkovitch and Narayanan (1990) show that the use of cash as means of M&A payment increases when the competition among the acquiring firms increases. Thus, we expect a positive (negative) relationship between the challenge dummy and the likelihood of using fully cash (fully stock) as means of M&A payment in our study. Following Nguyen and Phan (2017), we define challenge dummy being equal to 1 if the acquirer's offer is challenged by a competing offer and 0 otherwise.

Diversifying Dummy (DD): Some researchers argue that if a merger occurs between firms from two unrelated industries, acquirers face more difficulties in evaluating the targets because of their limited familiarity about target's industry. In such cases, acquirers are likely to choose stock financing to avoid adverse selection costs (Tsai et al., 2021). On the contrary, Faccio and Masulis (2005) argue that in case of cross-industry M&A, target firms are less likely to accept acquirers' stock as a method of payment since the shareholders of target firms are not well acquainted with acquiring industry's risks and prospects. Thus, ex ante we cannot predict the relationship between the inter-industry dummy variable and the choice of M&A payment method. We conduct empirical analysis with this diversifying dummy variable to check the resulting outcome in our regression. We construct diversifying dummy being equal to 1 if acquiring firms and their respective target firms are from different industries as differentiated by 2-digit SIC codes and 0 otherwise.

We use the above mentioned firm and deal level control variables following the past literature that investigate the M&A payment choice such as Martin (1996), Faccio and Masulis (2005), Gao (2010), Karampatsas et al. (2014), Dutordoir et al. (2022). All the firm level control variables represent the acquiring firm's characteristics. In our regression, we do not include firm level variables of target firms since we argue that the characteristics of the target firms could influence the M&A likelihood decision, nevertheless, they are unlikely to influence the acquiring firm's M&A payment choice decisions. Since in this study we exclusively look at the M&A payment choice decision, we do not include firm characteristics of the targets in the regression model. On the other hand, following Faccio and Masulis (2005) and Nguyen and Phan (2017), we include some deal level variables that partially controls for the characteristics of the target firms. For example, hostility dummy controls for if the target firms were given any choice to

decide about the M&A decision, challenge dummy controls for if the target firms challenged the initial offer the acquiring firms made, and diversifying dummy controls for the industry variations of the target firms.

3.3.2.4 Board Characteristic Variables

To check the role of different board characteristics on the impact of aggregate manager sentiment in driving the M&A payment decisions, we include two board level variables which previous literature find to be significant in determining various corporate finance decisions and managing managerial behavioural biases. We collect the board characteristic data from BoardEx database. The details are provided below.

Board Size: We define board size as the number of members on board of the acquiring firm.

Board Independence: We define board independence as the ratio of number of independent directors to the number of total members on board of the acquiring firm.

3.3.2.5 CEO Characteristic Variables

To investigate how various CEO characteristics play roles on the effect of aggregate manager sentiment in determining the M&A payment decisions, we include two CEO level variables that are found to be significant in driving managerial biases and different corporate finance decisions. We collect CEO characteristic data from BoardEx database. The details are as follows.

Age: In our study, we calculate CEO age by subtracting the birth year of the CEO from the year of M&A announcement by the acquiring firms of respective CEOs.

Tenure: To proxy for CEO tenure in our study, we calculate the total number of years a CEO has been working in the acquiring firm till the M&A announcement.

In the following section, we discuss the methodology that we use in this study to check the impact of aggregate manager sentiment on the choice of M&A payment method and the roles played by various types of boards and CEOs of acquiring firms on such impacts.

3.4 Methodology

In this section, we discuss the methodology that we use in this study. In our study, we first examine the impact of aggregate manager sentiment on firm level choice of M&A payment method. Following Nguyen and Phan (2018), Karampatsas et al. (2014) and Faccio and Masulis (2005), we conduct our regression analysis by defining our dependent

variables in four different ways to get a robust finding of our analysis. Next, we extend our analysis to investigate the roles of various board and CEO characteristics on the impact of aggregate manager sentiment in driving the firm's M&A payment decisions. The details of the methodology are discussed in the following subsection.

3.4.1 Impact of Aggregate Manager Sentiment on M&A Payment Method

To investigate the impact of aggregate manager sentiment on the choice of individual firm's M&A payment method, in general, we use the following regression equation in our study.

$$Y_{ijt} = \alpha + \beta_1 X_{t-1} + \beta_2 X'_{jt-1} + \beta_3 Z_{it} + \gamma \ln_FE + \mu_{ijt} \quad (1)$$

Here, Y represents the payment data of deal i by firm j at time t . X represents the sentiment variables including aggregate manager sentiment index and investor sentiment index. X' represents the firm level control variables whereas Z represents the deal level control variables. β_1 , β_2 and β_3 represent the coefficients of sentiment variables, firm level control variables and deal level control variables, respectively. We further control for common industry factors by including industry fixed effects in the regression and γ denotes the coefficient of industry fixed effects as differentiated by 2-digit SIC codes of the respective acquiring firms' industries. Finally, μ denotes the error term in the model. We cluster the standard errors in all our regressions by years.

To check the impact of aggregate manager sentiment on the likelihood of using fully cash (fully stock), we define our dependent dummy variable, Y , being equal to 1 if the payment of a deal consist of 100 percent cash (stock) and 0 otherwise in our regression. In this case, we use Probit regression model since our dependent variable is a dummy variable and we have a relatively large number of observations which is comparable to Karampatsas et al. (2014) who also apply the Probit model in their regression. For further analysis, we check the impact of aggregate manager sentiment on the proportion of using cash or stock in M&A deals. In this case, following Nguyen and Phan (2017), we apply Tobit regression model in which the dependent variable, Y , represents the percentage of cash or stock used is a deal. In addition, Following Karampatsas et al. (2014) we redefine our dependent dummy variable being equal to 1 if the deal consists of more than 50 percent cash and 0 if the deal consists of more than 50 percent stock. Following the authors, we again apply Probit model in this regression. Finally, following Faccio and Masulis (2005), we define our dummy dependent variable being equal to 2 if the deal consists of 100 percent cash, 1 if the deal contains mixed payment method and 0 if the

deal consists of 100 percent stock. Following the authors, we apply Ordered Probit model in this regression analysis. In all our regressions except otherwise stated, we use 3-month moving averages of both sentiment variables prior to the deal announcement excluding the exact announcement month. All firm level control variables are measured at the end of fiscal year preceding the M&A announcement. We winsorize all firm level variables and one deal characteristic variable, relative deal value, at 1st and 99th percentiles level and use these winsorized values in our regression models. All our regressions include industry fixed effects.

3.4.2 Role of Board and CEO Characteristic Variables

To examine the role of certain board and CEO characteristics, we conduct further regression analysis by interacting the aggregate manager sentiment variable with various board and CEO characteristics variables. Specifically, we use the following regression model in our study.

$$Y_{ijt} = \alpha + \beta_1 X_{t-1} + \beta_2 X'_{jt-1} + \beta_3 Z_{it} + \beta_4 Z'_{jt-1} + \beta_5 MSI_{t-1} * Z'_{jt-1} + \gamma In_FE + \mu_{ijt} \quad (2)$$

Here, in addition to all other factors of equation (1), Z' represents different board and CEO characteristics. β_4 represents the coefficients of board or CEO characteristic variables whereas β_5 represents the coefficients of interactions of those variables with aggregate manager sentiment index (MSI).

Here, our dependent variable, Y , is a dummy variable being equal to 1 if the payment of an M&A deal consists of 100 percent cash (stock) and 0 otherwise when we analyse the roles of board and CEO characteristic variables on the impact of aggregate manager sentiment in case of the likelihood of fully cash (fully stock) M&A payment. Here, we apply the Probit model in our regression analysis since dependent variable is a dummy variable. In addition to firm level variables and relative deal value, we also winsorize board and CEO characteristic variables at 1st and 99th percentiles and apply these winsorized values in our regression models.

We discuss our results in the following section.

3.5 Results and Discussions

In this section, we present and discuss the results of our analysis in two sub-sections. In the first sub-section, we report our summary statistics and correlations among the

variables that we use in this study. In the next section, we report and discuss our empirical results.

3.5.1 Descriptive Statistics

The following table 3-3 shows the summary statistics of the independent variables that we use in this study. Particularly, we report mean, median, standard deviation, minimum and maximum values as well as the number of observations that are available for each variable in our sample.

<Insert Table 3-3 Here>

From table 3-3, we can see that the mean and median of cash dummy variable are 0.695 and 1.000, respectively whereas the mean and median of stock dummy variable are 0.043 and 0.000, respectively. These results indicate that the number of observations of M&As with 100 percent cash payment is much higher than the number of observations of M&As with 100 percent stock payment in our sample. The mean and standard deviation of aggregate manager sentiment are 0.018 and 0.913, respectively whereas the mean and standard deviation of investor sentiment are -0.218 and 0.293, indicating that aggregate manager sentiment has higher fluctuation rate than the investor sentiment. The summary statistics of other variables show comparable results with the summary statistics reported in recent M&A related research papers including Nguyen and Phan (2017), Bonaime et al. (2018) and An et al. (2022).

The following table 3-4 shows the correlations among the variables and reports the Variance Inflation Factors (VIF) of the independent variables.

<Insert Table 3-4 Here>

From the correlation table, we can see that cash dummy and manager sentiment index has positive relationship whereas stock dummy and manager sentiment has negative relationship between them. These correlations are significant at 1 percent level. We can also see that manager sentiment and investor sentiment has moderately high and significant relationship between them which creates a possibility of multicollinearity in our regression model. However, we see that the VIF of manager sentiment index and investor sentiment index are 1.57 and 1.60, respectively, indicating no multicollinearity in the model. Here, the correlation between stock dummy and investor sentiment does not show consistent sign according to our prediction. Although it shows inconsistent sign, we

do further regression analysis to check whether any causal relationship exist between these two variables.

3.5.2 Empirical Results

In this section, we present the results in three subsections. First, we report the findings from the regression analysis about the impact of aggregate manager sentiment on the choice of M&A payment method by defining the dependent variables in four different ways and by including additional control variables to get a robust view of our findings. In the next two sections, we report the findings about the roles of various board and CEO characteristics, respectively on such impacts.

3.5.2.1 Aggregate Manager Sentiment and M&A Payment Method

In this section we discuss the empirical findings about the impact of aggregate manager sentiment on the choice of individual acquiring firm's M&A payment method. Table 3-5 reports the Probit regression results about the impact of aggregate manager sentiment on the likelihood of using fully cash and fully stock as choices of M&A payment method.

<Insert Table 3-5 Here>

From column 1 of table 3-5 we can see that the likelihood of using fully cash in takeover deals by acquiring firms increases following a period of high aggregate manager sentiment. The finding here is statistically significant at 1 percent level. On the other hand, from column 2 of the table we can see the likelihood of using fully stock in takeover deals decreases following a period of high aggregate manager sentiment in the market. This finding is statistically significant at 5 percent level. The average marginal effects of aggregate manager sentiment on the likelihood of using fully cash and fully stock are 0.041 and -0.008, respectively where both impacts are significant at 1 percent level. The findings about the marginal effects suggest that one standard deviation increase in aggregate manager sentiment increases the probability of fully cash M&A payment by approximately 3.75 percent and decreases the probability of fully stock M&A payment by 0.70 percent. Thus, we can say that aggregate manager sentiment is positively and strongly associated with the likelihood of using fully cash whereas it is negatively and strongly associated the likelihood of using fully stock by acquiring firms as choices of M&A payment method. These findings are consistent with our research hypotheses 1⁵⁹.

⁵⁹ We find similar results when we calculate sentiment variables by taking the average of 6-month instead of 3-month prior to the M&A announcement. Table 3-A1 of the appendix reports results of such regressions.

Among the control variables, we can see that investor sentiment has a significant negative impact on the likelihood of using fully cash which is consistent with our prediction. The finding is significant at 5 percent level. Nevertheless, results do not reveal a statistically significant association between investor sentiment and the likelihood of using fully stock as a choice of M&A payment method. Next, we find that firm size has strong and positive association with the likelihood of using fully cash and is consistent with our prediction. In addition, consistent with cash flow hypothesis, we find that acquiring firms' profitability has strong positive (strong negative) relationships with the likelihood of using fully cash (fully stock) as means of M&A payment by those firms. Again, consistent with our prediction, we find that mispricing of acquiring firm's value, as defined by the market-to-book ratio, is negatively associated with the likelihood of using fully cash whereas cumulative market return of those firms are positively associated with the likelihood of using stock as means of M&A payment. The former is significant at 1 percent level whereas the latter is significant at 5 percent level. Also, the significant findings about the market-to-book ratio indicates that acquiring firms are less likely to pay cash in takeover deals when they have higher growth opportunities. Moreover, similar to the findings of Faccio and Masulis (2005), our findings suggest that the likelihood of using fully cash (fully stock) decreases (increases) when the relative deal value increases. Here, both findings are significant at 1 percent level. Lastly, we find that the likelihood of using fully cash decreases when the merger occurs between firms from two unrelated industries, suggesting that acquirers are more likely to pay using stock when they face extra difficulty in evaluating targets from another industry to avoid adverse selection costs. All of our findings which are statistically significant at least at 10 percent level show consistent signs with our predictions. In our regression analysis, we do not find significant results about the impact of acquiring firm's leverage condition, cash availability as well as certain deal characteristics such as deal hostility and whether the deal is challenged by competing offers on the choice of M&A payment method. Hence, we can say that along with other previously identified determinants of choice of M&A payment method, aggregate manager sentiment plays significant roles in driving acquiring firm's such payment decisions.

To examine that our findings about the impact of aggregate manager sentiment on the choice of M&A payment method are not driven by some market-level factors, we include three additional market-level variables in our regressions that previous literature find to be significant in M&A activities. First, we include CRSP value weighted market index

(CRSP Index) to control for alternative explanation that general economic condition plays role in determining firm's choice of M&A payment method. Faccio and Masulis (2005) find that the likelihood of using cash by acquiring firms in takeover deals decreases when they experience a stock price gain prior to the announcement. However, in case of overall stock price gain in the market, target firms also experience price gains prior to the takeover deals. On the other hand, during the period of economic expansion, firms in general may have higher cash flows and access to more debt financing which allow firms to pay more cash if needed during the takeover activities. Thus, ex ante it is difficult to predict the relationship between the stock market returns and individual firm's choice of M&A payment method. To investigate the relationship empirically in our regression, we use CRSP value weighted index instead of equal weighted index since the former one adjusts for the market capitalization. We collect this data from The Center for Research in Security Prices (CRSP) database.

Second, we include Robert J. Shiller's cyclically adjusted price earnings ratio (CAPE Ratio) to control for the alternative explanation that market misvaluation affects firm's M&A decisions. We collect this data from the faculty website of Professor Robert J. Shiller⁶⁰. Previously, Shleifer and Vishny (2003) as well as Rhodes-Kropf and Viswanathan (2004) report that market misvaluation affects M&A activities. Investigating US mergers during the period from 1985 to 2008, Gugler et al. (2012) empirically find similar result that market valuation affects M&A decisions. Recently, An et al. (2022) argue that managers of acquiring firms tend to make stock payment in exchange of their overvalued equity for undervalued or comparatively lower overpriced asset of the target firms. Thus, following the literature, we predict that the likelihood of using fully cash decreases while the likelihood of using fully stock increases as means of M&A payment method during the period of market overvaluation. Finally, we include aggregate cash holding in the market as an additional market-level control variable in our regression. Previously, Harford (2005) documents the importance of corporate liquidity in M&A activities. In addition, investigating the relationship between corporate liquidity and asset reallocation opportunities, Almeida et al. (2011) argue that liquidity awash, resulted from rich cash balances and low rate of financing, previously led firms to engage in M&As with more pronounced cash financing. Thus, we predict that acquiring firms are more (less) likely to pay using cash (stock) following a period of high aggregate cash

⁶⁰ Available at <http://www.econ.yale.edu/~shiller/data.htm>

holding by firms in the market. We collect this variable from the Compustat selecting Cash and Short-Term Investment option for individual firms and then calculate the monthly aggregate value of this variable. In our analysis, we take the natural logarithm of aggregate cash holding. Table 3-6 reports the Probit regression results about the impact of aggregate manager sentiment on the choice of M&A payment method with three additional market-level control variables.

<Insert Table 3-6 Here>

From table 3-6 we can see that our findings about the aggregate manager sentiment remain consistent even after including additional market-level variables where the likelihood of using fully cash (fully stock) as means of M&A payment method increases (decreases) following a period of high aggregate manager sentiment in the market. Thus, we can say that our findings are not driven by other market-level factors. Among the other control variables, investor sentiment index here shows consistent result and is significant at 10 percent level in case of fully cash payment method. Other firm level and deal specific control variables also generate consistent results. In case of our additional market-level variables, we find that the likelihood of using fully stock as a choice of M&A payment method decreases following a period of high market return. The result is significant at 5 percent level. In the regression result, the negative sign of CRSP index and positive sign of cumulative stock return of acquiring firms on the likelihood of using stock as a choice of M&A payment indicate that targets are less likely to accept stock during the takeover activities when they also experience stock price gains prior to the M&A announcement. In case of overall market misvaluation proxied by CAPE ratio, we do not find any statistically significant result, suggesting that individual acquiring firms' valuations play significant role rather than periods of overall market mispricing in determining the choice of M&A payment method by those firms. Moreover, we do not find any significant result of aggregate cash holding in our regression which suggest that individual firm's cash flow is more important in deciding the choice of M&A payment method rather than overall cash condition in the market.

Next, to examine the impact of aggregate manager sentiment on the proportion of cash and stock payment in takeover deals, we employ Tobit regression techniques. Table 3-7 presents the regression results.

<Insert Table 3-7 Here>

From table 3-7 we can see that the proportion of cash and proportion of stock used in takeover deals increases and decreases, respectively following a period of high aggregate manager sentiment. Both findings are significant at 1 percent level. Thus, we can say that aggregate manager sentiment has a strong positive (negative) relationship with the proportion of using cash (stock) in addition to its significant relationship with the likelihood of using fully cash or fully stock as means of M&A payment⁶¹. Here, we find that investor sentiment index generates signs which are consistent with our predictions in case of both cash and stock proportion. Nevertheless, their impacts are statistically significant at 10 percent level in case of cash payment method and statistically insignificant even at 10 percent level in case of stock payment method. Thus, our findings indicate that aggregate manager sentiment dominates the investor sentiment in determining the choice of M&A payment method. This finding is, to some extent, consistent with Jiang et al. (2019) who provide evidence that manager sentiment dominates the investor sentiment in predicting the aggregate investment growth. In addition to aggregate manager sentiment, we also find that firm size, cash flow, mispricing, growth opportunity of acquiring firm and relative deal value play significant roles in determining the proportion of the use of cash or stock in takeover deals.

Finally, as additional robustness tests we redefine our dependent variables and conduct the regression analysis with these redefined dependent variables. Following Karampatsas et al. (2014) we define our dependent dummy variable being equal to 1 if the deal consists of more than 50 percent cash and 0 if the deal consists of more than 50 percent stock. The Probit regression results with this dummy variable are presented in column 1 of table 3-8. Again, following Faccio and Masulis (2005) we redefine our dependent variable to be 2 if the payment consists of 100 percent cash, 1 if the payment includes mixed methods and 0 if the payment consists of 100 percent stock. Following the authors, we run Ordered Probit regression and the results are presented in column 2 of table 3-8.

<Insert Table 3-8 Here>

From column 1 of table 3-8 we can see that aggregate manager sentiment is positively associated with the dependent variable, indicating that the likelihood of using cash as opposed to stock increases following a period of high sentiment. The result is significant at 1 percent level. The average marginal effect of aggregate manager sentiment is 0.019

⁶¹ We find similar results when we calculate sentiment variables by taking the average of 6-month instead of 3-month prior to the M&A announcement. Table 3-A2 of the appendix reports results of such regressions.

and is significant at 1 percent level, indicating that one standard deviation increase in aggregate manager sentiment corresponds to around 1.7 percent increase in the probability of using more than 50 percent cash as opposed to using more than 50 percent stock as a choice of M&A payment method. Consistent with the prior findings, we can see that aggregate manager sentiment dominates the investor sentiment in this case as well. From column 2 of the table we can see that aggregate manager sentiment is still positive and significant at 1 percent level in this regression. Here, we also find significant impact of investor sentiment. The findings about investor sentiment is consistent with our prediction and is significant at 10 percent level. Other control variables also show consistent results. Therefore, following the findings of various types of regression analysis, we can say that aggregate manager sentiment plays a significant role in driving individual acquiring firm's choice of M&A payment method. All of these findings are consistent with our first hypothesis of this study.

In case of endogeneity issue in our research, we argue that since the aggregate manager sentiment reflects the aggregate managerial sentiment level of all non-financial and non-utility firms in the US that includes both firms that undertake M&A deals and firms that do not undertake M&A deals during the sample period, the choice of M&A payment method of individual acquiring firms are unlikely to significantly affect the aggregate manager sentiment. Hence, we do not specifically test for endogeneity in our research. However, our findings may be driven by some observable firm characteristics. To address this issue, we use the propensity score matching (PSM) procedure to control for a possible selection bias. In particular, we match M&A deals following high period of aggregate manager sentiment with M&A deals following low period of aggregate manager sentiment using six observable firm characteristics⁶². Such characteristics and their mean values in each aggregate manager sentiment category are provided in table 3-A3 in the appendix. Our matching procedure uses one-to-one matching. We run our regression again with the matched sample. The empirical results are provided in table 3-A4 in the appendix.

Our PSM analysis show that our findings about the impact of aggregate manager sentiment on the choice of M&A payment method remain consistent for the likelihood of using fully cash during the takeover deals. However, we do not find a statistically significant result in the case of fully stock payment method here. Therefore, we, to a large

⁶² We regard the high sentiment if the aggregate manager sentiment is higher than or equal to its median value and low sentiment if the aggregate manager sentiment is less than its median value.

extent, find robust statistical evidence in support of our hypothesis that aggregate manager sentiment has a positive (negative) and significant impact on the likelihood of using cash (stock) as means of M&A payment method.

The manager sentiment index of Jiang et al. (2019) that we use in this study as a proxy for aggregate manager sentiment is based on the positive and negative words embedded in both conference call transcripts and corporate financial disclosures. Although different researchers use tones of various corporate disclosures to proxy for managerial sentiment (e.g., Li et al., 2010; Price et al., 2012; Loughran and McDonalds, 2011), Jiang et al. (2019) do not specifically test whether their sentiment index is a true measure of aggregate manager sentiment in the market. In their study, the authors find that high manager sentiment is accompanied by high aggregate investment growth and vice versa. Following their findings, they claim that higher level of manager sentiment indicates the managers' overly optimistic beliefs about the future returns to investments. Previously, Arif and Lee (2014) find that investor sentiment is associated with aggregate corporate investment and argue that managers also get influenced by the market sentiment. Jiang et al. (2019) show that manager sentiment provides additional and complementary information beyond investor sentiment about the aggregate investment growth. Hence, it can be argued that manager sentiment index reflects the aggregate manager sentiment in the market. Nevertheless, to check the validity of our findings that the likelihood of the fully cash payment method in M&A deals of individual acquiring firms increases (decreases) following high (low) periods of aggregate manager sentiment, here we use Business Confidence Index (BCI) of OECD instead of aggregate manager sentiment index of Jiang et al. (2019) as an alternative proxy to measure aggregate manager sentiment in the market and conduct the analysis again⁶³. This index is based upon opinion surveys on developments in production, orders and stocks of finished goods in the industry sector and provides information on future developments. Hence, the index potentially reflects the aggregate optimism level of the managers in the market. The results are provided in table 3-A5 in the appendix.

From the analysis, we find that business confidence index generates positive and significant result in case of fully cash payment method, indicating that the individual acquiring firms are more likely to engage in M&A deals with 100 percent cash payment following a period of high aggregate business confidence. This result is consistent with

⁶³ Available at <https://data.oecd.org/leadind/business-confidence-index-bci.htm>

what we find previously using manager sentiment index of Jiang et al. (2019). In case of fully stock deals, although we find consistent sign of the coefficient with what we predict, the coefficient is statistically insignificant. Since we find consistent result in case of fully cash M&A deals, we can say that our findings are largely consistent with our hypothesis that the likelihood of using fully cash as means of M&A payment increases (decreases) with the increase (decrease) of aggregate manager sentiment in the market.

3.5.2.2 Aggregate Manager Sentiment, Board Characteristics and M&A Payment Method

In this section, we discuss the empirical findings about the role of different board characteristics on the impact of aggregate manager sentiment in determining the choice of M&A payment method. In each table, Panel A shows the Probit regression results whereas panel B shows the marginal effect of aggregate manager sentiment on the likelihood of using fully cash and fully stock as means of M&A payment method at five different percentiles of respective board characteristics. Table 3-9 reports the regression results about the role of board size.

<Insert Table 3-9 Here>

From column 1 of panel A of table 3-9, we can see that aggregate manager sentiment is still positively and strongly associated with the likelihood of using fully cash as a choice of M&A payment method after adding board size variable in the regression model. Other control variables also show consistent results. Here, we can see that board size has also positive relationship with the likelihood of using fully cash as a choice of M&A payment method. The relationship is significant at 5 percent level. Previously, Gill and Shah (2012) find that larger board size increase cash holdings in firm. Thus, the increased amount of cash holding by firms with larger board may allow firms to use more cash during the M&A activities. In addition, firms may make connections with creditors through the personal connections of their directors and these connections may allow firms to raise debt financing when needed. Thus, higher number of directors on board allows firms to make more connections and eventually firms will be able to raise more money which will allow them to use more cash during takeover activities. From column 2 we can see that the interaction between aggregate manager sentiment and board size is positively related with the likelihood of using fully cash as M&A payment method. The finding suggests that the likelihood of using fully cash as a choice of M&A payment method gradually increases with the increase of board size and vice versa following a period of high

sentiment. Panel B shows that the marginal effect gradually increases at higher percentiles of board size. All these effects are statistically significant at 1 percent level except the effect at 10th percentile which is significant at 10 percent level.

On the other hand, in case of stock M&A payment method, from column 3 of panel A of the table we can see that the impact of aggregate manager sentiment is still negative and significant on the likelihood of using fully stock after including board size variable in the regression model. Other significant control variables generate consistent signs according to our predictions. The board size in this case generates statistically insignificant result, indicating that number of directors on board does not play roles in determining the likelihood of using fully stock as a choice of M&A payment method. From column 4 we can see that the interaction between aggregate manager sentiment and board size generates negative and significant sign in this regression, suggesting that the likelihood of using fully stock gradually decreases with the increase of board size and vice versa following a period of high manager sentiment. From marginal effect analysis in panel B we can see that the value of the coefficient on the likelihood of using fully stock gradually decreases at higher percentiles of board size which indicates that the magnitude of the impact of aggregate manager sentiment gradually increases with the increase of board size. Therefore, we can say that larger board size enhances the impact of aggregate manager sentiment on the likelihood of using fully stock as a choice of M&A payment method and the finding is consistent with the second hypothesis of our study.

Next, we report the findings about the role of board independence level on the impact of aggregate manager sentiment in determining the choice of M&A payment method in table 3-10.

<Insert Table 3-10 Here>

From column 1 of panel A of table 3-10, we can see that the impact of aggregate manager sentiment on the likelihood of fully cash M&A payment method is positive and significant at 1 percent level even after including the board independence variable as a control in the regression model. From column 2 we can see that the interaction between aggregate manager sentiment and board independence variable generates positive and significant result. Here, the finding is significant at 5 percent level and suggests that the likelihood of using fully cash as a choice of M&A payment method increases with the increase of acquiring firm's board independence level and vice versa following a period of high sentiment. In case of fully cash payment method, from panel B we can see that the

marginal effect of the aggregate manager sentiment gradually and significantly increases at higher percentiles of board independence. Thus, we can say that higher level of board independence enhances the impact of aggregate manager sentiment on the likelihood of using fully cash as a choice of M&A payment method and the finding is consistent with our hypothesis 3.

In case of fully stock payment method, from column 4 we can see that the interaction term between fully stock dummy and board independence level does not generate any significant result. The marginal effect analysis also does not show any significant changes at various percentiles of board independence level, suggesting that board independence level does not play any role on the impact of aggregate manager sentiment in case of fully stock M&A payment method.

As a robustness test, we redefine our dependent variables following Faccio and Masulis (2005) and conduct the analysis again to examine the roles of board characteristics in alternating the impact of aggregate manager sentiment on the choice of M&A payment method. The results are reported in table 3-11.

<Insert Table 3-11 Here>

From column 1 of the table we can see that the coefficient of the interaction between manager sentiment index and board size, measured by the number of directors on board, is positive. The result is significant at 5 percent level. The finding suggest that the positive impact of aggregate manager sentiment on the likelihood of choosing fully cash deal relative to other method and fully stock deal increases with the increase of board size. This finding in robustness test confirms our previous finding and is consistent with our hypothesis 2. On the other hand, from column 2 of the table we can see that the coefficient of the interaction term between manager sentiment index and board independence level is also positive but the finding is statistically insignificant at 10 percent level, suggesting that board independence level does not play any roles in alternating the impact of aggregate manager sentiment on the likelihood of using cash relative to other methods in M&A deals. Thus, we find do find consistent result for our third hypothesis.

The insignificant result in the robustness test about the moderating effect of board independence suggests that although independent directors provide the breadth of perspectives by considering the wider viewpoint of the society, higher level of board independence works as an effective monitoring system of the managerial activities. This

finding is consistent with Gordon (2007) who argues that board independence better controls acquiring firm's managerial over optimism bias. Because of the better monitoring system, the aggregate optimism of the affiliates brought by the independent directors in the acquiring firm does not play any significant role on the M&A payment choice.

3.5.2.3 Aggregate Manager Sentiment, CEO Characteristics and M&A Payment Method

In this final empirical result section, we discuss the findings about the role of two different CEO characteristics on the impact of aggregate manager sentiment in determining the choice of M&A payment method. In each table, Panel A shows the Probit regression results whereas panel B shows the marginal effect of aggregate manager sentiment on the likelihood of using fully cash and fully stock as means of M&A payment method at five different percentiles of acquiring firm's CEO characteristics. Table 3-12 reports the regression results about the role of CEO age.

<Insert Table 3-12 Here>

From column 1 of panel A of table 3-12, we can see that CEO age does not generate any significant result about its impact on the likelihood of using fully cash as a choice of M&A payment method. The impact of aggregate manager sentiment after including this CEO age variable remains significant at 1 percent level. Other statistically significant control variables also generate predicted signs. From column 2 we can see that the interaction between aggregate manager sentiment and CEO age variable generates negative sign, suggesting that the likelihood of using fully cash in takeover deal decreases with the increase of CEO age and vice versa following a period of high aggregate manager sentiment. Here, the finding is significant at 5 percent level. From panel B we can see that the marginal effect of aggregate manager sentiment on the likelihood of using fully cash gradually decreases at higher percentiles of CEO age. The findings suggest that higher CEO age attenuates the impact of aggregate manager sentiment on the likelihood of using fully cash as a choice of M&A payment method.

Again, from column 4 we can see that the interaction between aggregate manager sentiment and CEO age generates positive sign and is significant at 5 percent level, suggesting that the likelihood of using fully stock gradually increases with the increase of CEO age and vice versa following a period of high aggregate manager sentiment. Marginal effect analysis also shows similar results. Thus, consistent with the previous

findings, we can say that higher CEO age of acquiring firms attenuates the impact of aggregate manager sentiment on the likelihood of using fully stock as a choice of M&A payment method. Overall, we find consistent results with our hypothesis 4 that CEO age has significant impact on the intensity at which aggregate manager sentiment affects the choice of M&A payment method where higher CEO age attenuates such impacts.

Next, we discuss the role of tenure of the acquiring firm's CEO on the choice of M&A payment method that is driven by aggregate manager sentiment in the market. Table 3-13 reports the regression results.

<Insert Table 3-13 Here>

From column 1 and 3 of panel A of table 3-13, we can see that CEO tenure does not have any significant impact on the likelihood of using fully cash and fully stock as choices of M&A payment method. The impacts of aggregate manager sentiment on such choices are still significant and generate predicted signs after controlling for CEO tenure in the model. Other control variables that are statistically significant also generate predicted signs. In case of the interaction between aggregate manager sentiment and CEO tenure, from column 2 and 4 we find that, the interacting variables generate predicted signs for both fully cash and fully stock M&A payment method analysis. Nevertheless, the impacts of these interacting variables do not generate any statistically significant result in case of both fully cash and fully stock payment method.

From panel B we can see that the marginal effect of aggregate manager sentiment on the likelihood of using fully cash as a choice of M&A payment method gradually decreases at higher percentiles of CEO tenure and the effects are statistically significant at 1 percent level. Similar finding is evident in case of fully stock payment method although the marginal effects here are significant at 5 percent level except for marginal effects at 75th and 90th percentiles where the effects are statistically insignificant. Although marginal analysis show gradual decrease in the impact of aggregate manager sentiment on the choice of M&A payment method, the statistically insignificant coefficients of interacting variables indicate that CEO tenure does not play any roles in alternating the impact of aggregate manager sentiment on such choices. Hence, we do not find statistical evidence in favour of our hypothesis 5.

The insignificant findings about the moderating effect of the CEO suggest that early-tenured CEOs are not as much concerned about their reputation building as the young

CEOs. An early-tenured CEO in the acquiring firm could be an older CEO who joined the respective acquiring firm after working for other firms and has already built the reputation in the market. Hence, the early-tenured CEOs do not get influenced by the aggregate optimism level of their peers and do not take M&A payment choice decisions accordingly. Previously, Bochkay et al. (2019) document that relative optimism of disclosures by CEOs gradually decreases over their tenure. Nevertheless, our results indicate that this diminishing optimism level of CEOs over their tenure does not play any roles in attenuating the impact of aggregate manager sentiment on the respective acquiring firm's choice of M&A payment method.

As a robustness test for CEO characteristics, we redefine our dependent variables following Faccio and Masulis (2005) and conduct the analysis again. The results are reported in table 3-14.

<Insert Table 3-14 Here>

From column 1 of the table we find that the interaction term between manager sentiment index and CEO age generates negative coefficient value. The finding is statistically significant at 5 percent level. The finding suggests that higher CEO age attenuates the impact of aggregate manager sentiment on the likelihood of using fully cash relative to other payment method by individual acquiring firms. On the other hand, although the interaction between manager sentiment index and CEO tenure generates negative coefficient value, the coefficient is statistically insignificant. Therefore, we find consistent result for our hypothesis 4 whereas the findings in robustness test does not generate consistent result in support of our last hypothesis.

3.6 Conclusion

Aggregate manager sentiment is an important factor in determining the individual acquiring firms' choice of payment method during their takeover activities. It provides additional information beyond the existing investor sentiment and other determinants of M&A payment methods that prior literature documented over the last several decades. In this study, we find that individual acquiring firms are more likely to pay using cash following periods of high aggregate manager sentiment whereas they are less likely to pay using stock following such periods of high aggregate manager sentiment to their respective targets. Our findings are robust to various forms of dependent variables that define the acquiring firm's choice of M&A payment and inclusion of different market-level variables. In addition, we find that certain board and CEO characteristics of

acquiring firms play significant roles on the impact of aggregate manager sentiment in determining the respective firm's choice of M&A payment method. Particularly, we find that larger board size enhances whereas higher CEO age attenuates the impact of aggregate manager sentiment on the choice of individual acquiring firm's M&A payment method. Therefore, acquiring firms need to take care that they are not paying more cash or less stock than the optimum amount in takeover deals just because their affiliates are optimistic in general at certain periods of time; rather they are selecting effective payment method that will increase the value of the firm in the post-merger period. Given our findings that aggregate manager sentiment significantly affects individual firm's choice of M&A payment method, it is tempting to know if such sentiment can affect acquiring firm's value as well. In the next chapter we investigate this issue. Specifically, we analyse how investors react to M&A announcement following periods of high aggregate manager sentiment in the market.

Tables – Chapter 3

Table 3-1 Distribution of M&As by Year

The table shows the year-wise total number and respective percentage of domestic M&As in our sample announced by 1,236 unique non-financial non-utility US public firms between April 2003 and December 2017.		
Year	Frequency	Percentage
2003	187	5.44
2004	355	10.33
2005	287	8.35
2006	312	9.08
2007	239	6.95
2008	198	5.76
2009	145	4.22
2010	288	8.38
2011	365	10.62
2012	278	8.09
2013	193	5.62
2014	182	5.30
2015	178	5.18
2016	113	3.29
2017	117	3.40
Total	3,437	100.00

Table 3-2 Distribution of M&As by Industry

The table shows the industry-wise total number and respective percentage of domestic M&As in our sample announced by 1,236 unique non-financial non-utility US public firms between April 2003 and December 2017. Here, the industry represents the distribution with their corresponding 2-digit SIC code.

2-Digit SIC	Industry Description	Frequency	Percentage
73	Business Services	523	15.22
38	Measuring, photographic, medical and optical goods, and clocks	359	10.45
35	Industrial and commercial machinery and computer equipment	348	10.13
36	Electronic and other electrical equipment and components	337	9.81
28	Chemicals and allied products	322	9.37
13	Oil and gas extraction	125	3.64
48	Communications	110	3.20
20	Food and kindred products	91	2.65
80	Health Services	87	2.53
33	Primary metal industries	74	2.15
27	Printing, publishing and allied industries	69	2.00
50	Wholesale trade-durable goods	69	2.00
87	Engineering, accounting, research, and management services	69	2.00
	Industries with < 2% representation	854	24.85
Total		3,437	100.00

Table 3-3 Summary Statistics

The table reports the descriptive statistics of the variables that we use in this study. Here, Cash_Dummy, equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise. On the other hand, Stock_Dummy, equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise. Manager sentiment and investor sentiment variables are the averages of the updated version of the monthly manager sentiment index developed by Jiang et al. (2019) and the monthly investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. Board and CEO characteristic variables are measured at the end of year preceding the M&A announcement. All firm level variables, relative value as well as all board and CEO characteristic variables are winsorized at 1st and 99th percentiles. Detail description of all the variables are provided in the data section.

Variable	Mean	Median	Standard Dev.	Minimum	Maximum	N
Panel A: M&A Payment Variables						
Cash Dummy	0.695	1.000	0.461	0.000	1.000	3,437
Stock Dummy	0.043	0.000	0.204	0.000	1.000	3,437
Panel B: Sentiment Variables						
Manager Sentiment	0.018	0.198	0.913	-3.922	1.561	3,437
Investor Sentiment	-0.218	-0.205	0.293	-0.867	0.544	3,437
Panel C: Firm Level Characteristics						
Ln(Size)	7.726	7.196	2.044	2.714	12.104	3,437
ROA	0.080	0.091	0.118	-0.500	0.338	3,437
Book Leverage	0.207	0.184	0.185	0.000	0.823	3,437
Cash to Total Asset	0.187	0.128	0.180	0.001	0.770	3,437
Market to Book Ratio	2.044	1.719	1.114	0.773	6.794	3,437
Cumulative Return	0.230	0.191	0.423	-0.813	1.907	3,437
Panel D: Deal Level Characteristics						
Relative Value	0.111	0.064	0.133	0.000	0.643	3,437
Hostile Dummy	0.004	0.000	0.061	0.000	1.000	3,437
Challenge Dummy	0.016	0.000	0.127	0.000	1.000	3,437
Diversifying Dummy	0.363	0.000	0.481	0.000	1.000	3,437
Panel E: Board Characteristics						
Size	8.829	9.000	2.378	4.000	15.000	3,203
Independence	0.825	0.857	0.094	0.545	1.000	3,203
Panel F: CEO Characteristics						
Age	55.557	56.000	7.465	39.000	74.000	3,056
Tenure	13.213	10.900	9.927	0.400	40.700	2,208

Table 3-4 Correlation Matrix and VIF

The table reports the correlations among the variables that we use in this study. Here, the dependent variable, Cash_Dummy, equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise. On the other hand, the dependent variable, Stock_Dummy, equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise. Manager sentiment and investor sentiment variables are the averages of the updated version of the monthly manager sentiment index developed by Jiang et al. (2019) and the monthly investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and relative value are winsorized at 1st and 99th percentiles. P-values are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

	Cash Dummy	Stock Dummy	MSI	ISI	Ln(Size)	ROA	BL	CTL	M/B Ratio	Ret	RV	HD	CD	DD	VIF
Cash Dummy	1.000														
Stock Dummy	—	1.000													
MSI	0.049*** (0.005)	-0.055*** (0.001)	1.000												1.57
ISI	-0.047*** (0.006)	-0.036** (0.037)	0.590*** (0.000)	1.000											1.60
Ln(Size)	0.202*** (0.000)	-0.085*** (0.000)	0.019 (0.266)	-0.002 (0.909)	1.000										1.38
ROA	0.241*** (0.000)	-0.215*** (0.000)	0.080*** (0.000)	0.056*** (0.001)	0.247*** (0.000)	1.000									1.25
BL	-0.045*** (0.008)	0.042** (0.014)	-0.003 (0.859)	0.043** (0.012)	0.217*** (0.000)	-0.057*** (0.001)	1.000								1.48
CTL	-0.034** (0.045)	0.021 (0.215)	-0.016 (0.357)	-0.060*** (0.001)	-0.209*** (0.000)	-0.133*** (0.000)	-0.386*** (0.000)	1.000							1.63
M/B Ratio	-0.036** (0.038)	0.015 (0.380)	0.042** (0.014)	0.072*** (0.000)	-0.039** (0.021)	0.182*** (0.000)	-0.163*** (0.000)	0.355*** (0.000)	1.000						1.47
Ret	-0.005 (0.772)	0.034** (0.050)	0.006 (0.732)	0.004 (0.818)	-0.136*** (0.000)	0.072*** (0.000)	0.008 (0.632)	0.051*** (0.003)	0.253*** (0.000)	1.000					1.15
RV	-0.297*** (0.000)	0.110*** (0.000)	-0.017 (0.308)	0.032* (0.063)	-0.186*** (0.000)	-0.145*** (0.000)	0.164*** (0.000)	-0.081*** (0.000)	-0.165*** (0.000)	-0.017 (0.310)	1.000				1.20
HD	-0.000 (0.985)	0.010 (0.552)	-0.019 (0.259)	0.020 (0.237)	0.016 (0.354)	-0.014 (0.399)	0.022 (0.189)	0.006 (0.707)	-0.000 (0.998)	0.018 (0.288)	0.099*** (0.000)	1.000			1.08
CD	-0.035** (0.043)	0.018 (0.298)	-0.027 (0.119)	-0.006 (0.718)	0.061*** (0.000)	-0.006 (0.743)	0.047*** (0.005)	0.004 (0.809)	0.020 (0.242)	-0.000 (0.992)	0.138*** (0.000)	0.217*** (0.000)	1.000		1.09
DD	-0.020 (0.235)	-0.003 (0.854)	0.019 (0.264)	0.061*** (0.000)	0.035** (0.038)	0.021 (0.224)	0.005 (0.752)	-0.084*** (0.000)	-0.051*** (0.003)	-0.020 (0.253)	-0.014 (0.408)	-0.037** (0.032)	-0.040** (0.020)	1.000	1.15

Table 3-5 Aggregate Manager Sentiment and Fully Cash and Fully Stock M&A Payment

The table reports the Probit model regression results about the choice of M&A payment method. The dependent variable in the regression reported in column (1) is Cash_Dummy, which equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise. On the other hand, the dependent variable in the regression reported in column (2) is Stock_Dummy, which equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Cash Versus Others		Stock Versus Others	
	Sign Prediction	(1)	Sign Prediction	(2)
Manager Sentiment	+	0.141*** (0.000)	-	-0.090** (0.011)
Investor Sentiment	-	-0.435** (0.015)	+	-0.119 (0.547)
Ln(Size)	+	0.093*** (0.000)	-	-0.034 (0.345)
ROA	+	2.053*** (0.000)	-	-2.260*** (0.000)
Book Leverage	-	-0.210 (0.282)	+	0.354 (0.228)
Cash to Total Asset	+	0.128 (0.354)	-	-0.376* (0.053)
Market to Book Ratio	-	-0.156*** (0.000)	+	0.051* (0.085)
Cumulative Return	-	0.100 (0.238)	+	0.166** (0.020)
Relative Value	-	-2.629*** (0.000)	+	1.200*** (0.000)
Hostile Dummy	+	0.649 (0.173)	-	-0.265 (0.596)
Challenge Dummy	+	-0.042 (0.805)	-	0.127 (0.685)
Diversifying Dummy	+/-	-0.117** (0.042)	+/-	0.008 (0.929)
Constant		-0.637* (0.088)		-0.822** (0.011)
Industry Fixed Effect		Yes		Yes
Pseudo R-Square		0.161		0.143
No. of Observation		3,420		2,806

Table 3-6 Aggregate Manager Sentiment and Fully Cash and Fully Stock M&A Payment with Additional Market-Level Variables

The table reports the Probit model regression results with three additional market-level variables about the choice of M&A payment method. The dependent variable in the regression reported in column (1) is Cash_Dummy, which equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise. On the other hand, the dependent variable in the regression reported in column (2) is Stock_Dummy, which equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. Additional market-level variables are the averages of the respective variables over 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Cash Versus Others		Stock Versus Others	
	Sign Prediction	(1)	Sign Prediction	(2)
Manager Sentiment	+	0.117*** (0.001)	-	-0.087*** (0.004)
Investor Sentiment	-	-0.255* (0.088)	+	-0.278 (0.137)
CRSP Index	+/-	0.800 (0.602)	+/-	-3.278** (0.030)
CAPE Ratio	-	-0.030 (0.196)	+	0.027 (0.147)
Ln(Aggregate Cash)	+	0.014 (0.850)	-	-0.072 (0.560)
Ln(Size)	+	0.093*** (0.000)	-	-0.034 (0.332)
ROA	+	1.988*** (0.000)	-	-2.219*** (0.000)
Book Leverage	-	-0.194 (0.331)	+	0.380 (0.210)
Cash to Total Asset	+	0.111 (0.406)	-	-0.376* (0.058)
Market to Book Ratio	-	-0.144*** (0.000)	+	0.042 (0.122)
Cumulative Return	-	0.127 (0.128)	+	0.147** (0.049)
Relative Value	-	-2.600*** (0.000)	+	1.167*** (0.001)
Hostile Dummy	+	0.599 (0.214)	-	-0.238 (0.636)
Challenge Dummy	+	-0.033 (0.850)	-	0.109 (0.738)
Diversifying Dummy	+/-	-0.108** (0.042)	+/-	-0.003 (0.976)
Constant		0.075 (0.931)		-1.160 (0.236)
Industry Fixed Effect		Yes		Yes
Pseudo R-Square		0.163		0.147
No. of Observation		3,420		2,806

Table 3-7 Aggregate Manager Sentiment and Proportion of Cash and Stock Payment

The table reports the Tobit model regression results about the choice of M&A payment method. The dependent variable in the regression reported in column (1) is Cash_Proportion measured by the percentage of cash paid in M&A deals. The dependent variable in the regression reported in column (2) is Stock_Proportion measured by the percentage of stock paid in M&A deals. The dependent variables are censored at the upper limit of 100 percent and lower limit of 0 percent cash (stock) payment in the case of cash (stock) proportion analysis. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Cash Proportion		Stock Proportion	
	Sign Prediction	(1)	Sign Prediction	(2)
Manager Sentiment	+	8.374*** (0.002)	-	-14.918*** (0.000)
Investor Sentiment	-	-17.906* (0.097)	+	20.084 (0.244)
Ln(Size)	+	5.329*** (0.000)	-	-4.138* (0.018)
ROA	+	159.443*** (0.000)	-	-216.066*** (0.000)
Book Leverage	-	-15.468 (0.280)	+	14.772 (0.440)
Cash to Total Asset	+	15.073 (0.142)	-	-1.636 (0.860)
Market to Book Ratio	-	-11.096*** (0.000)	+	18.147*** (0.000)
Cumulative Return	-	3.742 (0.527)	+	0.910 (0.891)
Relative Value	-	-153.564*** (0.000)	+	257.056*** (0.000)
Hostile Dummy	+	32.497 (0.307)	-	-47.632 (0.193)
Challenge Dummy	+	-2.662 (0.801)	-	26.317 (0.128)
Diversifying Dummy	+/-	-6.208 (0.138)	+/-	3.480 (0.677)
Constant		62.135*** (0.003)		-11.882 (0.650)
Industry Fixed Effect		Yes		Yes
Pseudo R-Square		0.054		0.080
No. of Observation		3,437		3,437

Table 3-8 Aggregate Manager Sentiment and Alternative Measure of M&A Payment Method

The table reports the Probit and Ordered Probit model regression results about the choice of M&A payment method. The dependent variable in the Probit regression reported in column (1) is Cash_Vs_Stock_Dummy, which equals 1 if the payment for an M&A deal is more than 50 percent in cash and 0 if the payment for an M&A deal is more than 50 percent in stock. On the other hand, the dependent variable in the Ordered Probit regression reported in column (2) is Cash_Vs_Mixed_Vs_Stock_Dummy, which equals 2 if the payment for an M&A deal is fully in cash, 1 if the payment for an M&A includes mixed method and 0 if the payment for an M&A deal is fully in stock. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Cash Versus Stock		Cash Versus Mixed Versus Stock	
	Sign Prediction	(1)	Sign Prediction	(2)
Manager Sentiment	+	0.142*** (0.000)	+	0.131*** (0.000)
Investor Sentiment	-	-0.121 (0.458)	-	-0.317* (0.054)
Ln(Size)	+	0.020 (0.419)	+	0.082*** (0.000)
ROA	+	2.706*** (0.000)	+	1.991*** (0.000)
Book Leverage	-	-0.140 (0.595)	-	-0.241 (0.218)
Cash to Total Asset	+	0.145 (0.274)	+	0.170 (0.171)
Market to Book Ratio	-	-0.207*** (0.000)	-	-0.124*** (0.002)
Cumulative Return	-	-0.045 (0.482)	-	0.025 (0.755)
Relative Value	-	-2.060*** (0.000)	-	-2.176*** (0.000)
Hostile Dummy	+	0.886* (0.090)	+	0.529 (0.233)
Challenge Dummy	+	-0.167 (0.451)	+	-0.080 (0.569)
Diversifying Dummy	+/-	-0.047 (0.580)	+/-	-0.095* (0.096)
Constant		0.548 (0.172)		-
Industry Fixed Effect		Yes		Yes
Pseudo R-Square		0.184		0.134
No. of Observation		2,982		3,437

Table 3-9 Aggregate Manager Sentiment, Board Size and M&A Payment

Panel A of the table reports the Probit model regression results about the choice of M&A payment method. The dependent variable in the regressions reported in column (1) and (2) is Cash_Dummy, which equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise. On the other hand, the dependent variable in the regressions reported in column (3) and (4) is Stock_Dummy, which equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. Board size, as defined by the number of directors on board, is measured at the end of year preceding the M&A announcement and winsorized at 1st and 99th percentiles. Panel B shows the marginal effect of aggregate manager sentiment at five different percentiles of board size. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Cash Versus Others		Stock Versus Others	
	(1)	(2)	(3)	(4)
Panel A				
Manager Sentiment	0.138*** (0.000)	-0.064 (0.584)	-0.066** (0.046)	0.201 (0.188)
Investor Sentiment	-0.428** (0.018)	-0.429** (0.018)	-0.134 (0.471)	-0.124 (0.507)
Board Size	0.028** (0.027)	0.027** (0.031)	-0.013 (0.675)	-0.016 (0.626)
MS X Board Size		0.024* (0.093)		-0.032* (0.064)
Ln(Size)	0.065*** (0.004)	0.063*** (0.007)	-0.011 (0.662)	-0.007 (0.771)
ROA	2.135*** (0.000)	2.146*** (0.000)	-2.471*** (0.000)	-2.481*** (0.000)
Book Leverage	-0.259 (0.102)	-0.250 (0.119)	0.790*** (0.003)	0.781*** (0.003)
Cash to Total Asset	0.128 (0.451)	0.020 (0.466)	-0.324 (0.146)	-0.321 (0.144)
Market to Book Ratio	-0.164*** (0.000)	-0.162*** (0.000)	0.082*** (0.003)	0.082*** (0.002)
Cumulative Return	0.104 (0.223)	0.102 (0.240)	0.151** (0.047)	0.157** (0.038)
Relative Value	-2.626*** (0.000)	-2.620*** (0.000)	1.088*** (0.002)	1.079*** (0.002)
Hostile Dummy	0.336 (0.404)	0.329 (0.411)	-0.013 (0.978)	-0.005 (0.992)
Challenge Dummy	0.015 (0.925)	0.009 (0.956)	0.094 (0.807)	0.100 (0.800)
Diversifying Dummy	-0.120** (0.036)	-0.120** (0.037)	0.006 (0.950)	0.007 (0.937)
Constant	-0.596 (0.164)	-0.581 (0.174)	-0.851** (0.019)	-0.864** (0.018)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Pseudo R-Square	0.159	0.160	0.151	0.153
No. of Observation	3,187	3,187	2,600	2,600
Panel B				
Board Size at 10 th Percentile		0.024* (0.075)		0.001 (0.903)
Board Size at 25 th Percentile		0.030*** (0.006)		-0.002 (0.651)
Board Size at 50 th Percentile		0.043*** (0.000)		-0.007* (0.077)
Board Size at 75 th Percentile		0.055*** (0.000)		-0.012** (0.018)
Board Size at 90 th Percentile		0.061*** (0.001)		-0.015** (0.018)

Table 3-10 Aggregate Manager Sentiment, Board Independence and M&A Payment

Panel A of the table reports the Probit model regression results about the choice of M&A payment method. The dependent variable in the regressions reported in column (1) and (2) is Cash_Dummy, which equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise. On the other hand, the dependent variable in the regressions reported in column (3) and (4) is Stock_Dummy, which equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. Board independence is measured at the end of year preceding the M&A announcement and winsorized at 1st and 99th percentiles. Panel B shows the marginal effect of aggregate manager sentiment at five different percentiles of board independence. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Cash Versus Others		Stock Versus Others	
	(1)	(2)	(3)	(4)
Panel A				
Manager Sentiment	0.137*** (0.000)	-0.276 (0.121)	-0.058 (0.172)	0.006 (0.996)
Investor Sentiment	-0.428** (0.018)	-0.430** (0.017)	-0.160 (0.345)	-0.160 (0.346)
Board Independence	0.524 (0.165)	0.524 (0.161)	-1.437* (0.091)	-1.441* (0.093)
MS X Board Independence		0.515** (0.017)		-0.076 (0.915)
Ln(Size)	0.079*** (0.000)	0.078*** (0.000)	0.003 (0.924)	0.003 (0.919)
ROA	2.159*** (0.000)	2.149*** (0.000)	-2.546*** (0.000)	-2.545*** (0.000)
Book Leverage	-0.239* (0.122)	-0.231 (0.137)	0.743*** (0.006)	0.740*** (0.007)
Cash to Total Asset	0.106 (0.528)	0.094 (0.576)	-0.296 (0.201)	-0.294 (0.210)
Market to Book Ratio	-0.161*** (0.000)	-0.160*** (0.000)	0.071** (0.013)	0.071** (0.013)
Cumulative Return	0.100 (0.237)	0.100 (0.234)	0.151** (0.041)	0.151** (0.035)
Relative Value	-2.637*** (0.000)	-2.638*** (0.000)	1.134*** (0.001)	1.133*** (0.001)
Hostile Dummy	0.358 (0.388)	0.341 (0.428)	-0.076 (0.877)	-0.075 (0.880)
Challenge Dummy	-0.011 (0.947)	0.001 (0.997)	0.150 (0.668)	0.147 (0.675)
Diversifying Dummy	-0.115** (0.035)	-0.117** (0.033)	-0.004 (0.963)	-0.004 (0.962)
Constant	-0.896** (0.050)	-0.891** (0.042)	0.169 (0.821)	0.169 (0.821)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Pseudo R-Square	0.159	0.160	0.159	0.159
No. of Observation	3,187	3,187	2,600	2,600
Panel B				
Board Indep. at 10 th Percentile		0.020 (0.160)		-0.005 (0.583)
Board Indep. at 25 th Percentile		0.037*** (0.001)		-0.005 (0.184)
Board Indep. at 50 th Percentile		0.047*** (0.000)		-0.005 (0.369)
Board Indep. at 75 th Percentile		0.052*** (0.000)		-0.005 (0.460)
Board Indep. at 90 th Percentile		0.054*** (0.000)		-0.005 (0.507)

Table 3-11 Robustness Test Results for Aggregate Manager Sentiment, Board Characteristics and M&A Payment

The table reports the Ordered Probit model regression results about the role of acquiring firms' board size and board independence in column 1 and 2, respectively on the impact of aggregate manager sentiment on their choice of M&A payment method. Here, the dependent variable is Cash Vs Mixed Vs Stock Dummy, which equals 2 if the payment for an M&A deal is fully in cash, 1 if the payment for an M&A includes mixed method and 0 if the payment for an M&A deal is fully in stock. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. Board characteristics are measured at the end of year preceding the M&A announcement and winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Board Size	Board Independence
	(1)	(2)
Manager Sentiment	-0.077 (0.433)	-0.207 (0.363)
Investor Sentiment	-0.324* (0.061)	-0.320 (0.140)
Board Size	0.025** (0.020)	
MS X Board Size	0.024** (0.041)	
Board Independence		0.669 (0.111)
MS X Board Independence		0.418 (0.140)
Ln(Size)	0.054*** (0.006)	0.064*** (0.001)
ROA	2.112*** (0.000)	2.118*** (0.000)
Book Leverage	-0.348** (0.024)	-0.325** (0.033)
Cash to Total Asset	0.148 (0.320)	0.126 (0.413)
Market to Book Ratio	-0.135*** (0.000)	-0.131*** (0.000)
Cumulative Return	0.036 (0.664)	0.034 (0.667)
Relative Value	-2.138*** (0.000)	-2.162*** (0.000)
Hostile Dummy	0.207 (0.543)	0.226 (0.538)
Challenge Dummy	-0.024 (0.841)	-0.037 (0.762)
Diversifying Dummy	-0.098* (0.089)	-0.095* (0.083)
Industry Fixed Effect	Yes	Yes
Pseudo R-Square	0.133	0.134
No. of Observation	3,203	3,203

Table 3-12 Aggregate Manager Sentiment, CEO Age and M&A Payment

Panel A of the table reports the Probit model regression results about the choice of M&A payment method. The dependent variable in the regressions reported in column (1) and (2) is Cash_Dummy, which equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise. On the other hand, the dependent variable in the regressions reported in column (3) and (4) is Stock_Dummy, which equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. CEO age is measured at the end of year preceding the M&A announcement and winsorized at 1st and 99th percentiles. Panel B shows the marginal effect of aggregate manager sentiment at five different percentiles of CEO age. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Cash Versus Others		Stock Versus Others	
	(1)	(2)	(3)	(4)
Panel A				
Manager Sentiment	0.141*** (0.000)	0.558*** (0.009)	-0.080 (0.104)	-0.804** (0.022)
Investor Sentiment	-0.425** (0.017)	-0.428** (0.044)	-0.139 (0.479)	-0.134 (0.493)
CEO Age	0.003 (0.187)	0.004 (0.110)	-0.002 (0.845)	-0.001 (0.873)
MS X CEO Age		-0.008** (0.044)		0.013** (0.031)
Ln(Size)	0.081*** (0.000)	0.082*** (0.000)	-0.020 (0.541)	-0.020 (0.535)
ROA	2.020*** (0.000)	2.026*** (0.000)	-2.285*** (0.000)	-2.302*** (0.000)
Book Leverage	-0.280 (0.114)	-0.279 (0.116)	0.797*** (0.002)	0.793*** (0.002)
Cash to Total Asset	0.061 (0.722)	0.078 (0.660)	-0.357* (0.090)	-0.405* (0.063)
Market to Book Ratio	-0.159*** (0.000)	-0.162*** (0.000)	0.095*** (0.001)	0.101*** (0.001)
Cumulative Return	0.118 (0.174)	0.122 (0.155)	0.123 (0.161)	0.122 (0.160)
Relative Value	-2.666*** (0.000)	-2.669*** (0.000)	1.136*** (0.000)	1.151*** (0.000)
Hostile Dummy	0.354 (0.379)	0.345 (0.396)	0.054 (0.907)	0.071 (0.880)
Challenge Dummy	-0.023 (0.891)	-0.025 (0.885)	-0.073 (0.888)	-0.089 (0.862)
Diversifying Dummy	-0.098* (0.065)	-0.099* (0.063)	0.011 (0.910)	0.010 (0.917)
Constant	-0.798* (0.052)	-0.832** (0.045)	-0.531 (0.357)	-0.548 (0.372)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Pseudo R-Square	0.156	0.157	0.148	0.152
No. of Observation	3,043	3,043	2,490	2,490
Panel B				
CEO Age at 10 th Percentile		0.061*** (0.000)		-0.016** (0.019)
CEO Age at 25 th Percentile		0.052*** (0.000)		-0.011** (0.032)
CEO Age at 50 th Percentile		0.039*** (0.001)		-0.004 (0.249)
CEO Age at 75 th Percentile		0.030** (0.014)		0.001 (0.979)
CEO Age at 90 th Percentile		0.019 (0.218)		0.006 (0.387)

Table 3-13 Aggregate Manager Sentiment, CEO Tenure and M&A Payment

Panel A of the table reports the Probit model regression results about the choice of M&A payment method. The dependent variable in the regressions reported in column (1) and (2) is Cash_Dummy, which equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise. On the other hand, the dependent variable in the regressions reported in column (3) and (4) is Stock_Dummy, which equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. CEO tenure is measured at the end of year preceding the M&A announcement and winsorized at 1st and 99th percentiles. Panel B shows the marginal effect of aggregate manager sentiment at five different percentiles of CEO tenure. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Cash Versus Others		Stock Versus Others	
	(1)	(2)	(3)	(4)
Panel A				
Manager Sentiment	0.133*** (0.003)	0.140*** (0.008)	-0.120** (0.018)	-0.257** (0.046)
Investor Sentiment	-0.544*** (0.009)	-0.544*** (0.009)	0.106 (0.665)	0.102 (0.678)
CEO Tenure	0.006 (0.165)	0.006 (0.163)	-0.001 (0.919)	-0.002 (0.843)
MS X CEO Tenure		-0.001 (0.785)		0.013 (0.125)
Ln(Size)	0.083*** (0.001)	0.084*** (0.001)	-0.040 (0.221)	-0.040 (0.225)
ROA	1.794*** (0.000)	1.793*** (0.000)	-2.203*** (0.000)	-2.188*** (0.000)
Book Leverage	-0.374* (0.059)	-0.374* (0.059)	0.913*** (0.000)	0.926*** (0.000)
Cash to Total Asset	0.056 (0.783)	0.057 (0.781)	-0.284 (0.299)	-0.298 (0.275)
Market to Book Ratio	-0.135*** (0.000)	-0.135*** (0.000)	0.093* (0.056)	0.097* (0.051)
Cumulative Return	0.078 (0.362)	0.078 (0.362)	0.173* (0.073)	0.184* (0.070)
Relative Value	-2.762*** (0.000)	-2.763*** (0.000)	0.830** (0.036)	0.870** (0.033)
Hostile Dummy	0.195 (0.755)	0.196 (0.754)	0.482 (0.288)	0.471 (0.299)
Challenge Dummy	0.147 (0.363)	0.149 (0.358)	0.311 (0.540)	0.272 (0.587)
Diversifying Dummy	-0.115* (0.091)	-0.115* (0.091)	0.158 (0.342)	0.148 (0.372)
Constant	-0.614 (0.199)	-0.614 (0.199)	-0.493* (0.059)	-0.488* (0.075)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Pseudo R-Square	0.159	0.159	0.168	0.172
No. of Observation	2,191	2,191	1,790	1,790
Panel B				
CEO Tenure at 10 th Percentile		0.041*** (0.005)		-0.019** (0.039)
CEO Tenure at 25 th Percentile		0.041*** (0.003)		-0.016** (0.036)
CEO Tenure at 50 th Percentile		0.039*** (0.002)		-0.010** (0.037)
CEO Tenure at 75 th Percentile		0.037*** (0.003)		-0.000 (0.945)
CEO Tenure at 90 th Percentile		0.035*** (0.009)		0.008 (0.486)

Table 3-14 Robustness Test Results for Aggregate Manager Sentiment, CEO Characteristics and M&A Payment

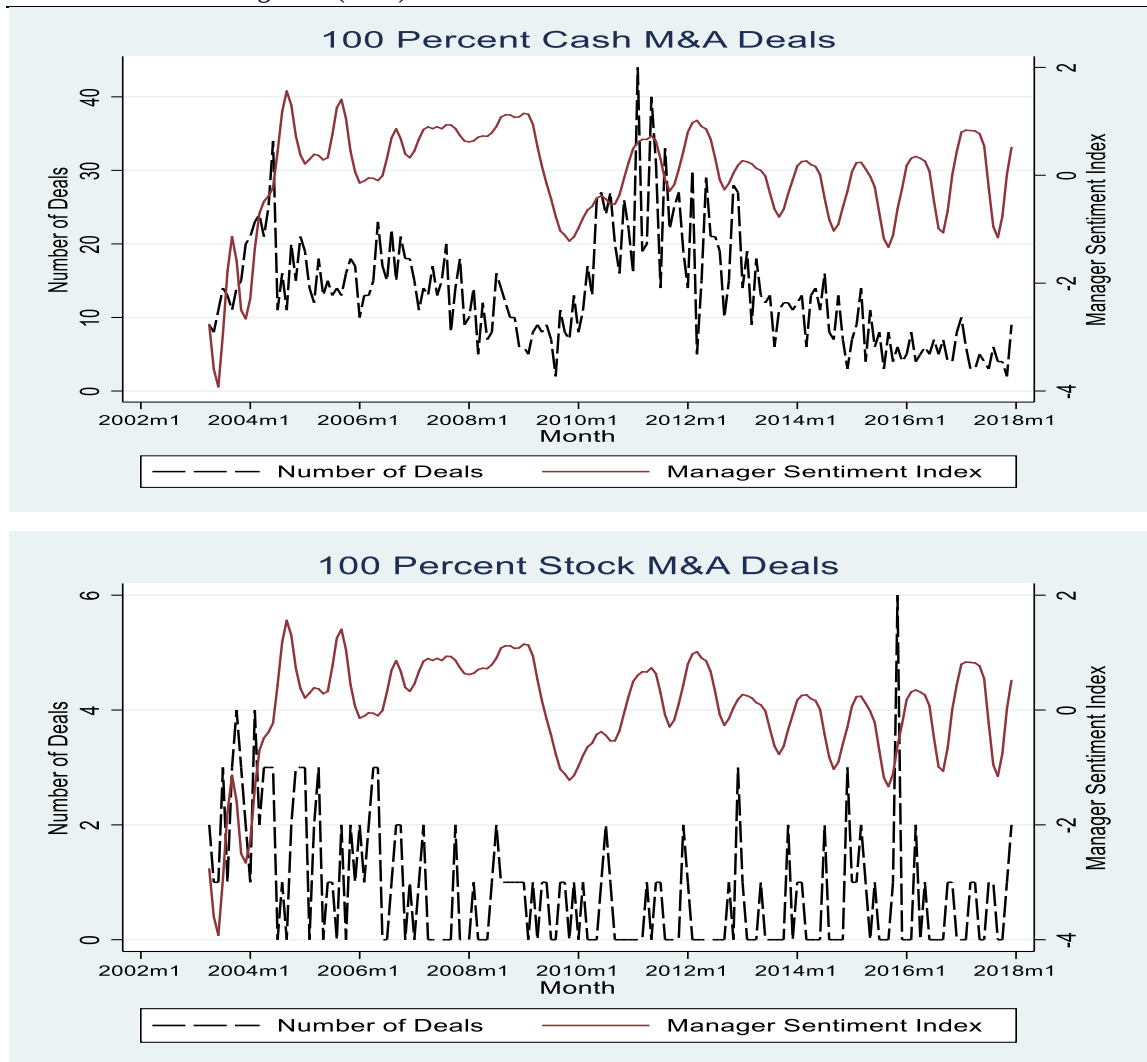
The table reports the Ordered Probit model regression results about the role of acquiring firms' CEO age and CEO tenure in column 1 and 2, respectively on the impact of aggregate manager sentiment on their choice of M&A payment method. Here, the dependent variable is Cash Vs Mixed Vs Stock Dummy, which equals 2 if the payment for an M&A deal is fully in cash, 1 if the payment for an M&A includes mixed method and 0 if the payment for an M&A deal is fully in stock. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. CEO characteristics are measured at the end of year preceding the M&A announcement and winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	CEO Age	CEO Tenure
	(1)	(2)
Manager Sentiment	0.605*** (0.003)	0.167*** (0.000)
Investor Sentiment	-0.322* (0.061)	-0.451** (0.020)
CEO Age	0.003 (0.202)	
MS X CEO Age	-0.009** (0.021)	
CEO Tenure		0.006 (0.185)
MS X CEO Tenure		-0.003 (0.233)
Ln(Size)	0.073*** (0.000)	0.076*** (0.001)
ROA	1.966*** (0.000)	1.823*** (0.000)
Book Leverage	-0.375** (0.022)	-0.468*** (0.003)
Cash to Total Asset	0.135 (0.365)	0.099 (0.571)
Market to Book Ratio	-0.138*** (0.000)	-0.117*** (0.000)
Cumulative Return	0.060 (0.475)	0.015 (0.862)
Relative Value	-2.202*** (0.000)	-2.207*** (0.000)
Hostile Dummy	0.199 (0.570)	-0.062 (0.905)
Challenge Dummy	-0.009 (0.950)	0.052 (0.815)
Diversifying Dummy	-0.083 (0.128)	-0.121* (0.072)
Industry Fixed Effect	Yes	Yes
Pseudo R-Square	0.132	0.136
No. of Observation	3,056	2,208

Figures – Chapter 3

Figure 3-1 Time Series Variations of M&A Deals and Manager Sentiment Index

The figures show the monthly total number of fully cash M&A domestic deals (top panel) and fully stock M&A domestic deals (bottom panel) announced by non-financial and non-utility US public firms between April 2003 and December 2017 along with the 3-month moving average of the updated version of manager sentiment index of Jiang et al. (2019).



Chapter 4

4 Aggregate Manager Sentiment and Acquiring Firms' Announcement Returns

4.1 Introduction

Acquirers' stock return upon their merger and acquisition (M&A) announcements has been a subject of major interest for many researchers over the past many years. Some studies, for example, Tuch and O'Sullivan (2007), Eckbo (2009), Renneboog and Vansteenkiste (2019), review past literature discussing the impact of various factors including firm-specific and deal-specific characteristics on acquirer's short-term and long-term announcement returns. Although a number of factors have been studied to explain acquirer's M&A announcement returns, Danbolt et al. (2015) state that there has been little empirical investigation about the significance of behavioural aspects on such returns. The authors investigate the impact of investor sentiment on acquirers' abnormal stock returns around their M&A announcement date. Their results show a significant positive relationship between investor sentiment and acquirers' short-term abnormal returns upon the announcement. On the other hand, Malmendier and Tate (2005a) and Baker and Wurgler (2012) document that corporate managers can be overly optimistic or pessimistic relative to fundamentals. In this regard, Jiang et al. (2019) state that there is little research on corporate managers' sentiment which is surprising given managers' information advantage about their companies over outside investors. According to the authors, like investors, corporate managers are not immune from behavioural biases and these biases potentially lead to irrational market outcomes. In their study, the authors find a negative relationship between aggregate manager sentiment and general stock return. We extend Jiang et al. (2019) work by investigating the association between aggregate manager sentiment and acquirers' abnormal stock returns during their M&A announcement periods.

Traditional corporate finance theories suggest that acquirers' M&A announcement returns are related to firm-specific factors including acquirer size (Moeller et al., 2004; Masulis et al., 2007; Yaghoubi et al., 2016; Zhao et al., 2019), profitability (Gao, 2010), book leverage (Moeller et al., 2005; Uysal, 2011), cash balance (Harford, 1999; Oler, 2008), market-to-book ratio (Dong et al., 2006), prior stock return (Masulis et al., 2007; Schmidt, 2015) and deal-specific factors such as relative deal size (Moeller et al., 2004;

Schmidt, 2015), deal hostility (Martynova and Renneboog, 2009) and diversification (Morck et al., 1990). Some researchers also find significant relationship between acquirers' announcement returns and their choice of payment method (Travlos, 1987; Andrade et al., 2001; Alexandridis et al., 2017; Dutordoir et al., 2022). On the other hand, studies from behavioural perspectives find significant relationship between investor sentiment and acquirer's abnormal return in the short period around the M&A announcement date (Danbolt et al., 2015; Tsai et al., 2021).

From the behavioural perspective, some researchers investigate if cognitive biases of individual acquiring firms' managers have impacts on their M&A announcement returns. In this regard, Malmendier and Tate (2008) show that the market reaction to merger announcement is significantly negative when the deal is announced by overconfident CEOs. Similarly, measuring CEO overconfidence based on option exercise and media portrayal, Kose et al. (2011) report that average 3-day cumulative abnormal returns are -1.2 percent and -0.8 percent, respectively for acquiring firms with overconfident CEOs during their merger announcement. Similar finding is also evident in Kolasinski and Li (2013) who uses alternative measure to identify overconfident CEOs that is based on CEOs' stock purchases of their own companies from the secondary market. Recently, An et al. (2022) show that managerial sentiment embedded in individual acquiring firms' financial statements is negatively related to respective firms' abnormal returns in the long-run after the M&A announcements. These findings suggest that investors can identify if M&As are announced by biased managers and react negatively upon realizing that the respective deals are potentially motivated because of the biased managers' overestimation of future synergies and/or underestimation of risks involved in the deal.

In turn, different papers from psychology and sociology fields claim that individual decision making is shaped by collective social processes (Chambers and Windschitl, 2004; Bennett, 2011). Lucey and Dowling (2005) argue that individuals often make decisions in a social context where they get influenced by expectations, views as well as beliefs of others. In addition, Olson (2006) states that people spontaneously take on the goals of others in an unconscious manner and produce similar emotional states of their affiliates. Moreover, some researchers from psychology and behavioural finance fields conduct lab based experiments and show that individuals sometimes take various decisions including investment decision by observing the behaviour of others and by getting influenced by others' emotions and confidence (Proeger and Meub, 2014; Darai et al., 2017). The impact of aggregate sentiment on individual's decision making is

evident in corporate finance literature as well. Anglin et al. (2018) show that collective entrepreneurial optimism plays role on creation and growth of business at the aggregate level. In case of corporate investment decisions, Jiang et al. (2019) empirically find that high aggregate manager sentiment, which is distinct from investor sentiment, is associated with high investment growth at both aggregate and firm level. In case of M&A, Nofsinger (2005) argues that during the period of high social mood, many financial decision makers including investors and executives are optimistic and thus biased financial decisions are more likely to correlate across various types of financial decisions including decisions about M&A activities. Shue (2013) argues that managers are likely to be influenced by their social experiences in addition to being guided by their own beliefs and shows that acquisitions following the interactions among managers' peers are more likely to be diversified into industries that are different from the acquirers' existing industries.

Following the findings of Malmendier and Tate (2008), Kose et al. (2011) and Kolasinski and Li (2013) which suggest that market can identify if M&As are announced by biased managers and also following the arguments in different psychology, sociology and finance papers that sentiment is a social phenomenon, in this study we investigate if market reacts negatively when M&As are announced following periods of high aggregate manager sentiment. In our analysis, we control for investor sentiment to examine whether manager sentiment provides additional information in explaining acquirers' abnormal returns as Jiang et al. (2019) argue that investors may simply follow managers' sentiment and thus high manager sentiment can potentially lead to speculative market overvaluation. We extend our analysis to investigate if the choice of stock payment method enhances the market's negative reaction upon M&A announcements following periods of high aggregate manager sentiment as the extant literature such as Travlos (1987), Andrade et al. (2001) and Ben-David et al. (2015) report significant negative impact of stock merger on acquirer short-term M&A announcement return.

Using the updated version of monthly manager sentiment index constructed by Jiang et al. (2019) as a proxy for aggregate manager sentiment, we examine a sample of 2,369 domestic completed acquisitions announced by 961 unique non-financial and non-utility US public firms between April 2003 and December 2017 to test the market reaction at the M&A announcement following periods of manager sentiment at the aggregate level. Our univariate analysis shows that the difference between acquirer 21-day buy and hold abnormal return (BHAR) around the M&A announcement date following periods of low

aggregate manager sentiment and that following periods of high aggregate manager sentiment is 1.00 percent and is statistically significant. We find similar result when we measure announcement return by calculating acquirer 21-day cumulative abnormal return (CAR) around the announcement date. Our multivariate analysis results show that one standard deviation increase in manager sentiment in the market is associated with approximately 0.75 percent and 0.65 percent decrease in acquirer 21-day abnormal returns measured by BHAR and CAR, respectively around the announcement date. Our finding is consistent with the findings in Jiang et al. (2019) who report a negative association between aggregate manager sentiment and general stock return. However, our study goes beyond the conventional relationship between general stock return and manager sentiment by empirically examining the relationship between aggregate manager sentiment and acquirer's abnormal returns in the short-term period around the deal announcement date. In line with Jiang et al. (2019) who find that aggregate manager sentiment dominates investor sentiment in predicting aggregate investment growth, we also find that aggregate manager sentiment empirically dominates investor sentiment, measured using Baker and Wurgler (2006) investor sentiment index, in explaining acquirers' announcement return. Our findings are robust to the inclusion of additional market-level factors as controls in the multivariate analysis and use of alternative asset pricing models as well as to the use of alternative windows to calculate announcement abnormal returns. In our study, we do not find any significant impact of aggregate manager sentiment on acquirers' long-term abnormal return measured as the acquirers' BHAR 1-year, 2-year and 3-year after the M&A announcement dates. This insignificant findings are consistent with Officer (2007) who investigates the impact of arbitrage disasters on merger arbitrage returns and argues that stock price reactions involving irrational components are of short-term in nature and to be arbitrated away over the days following the announcement period.

Our analysis about the role of M&A payment method shows that the interaction between fully stock deal dummy and aggregate manager sentiment index is significantly negative, suggesting that acquiring firms experience higher negative returns following periods of high aggregate manager sentiment if the deals include fully stock as choices of M&A payment method. In addition, we find negative coefficient when we interact the stock percentage with aggregate manager sentiment index and examine its impact on acquirers' announcement returns. This negative reaction also suggest that acquiring firms experience higher negative announcement returns with the increase of stock percentage

in deal following periods of high aggregate manager sentiment. On the other hand, we find the positive coefficients when we conduct the analysis using the interaction between fully cash payment dummy and aggregate manager sentiment index as well as the interaction between percentage of cash payment and aggregate manager sentiment index in the regression. These findings about cash payment methods suggest that the negative market reaction upon M&A announcement following periods of high aggregate manager sentiment is attenuated when acquiring firms choose to use more cash to pay for the deals. Our findings are largely consistent with the previous findings of Travlos (1987), Andrade et al. (2001) and Dutordoir et al. (2022) who find positive and negative market reactions at the M&A announcement in case of cash and stock payment methods, respectively.

Our study contributes to the literature in several ways. First, it contributes to the behavioural corporate finance literature by providing evidence that aggregate manager sentiment, which is a type of cognitive bias, significantly affects acquirers' short-term M&A announcement returns. Previously, Danbolt et al. (2015) and Tsai et al. (2021) report the significance of investor sentiment on such returns. Upon including investor sentiment as a control variable in our analysis, we show that manager sentiment dominates the investor sentiment in empirical analysis in explaining acquirers' M&A announcement returns in the short-run. Second, the study contributes to the M&A literature by documenting a factor, aggregate manager sentiment, that explains why market reacts negatively in some cases after a firm announces its M&A decisions. Prior literature such as Harford (1999), Moeller et al. (2004), Masulis et al. (2007) and Schmidt (2015), along with others, report firm size, cash reserves, pre-announcement stock-price run-up, etc. having negative impact on acquirers' short-term announcement returns. In this study, we document that in addition to other factors, aggregate manager sentiment has negative impact on acquirers' short-term returns upon M&A announcements. Finally, the extension of our study exploring the role of M&A payment method also contributes to the M&A literature by showing the importance of deal payment method in creation or destruction of acquiring firms' shareholders wealth.

The remainder of the paper is organized as follows: section 4.2 discusses about the previous literature and formulate particular research hypotheses that we empirically examine in this study. Section 4.3 and 4.4 discuss the data and methodology, respectively that we use to test our hypotheses. We present and discuss our findings in section 4.5 and section 4.6 concludes the chapter.

4.2 Literature Review and Research Hypothesis

Historically, many researchers investigate whether mergers and acquisitions (M&As) create value for the acquiring firms during their takeover activities and attempt to identify the factors that affect the creation or destruction of acquiring firms' value. Examining the behavioural biases of acquiring firm's managers, some researchers find that overconfidence and optimism of these managers have profound impacts on respective firms' value destruction during their takeover processes⁶⁴. In this section, we first discuss the literature which provide evidence that behavioural biases of individual managers negatively affect their respective firms' value during their M&A activities and develop our particular hypothesis. We then discuss the literature which provide evidence that the choice of payment method plays significant role in M&A announcement returns and develop our next hypothesis accordingly.

4.2.1 Managerial Biases and M&A Announcement Returns

In M&A literature, Roll (1986) first formalizes the notion that hubris on individual part of acquiring firm's managers can explain why firms engage in value destroying takeover activities⁶⁵. The author coined the term 'hubris hypothesis' which suggests that managers engage in acquisition activities with an excessive optimism about their ability to create value for their respective firms. Drawing on Roll's (1986) hubris hypothesis, Malmendier and Tate (2008) investigate if M&A activities by firms with overconfident CEOs destroy firm value more than those by firms with non-overconfident CEOs. Analysing 3-day cumulative abnormal returns around the merger announcements of 394 Forbes 500 US firms between 1980 and 1994, the authors find that market reacts three times more negatively if the announcement is made by firms with overconfident CEOs compared to the average announcement effect for the rest of their sample. Their regression result also shows that the market reaction to merger announcement is significantly negative when the deal is announced by overconfident CEOs. In their sample the authors find that approximately one-tenth of their sample CEOs are overconfident and these overconfident CEOs cause 44 percent of value destruction around the M&A bids which accounts for an average of \$7.7 million more value destruction per bid compared to other CEOs.

⁶⁴ Baker and Nofsinger (2010, P. 417) state that "despite the fact that overconfidence and optimism are technically distinct, the two biases are often taken to mean the same thing in the finance literature. In the context of capital budgeting, this turns out to be legitimate, as only information that leads to new investments affects firm value".

⁶⁵ Hubris is a type of cognitive bias that can influence decisions (Kahneman et al., 1982).

Kose et al. (2011) also investigate if CEO overconfidence has any significant impact on short-term announcement returns for acquiring firms during their M&A activities and report findings that are consistent with Malmendier and Tate (2008). Analysing a large sample of 3,162 CEOs of 2,129 US public firms and 1,888 M&A deals between 1993 and 2005, the authors find that market reacts significantly and negatively when the deals are announced by firms with overconfident CEOs. Measuring CEO overconfidence based on both option exercise and media portrayal, they report average 3-day cumulative abnormal returns of -1.2 percent and -0.8 percent, respectively for acquiring firms with overconfident CEOs during their merger announcement. The authors also provide evidence of higher level of value destruction which accounts for more than 10 percent negative M&A announcement returns when the CEOs of both acquiring firms and target firms are overconfident relative to deals where neither or only one party is overconfident. Using alternative measure to identify overconfident CEOs that is based on CEOs' stock purchases of their own companies from secondary market and corresponding abnormal returns over the next 180 days on these stocks, Kolasinski and Li (2013), investigate 25,516 M&A deals initiated between 1988 and 2006 by US public firms and find that M&A announcements by acquiring firms with overconfident CEOs generate 0.392 percent lower returns over a 5-day trading period than those by other firms. They also examine the impact using the sample firms of Malmendier and Tate (2008), S&P 1500 firms with available board data and firms in ExecuComp universe, and report consistent results where the M&A announcement returns for firms with overconfident CEOs are 1.73, 1.485 and 0.702 percent lower, respectively relative to announcement returns of other firms.

In case of international level, Doukas and Petmezas (2007) analyse 5,334 successful acquisitions by UK public companies between 1980 and 2004 and find that market reacts significantly differently when acquisitions are announced by multiple acquirers and when acquisitions are announced by single acquirers. The authors argue that heightened acquisitiveness of acquiring firms reflects respective firms' managerial overconfidence and firms with heightened acquisitiveness fail to outperform single acquirers because the managers of these firms overestimate their ability to create value. Their results show that mean abnormal return over a 5-day window surrounding the acquisition announcement by multiple acquirers is 0.55 percent lower than that of single acquirers.

Although some researchers investigate the impact of managerial biases on short-term M&A announcement returns for acquiring firms, An et al. (2022) examine if individual

acquiring firms' managerial sentiment has any impact on respective firms' long-term abnormal stock returns in the post announcement period. Analysing the positive and negative words of acquiring firms' 10-K and 10-Q filings to measure managerial sentiment, the authors investigate 6,752 M&A deals announced by US listed firms between January 2003 and June 2018 and find that higher managerial sentiment of acquiring firms results in lower abnormal returns in the long run. Their regression results show that the negative effects of managerial sentiment increase gradually over time, with the coefficients being -0.009, -0.012 and -0.017 in year 1, 2 and 3, respectively after the M&A announcements.

Although some researchers find that behavioural biases of individual managers affect their respective firms' M&A related investment decisions⁶⁶, some authors from psychology, sociology and behavioural finance field argue that overconfidence or optimism is social, rather than individual bias. In this regard, Lucey and Dowling (2005) argue that individuals often get influenced by expectations and beliefs of others and take decisions accordingly. Olson (2006) claims that people spontaneously produce similar emotional states of their affiliates and take on the goals of others in an unconscious manner. Discussing how overconfidence evolves among population of competing strategies, Johnson and Fowler (2011) state that overconfidence can arise and spread very quickly among interacting entities including individuals, groups or firms by means such as imitation or learning. Different lab based experiments in psychology and behavioural finance fields also provide evidence that individuals sometimes take various decisions after getting influenced by others' emotions and confidence (Proeger and Meub, 2014; Darai et al., 2017).

In case of corporate investment decisions, Jiang et al. (2019) empirically show that periods of high aggregate manager sentiment, which is distinct from investor sentiment, are accompanied by high aggregate investment growth and vice versa in the short-run up to three quarters. The authors also find evidence of overinvestment at the firm level following high manager sentiment⁶⁷. In case of M&A, Nofsinger (2005) argues that during the period of high social mood, many financial decision makers including investors and executives are optimistic and thus biased financial decisions are more likely to correlate across various types of financial decisions including M&A activities.

⁶⁶ Such as Malmendier and Tate (2008), Ferries et al. (2013), Huang-Meier et al. (2016) and An et al. (2022).

⁶⁷ Results for firm-level data are not reported in Jiang et al. (2019).

Conducting empirical analysis, Shue (2013) also finds strong impact of social interactions among peers on individual manager's acquisition strategy. According to the author, managers are likely to be influenced by their social experiences in addition to being guided by their own beliefs since managers are extremely networked and social agents. The author also provides evidence that relative to acquisitions in other years, acquisitions following the interactions among peers in reunions are 5.4 percent points more likely to be diversified into different industries other than acquirers' existing industries. Previously, Morck et al. (1990) claim to have negative announcement period return for acquirers for these kinds of diversified acquisitions. Hence, the findings of these studies indicate that if M&As are announced following a period of high aggregate manager sentiment, acquirers are likely to experience negative returns upon announcements.

Empirical findings of Doukas and Petmezas (2007), Malmendier and Tate (2008) and Kolasinski and Li (2013) suggest that investors can potentially identify if M&As are announced by firms with overconfident or overoptimistic managers and stock market reacts negatively in the short-run upon M&A announcements by these firms. This negative reaction stems from the beliefs that overconfident managers may overbid even in value-creating deals or their deals have lower average quality than other CEOs as mentioned in Malmendier and Tate (2008). We purport that market can also identify if M&As are announced following a period of high aggregate manager sentiment and reacts negatively since it assumes that these M&As are motivated because of aggregate manager sentiment rather than pure value creation motive from a rational perspective. Hence, we test the following hypothesis:

Hypothesis 1: Stock market reacts negatively in the short-run upon M&A announcement following periods of high aggregate manager sentiment.

4.2.2 M&A Payment Method, Aggregate Manager Sentiment and M&A Announcement Returns

Historically, different researchers attempt to explore if the method of payment in takeover activities has any role in stock returns of acquiring firms upon their M&A announcement. Analysing the daily average abnormal returns and cumulative abnormal returns for 10 days before and after the announcement of 160 bids between 1972 and 1981 by US listed firms, Travlos (1987) finds that shareholders of acquiring firms, on average, experience significant losses around the announcement period when their firms engage in takeover activities with fully stock payment whereas they experience normal rates of return when

their firms pay to the targets with fully cash. The author shows that the portfolio abnormal returns on the day prior to the announcement and on the day of the announcement for fully stock bid are -0.78 percent and -0.69 percent, respectively and both are significantly different from zero. In contrast, none of the average abnormal returns in those two days in case of bids with fully cash payment generates any statistically significant result. In addition, the author reports that the mean differences of abnormal returns between bids with fully stock and bids with fully cash on announcement days and one day prior to the announcement are -0.98 percent and -0.73 percent, respectively. Both of these findings are highly significant which suggest that shareholders of acquiring firms are worse off when their firms pay with fully stock to engage in M&A activities. On the contrary, Wansley et al. (1987) report that, on average, shareholders of acquiring firms experience significant positive abnormal returns of 0.71 percent and 0.73 percent one day prior and on the day of their M&A announcement, respectively when their firms pay with fully cash but report no significant findings about abnormal gains or losses in case of all stock transactions. Investigating 64 fully cash and 118 fully stock acquisitions announced between 1970 and 1978, the authors also find that the cumulative abnormal return for 81 days around the M&A announcement in case of fully cash acquisitions is 8.17 percent and is statistically significant whereas the cumulative abnormal return for the same time period in case of fully stock acquisitions is -1.51 percent but is statistically insignificant. Although Travlos (1987) and Wansley et al. (1987) report some contradictory results, considering both of their findings we can infer that in the worst case scenario stock acquisitions generate significantly negative abnormal returns whereas cash acquisitions generate no significant abnormal returns upon M&A announcement.

Arguing that method of payment does not independently affect acquiring firms value during the period of their M&A activities, Blackburn et al. (1997) investigate 440 acquiring firms between 1981 and 1990 to examine the relationship between acquiring firm control, method of payment and firm value. Their results show that, on average, shareholders of both manager-controlled and owner-controlled acquiring firms experience significantly negative abnormal returns during 11-day period surrounding the M&A announcement date when their firms pay to the targets using fully stock. On the other hand, the authors do not find any significant abnormal return in case of fully cash payment for both types of firms. The author reports that although both types of firms experience negative abnormal returns in case of fully stock payment, manager-controlled

firms experience more negative abnormal returns than owner-controlled firms⁶⁸. Later, analysing a subsample of 4,300 completed deals by publicly traded US firms between 1973 and 1998, Andrade et al. (2001) find a significant negative average abnormal return of 1.5 percent during the three days surrounding the M&A announcement when acquiring firms use at least some stocks to finance their acquisitions. The authors also find that average three-day abnormal return for acquiring firms that do not use any stock in their M&A activities is positive, nevertheless this finding is statistically indistinguishable from zero. The findings of both Blackburn et al. (1997) and Andrade et al. (2001) show consistency with the findings reported in Travlos (1987).

Contrary to previous findings, Moeller et al. (2004) find that, on average, the 3-day cumulative abnormal returns for acquiring firms are significantly positive irrespective of their financing method. Investigating 12,023 acquisitions by US public firms between 1980 and 2001, the authors, however, report that the dollar abnormal return is significantly negative in case of acquisitions with stock payment. They also show that even though the mean 3-day cumulative abnormal return for both types of payment is positive, the return for cash payment is 1.223 percentage higher than that for stock payment. Later, Fu et al. (2013) investigate 2,062 deal completed by US public acquirers from 1985 to 2006 and report that acquirer cumulative abnormal return from 42 trading days before the merger announcement to the date of deal completion is significantly negative, -17.45 percent, if the acquirer stock is overvalued and if they use only stock to pay for the merger. Nevertheless, the authors do not find any significant results in case of non-overvalued acquirers when they use only cash or in case of acquirers who use only cash to pay for their merger activities. This finding is consistent with the argument of Blackburn et al. (1997) who state that method of payment does not independently determine the value of the acquiring firms during their M&A activities. Similar to Fu et al. (2013), Akbulut (2013) also reports that overvalued acquirers experience significantly negative announcement returns when they make stock deals. Investigating 11,796 deals announced by US public firms between 1993 and 2009, the author reports that the overvalued acquirers earn approximately 0.88 percent lower cumulative abnormal returns during the 3-day period surrounding the announcement when they make stock deals whereas the abnormal return for overvalued acquirers is not significantly different from

⁶⁸ This negative effect becomes insignificant for owner-controlled firm when the authors analyse mean abnormal returns for 6-day period including the announcement date and the 5 days preceding the announcement.

zero when they make cash deals. Using a different approach to measure overvaluation⁶⁹, Ben-David et al. (2015) do not find any impact of acquirer's overvaluation on short-term abnormal return upon announcement for all deals irrespective of payment method. Nevertheless, they report a significant negative impact of stock merger on short-term abnormal return of acquiring firms surrounding their M&A announcement date.

More recently, analysing the 3-day cumulative abnormal returns surrounding the M&A announcement day of 4,773 completed public deals by US acquirers from 1990 to 2009 and from 2010 to 2015, Alexandridis et al. (2017) report that the acquirer returns for all cash deals are significantly positive for both sample periods and acquirer returns for all stock deals are significantly negative only in the first sample period while the returns for all stock deals become insignificant in the second sample period. Their multivariate regressions show that all stock public acquisitions have significant negative impact of about 1.59 percent on acquirer's short-term cumulative abnormal return upon M&A announcement. In addition, investigating 798 M&A deals announced by 523 public non-financial and non-utility US firms between June 2002 and December 2017, Dutordoir et al. (2022) find that the mean 3-day cumulative abnormal returns around the deal announcement date for cash deals and stock deals are 0.86 percent and -2.59 percent, respectively. Both of these returns are significantly different from zero and are in line with previous findings of Travlos (1987), Wansley et al. (1987), Andrade et al. (2001) and Alexandridis et al. (2017).

The extant literature suggests that, in general, stock payments are associated with negative or lower announcement returns while cash payments are associated with positive or higher announcement returns relative to each other. Given our prediction that stock market reacts negatively upon M&A announcements in the short-run following periods of high aggregate manager sentiment and following the literature which suggest that stock payments are associated with negative abnormal stock returns, we purport that the stock market reacts more negatively upon M&A announcements in the short-run following periods of high aggregate manager sentiment when acquirers choose to pay using fully stock to their targets. Furthermore, when firms' M&A activities follow periods of high aggregate manager sentiment, investors may think that managers, in some cases, are trading even their undervalued stocks to execute M&A deals after being influenced by

⁶⁹ Assuming that short sellers take (avoid) short positions in overvalued (undervalued) stocks, the authors use investors' short interest as a measure to identify over- and under-valuation of firms.

aggregate sentiment of their affiliates and thus market reacts more negatively. Therefore, we empirically test the following hypothesis:

Hypothesis 2: Stock deals enhance the negative stock market reaction in the short-run upon M&A announcement following periods of high aggregate manager sentiment.

The following section discusses the data that we use in this study.

4.3 Data

In this section we first discuss our M&A data that we use to construct our dependent variables. Next, we discuss the independent variables that we use in this study to check the impact of aggregate manager sentiment on M&A announcement returns surrounding the announcement date.

4.3.1 Mergers and Acquisitions Data

We collect our mergers and acquisitions (M&As) data for US public firms from Thomson One Banker database. Our sample includes completed M&A deals announced between April 2003 and December 2017 to match with the availability of monthly manager sentiment index of Jiang et al. (2019) and to match with our research methodology⁷⁰. From our sample, we exclude cross-border M&A data and restrict our sample to domestic M&As only since cross-border M&As are more complex in nature and take longer time from planning to deal announcement stage⁷¹. We also restrict our sample to non-financial and non-utility firms since the business model of these types of firms are somewhat different from other types of firms⁷². In addition, decisions taken by managers of utility firms are often heavily influenced by the government. We then exclude those observations whose deal value information are missing since we include deal level characteristics in our regression. Next, we exclude those observations for which payment data are missing. We match the remaining observations with the independent variables that we use in this study. Finally, using these observations with non-missing independent variables data, we calculate abnormal stock returns surrounding the M&A announcement date, which we

⁷⁰ Although the updated version of manager sentiment index developed by Jiang et al. (2019) is available from January 2003 to December 2017, we use M&A payment data from April 2003 since our study considers 3-month average of manager sentiment index prior to M&A announcement excluding the specific announcement month.

⁷¹ Erel et al. (2012) state that unlike domestic mergers, cross-border mergers are associated with an additional set of frictions that can affect the deals.

⁷² Fama and French (1992) indicate the differences in business models between the financial firms and the non-financial firms by arguing that high leverage for financial firms is normal whereas high leverage for non-financial firms often indicates distress.

use as dependent variables in this study⁷³. Here, we get a final sample of 2,369 M&A observations announced by 961 unique non-financial and non-utility US public firms between April 2003 and December 2017. Our sample size is comparable to Gao (2010) and Boone et al. (2014) who use 2,894 and 2,590 observations, respectively to check the impact of managerial horizon on M&A performance and time trends of M&A payment method. Table 4-1 shows the number of M&A deals in our sample by year.

<Insert Table 4-1 Here>

From table 4-1 we can see that the number of deals in year 2004, 2005 and 2006 are relatively higher than other years. Consistent with Nguyen and Phan (2017), we can see that the frequency of deals in our sample gradually decreases during the period from 2007 to 2009 due to the financial crisis and rises again from 2010. The total deal value in our sample is USD 1.63 trillion with an average deal value of USD 9.15 billion per month. Again, the mean deal values in our sample are USD 687.98 million and USD 1.70 billion per observation and per firm, respectively. Table 4-2 shows the number of M&A deals in our sample by industry variations.

<Insert Table 4-2 Here>

From table 4-2 we can see that the frequencies of M&A are higher in business services; measuring, photographic, medical and optical goods, and clocks; industrial and commercial machinery and computer equipment; electronic components; and chemical and allied products industries. This is consistent with Nguyen and Phan (2017) who find that M&A deals in their sample are more concentrated in these industries. We use this sample of 2,369 observations in this study to test our hypothesis about the impact of aggregate manager sentiment on M&A performance upon announcement.

4.3.2 Independent Variables

In this subsection we discuss our independent variables including sentiment related variables, firm level variables and deal specific variables in detail.

4.3.2.1 Sentiment Variables

We use two types of sentiment variables in our regressions including our main variable of interest, manager sentiment index. The details are as follows:

⁷³ Details of how we calculated our dependent variable are mentioned in the methodology section.

Manager Sentiment Index (MSI): To examine the impact of aggregate manager sentiment on short-term market reaction around the M&A announcement period, we use the updated version of monthly manager sentiment index of Jiang et al. (2019) that is available at the faculty website of Professor Guofu Zhou⁷⁴. Previously, different papers conduct textual analysis and analyse the tone embedded in various types of corporate disclosures. In this regard, Price et al. (2012) and Lee et al. (2017) analyse the tones of conference call transcripts and use the tone of such disclosures as proxies to measure managerial sentiment or confidence. Again, Feldman et al. (2010), Li (2010) and Loughran and McDonalds (2011), among others analyse the tones of financial statements to measure managerial sentiments. On the other hand, Jiang et al. (2019) claim that conference call transcripts and financial statements contain complementary information about manager sentiment and hence analyse the tones of both types of disclosure to construct their monthly aggregated manager sentiment index. In addition, Jiang et al. (2019) argue that manager sentiment index, which contains additional and complementary sentiment information beyond investor sentiment index, reflects management's overly optimistic or pessimistic beliefs about future returns to investment and find evidence of overinvestment at both aggregate and firm level following high manager sentiment. Therefore, following their argument, we use manager sentiment index of Jiang et al. (2019) in our study as a proxy for aggregate manager sentiment in the market. Since the index is constructed by subtracting the negative words from positive words and then dividing the resulting outcome by the total number of words in the corporate financial disclosures, we argue that higher value of the index indicates higher level of managerial optimism and vice versa. For our univariate analysis in the empirical result section, we regard the high-sentiment/overoptimism if the aggregate manager sentiment is higher than or equal to its median or mean value and low-sentiment/pessimism if the aggregate manager sentiment is less than its median or mean value.

Investor Sentiment Index (ISI): Like managers during the period of high aggregate manager sentiment, investors may subconsciously overestimate the potential synergy and underestimate the risks of a deal if the deal is announced during a period of high investor sentiment. Previously, De Long et al. (1990) and Barberis et al. (1998) theoretically argue that investors' irrationality could cause a divergence of short-term market price of assets from their fundamental values. In this regard, Petmezas (2009) analyses 2,973 successful

⁷⁴ Available at <http://apps.olin.wustl.edu/faculty/zhou/>

domestic acquisitions by US public firms from 1984 to 2003 and reports that investor sentiment has a significant positive impact on acquirers' short-term abnormal stock return 5-days around the M&A announcement date. However, the author finds a long-term gradual reversals in the stock returns of the acquiring firms as the market realizes that the deals were made during the high sentiment periods and were not properly evaluated. Consistently, using daily sentiment proxy, Gross National Happiness Index, based on Facebook status updates across seventeen international markets, Danbolt et al. (2015) find that investor sentiment has a positive impact on acquiring firm's short-term M&A announcement return. Their multivariate analysis shows that a one percent increase in their sentiment index is associated with a 0.120 percent increase in bidder 3-day cumulative abnormal returns. Although the authors find significant result in their analysis when they include data from all seventeen countries together, they do not find any statistically significant impact of investor sentiment on bidder short-term announcement returns in case of US only M&A deals. The authors also report that the association between investor sentiment and bidder abnormal return upon M&A announcement is more prominent in firms with a low fraction of blockholder ownership, in acquisitions of public targets and in high relative size acquisitions. On the contrary, using investor sentiment index constructed by Baker and Wurgler (2006), Tsai et al. (2021) analyse 4,466 M&A deals announced by 2,204 US firms between 1985 and 2014 and find that investor sentiment has a strong negative associations with 3-day cumulative abnormal returns of the acquiring firms upon M&A announcement. Following the literature, we include investor sentiment as a control variable in our multivariate regression analysis. We use the investor sentiment index of Baker and Wurgler (2006) that is based on first principal component of five standardized sentiment proxies. We collect investor sentiment index from the faculty website of Professor Jeffrey Wurgler⁷⁵.

4.3.2.2 Firm Level Variables

We use six firm level variables in our regressions. We collect firm level annual data from Compustat database except the cumulative stock return data which we collect from CRSP database. The details of the variables are discussed below.

Firm Size (Size): Previous literature document that larger acquiring firms generate significantly negative abnormal returns in the short-run upon M&A announcement. In this regard, Moeller et al. (2004) argue that managers of large firms tend to be more prone

⁷⁵ Available at <http://people.stern.nyu.edu/jwurgler/>

to hubris because of their past success, social importance or better access to resources while making acquisitions. Using both market value and book value of asset to measure firm size, the authors find that acquiring firm size has negative significant association with 3-day cumulative abnormal return surrounding the M&A announcement date. Similar finding is also evident in Masulis et al. (2007), Humphery-Jinner and Powell (2014), Yaghoubi et al. (2016) and Zhao et al. (2019). Since firm size is an important factor of acquiring firms' announcement day return, we include the size of acquiring firm in our regression analysis as a control variable. Following Moeller et al. (2004) and Faccio and Masulis (2005), we measure firm size using the book value of their asset. In the regression we use the natural logarithm of the book value of asset.

Return on Asset (ROA): Previous literature document that acquiring firms' profitability has significant impact on their short-term abnormal stock return upon M&A announcement. Investigating 2,894 completed deals announced by US firms between 1993 and 2004, Gao (2010) reports a positive and significant impact of acquiring firm's ROA on 3-day cumulative abnormal return surrounding the M&A announcement date. Hence, we include acquiring firm's ROA as a control variable in our study. Following Bonaime et al. (2018) we calculate acquiring firm's ROA by adding income before extraordinary items, interest expense and income taxes, and then dividing the resulting outcome by total asset of the firm⁷⁶.

Book Leverage (BL): Higher debt level helps limit managerial discretion and provides incentives for managers to improve firm performance (Masulis et al., 2007). Thus, if a firm with high debt level announces an M&A deal, market reacts positively since the market perceives it as a mechanism to improve firm's future performance. Previous literature such as Maloney et al. (1993), Moeller et al. (2005), Uysal (2011) and Nguyen and Phan (2017) find positive and significant association between acquiring firms' pre-merger debt level and short-term abnormal return upon M&A announcement by those firms. Hence, to control for acquiring firm's debt level impact on short-term abnormal return upon M&A announcement, we include this variable in our regression analysis. Following Bonaime et al. (2018), we calculate acquiring firms' book leverage by adding their book value of long-term debt with the book value of debt in current liabilities, and then dividing this book value of total debt by the book value of their asset⁷⁷.

⁷⁶ $ROA = (IB + XINT + TXT) / AT$; Source: Compustat

⁷⁷ $BL = (DLTT + DLC) / AT$; Source: Compustat

Cash to Total Asset (CTL): According to the free cash flow theory, managers are more likely to make low-benefit M&A deals if they have access to large free cash flow (Jensen, 1986). If investors anticipate that firms are making value destroying M&As, they tend to react negatively when firms announce the deals. In this regard, Harford (1999) finds that announcement period returns are significantly lower for high-cash acquirers than those of other acquirers. In line with Harford (1999), Oler (2008) finds that acquirer cash balance is significantly and negatively associated with announcement period abnormal return. Nevertheless, the author reports that the negative association is statistically significant only when acquiring firms make diversifying deals. Following the literature, we include acquiring firm's cash level as a control variable in our study. Following Bonaime et al. (2018), we calculate acquirer's cash level by dividing their total value of cash and short-term investment with the total book value of their asset⁷⁸.

Market-to-Book Ratio (M/B Ratio): Dong et al. (2006) argue that overvalued acquirers are predicted to offer high bid premia to targets and market mistakenly believes that those firms are paying too much in case of equity offers. According to them, investors take on a negative view while an overvalued acquirer makes a takeover offer. Their empirical analysis shows that acquiring firm's valuation is negatively associated the short-term abnormal return around the M&A announcement date. Their finding is consistent with the previous findings of Moeller et al. (2004) but contradicts with Servaes (1991) and Lang et al. (1989) who investigate acquisitions of public firms and tender offers, respectively and find that overvalued acquirers experience positive market reactions upon M&A announcement. More recently, investigating the impact of policy uncertainty on M&A activities, Nguyen and Phan (2017) report a significant negative association between acquiring firm's market-to-book value and their short-term abnormal return upon M&A announcement. Although past literature report contradictory findings whether higher valuation of acquiring firms is negatively associated with the short-term abnormal market return, they all document statistically significant results. Hence, we include market-to-book ratio as a proxy for misvaluation of acquiring firm in our study. To calculate the acquiring firm's market-to-book ratio, we follow Chen et al. (2020) who use this ratio in their multivariate regressions. To calculate the firm's market value, we first subtract the book value of common equity from the book value of total asset and add the market value of common equity where the market price of equity is the closing price on

⁷⁸ CTL=CHE/AT; Source=Compustat

the last trading day of respective firms fiscal year preceding the M&A announcement. Next, we divide the resulting market value by the book value of firm's total asset to calculate the respective firm's market-to-book ratio⁷⁹.

Stock Return (Ret): If acquiring firms experience a high stock price gains prior to M&A activities, the existing shareholders of respective firms face lower dilution of their voting power in case of stock financing during the takeover process (Faccio and Masulis, 2005). Thus, if firms announces a deal following a period of high stock price gain, investors are predicted to react negatively upon the announcement. The empirical findings of Masulis et al. (2007) show that acquirers' pre-announcement stock price run-up is significantly and negatively associated with their 5-day cumulative abnormal stock return surrounding the M&A announcement date. Similar finding is also evident in Schmidt (2015). Therefore, we include acquiring firm's stock return prior to the deal announcement as a control variable in our multivariate regression analysis. In this study, following Bonaime et al. (2018), we calculate stock return as the cumulative stock returns during the 12-month period ending at the end of firm's fiscal year preceding an M&A announcement.

4.3.2.3 Deal Specific Variables

Following the past literature, we include four control variables in our multivariate regression analysis that are related to the characteristics of specific M&A deals. We collect these deal specific variables from Thomson One Banker database.

Relative Deal Value (RV): Prior literature document that relative deal value has significant positive impact on acquirer's short-term abnormal stock return upon M&A announcement. Investigating the size effect of acquiring firms on their short-term M&A performance, Moeller et al. (2004) report that when the deal value relative to the acquirer's market value of equity increases, abnormal returns of the acquirer also increases surrounding the M&A announcement date. The finding is consistent with the notion that the size of the acquirers has a negative impact on their M&A performance in the short-run. Later, Schmidt (2015) also reports a positive association between relative deal size and short-term abnormal stock return of the acquirer upon announcement. Thus, we include relative deal size as a deal level control variable in our study. Following Faccio and Masulis (2005), we calculate relative deal value by dividing the deal value by the

⁷⁹ M/B Ratio=(AT-CEQ+PRCC_F*CSHO)/AT; Source=Compustat

combined value of the deal and the acquirer's market capitalization. Here, we use acquirer's market capitalization four weeks prior to the M&A announcement.

Hostile Dummy (HD): In case of a hostile deal, the offer needs to be sufficiently generous so that the shareholders of the target firms surrender their shares. Acquiring firms in hostile takeovers intend to complete the deal as promptly as possible. If investors realize that acquiring firms are undertaking the deals with high price for a prompt transition, they are predicted to react negatively upon those hostile bid announcement. The empirical analysis of Martynova and Renneboog (2009) show that acquiring firm's 3-day cumulative abnormal return is significantly negative in case of hostile takeovers. In this study we also include hostile dummy as a deal level control variable where hostile dummy being equal to 1 if the M&A deal is a hostile takeover and 0 otherwise.

Challenge Dummy (CD): If a takeover attempt is challenged by any competing offer, the acquirer needs to be generous enough in their offer so that the shareholders of the target firms accept their offer. If the market realizes that the acquiring firms are paying high price to undertake the deal that has been challenged in the first place, they tend to react negatively upon announcement of this type of deal. Hence, shareholder of acquiring firms lose value in the short-run when the firms announce deals where their offer is challenged by a competing offer. In our regression analysis, we include challenge dummy as a control variable. Following Nguyen and Phan (2017), we define challenge dummy being equal to 1 if the acquirer's offer is challenged by a competing offer and 0 otherwise.

Diversifying Dummy (DD): If a mergers occurs between firms from two unrelated industries, acquirers are more likely to face higher difficulties in evaluating the targets because of their limited familiarity about target's industry. In such cases, investors are more likely to react negatively upon M&A announcements. Previously, Morck et al. (1990) document that bidding shareholders earn significantly lower return around the time of M&A announcement when their firms undertake diversifying deals. In our study, we control for this diversifying deal impact on short-term abnormal return upon M&A announcement. We construct diversifying dummy being equal to 1 if acquiring firms and their respective target firms are from different industries as differentiated by 2-digit SIC codes and 0 otherwise.

4.3.2.4 M&A Payment Variables

To examine the role of M&A payment method in alternating the impact of aggregate manager sentiment on short-term market reaction upon M&A announcement, we include

four M&A payment related variables. We collect the payment data from Thomson One Banker database. The details are provided below.

Stock Dummy: We define stock dummy being equal to 1 if the payment for an M&A is fully in stock and 0 otherwise.

Stock Proportion: Stock proportion is the percentage of M&A payment that is made by stock.

Cash Dummy: We define cash dummy being equal to 1 if the payment for an M&A is fully in cash and 0 otherwise.

Cash Proportion: Cash proportion is the percentage of M&A payment that is made by cash.

In the following section, we discuss the methodology that we use in this study to check the short-term stock market reaction surrounding the M&A announcement date following periods of high aggregate manager sentiment and how M&A payment method plays role in alternating the reaction of the market.

4.4 Methodology

In this section, we discuss the methodology that we use in this study. In our study, we first examine the impact of aggregate manager sentiment on short-term market reaction around the M&A announcement period. Following past literature⁸⁰, we conduct our regression analysis by defining our dependent variables in two different ways to get a robust finding of our analysis. Next, we extend our analysis to investigate the role of M&A payment choice in alternating the impact of aggregate manager sentiment on short-term market reaction around the M&A announcement date. The detail of the methodology are discussed in the following subsections.

4.4.1 Impact of Aggregate Manager Sentiment on M&A Announcement Returns

To investigate the impact of aggregate manager sentiment on short-term abnormal stock returns of acquiring firms around the M&A announcement date, in general, we use the following regression equation in our study.

$$Y_{ijt} = \alpha + \beta_1 X_{t-1} + \beta_2 X'_{jt-1} + \beta_3 Z_{it} + \gamma \ln_FE + \mu_{ijt} \quad (1)$$

⁸⁰ Such as Brown and Warner (1985), Travlos (1987), Moeller et al. (2004), Masulis et al. (2007), Bonaime et al. (2018) and Dutordoir et al. (2022).

Here, Y represents the short-term abnormal stock return of deal i by firm j at time t . X represents the sentiment variables including aggregate manager sentiment index and investor sentiment index. X' represents the firm level control variables whereas Z represents the deal level control variables. β_1 , β_2 and β_3 represent the coefficients of sentiment variables, firm level control variables and deal level control variables, respectively. We further control for common industry factors by including industry fixed effects in the regression, and γ denotes the coefficient of industry fixed effects as differentiated by 2-digit SIC codes of the respective acquiring firms' industries. Finally, μ denotes the error term in the model. We cluster the standard errors in all our regressions by years⁸¹.

To measure acquirer's short-term abnormal return surrounding the M&A announcement date, following Travlos (1987), we calculate 21-day buy and hold abnormal return (BHAR) as well as cumulative abnormal return (CAR) around the 10 days before and 10 days after the M&A announcement date. Following Dutordoir et al. (2022), we define acquirers' abnormal returns as the residuals from a market adjusted model estimated over 200-day trading period before the M&A announcement date where we proxy the market return with the CRSP-value weighted market index return. We keep a gap of 30 days between the end of estimation period and the announcement date to isolate the M&A news effect on stock returns in the estimation period⁸². From the abnormal returns, we then calculate BHAR and CAR of acquiring firms over a 21-day window around the M&A announcement date. For our multivariate regression analysis, we use Ordinary Least Square (OLS) regression method since our dependent variables are continuous in nature. In all our regressions we use 3-month moving averages of both sentiment variables prior to the deal announcement excluding the exact announcement month. All firm level control variables are measured at the end of fiscal year preceding the M&A announcement. We winsorize all firm level variables and one deal characteristic variable, relative deal value, at 1st and 99th percentiles level and use these winsorized values in our regression models. All our regressions include industry fixed effects.

⁸¹ We get qualitatively similar results when we cluster the standard errors by firms. The findings are reported in table 4-A1 in the appendix.

⁸² We find identical result if, following Dutordoir et al. (2022), we keep a gap of 10 days between the end of estimation period and the M&A announcement date. The findings are reported in table 4-A2 in the appendix.

4.4.2 Role of M&A Payment Method

To examine the role of payment choice, we conduct further regression analysis by interacting the aggregate manager sentiment variable with various payment methods variables. Specifically we use the following regression model.

$$Y_{ijt} = \alpha + \beta_1 X_{t-1} + \beta_2 X'_{jt-1} + \beta_3 Z_{it} + \beta_4 Z'_{jt} + \beta_5 MSI_{t-1} * Z'_{jt} + \gamma \ln_FE + \mu_{ijt} \quad (2)$$

Here, in addition to all other factors of equation (1), Z' in equation (2) represents M&A payment choice variable. β_4 represents the coefficients of payment choice variable whereas β_5 represents the coefficients of interactions of that variable with aggregate manager sentiment index. Y represents the short-term abnormal stock return of deal i by firm j at time t . Similar to equation (1), we use OLS regression model since our dependent variables are same in all cases.

We discuss our results in the following section.

4.5 Results and Discussions

In this section, we present and discuss the results of our analysis in two sub-sections. In the first sub-section, we report our summary statistics and correlation coefficients among the variables that we use in this study. In the next sub-section, we report and discuss our empirical results.

4.5.1 Descriptive Statistics

Table 4-3 shows the summary statistics of both dependent and independent variables that we use in this study. Here, we report mean, median, standard deviation, minimum and maximum values as well as the number of observations that are available for each variable in our sample.

<Insert Table 4-3 Here>

From the table we can see that both mean BHAR and mean CAR in our sample is 2.2 percent while the median BHAR and CAR are 1.2 percent and 1.4 percent, respectively. These findings of positive short-term abnormal return upon M&A announcement are consistent with the findings of Fuller et al. (2002), Danbolt et al. (2015), Schmidt (2015) and Alexandridis et al. (2017) in case of all deals regardless of their payment method and other deal characteristics. Although some researchers report negative CAR in case of stock payment and positive CAR in case of cash payment around the M&A

announcement⁸³, Alexandridis et al. (2017) provide evidence that M&A deals with all stock payment no longer destroy value in the post-2009 period. In this study, we find that the acquirer average BHAR and CAR in case of all cash payment are 2.17 percent and 2.12 percent, respectively where both findings are significant at 1 percent level (p-value<0.000 in case of both BHAR and CAR). On the other hand, the acquirer average BHAR and CAR in case of all stock payment are 1.39 percent and 1.19 percent, respectively where both findings are statistically insignificant (p-value<0.418 in case of BHAR and p-value<0.466 in case of CAR). Therefore, our findings are largely consistent with Alexandridis et al. (2017).

In case of sentiment variables, we can see that aggregate manager sentiment has much higher standard deviation relative to investor sentiment which indicates a higher frequency of fluctuations in managerial sentiment level. Summary statistics about other variables of our study show comparable results with those reported in recent M&A related research papers including Schmidt (2015), Nguyen and Phan (2017), Bonaime et al. (2018) and Dutordoir et al. (2022). Table 4-4 shows the correlation coefficients and statistical significance levels among the variables and reports the Variance Inflation Factors (VIF) of the independent variables.

<Insert Table 4-4 Here>

From the table we can see that manager sentiment index has significantly negative correlation with both BHAR and CAR which primarily indicates negative impact of aggregate manager sentiment on acquirer short-term abnormal return around the M&A announcement date. In addition to manager sentiment index, we can also see that firm size, book leverage, cash reserve and relative deal value have strong correlation with acquirer BHAR and CAR.

The table also shows that manager sentiment and investor sentiment have moderately strong correlation between them which arises the possibility of multicollinearity in the regression model. Nevertheless, the VIF indicates there are no potential multicollinearity issues among the independent variables. We discuss our empirical findings in the next sub-section.

⁸³ Such as Travlos (1987), Alexandridis et al. (2013) and Dutordoir (2022).

4.5.2 Empirical Results

In this section we present and discuss our empirical findings in two subsections. First, we report the findings of both univariate and multivariate analysis about the impact of aggregate manager sentiment on acquirer short-term abnormal return surrounding the M&A announcement date. In the next subsection, we report the findings about the roles of M&A payment method on such impacts.

4.5.2.1 Aggregate Manager Sentiment and M&A Announcement Returns

Univariate Results

We first examine the association between aggregate manager sentiment and acquirer short-term abnormal return around the M&A announcement date by conducting univariate analysis. Here, we investigate the 21-day acquirer BHAR and CAR following a 3-month period of aggregate manager sentiment prior to the M&A announcement. Table 4-5 shows the univariate results where low and high periods are categorized based on the median and mean values of manager sentiment index in Panel A and panel B, respectively.

<Insert Table 4-5 Here>

From panel A of the table we can see that both acquirer BHAR and CAR surrounding the M&A announcement date following periods of low aggregate manager sentiment are higher than those following periods of high sentiment. The differences between low period return and high period abnormal returns for both measures are 1.00 percent. Here, the differences are economically large and statistically significant. We find similar findings in panel B. From panel B we can see that the differences between low period return and high period abnormal returns for BHAR and CAR are 1.2 percent and 1.1 percent, respectively. Both of the differences are larger than what we find in panel A and they are statistically significant⁸⁴. These findings in univariate analysis indicate that acquirer short-term abnormal returns are related with aggregate manager sentiment, with M&As announced on days following periods of high aggregate manager sentiment associated with lower abnormal returns around the announcement date.

⁸⁴ Although our sample includes only completed deals, we find similar results in univariate analysis when we include all deals regardless of their status. Results are provided in table 4-A3 in the appendix.

Multivariate Results

In this section we present and discuss our multivariate analysis results about the impact of aggregate manager sentiment on acquirer 21-days abnormal returns surrounding the M&A announcement. Column 1 and 2 of table 4-6 report the OLS regression results where the dependent variables are acquirer BHAR. On the other hand, column 3 and 4 report the results where the dependent variables are acquirer CAR.

<Insert Table 4-6 Here>

From column 1 we can see that acquirer BHAR is significantly and negatively associated with aggregate manager sentiment. Here, we see that one standard deviation increase in aggregate manager sentiment is associated with 0.75 percent decrease in acquirer BHAR 21-day around the M&A announcement date. From column 2 we can see that the result remains same after including the control variables that previous studies find significant association with acquirer short-term abnormal return surrounding the M&A announcement date. The results in both cases are statistically significant at 1 percent level. Among the other control variables, we find negative and significant impact of firm size, cash reserve and challenge dummy variables whereas we find positive and significant impact of book leverage and relative value variable on acquirer BHAR surrounding the M&A announcement date. These findings about control variables are consistent with Harford (1999), Moeller et al. (2004), Moeller et al. (2005), Uysal (2011) and Schmidt (2015). On the other hand, we do not find any statistically significant result for investor sentiment. Our finding about investor sentiment is consistent with Danbolt et al. (2015) who do not find any statistically significant result about the impact of investor sentiment on short-term M&A announcement returns in case of US firms. Our findings about significant impact of aggregate manager sentiment and insignificant impact of investor sentiment on acquirer's short-term M&A announcement return suggest that investors potentially identify if M&A announcements are followed by aggregate managerial optimistic beliefs and thus react negatively while their own sentiment does not have any profound role in short-term market reaction around the M&A announcement dates.

We find similar result when we consider acquirer abnormal return by measuring CAR of 21-day around the M&A announcement date. From column 3 and 4 we can see that similar to BHAR, acquirer CAR also significantly decreases upon M&A announcement following periods of high aggregate manager sentiment. Column 4 shows that one standard deviation increase in aggregate manager sentiment index is associated with 0.66

percent decrease in acquirer CAR of 21-days surrounding the M&A announcement date. Other control variables also show consistent results⁸⁵. Hence, we find supportive results of our hypothesis 1 that market can identify if the M&As are announced following periods of high aggregate manager sentiment and reacts negatively in the short-run upon those announcements.

To examine that our findings about the impact of aggregate manager sentiment on short-term M&A announcement abnormal returns are not driven by some market-level factors, we include three additional market-level factors in our regression that previous literature find to be significant in M&A activities. First, we include CRSP value weighted market index (CRSP Index) to control for alternative explanation that general economic condition plays role in determining the market reaction upon M&A announcement. Previously, using Standard and Poor 500 trend line, Kusewitt Jr. (1985) empirically, and using continuous time real option techniques as well as game theoretic concepts, Lambrecht (2004) theoretically show that the timing of the acquisitions has significant association with acquirer's returns. To investigate the relationship empirically in our regression, we use CRSP value weighted index instead of equal weighted index since the former one adjusts for the market capitalization. We collect this data from The Center for Research in Security Prices (CRSP) database.

Second, we include Robert J. Shiller's cyclically adjusted price earnings ratio (CAPE Ratio) to control for the alternative explanation that market misvaluation affects acquirer's abnormal returns upon M&A announcement. We collect this data from the faculty website of Professor Robert J. Shiller⁸⁶. Previously, Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004) report that market misvaluation affects acquirer's return around the M&A announcement date. Thus, to control for overall market misvaluation, we include this variable in our regression. Finally, following Harford (2005), who documents the importance of liquidity in M&A activities, we include aggregate cash holding in the market as an additional market-level control variable in our regression. We collect this variable from the Compustat selecting Cash and Short-Term Investment option for individual firms and then calculate the monthly aggregate value of this variable. In our analysis, we take the natural logarithm of aggregate cash holding. Table 4-7 report the OLS regression results about the association between acquirer short-

⁸⁵ Although our sample includes only completed deals, we find similar results in multivariate analysis when we include all deals regardless of their status. Results are provided in table 4-A4 in the appendix.

⁸⁶ Available at <http://www.econ.yale.edu/~shiller/data.htm>

term market reaction upon M&A announcement and aggregate manager sentiment with three additional market-level control variables.

<Insert Table 4-7 Here>

From the table we can see that our findings about the impacts of aggregate manager sentiment on both BHAR and CAR remain consistent after including the additional market-level factors. In addition, all the control variables show consistent results in this regression. Nevertheless, we do not find any significant impact of additional market-level factors on acquirer short-term abnormal returns upon M&A announcement. Thus, the supportive empirical findings about our hypothesis 1 persist even after controlling for market-level factors along with other control variables.

Next, to check the robustness of our findings we use market model and Fama French three factor (FF3F) model instead of market adjusted model to measure our dependent variables and run the regressions. We calculate both acquirer BHAR and CAR for 21-days around the M&A announcement date where the abnormal returns are defined as the residuals from market as well as FF3F model estimated over 200 days trading period ending 30 days prior to the announcement date. Table 4-8 reports the OLS regression results.

<Insert Table 4-8 Here>

From column 1 and 2 of table 4-8 we can see that manager sentiment has negative and significant association with acquirer BHAR 21-days around the M&A announcement date. In case of market model, one standard deviation of manager sentiment index is negatively associated with 0.75 percent decrease in BHAR whereas in case of FF3F model, one standard deviation of manager sentiment index is negatively associated with 0.38 percent decrease in acquirer BHAR. Both findings are statistically significant at 5 percent level. On the other hand, from column 3 and 4 we can see that in case of market model, one standard deviation of manager sentiment index is negatively associated with 0.57 percent decrease in acquirer CAR whereas in case of FF3F model, one standard deviation of manager sentiment index is negatively associated with 0.28 percent decrease in CAR around the announcement date. Although the finding about manager sentiment impact in column 3 is significant at 5 percent level, we do not find statistical significance of manager sentiment impact in case of CAR measured using FF3F model as reported in column 4 of the table.

In case of control variables, we find consistent results for most of the variables. However, unlike previous findings, here we find that acquirers' cumulative stock returns prior to the M&A announcement are significantly and negatively associated with their BHAR and CAR around the M&A announcement date. This negative and significant finding about cumulative stock return is consistent with the findings of Masulis et al. (2007) and Schmidt (2015).

Finally, as a further robustness test we repeat the regression using the 11-day and 41-day BHAR and CAR surrounding the M&A announcement date as our dependent variables. Table 4-9 reports the OLS regression result.

<Insert Table 4-9 Here>

From column 1 to 4 of the table, we can see that both 11-day and 41-day BHAR as well as 11-day and 41-day CAR are negatively associated with period of aggregate manager sentiment. Here all our findings about the impact of aggregate manager sentiment are significant at 10 percent level except 41-day CAR which generates statistically insignificant result. However, the negative reactions in all four cases show consistency with our prior findings. These empirical results provide supportive evidence that market reacts negatively in the short-run upon M&A announcement following periods of high manager sentiment.

Next, we check if the aggregate manager sentiment has any impact on acquirer long-term performance. To analyse the long-term performance, we measure acquirer BHAR 1 year, 2 years and 3 years after the M&A announcement. Table 4-10 reports the OLS regression results.

<Insert Table 4-10 Here>

From column 1, 2 and 3 of the table we can see that manager sentiment variable does not generate any statistically significant result in case of 1-year, 2-year and 3-year BHAR. These statistically insignificant findings indicate that the impact of manager sentiment on acquirer abnormal stock return disappears in the long-run. The findings are largely consistent with Officer (2007) who argues that stock price reactions involving irrational components are of short-term in nature and to be arbitrated away over the days following the announcement period. Therefore, we can say that the negative impact of aggregate manager sentiment on acquirer abnormal return upon M&A announcement is a short-term phenomenon.

4.5.2.2 M&A Payment Method, Aggregate Manager Sentiment and M&A Announcement Returns

In this section we present and discuss the role of M&A payment method on acquirer short-term abnormal return surrounding the M&A announcement date following periods of high aggregate manager sentiment. Table 4-11 reports the results when the acquirers use 100 percent stock payment to undertake the deal.

<Insert Table 4-11 Here>

From column 1 and 3 of the table we can see that our findings about the impact of manager sentiment on acquirer 21-day BHAR and CAR remain consistent after including stock dummy as a control variable along with other control variables. This provides further evidence of significant negative association between aggregate manager sentiment and acquirer short-term abnormal return upon M&A announcement. From column 2 and 4 we can see that the coefficients of the interaction between aggregate manager sentiment index and stock dummy in case of both BHAR and CAR are negative. Both findings are statistically significant at 5 percent level. This negative results suggest that investors react more negatively when acquiring firms announce M&A deals with fully stock payment relative to the negative market reaction that occurs when acquiring firms announce deals with other types of payment method following periods of high aggregate manager sentiment. We also check the role of percentage of stock payment and present the findings in table 4-12.

<Insert Table 4-12 Here>

From column 1 and 3 of tale 4-12 we can see that our findings about the impact of aggregate manager sentiment on BHAR and CAR remain consistent after including stock percentage as a control variable in the multiple regression analysis. From column 2 and 4 we can see that the interaction between aggregate manager sentiment variable and stock percentage variable generates negative coefficients in case of both BHAR and CAR. Both findings are statistically significant at 1 percent level. The findings suggest that higher percentage of stock payment in the deal enhances the impact of aggregate manager sentiment on acquirer short-term abnormal returns upon M&A announcement. Thus, our findings about all stock payment and fraction of stock payment provide evidence in support of our hypothesis 2 that stock deals enhances the negative market reaction in the short-run upon M&A announcement following periods of high aggregate manager sentiment in the market.

To check the robustness of our findings, we run the regressions by interacting aggregate manager sentiment with cash dummy variable as well as percentage of cash variable. The significant and positive coefficients of interacting variable between aggregate manager sentiment and cash dummy in case of both BHAR and CAR suggest that use of fully cash as method of M&A payment attenuates the impact of aggregate manager sentiment on acquirer short-term abnormal return upon M&A announcement. The OLS regression results are reported in table 4-A5 in the appendix. We find similar results when we use the percentage of cash payment instead of all cash dummy variable. The highly significant and positive impact of interacting variable between aggregate manager sentiment and percentage of cash payment in case of both BHAR and CAR provide further evidence that impact of aggregate manager sentiment on acquirer short-term abnormal return around the M&A announcement date is attenuated with the increase of fraction of cash payment in M&A deals. The results are reported in table 4-A6 in the appendix. All these empirical findings provide evidence in support of our hypothesis 2 of this study.

4.6 Conclusion

The extant literature finds a positive relationship between investor sentiment and general stock market index (e.g., Siganos et al., 2014) and a negative relationship between manager sentiment and general stock market index (e.g., Jiang et al., 2019). In addition, Danbolt et al. (2015) show that not only general stock index but also acquirers' abnormal returns at the time of M&A announcement is positively associated with investor sentiment. Following the argument of prior literature in psychology, sociology and behavioural finance fields that people often take decisions after getting influenced by the emotions and confidence of their affiliates as reported in Lucey and Dowling (2005), Olson (2006) and Shue (2013), in this study we investigate whether aggregate manager sentiment has any association with acquirers' abnormal stock returns upon M&A announcements. We provide empirical evidence that aggregate manager sentiment has a significant negative relationship with acquirer's short-term abnormal stock returns surrounding the M&A announcement date. Consistent with Jiang et al. (2019) who report that manager sentiment dominates the investor sentiment in predicting general stock returns, our findings suggest that manager sentiment dominates the investor sentiment in explaining acquirers' short-term M&A return. Our finding is robust to the alternative explanation that certain market-level factors drive acquirer's abnormal returns and to the alternative measures of abnormal returns using various estimation models as well as different windows around the M&A announcement date. We also find evidence that the

negative association between aggregate manager sentiment acquirer's abnormal returns is more pronounced in case of all stock deals and in case of higher fraction of stock payment. Overall, our findings suggest that investors potentially identify whether M&A announcements are followed by periods of high aggregate manager sentiment and react negatively assuming that the respective M&As are motivated because of aggregate optimism of manager' peers. Investors assess the expected synergies from firm's M&A activities and hence react accordingly. We conclude that aggregate manager sentiment is an important factor in determining acquiring firms' short-term abnormal stock returns surrounding their M&A announcement dates.

Tables – Chapter 4

Table 4-1 Distribution of M&As by Year

The table shows the year-wise total number and respective percentage of domestic M&As in our sample announced by 961 unique non-financial non-utility US public firms between April 2003 and December 2017

Year	Frequency	Percentage
2003	137	5.78
2004	257	10.85
2005	224	9.46
2006	237	10.00
2007	192	8.10
2008	154	6.50
2009	116	4.90
2010	145	6.12
2011	146	6.16
2012	143	6.04
2013	124	5.23
2014	157	6.63
2015	147	6.21
2016	98	4.14
2017	92	3.88
Total	2,369	100.00

Table 4-2 Distribution of M&As by Industry

The table shows the industry-wise total number and respective percentage of domestic M&As in our sample announced by 961 unique non-financial non-utility US public firms between April 2003 and December 2017. Here, the industry represents the distribution with their corresponding 2-digit SIC code.

2-Digit SIC	Industry Description	Frequency	Percentage
73	Business Services	380	16.04
38	Measuring, photographic, medical and optical goods, and clocks	274	11.57
35	Industrial and commercial machinery and computer equipment	272	11.48
36	Electronic and other electrical equipment and components	227	9.58
28	Chemicals and allied products	223	9.41
13	Oil and gas extraction	68	2.87
20	Food and kindred products	68	2.87
80	Health Services	67	2.83
33	Primary metal industries	56	2.36
48	Communications	55	2.32
37	Transportation equipment	53	2.24
87	Engineering, accounting, research, and management services	48	2.03
	Industries with < 2% representation	578	24.40
Total		2,369	100.00

Table 4-3 Summary Statistics

The table reports the descriptive statistics of the variables that we use in this study. Here, BHAR and CAR are the acquirer 21-day buy and hold abnormal returns and cumulative abnormal returns, respectively centred on the M&A announcement day. Manager sentiment and investor sentiment variables are the averages of the updated version of the monthly manager sentiment index developed by Jiang et al. (2019) and the monthly investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific and payment related variables are measured at the time of the announcement. All firm level variables and relative value variables are winsorized at 1st and 99th percentiles. Detail description of all the variables are provided in the data section.

Variable	Mean	Median	Standard Dev.	Minimum	Maximum	N
Panel A: M&A Performance Variables						
BHAR	0.022	0.012	0.116	-0.492	0.710	2,369
CAR	0.022	0.014	0.113	-0.685	0.810	2,369
Panel B: Sentiment Variables						
Manager Sentiment	-0.005	0.186	0.942	-3.922	1.561	2,369
Investor Sentiment	-0.197	-0.176	0.301	-0.867	0.544	2,369
Panel C: Firm Level Characteristics						
Ln(Size)	7.264	7.125	2.012	2.774	12.029	2,369
ROA	0.083	0.091	0.110	-0.463	0.323	2,369
Book Leverage	0.201	0.183	0.176	0.000	0.793	2,369
Cash to Total Asset	0.187	0.127	0.181	0.001	0.770	2,369
Market to Book Ratio	2.079	1.761	1.117	0.782	6.794	2,369
Cumulative Return	0.218	0.185	0.403	-0.750	1.907	2,369
Panel D: Deal Level Characteristics						
Relative Value	0.108	0.061	0.127	0.000	0.582	2,369
Hostile Dummy	0.001	0.000	0.029	0.000	1.000	2,369
Challenge Dummy	0.011	0.000	0.104	0.000	1.000	2,369
Diversifying Dummy	0.410	0.000	0.492	0.000	1.000	2,369
Panel E: M&A Payment Variables						
Stock Dummy	0.037	0.000	0.188	0.000	1.000	2,369
Cash Dummy	0.652	1.000	0.476	0.000	1.000	2,369
Stock Percentage	9.061	0.000	23.957	0.000	100.000	2,369
Cash Percentage	83.759	100.000	29.018	0.000	100.000	2,369

Table 4-4 Correlation Matrix and VIF

The table reports the correlation coefficients and statistical significance levels among the variables that we use in this study. Here, BHAR and CAR are the acquirer 21-day buy and hold abnormal returns and cumulative abnormal returns, respectively centred on the M&A announcement day. Manager sentiment and investor sentiment variables are the averages of the updated version of the monthly manager sentiment index developed by Jiang et al. (2019) and the monthly investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

	BHAR	CAR	MSI	ISI	Ln(Size)	ROA	BL	CTL	M/B Ratio	Ret	RV	HD	CD	DD	VIF
BHAR	1.000														
CAR	0.991*** (0.000)	1.000													
MSI	-0.065*** (0.002)	-0.061*** (0.003)	1.000												1.60
ISI	-0.032 (0.124)	-0.035* (0.088)	0.604*** (0.000)	1.000											1.60
Ln(Size)	-0.142*** (0.000)	-0.150*** (0.000)	0.014 (0.511)	-0.008 (0.709)	1.000										1.40
ROA	-0.020 (0.341)	-0.027 (0.188)	0.063*** (0.002)	0.076*** (0.000)	0.252*** (0.000)	1.000									1.33
BL	0.062*** (0.003)	0.059*** (0.004)	-0.007 (0.730)	0.039* (0.058)	0.190*** (0.000)	-0.016 (0.434)	1.000								1.26
CTL	-0.050** (0.016)	-0.051** (0.013)	-0.012 (0.556)	-0.052** (0.012)	-0.164*** (0.000)	-0.149*** (0.000)	-0.382*** (0.000)	1.000							1.24
M/B Ratio	-0.026 (0.213)	-0.030 (0.146)	0.048** (0.020)	0.071*** (0.000)	0.011 (0.600)	0.153*** (0.000)	-0.166*** (0.000)	0.356*** (0.000)	1.000						1.17
Ret	0.037* (0.070)	0.024 (0.238)	0.028 (0.172)	0.025 (0.225)	-0.132*** (0.000)	0.046** (0.026)	0.021 (0.307)	0.045** (0.029)	0.245*** (0.000)	1.000					1.16
RV	0.119*** (0.000)	0.126*** (0.000)	-0.036* (0.083)	-0.011 (0.607)	-0.232*** (0.000)	-0.144*** (0.000)	0.163*** (0.000)	-0.089*** (0.000)	-0.196*** (0.000)	-0.004 (0.832)	1.000				1.10
HD	-0.002 (0.935)	-0.001 (0.982)	-0.106*** (0.000)	-0.044** (0.032)	0.005 (0.798)	0.028 (0.179)	-0.017 (0.419)	0.021 (0.309)	0.042** (0.042)	0.033 (0.113)	0.055*** (0.007)	1.000			1.04
CD	-0.031 (0.138)	-0.030 (0.144)	-0.029 (0.160)	-0.032 (0.120)	0.077*** (0.000)	0.014 (0.510)	0.014 (0.495)	-0.006 (0.779)	0.038* (0.063)	-0.005 (0.808)	0.085*** (0.000)	0.136*** (0.000)	1.000		1.04
DD	0.017 (0.423)	0.013 (0.525)	0.024 (0.251)	0.030 (0.150)	0.045** (0.030)	0.053*** (0.009)	-0.004 (0.835)	-0.102*** (0.000)	-0.060*** (0.003)	0.007 (0.732)	-0.046** (0.024)	-0.024 (0.239)	-0.063*** (0.002)	1.000	1.02

Table 4-5 Univariate Results

The table shows the univariate results regarding the relationship between aggregate manager sentiment and BHAR as well as the relationship between aggregate manager sentiment and CAR. Here, BHAR and CAR are the acquirer 21-day buy and hold abnormal returns and cumulative abnormal returns, respectively centred on the M&A announcement day. Manager sentiment variable is the average of the updated version of the monthly manager sentiment index developed by Jiang et al. (2019) over the 3-month period prior to the M&A announcement. We define low sentiment in panel A (panel B) when the value of manager sentiment is lower than the median (mean) value of this variable. On the other hand, we define high sentiment in panel A (panel B) when the value of manager sentiment is higher than or equal to the median (mean) value of this variable. P-values are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively. N indicates the number of observations.

	BHARs _(-10,+10)	CARs _(-10,+10)
Panel A		
Low	0.027*** (0.000)	0.027*** (0.000)
N	1,185	1,185
High	0.017*** (0.000)	0.017*** (0.000)
N	1,184	1,184
Low — High	0.010** (0.035)	0.010** (0.038)
Panel B		
Low	0.029*** (0.000)	0.029*** (0.000)
N	994	994
High	0.017*** (0.000)	0.018*** (0.000)
N	1,375	1,375
Low — High	0.012** (0.014)	0.011** (0.018)

Table 4-6 Aggregate Manager Sentiment and Acquirer Short-Term M&A Announcement Returns

The table reports the OLS regression results about the acquirer short-term abnormal stock returns upon M&A announcement following periods of aggregate manager sentiment. Here, the dependent variables BHAR and CAR are the acquirer 21-day buy and hold abnormal returns and cumulative abnormal returns, respectively centred on the M&A announcement day. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	BHARS _(-10,+10)		CARs _(-10,+10)	
	(1)	(2)	(3)	(4)
Manager Sentiment	-0.008*** (0.001)	-0.008*** (0.002)	-0.008*** (0.002)	-0.007*** (0.008)
Investor Sentiment		-0.002 (0.665)		-0.006 (0.274)
Ln(Size)		-0.009*** (0.000)		-0.009*** (0.000)
ROA		0.025 (0.534)		0.020 (0.596)
Book Leverage		0.055** (0.029)		0.051** (0.037)
Cash to Total Asset		-0.041** (0.044)		-0.043** (0.042)
Market to Book Ratio		0.002 (0.478)		0.002 (0.414)
Cumulative Return		0.004 (0.569)		0.000 (0.969)
Relative Value		0.074* (0.077)		0.077* (0.059)
Hostile Dummy		-0.009 (0.551)		-0.002 (0.905)
Challenge Dummy		-0.031* (0.089)		-0.030* (0.090)
Diversifying Dummy		0.008 (0.121)		0.007 (0.150)
Constant	0.014 (0.695)	0.064 (0.172)	0.016 (0.644)	0.068 (0.135)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Adjusted R-Square	0.006	0.041	0.005	0.043
No. of Observation	2,369	2,369	2,369	2,369

Table 4-7 Aggregate Manager Sentiment and Acquirer Short-Term M&A Announcement Returns with Additional Market-level Factors

The table reports the OLS regression results about the acquirer short-term abnormal stock returns upon M&A announcement following periods of aggregate manager sentiment. Here, the dependent variables BHAR and CAR are the acquirer 21-day buy and hold abnormal returns and cumulative abnormal returns, respectively centred on the M&A announcement day. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. Additional market-level factors are the averages of the respective variables over 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	(1) BHARs _(-10,+10)	(2) CARs _(-10,+10)
Manager Sentiment	-0.008*** (0.002)	-0.007*** (0.004)
Investor Sentiment	0.005 (0.659)	0.001 (0.910)
CRSP Index	0.131 (0.280)	0.119 (0.401)
CAPE Ratio	-0.001 (0.337)	-0.001 (0.340)
Ln(Aggregate Cash)	0.002 (0.882)	0.001 (0.958)
Ln(Size)	-0.009*** (0.000)	-0.009*** (0.000)
ROA	0.022 (0.584)	0.016 (0.659)
Book Leverage	0.056** (0.025)	0.052** (0.031)
Cash to Total Asset	-0.042** (0.035)	-0.044** (0.035)
Market to Book Ratio	0.002 (0.352)	0.003 (0.300)
Cumulative Return	0.006 (0.485)	0.002 (0.845)
Relative Value	0.076* (0.073)	0.079* (0.056)
Hostile Dummy	-0.015 (0.344)	-0.007 (0.594)
Challenge Dummy	-0.031* (0.079)	-0.030* (0.079)
Diversifying Dummy	0.008 (0.107)	0.007 (0.132)
Constant	0.084 (0.319)	0.094 (0.257)
Industry Fixed Effect	Yes	Yes
Adjusted R-Square	0.040	0.043
No. of Observation	2,369	2,369

Table 4-8 Aggregate Manager Sentiment and Acquirer Short-Term M&A Announcement Returns Using Alternative Models

The table reports the OLS regression results about the acquirer short-term abnormal stock returns upon M&A announcement following periods of aggregate manager sentiment. Here, the dependent variables BHAR and CAR are the acquirer 21-day buy and hold abnormal returns and cumulative abnormal returns, respectively centred on the M&A announcement day where the abnormal returns are estimated using market model and Fama French three factor model (FF3FM). Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	BHARs _(-10,+10)		CARs _(-10,+10)	
	(1) Market Model	(2) FF3FM	(3) Market Model	(4) FF3FM
Manager Sentiment	-0.008** (0.011)	-0.004** (0.047)	-0.006** (0.024)	-0.003 (0.175)
Investor Sentiment	0.015 (0.129)	0.008 (0.405)	0.010 (0.269)	0.004 (0.694)
Ln(Size)	-0.006*** (0.005)	-0.006*** (0.003)	-0.006*** (0.002)	-0.006*** (0.001)
ROA	0.049 (0.227)	0.053 (0.152)	0.041 (0.257)	0.043 (0.188)
Book Leverage	0.042* (0.053)	0.037* (0.083)	0.039* (0.066)	0.033 (0.111)
Cash to Total Asset	-0.051** (0.018)	-0.056** (0.019)	-0.053** (0.018)	-0.057** (0.020)
Market to Book Ratio	0.002 (0.462)	0.003 (0.367)	0.003 (0.384)	0.003 (0.322)
Cumulative Return	-0.032*** (0.002)	-0.025*** (0.009)	-0.035*** (0.001)	-0.028*** (0.004)
Relative Value	0.083** (0.044)	0.095** (0.017)	0.088** (0.030)	0.099** (0.011)
Hostile Dummy	-0.048*** (0.008)	-0.055*** (0.001)	-0.036** (0.023)	-0.040*** (0.005)
Challenge Dummy	-0.034* (0.083)	-0.037* (0.063)	-0.033* (0.083)	-0.036* (0.060)
Diversifying Dummy	0.007 (0.160)	0.004 (0.396)	0.006 (0.186)	0.003 (0.461)
Constant	0.042 (0.360)	0.014 (0.784)	0.048 (0.264)	0.022 (0.642)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Adjusted R-Square	0.035	0.031	0.040	0.037
No. of Observation	2,369	2,369	2,369	2,369

Table 4-9 Aggregate Manager Sentiment and Acquirer Short-Term M&A Announcement Returns Using Alternative Windows

The table reports the OLS regression results about the acquirer short-term abnormal stock returns upon M&A announcement following periods of aggregate manager sentiment. Here, the dependent variables BHAR and CAR are the acquirer 11-day as well as 41-day buy and hold abnormal returns and cumulative abnormal returns, respectively centred on the M&A announcement. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	BHARs		CARs	
	(1)	(2)	(3)	(4)
	[-5,+5]	[-20,+20]	[-5,+5]	[-20,+20]
Manager Sentiment	-0.004* (0.095)	-0.009* (0.081)	-0.004* (0.095)	-0.006 (0.220)
Investor Sentiment	0.003 (0.582)	-0.012 (0.248)	0.002 (0.723)	-0.016* (0.061)
Ln(Size)	-0.006*** (0.000)	-0.011*** (0.000)	-0.007*** (0.000)	-0.012*** (0.000)
ROA	-0.005 (0.871)	0.094 (0.102)	-0.011 (0.690)	0.083 (0.148)
Book Leverage	0.035 (0.102)	0.094** (0.017)	0.031 (0.138)	0.085** (0.017)
Cash to Total Asset	-0.026 (0.119)	-0.050* (0.075)	-0.026* (0.100)	-0.056** (0.050)
Market to Book Ratio	0.001 (0.645)	-0.002 (0.600)	0.001 (0.527)	-0.002 (0.726)
Cumulative Return	0.002 (0.781)	-0.010 (0.465)	0.000 (0.976)	-0.012 (0.325)
Relative Value	0.064** (0.022)	0.066 (0.183)	0.064** (0.023)	0.061 (0.187)
Hostile Dummy	-0.014 (0.355)	0.051 (0.151)	-0.012 (0.420)	0.058* (0.090)
Challenge Dummy	-0.022 (0.179)	-0.057** (0.017)	-0.022 (0.196)	-0.053** (0.024)
Diversifying Dummy	0.003 (0.427)	0.009 (0.269)	0.003 (0.517)	0.009 (0.231)
Constant	0.032 (0.453)	0.088 (0.123)	0.032 (0.426)	0.099 (0.103)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Adjusted R-Square	0.037	0.047	0.037	0.049
No. of Observation	2,369	2,369	2,369	2,369

Table 4-10 Aggregate Manager Sentiment and Acquirer Long-Term M&A Performance

The table reports the OLS regression results about the acquirer long-term abnormal stock returns upon M&A announcement following periods of aggregate manager sentiment. Here, the dependent variable BHAR is the acquirer 1-year, 2-year and 3-year buy and hold abnormal returns after the M&A announcement day. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	BHAR		
	1-Year	2-Year	3-Year
Manager Sentiment	0.003 (0.881)	-0.005 (0.916)	0.011 (0.830)
Investor Sentiment	-0.078 (0.156)	-0.089 (0.345)	-0.148 (0.131)
Ln(Size)	-0.015 (0.237)	-0.018 (0.163)	-0.019 (0.124)
ROA	0.290 (0.113)	0.626** (0.019)	0.973*** (0.003)
Book Leverage	0.225* (0.070)	0.251* (0.088)	0.284 (0.123)
Cash to Total Asset	-0.155* (0.071)	-0.158 (0.316)	-0.259* (0.099)
Market to Book Ratio	-0.011 (0.626)	-0.018 (0.502)	-0.030 (0.382)
Cumulative Return	0.005 (0.905)	-0.032 (0.498)	-0.025 (0.697)
Relative Value	0.181 (0.142)	0.210 (0.236)	0.124 (0.619)
Hostile Dummy	0.482*** (0.001)	1.022*** (0.000)	0.138 (0.523)
Challenge Dummy	0.031 (0.700)	0.057 (0.554)	0.022 (0.870)
Diversifying Dummy	-0.029 (0.330)	-0.036 (0.397)	-0.020 (0.747)
Constant	-0.136 (0.507)	-0.410 (0.121)	-0.574** (0.020)
Industry Fixed Effect	Yes	Yes	Yes
Adjusted R-Square	0.017	0.019	0.030
No. of Observation	2,369	2,369	2,359

Table 4-11 Aggregate Manager Sentiment, All Stock Payment and Short-Term M&A Announcement Returns

The table reports the OLS regression results about the role of all stock payment method on acquirer short-term abnormal stock returns upon M&A announcement following periods of aggregate manager sentiment. Here, the dependent variables BHAR and CAR are the acquirer 21-day buy and hold abnormal returns and cumulative abnormal returns, respectively centred on the M&A announcement day. Stock dummy variable equals 1 if the M&A payment is fully in stock and 0 otherwise. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables and stock dummy variable are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	BHARs _(-10,+10)		CARs _(-10,+10)	
	(1)	(2)	(3)	(4)
Manager Sentiment	-0.008*** (0.003)	-0.007*** (0.008)	-0.007*** (0.008)	-0.006** (0.024)
Stock Dummy	-0.020 (0.305)	-0.024 (0.165)	-0.023 (0.235)	-0.027 (0.122)
MS X Stock Dummy		-0.033** (0.024)		-0.031** (0.018)
Investor Sentiment	-0.003 (0.605)	-0.002 (0.679)	-0.007 (0.233)	-0.006 (0.267)
Ln(Size)	-0.009*** (0.000)	-0.009*** (0.000)	-0.009*** (0.000)	-0.009*** (0.000)
ROA	0.019 (0.620)	0.018 (0.651)	0.013 (0.716)	0.012 (0.748)
Book Leverage	0.055** (0.028)	0.056** (0.023)	0.051** (0.035)	0.052** (0.029)
Cash to Total Asset	-0.042** (0.037)	-0.041** (0.042)	-0.045** (0.036)	-0.044** (0.041)
Market to Book Ratio	0.002 (0.399)	0.002 (0.412)	0.003 (0.331)	0.003 (0.341)
Cumulative Return	0.005 (0.556)	0.005 (0.512)	0.000 (0.955)	0.001 (0.903)
Relative Value	0.076* (0.068)	0.075* (0.070)	0.079** (0.050)	0.078* (0.052)
Hostile Dummy	-0.010 (0.537)	-0.006 (0.712)	-0.002 (0.880)	0.002 (0.915)
Challenge Dummy	-0.032* (0.078)	-0.032* (0.080)	-0.031* (0.077)	-0.031* (0.080)
Diversifying Dummy	0.008 (0.124)	0.008 (0.116)	0.007 (0.154)	0.007 (0.147)
Constant	0.069 (0.156)	0.074 (0.142)	0.074 (0.120)	0.078 (0.110)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Adjusted R-Square	0.041	0.043	0.044	0.046
No. of Observation	2,369	2,369	2,369	2,369

Table 4-12 Aggregate Manager Sentiment, Percentage of Stock Payment and Short-Term M&A Announcement Returns

The table reports the OLS regression results about the role of fraction of stock payment on acquirer short-term abnormal stock returns upon M&A announcement following periods of aggregate manager sentiment. Here, the dependent variables BHAR and CAR are the acquirer 21-day buy and hold abnormal returns and cumulative abnormal returns, respectively centred on the M&A announcement day. Stock percentage is the fraction of payment made by stock. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables and stock percentage variable are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	BHARs _(-10,+10)		CARs _(-10,+10)	
	(1)	(2)	(3)	(4)
Manager Sentiment	-0.008*** (0.002)	-0.006** (0.012)	-0.007*** (0.005)	-0.005** (0.038)
Stock Percentage	-0.000 (0.123)	-0.000* (0.058)	-0.000* (0.097)	-0.000** (0.046)
MS X Stock Percentage		-0.000*** (0.003)		-0.000*** (0.003)
Investor Sentiment	-0.003 (0.632)	-0.003 (0.641)	-0.006 (0.247)	-0.006 (0.254)
Ln(Size)	-0.009*** (0.000)	-0.009*** (0.000)	-0.009*** (0.000)	-0.009*** (0.000)
ROA	0.016 (0.684)	0.016 (0.679)	0.010 (0.783)	0.010 (0.779)
Book Leverage	0.055** (0.028)	0.056** (0.025)	0.051** (0.035)	0.052** (0.031)
Cash to Total Asset	-0.041** (0.044)	-0.041** (0.048)	-0.044** (0.043)	-0.044** (0.046)
Market to Book Ratio	0.003 (0.312)	0.003 (0.304)	0.003 (0.254)	0.003 (0.247)
Cumulative Return	0.004 (0.565)	0.005 (0.528)	0.000 (0.967)	0.001 (0.929)
Relative Value	0.082** (0.042)	0.082** (0.042)	0.086** (0.029)	0.086** (0.029)
Hostile Dummy	-0.014 (0.368)	-0.007 (0.625)	-0.007 (0.624)	-0.000 (0.976)
Challenge Dummy	-0.032* (0.090)	-0.031* (0.093)	-0.031* (0.091)	-0.030* (0.094)
Diversifying Dummy	0.007 (0.131)	0.007 (0.129)	0.007 (0.162)	0.007 (0.162)
Constant	0.071 (0.143)	0.073 (0.141)	0.076 (0.112)	0.077 (0.110)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Adjusted R-Square	0.042	0.043	0.045	0.046
No. of Observation	2,369	2,369	2,369	2,369

Chapter 5

5 Conclusion

Mergers and acquisitions are one of the biggest and most important corporate finance events (Fuller et al., 2002; Hackbarth and Morellec, 2008; Bessler et al., 2011). Because of their immense significance on firm value creation or destruction, many academics historically put substantial attention on M&A research. Although there have been considerable research about the impact of various firm-specific, deal-specific and market-level factors on acquiring firm's M&A decisions and performance, empirical investigations about the significance of behavioural aspects on such decisions and performance are limited in the literature, as mentioned in Danbolt et al. (2015). Previously, some researchers in the behavioural finance discipline show that investor sentiment has significant association with firm's M&A activities and announcement returns (Petmezas, 2009; Danbolt et al., 2015; Tsai et al., 2021). Nevertheless, Jiang et al. (2019) state that there has been little research on manager sentiment, which is surprising given managers' information advantage on their firms. In M&A literature, some researchers provide evidence that behavioural biases such as overconfidence or sentiment of individual acquiring firms' managers significantly affect their M&A activities and announcement returns (Malmendier and Tate, 2008; Ferris et al., 2013; An et al., 2022).

In turn, different studies in psychology and sociology discipline and lab-based experiments in behavioural finance field show that sentiment is a social phenomenon and people sometimes update their behaviour based on the aggregate sentiment of their affiliates (Lucey and Dowling, 2005; Olson, 2006; Bennett, 2011). Some M&A literature, for example, Nofsinger (2005) and Shue (2013), report that during the period of high social mood, firm's executives are likely to take biased financial decisions including M&A decisions and managers are likely to be influenced by their social experiences in addition to being guided by their own beliefs. Following these arguments that aggregate sentiment of one's peers can affect individual's decision making behaviour, this thesis investigates if aggregate manager sentiment has significant association with market-level M&A activities, the choice of individual acquiring firm's M&A payment method and acquirers' abnormal stock returns upon M&A announcements.

In general, the thesis documents that aggregate manager sentiment has significant association with market-level M&A activities that are financed with 100 percent cash payment. However, this association is short-lived in case of small and medium firms

whereas the association is long-lived in case of large firms. Next, it reports that the probability of cash payment method in M&A deal by individual acquiring firms increases following periods of high aggregate manager sentiment and vice versa. This higher probability of cash payment is enhanced if the acquiring firm has larger board size and younger CEO. Finally, the thesis documents that investor reacts negatively to M&A announcement in the short-run if such announcements are made following periods of high aggregate manager sentiment. This negative reaction is enhanced if M&A deals include fully or higher proportion of stock payment. The most important finding of this thesis is that the studies provide empirical evidence that aggregate manager sentiment provides additional and complementary information beyond the investor sentiment about both market-level and firm-level M&A activities and announcement returns. Moreover, the studies show that in addition to some other previously identified determinant, aggregate manager sentiment can also affect individual acquiring firm's choice of M&A payment method and announcement returns. The summary of the findings of individual chapters is discussed in the next section.

5.1 Summary of Findings

5.1.1 Aggregate Manager Sentiment and Market-Level Merger and Acquisition Activities

In the first empirical chapter, the study investigates the impact of aggregate manager sentiment on aggregate M&A deal value in the market. Using domestic M&As of US public non-financial and non-utility firms during the period between January 2003 and December 2017 and applying Newey-West regression technique in the time series data, the study analyses and reports the findings in three different subsections. It reports contemporaneous effect, 1-month, 2-month and 3-month lag effect as well as last 3- and 6-month average effect of the sentiment variable on aggregate M&A deal value.

First, the study examines the impact of aggregate manager sentiment on total deal value of all M&As. The results suggest that aggregate manager sentiment does not have any significant impact on total deal value when it considers all M&As without considering their type of payment method. Next, it examines the impact of aggregate manager sentiment on total deal value of M&As that consist of 100 percent cash payment as Malmendier and Tate (2008) and Ferries et al. (2013) report that biased managers are more likely to pay for M&A deals using cash. The results show that aggregate manager sentiment is positively and significantly associated with aggregate cash only M&A deal

value. The results are consistent in case of contemporaneous, lag effect and average effect analysis where the study finds that one standard deviation increase in aggregate manager sentiment is associated with approximately 16 percent increase in cash only financed aggregate M&A deal value. The study conducts several robustness tests and finds consistent results.

Finally, the study finds significant impacts of aggregate manager sentiment on cash only financed M&A activities of small and medium size acquiring firms in contemporaneous cases only. On the other hand, such impact lasts longer in case of cash only financed M&A activities by large acquiring firms. These findings are consistent with Vancil and Lorange (1997), Ekanem (2005) and Danielson and Scott (2006) who suggest that the decision making procedure in small firms differ from large firms. Hence, the first empirical chapter concludes that the impact of aggregate manager sentiment on cash only financed market-level M&A deal is significantly positive and such impacts are short-lived in case of small as well as medium firms and long-lived in case of large firms.

5.1.2 Aggregate Manager Sentiment and the Choice of Mergers and Acquisitions Payment Method

In the second empirical chapter, the study investigates the impact of aggregate manager sentiment on individual acquiring firm's choice of M&A payment method and the role of board as well as CEO characteristics on such impacts. Using domestic M&A payment data for US public non-financial and non-utility firms from April 2003 to December 2017 and applying Probit regression model, it examines and reports the findings in three different subsections.

First, the study examines the impact of aggregate manager sentiment on the likelihood of using fully cash and fully stock as individual acquiring firm's choice of M&A payment method. The findings suggest that the likelihood of using 100 percent cash payment as a choice of M&A payment method increases following periods of high aggregate manager sentiment. On the other hand, it finds the opposite in case of 100 percent stock payment as a choice of M&A payment method. Here, finding about the cash payment method is statistically significant at 1 percent level whereas the finding about the stock payment method is statistically significant at 5 percent level. The average marginal effects are 0.041 and -0.008 in case of fully cash and fully stock payment, respectively, suggesting that one standard deviation increase in aggregate manager sentiment increases the probability of fully cash M&A payment by approximately 3.75 percent and decreases the

probability of fully stock M&A payment by 0.70 percent. The findings remain consistent when the study conducts robustness tests by including additional market-level control variables and by redefining the measure of dependent variables. In addition, using Tobit regression model, it finds that the proportion of the use of cash increases whereas the proportion of the use of stock decreases in M&A deals following periods of high aggregate manager sentiment.

Next, the study examines the role of acquiring firms' board size and board independence level in alternating the impact of aggregate manager sentiment on their choice of M&A payment method. The result shows that the coefficients of the interacting variables between board size and manager sentiment index is significantly positive in case of fully cash and negative in case of fully stock payment method, suggesting that larger board size enhances the impact of aggregate manager sentiment on individual acquiring firm's choice of M&A payment method. The study finds similar results in case of board independence level, however, here the finding in case of stock payment method is not statistically significant. The analysis of marginal effects at five different percentiles of board size and independence level shows consistent results where the study finds that the impact of aggregate manager sentiment on individual acquiring firms' choice of M&A payment method gradually increases with the increase of board size and board independence level of respective acquiring firms. The robustness test provides further evidence that board size enhances the impact of aggregate manager sentiment on individual acquiring firm's choice of M&A payment method; nevertheless, it shows that board independence level does not play any significant role in alternating such impacts.

Lastly, the study examines the role of acquiring firm's CEO age and tenure on the impact of aggregate manager sentiment in choosing the M&A payment method. The results from the coefficients of the interacting variables suggest that higher CEO age and longer CEO tenure attenuate such impacts. The study gets consistent results in marginal effect analysis where it finds that the effects gradually decrease with the increase of CEO age and tenure at five different percentiles of these two CEO characteristic variables. Nevertheless, robustness test generates insignificant result for CEO tenure. Therefore, the second empirical chapter concludes that aggregate manager sentiment is positively (negatively) associated with individual acquiring firm's likelihood of choosing cash (stock) as a method of M&A payment and board size and CEO age play significant roles in either enhancing or attenuating the magnitude of this impact.

5.1.3 Aggregate Manager Sentiment and Acquiring Firms' Announcement Returns

In the final empirical chapter, the study investigates the relationship between aggregate manager sentiment and acquirer both short-term and long-term abnormal stock return upon M&A announcements. In addition, it examines the role of the payment method on such relationship. Using domestic M&As completed by US public non-financial and non-utility firms from April 2003 to December 2017 and applying OLS regression method, the study reports and discusses the findings in two subsections.

First, measuring acquirer BHAR and CAR for a 21-day window surrounding the M&A announcement date, the study analyses the impact of aggregate manager sentiment on acquirer short-term abnormal returns upon such announcement. Here, univariate analysis result shows that the difference between low period return and high period return in case of both BHAR and CAR is approximately 1.00 percent, which is statistically significant and economically large. Next, multivariate analysis shows that aggregate manager sentiment is significantly and negatively associated with acquirer short-term announcement returns where one standard deviation increase in aggregate manager sentiment is associated with 0.75 percent and 0.66 percent decrease in acquirer BHAR and CAR, respectively 21-day surrounding the M&A announcement date. The study finds consistent results when it conducts robustness tests by including additional market-level variables as controls, applying different asset pricing model to measure abnormal returns, and using different windows to calculate BHAR and CAR. Nevertheless, the study does not find any statistically significant results when it analyses the acquirer BHAR 1-, 2- and 3-year after the M&A announcements.

Next, the study analyses the role of payment method on the negative relationship between aggregate manager sentiment and acquirer short-term abnormal returns. It finds that the coefficients of the interacting variables between 100 percent stock dummy as well as percentage of stock payment and aggregate manager sentiment are negative, implying that investors react more negatively when acquiring firms announce M&A deals with fully stock payment or higher proportion of stock payment following periods of high aggregate manager sentiment. The findings suggest that stock payment enhances the negative impact of aggregate manager sentiment on acquirer M&A announcement return. Hence, the third empirical chapter concludes that aggregate manager sentiment is negatively associated with acquirer short-term abnormal stock returns upon M&A announcement and the stock payment method enhances such negative impacts.

5.2 Theoretical and Managerial Implications

The findings in this thesis have important implications not only in behavioural finance and M&A strands of the literature but also in psychology and sociology fields. Building on Roll's (1986) 'hubris hypothesis' of acquisition, the extant literature in behavioural finance and M&A fields shows an association between individual managerial sentiment and respective firm's M&A activities and performance. On the other hand, many theoretical and survey based studies in psychology and sociology fields claim that individual's decision can be shaped by the sentiment of one's affiliates. Similar arguments are also evident in different lab based experimental studies in behavioural finance and psychology fields. Combining these arguments, this thesis provides empirical evidence that aggregate sentiment of one's peers is an important factor in their decision making behaviour in case of M&A activities.

The empirical findings in this thesis extend the hubris hypothesis in a sense that acquiring firm's M&A related decisions, particularly deal value and payment method, depend not only on individual managerial bias, as identified in previous literature, but also on the aggregate sentiment of manager's affiliates. In addition, like previous studies which indicate that investors can identify if M&As are undertaken by biased managers, the findings of this thesis suggest that investors can also identify if M&A announcements are followed by periods of high or low aggregate manager sentiment and react accordingly to those announcements. The findings should encourage scholars to theoretically and empirically examine the behaviour of investors following periods of high or low manager sentiment in order to have a better understanding about the general inter-relationship between investor sentiment and manager sentiment.

The findings of the thesis also provide important implications for the financial decision makers of the firms. Given the findings that M&A decisions can be affected by the aggregate sentiment of one's peers, the strategic decision makers of firms need to be careful that they are not taking any M&A related decisions after getting influenced by the sentiment of their affiliates, rather than by pure value creation motive. Although this thesis focuses on acquiring firm's M&A activities, firms should also take precautions while undertaking other business activities so that their decisions do not get biased because of their peers' sentiment. Moreover, as the findings of the thesis suggest that investors react negatively upon M&A announcements following periods of high aggregate manager sentiment, acquiring firms should communicate their true M&A

motive more clearly with the outside investors to avoid shareholders' wealth destruction during those announcements.

Finally, the findings of the thesis about the role of board size and CEO age suggest that these board and CEO characteristics have important implications on firm's financial decision making. Given the findings about the significant influence of these board and CEO characteristics in alternating the impact of aggregate manager sentiment on M&A decisions, acquiring firms should carefully consider the structure of their board and characteristics of CEO to make sure that their M&A decisions are not being influenced by the aggregate manager sentiment. The findings should also encourage governance practitioners to study further about the significance of the corporate governance structure of firms on respective firms' other financial decisions and performance outcomes.

5.3 Limitations of the Studies

The studies in this thesis find significant impact of aggregate manager sentiment on corporate M&A decisions and announcement returns. Nevertheless, it is important to acknowledge the limitations of these studies. First, the samples in these studies are limited to the M&A decisions and announcement returns of domestic M&As announced by US public firms. Findings may be different in case of cross-border M&As. Erel et al. (2012) mention that cross-border mergers are associated with additional set of frictions that can affect the deals. Their statement suggests that cross-border M&As are more complex in nature relative to domestic M&As and take longer time to execute the deals. During these longer period of time from planning to execution stage, acquiring firms may apply better investment evaluation techniques and take M&A decisions based on the outputs of those techniques instead of being driven by the aggregate sentiment of their peers.

Second, the samples exclude M&A data of financial and utility firms. The findings may vary in case of M&A activities and announcement returns by financial and utility firms since their business model is somewhat different than non-financial and non-utility firms, as indicated in Fama and French (1992)⁸⁷. Third, the samples in these empirical studies consider M&A data of US acquiring firms only. Findings may be different in case of M&As announced by firms in other countries where the accounting standards and disclosure requirements are different than those in the US. In addition, the results may

⁸⁷ Fama and French (1992) indicate the differences in business models between the financial firms and the non-financial firms by arguing that high leverage for financial firms is normal whereas high leverage for non-financial firms often indicates distress.

vary in case of M&As in countries where the extent of social interactions among the affiliates are limited because of the cultural aspects. Finally, the studies in this thesis use M&A data for the period between January 2003 and December 2017 to match the availability of the main variable of interest i.e. the updated version of manager sentiment index constructed by Jiang et al. (2019). Although five years have passed since 2017 and global M&A activities peaked in 2021 than ever before, the studies here do not include M&A data of these years.

5.4 Future Research Directions

The findings in this thesis provide some direction for future research agenda. First, the three empirical studies in this thesis exclusively focus on corporate M&A activities and provide evidence that aggregate manager sentiment is an important factor for firm's investment decisions. Future research could focus on other business decisions such as IPO and SEO decisions, capital structure decision, dividend pay-out decision and R&D investment decisions. Given the limitations of this thesis, future research may also focus on the impact of aggregate manager sentiment on cross-border M&A decisions as well as on M&A activities in other countries.

The study in this thesis also provides evidence that investors react negatively to the M&A announcements following periods of high aggregate manager sentiment. Future research should investigate if these negative reactions are rational by examining whether the operating performance of merged firms in the post-mergers periods is significantly different between firms which announce M&As following periods of high aggregate manager sentiment and firms which announce M&As following periods of low aggregate manager sentiment. Overall, this thesis suggests that along with investor sentiment and individual managerial biases (e.g., overconfidence), aggregate manager sentiment is also an important determinant of a firm's corporate investment decisions, providing avenues for more research in this area.

Bibliography

- Akbulut, M.E. 2013. Do overvaluation-driven stock acquisitions really benefit acquirer shareholders?. *Journal of Financial and Quantitative Analysis*, **48**(4), pp.1025-1055.
- Alexandridis, G., Antypas, N. and Travlos, N. 2017. Value creation from M&As: New evidence. *Journal of Corporate Finance*, **45**, pp.632-650.
- Alexandridis, G., Fuller, K.P., Terhaar, L. and Travlos, N.G. 2013. Deal size, acquisition premia and shareholder gains. *Journal of Corporate Finance*, **20**, pp.1-13.
- Alexandridis, G., Mavrovitis, C.F. and Travlos, N.G. 2012. How have M&As changed? Evidence from the sixth merger wave. *The European Journal of Finance*, **18**(8), pp.663-688.
- Almeida, H., Campello, M. and Hackbarth, D. 2011. Liquidity mergers. *Journal of Financial Economics*, **102**(3), pp.526-558.
- Alshwer, A.A., Sibilkov, V. and Zaiats, N.S., 2011. Financial constraints and the method of payment in mergers and acquisitions. *Available at SSRN 1364455*.
- Amihud, Y., Lev, B. and Travlos, N.G. 1990. Corporate control and the choice of investment financing: The case of corporate acquisitions. *The Journal of Finance*, **45**(2), pp.603-616.
- An, S., Tan, X. and Wu, K. 2022. Manager Sentiment, Deal Characteristics, and Takeover Performance. *Available at SSRN 3527865*.
- Andrade, G. and Stafford, E. 2004. Investigating the economic role of mergers. *Journal of Corporate Finance*, **10**(1), pp.1-36.
- Andrade, G., Mitchell, M. and Stafford, E. 2001. New evidence and perspectives on mergers. *Journal of Economic Perspectives*, **15**(2), pp.103-120.
- André, P., Kooli, M. and L'her, J.F. 2004. The long-run performance of mergers and acquisitions: Evidence from the Canadian stock market. *Financial Management*, pp.27-43.
- Ang, J.S. 1991. Small business uniqueness and the theory of financial management. *Journal of Small Business Finance*, **1**(1), pp.1-13.
- Ang, J.S. and Cheng, Y. 2006. Direct evidence on the market-driven acquisition theory. *Journal of Financial Research*, **29**(2), pp.199-216.
- Anglin, A.H., McKenny, A.F. and Short, J.C. 2018. The impact of collective optimism on new venture creation and growth: A social contagion perspective. *Entrepreneurship Theory and Practice*, **42**(3), pp.390-425.
- Angst, C.M., Agarwal, R., Sambamurthy, V. and Kelley, K. 2010. Social contagion and information technology diffusion: The adoption of electronic medical records in US hospitals. *Management Science*, **56**(8), pp.1219-1241.
- Aral, S. and Walker, D. 2011. Creating social contagion through viral product design: A randomized trial of peer influence in networks. *Management Science*, **57**(9), pp.1623-1639.
- Arif, S. and Lee, C.M. 2014. Aggregate investment and investor sentiment. *The Review of Financial Studies*, **27**(11), pp.3241-3279.

- Arikan, A.M. and Stulz, R.M. 2016. Corporate acquisitions, diversification, and the firm's life cycle. *The Journal of Finance*, **71**(1), pp.139-194.
- Armbruster, D., Pieper, L., Klotsche, J. and Hoyer, J. 2015. Predictions get tougher in older individuals: a longitudinal study of optimism, pessimism and depression. *Social Psychiatry and Psychiatric Epidemiology*, **50**(1), pp.153-163.
- Ayers, B.C., Lefanowicz, C.E. and Robinson, J.R. 2003. Shareholder taxes in acquisition premiums: The effect of capital gains taxation. *The Journal of Finance*, **58**(6), pp.2783-2801.
- Ayers, B.C., Lefanowicz, C.E. and Robinson, J.R. 2004. The effect of shareholder-level capital gains taxes on acquisition structure. *The Accounting Review*, **79**(4), pp.859-887.
- Baker, H.K. and Nofsinger, J.R. eds. 2010. *Behavioral finance: investors, corporations, and markets*, **6**, John Wiley & Sons.
- Baker, M. 2009. Capital Market-Driven Corporate Finance. *Annual Review of Financial Economics*, **1**(1), pp.181-205.
- Baker, M. and Wurgler, J. 2006. Investor sentiment and the cross-section of stock returns. *The Journal of Finance*, **61**(4), pp.1645-1680.
- Baker, M. and Wurgler, J. 2012. Behavioral corporate finance: an updated survey. In: Constantinides, G., Harris, M. and Stulz, R. (Eds.), *Handbook of the Economics of Finance*, **2**. Elsevier, Amsterdam, pp.357-424.
- Baker, M. and Wurgler, J. 2013. Behavioral corporate finance: An updated survey. In *Handbook of the Economics of Finance*, **2**, pp.357-424, Elsevier.
- Baker, M., Coval, J. and Stein, J.C. 2007. Corporate financing decisions when investors take the path of least resistance. *Journal of Financial Economics*, **84**(2), pp.266-298.
- Baker, M., Greenwood, R. and Wurgler, J. 2009. Catering through nominal share prices. *The Journal of Finance*, **64**(6), pp.2559-2590.
- Baker, S.R., Bloom, N. and Davis, S.J. 2016. Measuring economic policy uncertainty. *The Quarterly Journal of Economics*, **131**(4), pp.1593-1636.
- Bandura, A. 1998. Personal and collective efficacy in human adaptation and change. In: Adair, J.G., Belanger, D. and Dion, K.L. (Eds.), *Advances in psychological science*, **1**, Hove, UK: Psychology Press, pp.51-71.
- Barberis, N., Shleifer, A. and Vishny, R. 1998. A model of investor sentiment. *Journal of Financial Economics*, **49**(3), pp.307-343.
- Baum, C.F., Schäfer, D. and Talavera, O., 2011. The impact of the financial system's structure on firms' financial constraints. *Journal of International Money and Finance*, **30**(4), pp.678-691.
- Bena, J. and Li, K. 2014. Corporate innovations and mergers and acquisitions. *The Journal of Finance*, **69**(5), pp.1923-1960.
- Bénabou, R. 2012. Groupthink: Collective delusions in organizations and markets. *The Review of Economic Studies*, **8**(2), pp.1-48.
- Ben-David, I., Drake, M.S. and Roulstone, D.T. 2015. Acquirer valuation and acquisition decisions: Identifying mispricing using short interest. *Journal of Financial and Quantitative Analysis*, **50**(1-2), pp.1-32.

- Ben-David, I., Graham, J.R. and Harvey, C.R. 2013. Managerial miscalibration. *The Quarterly Journal of Economics*, **128**(4), pp.1547-1584.
- Bennett, O. 2011. Cultures of optimism. *Cultural Sociology*, **5**(2), pp.301-320.
- Berkovitch, E. and Narayanan, M.P. 1990. Competition and the medium of exchange in takeovers. *The Review of Financial Studies*, **3**(2), pp.153-174.
- Berkovitch, E. and Narayanan, M.P. 1993. Motives for takeovers: An empirical investigation. *Journal of Financial and Quantitative analysis*, **28**(3), pp.347-362.
- Berns, J., Bick, P., Flugum, R. and Houston, R. 2019. Do Tone Changes in Financial Statements Predict Acquisition Behavior?. *Financial Management Association Annual Meeting*, New Orleans, Louisiana.
- Bessler, W., Drobetz, W. and Zimmermann, J. 2011. Financing corporate mergers and acquisitions. In K. H. Baker, and G. S. Martin, *Capital structure and corporate financing decisions: Theory, evidence, and practice*. New Jersey: John Wiley & Sons.
- Bhagwat, V., Dam, R. and Harford, J. 2016. The real effects of uncertainty on merger activity. *The Review of Financial Studies*, **29**(11), pp.3000-3034.
- Bharadwaj, A. and Shivdasani, A. 2003. Valuation effects of bank financing in acquisitions. *Journal of Financial Economics*, **67**(1), pp.113-148.
- Billett, M.T. and Qian, Y. 2008. Are overconfident CEOs born or made? Evidence of self-attribution bias from frequent acquirers. *Management Science*, **54**(6), pp.1037-1051.
- Blackburn, V.L., Dark, F.H. and Hanson, R.C. 1997. Mergers, Method of Payment and Returns to Manager-and Owner-Controlled Firms. *Financial Review*, **32**(3), pp.569-589.
- Blau, B.M., DeLisle, J.R. and Price, S.M. 2015. Do sophisticated investors interpret earnings conference call tone differently than investors at large? Evidence from short sales. *Journal of Corporate Finance*, **31**, pp.203-219.
- Boateng, A. and Bi, X. 2014. Acquirer characteristics and method of payment: Evidence from Chinese mergers and acquisitions. *Managerial and Decision Economics*, **35**(8), pp.540-554.
- Bochkay, K. and Dimitrov, V. 2015. Qualitative management disclosures and market sentiment. Unpublished working paper. Rutgers University.
- Bochkay, K., Chychyla, R. and Nanda, D. 2019. Dynamics of CEO disclosure style. *The Accounting Review*, **94**(4), pp.103-140.
- Bonaime, A., Gulen, H. and Ion, M. 2018. Does policy uncertainty affect mergers and acquisitions?. *Journal of Financial Economics*, **129**(3), pp.531-558.
- Boone, A.L., Lie, E. and Liu, Y. 2014. Time trends and determinants of the method of payment in M&As. *Journal of Corporate Finance*, **27**, pp.296-304.
- Boulton, T.J. and Campbell, T.C. 2016. Managerial confidence and initial public offerings. *Journal of Corporate Finance*, **37**, pp.375-392.
- Bradley, M., Desai, A. and Kim, E.H. 1983. The rationale behind inter firm tender offers: Information or synergy?. *Journal of Financial Economics*, **11**(1-4), pp.183-206.

- Bradley, M., Desai, A. and Kim, E.H. 1988. Synergistic gains from corporate acquisitions and their division between the stockholders of target and acquiring firms. *Journal of financial Economics*, **21**(1), pp.3-40.
- Brickley, J.A., Coles, J.L. and Terry, R.L. 1994. Outside directors and the adoption of poison pills. *Journal of financial Economics*, **35**(3), pp.371-390.
- Brogaard, J. and Detzel, A. 2015. The asset-pricing implications of government economic policy uncertainty. *Management Science*, **61**(1), pp.3-18.
- Brown, R. and Sarma, N. 2007. CEO overconfidence, CEO dominance and corporate acquisitions. *Journal of Economics and Business*, **59**(5), pp.358-379.
- Brown, R.L., Durbin, J. and Evans, J.M. 1975. Techniques for testing the constancy of regression relationships over time. *Journal of the Royal Statistical Society: Series B (Methodological)*, **37**(2), pp.149-163.
- Brown, S.J. and Warner, J.B. 1985. Using daily stock returns: The case of event studies. *Journal of Financial Economics*, **14**(1), pp.3-31.
- Byrd, J.W. and Hickman, K.A. 1992. Do outside directors monitor managers?: Evidence from tender offer bids. *Journal of Financial Economics*, **32**(2), pp.195-221.
- Campbell, T.C., Gallmeyer, M., Johnson, S.A., Rutherford, J. and Stanley, B.W. 2011. CEO optimism and forced turnover. *Journal of Financial Economics*, **101**(3), pp.695-712.
- Cartwright, S., & Schoenberg, R. 2006. Thirty years of mergers and acquisitions research: Recent advances and future opportunities. *British Journal of Management*, **17**, pp.S1-S5.
- Chambers, J.R., & Windschitl, P.D. 2004. Biases in social comparative judgments: the role of nonmotivated factors in above-average and comparative-optimism effects. *Psychological Bulletin*, **130**(5), pp.813-838.
- Chemmanur, T.J., Paeglis, I. and Simonyan, K. 2009. The medium of exchange in acquisitions: Does the private information of both acquirer and target matter?. *Journal of Corporate Finance*, **15**(5), pp.523-542.
- Chen, D., Gao, H. and Ma, Y. 2018. Human capital driven acquisition: Evidence from the Inevitable Disclosure Doctrine. *Available at SSRN 2713600*.
- Chen, J., Leung, W.S., Song, W. and Goergen, M. 2019. Why female board representation matters: The role of female directors in reducing male CEO overconfidence. *Journal of Empirical Finance*, **53**, pp.70-90.
- Chen, S.S., Ho, K.Y. and Ho, P.H. 2014. CEO overconfidence and long-term performance following R&D increases. *Financial Management*, **43**(2), pp.245-269.
- Chen, T., Dong, H. and Lin, C. 2020. Institutional shareholders and corporate social responsibility. *Journal of Financial Economics*, **135**(2), pp.483-504.
- Chen, Y.W., Chan, K. and Chang, Y. 2019. Peer effects on corporate cash holdings. *International Review of Economics & Finance*, **61**, pp.213-227.
- Choe, H., Masulis, R.W. and Nanda, V. 1993. Common stock offerings across the business cycle: Theory and evidence. *Journal of Empirical Finance*, **1**(1), pp.3-31.
- Cooper, A.C., Woo, C.Y. and Dunkelberg, W.C. 1988. Entrepreneurs' perceived chances for success. *Journal of Business Venturing*, **3**(2), pp.97-108.

- Cordeiro, L. 2009. Managerial overconfidence and dividend policy. *Available at SSRN 1343805*.
- Core, J.E., Holthausen, R.W. and Larcker, D.F. 1999. Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics*, **51**(3), pp.371-406.
- Corwin, S.A. 2003. The determinants of underpricing for seasoned equity offers. *The Journal of Finance*, **58**(5), pp.2249-2279.
- Cowling, M. 2003. Productivity and corporate governance in smaller firms. *Small Business Economics*, **20**(4), pp.335-344.
- Cunningham, C., Ederer, F. and Ma, S. 2019. Killer acquisitions. *Available at SSRN 3241707*.
- Danbolt, J., Siganos, A. and Vagenas-Nanos, E. 2015. Investor sentiment and bidder announcement abnormal returns. *Journal of Corporate Finance*, **33**, pp.164-179.
- Danielson, M.G. and Scott, J.A. 2006. The capital budgeting decisions of small businesses. *Journal of Applied Finance*, **16**(2).
- Darai, D., Kogan, S., Kwasnica, A.M. and Weber, R.A. 2017. Aggregate Sentiment and Investment: An Experimental Study. *Available at SSRN 3008722*.
- De Bondt, W.F. and Thompson, H. E. 1992. Is economic efficiency the driving force behind mergers?. *Managerial and Decision Economics*, **13**(1), pp.31-44.
- de La Bruslerie, H. 2013. Crossing takeover premiums and mix of payment: An empirical test of contractual setting in M&A transactions. *Journal of Banking & Finance*, **37**(6), pp.2106-2123.
- De Long, J.B., Shleifer, A., Summers, L.H. and Waldmann, R.J. 1990. Noise trader risk in financial markets. *Journal of Political Economy*, **98**(4), pp.703-738.
- Denes, M., Duchin, R. and Harford, J. 2018. *Merger waves and innovation cycles: Evidence from patent expirations*. Working paper.
- Denis, D.J. and Sibilkov, V. 2010. Financial constraints, investment, and the value of cash holdings. *The Review of Financial Studies*, **23**(1), pp.247-269.
- Deshmukh, S., Goel, A.M. and Howe, K.M. 2013. CEO overconfidence and dividend policy. *Journal of Financial Intermediation*, **22**(3), pp.440-463.
- Devos, E., Kadapakkam, P.R. and Krishnamurthy, S. 2009. How do mergers create value? A comparison of taxes, market power, and efficiency improvements as explanations for synergies. *The Review of Financial Studies*, **22**(3), pp.1179-1211.
- Di Giuli, A. 2013. The effect of stock misvaluation and investment opportunities on the method of payment in mergers. *Journal of Corporate Finance*, **21**, pp.196-215.
- Dong, M., Hirshleifer, D., Richardson, S. and Teoh, S.H. 2006. Does investor misvaluation drive the takeover market?. *The Journal of Finance*, **61**(2), pp.725-762.
- Doukas, J.A. and Petmezas, D. 2007. Acquisitions, overconfident managers and self-attribution bias. *European Financial Management*, **13**(3), pp.531-577.

- Dube, S. and Glascock, J.L. 2006. Effects of the method of payment and the mode of acquisition on performance and risk metrics. *International Journal of Managerial Finance*, **2**(3), pp.176-195.
- Dutordoir, M., Strong, N.C. and Sun, P. 2022. Does short-selling potential influence merger and acquisition payment choice?. *Journal of Financial Economics*, **144**(3), pp.761-779.
- Eckbo, B.E. 2009. Bidding strategies and takeover premiums: A review. *Journal of Corporate Finance*, **15**(1), pp.149-178.
- Eckbo, B.E. and Langohr, H. 1989. Information disclosure, method of payment, and takeover premiums: Public and private tender offers in France. *Journal of Financial Economics*, **24**(2), pp.363-403.
- Eckbo, B.E., Giammarino, R.M. and Heinkel, R.L. 1990. Asymmetric information and the medium of exchange in takeovers: Theory and tests. *The Review of Financial Studies*, **3**(4), pp.651-675.
- Ekanem, I. 2005. 'Bootstrapping': the investment decision-making process in small firms. *The British Accounting Review*, **37**(3), pp.299-318.
- Erel, I., Liao, R.C. and Weisbach, M.S. 2012. Determinants of cross-border mergers and acquisitions. *The Journal of Finance*, **67**(3), pp.1045-1082.
- Faccio, M. and Masulis, R. W. 2005. The choice of payment method in European mergers and acquisitions. *The Journal of Finance*, **60**(3), 1345-1388.
- Fama, E.F. and French, K.R. 1992. The cross-section of expected stock returns. *The Journal of Finance*, **47**(2), pp.427-465.
- Fama, E.F. and Jensen, M.C. 1983. Separation of ownership and control. *The Journal of Law and Economics*, **26**(2), pp.301-325.
- Fang, Y., Francis, B. and Hasan, I. 2018. Differences make a difference: Diversity in social learning and value creation. *Journal of Corporate Finance*, **48**, pp.474-491.
- Feldman, R., Govindaraj, S., Livnat, J. and Segal, B. 2010. Management's tone change, post earnings announcement drift and accruals. *Review of Accounting Studies*, **15**(4), pp.915-953.
- Ferris, S.P., Jayaraman, N. and Sabherwal, S. 2013. CEO overconfidence and international merger and acquisition activity. *Journal of Financial and Quantitative Analysis*, **48**(1), pp.137-164.
- Fishman, M.J. 1989. Preemptive bidding and the role of the medium of exchange in acquisitions. *The Journal of Finance*, **44**(1), pp.41-57.
- Flannery, M.J., Kwan, S.H. and Nimalendran, M. 2013. The 2007–2009 financial crisis and bank opaqueness. *Journal of Financial Intermediation*, **22**(1), pp.55-84.
- Forbes, D.P. 2005. Are some entrepreneurs more overconfident than others?. *Journal of Business Venturing*, **20**(5), pp.623-640.
- Frank, M.Z. and Goyal, V.K. 2003. Testing the pecking order theory of capital structure. *Journal of Financial Economics*, **67**(2), pp.217-248.
- Fu, F., Lin, L. and Officer, M.S. 2013. Acquisitions driven by stock overvaluation: are they good deals?. *Journal of Financial Economics*, **109**(1), pp.24-39.

- Fuller, K., Netter, J. and Stegemoller, M. 2002. What do returns to acquiring firms tell us? Evidence from firms that make many acquisitions. *The Journal of Finance*, **57**(4), pp.1763-1793.
- Gao, H. 2010. Market misvaluation, managerial horizon, and acquisitions. *Financial Management*, **39**(2), pp.833-850.
- Garfinkel, J.A. and Hankins, K.W. 2011. The role of risk management in mergers and merger waves. *Journal of Financial Economics*, **101**(3), pp.515-532.
- Gervais, S., Heaton, J.B. and Odean, T. 2011. Overconfidence, compensation contracts, and capital budgeting. *The Journal of Finance*, **66**(5), pp.1735-1777.
- Ghosh, A. and Ruland, W. 1998. Managerial ownership, the method of payment for acquisitions, and executive job retention. *The Journal of Finance*, **53**(2), pp.785-798.
- Gill, A. and Shah, C. 2012. Determinants of corporate cash holdings: Evidence from Canada. *International Journal of Economics and Finance*, **4**(1), pp.70-79.
- Gino, F., Ayal, S. and Ariely, D. 2009. Contagion and differentiation in unethical behavior the effect of one bad apple on the barrel. *Psychological Science*, **20**(3), pp.393-398.
- Ginwright, S.A. 2007. Black youth activism and the role of critical social capital in Black community organizations. *American Behavioral Scientist*, **51**(3), pp.403-418.
- Glaser, M., Schäfers, P. and Weber, M. 2008, October. Managerial optimism and corporate investment: Is the CEO alone responsible for the relation?. In *AFA 2008 New Orleans Meetings Paper*.
- Gombola, M. and Marciukaityte, D. 2007. Managerial overoptimism and the choice between debt and equity financing. *Journal of Behavioral Finance*, **8**(4), pp.225-235.
- Gordon, J.N. 2007. The rise of independent directors in the United States, 1950-2005: Of shareholder value and stock market prices. *Stanford Law Review*, **59**(6), pp.1465-1568.
- Gorton, G., Kahl, M. and Rosen, R.J. 2009. Eat or be eaten: A theory of mergers and firm size. *The Journal of Finance*, **64**(3), pp.1291-1344.
- Graham, J.R., Harvey, C.R. and Puri, M. 2013. Managerial attitudes and corporate actions. *Journal of Financial Economics*, **109**(1), pp.103-121.
- Greene, W.H. 2003. *Econometric analysis*, Fifth edition / International edition. Upper Saddle River, N.J., Great Britain: Prentice Hall.
- Grennan, J. 2019. Dividend payments as a response to peer influence. *Journal of Financial Economics*, **131**(3), pp.549-570.
- Gugler, K., Mueller, D.C. and Weichselbaumer, M. 2012. The determinants of merger waves: An international perspective. *International Journal of Industrial Organization*, **30**(1), pp.1-15.
- Gugler, K., Mueller, D.C., Weichselbaumer, M. and Yurtoglu, B. 2012. Market optimism and merger waves. *Managerial and Decision Economics*, **33**(3), pp.159-175.
- Hackbarth, D. 2002, December. Managerial optimism, overconfidence, and capital structure decisions. In *European Finance Association Annual Meeting, (August, 2004), Maasticht, The Netherlands*.

- Hackbarth, D. 2008. Managerial traits and capital structure decisions. *Journal of Financial and Quantitative Analysis*, **43**(4), pp.843-881.
- Hackbarth, D. and Morellec, E. 2008. Stock returns in mergers and acquisitions. *The Journal of Finance*, **63**(3), pp.1213-1252.
- Hansen, R.G. 1987. A theory for the choice of exchange medium in mergers and acquisitions. *The Journal of Business*, **60**(1) pp.75-95.
- Harford, J. 1999. Corporate cash reserves and acquisitions. *The Journal of Finance*, **54**(6), pp.1969-1997.
- Harford, J. 2005. What drives merger waves?. *Journal of Financial Economics*, **77**(3), pp.529-560.
- Hayward, M.L. and Hambrick, D.C. 1997. Explaining the premiums paid for large acquisitions: Evidence of CEO hubris. *Administrative Science Quarterly*, pp.103-127.
- Healy, P.M., Palepu, K.G. and Ruback, R.S. 1992. Does corporate performance improve after mergers?. *Journal of Financial Economics*, **31**(2), pp.135-175.
- Heaton, J.B. 2002. Managerial optimism and corporate finance. *Financial Management*, **31**(2), pp.33-45.
- Heron, R. and Lie, E. 2002. Operating performance and the method of payment in takeovers. *Journal of Financial and Quantitative Analysis*, **37**(1), pp.137-155.
- Hietala, P., Kaplan, S.N. and Robinson, D.T. 2002. *What is the price of hubris? Using takeover battles to infer overpayments and synergies* (No. w9264). National Bureau of Economic Research.
- Hilary, G. and Hsu, C. 2011. Endogenous overconfidence in managerial forecasts. *Journal of Accounting and Economics*, **51**(3), pp.300-313.
- Hilary, G., Hsu, C., Segal, B. and Wang, R. 2016. The bright side of managerial over-optimism. *Journal of Accounting and Economics*, **62**(1), pp.46-64.
- Hiller, N.J. and Hambrick, D.C. 2005. Conceptualizing executive hubris: the role of (hyper-) core self-evaluations in strategic decision-making. *Strategic Management Journal*, **26**(4), pp.297-319.
- Hinz, A., Sander, C., Glaesmer, H., Brähler, E., Zenger, M., Hilbert, A. and Kocalevent, R.D. 2017. Optimism and pessimism in the general population: Psychometric properties of the Life Orientation Test (LOT-R). *International Journal of Clinical and Health Psychology*, **17**(2), pp.161-170.
- Hirshleifer, D., Low, A. and Teoh, S.H. 2012. Are overconfident CEOs better innovators?. *The Journal of Finance*, **67**(4), pp.1457-1498.
- Hoberg, G. and Phillips, G. 2010. Product market synergies and competition in mergers and acquisitions: A text-based analysis. *The Review of Financial Studies*, **23**(10), pp.3773-3811.
- Huang-Meier, W., Lambertides, N. and Steeley, J.M. 2016. Motives for corporate cash holdings: the CEO optimism effect. *Review of Quantitative Finance and Accounting*, **47**(3), pp.699-732.

- Humphery-Jenner, M. and Powell, R. 2014. Firm size, sovereign governance, and value creation: Evidence from the acquirer size effect. *Journal of Corporate Finance*, **26**, pp.57-77.
- Humphery-Jenner, M., Lisic, L.L., Nanda, V. and Silveri, S.D. 2016. Executive overconfidence and compensation structure. *Journal of Financial Economics*, **119**(3), pp.533-558.
- Hwang, H.D., Kim, H.D. and Kim, T. 2020. The Blind Power: Power-led CEO Overconfidence and M&A Decision Making. *The North American Journal of Economics and Finance*, **52**, pp.1-23.
- imaa-institute. 2023. *M&A Statistics*. [Online]. [Accessed 03 February 2023]. Available from: <https://imaa-institute.org/mergers-and-acquisitions-statistics/>
- Ismail, A. and Krause, A. 2010. Determinants of the method of payment in mergers and acquisitions. *The Quarterly Review of Economics and Finance*, **50**(4), pp.471-484.
- Jensen, M.C. 1986. Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*, **76**(2), pp.323-329.
- Jensen, M.C. 1993. The modern industrial revolution, exit, and the failure of internal control systems. *The Journal of Finance*, **48**(3), pp.831-880.
- Jensen, M.C. and Ruback, R.S. 1983. The market for corporate control: The scientific evidence. *Journal of Financial Economics*, **11**(1-4), pp.5-50.
- Jenter, D. and Lewellen, K. 2015. CEO preferences and acquisitions. *The Journal of Finance*, **70**(6), pp.2813-2852.
- Jiang, F., Lee, J., Martin, X. and Zhou, G. 2019. Manager sentiment and stock returns. *Journal of Financial Economics*, **132**(1), pp.126-149.
- Jochem, T. and Peters, F.S. 2020. *Bias Propagation in Economically Linked Firms*. [Online]. Karlsruher Institut für Technologie: KIT. [Accessed 25 February 2020]. Available from: <http://micro.econ.kit.edu/downloads/Jochem>
- Johnson, D.D. and Fowler, J.H. 2011. The evolution of overconfidence. *Nature*, **477**, pp.317-320.
- Jovanovic, B. and Rousseau, P.L. 2002. The Q-theory of mergers. *American Economic Review*, **92**(2), pp.198-204.
- Jung, K., Kim, Y.C. and Stulz, R. 1996. Timing, investment opportunities, managerial discretion, and the security issue decision. *Journal of Financial Economics*, **42**(2), pp.159-185.
- Kahneman, D., Slovic, P. and Tversky, A. 1982. *Judgment under uncertainty: Heuristics and biases*. New York: Cambridge university press.
- Kalinowska, A. and Mielcarz, P. 2014. Methods of payment in M&A transactions and the operational performance of acquirers. *Available at SSRN 2419742*.
- Karampatsas, N., Petmezas, D. and Travlos, N.G. 2014. Credit ratings and the choice of payment method in mergers and acquisitions. *Journal of Corporate Finance*, **25**, pp.474-493.

- Kolasinski, A.C. and Li, X. 2013. Can strong boards and trading their own firm's stock help CEOs make better decisions? Evidence from acquisitions by overconfident CEOs. *Journal of Financial and Quantitative Analysis*, **48**(4), pp.1173-1206.
- Komlenovic, S., Mamun, A. and Mishra, D. 2011. Business cycle and aggregate industry mergers. *Journal of Economics and Finance*, **35**(3), pp.239-259.
- Korkeamaki, T. P. 2005. Effects of law on corporate financing practices-international evidence from convertible bond issues. *Journal of Corporate Finance*, **11**(5), pp.809-831.
- Kose, J., Liu, Y., and Taffler, R. 2011. *It Takes Two to Tango: CEO Overconfidence, Overpayment, and Acquirer Value Destruction*. Paper presented at The 20th European Financial Management Association (EFMA) (Paper accepted.), Braga, Portugal.
- Kovalchik, S., Camerer, C.F., Grether, D.M., Plott, C.R. and Allman, J.M. 2005. Aging and decision making: A comparison between neurologically healthy elderly and young individuals. *Journal of Economic Behaviour & Organization*, **58**(1), pp.79-94.
- Kuepper, J. 2019. *CBOE Volatility Index (VIX) Definition*. [Online]. Investopedia. [Accessed 04 February 2020]. Available from: <https://www.investopedia.com/terms/v/vix.asp>
- Kumar, P. and Sivaramakrishnan, K. 2008. Who monitors the monitor? The effect of board independence on executive compensation and firm value. *The Review of Financial Studies*, **21**(3), pp.1371-1401.
- Kusewitt Jr, J.B. 1985. An exploratory study of strategic acquisition factors relating to performance. *Strategic Management Journal*, **6**(2), pp.151-169.
- Lambrecht, B.M. 2004. The timing and terms of mergers motivated by economies of scale. *Journal of Financial Economics*, **72**(1), pp.41-62.
- Lamont, O.A. 2000. Investment plans and stock returns. *The Journal of Finance*, **55**(6), pp.2719-2745.
- Landier, A. and Thesmar, D. 2009. Financial contracting with optimistic entrepreneurs. *The Review of Financial Studies*, **22**(1), pp.117-150.
- Lang, A. and Mosk, T. 2012. Impact of financial crisis on real economic activity. Tilburg University, Netherland.
- Lang, L.H., Stulz, R. and Walkling, R.A. 1989. Managerial performance, Tobin's Q, and the gains from successful tender offers. *Journal of Financial Economics*, **24**(1), pp.137-154.
- Leary, M.T. and Roberts, M.R. 2014. Do peer firms affect corporate financial policy?. *The Journal of Finance*, **69**(1), pp.139-178.
- Lee, J.M., Hwang, B.H. and Chen, H. 2017. Are founder CEOs more overconfident than professional CEOs? Evidence from S&P 1500 companies. *Strategic Management Journal*, **38**(3), pp.751-769.
- Lee, K.H., Mauer, D.C. and Xu, E.Q. 2018. Human capital relatedness and mergers and acquisitions. *Journal of Financial Economics*, **129**(1), pp.111-135.
- Li, F. 2010. The information content of forward-looking statements in corporate filings—A naïve Bayesian machine learning approach. *Journal of Accounting Research*, **48**(5), pp.1049-1102.

- Li, J. and Tang, Y. I. 2010. CEO hubris and firm risk taking in China: The moderating role of managerial discretion. *Academy of Management Journal*, **53**(1), pp.45-68.
- Lin, Z., Peng, M.W., Yang, H. and Sun, S.L. 2009. How do networks and learning drive M&As? An institutional comparison between China and the United States. *Strategic Management Journal*, **30**(10), pp.1113-1132.
- Linck, J.S., Netter, J.M. and Yang, T. 2008. The determinants of board structure. *Journal of Financial Economics*, **87**(2), pp.308-328.
- Lipton, M. and Lorsch, J.W. 1992. A modest proposal for improved corporate governance. *The Business Lawyer*, **48**(1), pp.59-77.
- Loughran, T. and McDonald, B. 2011. When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks. *The Journal of Finance*, **66**(1), pp.35-65.
- Loughran, T. and Vijh, A.M. 1997. Do long-term shareholders benefit from corporate acquisitions?. *The Journal of Finance*, **52**(5), pp.1765-1790.
- Lu, J. and Wang, W. 2015. Board independence and corporate investments. *Review of Financial Economics*, **24**, pp.52-64.
- Lucey, B.M. and Dowling, M. 2005. The role of feelings in investor decision-making. *Journal of Economic Surveys*, **19**(2), pp.211-237.
- Ludvigson, S.C. 2004. Consumer confidence and consumer spending. *Journal of Economic perspectives*, **18**(2), pp.29-50.
- Maksimovic, V. and Phillips, G. 2001. The market for corporate assets: Who engages in mergers and asset sales and are there efficiency gains?. *The Journal of Finance*, **56**(6), pp.2019-2065.
- Maksimovic, V., Phillips, G. and Yang, L. 2013. Private and public merger waves. *The Journal of Finance*, **68**(5), pp.2177-2217.
- Malmendier, U. and Tate, G. 2005a. CEO overconfidence and corporate investment. *The Journal of Finance*, **60**(6), pp.2661-2700.
- Malmendier, U. and Tate, G. 2005b. Does overconfidence affect corporate investment? CEO overconfidence measures revisited. *European Financial Management*, **11**(5), pp.649-659.
- Malmendier, U. and Tate, G. 2008. Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of Financial Economics*, **89**(1), pp.20-43.
- Malmendier, U. and Tate, G. 2015. Behavioral CEOs: The role of managerial overconfidence. *Journal of Economic Perspectives*, **29**(4), pp.37-60.
- Malmendier, U., Tate, G. and Yan, J. 2007. *Corporate financial policies with overconfident managers* (No. w13570). National Bureau of Economic Research.
- Malmendier, U., Tate, G. and Yan, J. 2011. Overconfidence and early-life experiences: the effect of managerial traits on corporate financial policies. *The Journal of Finance*, **66**(5), pp.1687-1733.
- Maloney, M.T., McCormick, R.E. and Mitchell, M.L. 1993. Managerial decision making and capital structure. *Journal of Business*, **66**(2), pp.189-217.

- Martin, K.J. 1996. The method of payment in corporate acquisitions, investment opportunities, and management ownership. *The Journal of Finance*, **51**(4), pp.1227-1246.
- Martynova, M. and Renneboog, L. 2008. A century of corporate takeovers: What have we learned and where do we stand?. *Journal of Banking & Finance*, **32**(10), pp.2148-2177.
- Martynova, M. and Renneboog, L. 2009. What determines the financing decision in corporate takeovers: Cost of capital, agency problems, or the means of payment?. *Journal of Corporate Finance*, **15**(3), pp.290-315.
- Masulis, R.W., Wang, C. and Xie, F. 2007. Corporate governance and acquirer returns. *The Journal of Finance*, **62**(4), pp.1851-1889
- Mitchell, M.L. and Mulherin, J.H. 1996. The impact of industry shocks on takeover and restructuring activity. *Journal of Financial Economics*, **41**(2), pp.193-229.
- Mitchell, M.L. and Stafford, E. 2000. Managerial decisions and long-term stock price performance. *The Journal of Business*, **73**(3), pp.287-329.
- Mitchell, R.L. and Phillips, L.H. 2007. The psychological, neurochemical and functional neuroanatomical mediators of the effects of positive and negative mood on executive functions. *Neuropsychologia*, **45**(4), pp.617-629.
- Moeller, S.B., Schlingemann, F.P. and Stulz, R.M. 2004. Firm size and the gains from acquisitions. *Journal of Financial Economics*, **73**(2), pp.201-228.
- Moeller, S.B., Schlingemann, F.P. and Stulz, R.M. 2005. Wealth destruction on a massive scale? A study of acquiring-firm returns in the recent merger wave. *The Journal of Finance*, **60**(2), pp.757-782.
- Mohamed, E., Baccar, A., Fairchild, R. and Bouri, A. 2012. Does corporate governance affect managerial optimism? Evidence from NYSE panel data firms. *International Journal of Euro-Mediterranean Studies*, **5**(1), pp.41-56.
- Mohamed, E.B. and Shehata, M.A. 2017. R&D investment–cash flow sensitivity under managerial optimism. *Journal of Behavioral and Experimental Finance*, **14**, pp.1-4.
- Moore, D.A. and Healy, P.J., 2008. The trouble with overconfidence. *Psychological review*, **115**(2), pp.502-517.
- Morck, R., Shleifer, A. and Vishny, R.W. 1990. Do managerial objectives drive bad acquisitions?. *The Journal of Finance*, **45**(1), pp.31-48.
- Mueller, D.C. and Sirower, M.L. 2003. The causes of mergers: tests based on the gains to acquiring firms' shareholders and the size of premia. *Managerial and Decision Economics*, **24**(5), pp.373-391.
- Myers, S.C. and Majluf, N.S. 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, **13**(2), pp.187-221.
- Nauhaus, S., Luger, J. and Raisch, S. 2021. Strategic decision making in the digital age: Expert sentiment and corporate capital allocation. *Journal of Management Studies*, **58**(7), pp.1933-1961.

- Nguyen, H.T., Yung, K. and Sun, Q. 2012. Motives for mergers and acquisitions: Ex-post market evidence from the US. *Journal of Business Finance & Accounting*, **39**(9-10), pp.1357-1375.
- Nguyen, N.H. and Phan, H.V. 2017. Policy uncertainty and mergers and acquisitions. *Journal of Financial and Quantitative Analysis*, **52**(2), pp.613-644.
- Nofsinger, J.R. 2005. Social mood and financial economics. *The Journal of Behavioural Finance*, **6**(3), pp.144-160.
- Officer, M.S. 2007. Are performance based arbitrage effects detectable? Evidence from merger arbitrage. *Journal of Corporate Finance*, **13**(5), pp.793-812.
- Oler, D.K. 2008. Does acquirer cash level predict post-acquisition returns?. *Review of Accounting Studies*, **13**(4), pp.479-511.
- Olson, K.R. 2006. A literature review of social mood. *The Journal of Behavioural Finance*, **7**(4), pp.193-203.
- Otto, C.A. 2014. CEO optimism and incentive compensation. *Journal of Financial Economics*, **114**(2), pp.366-404.
- Park, K., Yang, I. and Yang, T. 2017. The peer-firm effect on firm's investment decisions. *The North American Journal of Economics and Finance*, **40**, pp.178-199.
- Park, S. 2021. The P/E ratio, the business cycle, and timing the stock market. *The Journal of Portfolio Management*, **47**(8), pp.165-183.
- Pástor, L. and Veronesi, P. 2013. Political uncertainty and risk premia. *Journal of Financial Economics*, **110**(3), pp.520-545.
- Petmezas, D. 2009. What drives acquisitions?: Market valuations and bidder performance. *Journal of Multinational Financial Management*, **19**(1), pp.54-74.
- Phillips, G.M. and Zhdanov, A. 2013. R&D and the incentives from merger and acquisition activity. *The Review of Financial Studies*, **26**(1), pp.34-78.
- Polk, C. and Sapienza, P. 2004. *The real effects of investor sentiment* (No. w10563). National Bureau of Economic Research.
- Price, S.M., Doran, J.S., Peterson, D.R. and Bliss, B.A. 2012. Earnings conference calls and stock returns: The incremental informativeness of textual tone. *Journal of Banking & Finance*, **36**(4), pp.992-1011.
- Proeger, T. and Meub, L. 2014. Overconfidence as a social bias: Experimental evidence. *Economics Letter*, **122**(2), pp.203-207.
- Rau, P.R. and Vermaelen, T. 1998. Glamour, value and the post-acquisition performance of acquiring firms. *Journal of Financial Economics*, **49**(2), pp.223-253.
- Reddy, K.S., Nangia, V.K. and Agrawal, R., 2014. The 2007–2008 global financial crisis, and cross-border mergers and acquisitions: A 26-nation exploratory study. *Global Journal of Emerging Market Economies*, **6**(3), pp.257-281.
- Renneboog, L. and Vansteenkiste, C. 2019. Failure and success in mergers and acquisitions. *Journal of Corporate Finance*, **58**, pp.650-699.
- Rhodes-Kropf, M. and Viswanathan, S. 2004. Market valuation and merger waves. *The Journal of Finance*, **59**(6), pp.2685-2718.

- Rhodes-Kropf, M., Robinson, D.T. and Viswanathan, S. 2005. Valuation waves and merger activity: The empirical evidence. *Journal of Financial Economics*, **77**(3), pp.561-603.
- Roll, R. 1986. The hubris hypothesis of corporate takeovers. *Journal of Business*, pp.197-216.
- Rosen, R.J. 2006. Merger momentum and investor sentiment: The stock market reaction to merger announcements. *The Journal of Business*, **79**(2), pp.987-1017.
- Russo, J.E. and Schoemaker, P.J. 1992. Managing overconfidence. *Sloan Management Review*, **33**(2), pp.7-17.
- Salhin, A., Sherif, M. and Jones, E. 2016. Managerial sentiment, consumer confidence and sector returns. *International Review of Financial Analysis*, **47**, pp.24-38.
- Sankar, B.P. and Leepsa, N.M., 2018. Payment methods in mergers and acquisitions: A theoretical framework. *Journal of Accounting and Financial Reporting*, **8**(1), pp.2162-3082.
- Scarpetta, S., Hemmings, P., Tressel, T. and Woo, J. 2002. *The role of policy and institutions for productivity and firm dynamics: evidence from micro and industry data*. OECD working paper.
- Scharfstein, D.S. and Stein, J.C. 1990. Herd behavior and investment. *The American Economic Review*, **80**(3), pp.465-479.
- Schmidt, B. 2015. Costs and benefits of friendly boards during mergers and acquisitions. *Journal of Financial Economics*, **117**(2), pp.424-447.
- Serfling, M.A. 2014. CEO age and the riskiness of corporate policies. *Journal of Corporate Finance*, **25**, pp.251-273.
- Servaes, H. 1991. Tobin's Q and the Gains from Takeovers. *The Journal of Finance*, **46**(1), pp.409-419.
- Sharot, T., Korn, C.W. and Dolan, R.J. 2011. How unrealistic optimism is maintained in the face of reality. *Nature neuroscience*, **14**(11), pp.1475-1479.
- Sheen, A. 2014. The real product market impact of mergers. *The Journal of Finance*, **69**(6), pp.2651-2688.
- Shi, W. and Chen, G. 2019. CEO-CFO Relative Optimism and Firm Mergers and Acquisitions. Available at SSRN 3428760.
- Shivdasani, A. 1993. Board composition, ownership structure, and hostile takeovers. *Journal of accounting and economics*, **16**(1-3), pp.167-198.
- Shleifer, A. and Vishny, R.W. 2003. Stock market driven acquisitions. *Journal of Financial Economics*, **70**(3), pp.295-311.
- Shue, K. 2013. Executive networks and firm policies: Evidence from the random assignment of MBA peers. *The Review of Financial Studies*, **26**(6), pp.1401-1442.
- Siganos, A., Vagenas-Nanos, E. and Verwijmeren, P. 2014. Facebook's daily sentiment and international stock markets. *Journal of Economic Behavior & Organization*, **107**, pp.730-743.

- Smith, J. and McAleer, M. 1994. Newey–West covariance matrix estimates for models with generated regressors. *Applied Economics*, **26**(6), pp.635-640.
- Stulz, R. 1988. Managerial control of voting rights: Financing policies and the market for corporate control. *Journal of Financial Economics*, **20**, pp.25-54.
- Subrahmanyam, V., Rangan, N. and Rosenstein, S. 1997. The role of outside directors in bank acquisitions. *Financial Management*, **26**(3), pp.23-36.
- Tichy, G. 2001. What do we know about success and failure of mergers?. *Journal of Industry, Competition and Trade*, **1**(4), pp.347-394.
- Travlos, N.G. 1987. Corporate takeover bids, methods of payment, and bidding firms' stock returns. *The Journal of Finance*, **42**(4), pp.943-963.
- Tsai, P.S., Yen, T.Y., Ho, C.C. and Tsai, P.J. 2021. Market sentiment and the choice of payment method in mergers and acquisitions. *Journal of Corporate Accounting & Finance*, **32**(3), pp.139-154.
- Tuch, C. and O'Sullivan, N. 2007. The impact of acquisitions on firm performance: A review of the evidence. *International Journal of Management Reviews*, **9**(2), pp.141-170.
- Uysal, V.B. 2011. Deviation from the target capital structure and acquisition choices. *Journal of Financial Economics*, **102**(3), pp.602-620.
- Vancil, R.F. and Lorange, P. 1997. Strategic planning in diversified companies. In *Strategische Unternehmensplanung/ Strategische Unternehmensführung* (pp.788-801). Physica, Heidelberg.
- Wansley, J.W., Lane, W.R. and Yang, H.C. 1983. Abnormal returns to acquired firms by type of acquisition and method of payment. *Financial Management*, pp.16-22.
- Wansley, J.W., Lane, W.R. and Yang, H.C. 1987. Gains to bidder firms in cash and securities transactions. *Financial Review*, **22**(4), pp.403-414.
- Weston, F.J., Mitchell, M.L. and Mulherin, H.J. 2004. *Takeovers, Restructuring and Corporate Governance*, 4th edition. Pearson Higher Education.
- Wooldridge, J.M. 2012. *Introductory Econometrics: A Modern Approach*, 4th edition. Thomson.
- Yaghoubi, R., Yaghoubi, M., Locke, S. and Gibb, J. (2016). Mergers and acquisitions: a review (Part 2). *Studies in Economics and Finance*, **33**(3), pp. 437-464.
- Yan, S. 2015. Managerial attitudes and takeover outcomes: Evidence from corporate filings. *Journal of International Financial Markets, Institutions and Money*, **35**, pp.30-44.
- Yang, J., Guariglia, A. and Guo, J.M. 2019. To what extent does corporate liquidity affect M&A decisions, method of payment and performance? Evidence from China. *Journal of Corporate Finance*, **54**, pp.128-152.
- Yim, S. 2013. The acquisitiveness of youth: CEO age and acquisition behavior. *Journal of Financial Economics*, **108**(1), pp.250-273.
- Yook, K.C., Gangopadhyay, P. and McCabe, G.M. 1999. Information asymmetry, management control, and method of payment in acquisitions. *Journal of Financial Research*, **22**(4), pp.413-427.

Zhao, X., Ma, H. and Hao, T. 2019. Acquirer size, political connections and mergers and acquisitions performance: Evidence from China. *Studies in Economics and Finance*, **36**(2), pp.311-332.

Appendix

Appendix – Chapter 2

Table 2-A1 Summary Statistics of the Variables

The table exhibits the summary statistics of both dependent and independent variables in their original format. The summary statistics of dependent variables and aggregate cash holding variable are presented after transforming them into their natural logarithm since we use natural logarithm of these variables in the regression. All the variables are collected for the time period ranging from January 2003 to December 2017 and the total number of observation of each variable is 180.

Variable	Mean	Median	Std. Dev.	Min.	Max.
All M&A Deal Value, All Firms, ln(\$ billion)	10.94	10.95	0.67	8.59	12.45
All M&A Deal Value, Small Firms, ln(\$ billion)	6.38	6.47	0.75	3.98	8.25
All M&A Deal Value, Medium Firms, ln(\$ billion)	8.64	8.70	0.56	6.47	10.24
All M&A Deal Value, Large Firms, ln(\$ billion)	10.43	10.51	0.92	6.57	12.38
Cash Only Financed M&A Deal Value, All Firms, ln(\$ billion)	10.41	10.50	0.73	7.49	12.37
Cash Only Financed M&A Deal Value, Small Firms, ln(\$ billion)	5.83	5.95	1.05	1.10	8.08
Cash Only Financed M&A Deal Value, Medium Firms, ln(\$ billion)	8.14	8.23	0.71	5.43	9.63
Cash Only Financed M&A Deal Value, Large Firms, ln(\$ billion)	9.96	10.06	1.03	3.96	12.29
Manager Sentiment Index	-0.00	0.14	1.00	-4.15	1.97
Investor Sentiment Index	-0.22	-0.22	0.29	-0.94	0.60
CAPE Ratio	24.11	24.95	3.45	13.32	32.09
CRSP Index	0.01	0.01	0.04	-0.18	0.11
Aggregate Cash, ln(\$ billion)	10.91	10.39	1.86	8.37	15.80

Table 2-A2 Correlation Matrix for All M&A Deal

The following table shows the correlation among the original values of the variables that we use in this study for all M&A deals. Here, the dependent variables and aggregate cash holding variables are transformed into their natural log format. P-values are given in the parenthesis. *, ** and *** represents significance level at 10, 5 and 1 percent level, respectively.

Variables	Deal Value, All Firm	Deal Value, Small Firm	Deal Value, Medium Firm	Deal Value, Large Firm	Manager Sentiment Index	Investor Sentiment Index	CAPE Ratio	CRSP Index	Aggregate Cash Holding
Deal Value, All Firm, ln(\$ billion)	1.00								
Deal Value, Small Firm, ln(\$ billion)	0.02 (0.81)	1.00							
Deal Value, Medium Firm, ln(\$ billion)	0.34*** (0.00)	0.34*** (0.00)	1.00						
Deal Value, Large Firm, ln(\$ billion)	0.89*** (0.00)	0.01 (0.92)	0.23*** (0.00)	1.00					
Manager Sentiment Index	0.32*** (0.00)	0.12 (0.12)	0.22*** (0.00)	0.35*** (0.00)	1.00				
Investor Sentiment Index	0.40*** (0.00)	0.31*** (0.00)	0.50*** (0.00)	0.38*** (0.00)	0.47*** (0.00)	1.00			
CAPE Ratio	0.34*** (0.00)	0.15*** (0.05)	0.31*** (0.00)	0.30*** (0.00)	0.07 (0.35)	0.43*** (0.00)	1.00		
CRSP Index	0.03 (0.72)	-0.06 (0.44)	-0.04 (0.60)	0.02 (0.83)	-0.17** (0.02)	-0.14* (0.07)	0.10 (0.19)	1.00	
Aggregate Cash, ln(\$ billion)	-0.01 (0.92)	-0.03 (0.65)	-0.16** (0.03)	0.04 (0.59)	0.10 (0.19)	-0.02 (0.83)	0.04 (0.59)	0.01 (0.86)	1.00

Table 2-A3 Correlation Matrix for Cash Only Financed M&A Deal

The following table shows the correlation among the original values of variables that we use in this study for cash only financed M&A deals. Here, the dependent variables and aggregate cash holding variables are transformed into their natural log format. P-values are given in the parenthesis. *, ** and *** represents significance level at 10, 5 and 1 percent level, respectively.

Variables	Deal Value, All Firm	Deal Value, Small Firm	Deal Value, Medium Firm	Deal Value, Large Firm	Manager Sentiment Index	Investor Sentiment Index	CAPE Ratio	CRSP Index	Aggregate Cash Holding
Deal Value, All Firm, ln(\$ billion)	1.00								
Deal Value, Small Firm, ln(\$ billion)	-0.00 (0.96)	1.00							
Deal Value, Medium Firm, ln(\$ billion)	0.33*** (0.00)	0.28*** (0.00)	1.00						
Deal Value, Large Firm, ln(\$ billion)	0.91*** (0.00)	-0.07 (0.38)	0.18** (0.02)	1.00					
Manager Sentiment Index	0.38*** (0.00)	0.17*** (0.01)	0.26*** (0.00)	0.43*** (0.00)	1.00				
Investor Sentiment Index	0.45*** (0.00)	0.25*** (0.00)	0.40*** (0.00)	0.41*** (0.00)	0.47*** (0.00)	1.00			
CAPE Ratio	0.24*** (0.00)	-0.11 (0.16)	0.07 (0.36)	0.16** (0.03)	0.07 (0.35)	0.43*** (0.00)	1.00		
CRSP Index	0.02 (0.82)	-0.06 (0.43)	0.05 (0.52)	-0.08 (0.59)	-0.17** (0.02)	-0.14* (0.07)	0.10 (0.19)	1.00	
Aggregate Cash, ln(\$ billion)	-0.01 (0.93)	-0.13* (0.08)	-0.15** (0.04)	0.04 (0.60)	0.10 (0.19)	-0.02 (0.83)	0.04 (0.53)	0.01 (0.86)	1.00

Table 2-A4 Aggregate Manager Sentiment and Cash Only Financed M&As in Different Industries

The table represents the Newey-West regression results of aggregate manager sentiment impact cash only financed US domestic M&As announced by public non-financial non-utility firms between January 2003 and December 2017. Here, the dependent variable is natural logarithm of 3-month rolling values of cash only financed M&A deal volume. Industry classification are based on 2-digit SIC code and reported if a particular industry makes up more than four percent of the observations in the sample. The independent variables are the averages of last 6-months' value prior to the announcement M&A month. The dependent variable and aggregate corporate cash holding variable are transformed into their natural logarithm. The regression considers maximum lag of 3. P-values are provided in the parenthesis. *, ** and *** represent significance level at 10, 5 and 1 percent, respectively.

Variable	Oil & Gas Extraction	Chemicals & Allied Products	Industrial and Commercial Machinery & Computer Components	Electronic & Other Electrical Equipment & Components	Measuring, Photographic, Medical, & Optical Goods & Clocks	Communi- cations	Business Services
Man. Sen.	0.628*** (0.000)	0.186 (0.383)	0.586*** (0.000)	0.489** (0.028)	0.369** (0.040)	0.439** (0.021)	-0.028 (0.822)
Inv. Sen.	0.128 (0.860)	0.866 (0.299)	1.136** (0.039)	0.469 (0.553)	0.219 (0.741)	1.326** (0.021)	0.609 (0.207)
CAPE	0.076 (0.187)	0.025 (0.540)	-0.098** (0.022)	0.076 (0.182)	-0.034 (0.469)	-0.068 (0.224)	0.064* (0.073)
CRSP	27.062*** (0.003)	1.071 (0.854)	25.036*** (0.003)	9.507 (0.112)	14.003** (0.035)	8.982 (0.246)	3.462 (0.487)
Ln(AgC)	-0.185* (0.088)	0.208*** (0.009)	-0.051 (0.541)	-0.021 (0.852)	0.044 (0.624)	0.063 (0.526)	0.069 (0.308)
Constant	6.437*** (0.003)	5.078*** (0.000)	10.681*** (0.000)	5.919*** (0.000)	7.680*** (0.000)	8.138*** (0.000)	5.949*** (0.000)
F-Statistics	6.710.000 (0.000)	5.610*** (0.000)	7.430*** (0.000)	6.080*** (0.000)	2.400** (0.039)	5.680*** (0.000)	3.740*** (0.003)
R-Square	0.230	0.184	0.343	0.264	0.143	0.179	0.139
Adj. R-Sq.	0.207	0.161	0.324	0.243	0.118	0.155	0.114
N	179	179	179	179	179	179	179

Table 2-A5 Regression with Newey-West Standard Error for US Domestic All M&As of Small Firms

The table represents the Newey-West regression results of aggregate manager sentiment impact on US domestic all M&As announced by small public non-financial and non-utility firms between January 2003 and December 2017. Firms have been categorized based on their total asset holdings one year prior to the announcements where small firms are those firms that have total assets below 30 percentile in the sample. Here, dependent variable and aggregate corporate cash holding variable are transformed into their natural logarithm. P-values are provided in the parenthesis. We consider a maximum lag of 3 in this Newey-West regression. *, ** and *** represent significance level at 10, 5 and 1 percent, respectively.

Variable	Contemp. Effect	1-Lag Effect	2-Lag Effect	3-Lag Effect	Last 3- Month Average Effect	Last 6- Month Average Effect
Panel A: Without Control Variables						
Man. Sen.	0.087 (0.243)	0.073 (0.265)	0.051 (0.438)	0.032 (0.638)	0.045 (0.490)	0.025 (0.710)
Constant	6.496*** (0.000)	6.492*** (0.000)	6.490*** (0.000)	6.487*** (0.000)	6.493*** (0.000)	6.494*** (0.000)
F-Statistics	1.370 (0.243)	1.250 (0.265)	0.600 (0.438)	0.220 (0.638)	0.480 (0.490)	0.140 (0.711)
R-Square	0.022	0.016	0.008	0.003	0.006	0.002
Adj. R-Sq.	0.017	0.010	0.002	-0.003	0.000	-0.004
Panel B: With Control Variables						
Man. Sen.	-0.024 (0.788)	-0.006 (0.939)	-0.014 (0.831)	-0.034 (0.623)	-0.021 (0.758)	-0.060 (0.456)
Inv. Sen.	0.759** (0.016)	0.687** (0.027)	0.682** (0.025)	0.708** (0.029)	0.687** (0.024)	0.827** (0.028)
CAPE	0.010 (0.669)	0.016 (0.468)	0.020 (0.385)	0.022 (0.354)	0.020 (0.389)	0.016 (0.559)
CRSP	-0.491 (0.703)	0.518 (0.690)	1.285 (0.338)	2.225 (0.117)	1.114 (0.411)	3.902* (0.058)
Ln(AgC)	-0.055 (0.155)	-0.102*** (0.010)	-0.132*** (0.001)	-0.119*** (0.004)	-0.133*** (0.001)	-0.156*** (0.001)
Constant	7.095*** (0.000)	7.468*** (0.000)	7.745*** (0.000)	7.525*** (0.000)	7.762*** (0.000)	8.202*** (0.000)
F-Statistics	4.180*** (0.001)	5.720*** (0.000)	8.090*** (0.000)	8.820*** (0.000)	8.040*** (0.000)	11.290*** (0.000)
R-Square	0.205	0.253	0.309	0.301	0.309	0.328
Adj. R-Sq.	0.183	0.232	0.289	0.281	0.289	0.308
N	180	179	178	177	179	179

Table 2-A6 Regression with Newey-West Standard Error for US Domestic All M&As of Medium Firms

The table represents the Newey-West regression results of aggregate manager sentiment impact on US domestic all M&As announced by medium public non-financial and non-utility firms between January 2003 and December 2017. Firms have been categorized based on their total asset holdings one year prior to the announcements where medium firms are those firms that have total assets between 30 and 70 percentile in the sample. Here, dependent variable and aggregate corporate cash holding variable are transformed into their natural logarithm. P-values are provided in the parenthesis. We consider a maximum lag of 3 in this Newey-West regression. *, ** and *** represent significance level at 10, 5 and 1 percent, respectively.

Variable	Contemp. Effect	1-Lag Effect	2-Lag Effect	3-Lag Effect	Last 3- Month Average Effect	Last 6- Month Average Effect
Panel A: Without Control Variables						
Man. Sen.	0.158*** (0.004)	0.131** (0.015)	0.100* (0.051)	0.070 (0.144)	0.107** (0.038)	0.103* (0.057)
Constant	8.707*** (0.000)	8.712*** (0.000)	8.717*** (0.000)	8.721*** (0.000)	8.713*** (0.000)	8.716*** (0.000)
F-Statistics	8.730*** (0.004)	6.050** (0.015)	3.870* (0.051)	2.150 (0.144)	4.350** (0.039)	3.670* (0.057)
R-Square	0.129	0.090	0.053	0.027	0.061	0.051
Adj. R-Sq.	0.124	0.085	0.048	0.021	0.056	0.046
Panel B: With Control Variables						
Man. Sen.	0.028 (0.665)	0.013 (0.848)	-0.018 (0.786)	-0.046 (0.454)	-0.007 (0.919)	-0.021 (0.801)
Inv. Sen.	0.738*** (0.000)	0.678*** (0.002)	0.684*** (0.003)	0.690*** (0.003)	0.677*** (0.004)	0.716** (0.014)
CAPE	0.021 (0.216)	0.029 (0.108)	0.033* (0.081)	0.035* (0.061)	0.033* (0.079)	0.034 (0.114)
CRSP	-1.376 (0.358)	-1.619 (0.301)	-0.596 (0.540)	-0.199 (0.890)	-0.646 (0.684)	1.875 (0.372)
Ln(AgC)	-0.015 (0.478)	-0.032 (0.132)	-0.021 (0.369)	-0.011 (0.650)	-0.020 (0.398)	-0.015 (0.589)
Constant	8.562*** (0.000)	8.567*** (0.000)	8.348*** (0.000)	8.165*** (0.000)	8.316*** (0.000)	8.218*** (0.000)
F-Statistics	14.920*** (0.000)	14.670*** (0.000)	12.960*** (0.000)	12.160*** (0.000)	12.780*** (0.000)	11.760*** (0.000)
R-Square	0.448	0.452	0.438	0.429	0.429	0.422
Adj. R-Sq.	0.432	0.436	0.421	0.412	0.413	0.406
N	180	179	178	177	179	179

Table 2-A7 Regression with Newey-West Standard Error for US Domestic All M&As of Large Firms

The table represents the Newey-West regression results of aggregate manager sentiment impact on US domestic all M&As announced by large public non-financial and non-utility firms between January 2003 and December 2017. Firms have been categorized based on their total asset holdings one year prior to the announcements where large firms are those firms that have total assets above 70 percentile in the sample. Here, dependent variable and aggregate corporate cash holding variable are transformed into their natural logarithm. P-values are provided in the parenthesis. We consider a maximum lag of 3 in this Newey-West regression. *, ** and *** represent significance level at 10, 5 and 1 percent, respectively.

Variable	Contemp. Effect	1-Lag Effect	2-Lag Effect	3-Lag Effect	Last 3- Month Average Effect	Last 6- Month Average Effect
Panel A: Without Control Variables						
Man. Sen.	0.318*** (0.003)	0.305*** (0.004)	0.261** (0.017)	0.209* (0.071)	0.266** (0.014)	0.295** (0.015)
Constant	10.601*** (0.000)	10.606*** (0.000)	10.612*** (0.000)	10.621*** (0.000)	10.609*** (0.000)	10.616*** (0.000)
F-Statistics	9.140*** (0.003)	8.510*** (0.004)	5.800** (0.017)	3.310* (0.071)	6.200** (0.014)	6.040** (0.015)
R-Square	0.207	0.190	0.140	0.093	0.146	0.161
Adj. R-Sq.	0.203	0.186	0.135	0.088	0.141	0.156
Panel B: With Control Variables						
Man. Sen.	0.172 (0.128)	0.170 (0.171)	0.127 (0.346)	0.078 (0.578)	0.131 (0.322)	0.192 (0.198)
Inv. Sen.	0.669* (0.052)	0.654* (0.073)	0.655* (0.078)	0.673* (0.055)	0.652* (0.078)	0.497 (0.180)
CAPE	0.019 (0.338)	0.020 (0.337)	0.021 (0.371)	0.019 (0.435)	0.021 (0.368)	0.025 (0.356)
CRSP	0.846 (0.709)	2.755 (0.204)	2.915 (0.169)	2.422 (0.267)	3.012 (0.147)	5.312* (0.070)
Ln(AgC)	0.109*** (0.005)	0.131*** (0.001)	0.141*** (0.001)	0.112*** (0.007)	0.141*** (0.001)	0.130*** (0.004)
Constant	8.957*** (0.000)	8.659*** (0.000)	8.529*** (0.000)	8.942*** (0.000)	8.519*** (0.000)	8.470*** (0.000)
F-Statistics	7.090*** (0.000)	6.890*** (0.000)	6.150*** (0.000)	5.860*** (0.000)	6.330*** (0.000)	7.370*** (0.000)
R-Square	0.342	0.358	0.322	0.245	0.328	0.307
Adj. R-Sq.	0.323	0.340	0.302	0.223	0.308	0.287
N	180	179	178	177	179	179

Appendix – Chapter 3

Table 3-A1 Aggregate Manager Sentiment and Fully Cash and Fully Stock M&A Payment

The table reports the Probit model regression results about the choice of M&A payment method. The dependent variable in the regression reported in column (1) is Cash_Dummy, which equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise. On the other hand, the dependent variable in the regression reported in column (2) is Stock_Dummy, which equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 6-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Cash Versus Others		Stock Versus Others	
	Sign Prediction	(1)	Sign Prediction	(2)
Manager Sentiment	+	0.144** (0.028)	-	-0.171** (0.015)
Investor Sentiment	-	-0.501** (0.033)	+	0.095 (0.667)
Ln(Size)	+	0.094*** (0.000)	-	-0.035 (0.324)
ROA	+	2.011*** (0.000)	-	-2.193*** (0.000)
Book Leverage	-	-0.175 (0.375)	+	0.320 (0.290)
Cash to Total Asset	+	0.147 (0.302)	-	-0.393** (0.050)
Market to Book Ratio	-	-0.154*** (0.000)	+	0.054* (0.085)
Cumulative Return	-	0.105 (0.236)	+	0.155** (0.046)
Relative Value	-	-2.582*** (0.000)	+	1.182*** (0.000)
Hostile Dummy	+	0.406 (0.330)	-	-0.152 (0.764)
Challenge Dummy	+	0.010 (0.955)	-	0.144 (0.658)
Diversifying Dummy	+/-	-0.121** (0.028)	+/-	0.014 (0.883)
Constant		-0.658* (0.077)		-0.782** (0.020)
Industry Fixed Effect		Yes		Yes
Pseudo R-Square		0.160		0.143
No. of Observation		3,369		2,769

Table 3-A2 Aggregate Manager Sentiment and Proportion of Cash and Stock Payment

The table reports the Tobit model regression results about the choice of M&A payment method. The dependent variable in the regression reported in column (1) is Cash_Proportion measured by the percentage of cash paid in M&A deals. The dependent variable in the regression reported in column (2) is Stock_Proportion measured by the percentage of stock paid in M&A deals. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 6-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Cash Proportion		Stock Proportion	
	Sign Prediction	(1)	Sign Prediction	(2)
Manager Sentiment	+	2.188** (0.034)	-	-2.697*** (0.004)
Investor Sentiment	-	-3.967 (0.212)	+	3.623 (0.156)
Ln(Size)	+	0.929** (0.015)	-	-0.158 (0.604)
ROA	+	63.756*** (0.000)	-	-48.472*** (0.000)
Book Leverage	-	-3.641 (0.449)	+	2.721 (0.448)
Cash to Total Asset	+	3.150 (0.319)	-	-0.861 (0.568)
Market to Book Ratio	-	-4.437*** (0.000)	+	3.581*** (0.000)
Cumulative Return	-	1.681 (0.362)	+	0.098 (0.943)
Relative Value	-	-45.074*** (0.000)	+	37.995*** (0.000)
Hostile Dummy	+	4.112 (0.640)	-	-4.146 (0.524)
Challenge Dummy	+	0.846 (0.837)	-	4.293 (0.288)
Diversifying Dummy	+/-	-1.625 (0.139)	+/-	0.743 (0.520)
Constant		62.095*** (0.000)		30.987*** (0.000)
Industry Fixed Effect		Yes		Yes
Pseudo R-Square		0.023		0.020
No. of Observation		3,386		3,386

Table 3-A3 Mean Values of Observable Firm Characteristics

The table reports the mean values of six firm level variables after conducting a propensity score matching procedure. We regard the high sentiment if the aggregate manager sentiment is higher than or equal to than its median values and low sentiment if the aggregate manager sentiment is less than its median values. All firm level variables are measured at the end of fiscal year prior to the M&A announcement and winsorized at 1st and 99th percentiles.

Variable	High Sentiment	Low Sentiment	Difference (High – Low)	P-Values
Ln(Size)	7.241	7.278	-0.037	0.617
ROA	0.082	0.086	-0.004	0.304
Book Leverage	0.204	0.207	-0.003	0.674
Cash to Total Asset	0.185	0.180	0.005	0.483
Market to Book Ratio	2.003	1.987	0.016	0.659
Cumulative Return	0.224	0.223	0.001	0.909

Table 3-A4 Aggregate Manager Sentiment and Cash and Stock M&A Payment with Propensity Score Matching

The table reports the Probit model regression results about the choice of M&A payment method after conducting propensity score matching with six firm level variables. The dependent variable in the regression reported in column (1) is Cash_Dummy, which equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise. On the other hand, the dependent variable in the regression reported in column (2) is Stock_Dummy, which equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 6-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Cash Versus Others		Stock Versus Others	
	Sign Prediction	(1)	Sign Prediction	(2)
Manager Sentiment	+	0.128*** (0.001)	-	-0.042 (0.344)
Investor Sentiment	-	-0.479** (0.015)	+	-0.083 (0.739)
Ln(Size)	+	0.097*** (0.000)	-	-0.031 (0.452)
ROA	+	2.178*** (0.000)	-	-2.364*** (0.000)
Book Leverage	-	-0.176 (0.376)	+	0.130 (0.633)
Cash to Total Asset	+	0.381** (0.026)	-	-0.526* (0.061)
Market to Book Ratio	-	-0.184*** (0.000)	+	0.089*** (0.002)
Cumulative Return	-	0.141 (0.130)	+	0.117 (0.208)
Relative Value	-	-2.635*** (0.000)	+	1.193*** (0.000)
Hostile Dummy	+	0.627 (0.171)	-	-0.200 (0.625)
Challenge Dummy	+	-0.051 (0.817)	-	-0.022 (0.955)
Diversifying Dummy	+/-	-0.075 (0.294)	+/-	-0.046 (0.622)
Constant		-0.872*** (0.006)		-0.691** (0.044)
Industry Fixed Effect		Yes		Yes
Pseudo R-Square		0.165		0.140
No. of Observation		3,003		2,441

Table 3-A5 Aggregate Manager Sentiment and Fully Cash and Fully Stock M&A Payment with Alternative Proxy

The table reports the Probit model regression results about the choice of M&A payment method. The dependent variable in the regression reported in column (1) is Cash_Dummy, which equals 1 if the payment for an M&A deal is fully in cash and 0 otherwise. On the other hand, the dependent variable in the regression reported in column (2) is Stock_Dummy, which equals 1 if the payment for an M&A deal is fully in stock and 0 otherwise. Business confidence and investor sentiment variables are the averages of the US Business Confidence Index (BCI) provided by the OECD and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Cash Versus Others		Stock Versus Others	
	Sign Prediction	(1)	Sign Prediction	(2)
Business Confidence	+	0.043* (0.089)	-	-0.020 (0.579)
Investor Sentiment	-	-0.147 (0.294)	+	-0.318 (0.120)
Ln(Size)	+	0.093*** (0.000)	-	-0.033 (0.354)
ROA	+	2.132*** (0.000)	-	-2.273*** (0.000)
Book Leverage	-	-0.216 (0.270)	+	0.362 (0.212)
Cash to Total Asset	+	0.152 (0.242)	-	-0.377* (0.056)
Market to Book Ratio	-	-0.160*** (0.000)	+	0.053* (0.082)
Cumulative Return	-	0.071 (0.327)	+	0.174** (0.015)
Relative Value	-	-2.634*** (0.000)	+	1.204*** (0.000)
Hostile Dummy	+	0.622 (0.168)	-	-0.258 (0.603)
Challenge Dummy	+	-0.052 (0.769)	-	0.134 (0.667)
Diversifying Dummy	+/-	-0.121** (0.030)	+/-	0.010 (0.914)
Constant		-4.881* (0.053)		1.130 (0.756)
Industry Fixed Effect		Yes		Yes
Pseudo R-Square		0.157		0.140
No. of Observation		3,420		2,806

Appendix – Chapter 4

Table 4-A1 Aggregate Manager Sentiment and Acquirer Short-Term M&A Announcement Returns

The table reports the OLS regression results about the acquirer short-term abnormal stock returns upon M&A announcement following periods of aggregate manager sentiment. Here, the dependent variables BHAR and CAR are the acquirer 21-day buy and hold abnormal returns and cumulative abnormal returns, respectively centred on the M&A announcement day. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by firms are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	BHARs _(-10,+10)		CARs _(-10,+10)	
	(1)	(2)	(3)	(4)
Manager Sentiment	-0.008*** (0.003)	-0.008** (0.024)	-0.008*** (0.003)	-0.007* (0.052)
Investor Sentiment		-0.002 (0.817)		-0.006 (0.572)
Ln(Size)		-0.009*** (0.000)		-0.009*** (0.000)
ROA		0.025 (0.436)		0.020 (0.534)
Book Leverage		0.055** (0.011)		0.051** (0.016)
Cash to Total Asset		-0.041** (0.044)		-0.043** (0.030)
Market to Book Ratio		0.002 (0.497)		0.002 (0.431)
Cumulative Return		0.004 (0.628)		0.000 (0.975)
Relative Value		0.074*** (0.008)		0.077*** (0.005)
Hostile Dummy		-0.009 (0.714)		-0.002 (0.940)
Challenge Dummy		-0.031* (0.081)		-0.030* (0.085)
Diversifying Dummy		0.008 (0.181)		0.007 (0.212)
Constant	0.014 (0.857)	0.064 (0.430)	0.016 (0.833)	0.068 (0.392)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Adjusted R-Square	0.006	0.041	0.005	0.043
No. of Observation	2,369	2,369	2,369	2,369

Table 4-A2 Aggregate Manager Sentiment and Acquirer Short-Term M&A Announcement Returns

The table reports the OLS regression results about the acquirer short-term abnormal stock returns upon M&A announcement following periods of aggregate manager sentiment. Here, the dependent variables BHAR and CAR are the acquirer 21-day buy and hold abnormal returns and cumulative abnormal returns, respectively centred on the M&A announcement day. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by year are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	BHARS _(-10,+10)		CARs _(-10,+10)	
	(1)	(2)	(3)	(4)
Manager Sentiment	-0.008*** (0.001)	-0.008*** (0.002)	-0.008*** (0.002)	-0.007*** (0.008)
Investor Sentiment		-0.002 (0.665)		-0.006 (0.274)
Ln(Size)		-0.009*** (0.000)		-0.009*** (0.000)
ROA		0.025 (0.534)		0.020 (0.596)
Book Leverage		0.055** (0.029)		0.051** (0.037)
Cash to Total Asset		-0.041** (0.044)		-0.043** (0.042)
Market to Book Ratio		0.002 (0.478)		0.002 (0.414)
Cumulative Return		0.004 (0.569)		0.000 (0.969)
Relative Value		0.074* (0.077)		0.077* (0.059)
Hostile Dummy		-0.009 (0.551)		-0.002 (0.905)
Challenge Dummy		-0.031* (0.089)		-0.030* (0.090)
Diversifying Dummy		0.008 (0.121)		0.007 (0.150)
Constant	0.014 (0.695)	0.064 (0.172)	0.016 (0.644)	0.068 (0.135)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Adjusted R-Square	0.006	0.041	0.005	0.043
No. of Observation	2,369	2,369	2,369	2,369

Table 4-A3 Univariate Results

The table shows the univariate results regarding the relationship between aggregate manager sentiment and BHAR as well as the relationship between aggregate manager sentiment and CAR. Here, BHAR and CAR are the acquirer 21-day buy and hold abnormal returns and cumulative abnormal returns, respectively centred on the M&A announcement day. Manager sentiment variable is the average of the updated version of the monthly manager sentiment index developed by Jiang et al. (2019) over the 3-month period prior to the M&A announcement. We define low sentiment in panel A (panel B) when the value of manager sentiment is lower than the median (mean) value of this variable. On the other hand, we define high sentiment in panel A (panel B) when the value of manager sentiment is higher than or equal to the median (mean) value of this variable. P-values are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively. N indicates the number of observations.

	BHARs _(-10,+10)	CARs _(-10,+10)
Panel A		
Low	0.023*** (0.000)	0.023*** (0.000)
N	1,559	1,559
High	0.015*** (0.000)	0.015*** (0.000)
N	1,549	1,549
Low — High	0.008** (0.034)	0.008** (0.039)
Panel B		
Low	0.024*** (0.000)	0.024*** (0.000)
N	1,325	1,325
High	0.015*** (0.000)	0.016*** (0.000)
N	1,783	1,783
Low — High	0.009** (0.046)	0.008* (0.055)

Table 4-A4 Aggregate Manager Sentiment and Acquirer Short-Term M&A Announcement Returns

The table reports the OLS regression results about the acquirer short-term abnormal stock returns upon M&A announcement following periods of aggregate manager sentiment. Here, the dependent variables BHAR and CAR are the acquirer 21-day buy and hold abnormal returns and cumulative abnormal returns, respectively centred on the M&A announcement day. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	BHARs _(-10,+10)		CARs _(-10,+10)	
	(1)	(2)	(3)	(4)
Manager Sentiment	-0.007*** (0.008)	-0.007** (0.022)	-0.007** (0.011)	-0.006** (0.042)
Investor Sentiment		0.000 (0.967)		-0.003 (0.571)
Ln(Size)		-0.007*** (0.000)		-0.008*** (0.000)
ROA		0.013 (0.680)		0.009 (0.772)
Book Leverage		0.044** (0.026)		0.039** (0.041)
Cash to Total Asset		-0.048** (0.019)		-0.050** (0.021)
Market to Book Ratio		0.001 (0.797)		0.001 (0.759)
Cumulative Return		-0.001 (0.854)		-0.004 (0.522)
Relative Value		0.076** (0.040)		0.080** (0.027)
Hostile Dummy		-0.034 (0.155)		-0.026 (0.266)
Challenge Dummy		-0.033** (0.016)		-0.032** (0.014)
Diversifying Dummy		0.009** (0.021)		0.009** (0.026)
Constant	0.052 (0.179)	0.095** (0.039)	0.054 (0.150)	0.100** (0.027)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Adjusted R-Square	0.004	0.035	0.003	0.038
No. of Observation	3,108	3,108	3,108	3,108

Table 4-A5 Aggregate Manager Sentiment, All Cash Payment and Short-Term M&A Announcement Returns

The table reports the OLS regression results about the role of all cash payment method on acquirer short-term abnormal stock returns upon M&A announcement following periods of aggregate manager sentiment. Here, the dependent variables BHAR and CAR are the acquirer 21-day buy and hold abnormal returns and cumulative abnormal returns, respectively centred on the M&A announcement day. Cash dummy variable equals 1 if the M&A payment is fully in cash and 0 otherwise. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables and cash dummy variable are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	BHARS _(-10,+10)		CARs _(-10,+10)	
	(1)	(2)	(3)	(4)
Manager Sentiment	-0.008*** (0.002)	-0.013*** (0.002)	-0.007*** (0.006)	-0.011*** (0.005)
Cash Dummy	0.013** (0.030)	0.013** (0.022)	0.012* (0.052)	0.012** (0.038)
MS X Cash Dummy		0.007* (0.070)		0.007* (0.071)
Investor Sentiment	-0.002 (0.697)	-0.003 (0.647)	-0.006 (0.285)	-0.006 (0.252)
Ln(Size)	-0.009*** (0.000)	-0.009*** (0.000)	-0.009*** (0.000)	-0.010*** (0.000)
ROA	0.017 (0.660)	0.018 (0.648)	0.013 (0.721)	0.013 (0.707)
Book Leverage	0.056** (0.027)	0.056** (0.025)	0.051** (0.034)	0.052** (0.032)
Cash to Total Asset	-0.040** (0.048)	-0.040** (0.049)	-0.043** (0.045)	-0.043** (0.045)
Market to Book Ratio	0.003 (0.362)	0.003 (0.368)	0.003 (0.317)	0.003 (0.323)
Cumulative Return	0.004 (0.611)	0.004 (0.576)	-0.000 (0.993)	0.000 (0.970)
Relative Value	0.086** (0.049)	0.085** (0.050)	0.088** (0.039)	0.087** (0.040)
Hostile Dummy	-0.016 (0.323)	-0.007 (0.564)	-0.008 (0.596)	0.001 (0.932)
Challenge Dummy	-0.033* (0.081)	-0.033* (0.082)	-0.032* (0.082)	-0.032* (0.084)
Diversifying Dummy	0.008 (0.120)	0.008 (0.118)	0.007 (0.150)	0.007 (0.148)
Constant	0.060 (0.198)	0.062 (0.194)	0.065 (0.158)	0.066 (0.153)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Adjusted R-Square	0.043	0.043	0.045	0.045
No. of Observation	2,369	2,369	2,369	2,369

Table 4-A6 Aggregate Manager Sentiment, Percentage of Cash Payment and Short-Term M&A Announcement Returns

The table reports the OLS regression results about the role of fraction of cash payment on acquirer short-term abnormal stock returns upon M&A announcement following periods of aggregate manager sentiment. Here, the dependent variables BHAR and CAR are the acquirer 21-day buy and hold abnormal returns and cumulative abnormal returns, respectively centred on the M&A announcement day. Cash percentage is the fraction of payment made by cash. Manager sentiment and investor sentiment variables are the averages of the updated version of the manager sentiment index developed by Jiang et al. (2019) and the investor sentiment index developed by Baker and Wurgler (2006), respectively over the 3-month period prior to the M&A announcement. All firm level variables are measured at the end of fiscal year prior to the M&A announcement whereas all deal specific variables and cash percentage variable are measured at the time of the M&A announcement. All firm level variables and one deal level variable, relative value, are winsorized at 1st and 99th percentiles. P-values based on heteroscedasticity-robust standard errors clustered by years are reported in parenthesis. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	BHARs _(-10,+10)		CARs _(-10,+10)	
	(1)	(2)	(3)	(4)
Manager Sentiment	-0.008*** (0.002)	-0.020*** (0.001)	-0.007*** (0.008)	-0.017*** (0.003)
Cash Percentage	0.000** (0.029)	0.000** (0.017)	0.000** (0.032)	0.000** (0.020)
MS X Cash Percentage		0.000*** (0.005)		0.000** (0.011)
Investor Sentiment	-0.003 (0.562)	-0.003 (0.535)	-0.007 (0.208)	-0.007 (0.192)
Ln(Size)	-0.009*** (0.000)	-0.009*** (0.000)	-0.009*** (0.000)	-0.009*** (0.000)
ROA	0.008 (0.815)	0.008 (0.820)	0.004 (0.913)	0.003 (0.921)
Book Leverage	0.055** (0.027)	0.056** (0.022)	0.051** (0.033)	0.052** (0.028)
Cash to Total Asset	-0.042** (0.045)	-0.042** (0.044)	-0.044** (0.042)	-0.044** (0.041)
Market to Book Ratio	0.003 (0.232)	0.003 (0.227)	0.004 (0.194)	0.004 (0.190)
Cumulative Return	0.004 (0.609)	0.005 (0.560)	-0.000 (0.988)	0.000 (0.965)
Relative Value	0.086** (0.041)	0.085** (0.043)	0.089** (0.030)	0.088** (0.031)
Hostile Dummy	-0.015 (0.361)	-0.007 (0.623)	-0.007 (0.627)	-0.000 (0.994)
Challenge Dummy	-0.034* (0.073)	-0.033* (0.076)	-0.033* (0.073)	-0.032* (0.076)
Diversifying Dummy	0.008 (0.123)	0.008 (0.117)	0.007 (0.153)	0.007 (0.148)
Constant	0.049 (0.284)	0.050 (0.284)	0.053 (0.236)	0.054 (0.235)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Adjusted R-Square	0.044	0.045	0.046	0.047
No. of Observation	2,369	2,369	2,369	2,369

List of Variables

List of Variables – Chapter 2

Variable	Description	Data Source
<i>Panel A: Dependent Variables</i>		
Aggregate nominal deal value – all M&A	Natural logarithm of total monthly nominal value of all market-level M&A deal	Thomson One Banker
Aggregate nominal deal value – cash only financed M&A	Natural logarithm of total monthly nominal value of cash only financed market-level M&A deal volume	Thomson One Banker
Aggregate real deal value – cash only financed M&A	Natural logarithm of total monthly real value of cash only financed market-level M&A deal volume adjusted for December 2017 price.	Thomson One Banker
<i>Panel B: Sentiment Variables</i>		
Manager sentiment index	Updated version of monthly manager sentiment index constructed by Jiang et al. (2019)	http://apps.olin.wustl.edu/faculty/zhou/
Investor sentiment index	Monthly investor sentiment index of Baker and Wurgler (2006) that is based on first principal component of five standardised sentiment proxies.	http://people.stern.nyu.edu/jwurgler/
<i>Panel C: Other Control Variables</i>		
CAPE ratio	Cyclically adjusted price earnings ratio of Robert J. Shiller	http://www.econ.yale.edu/~shiller/data.htm
CRSP index	CRSP value-weighted market index	CRSP
Aggregate cash holding	Natural logarithm of monthly total value of cash and short-term investment by individual firms	Compustat
<i>Panel D: Alternative Proxy Variable</i>		
Business Confidence Index	Business Confidence Index of OECD	https://data.oecd.org/leadind/business-confidence-index-bci.htm

List of Variables – Chapter 3

Variable	Description	Data Source
<i>Panel A: Dependent Variables</i>		
Cash dummy	A dummy variable that equals to be 1 if the payment for an M&A deal is fully in cash and 0 otherwise	Thomson One Banker
Stock dummy	A dummy variable that equals to be 1 if the payment for an M&A deal is fully in stock and 0 otherwise	Thomson One Banker
Cash proportion	Percentage of cash paid in M&A deals	Thomson One Banker
Stock proportion	Percentage of stock paid in M&A deals	Thomson One Banker
Cash versus stock dummy	A dummy variable that equals to be 1 if the payment for an M&A deal is more than 50 percent in cash and 0 if the payment for an M&A deal is more than 50 percent in stock	Thomson One Banker
Cash versus mixed versus stock	A variable which equals to be 2 if the payment for an M&A deal is fully in cash, 1 if the payment for an M&A includes mixed method and 0 if the payment for an M&A deal is fully in stock	Thomson One Banker
<i>Panel B: Sentiment Variables</i>		
Manager sentiment index	Updated version of monthly manager sentiment index constructed by Jiang et al. (2019)	http://apps.olin.wustl.edu/faculty/zhou/
Investor sentiment index	Monthly investor sentiment index of Baker and Wurgler (2006) that is based on first principal component of five standardised sentiment proxies.	http://people.stern.nyu.edu/jwurgler/
<i>Panel C: Firm Level Variables</i>		
Firm size	Natural logarithm of the book value of total asset in a fiscal year	Compustat
Return on Asset	Sum of income before extraordinary items, interest expense and income taxes divided by total asset of the firm	Compustat

Variable	Description	Data Source
Book leverage	Sum of the book value of long-term debt and the book value of debt in current liabilities divided by the book value of total asset	Compustat
Cash to total asset	Total value of cash and short-term investment divided by the book value of asset	Compustat
Market to book ratio	Sum of book value of total asset and market value of common equity minus the book value of common equity and divided by the book value of total asset	Compustat
Stock return	Cumulative stock returns during the 12-month period ending at the end of firm's fiscal year preceding an M&A announcement	CRSP
<i>Panel D: Deal Level Variables</i>		
Relative deal value	Total value of the deal divided by the combined value of the deal and the acquirer's market capitalization four weeks prior to the M&A announcement	Thomson One Banker
Hostile dummy	A dummy variable equals to be 1 if the M&A deal is a hostile takeover and 0 otherwise	Thomson One Banker
Challenge dummy	A dummy variable equals to be 1 if the acquirer's offer is challenged by a competing offer and 0 otherwise	Thomson One Banker
Diversifying dummy	A dummy variable equals to be 1 if acquiring firms and their respective target firms are from different industries as differentiated by 2-digit SIC codes and 0 otherwise.	Thomson One Banker
<i>Panel E: Additional Market-Level Control Variables</i>		
CAPE ratio	Cyclically adjusted price earnings ratio of Robert J. Shiller	http://www.econ.yale.edu/~shiller/data.htm
CRSP index	CRSP value-weighted market index	CRSP

Variable	Description	Data Source
Aggregate cash holding	Natural logarithm of monthly total value of cash and short-term investment by individual firms	Compustat
<i>Panel F: Board Characteristic Variables</i>		
Board size	The total number of directors on board	BoardEx
Board independence	Ratio of number of independent directors divided by the number of total members on board	BoardEx
<i>Panel G: CEO Characteristic Variables</i>		
CEO age	M&A announcement year minus the birth year of the CEO	BoardEx
CEO tenure	The total number of years a CEO has been working in the acquiring firm till the M&A announcement	BoardEx
<i>Panel H: Alternative Proxy Variable</i>		
Business Confidence Index	Business Confidence Index of OECD	https://data.oecd.org/leadind/business-confidence-index-bci.htm

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Variable	Description	Data Source
<i>Panel A: Dependent Variables</i>		
11-day BHAR	Buy-and-hold abnormal returns for the acquirer in the 11-day event window (-5, +5), where 0 is the announcement date of the M&A deal	CRSP
11-day CAR	Cumulative abnormal returns for the acquirer in the 11-day event window (-5, +5), where 0 is the announcement date of the M&A deal	CRSP
21-day BHAR	Buy-and-hold abnormal returns for the acquirer in the 21-day event window (-10, +10), where 0 is the announcement date of the M&A deal	CRSP
21-day CAR	Cumulative abnormal returns for the acquirer in the 21-day event window (-10, +10), where 0 is the announcement date of the M&A deal	CRSP
41-day BHAR	Buy-and-hold abnormal returns for the acquirer in the 41-day event window (-20, +20), where 0 is the announcement date of the M&A deal	CRSP
41-day CAR	Cumulative abnormal returns for the acquirer in the 41-day event window (-20, +20), where 0 is the announcement date of the M&A deal	CRSP
1-, 2-, 3-year BHAR	Buy-and-hold abnormal returns for the acquirer 1 year, 2 years and 3 years after the M&A deal announcement date	CRSP
<i>Panel B: Sentiment Variables</i>		
Manager sentiment index	Updated version of monthly manager sentiment index constructed by Jiang et al. (2019)	http://apps.olin.wustl.edu/faculty/zhou/
Investor sentiment index	Monthly investor sentiment index of Baker and Wurgler (2006) that is based on first principal component of five standardised sentiment proxies.	http://people.stern.nyu.edu/jwurgler/
<i>Panel C: Firm Level Variables</i>		
Firm size	Natural logarithm of the book value of total asset in a fiscal year	Compustat

Variable	Description	Data Source
Return on Asset	Sum of income before extraordinary items, interest expense and income taxes divided by total asset of the firm	Compustat
Book leverage	Sum of the book value of long-term debt and the book value of debt in current liabilities divided by the book value of total asset	Compustat
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Market to book ratio	Sum of book value of total asset and market value of common equity minus the book value of common equity and divided by the book value of total asset	Compustat
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<i>Panel D: Deal Level Variables</i>		
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<i>Panel E: Additional Market-Level Control Variables</i>		
CAPE ratio	Cyclically adjusted price earnings ratio of Robert J. Shiller	http://www.econ.yale.edu/~shiller/data.htm
CRSP index	CRSP value-weighted market index	CRSP

Variable	Description	Data Source
Aggregate cash holding	Natural logarithm of monthly total value of cash and short-term investment by individual firms	Compustat
<i>Panel F: Payment Choice Variables</i>		
Cash dummy	A dummy variable that equals to be 1 if the payment for an M&A deal is fully in cash and 0 otherwise	Thomson One Banker
Stock dummy	A dummy variable that equals to be 1 if the payment for an M&A deal is fully in stock and 0 otherwise	Thomson One Banker
Cash proportion	Percentage of cash paid in M&A deals	Thomson One Banker
Stock proportion	Percentage of stock paid in M&A deals	Thomson One Banker