Audit Market Concentration, Auditor Switching and Audit Fee Pricing: An Investigation of the UK Private Company Audit Market, 2005-2012

by

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Dedication of this Thesis

To my parents Ian and Debbie May. Thank you for your unconditional love and support throughout my doctoral studies and for always believing in me.

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Undertaking this PhD would not have been possible to do without the support and guidance that I received from many people.

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Abstract

Statutory audit markets across the EU have recently been reformed, with new Regulation on the Statutory Audits of Public Interest Entities coming into force in June 2016. The Regulation imposes stricter requirements on the audits of Public Interest Entities, as originally defined in the Statutory Audit Directive 2006, with the option for Member States to designate additional entities as public interest. Thus, the exact definition of a Public Interest Entity applied varies across Member States. In the UK the definition has not been widely extended and includes listed firms, credit institutions, and insurance undertakings.

Private firms in the UK are therefore currently exempt from the more stringent audit regulations. However, even based on the limited, and often mixed, evidence for the private company audit market, the decision to preclude most private companies from the definition of a Public Interest Entity, effectively excluding them from the new audit reforms, may not be appropriate. This thesis, therefore, undertakes a comprehensive analysis of the UK audit market for private companies, in addition to examining the auditing choices of private companies and the economic consequences of these choices. The UK is specifically examined because it is one of a number of countries that have chosen not to extend the scope of the definition of a Public Interest Entity beyond the one set at the EU level.

The findings of this research show that, similar to the audit market for listed firms, the private company audit market in the UK is segmented with Big Four dominance among the largest firms and relatively low levels of auditor switching. As a result of

this audit environment, private companies that do switch auditor are found to experience economic consequences in terms of a reduction in their credit ratings. Particularly when the reasons for a switch are unknown to investors. In addition, the thesis provides evidence to suggest that following an auditor switch, firms receive both physical and implicit discounts on their audit fees, with price recovery of these discounts over the following three years. Suggesting that low-balling is also present in this audit market, which in turn raises concerns regarding competitive pricing and levels of auditor independence.

In sum, the results of the thesis provide strong support that the definition and scope of a Public Interest Entity needs revisiting both within the UK and across all EU Member States. Moreover, it reinforces the idea of extending some of the more stringent audit requirements introduced by the EU Regulation on the Statutory Audits of Public Interest Entities, to ensure that economically important private firms have sufficient oversight.

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List of Abbreviations

ACCA	Association of Chartered Certified Accountants
AEC	Adverse Effects on Competition
AQR	Audit Quality Review
BIG FOUR	The largest four accounting firms Deloitte, Ernst & Young, KPMG, and PricewaterhouseCoopers
BIS	Department of Business, Innovation and Skills
CC	Competition Commission
DTI	Department of Trade and Industry
EC	European Commission
EU	European Union
FAME	Financial Analysis Made Easy
FRC	Financial Reporting Council
FTSE	Financial Times Stock Exchange
HHI	Hirschman-Herfindahl Index
ICAEW	Institute for Chartered Accountants in England and Wales
KPMG	Klynveld Peat Marwick Goerdeler
NON-BIG FOUR	Accounting firms not classified as being one of the Big Four
NSSBF	National Survey of Small Business Finances
OFT	Office of Fair Trading
PIE	Public Interest Entity
PKF	Pannell Kerr Forster
PWC	PricewaterhouseCoopers
SEC	Securities and Exchange Commission
SIC	Standard Industrial Classification
UK	United Kingdom
US	United States of America

1
Introduction

1.1 Introduction

Private firms constitute the most significant portion of the UK economy and the market for audit services, accounting for 99.8% of the Companies House register at the end of June 2016 (Companies House, 2016). Compared to the availability of data for publicly listed companies, however, data for private companies is often incomplete and difficult to access. Consequently, prior auditing research focuses primarily on public firms. To date, there is therefore only limited knowledge regarding the audit market for private companies in terms of supplier concentration, switching frequencies and audit fees. Particularly since the Big Four audit firms came into power. The lack of knowledge about the private company audit market in the UK has subsequently resulted in a shortage of research that focuses on private companies with respect to their accounting and auditing choices or the economic consequences of these choices (Francis et al., 2011).

In contrast, there have been a number of high profile regulatory investigations (e.g., Oxera, 2006; Competition Commission, 2013c) and academic studies (e.g., Abidin et al., 2010; Peel, 2013) focusing on the audit market for listed companies in the UK. As is the case for audit markets globally, these investigations have resulted in a number of ongoing concerns being raised regarding the statutory audit market for listed firms. For example, the high supplier concentration of the Big Four accounting firms, and the potentially adverse effect this may have on audit markets and the quality of audits (Francis et al., 2013). In addition to the excessive familiarity often observed between

the management of a company and its audit firm, resulting in risks of conflicts of interest and threats to the independence of statutory auditors (EC, 2014c). Further, following the Global Financial Crisis of 2007-2008 questions have also been raised regarding the effectiveness of auditors and whether they could have played a part in mitigating the crisis.

Consequently, because of the ongoing concerns from both regulators and academics regarding various shortcomings observed on audits market globally, in April 2014 EU legislation to reform the statutory audit market came into force, with the rules becoming applicable in June 2016. The changes made by the reform included a revised Statutory Audit Directive, which sets out the framework for all statutory audits. In addition to the introduction of a new EU Regulation on the Statutory Audit of Public Interest Entities, which sets out specific requirements for the statutory audits of Public Interest Entities only.

The specific requirements for Public Interest Entities set out by the new Regulation include measures such as the mandatory rotation of audit firms, the restriction of particular non-audit services and fees provided and charged by audit firms, and the reinforcement of the role and competences of the audit committee (EC, 2014c). In justifying the stricter requirements for Public Interest Entities, the EC highlighted the potentially 'greater negative consequences, relative to other types of undertakings, resulting from misstatements for shareholders, investors and more broadly society at large' (EC, 2014b, p.4). Consequently, the possible costs of introducing the new specific rules are thought to be far outweighed by the benefits of avoiding audit problems in these entities.

While the regulatory changes aim to improve audit competition and quality, their success and impact depend on the definition of a Public Interest Entity applied across the various EU Member States. When deciding whether to extend the Public Interest Entity definition in the UK from the one set at EU level, the Department of Business Innovation and Skills (BIS) and Financial Reporting Council (FRC) launched parallel consultation documents. Due to the perceived additional costs and the risk of placing firms at a relative disadvantage to their European counterparts, the idea of extending the definition was met with opposition. The Regulation in the UK is therefore only applicable to listed companies, banks and insurance undertakings.

Consequently, the majority of private companies in the UK are exempt from the new regulations. However, it could be said that these firms have been excluded from the more rigorous audit requirements without sufficient evidence to justify the decision. As a result, it remains an open question whether the definition of a Public Interest Entity in the UK is adequate or whether, by excluding private companies it has excluded audit markets that potentially warrant similar regulatory changes.

Given this, it is important to undertake a comprehensive analysis of the audit market for private companies in the UK in order to provide a greater level of detail about the structure of the audit market, in addition to private companies' auditing choices. In turn, this will enable comparisons to be made with the statutory audit market for listed entities. In addition to determining whether it could be more appropriate to define a Public Interest Entity, for the purposes of more stringent audit regulations, based on a company's size, without reference to its corporate status. Moreover, once a more detailed picture of the private company audit market in the UK is available, other issues

related to private companies' auditing choices and the economic consequence of these choices will be able to be investigated.

1.2 Contributions of the Thesis

Since the Big Four audit firms came into power, no research has empirically examined the structure of the private company audit market in detail in terms of supplier concentration, rates of auditor change and audit pricing. Consequently, it is not clear whether segments of this audit market potentially warrant similar regulatory changes to those recently imposed on Public Interest Entities.

In the audit market for private companies, the larger audit firms are thought to possess comparatively small market shares relative to those in the listed company audit market, and is therefore thought to have characteristics of a competitive market (Peel, 2013). Consequently, there are lesser concerns present about supplier concentration levels, the frequency at which firms change auditors and subsequent audit pricing. This has resulted in the private company audit market receiving less attention from both regulators and academics. However, while concentration measures are a good indicator of market structure, the link with competitiveness is more complex than often assumed (Beattie et al., 2003). Moreover, there is a greater level of heterogeneity among private firms, which means that the assumptions regarding supplier concentration, subsequent switching frequencies and fee levels, may not hold across all sub-sectors of the audit market.

The overarching objective of this thesis is, therefore, to provide a comprehensive analysis of the private company audit market in the UK. Through this, the thesis aims to provide a detailed review of the structure of the private company audit market, in

terms of supplier concentration, switching frequency and audit fees. In doing so, this thesis provides the first detailed analysis of the private company audit market for a period during which the Big Four audit firms have been the dominant audit suppliers. Consequently, the thesis can also go on to investigate issues for private firms related to market structure. Such as, whether there are economic consequences for private firms associated with changing auditor while the rotation of auditors remains non-mandatory. In addition to reviewing the pricing strategies of audit firms following a change in auditor, to determine whether auditor independence and competitive pricing concerns are also present in the private firm market. By comparing the findings with the audit market for listed companies, the thesis can subsequently contribute to the debate over whether it would be more practical and more beneficial to the economy to set audit regulations based on company size, rather than listing status.

The UK is one of a number of countries that have chosen not to extend the scope of the definition of a Public Interest Entity. Consequently, the new, more stringent audit requirements recently introduced by the Regulation on the Statutory Audits of Public Interest Entities will not be applicable to companies in the UK unless they are a listed entity, a credit institution, or an insurance undertaking. Moreover, the UK economy is typical of other European economies, in that private firms are the dominant form of entity, accounting for the majority of registered businesses. The UK is therefore an ideal setting to conduct an in depth review of the private firm audit market. Accordingly, by using data on UK private firms, Chapters 4 to 6 of this thesis provide unique evidence on the structure of the private company audit market. In addition to issues related to market structure, such as the consequences associated with changing auditor and the pricing strategies for initial audit engagements.

1.2.1   Regulation of the Statutory Audit for Private UK Companies

Chapter 4 provides an in depth review of the private company audit market. Specifically, the chapter examines levels of supplier concentration and the frequency of auditor switches, in addition to considering whether the audit market for large independent private companies may require similar reforms to those applicable to Public Interest Entities (PIEs).

Using three different measures of concentration, the k-firm concentration ratio (C_n), the Hirschman-Herfindahl index (HHI) and the Gini coefficient, the findings show, similar to the listed company audit market, the Big Four audit firms maintain a tight oligopoly of the largest independent private company audits. In addition, the chapter finds the private company audit market to be characterised by low auditor switching rates.

Overall, the findings suggest the need for direct regulatory intervention in the audit market for private UK companies. In addition to supporting the proposition that the definition and scope of a Public Interest Entity needs revisiting both within the UK and across all EU Member States, with a view to including more economically important private entities. Moreover, given the lesser audit regulations currently present for private companies, the findings prompt questions regarding the economic consequences for companies switching auditor in this audit environment.

1.2.2   The Economic Consequences of Auditor Switching

In response to the concerns raised in Chapter 4, Chapter 5 examines whether there are any economic consequences to private companies resulting from a change in auditor. In addition to investigating whether there are different findings depending on the type of

change that has taken place. Relative to listed firms, the reaction of capital markets to a change in auditor are not readily available for private companies. The economic consequences are therefore measured via a company's credit ratings. In addition to being available for the majority of private firms, credit ratings can play an essential role in private firms as they are more likely to rely on them for bank-based forms of financing.

The findings show, after controlling for other known determinants of credit ratings, such as profitability, companies switching auditor experience a significant decrease in their credit ratings compared to non-switching companies. Further, when the direction of an auditor switch is considered, the results show that only companies switching laterally between the same tiers of auditor experience a decrease in credit ratings. This suggests that when the reasons for a change in auditor are harder to explain, it sends a negative signal about a company's credit risk to those external to the firm.

With credit ratings playing such an important role in the financing of private companies, it is therefore questioned what drives a company to switch auditor if they risk the chance of being penalised by credit ratings agencies. With lesser audit regulations present for the private firm audit market it leads to the question as to whether audit firms are doing anything to attract new audit clients through specific pricing strategies, potentially explaining the dominance of the more economically significant firms by the Big Four. This goes on to form the basis of the final empirical chapter, Chapter 6.

1.2.3 Playing Low-Ball: The Pricing of Initial Audit Engagements for UK Private Firms

The findings from Chapter 5 questioned whether audit firms were using particular pricing strategies to attract new clients. The currently limited knowledge of the private company audit market has resulted, however, in the pricing strategies of auditors in the private company audit market not receiving much attention from regulators or academics. To date, therefore, the pricing of audit engagements following a change in auditor has largely only been considered for samples of listed firms.   Chapter 6 therefore examines the pricing of initial audit engagements, namely, whether a discount in audit fees is present in the year following an auditor switch. Following this, the chapter also considers the price recovery of any initial discounts for the three years subsequent to the initial engagement year, in order to identify whether any discounts are indicative of fee cutting or low-balling.

The chapter finds that a discount is associated with initial audit engagements for private firms in the UK. However, the results are mixed following the refinement of auditor switches by direction, with physical discounts present for companies switching laterally between audit firms of the same tier and implicit discounts experienced by companies upgrading their auditor. Findings also show that during the three years following the initial audit engagement, for companies upgrading their auditor or switching laterally, there is an increase in audit fees.

Taken together the results suggest that low-balling is present in the private company audit market in the UK. Revealing why companies might be more inclined to switch auditor, given the negative economic consequences, and potentially raising audit independence concerns for this market. This again reinforces the idea of extending

some of the more stringent audit requirements introduced by the EU Regulation on the Statutory Audits of Public Interest Entities, in order to ensure that audit markets for economically important entities, such as private firms, have sufficient oversight.

1.3   Structure of the Thesis

This thesis is organised as follows:

- Chapter 2 reviews the extant literature examining the structure of the UK audit market and the current concerns regarding the issues around supplier concentration, auditor switching and the pricing of audit services.   Regulatory reports and empirical studies all point to an audit market increasingly dominated by the largest audit firms, with low rates of auditor change and potential impairment to independence following initial audit pricing. However, the majority of studies focus on listed companies or on the largest private firms only. Chapter 2 also, therefore, highlights areas where empirical research is lacking.

- Chapter 3 presents the sample selection criteria and high-level descriptive statistics for the sample used throughout this thesis. The chapter illustrates the representative nature of the sample in addition to providing insights to the overall structure of the private company audit market in the UK. Further, the chapter provides comparative statistics for the listed company audit market in order to garner perspective with the audit market for private firms. More detailed descriptive statistics and sampling and selection criteria are presented and discussed in Chapters 4 to 6.

- Chapter 4 is the first empirical chapter, which provides an in depth review of supplier concentration in the private company audit market and examines whether

the audit market for large independent private companies may require similar reforms to those applicable to Public Interest Entities (PIEs).

- Chapter 5 is the second empirical chapter and empirically examines whether there are economic consequences for private firms associated with a change in auditor in terms of their credit ratings. Further, this chapter examines whether the effect to credit ratings is different depending on the type of auditor change in question.

- Chapter 6 is the final empirical chapter, which examines initial audit pricing and price recovery for three years following an auditor switch. The purpose of which is to determine whether, similar to the listed company audit market, low-balling is a characteristic of the UK private company audit market. The chapter also examines whether the results and the type of discount present differ depending on the type of switch in question.

- Chapter 7 provides a summary and discussion of the thesis, an overview of the regulatory implications, and direction for further research.

2
Literature Review

2.1 Introduction

The role of the external audit is to provide an independent assessment of the accuracy and fairness with which financial statements represent the results of operations in accordance with generally accepted accounting principles (Hope et al., 2012). Globally, regulators agree that publicly listed firms must disclose audited financial statements for practical reasons but also because, from a public policy perspective, it is thought the potential systemic risks are inherently greater for these companies. Therefore it is widely accepted, that for publicly listed firms, the benefits of a statutory audit outweigh the costs and is subsequently a mandatory requirement (Langli and Svanström, 2013).

When it comes to auditing in private firms there is less agreement on the exact purpose of an audit due to the greater level of heterogeneity among private firms and the different environment in which they operate (Langli and Svanström, 2013). For example, relative to public firms, the degree of separation of ownership and control is reduced for private firms, subsequently affecting the level and type of agency conflicts present (Dedman et al., 2013). In addition, private firms operate in a much more opaque reporting environment and are subject to a lower level of public scrutiny, which, in turn, reduces capital market pressures to hire a particular auditor. Consequently, there is no general consensus among regulators regarding the need for statutory audits of private firms, which is reflected by auditing being statutory in some countries and voluntary in others (Langli and Svanström, 2013).

In the UK, historically all public and private companies have been required to file audited financial statements and to make them publicly available (Freedman and Godwin, 1993). However, in 1994 the UK applied the EC Fourth Directive, which permitted the UK government to dispense with the requirement for small, unlisted companies to undergo an audit. Companies were allowed exemption from the statutory audit if they qualified as a small company in addition to having a turnover of up to £90,000 and a balance sheet total not exceeding £1.4 million for that year.

Since then, the audit exemption thresholds for private firms have increased in size according to EU maxima. Since 1 January 2016, an unlisted company in the UK may qualify for audit exemption if, at their balance sheet date, they satisfy at least two of the three following criteria for two consecutive financial years: annual turnover of no more than £10.2 million, assets worth no more than £5.1 million and 50 or fewer employees on average (BIS, 2016).[1]

The supply of audit services has been looked at by researchers since the 1960s when the first US supplier concentration studies were published (Burton and Roberts, 1967; Zeff and Fossum, 1967). The topic has been perceived to be an important research topic because of its potential to impact on both market competition and large audit firm market behaviour (Moizer and Turley, 1989; Peel, 1997; Peel, 2013). Typically, the 'Big N' audit firms have dominated the supply of audits to large, public companies. The term Big N came from the fact that since the 1980s the number of dominant audit firms has reduced in size. Originally, the Big N audit firms were known as the 'Big Eight', which consisted of Arthur Andersen, Arthur Young & Co., Coopers & Lybrand,

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[1] Regardless of size, however, some companies are required to have an audit if their business is of a particular nature, such as authorised insurance companies or companies involved in banking or the issuance of e-money (BIS, 2016).

Ernst & Whinney, Deloitte Haskins & Sells, Peat Marwick McLintock, Price Waterhouse and Touche Ross. In 1989, the Big Eight audit firms reduced to the Big Six following a merger between Ernst & Whinney and Arthur Young to form Ernst & Young, in addition to a merger between Deloitte, Haskins & Sells with Touche Ross, to form Deloitte & Touche. Following this, in 1998, a merger between Price Waterhouse and Coopers & Lybrand, to form PricewaterhouseCoopers (PWC) reduced the Big Six to the Big Five. The Enron scandal in 2002 and the demise of Arthur Andersen then resulted in only the Big Four audit firms remaining: Deloitte, Ernst & Young, KPMG, and PWC. [2]

In the early 1990s, when the Big Six audit firms came into force, concerns began to rise, however, regarding the concentration of audit firms in the public company audit market. Since then, the reduction to the Big Four has only acted to intensify the concentration debate, with concerns raised by regulators that the structure of the audit market has become vulnerable to the risk of a Big Four firm exiting the market in a situation similar to Arthur Anderson. In addition to the fact that the majority of companies that employ a large audit firm are those with the fewest alternatives to their current auditor should one of them exit the market (Oxera, 2006). However, these concerns have largely focused on the listed company audit market, with a limited amount of empirical research focusing on the structure of the private company audit market.

In tandem with the supplier concentration issues, questions have also begun to rise over the low frequency of auditor switching in addition to whether there is price

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[2] The audit firm KPMG (Klynveld Peat Marwick Goerdeler) did not result from a merger but instead from the renaming of Peat Marwick McLintock to KPMG Peat Marwick in 1990 and then the further reduction of the name to KPMG in 1999.

competition between the larger audit firms for new audits (Ghosh and Lustgarten, 2006; Peel, 2013). Low switching rates and a lack of price competition can act to restrict competition in the market further by sustaining the high supplier concentration levels (OFT, 2011). These concerns have since been heightened, both in the UK and across audit markets globally, by the global financial crisis of 2007-2008. With a renewed focus being placed on the role and effectiveness of auditing, in particular, on auditor independence and audit quality (ACCA, 2011). Consequently, these issues have become a focus of both academic research and regulatory investigations. The next subsections therefore extend the literature review by providing an overview of the research investigating these issues for the UK audit market.

2.2 Supplier Concentration

2.2.1 Supplier Concentration in the UK Listed Company Audit Market

Supplier concentration is currently one of the most common and recurring concerns regarding global audit markets, with both regulators and academics frequently questioning the audit market share held by the Big Four accounting firms and the adverse effects this may have on both audit competition and audit quality (Francis et al., 2013). Consequently, there have been a number of academic studies and high profile reports, which have voiced concerns about the increasing levels of supplier concentration by the Big Four accounting firms across the UK audit market. However, these studies largely focus on the listed company audit market only.

The first study of supplier concentration in the UK audit market was undertaken by Briston and Kedslie (1984), who looked at all domestically listed companies in 1968. Based on the number of audits they found that the largest four audit firms, at the time,

audited approximately 20.7% of companies. A later study by Beattie and Fearnley (1994) found this figure had risen to 58.9% by 1991. Similarly, Pong (1999) also reported an increase in market concentration during the period 1991-1995, based on both the number of audits and audit fees. The market share of the top four audit firms based on number of audits rose from 56.52% to 59.68% and based on audit fees, market share rose from 77.15% to 79.39% (Pong, 1999). Thus, the early supplier concentration studies all reported trends of increasing market share in the listed company audit market for the larger audit firms.

Following the collapse of Arthur Andersen, Beattie et al. (2003) analysed market concentration within the UK listed company audit market. Following the collapse, the remaining Big Four firms increased their market share from 67% to 73% based on the number of audits, and from 90% to 96% based on the value of audit fees. Moreover, in the 'premier' market segments such as the FTSE 100 and FTSE 250, the levels of market concentration based on audit fees were significantly higher, 100% and 97.8% respectively. Subsequently, because of the reduced choice of audit suppliers in these segments, Beattie et al. (2003) raised concerns that in the future it would become increasingly problematic for a company to find a top tier audit firm that is not associated with its competitors.

In September 2005, because of the concerns about the state of competition and choice in the UK audit market, the Department of Trade and Industry (DTI) and the Financial Reporting Council (FRC) commissioned a study of the UK listed audit market, the Oxera Study (2006). The sample used in the study covered a nine-year period from 1995 to 2004 and included all UK-listed companies traded on the Main Market of the

London Stock Exchange.[3] In addition, the sample also included 63 of the largest private

UK companies in terms of turnover in the *Bureau Van Dijk* Financial Analysis Made

Easy (FAME) database in 2004.[4]

In line with expectations, Oxera (2006) found the audit market in the UK to be

highly and persistently concentrated with concentration increasing over the last ten

years mainly as a result of the merger of Price Waterhouse with Coopers & Lybrand

(1998) and the folding of Arthur Andersen UK into Deloitte (2002). At the time of the

study, 99% of the FTSE 100 companies and 97% of the FTSE 250 companies were

supplied audit services almost exclusively by the Big Four. In comparison, the market

share of the Big Four for the smaller listed FTSE fledgling companies was slightly

lower at 85%. However, even in this segment of the market the Big Four individually

had significantly higher market shares than the mid-tier firms.[5]

An academic study by McMeeking et al. (2007) investigated both audit market

concentration and fee levels in the listed firm audit market for a similar period 1990-

2005. In the first year of the sample, McMeeking et al. (2007) found the largest four

firms (Coopers and Lybrand, Ernst and Young, KPMG and Price Waterhouse)

accounted for 86.5% of the FTSE 100 audits. The PricewaterhouseCoopers and the

Andersen-Deloitte mergers later increased the share to 90.5% and 99%, respectively.

Concentration levels then continued to grow during the sample period and by 2004 the

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[3] A company was included in the Oxera panel dataset for the years 1995-2004 if, in 2004, it appeared in the FTSE 350 index, the FTSE Small Cap index, or the FTSE Fledgling index

[4] The sample initially hoped to include the 100 largest private UK companies in terms of turnover in the FAME database, however due to data availability only 63 made it into the final sample. Oxera (2006) therefore acknowledged that in the case of private companies the results should be seen as indicative only (Oxera, 2006, p.19).

[5] Oxera (2006) included the following as mid-tier firms: Grant Thornton, RSM Robson Rhodes, Baker Tilly, Moore Stephens, PKF, Smith & Williamson, Mazars and the Tenon Group.

Big Four conducted the audits of all of the FTSE 100 companies (McMeeking et al., 2007, p.207).

An empirical study by Abidin et al. (2010) looked at the auditors of all domestic UK companies listed on both the main and AIM markets of the London Stock Exchange for the period 1998 through to 2003. Focusing on the concentration ratios based on audit fees, the level of concentration in the UK remained at a consistently high level during the sample period, characteristic of a 'tight oligopoly', where the leading four firms control between 60% and 100% percent of the market, presenting significant barriers to entry for the remaining firms (Abidin et al., 2010). Further, in the first year of the panel, 1998, the Big Five were responsible for auditing 95% of companies according to audit fees. By 2003, this share had grown to 96% but only concerned the four remaining large audit firms. Taken together the three studies (Oxera, 2006; McMeeking et al., 2007; Abidin et al., 2010) show the extent of the dominance of the Big Four audit firms and the speed at which the listed firm audit market has reached a tight oligopoly status.

On the 21st October 2011, the Office of Fair Trading (OFT) referred the market for statutory audit services to large companies in the UK to the Competition Commission (CC) for investigation. The OFT had been concerned about the audit market in the UK for some time, with John Fingleton the Chief Executive of the OFT stating:

> *"The market for large company audits lacks sufficient competition and does not work well for customers. It is highly concentrated, largely supplied by four big firms, with clients rarely switching between auditors. There are also high barriers to entry for new and smaller competitors."*

(Accountancy Age, 2011)

For the purpose of the investigation, large companies were companies listed from time to time on the London FTSE 100 and FTSE 250 indices for the period 2001 to 2010. The final dataset used by the Competition Commission therefore comprised companies that were members of the FTSE 350 at any time during the period 2001 to 2011 in addition to companies that were members of the 'Top Track 100' during 2006 to 2011. The Top Track 100 is a league table, which ranks Britain's largest private companies by sales, with a typical Top Track 100 company having sales between £700 million and £3 billion and between 500 and 20,000 employees. This amounted to 712 FTSE 350 companies and a further 133 Top Track 100 companies (Competition Commission, 2013a, appendix 2.4 p.1).

Similar to previous studies, the investigation by the Competition Commission found that between 2001 and 2010 the Big Four firms consistently had a share of over 95% of the audits of FTSE 350 companies and over 99% of the audit fees of FTSE 350 companies. For non-FTSE 350 firms, in terms of the number of audits, the Big Four firms possessed a slightly lower market share at just over 80%. In terms of audit fees their share of non-FTSE 350 companies was higher at 90% (Competition Commission, 2013c). The investigation therefore revealed that the high supplier concentration levels in the UK listed audit market had sustained in recent years, one contributing factor of this being the low frequency of companies changing their auditor.

2.2.2   Supplier Concentration in the UK Private Company Audit Market

Few studies have actually examined the concentration of the private firm audit market in the UK with extant research tending to focus on listed/quoted firms, or alternatively on the leading (largest) companies within a particular listed market (Peel, 1997). Relative to the listed-firm audit market the exact market share of the Big Four among

private firms is harder to estimate because data covering all private firms within a country is not as easily accessible (Langli and Svanström, 2013). Moreover, the private firm audit markets possess much greater levels of heterogeneity and cover thousands of client-firms, as opposed to the relatively small number of listed firms in the UK.

In both auditor choice and agency theory literature there is a general consensus that there will be lower levels of supplier concentration present for private firm audit markets relative to listed firms (Peel, 1997). Listed companies are thought to be both larger and more complex and subsequently more likely to be audited by larger (Big N) auditors because they require the technical expertise and resources of larger audit firms (Moizer and Turley, 1987; Keasey and Watson, 1991). Due to difficulties in accessing data, however, relatively few studies have examined the private company audit market in detail, with studies instead tending to state the percentage of their sample audited by the Big Four firms. However, as a result of sample composition, even these provide mixed findings, with the market share of the Big Four ranging from 8.3% (Clatworthy et al., 2009), to 19% (Ball and Shivakumar, 2005) to as high as 87% (Chaney et al., 2004).

To date only one paper focuses solely on supplier concentration in the private company audit market. Using a sample of 164,726 private firms downloaded from the FAME database for the year end 1994/1995, Peel (1997) examined auditor concentration across all corporate sectors and sub-markets. He found 28.6% of private firms were audited by the Big Six between 1994 and 1995, just over half of the number of public firms audited by the Big Six (55.9%). Which Peel (1997) took to demonstrate the significantly different characteristics of the public and private sector sub-markets (Peel, 1997, p.313). However, when Peel (1997) partitioned his sample by company

turnover, the market share of the Big Six rose from 15.9% for the subdivision of the smallest to 94.1% for the subdivision of the largest private companies. Thus demonstrating the significantly different characteristics of the private sector sub-markets and reflecting the greater levels of heterogeneity between firms present in this market. Moreover, the findings highlighted that for large private companies, concentration levels were similar to those present in the listed market and potentially a cause for concern. Due to data collection problems, however, Peel (1997) was unable to go further in his analysis and provide a measure of supplier concentration based on audit fees. Nor was Peel (1997) able to make comparisons with additional measures of concentration thus providing a limited and static picture of supplier concentration in the private firm audit market.

2.3 Auditor Switching

2.3.1 Rates of Auditor Change

In conjunction with the continued dominance of large company audits by the Big Four, there have been increasing concerns expressed regarding the low frequency of auditor switching (McMeeking et al., 2007; Abidin et al., 2010; Peel, 2013). This is because if switching rates are low then market shares are likely to be stable, and high levels of concentration, once established, are likely to persist (Oxera, 2006). However, the focus of extant academic research concerned with auditor switching tends to be on isolating the micro-level factors considered determinants of auditor switching, rather than on switching frequencies for a representative sample of the UK audit market. With the majority of prior switching determinant studies focusing on publicly held entities.

To date, the investigations by Oxera (2006) and the Competition Commission have provided the greatest level of detail regarding the frequency of auditor switching for the listed firm audit market in the UK. The Oxera (2006) study found switching between auditors to happen infrequently, around 4.2% of companies switched their auditor on average per year. However, the rates differed with company size. For the FTSE 100 companies switching rates were 2.1% on average, whereas for FTSE fledgling companies the switching rate almost tripled to 5.6%. In the final year of the panel (2004) only 1% of FTSE 100 and 2% of the FTSE 250 companies changed auditors, while 3.1% of FTSE Small Cap companies, and 3.8% of the FTSE Fledgling companies switched auditors (Oxera, 2006, p.44). The switching rates for the private firms were unable to be determined, likely because of data availability and the limited number of private firms included in their sample. In line with low rates of auditor switching, Oxera (2006) also found tendering to occur infrequently in the UK listed firm audit market. Almost three quarters of the companies surveyed only put out a tender once every five years or less and more than 70% of the FTSE 100 did not hold a single competitive tender in the last 15 years.

Similarly, in their investigation into the supply of statutory audit services to large companies in the UK, the Competition Commission found that 31% of FTSE 100 companies and 20% of FTSE 250 companies had employed the same audit firm for more than twenty years. Moreover, 67% of the FTSE 100 and 53% of the FTSE 250 companies had employed the same audit firm for more than ten years. In terms of actual switching rates, for the FTSE 350 companies annual switching rates varied between 1.5% and 3.5% with an average of 2.4% between 2001 and 2010. The rates were found to be slightly higher for non-FTSE 350 companies whose annual switching

rates varied between 2.8% and 8.2% (Competition Commission, 2013a, appendix 2.4 p.12).

2.3.2 *Economic Consequences Associated with Changing Auditor*

Although the frequency of auditor switches is low, there is quite a large body of research focusing on switching determinants. Changes in auditor can often occur for very valid reasons, for example the growth of a client-firm (Haskins and Williams, 1990; Johnson and Lys, 1990). However, switching determinants can also be related to risk factors such as client-firm financial distress (Schwartz and Menon, 1985; Hudaib and Cooke, 2005), opinion shopping (Chow and Rice, 1982; Craswell, 1988; Citron and Taffler, 1992; Lennox, 2000) and disagreements with auditors over reporting matters (DeAngelo, 1982; Magee and Tseng, 1990).

As there are different reasons underlying an auditor switch, and switches are such infrequent events, the exact reaction of capital markets and the subsequent effect to stock prices may be uncertain. Using an analytical model Teoh (1992) found that investor reactions to an auditor switch depended on the context of the switch and the characteristics of the switching firm. Further, investor reactions to auditor switches were also found to be conditioned on the pre-switch audit opinion and other factors related to the costs and benefits of switching (Teoh, 1992, p.17). Lu (2006) also developed an analytical model and indicated that auditor switching sends a negative signal to capital market participants, which can subsequently result in a negative stock price reduction for the client. The reason being that 'capital market and non-incumbent auditors view auditor switching as a 'red flag' signal and perceive that switching firms have failed to secure their predecessors auditors approval of the audit report' (Lu, 2006, p.574).

Empirical studies provide mixed findings concerning the reaction of capital markets to auditor switches. For example, for a sample of 48 US companies obtained from the Corporate Profiles and Index of Corporate Events for the period 1972-1975, Fried and Schiff (1981) found there to be a negative market reaction to auditor switches based on a 21-week window. In contrast, for a sample of 51 US companies listed on either the New York or American Stock Exchanges for the period 1973-1979, Nichols and Smith (1983) failed to find a significant reaction to auditor switches when using a shorter window of 8 weeks. Similarly, during their study of voluntary auditor realignments, for a sample of 194 switches by US firms for the period 1973-1982, Johnson and Lys (1990) found there to be an absence of a significant average price reaction to auditor realignment announcements.

Later studies, on the other hand, have tended to document some form of negative market reaction to auditor switching. For example, for a sample of 79 US firms, Wells and Loudder (1997), found a significant negative market reaction to auditor resignations between 1988 and 1991, using a two-day window. When considering the reaction to auditor resignations only, for a sample of 247 US firms for the period 1987-1996, Shu (2000) found that investors reacted negatively to resignations, and the price drop varied with litigation risk. A later US-based study by Beneish et al. (2005) also limited their analysis to auditor resignations. For their sample of 109 firms that changed auditor during the period 1994-1998, they only found a negative market response to resignation announcements where firms provided a reason for the change. For example, if a firm disclosed that there had been a disagreement over an accounting treatment, or over the adequacy of internal controls.

UK-based research on the consequences of auditor switching, on the other hand is scarce, both for public and private firms. During their study of UK listed firms Oxera (2006) asked respondents about the relative importance of factors which might act as barriers to switching. One of the barriers identified was the potential costs of sending a negative signal to the capital market, since it might be associated with problems with the company's financial statements (Oxera, 2006, p.49). However, through their surveys and interviews they found that a change in auditor tended not to concern investors, provided the switch that occurred be between Big Four firms:

"In the words of one investor, if a company moves from a Big Four auditor to a mid-tier firm, on 'gut instinct' he would feel that 'there was an issue'. The switch would then require an explanation by the company ... For instance, one audit committee chair said that meetings with the two or three largest shareholders would be required to explain the company's decision to switch to a mid-tier firm."

(Oxera, 2006, p.49)

Thus, Oxera (2006) concluded that companies appeared to be aware of the negative concerns from investors when changing their auditor but that the perceived effect on capital markets of changing auditor is not (or is no longer) seen as a *significant* barrier to switching (Oxera, 2006, p.49). However, their findings are based on the replies of 50 respondents so it is therefore unclear whether the conclusions are actually generalizable to the entire UK market.

The private company audit market is similarly lacking empirical research on the consequences associated with an auditor switch. Instead research has tended to focus on the consequences associated with undergoing an audit voluntarily, with firms choosing to do so found to benefit in terms of improved credit ratings or a lower cost of debt (e.g., Blackwell et al., 1998; Allee and Yohn, 2009; Kim et al., 2011; Lennox and Pittman, 2011; Minnis, 2011; Dedman and Kausar, 2012). Alternatively, studies have focused on the role of auditor choice in debt pricing in private firms (e.g., Mansi et al., 2004; Pittman and Fortin, 2004; Fortin and Pittman, 2007). With some studies finding there to be benefits associated with the choice of a higher-tier auditor (Francis, 1984; Francis and Wilson, 1988) and other studies providing mixed evidence (Fortin and Pittman, 2007; Van Tendeloo and Vanstraelen, 2008; Karjalainen, 2011). It therefore remains an empirical question whether there are consequences for private firms stemming from a change in auditor, as this is yet to be the focus of an empirical investigation.

2.4   The Pricing of Audit Services

As previously discussed, because of the continued dominance of large company audits by the Big Four, increasing concerns have been expressed about competition issues, one of the concerns being whether there is competitive pricing in the audit market. More specifically, whether there is competitive pricing for initial audit engagements by the Big Four audit firms and the ability of the non-Big Four audit firms to compete with this (Peel, 2013). Although auditor switches do not occur often, when a change in auditor does take place the pricing of the initial audit fee offers an (observable) opportunity to examine whether competitive pricing is a feature of a market with an oligopolistic

supply structure, such as the UK (Peel, 2013, p.637). If initial discounts are present, there are concerns from regulators that auditors will treat discounts as relevant costs and this will consequently impair auditor independence (Ghosh and Lustgarten, 2006). On the other hand, there also exists the possibility that the increase in concentration may have a positive influence on pricing, due to economies of scale or scope, which could subsequently lead to an increase in price competition (Peel, 2013). Beattie et al. (2003) argue that 'while concentration measures are a good indicator of market structure, the link with competitiveness is more complex than often assumed' (Beattie et al., 2003, p.250). Thus, it is not always possible, without empirical analysis, to make inferences about the pricing of audit services based on concentration ratios alone.

Despite the recent investigation by the Competition Commission and the large and growing literature on audit pricing more generally, few studies have examined the pricing of initial audit engagements, fewer still relating to the UK market. [6] Pong and Whittington (1994) were the first study to examine the pricing of initial audit engagements for UK listed firms. Using a sample of 577 quoted companies for the period 1981-1988 they found that only new audits conducted by non-Big Eight auditors attracted significant fee discounts. Building on the work of Pong and Whittington (1994), Gregory and Collier (1996) examined whether there was any evidence of fee discounting following a change in auditor, in addition to whether there was any evidence of price recovery taking place in later years. For a sample of 399 listed firms for the period 1987 - 1991, they found that the initial fee reduction to be both large and significant at 22.4% but that it did not persist over the following three years. Gregory and Collier (1996) also investigated whether the type of auditor change made a

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[6] See Hay (2013) for a review of this.

difference to the fee reduction experienced. They found companies that switched laterally between the Big Six audit firms benefitted from a discount of 20.2%, and companies that changed from a non-Big Six to a Big Six auditor benefitted from a discount of 33.6%. Gregory and Collier (1996) therefore concluded that, in addition to offering initial fee discounts, large auditors forego the Big Six audit fee premium as an incentive for auditees of smaller firms to change to a premium auditor.

A primary focus of the Competition Commission investigation was whether the oligopolistic sector of the UK audit market was competitive. For companies that switched auditor during the sample period they therefore investigated the real percentage change in audit fees in the years after switching auditor. For direct switches, in line with academic research, audit fees generally decreased in real terms the year after a switch and returned to the previous fee level in the third year after switching. [7] The average (median) company obtained an 8% (17%) real decrease in audit fees in the first year after switching. However, compared with the fee before the switch, by the third year switching firms saw a 20% real increase on average and a median increase of 2% (Competition Commission, 2013a, appendix 2.4 p.16). However, the Competition Commission commented that they were unable 'to reach a conclusion on whether audit firms were making profits above competitive levels' (Competition Commission, 2013c, p.2). This was due to difficulties such as valuing capital employed, the intangible nature of the asset base in this market, difficulties in cost allocation, and difficulties in

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[7] The main sample for the analysis consisted of direct switches, where the company remained in the FTSE 350 both before and after the switch. 'Direct switches' were considered to be those not associated with the collapse of Arthur Andersen, merger and acquisition activity and moves to or from joint audits (Competition Commission, 2013c, p.55).

identifying costs due to the partnership ownership structure. However, the Competition Commission did state:

> *"It is our provisional view that this pattern (of reduced first-year prices and profitability, which rapidly increases over the subsequent two to three years) may indicate an adverse effect on competition (AEC) resulting from a feature or a combination of features in the FTSE 350 statutory audit market, since it demonstrates the ability of a new firm to increase its prices rapidly."*
>
> *(Competition Commission, 2013b, p.84)*

Despite not being able to reach a definite conclusion regarding competitive audit pricing, the Competition Commission therefore remained concerned about the adverse effects on competition resulting from the initial price discounts for audit fees.

Peel (2013) investigated the pricing of new audits following switches between the Big Four relative to their leading mid-tier counterparts for both the listed and private firm audit market. To date, Peel (2013) is the only study to investigate the pricing of initial audit engagements for private firms in the UK. Peel (2013) analysed a sample of 7,651 companies, of which 6,084 were private and 1,555 were public, for the year 2007, with more recent data for the year 2010 downloaded to test for evidence of price recovery. Peel (2013) found evidence to show quoted companies switching auditor benefitted from an average discount on their audit fees of 18.2%. Moreover, when the switches were refined by direction Peel (2013) found larger quoted companies switching between the Big Four benefitted from a substantial price discount of 26.7%. Although quoted clients switching to the mid-tier auditors also attracted discounts, they

were smaller in magnitude. For private firms, discounts appeared to be present on initial engagements, but Peel (2013) failed to find any evidence of price recovery. Similar to the conclusions drawn by the Competition Commission, Peel (2013) commented that it is important to note that initial discounts offer support for competition only to the extent that they show price reductions relative to continuing audits.

2.5   Reform of the EU Statutory Audit Market (2014)

As well as the concerns about the UK audit market raised in the previous sections, the Global Financial Crisis in 2007-2008 further highlighted some serious shortcomings in the stability of the entire EU economic and financial system. This in turn raised questions regarding the actual effectiveness of auditors during the Financial Crisis. Questions focused on whether auditors could have mitigated the banking crisis of 2008 by alerting investors to the riskiness of the assets held by banks (Lords Select Committee, 2010; EC, 2013a). Post-crisis inspection reports by Member States have since confirmed that there had been a lack of professional scepticism by auditors, misstatements in audit reports and a lack of fresh thinking in the audits of major companies – which they largely attributed to the average long-distance relationship between auditors and their clients (EC, 2013a).

Subsequently, to address both the existing concerns identified in academic studies and regulatory reports, and the shortcomings observed following the Financial Crisis, the European Commission (EC) embarked upon an extensive consultation process regarding how the European audit market could be improved. The consultation broadly focused on the role of statutory audit as well the wider environment within which audits

are conducted. In particular, through their consultation the EC were keen to determine whether audits provide the right information to all financial actors, whether there were issues around the independence of audit firms and whether there were risks linked to a concentrated market (EC, 2010a). Following the launch of the consultation, a Green Paper on Audit Policy and the issues learnt from the Financial Crisis was issued by the EC in October 2010 (EC, 2010b).

Following this, in 2011 the EC issued two further Commission proposals for a regulation on the quality of audits of Public Interest Entities (PIEs) and for a directive to enhance the single market for statutory audits (EC, 2011a; EC, 2011b). [8] By July 2014, the EC had reached an agreement on a reform of the audit market and, consequently, an amended Statutory Audit Directive and a new EU Regulation on Statutory Audit of Public Interest Entities entered into force. [9] The new regulation requires Public Interest Entities to rotate their auditors and audit firms after a period of ten years, in addition to prohibiting their auditor from providing certain non-audit services to them if they already conduct their financial audit. The new regulation also reinforces the role and competences of the audit committee and strengthens the requirements of the audit report (EC, 2014b).

It is hoped that introducing the more stringent regulations will address issues such as the lack of choice of audit firms emanating from high concentration levels in the top

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[8] According to the Statutory Audit Directive (Article 2, point 13) the definition of a 'public-interest entity' is as follows: (a) entities governed by the law of a Member State whose transferable securities are admitted to trading on a regulated market of any Member State within the meaning of point 14 of Article 4(1) of Directive 2004/39/EC; (b) credit institutions as defined in point 1 of Article 3(1) of Directive 2013/36/EU of the European Parliament and of the Council (16), other than those referred to in Article 2 of that Directive; (c) insurance undertakings within the meaning of Article 2(1) of Directive 91/674/EEC; or (d) entities designated by Member States as public-interest entities, for instance undertakings that are of significant public relevance because of the nature of their business, their size or the number of their employees.

[9] Statutory Audit Directive 2014/56/EU amends the Directive 2006/43/EC.

end of the market, in addition to reducing the systemic risk posed by the domination of the Big Four audit firms. Further, the more frequent changes in auditor brought about by mandatory auditor switching should help to address the excessive familiarity between the management of a company and its audit firm. This, in turn, should help with reducing the risk of conflicts of interest and threats to independence so that auditors are able to exert professional scepticism. However, the impact of the new regulation will depend on the definition of a Public Interest Entity applied across the various EU Member States. In the case of the UK, the definition of a Public Interest Entity applied is the one set at EU level and the new regulation therefore covers listed companies, credit institutions and insurance undertakings only. Private firms in the UK are therefore only affected by the amended Directive and are not subject to the new, more stringent audit regulations.

2.6   Summary and Discussion

Both academic research and regulatory investigations agree that the UK audit market for listed companies has been highly and persistently concentrated for a number of years. With levels suggesting that the market is a tight oligopoly, thus presenting difficulties to other firms who wish to compete in the market. In contrast, there are lesser concerns regarding the audit market for private firms. However, there is limited empirical literature that looks at the private company audit market in detail to test whether these assumptions are correct and hold across all sub-sectors of the audit market.

To combat the high supplier concentration levels in the listed firm audit market, and the issues that come with it, the EU amended the Statutory Audit Directive and

introduced new EU Regulation for the statutory audit of Public Interest Entities. With

the new regulation come more stringent audit requirements for Public Interest Entities

only. The reason for this being:

"the potential negative consequences of misstatements for shareholders,

investors and more broadly society at large, are usually greater than for other

types of undertakings. The possible costs of the specific rules concerned are thus

far outweighed by the benefits of avoiding audit problems in those public-

interest entities"

(EC, 2014b, p.4)

However, this does not take into account the size and economic importance of some of

the private entities excluded from these regulations. During the last twenty years the

number of public companies has substantially decreased in the UK, by around 48%,

with private firms now making up the majority of firms registered at Companies House

(The Economist, 2012). It also does not factor in the limited empirical knowledge of

the private company audit market. As a result it is not clear to what extent theory and

empirical findings based on public firms can provide insight and guidance to regulators,

standard setters, researchers and users of (audited) financial statements when it comes

to auditing in the private firm segment of the economy (Langli and Svanström, 2013).

Nor can it determine whether the issues raised by public company based research are

actually also applicable to this market and whether some of the more stringent

regulations might benefit private firms, thereby highlighting the need for empirical

research that examines the private company audit market in the UK in detail.

3
Sample Selection and Descriptive Statistics

The principal aim of this chapter is to provide a broad overview of the core sample that will act as a basis for subsequent analysis in the thesis. In the empirical chapters, Chapters 4 to 6, more restrictive data requirements will be applied to this core sample, subject to the methodologies used. Each empirical chapter will therefore include their own descriptive statistics accompanied by a more in depth discussion. The current chapter, therefore, outlines the filtering process used to obtain the core sample, followed by graphical illustration and discussion of some of the key descriptive statistics at a broad level.

3.1   Sample Selection

The data source for this thesis is the 'Financial Analysis Made Easy' (FAME) database, supplied by *Bureau Van Dijk*. The database provides comprehensive financial and non-financial information on over 8 million companies, both private and public, for the UK and Ireland. For the thesis, data is downloaded from FAME for the period 2005 to 2012. This is because a major threshold change in 2004 exempted a large number of private companies from audit for the first time.[10] Consequently, the sample period corresponds

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[10] In January 2004, independent, small, private companies could qualify for exemption from an audit if they had sales < £5.6 million and total assets < £2.8 million. Prior to the thresholds being raised, the audit exemption thresholds were much lower, sales < £1 million and total assets < £1.4 million (Dedman and Kausar, 2012).

to the years following these changes to prevent this having any confounding effects on results.

First, to ensure any audit related decisions reflect those made by companies in the sample themselves, the sample used in this thesis is comprised entirely of independent private companies in the UK.[11] This is because for companies belonging to a group, auditor-hiring decisions are routinely made by the ultimate owner rather than at the company level (Ball and Shivakumar, 2005; Lennox and Pittman, 2011). The definition of 'independence' for the sample firms therefore relates to the ability of shareholders to remove or change an auditor. According to the Companies Act 2006 members of a company may remove an auditor from office at any time but this power is only exercisable in accordance with Section 511 by ordinary resolution at a meeting (legislation.gov.uk). An ordinary resolution is a resolution passed by the shareholders of a company by a simple vote or bare majority - for example more than 50% of the vote. Consequently, to ensure none of the companies in the panel has a single shareholder with enough power to solely influence auditor choice or remove an auditor from a company, only companies with known recorded shareholders with an ownership percentage below 50% are included in the initial download.[12]

In addition to the independence requirement, to be included in the initial download from FAME, companies also had to meet a number of criteria. Following similar steps to Clatworthy et al. (2009) companies were required to be 'live', i.e. at the time of

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[11] Although data was available for Irish firms they were not included in the initial download because they are subject to different accounting and auditing regulations (ICAEW, 2014).

[12] In the FAME database an 'independence indicator' characterises the degree of independence of a company with regard to its known recorded shareholders. Included in the download were companies with the following independence indicators: 'A' - attached to any company with known recorded shareholders, none of which having more than 25% of direct or total ownership; 'B' - attached to any company with known recorded shareholders, none of which with an ownership percentage (direct, total or calculated total) over 50%, but having one or more shareholders with an ownership percentage above 25%.

download, FAME listed the company as 'active' and not have an IPO or delisting date present, as this indicates a change in listing status. In FAME when a firm converts from one listing type to another (e.g. listed to private) all of their past information is classified in subsequent years under their current listing type, which could result in non-private firms being incorrectly included in the sample (Ball and Shivakumar, 2005). Companies were also required to possess a valid SIC (2007) code and not be involved in the financial or utilities sectors. In addition to having the required accounting data available for a full 12 months of accounts which included total assets and sales (minimum £1,000), a disclosed profit/loss figure, and a disclosed registered office location.

Further, because an audit is not mandatory for all private firms, some of the smaller firms in the download will have chosen to take advantage of the audit exemption. For those companies that are audited, after discussions with various members of the audit profession, an audit fee threshold of £1,000 was specified to lessen the chance of the inclusion of firms with data entry errors related to the audit fee figure.[13] During the data checks, it was also noted that there were some instances of a firm's account types changing between consolidated and unconsolidated. These were checked against another database, ICC Plum, which confirmed that the changes in account type recorded were correct. Such observations were subsequently removed from the download to ensure reliability and to prevent any potential skewing of the data. These data

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[13] The members of the audit profession included a number of chartered accountants and audit partners either currently or previously employed by a Big Four or Mid-Four audit firm. During the research process, the sensibility of any data checks related to audit information could be checked with these members to ensure that both the opinions of previous research and the audit profession itself were incorporated into the data selection process. With regards to data entry errors, FAME specified a number of firms with audit fees of £100 that were checked against another database, ICC plum. For the majority of occurrences, audit fees below £1,000 were confirmed to be data entry errors and reflected an amount paid to an accountant for accounts preparation, not an audit.

restrictions resulted in an initial download of 51,191 independent, private UK firms for the period 2005 to 2012.

Following this, because the thesis will focus on audit related decisions, year on year comparisons will often be required e.g., changes in audit fees or a change in auditor. Thus, it is important that any firms downloaded have a minimum of two consecutive years of data in addition to there being no gaps throughout their panel as not to affect any conclusions drawn.[14] Subsequently, 2,565 firms with gaps in their panels were removed from the sample. To ensure the accuracy of the remaining data, following Ball and Shivakumar (2005) several forms of verification were then used. A firm-year was excluded if the accounting numbers were inconsistent, such as assets, liabilities and profit/loss figures.[15]

Similarly, firm-years were excluded where there were instances of inconsistent or missing audit information. For observations missing audit information, a sample was checked against another Companies House based database ICC Plum, to determine whether the data was actually missing from Companies House rather than from FAME. In the majority of cases ICC Plum was also missing the required audit information. Consequently, where fees were provided but the auditor name was not it is assumed that

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[14] Although a minimum of two years of data is required, firms do not have to possess consecutive data for the full 8 years of the sample (2005 – 2012) because this would bring survivorship bias into the data, as well as dramatically reducing the sample size. Subsequently, a firm with data for e.g. 2005, 2006, 2008, 2009, and 2010 is removed due to missing the data for 2007 but a firm with data for 2005 to 2009 inclusively is kept due to possessing consecutive data for more than 2 years.
[15] The following checks were carried out which resulted in exclusion of firm-years in some cases: fixed assets below zero; whether the total assets figure was consistent by +/- 1000 with the definition from FAME (current assets + fixed assets); net assets equal to zero or missing; whether net assets was consistent by +/- 1000 with the definition from FAME (total assets less current liabilities) - (long-term liabilities); whether current assets were equal to or below zero; and whether current liabilities were equal to or below zero.

this is due to missing data and the company was removed.[16] Due to the requirement that the companies in the sample do not have gaps in their panels, any company subsequently missing a firm-year observation following the previous data cleaning steps was removed from the sample. After these exclusions, the sample consists of 191,306 firm-year observations for 44,234 unique private firms.

Following Ball and Shivakumar (2005) a trimmed sample which excludes companies with 1% of the accounting variables at each extreme will be used for the thesis.[17] After trimming, the sample consists of 164,201 firm-year observations for 38,451 unique, independent private companies. Lastly, as the main focus of the thesis is the private company audit market the final filter is to remove any companies without audited financial statements. The final sample therefore consists of 36,118 observations for 8,314 unique companies for the period from 2005 to 2012. Table 3.1 summaries the sample selection procedure.

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[16] In addition, using the audit exemption size thresholds companies below (above) the size threshold and that are therefore able (unable) to take advantage of the audit exemption are identified. Where a company is above the size thresholds and therefore unlikely to be able to take advantage of the exemption from the mandatory audit and an auditor name is provided but fees are missing it is assumed that this is also a case of missing data and the company is removed.

[17] Data trimmed on ROA, net profit margin, fees to sales, and change in fees.

Table 3.1 Thesis sample selection

Sampling Process	Total Observations	Total Firms
Initial download from FAME	223,687	51,191
Less: Missing data requirements	-12,799	-2,565
Less: Inconsistent or irreconcilable data	-19,582	-4,392
Less: 1% of accounting variables at each extreme	-27,105	-5,783
Less: unaudited firms	-128,083	-30,137
Final sample	36,118	8,314

3.2 Sample Distribution

Table 3.2 presents the distribution of the 8,314 sample firms across their broad SIC (2007) industry groupings and regional distributions. Table 3.2 Panel A shows firms involved in 'business services' activities account for a quarter of the sample (25.50%), which is as expected because business services sectors are often well represented in samples of UK private firms (e.g., Lennox and Pittman, 2011). A further 21.78% operate in the 'wholesale and retail trade' sector, resulting in the two industries accounting for almost half of the sample. Other industries that are well represented in the sample are 'manufacturing' (15.67%) and 'construction' (12.79%). The industry composition of the sample companies remains relatively stable during the sample period. As sector specific expertise is thought to be an important determinant of auditor choice (Oxera, 2006, p.58) future research designs will control for between-industry differences by specifying indicator variables for each industry grouping according to 2-digit SIC codes.

Table 3.2 Thesis sample distribution by industry and region

Panel A: Sample distribution by industry sector

Industry	2005	2006	2007	2008	2009	2010	2011	2012	Firm Years	Total Firms (*n*)	Total Firms (%)
Agriculture, hunting, farming and fishing	61	67	59	56	72	81	87	79	562	126	1.52
Business services	999	1,195	1,170	1,124	1,205	1,121	1,179	1,088	9,081	2,120	25.50
Construction	480	564	600	608	660	561	560	494	4,527	1,063	12.79
Hotels and restaurants	152	196	201	210	250	221	236	222	1,688	420	5.05
Manufacturing	505	564	567	574	870	961	1,029	998	6,068	1,303	15.67
Mining	21	25	25	25	30	31	32	29	218	41	0.49
Other service activities	266	316	334	327	364	389	435	401	2,832	699	8.41
Transport, storage and communication	332	401	423	423	455	431	462	439	3,366	731	8.79
Wholesale and retail trade	797	900	872	870	1,020	1,058	1,161	1,098	7,776	1,811	21.78
Total	3,613	4,228	4,251	4,217	4,926	4,854	5,181	4,848	36,118	8,314	

Table 3.2 (continued)

Panel B: Sample distribution by region

Region	2005	2006	2007	2008	2009	2010	2011	2012	Firm Years	Total Firms (n)	Total firms (%)
East Anglia	416	489	492	501	560	505	505	475	3,943	912	10.97
East Midlands	218	253	247	247	315	331	368	343	2,322	524	6.30
London	683	804	811	821	895	828	855	787	6,484	1,401	16.85
North East	89	97	91	85	114	129	147	137	889	229	2.75
North West	297	336	333	336	439	465	510	472	3,188	746	8.97
Northern Ireland	36	42	53	52	133	161	170	161	808	203	2.44
Scotland	183	209	215	225	324	353	380	369	2,258	488	5.87
South East	887	1,061	1,113	1,096	1,052	882	938	874	7,903	1,834	22.06
South West	248	289	273	268	320	336	355	334	2,423	557	6.70
Wales	62	80	77	69	99	103	111	104	705	181	2.18
West Midlands	285	329	320	296	367	401	438	410	2,846	678	8.15
Yorkshire	209	239	226	221	308	360	404	382	2,349	561	6.75
Total	3,613	4,228	4,251	4,217	4,926	4,854	5,181	4,848	36,118	8,314	

The broad industry classifications are based on the United Kingdom Standard Industrial Classification of Economic Activities (SIC) which is used to classify business establishments and other standard units by the type of economic activity in which they are engaged. The most recent version of these codes (SIC 2007) was adopted by the UK as from 1st January 2008. Region is determined by the county in which a company's registered office is located.

Table 3.2 Panel B presents the sample composition by region. The distribution of companies by region remains relatively stable over the sample period with the sample consistently dominated by two particular regions, the South East and London, representing 22.06% and 16.85% of the total firms respectively. In comparison, the total proportion of sample firms with registered offices located in the North of the UK are almost equal to the percentage of sample firms located in London alone. Due to the potential higher cost of living differentials expected in the two dominant regions (Peel, 2013) registered office location will be controlled for in subsequent analysis.

3.3   Descriptive Statistics

In the subsequent empirical chapters, since a more detailed analysis is provided for each sample used, the following section will only provide a high-level overview of the 8,314 firms for the sample period 2005 to 2012. A variety of tables and figures will be used to provide information about the types of firms included in the core sample and, more specifically, to provide a preliminary insight into the UK private firm audit market, which provides the basis for this thesis. The chapter will begin by looking at the average size of the firms in the sample, followed by a comparison of the audit firms used by UK private firms, the rates of auditor change and audit fees.

3.3.1   Firm Characteristics

Figures 3.1 and 3.2 present the median and average size of the sample firms in terms of total assets and turnover respectively. Figure 3.1 shows total assets for the audited firms gradually increases across the sample period, from an average (median) value of

£12.4 million (£1.6 million) in 2005 to an average value of £32.8 million in 2012 (£6.7

million).

Figure 3.1 Comparison of median and average total assets for the sample companies
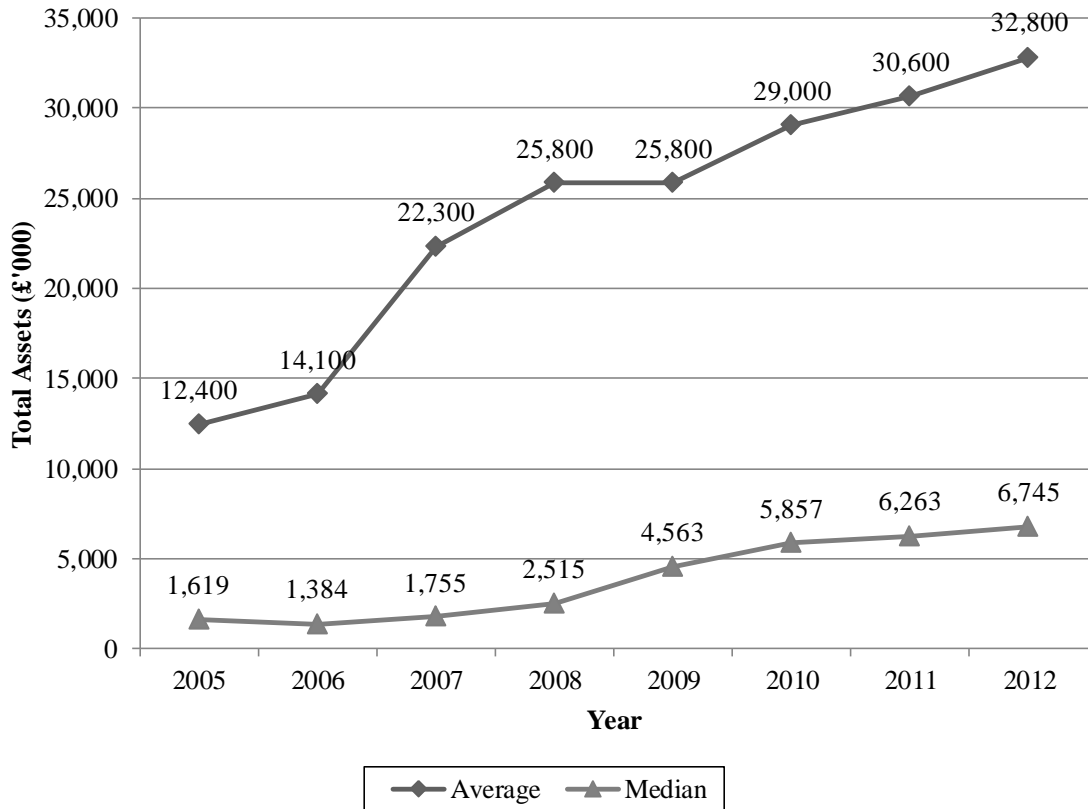
The figure compares the average and median total assets for the 8,314 private firms in the thesis sample for the period 2005 to 2012.

Similarly, Figure 3.2 shows average (median) turnover increases from £12.9

million (£1.6 million) on average in 2005, to £28.6 million (£10.6 million) in 2012.

One potential explanation for this could be that smaller firms did not survive the

financial crisis, driving up the averages in later years.   On average, the sample

companies have total assets and turnover of £24.7 million and £20.4 million respectively.

Figure 3.2 Comparison of median and average turnover for the sample companies
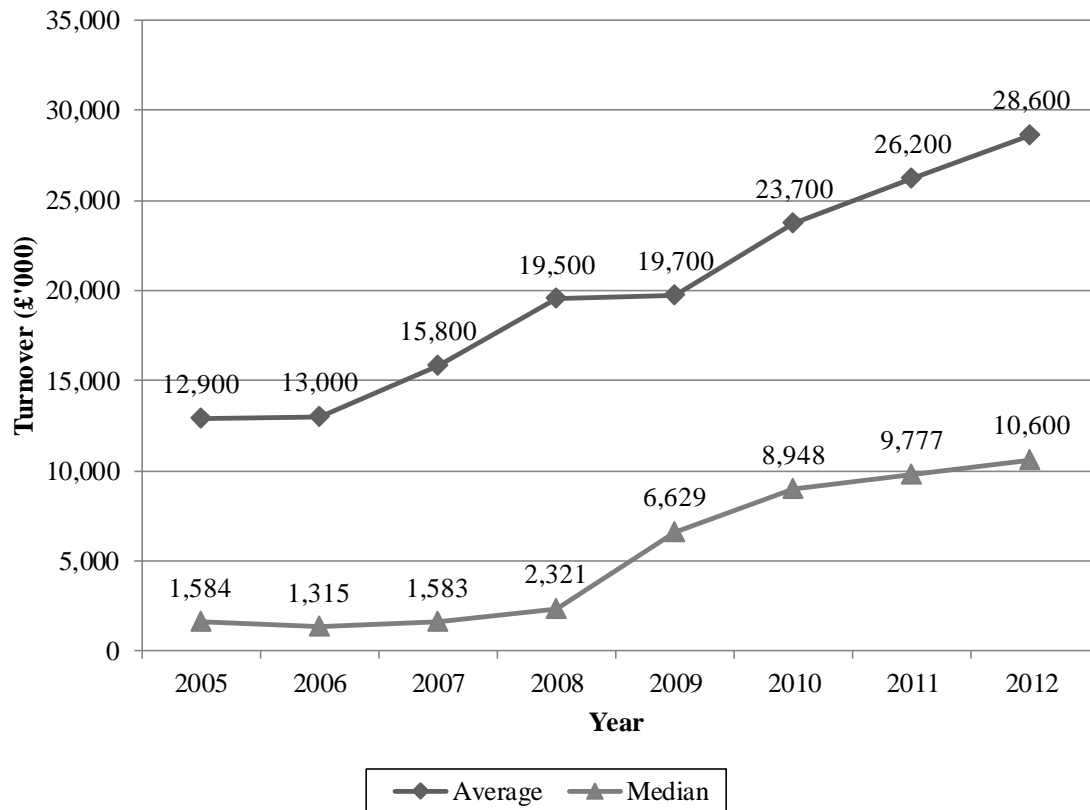
The figure compares the average and median turnover for the 8,314 private firms in the thesis sample for the period 2005 to 2012.

In comparison to the sample of independent private companies used in this sample, listed companies are much larger in terms of total assets and turnover. Figure 3.3 compares the median total assets and turnover for the companies used in the Competition Commission's investigation of statutory audit services to large

companies.[18]   The median figures are used because the yearly standard deviation is often extremely high, indicating that the distribution of the sample is highly skewed. Consequently, the median is likely to provide a more accurate representation of the typical company used in the investigation.

Figure 3.3 Competition Commission statutory audit services for large companies market investigation: median total assets and turnover
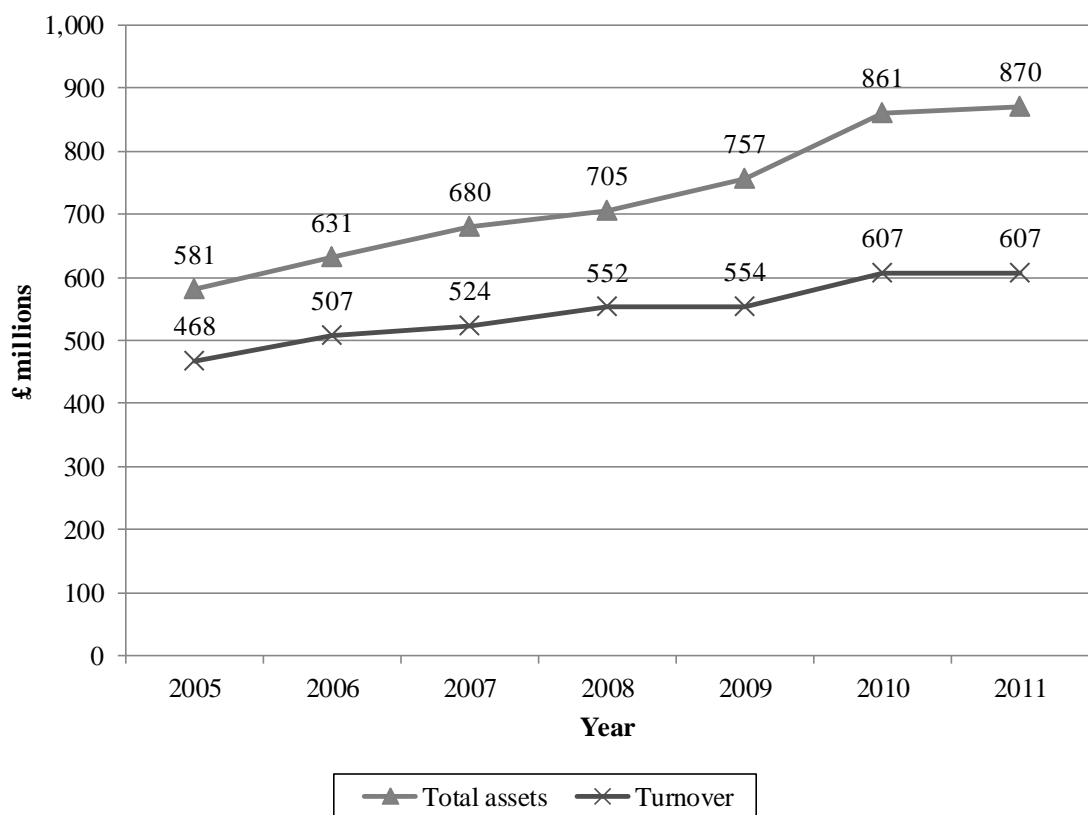
The figure presents a comparison between the median total assets and turnover for the sample firms used in the investigation of the statutory audit market for large companies undertaken by the Competition Commission. The investigation used a sample of 7,959 firm-year observations for 828 unique firms for an eleven-year period from 2000 to 2011. However, for comparison, only the years relevant to the thesis sample are shown in the above figure.

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[18] The data used in the statutory audit market investigation is available to download online from http://www.competition-commission.org.uk/assets/competitioncommission/docs/2011/statutory-audit-services/audit_public_dataset.xls

Figure 3.3 shows the median values increase over the period under investigation. Across the years corresponding to the thesis sample, companies have median total assets of £726 million and median turnover of £546 million.[19] In comparison, the companies used in the Oxera study (2006) had a median turnover of £197.7 million in 2004, the final year of the panel. Thus suggesting it is the inclusion of the private Top Track 100 companies in the Competition Commission investigation that are responsible for driving up the average size of the companies, further highlighting the substantial size of some private companies.

3.3.2   Auditor Choice

Figure 3.4 presents the market share of the different audit firms used by companies in the sample according to the number of audit engagements. To provide an additional level of detail, the traditional non-Big Four group of audit firms is further divided into the Mid Four, Small-Tier and non-major audit firms using the FRC's 'Key Facts and Trends in the Accountancy Profession' reports for the relevant years covered by the sample period. The Mid Four group includes Baker Tilly, BDO, Grant Thornton and PKF (UK). As well as being differentiated from other non-Big Four audit firms in terms of income, these four mid-tier auditors are the only non-Big Four auditors covered by the ICAEW Audit Firm Governance Code.[20] After the largest eight audit firms, the Small-Tier group includes audit firms which have appeared in the top 20 of

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[19] The investigation finished in 2011 therefore the year 2012 is unavailable for comparison to the thesis sample.

[20] The Audit Firm Governance Code, published in January 2010, applies to eight audit firms that together audit about 95% of the companies listed on the Main Market of the London Stock Exchange. For these audit firms, the code sets a benchmark for good governance which other audit firms may wish to voluntarily adopt in full or in part (ICAEW, 2010).

the FRC's list of the major auditing firms at any point throughout the sample period.

All of the remaining audit firms are included in the non-major group.

Figure 3.4 Auditor choice by client firms measured by the number of audit engagements
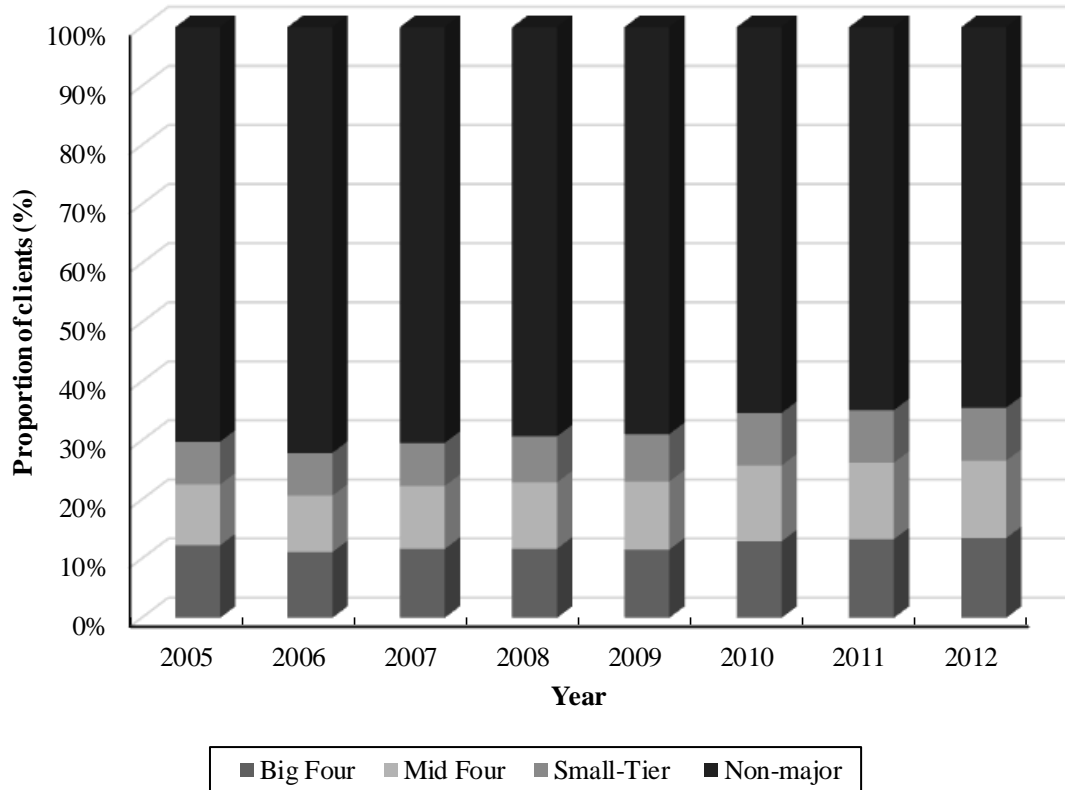
The figure shows the proportion of the total number of audit engagements held by the four different groups of audit firms for the sample of 8,314 private firms for the period 2005 to 2012.

Figure 3.4 confirms that, in terms of the number of audit engagements, the Big Four do not dominate the sample of private firms in the same way they appear to dominate the listed-firm audit market. Over the sample period, the Big Four are responsible for auditing, on average, 12.32% of the client firms in the sample, a very small proportion of the audit market in comparison to their share of the number of listed clients. Non-

major audit firms audit the greatest share of the number of clients during the sample period, 67.94% on average.[21] The Mid-Four audit firms audit a share of the sample which is similar to that of the Big Four (11.64%) and the Small-Tier firms have the smallest share of the sample at 8.10%.

In a study of the UK audit market Pong (1999) demonstrated that the basis of measuring supplier concentration can affect results. Figure 3.5 therefore compares the yearly average turnover values for the audit clients of the four audit firm groups. From Figure 3.5 the clients of the Big Four audit firms appear to be substantially larger in terms of turnover in comparison to clients of non-major audit firms. The average turnover for clients of the Big Four is £75 million, whereas clients of the Mid-Four audit firms have an average turnover of £25.1 million and clients of Small-Tier and non-major audit firms have average turnover values of £14.4 million and £10.4 million respectively. During the sample period, the clients of Big Four audit firms are approximately 2.9 times larger, on average, than the clients of the next four largest audit firms and 5.2 times larger than clients of Small-Tier audit firms.

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[21] The share of the 'non-top 20' audit firms is thought to be largely attributable to the large number of audit firms contained in this group, over 7,000 individual firms.

Figure 3.5 Auditor choice by client firms measured by yearly average turnover
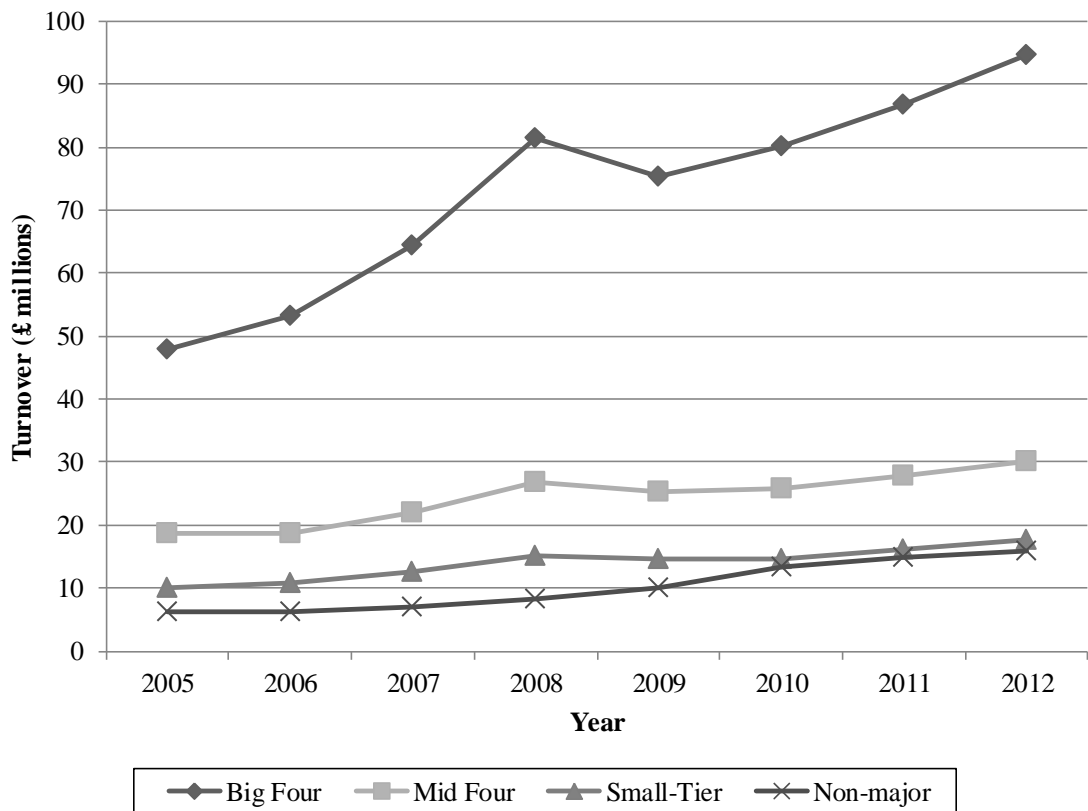
The figure presents a comparison between the average client-firm size for each audit firms group for the sample of 8,314 private firms for the period 2005 to 2012.

To complement Figure 3.4 and Figure 3.5, Figure 3.6 presents the proportion of the private companies audited by each group of audit firm when aggregating their client-firm revenue. When measured by total client turnover, over the sample period the Big Four are responsible for auditing, on average, 45.26% of client firms. This is a much larger proportion of the audit market in comparison to their share of the number of audit engagements. When measured in terms of total client turnover the share of the non-major audit firms also changes, reducing from 67.94% to 34.69%, on average. In terms of aggregate revenue, the Mid-Four audit firms audit a share of the sample that is a third of the proportion of the Big Four (14.36%) and the Small-Tier firms have the smallest

share of the sample at 5.69%. The basis of measuring supplier concentration therefore

largely affects results, which forms the basis of the following empirical chapter, Chapter

4.

Figure 3.6 Auditor choice by client firms measured by total client turnover
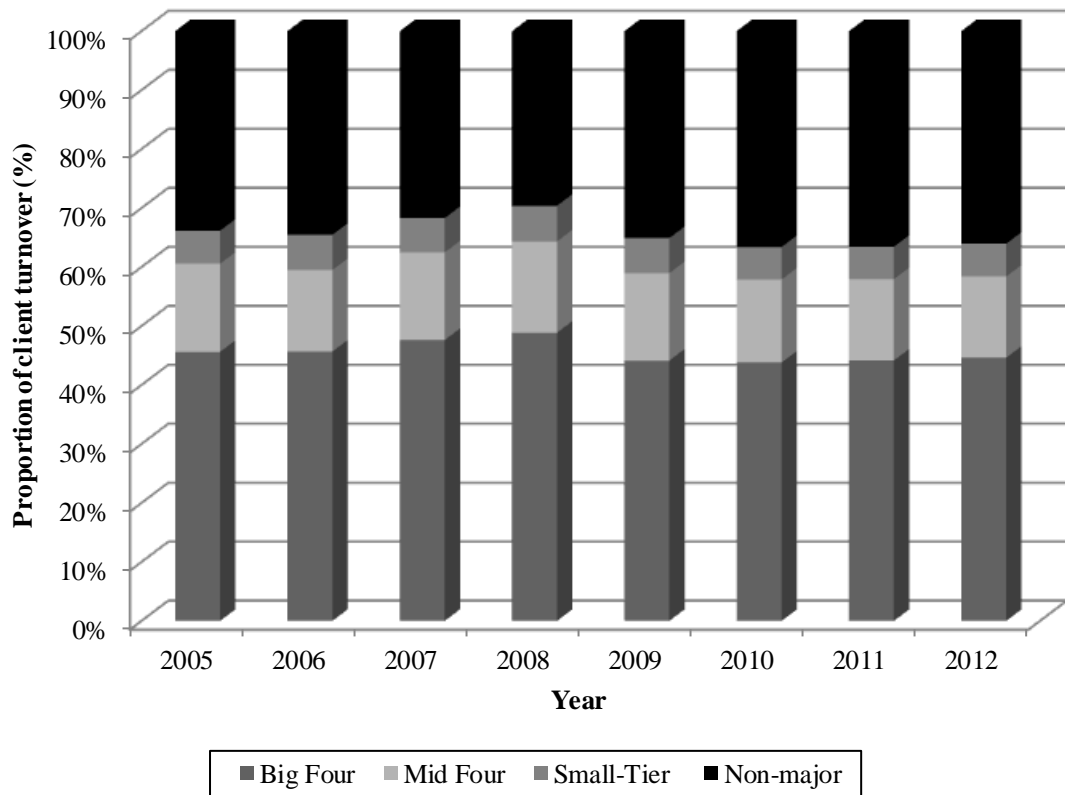
The figure compares the proportion of the 8,314 private firms audited by each of the four groups of audit firm when aggregating their client firm turnover for the years 2005 to 2012.

3.3.3   Rates of Auditor Change

One of the concerns associated with the higher levels of supplier concentration in audit markets is the low frequency of auditor switching as it means that market shares are likely to remain stable. Table 3.3 compares the proportion of private companies that switched auditors, on average, with the proportion of listed companies that switched auditors in the Oxera (2006) study and the statutory audit market investigation carried out by the Competition Commission (Competition Commission, 2013c). Table 3.3 Panel A shows that the proportion of private companies switching audit firm in the thesis sample remains relatively stable, with rates varying between 2.9% and 4.9% per year and a total of 3.6% of companies changing auditor on average.

Table 3.3 Comparison of auditor switching rates between listed and unlisted firms, 2001 to 2012

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Avg.
Panel A: Thesis sample													
All sample firms (%)	-	-	-	-	-	3.5	3.3	3.3	2.9	3.2	4.2	4.9	3.6
Turnover < £6.3 m (%)	-	-	-	-	-	2.0	2.0	1.9	1.4	1.1	1.1	1.3	1.5
Turnover > £6.3 m (%)	-	-	-	-	-	1.5	1.4	1.4	1.5	2.1	3.1	3.6	2.1
Panel B: Oxera (2006) Competition and choice in the UK audit market													
Listed companies (%)	4.9	5.5	3.4	2.8	-	-	-	-	-	-	-	-	4.2
FTSE 100 (%)	2.9	2.6	3.8	1.2	-	-	-	-	-	-	-	-	2.1
FTSE 250 (%)	3.9	4.9	2.7	1.6	-	-	-	-	-	-	-	-	2.8
FTSE Small Cap (%)	5.9	4.5	3.2	3.1	-	-	-	-	-	-	-	-	4.6
FTSE Fledgling (%)	5.8	8.5	4.6	3.8	-	-	-	-	-	-	-	-	5.6
Panel C: Competition Commission (2013) Statutory audit services for large companies market investigation													
FTSE 350 (%)	2.7	1.5	2.6	2.6	1.5	3.5	3.2	1.5	3.2	1.7	-	-	2.4
FTSE 100 (%)	3.1	1.0	1.0	1.0	1.1	1.0	3.0	1.0	3.0	2.0	-	-	1.7
FTSE 250 (%)	2.5	1.7	3.3	3.3	1.7	4.5	3.3	1.6	3.3	1.6	-	-	2.7
Non-FTSE 350 (%)	5.2	4.2	3.3	3.3	4.8	8.2	6.0	5.5	4.5	2.8	-	-	4.8

The table compares switching rates between three different samples of UK firms. Panel A shows the proportion of the 8,314 firms from the thesis sample that change auditor, on a pooled basis and according to firm size. Panel B refers to the sample of 739 firms used by the Oxera (2006) study commissioned by the Department of Trade and Industry (DTI) and the Financial Reporting Council (FRC). The study covers the years 1996 to 2004, but only the switching rates for the more recent comparable years are shown for brevity, however, average switching rates in Panel B refer to the complete panel analysed (Oxera, 2006, p.44). Panel C refers to the sample of 828 companies used in the investigation of the statutory audit market by the Competition Commission. The study covers the years 2000 to 2011 but switching rates are only provided up to the year 2010 (Competition Commission, 2013a, appendix 2.4 p.12).

For comparison, Table 3.3 Panel A also shows the proportion of sample companies switching auditor in terms of company size. With company size measured according to whether a company is above or below the median sample turnover value of £6.3 million. In terms of average switching rates, there is not a substantial difference, with 1.5% of companies below the median turnover value and 2.1% of companies above the median turnover value, switching auditor on average.

As previously discussed in Chapter 2, the frequency of auditor switches by listed firms varies with company size with rates slightly lower for smaller FTSE Fledgling firms for example. Table 3.3 Panel B and Panel C report the yearly and overall average switching rates from the Oxera (2006) study and the Competition Commission investigation respectively, for years comparable to the thesis sample. As Table 3.3 Panel B and Panel C show, there is slightly more variation in switching frequencies between listed companies of different sizes. Switching frequencies remain low, however, regardless of listing status, with all averages below 6%. Private companies do not appear, therefore, to switch auditors significantly more frequently than listed firms. The average switching rate for the sample of private companies of 3.6% is similar to the average switching rates for listed companies (4.2%), FTSE 350 companies (2.4%) and the larger non-FTSE companies (4.8%) (Competition Commission, 2013a, appendix 2.4 p.12).

3.3.4 Audit Fees

Figure 3.7 Comparison of average audit fees between size quartiles, 2005 – 2012
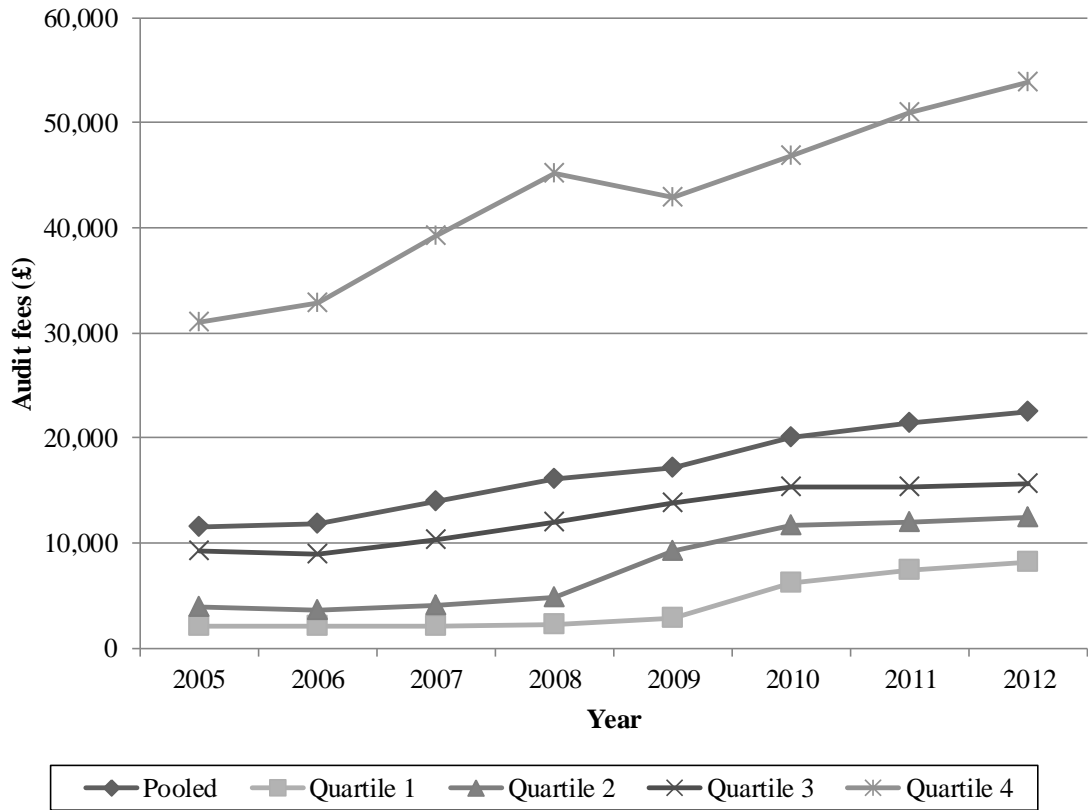
The figure shows the relationship between audit fees and company size across the sample period through comparison of the yearly average values of audit fees for the 8,314 firms in the sample by size quartile, with quartiles based on company turnover.

Figure 3.7 shows the relationship between audit fees and company size across the sample period through comparison of the yearly average values of audit fees for the sample firms by size quartile, with quartiles based on company turnover. Client size has been found to be the principal determinant of audit fees (Peel, 2013), which is reflected by the average audit fees in Figure 3.7. Average audit fees across the quartiles range from £4,345 for the first quartile, compared to £8,048 for the second quartile, £12,818 for the third quartile, and £43,548 for the fourth quartile. In the UK an average

audit for a small company typically costs around £9,500 (Financial Times, 2011), therefore suggesting that the companies in quartile one are very small.

Figure 3.8 Comparison of median audit fees for listed UK firms, 2000 - 2010
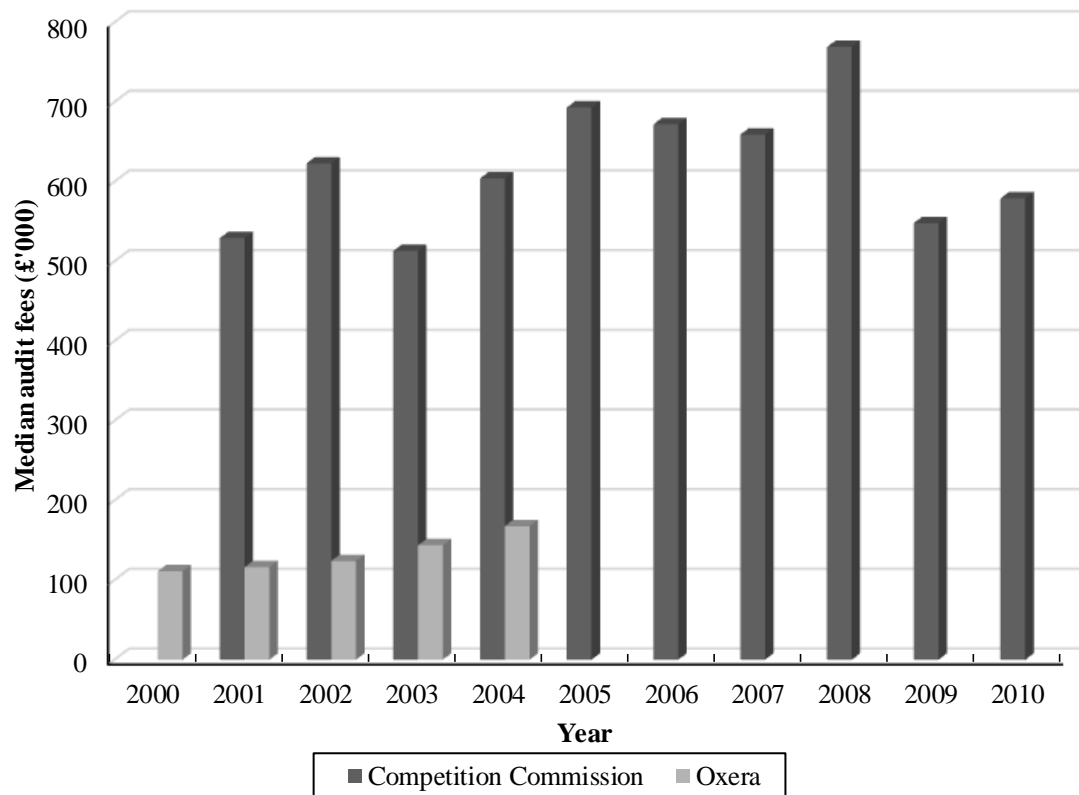
The figure presents a comparison between the median audit fees for the 739 sample firms used by the Oxera (2006) study commissioned by the Department of Trade and Industry (DTI) and the Financial Reporting Council (FRC) and the 828 sample firms used in the investigation of the statutory audit market by the Competition Commission (Competition Commission, 2013a, appendix 2.4 p.8-9).   The Oxera (2006) study covers the years 1996 to 2004, but only the audit fees for the more recent, comparable years are shown for brevity (Oxera, 2006, p.70).

For comparison, Figure 3.8 presents the median audit fees of the firms used in the Oxera (2006) study and the median audit fees for the firms investigated by the Competition Commission. Overall, the median audit fees for the sample of firms used in the Oxera (2006) study range from £110,000 to £167,000. However, median fees

differ substantially when the firms are partitioned by index. Oxera (2006) find the median audit fees range from £62,000 for FTSE Fledgling companies, to £165,000 for the FTSE Small Cap companies, to £600,000 for FTSE 350 companies. Moreover, if the FTSE 100 companies are considered by themselves, median audit fees are substantially higher at £2.1 million (Oxera, 2006, p.70).

The Competition Commission find the median audit fees for the sample of FTSE 350 to be similar to the findings of Oxera (2006), with median fees ranging from £513,000 to £769,000. Similarly, median audit fees for FTSE 100 companies were also found to be substantially higher than for FTSE 250 and non-FTSE-350 companies. With median audit fees fluctuating between £2 million and £3.5 million during the period under investigation (Competition Commission, 2013a, appendix 2.4 p.8-9). However, the individual audit fees of companies in the thesis sample does range from a minimum of £1,000 to a maximum of £2.5 million.[22] Some of the larger companies in the sample therefore have fees similar to FTSE 100 companies.

Due to turnover being a first approximation of the amount of work required to audit a company, Figure 3.9 compares the average values of audit fees as a proportion of company turnover. From Figure 3.9 it can be seen that the smallest companies have the highest audit fee to turnover percentage, with audit fees being around 1.23% of company turnover on average. In comparison, audit fees make up a much lower proportion of turnover for companies in quartiles 2, 3 and 4 with ratios of 0.37%, 0.17% and 0.09% respectively. Oxera (2006) observe a similar pattern for listed firms, with

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[22] Audit fees of this magnitude were crosschecked to ensure that the data entry was not an error. First, the audit fees for the company across the panel were considered, thus the large fee could be compared to other years for sensibility. Then fees were doubled checked with the ICC plum database and were found to be correct.

median audit fees representing an increasing proportion of company turnover as average

company size decreases. Audit fees represent 0.06% of FTSE 100 company turnover,

0.13% of FTSE small cap turnover, and 0.20% of FTSE fledgling turnover (Oxera,

2006, p.70).

Figure 3.9 Comparison of average audit fees as a percentage of turnover between size quartiles, 2005 - 2012
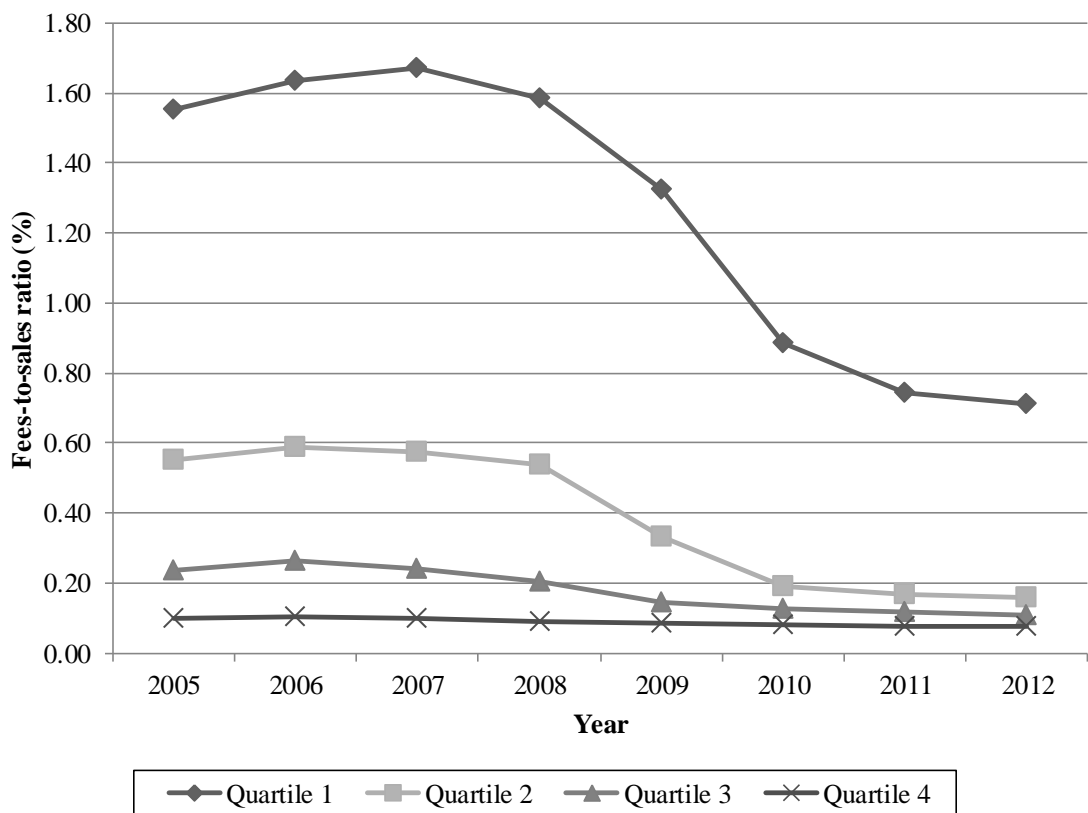
The figure shows the relationship between audit fees and company size across the sample period through comparison of the yearly average fees-to-sales ratio for the 8,314 audited firms in the sample by size quartile, with quartiles based on company turnover.

3.4 Summary

This chapter provided a broad overview of the core sample, which will act as a basis for

subsequent analysis in the thesis. The chapter highlighted a number of similarities

between the audit markets for private and listed firms, in particular for the larger private firms in the sample. Following the overview of the private company audit market in the UK, the aim of the following three chapters is therefore to examine the UK audit market for private companies in more detail. With specific attention given to supplier concentration, the consequences of auditor switching and the pricing of initial audit engagements.

The core sample for the thesis provides the sample for the following empirical chapter, Chapter 4. For the remaining empirical chapters, Chapter 5 and Chapter 6, the core sample is further refined with more restrictive data requirements. In Chapter 5 additional data filters remove companies switching more than once in addition to companies missing credit ratings data, which results in a total of 33,498 observations for 7,825 unique firms. In Chapter 6 only companies switching more than once throughout their panel are removed from the core sample, resulting in 35,425 observations for 8,215 unique firms.

4
Regulation of the Statutory Audit for Private UK Companies

4.1 Introduction

New EU regulation on the Statutory Audit of Public Interest Entities requires the mandatory rotation of audit firms and restricts the non-audit services and fees provided and charged by audit firms to all Public Interest Entities. While these regulatory changes aim to improve audit competition and quality, their success and impact depend on the definition of a Public Interest Entity applied across the various EU Member States. Although their governance and performance is crucial for economic growth (Langli and Svanström, 2013), the majority of private companies within the UK will fall outside the narrow scope of the definition of a 'Public Interest Entity' and, therefore, are not covered by these regulatory changes. [23] The limited knowledge about the audit market for these companies raises questions over whether economically important private firms should be exempt from some of the more stringent audit regulations applicable to Public Interest Entities. This chapter, therefore, provides an in depth review of the audit market for private firms and examines whether the audit market for large private companies may require similar reforms to the auditing regulations applicable for Public Interest Entities.

The adverse effects on audit competition and audit quality due to high levels of supplier concentration is a recurring issue raised by regulators and academics (Francis

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[23] In January 2015 private companies accounted for just over 99.7% of the effective Companies House register.

et al., 2013), with particular attention given to the audit market share held by the Big Four accounting firms. For publicly listed companies, the Big Four audit firms have an average market share of over 90% in most EU member states (ESCP Europe, 2011). Likewise, in the UK, the Big Four increasingly dominate the audit market of large listed companies, where they currently are responsible for over 95% of audits for the FTSE 350, and all but one of the FTSE 100 companies (Oxera, 2006).

In addition to the potential for systemic risk resulting from high concentration levels, such a market is often characterised by an infrequent number of auditor switches and overfamiliarity between clients and their auditors, raising concerns over the quality of individual audits. Consequently, the European Commission implemented a new EU regulatory framework in 2014 in response to an extensive consultation process, which amended the EU Directive on Statutory Audits of Annual and Consolidated Accounts. In conjunction with these changes, the European Commission further introduced new EU-wide Regulation on the Statutory Audit of Public Interest Entities, all of which came into effect in June 2016.

This regulation has resulted in significant changes to the audit market as all Public Interest Entities in the EU are now subject to a mandatory rotation of their auditor and restrictions placed on the non-audit services and fees provided and charged by audit firms to their clients. The success and impact of these regulatory changes will, therefore, depend on the definition of a 'Public Interest Entity' which, while defined at an EU level, has been broadened by Member States, leading to considerable variation across the different legal regimes. In the UK the Financial Reporting Council (FRC) defines only listed companies and certain unlisted banking and insurance companies as Public Interest Entities, regardless of their size.

Therefore, even while their governance and performance is crucial for economic growth (Langli and Svanström, 2013), most private companies within the UK will not be covered by the regulatory changes. Conversely in Denmark, for example, the definition is much broader and includes a size criterion, consistent with the view that larger organisations (quoted or unquoted) are systemically important to the Danish economy. [24] Relative to the wider definition applied by some Member States, the narrower definition of a Public Interest Entity applied by the UK has led to concerns that '…UK legislation is being manipulated to suit existing structures, rather than the outcomes sought by the EU legislative framework' (ICAEW, 2015a, p.7).

Compared to the availability of data for publicly listed companies, data for private companies is often incomplete and difficult to access and, therefore, the exact market share of private company audits conducted by the Big Four is difficult to measure (Langli and Svanström, 2013). From the few studies examining private firm audit markets, Langli and Svanström (2013) find a large cross-country variation in the market share of the Big N audit firms, ranging from 18.1% in Norway to 90.2% in Finland, with larger companies being audited by the large audit firms.

However, prior studies may have underestimated the concentration levels within the market for large private company audits by measuring market share based on the proportional number of audits, rather than taking into account the value of the company being audited. Consequently, the audit market for large private companies may exhibit concentration levels and systemic risks similar to those observed in the audit market of public firms. This chapter therefore, provides an in depth review of the audit market for

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[24] Any firm exceeding 2 out of 3 criteria concerning number of employees, asset values, and turnover are considered Public Interest Entities.

private firms and examines whether the audit market for large private companies requires similar reforms to the auditing regulations applicable for Public Interest Entities.

To undertake this study a large panel of independent private company audits in the UK from 2005 to 2012 is utilised. The UK is focused on for two reasons. First, concerns have been raised over the UK's narrow definition of a Public Interest Entity raising questions as to whether UK legislation is being implemented in a way to suit existing structures. Second, because of the difficulties in accessing data, the exact market share of private company audits conducted by the Big Four is often difficult to measure. Supplier concentration in audit markets is best measured using audit fee data however, audit fee data are not publicly available in many countries (Willekens and Achmadi, 2003). Relative to other Member States, UK private company data is more accessible, therefore proprietary data, including audit fees, for a large sample of independent private companies is downloaded and analysed.

The results show that, when supplier concentration levels are measured by the number of audit appointments, the market share of larger audit firms is significantly understated compared to when supplier concentration is measured by either audit fees or client-firm size. The Big Four, therefore, appear to audit the majority of private companies that will provide them with the greatest economic rents. Further, when the sample is partitioned by firm size, the market share of the Big Four is found to exceed economists' 'tight oligopoly' threshold of 60% (Shepherd and Shepherd, 2003) for the largest independent private companies. Regardless of listing status, therefore, audit markets appear to be segmented with Big Four dominance among the largest public and private firms. Moreover, similar to the public firm audit market, switching rates for

private firms are found to be low suggesting that, if no direct regulatory intervention is planned, the private company audit market will continue to exhibit high levels of concentration for larger sized entities.

Given the economic importance of private companies, further consideration should be made of the risks associated with excluding them from the more stringent audit regulations applicable to other Public Interest Entities. In the UK, these firms have been excluded from the more rigorous audit requirements without sufficient evidence to justify these decisions. Therefore, the definition and scope of a Public Interest Entity needs revisiting both within the UK and for all EU Member States, given the variation in definitions of Public Interest Entity and the limited knowledge of private audit markets across Europe.

The remainder of the chapter is organised as follows. The next section outlines the recent audit reform by the European Union and discusses prior literature. Section 4.3 outlines the sample selection process and provides descriptive statistics, while Section 4.4 details the methods used to measure concentration, Section 4.5 provides the results and discussion, and Section 4.6 concludes.

4.2 Regulatory Background and Prior Literature

For a number of years, regulators, market participants and academics have raised concerns that a high level of supplier concentration within audit markets by the dominant audit firms, coupled with low levels of auditor switching, may impair independence and audit quality (e.g., Beattie et al., 2003; Oxera, 2006; Abidin et al., 2010; Francis et al., 2011). More recently, auditors have been criticised for not doing more to mitigate the effects of the 2007-2008 Global Financial Crisis by alerting

investors to the risks associated with the assets held by banks (House of Lords, 2010). Post-crisis, inspection reports by Member States revealed that the lengthy relationships between auditors and their clients had resulted in the auditors exercising low levels of professional scepticism and performing inadequate procedures for the audits of major companies (EC, 2013b).

4.2.1   European Regulation on the Statutory Audits of Public Interest Entities

The European Commission (EC), therefore, embarked upon an extensive consultation process, culminating in the release of the Green Paper on Audit Policy in October 2010 which raised concerns over the Big Four dominance of audit markets (EC, 2010b). Consequently, in 2011, the EC proposed significant audit regulatory changes (EC, 2011a; EC, 2011b) and, in 2013, the European Parliament and EU Member States reached agreement on a number of audit reforms (EC, 2013b). These reforms were then approved by the European Parliament in 2014, who issued a revised Statutory Audit Directive and a new EU Regulation on the Statutory Audit of Public Interest Entities, with effect from June 2016 (EC, 2014a). [25] According to the Statutory Audit Directive 2014/56/EU (Article 2, point 13) the definition of a 'Public Interest Entity' is as follows:

a) entities governed by the law of a Member State whose transferable securities are admitted to trading on a regulated market of any Member State within the meaning of point 14 of Article 4(1) of Directive 2004/39/EC;

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[25] Statutory Audit Directive 2014/56/EU amends the Directive 2006/43/EC.

b) credit institutions as defined in point 1 of Article 3(1) of Directive 2013/36/EU of the European Parliament and of the Council (16), other than those referred to in Article 2 of that Directive;

c) insurance undertakings within the meaning of Article 2(1) of Directive 91/674/EEC; or

d) entities designated by Member States as public-interest entities, for instance undertakings that are of significant public relevance because of the nature of their business, their size or the number of their employees.

The Statutory Audit Directive sets out the auditor's duties and regulates all statutory audits in the EU, regardless of whether the audited entity is a Public Interest Entity. However, the new EU Regulation on the Statutory Audit of Public Interest Entities only enforces stricter legal requirements for the statutory audits of 'Public Interest Entities' (PIEs). The requirements for Public Interest Entities include the mandatory rotation of the auditor for Public Interest Entities after a period of ten years, joint audit and tendering incentives, a list of non-audit services that audit firms may not provide to their clients and a cap on the fees charged for non-audit services that are provided.[26]

Justifying their decision for stricter audit regulation of Public Interest Entities, the EC argue that undetected material misstatements have disproportionally greater consequences for society, the shareholders and investors of these firms than for other undertakings (EC, 2014b, p.4). Any costs associated with complying with the new EU

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[26] Member States can allow Public Interest Entities to extend the audit engagement (1) by an additional 10 years upon tender; (2) or by an additional 14 years in case of joint audit (EC, 2014b). Prohibited non-audit services includes: tax, consultancy and advisory services; if an firm provides non-audit services for three of more years fees are limited to no more than 70% of the average fees paid in the last three years by the audited entity.

Regulation should, therefore, be outweighed by the greater audit assurance resulting from reducing the overfamiliarity between auditors and their clients, increasing the choice between audit firms, and lowering the levels of concentration in the top-end of the audit market (EC, 2014a).

4.2.2   Defining a Public Interest Entity

However, the imprecise definition of a Public Interest Entity provided by the EC has led to a variety of interpretations across EU Member States, which could limit the intended impact and success of these reforms (FEE, 2014). For example, Table 4.1, which summarises the definitions of Public Interest Entities across EU Member States, shows France, Germany, Hungary, Ireland, Norway, Slovenia, and Sweden applying the minimum requirements. While Denmark, Italy and Spain expand the definition to include other entities such as investment companies, large non-listed companies, state owned companies, and pension funds. Table 4.1, further, shows that the definition of a Public Interest Entity has not been widely extended within the UK.

Table 4.1 Overview of the definition of a 'Public Interest Entity' (PIE) applicable across Europe

Country	Expand on 2006 EU PIE definition?	Other designated entities on a national level (if applicable)	Total number of PIEs	Total number of listed companies
Bulgaria	Yes	Pension funds; State owned companies; Other.	900	-
Croatia	Yes	Pension funds; UCITS/Investment companies; Size criterion; State owned companies; Asset management companies; Electronic money institutions.	500	174
Cyprus	Yes	Size criterion.	350	104
Czech Republic	Yes	Pension funds; UCITS/Investment companies; Size criterion.	321	64
Denmark	Yes	UCITS/Investment companies; Size criterion; State owned companies; Government.	900	200
Estonia	Yes	Size criterion; State owned companies; Government.	149	13
Finland	Yes	Pension funds; UCITS/Investment companies.	600	120
France	No	-	2,533	498
Germany	No	-	1,600	800
Greece	Yes	The option to expand the definition of a PIE to other designated entities is available but not currently used.	342	250
Hungary	No	-	102	55
Iceland	Yes	Pension funds.	-	-
Ireland	No	-	2,000	55
Italy	Yes	Pension funds; UCITS/Investment companies; Size criterion; Asset management companies; Electronic money institutions; Other.	1,430	260
Latvia	Yes	Pension funds; UCITS/Investment companies; Asset management companies.	75	33
Lithuania	Yes	Pension funds; UCITS/Investment companies; Other.	154	20
Luxembourg	Yes	The option to expand the definition of a PIE to other designated entities is available but not currently used.	-	23
Malta	Yes	The option to expand the definition of a PIE to other designated entities is available but not currently used.	94	22
Netherlands	Yes	The option to expand the definition of a PIE to other designated entities is available but not currently used.	1,200	125
Norway	No	-	414	218

Table 4.1 (continued)

Poland	Yes	Pension funds; UCITS/Investment companies; Electronic money institutions; Other.	500	450
Portugal	Yes	Pension funds; UCITS/Investment companies; State owned companies; Other.	1,300	77
Romania	Yes	Pension funds; UCITS/Investment companies; State owned companies; Government; Electronic money institutions; Other.	500	198
Slovakia	Yes	Pension funds; UCITS/Investment companies; Size criterion; State owned companies; Asset management companies; Other.	600	60
Slovenia	No	-	70	70
Spain	Yes	Pension funds; UCITS/Investment companies; Size criterion; Electronic money institutions; Other.	8,000	150
Sweden	No	-	450-500	450-500
UK	Yes	Credit institutions (a bank and building society but not a credit union) and insurance undertakings.	2,300	2,300

Source: The information in the table is taken from the FEE Survey on the Definition of Public Interest Entities (PIEs) in Europe (FEE, 2014). The FEE collected data from FEE Member Bodies from EU Member States, Iceland and Norway. The number of PIEs and listed entities was originally provided to the FEE by Member Bodies and may therefore represent an approximate estimation. Listed entities, credit institutions, insurance undertakings and other designated entities refer to the extent of the EU definition. Other designated entities on a national level include: pension funds, undertakings for collective investments in transferable securities (UCITS), investment companies, size criterion, State owned companies, Government asset management companies, and electronic money institutions.

When deciding the scope of the Public Interest Entity definition in the UK, the Department of Business Innovation and Skills (BIS) and FRC launched parallel consultation documents. While the BIS did not propose to widen the definition, the FRC suggested including entities, currently outside the scope of the Public Interest Entity definition, but which may be of sufficient public interest to warrant applying some, but not all, of the more stringent requirements applicable to Public Interest Entities (FRC, 2014b, p.25).

Nevertheless, the idea of extending the Public Interest Entity definition was opposed due to the perceived additional costs and risk of placing these firms at a relative disadvantage to their European counterparts. However, since the FRC's definition of a 'listed entity' is broader than the EU's, the focus of the discussion was aimed towards the application of the definition to smaller companies listed on the Alternative Investment Market (AIM), rather than the effect of extending this regulation to larger private firms. [27] Therefore, in its current form, the Regulation will not apply to the majority of private companies in the UK, despite their overall importance to the wider economy and the market for audit services.

As a result, the European Commission has raised concerns over the UK's definition of a Public Interest Entity, suggesting that UK legislation was manipulated to suit existing structures rather than the intended outcomes of the EU legislative framework (ICAEW, 2015a, p.7). Moreover, the ICAEW has questioned the sense of using the new Public Interest Entity definition alongside the existing classification of a 'major audit' within the UK, which will lead to some large private entities being classed as

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[27] The FRC defines a listed entity as 'an entity whose shares, stock or debt are quoted or listed on a recognized stock exchange, or are marketed under the regulations of a recognized stock exchange or other equivalent body (FRC, 2014b, p.21)

major audits for an Audit Quality Review (AQR), while being excluded from the regulatory requirements applicable to Public Interest Entities.[28] The ICAEW has, therefore, recommended the FRC re-examine the regulatory framework for corporate entities in the UK with a view to incorporating non-quoted firms within the definition of a Public Interest Entity given the risk to the UK economy in light of their financial failure (ICAEW, 2015a, p.7).

Alternatively, the FRC may consider adopting a tiered approach which could see some of the new regulatory requirements, currently only applicable to Public Interest Entities, being applied to larger private entities (ICAEW, 2015b, p.7). Given the limited understanding and knowledge of the private company audit market, excluding all private companies from the more stringent audit regulations applicable to Public Interest Entities seems premature, particularly given the substantial size of some of these firms.[29]

4.2.3   The Private Company Audit Market

Despite their often substantial size and economic importance little is known about the accounting and auditing choices of private firms (Francis et al., 2011, p.489). To date only one paper focuses solely on supplier concentration in the private company audit market. Peel (1997) finds 28.6% of his large sample of private firms were audited by the Big Six between 1994 and 1995, and when dividing the sample by company

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[28] A 'major audit' is an audit conducted under UK law in respect of a Public Interest Entity; or any other person in whose financial condition there is a major public interest. This includes UK unquoted companies, groups of companies, limited liability partnerships or industrial and provident societies with Group turnover in excess of £500million (FRC, 2014a).

[29] In the UK, the 'Top Track 100' ranks Britain's largest private companies by sales, a typical Top Track 100 company has sales ranging between £700 million and £3 billion and has between 500 and 20,000 employees. In 2012, the Top Track 100 included private companies with turnover ranging from £617 million to £25,400 million (Fast Track, 2014), of which the Big Four were responsible for auditing just over 80%, with the remainder of firms mostly being audited by the Mid Four.

turnover, the Big Six market share rose from 15.9% for the subdivision of the smallest to 94.1% for the subdivision of the largest private companies. However, due to data collection problems Peel (1997) was unable to go further in his analysis and provide a measure of supplier concentration based on audit fees, nor was he able to make comparisons to additional measures of concentration thus providing a limited picture of the private firm audit market.

While a small number of studies have examined the private company audit market share of the larger audit firms, their data collection methods and sample compositions vary greatly (Moizer and Turley, 1987; Abidin et al., 2010). For example, in a study on audit pricing, Chaney et al. (2004) find around half their sample of 15,484 private firms use a Big Five auditor between 1994 and 1998 and, similar to Peel (1997), report the Big Five audit 87% of the largest private companies, compared to 28% of the smallest. However, Ball and Shivakumar (2005) report the Big Five audit only 19% of their sample of 54,778 private companies between 1990-2000 when investigating the earnings quality of private UK firms. Moreover, Clatworthy et al. (2009) report an even lower Big Four market share of 8.3% when studying whether a Big Four premium exists in the private firm audit market in 1994 and suggest that the difference between their findings and Chaney et al. (2004) may be attributable to the different data collection methods from the *Bureau Van Dijk* 'Financial Analysis Made Easy' (FAME) database.

These studies may, further, be misstating the real market share of the large audit firms since they measure market share primarily using the number of clients audited by each firm rather than the audit fees earned from these clients, which provides a better measure of the output required by each auditor (Moizer and Turley, 1989). Moreover,

the reported audit market share of the large audit firms may be misrepresented due to the sample of private companies used. For example, Lennox and Pittman (2011) find the Big Four audit between 6% and 7% of their sample of 5,139 private companies in 2003 and 2004, yet their sample is only comprised of smaller private companies which were recently exempt from a statutory audit. Finally, the reported private company audit market share will depend on the independence of the private companies within the sample since auditor hiring decisions are routinely made by the holding company rather than the subsidiary (Lennox and Pittman, 2011).

This limited, and often mixed, evidence for the private company audit market, therefore, suggests that the decision to preclude most private companies from the definition of a Public Interest Entity, effectively excluding them from the new audit reforms, may be hasty, particularly since these reforms were introduced to improve both audit competition and quality. The greater heterogeneity and wide-ranging size of private firms makes the role of auditing less obvious and a constant market share across all sub-sectors by the large audit firms less likely. Consequently, the audit market for large private companies may exhibit concentration levels and systemic risks similar to those observed in the public company audit market, yet there is no planned regulatory intervention to address this. Therefore, given the recent audit reforms for 'Public Interest Entities', an in depth review of the audit market for private firms is timely and necessary to determine whether economically important private companies should be subject to similar audit requirements as applicable to Public Interest Entities.

4.3 Data

4.3.1 Sample Selection

Consistent with prior studies examining the audit market for private UK companies, the data is extracted from the *Bureau Van Dijk* 'Financial Analysis Made Easy' (FAME) database. To ensure that no firms in the sample have an individual shareholder with sole power to influence the choice of auditor, to begin with all active independent, private companies with audited financial statements for the period 2005-2012 are downloaded. [30] Next, any firms identified as switching status from a private to public or public to private company during the sample period are removed. Further, to identify and remove firms within the financial or utilities sectors (e.g., Firth, 1997; Lennox and Pittman, 2011; Dedman and Kausar, 2012) only those companies with a valid SIC (2007) code are retained. Firms in these industries have unique operating reporting requirements and include unlisted credit institutions and insurance undertakings, which are already classified as Public Interest Entities.

From this sample, all firms without the necessary annual accounting data such as total assets, a minimum turnover of £1,000, a disclosed profit or loss figure, a minimum audit fee of £1,000, and a registered office location for a minimum period of two consecutive years are removed. [31] A firm's registered office location is taken into consideration because audit fees of firms located in particular regions, for example

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[30] The FAME database characterises the degree of independence of a company with regard to the ownership of shareholders and included in the download are companies that do not possess a single shareholder with enough power to solely influence auditor choice. This is discussed in more detail in Chapter 3.

[31] Oxera (2006) finds median audit fees as a percentage of company turnover for FTSE 100 firms to be 0.05%, increasing to 0.20% for the smaller FTSE fledgling companies. In a sample of smaller private firms, audit fees as a percentage of sales is expected to be higher than those for listed firms and a fees to sales ratio of 10% would provide us with a minimum fee threshold of £1,000 (based on the minimum turnover in the final sample being £13,000).

London, are expected to reflect the higher cost of living differentials (Peel, 2013), which may affect market share when based on fees. Following Ball and Shivakumar (2005) all firm-years where either the key accounting or audit information is missing or internally inconsistent are excluded. Finally, all key accounting variables are trimmed at the 1% and 99% levels leaving a final sample of 8,314 independent companies and 36,118 observations. [32]

The audit firms within the sample are initially classified into Big Four and Non-Big Four. However, since the Big Four audit firms compete, to a large extent, with non-Big Four audit suppliers in the market for private company audits the traditional distinction between Big Four and non-Big Four audit firms may be inadequate for an audit market study which focuses on private independent company audits (Van Tendeloo and Vanstraelen, 2008; Dutillieux et al., 2013). Due to the level of detail required for an investigation into the private company audit market, the sample of non-Big Four audit firms are therefore further divided into three groups of Mid Four, Small-Tier, and non-major audit firms. This is done using the FRC's 'Key Facts and Trends in the Accountancy Profession' reports for the relevant years covered by the sample period.

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[32] For example, profit to sales ratio, fees to sales ratio, return on assets and percentage change in audit fees.

Table 4.2 Classification of the major UK audit firms and their key characteristics

Audit firms	UK audit fee income (£ millions)	Number of UK offices	Number of UK partners
Big Four			
Deloitte	381.6	23	991
Ernst & Young	315.8	20	549
KPMG	414.3	22	602
PricewaterhouseCoopers	560.8	40	863
Mid Four [a]			
Baker Tilly	55.7	28	107
BDO	86.4	13	196
Grant Thornton	93.4	25	203
PKF (UK)	52.7	23	70
Small-Tier [b]			
Buzzacott	6.9	1	23
Chantrey Vellacott DFK	8.0	10	46
Crowe Clark Whitehill [c]	21.3	9	72
Haysmacintyre	7.9	1	23
HLB Vantis Plc [d]	5.5	19	143
HW Group	9.4	51	117
Kingston Smith	10.4	6	60
Littlejohn	6.4	1	31
Mazars	38.3	16	115
MHA Macintyre Hudson	10.1	10	42
Moore Stephens	12.6	34	156
RSM + Tenon Group [e]	30.1	42	244
Saffery Champness	6.0	10	59
Smith & Williamson	12.8	11	254
UHY Hacker Young	9.6	22	83

Source: The UK audit fee income is the average of the yearly fee income from audit for the period 2005 - 2012 according to figures from the FRC's Key Facts and Trends in the Accountancy Profession. The number of UK offices and number of partners are correct as at 2012.

[a] Over the sample period the four largest Mid-tier audit firms do not change and in descending order of size are: Grant Thornton, BDO, PKF (UK) and Baker Tilly (correct at 2012, the final year of the panel). As well as being differentiated in terms of income, the Mid Four and the Big Four are the only audit firms covered by the ICAEW Audit Firm Governance Code at the time of the study.

[b] Audit firms which have appeared in the top 20 of the FRC's list of the major auditing firms at any point throughout the sample period. Also included in the group but not individually listed was RSM Robson Rhodes prior to its merger with Grant Thornton on 29th April 2007.

[c] Horwath Clark Whitehill prior to rebrand on 1 October 2010.

[d] HLB Vantis - number of UK offices and number of partners prior to entering administration on 29th June 2010.

[e] RSM + Tenon Group - resulting from a merger between RSM Bentley Jennison and Tenon Audit on 29th December 2010, therefore the top 20 group also includes RSM Bentley Jennsion and Tenon Audit. On the 22 August 2013 the operating companies in the RSM Tenon group were acquired by Baker Tilly; the number of UK offices and number of partners listed is for RSM Tenon 2012 (most recent form of group).

Table 4.2 reports the categorisation of the Big Four, Mid Four, and Small-Tier audit firms, along with their average annual audit fee income, number of UK offices and number of UK partners for the sample period. In total, these firms report a combined average annual audit fee income of £2.2 billion of which the Big Four firms earn 78% (£1.7 billion). By comparison, the Mid Four earn 13% (£288 million) of the total audit fee income, with the remaining 9% (£195 million) being shared between the Small-Tier firms. In terms of audit fee income, therefore, the Big Four are the market leaders.

However, there are still significant differences between the four individual firms. For example, PricewaterhouseCoopers average annual audit fee income is £560.8 million, over 1.7 times greater than Ernst & Young's average income of £315.8 million. Compared to the Big Four, the Mid Four firms earn a far lower average income from audit fees with Grant Thornton earning the highest income of £93.4 million while, at £52.7 million, PKF (UK) earned the lowest. Finally, for a Small-Tier audit firm, their average audit fee income ranges between £6.8 million and £38.3 million, substantially lower than the lowest Mid-Four income and confirming the importance of expanding the classification of non-Big Four audit firms.

4.3.2 Descriptive Statistics by Year: 2005-2012

Table 4.3 Yearly descriptive statistics by audit firm grouping

	Year 2005	2006	2007	2008	2009	2010	2011	2012	Avg.
Panel A: Big Four clients									
Obs.	444	471	496	494	570	629	690	655	556
Turnover (£'000)	47,900	53,200	64,400	81,300	75,200	80,100	86,800	94,600	75,000
Total Assets (£'000)	52,500	70,600	125,000	145,000	142,000	138,000	141,000	147,000	124,000
Employees	410	408	466	528	525	534	570	636	520
Audit Fees (£'000)	30.49	35.92	44.18	53.01	51.11	54.02	59.22	60.89	49.99
Co.'s reporting non-audit fees (%)	57.43	56.48	59.07	63.77	64.74	65.66	66.67	68.85	63.43
Non-audit fees proportion (%)	89.41	87.47	90.97	102.56	102.46	80.02	79.38	78.61	87.83
Auditor switches (%)		2.55	2.82	2.63	3.51	3.97	4.64	4.12	3.21
Panel B: Mid Four clients									
Obs.	372	404	453	474	568	624	672	636	525
Turnover (£'000)	18,800	18,700	22,000	26,700	25,400	25,900	27,800	30,000	25,100
Total Assets (£'000)	16,200	16,800	21,900	23,000	22,200	22,600	23,100	26,700	22,100
Employees	199	198	222	246	224	218	221	233	222
Audit Fees (£'000)	17.25	17.83	20.49	23.19	23.89	24.28	24.95	27.08	22.99
Co.'s reporting non-audit fees (%)	41.40	45.30	50.33	51.90	54.05	52.40	55.36	60.22	52.34
Non-audit fees proportion (%)	88.04	87.45	83.83	73.77	70.33	63.34	73.44	67.80	73.83
Auditor switches (%)		3.47	3.97	4.64	3.52	2.56	4.32	5.35	3.64

Table 4.3 (continued)

Panel C: Small-Tier clients									
Obs.	309	368	377	395	491	572	616	574	463
Turnover (£'000)	10,500	13,200	15,100	17,500	16,600	15,800	18,100	20,100	16,400
Total Assets (£'000)	9,207	10,700	12,900	14,900	16,800	16,100	17,600	19,500	15,400
Employees	152	154	159	164	142	127	145	155	148
Audit Fees (£'000)	12.52	13.72	14.88	16.51	16.92	16.29	16.51	17.52	15.91
Co.'s reporting non-audit fees (%)	26.21	25.54	31.83	38.23	39.92	39.86	40.10	40.94	36.52
Non-audit fees proportion (%)	104.49	100.73	91.90	97.64	100.71	90.02	85.55	88.50	93.12
Auditor switches (%)		6.25	5.04	4.30	2.65	4.02	6.66	5.05	4.46
Panel D: Non-major clients									
Obs.	2,488	2,985	2,925	2,854	3,297	3,029	3,203	2,983	2,971
Turnover (£'000)	6,092	5,800	6,659	7,822	9,614	13,000	14,300	15,500	9,992
Total Assets (£'000)	5,050	5,294	6,100	7,080	7,816	10,100	10,800	11,500	8,058
Employees	111	120	118	129	118	119	122	129	122
Audit Fees (£'000)	7.17	7.05	7.65	8.40	10.24	12.80	13.47	14.06	10.22
Report non-audit fees (%)	12.66	13.03	14.26	16.29	21.60	28.10	31.38	32.52	21.56
Non-audit fees proportion (%)	93.61	94.61	91.77	101.47	108.86	103.59	107.14	104.20	105.6
Auditor switches (%)		3.35	3.11	3.08	2.67	3.07	3.62	4.96	3.05

The sample consists of 36,118 firm year observations for 8,314 unique private companies for the period 2005-2015. Variable definitions are as follows: *Obs.*, number of observations per year; *Turnover*, average turnover in thousands; *Total assets*, average total assets in thousands; *Employees*, average number of employees; *Audit fees*, average total audit fees in thousands; *Report non-audit fees*, the proportion of companies reporting a figure for non-audit fees; *Non-audit fees proportion*, average of non-audit fees as a percentage of audit fees; *Auditor switches*, the proportion of companies switching auditor. The final column shows averages for the entire eight year panel.

Table 4.3 reports the descriptive statistics by audit firm group presenting the mean of each variable on both an annual and aggregate basis. Consistent with prior research (e.g., Peel, 1997; Clatworthy et al., 2009) companies audited by the Big Four are significantly larger than clients of the non-Big Four audit firms. For example, in Panel A, Big Four audit clients generate an average turnover of £75 million, while, in Panel B, Mid-Four clients generate a significantly lower turnover of £25.1 million. [33] Further, the average turnover of a Small-Tier or non-major audit client is lower still at £16.4 million and £10 million respectively. Other measures of client firm size, such as total assets and number of employees, continue to highlight the significant differences between the audit clients of each group of audit firms. For example, an average Big Four audit client employs just over 500 staff, while an average client of a non-major audit firm employs less than 130 people.

The size of the audit client is an important determinant of audit fees as this reflects the amount of audit effort required (Pong and Whittington, 1994; Chi, 2004; Feldman, 2006; Oxera, 2006; McMeeking et al., 2007). Consistent with this, Table 4.3 shows the Big Four audit firms receive an average audit fee of £49,992, almost five times the average fee of £10,219 paid to a non-major audit firm. [34] In addition to audit services, clients may purchase non-audit services from their auditor which, while relatively similar across all audit groups, shows the average non-audit fees paid by private companies are either close to or above the 70% limit to be applied to Public Interest

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[33] Clatworthy et al. (2009) report average turnover (total assets) of £39.41 million (£35.62 million) for Big Four auditees. Although similar steps were taken during downloads there are differences between the average size of the companies which likely results from the higher audit fee threshold used in the current paper (£1,000) in comparison to the smaller threshold (£100) used by Clatworthy et al. (2009) which will result in the exclusion of smaller client-firms. The nature and timing of each sample will also affect the firm composition due the requirement in the current paper for firms to possess consecutive years of accounting data.

[34] In comparison, Clatworthy et al. (2009) report average audit fees of £29,050 for Big Four clients.

Entities (EC, 2014b, p.8).[35] Moreover, as the type of non-audit services provided cannot be determined, it may be possible that some of these non-audit services are soon to be prohibited for audit clients qualifying as Public Interest Entities.

In addition to concerns about concentration, both EU and UK investigations raised concerns about the low levels of auditor switching and the lengthy auditor tenures for listed companies. Auditor switches are infrequent events with only 2% of FTSE 100 companies and 4% of all listed companies switching auditor between 1995 and 2004 (Oxera, 2006) while 31% (67%) of FTSE 100 companies and 20% (52%) of FTSE 250 companies employed the same auditor for more than 20 (10) years (Competition Commission, 2013c). The findings in Table 4.3 show that the audit switching rates for private companies are just as low with an average of between 3.05% to 4.46% switches across the four groups of audit firms.

Moreover, while the exact length of the auditor-client relationship cannot be determined from FAME, the low switching rate implies that the auditor tenures for these private companies could be similar to those already documented for listed companies, which is unlikely to change without similar regulatory intervention applicable to Public Interest Entities. The low switching rate also raises questions regarding the reaction of those outside the company when a company does decide to change auditors and whether it may send a negative signal.

4.3.3 Descriptive Statistics by Company Size

Given the importance of auditee size in determining the choice of auditor, the sample is partitioned into deciles based on each company's turnover and further statistics are

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[35] Small and medium sized companies are not required to disclose the fees received by auditors in respect of non-audit services, the proportion of companies reporting non-audit fees is reported in Table 3.

reported in Table 4.4. Panel A shows average total assets (turnover) increase from £313,000 (£848,000) in the first decile rising up to £196 million (£120 million) in the largest decile, nearly ten times larger than the average total assets of a private company in the ninth decile. Further, highlighting the significant size of the average private company in the largest decile, in un-tabulated results, collectively, in 2012, companies in this decile employed approximately 430,000 people and contributed more than 5% of the UK GDP based on sales revenue.[36]

Consistent with fees being determined by size, Panel B reports average audit fees rising from £3,125 for the smallest private companies up to £76,931 for the largest, comparable to the £84,900 average audit fees paid by FTSE Fledgling companies in 2004, but notably lower than the audit fees paid in the FTSE Small Cap or FTSE 100 (Oxera, 2006). Given audit fees relate closely to the size of the auditee, the audit fees-to-sales ratio allows a better comparison between the audit fees of listed and non-listed firms. Panel B, therefore, reports the fee-to-sales ratio for each decile, which shows a steady fall from 1.32% in the first decile to 0.17% in the tenth, most likely due to fixed costs and audit scale economies (Abidin et al., 2010).

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[36] In 2012 real GDP for the UK was £1.5 trillion (Office of National Statistics, 2013) and the total turnover of the sample firms included in decile ten for the year 2012 totalled £75.4 billion.

Table 4.4 Descriptive statistics by company size according to turnover

	Size Decile									
	Small									Large
	1	2	3	4	5	6	7	8	9	10
Panel A: Client-firm characteristics										
Observations	3,616	3,612	3,612	3,612	3,609	3,613	3,612	3,612	3,612	3,608
Total Assets (£'000)	313	1,092	1,763	2,502	3,432	4,804	6,822	10,700	20,200	196,000
Turnover (£'000)	848	2,922	4,087	5,352	6,779	8,637	11,100	16,400	27,900	120,000
Employees	31	74	64	67	79	86	109	140	230	774
Panel B: Audit related characteristics										
Audit Fees (£'000)	3.13	5.21	6.09	7.53	8.85	10.34	12.89	16.47	24.52	76.93
Fees-to-sales ratio	1.32	0.70	0.58	0.43	0.39	0.32	0.29	0.25	0.20	0.17
Report non-audit fees (%)	9.43	13.93	17.64	21.71	23.66	28.51	32.06	41.22	58.36	71.90
Non-audit fees proportion (%)	106.44	100.28	103.91	103.55	90.58	101.05	83.64	81.34	79.94	100.34
Auditor switches (%)	2.16	2.77	2.63	3.07	2.94	3.54	3.57	4.18	4.32	3.63

The sample consists of 36,118 firm year observations for 8,314 unique private companies for the period 2005-2015. The size deciles are according to company turnover. The number of companies present in each size decile vary for each year of the sample (i.e. one decile always contains 10% of the sample for that year) with the same firm potentially appearing in different deciles depending on yearly sample composition. To control for this, when reporting results by decile, the figures in the table are calculated on both a yearly and an aggregate basis, with the average of the yearly figures being compared with the aggregate figures. As the results are similar, only the aggregate figures are reported for brevity but annual results are available on request. Variable definitions are as follows: *Obs.*, number of observations per year; *Turnover*, average turnover in thousands; *Total assets*, average total assets in thousands; *Employees*, average number of employees; *Audit fees*, average total audit fees in thousands; *Fees-to-sales ratio*, average audit fees expressed as a proportion of sales as a percentage; *Report non-audit fees*, the proportion of companies reporting a figure for non-audit fees; *Non-audit fees proportion*, average of non-audit fees as a percentage of audit fees; *Auditor switches*, the proportion of companies switching auditor. The averages shown are the aggregate means for each decile.

By comparison, in 2004, audit fees represented 0.05% of the median turnover of FTSE 100 companies, 0.13% of the FTSE Small Cap, and 0.20% of the FTSE Fledgling (Oxera, 2006), similar to the fees-to-sales ratio of 0.17% for the largest private companies. Client size, therefore, appears to drive audit fees irrespective of listing status. Further, Panel B shows private companies purchase a large proportion of non-audit services, regardless of their size. Together with the low switching rates, this raises concerns regarding the overfamiliarity of auditors and their clients and highlights the need for regulators to re-examine the audit regulatory requirements applicable to these companies.

In summary, the audit market for private independent companies appears to share many characteristics found in the audit market for listed companies. Consequently, given the substantial size and subsequent economic importance of these entities, the audit market for private companies may require similar reforms to the auditing regulations for Public Interest Entities. To provide a more detailed understanding of the audit market for private companies the chapter proceeds by examining the audit choice of private firms and audit market concentration levels in more detail.

4.4 Measuring Audit Market Concentration

Audit market concentration has traditionally been measured using the k-firm concentration ratio (C_n) and the Hirschman-Herfindahl index (HHI) (e.g., McMeeking et al., 2007; Abidin et al., 2010) while the Gini-coefficient, traditionally used in economic related literature to measure wealth inequality, is used more recently (e.g., Quick and Wolz, 1999; Abidin et al., 2010).

Therefore, since the C_n is the most widely used method, the first measure of audit market share is defined as follows:

$$CR_k = \frac{\sum_1^k x_i}{\sum_1^n x_i} \qquad (4.1)$$

Where CR is the concentration ratio calculated for k audit firms, n is the total size of the market, and x_i is the size of the audit firm measured by a proxy e.g., clients, fees, total assets. Modern industrial economics use the level of concentration present in a market to classify it into one of four categories.[37] However, this is not a perfect measure of market concentration since it only accounts for the market share of the largest n firms, ignoring all others (Pong, 1999). The HHI is, therefore, a better measure of market concentration as it accounts for all active firms and provides a better indication of the relative market control of the largest audit firms (Wootton et al., 1994; Pong, 1999), which is defined as follows:

$$HHI = \frac{\sum_1^n x_i^2}{(\sum_1^n x_i)^2} \qquad (4.2)$$

Where *HHI* is the Hirschman-Herfindahl Index, n is total size of the market, and x_i is the size of the audit firm. The HHI can range from 0, for an industry with many active firms of equal size, to 10,000, for an industry with only one active firm. However, there

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[37] The research field defines four main categories of market: (1) monopoly – one firm has a market share of 100%, (2) a dominant firm – one firm has a market share between 40% and 99%, (3) a tight oligopoly – four firms possess a 60% market share, and (4) effective competition - four firms have less than 40% market share and entry into the market is free (Shepherd and Shepherd, 2003, p.13).

are different interpretations of what threshold indicates a highly concentrated market. For example, the US Department of Justice classify markets as competitive if the HHI is below 1,000, moderately concentrated from 1,500 to 2,500, and highly concentrated if above 2,500. Conversely, Europe considers a market with a HHI exceeding 1,000 as concentrated, and highly concentrated when greater than 2,000 (Barty and Ricketts, 2014). Moreover, the HHI still gives greater weight to large firms and, despite the differences which exist between the C_n and HHI, the two measures can be highly correlated (Pong, 1999). For the third measure of concentration the Gini coefficient is therefore used, which is a market wide measure of concentration that does not place greater weight on larger audit firms, nor is it easily affected by changes in population size, as follows:

$$Gini = \frac{2}{n^2 \bar{x}} \sum_{i=1}^{n} \left[\left(i - \frac{n+1}{2} \right) x_i \right] \tag{4.3}$$

Where *Gini* is the Gini coefficient, $\bar{x} = \frac{1}{n} \sum_{i=1}^{n} x_i$, n is the total size of the market, and x_i is the size of the audit firm. The Gini coefficient can range from 0, for a market with perfect equality, to 100 for a market with perfect inequality.

For all three models of market concentration, different measures of market size can be used. While prior audit studies generally use the number of audits as their main proxy, largely due to the minimal data required, this may understate an audit firm's real value of their market share (Moizer and Turley, 1989). Using audit fees as an alternative measure, therefore, is less likely to understate a firm's market share and should provide a more accurate representation of an audit firm's output since the

measure is not sensitive to the overall population size (Pong, 1999). Moreover, where audit fee information is missing, total assets or total sales may be used as a suitable proxy for client firm size (Moizer and Turley, 1987). To provide a detailed report of the concentration within the audit market for private UK firms all four measures of market size based on the number of audits, audit fees, and company size according to total assets and total sales are applied.

4.5   Results

4.5.1   *Audit Market Concentration by Year: 2005-2012*

Table 4.5 reports the level of auditor concentration from 2005 to 2012 using the three measures of concentration calculated using Equations (4.1) to (4.3) and based on the four measures of market share. The findings in Panel A, using market share based on the number of audits, shows audit market concentration levels are relatively low compared to the listed company audit market where the Big Four audit over 95% of the FTSE 350, and all but one of the FTSE 100 companies (Oxera, 2006). For the sample of private companies, the Big Four audit 12% of the private company market, comparable to the 8.3% reported by (Clatworthy et al., 2009) in their cross-sectional study of private UK firms in 1994. However, when combined, the Big Four and Mid Four audit firms (Big Eight) account for 24% of all private company audits, implying these two groups each audit a similar numbers of clients and highlighting the need to examine market share based on the value of these clients.

Table 4.5 Auditor concentration in the UK private company market: 2005 – 2012

	2005	2006	2007	2008	2009	2010	2011	2012	Average
Panel A: Market share based on number of audits									
CR4	12.29	11.14	11.67	11.71	11.57	12.96	13.32	13.51	12.27
CR8	22.59	20.70	22.32	22.95	23.10	25.81	26.29	26.63	23.80
CR20	31.14	29.40	31.19	32.32	33.07	37.60	38.18	38.47	33.92
HHI	104	94	105	108	98	114	119	124	108
Gini	55.82	55.82	55.82	55.82	55.82	55.82	55.82	55.82	55.82
Panel B: Market share based on audit fees									
CR4	32.50	33.68	37.03	38.69	34.37	34.95	36.83	36.56	35.58
CR8	47.91	48.03	52.71	54.93	50.37	50.54	51.95	52.35	51.10
CR20	57.20	58.08	62.19	64.57	60.17	60.12	61.12	61.56	60.63
HHI	349	374	464	488	394	402	438	436	418
Gini	83.63	83.63	83.63	83.63	83.63	83.63	83.63	83.63	83.63
Panel C: Market share based on total assets									
CR4	52.09	55.62	65.53	65.99	63.38	61.60	61.58	60.73	60.81
CR8	65.56	66.99	76.02	76.02	73.30	71.63	71.39	71.44	71.54
CR20	71.92	73.55	81.15	81.42	79.76	78.19	78.25	78.47	77.84
HHI	769	885	1,662	1,532	1,219	1,178	1,134	1,084	1,183
Gini	91.88	91.88	91.88	91.88	91.88	91.88	91.88	91.88	91.88
Panel D: Market share based on total sales									
CR4	45.60	45.71	47.61	48.92	44.13	43.80	44.18	44.66	45.58
CR8	60.56	59.50	62.48	64.35	58.97	57.86	57.96	58.41	60.01
CR20	67.52	68.40	70.98	72.79	67.37	65.70	66.18	66.71	68.21
HHI	620	628	676	745	574	581	577	578	622
Gini	93.77	93.77	93.77	93.77	93.77	93.77	93.77	93.77	93.77

Variable definitions: *CR4*, k-firm concentration ratio calculated for the Big Four audit firms; *CR8*, k-firm concentration ratio calculated for the Big Eight (Big Four and Mid Four) audit firms; *CR20*, k-firm concentration ratio calculated for the top 20 audit firms (Big Eight and Small-Tier firms); *HHI*, the Hirschman-Herfindahl Index; *Gini*, Gini-coefficient. The table was repeated for a sample which excluded companies with registered offices in London (16.7% of total companies) because audit fees of firms located in particular regions, for example London, are expected to reflect the higher cost of living differentials (Peel, 2013) which may affect market share when based on fees. When market shares are recalculated excluding these companies, the results are unchanged.

Panel B, therefore, reports the concentration statistics based on audit fees and shows the market share of the Big Four triples to 36%, while the Big Eight more than doubles to 51%. This difference between the market shares reported in Panel A and B is due to the disproportionally larger size of the average private company audited by the Big Four, as detailed in Table 4.3. The results show that the Big Four (Big Eight) audit an even greater respective share of 60.81% (71.54%) of private companies when market share is based on total assets in Panel C, or 45.58% (60.01%) when using total sales in Panel D. In contrast to the low market concentration levels based on the number of audits, a market share of 60% based on our alternative measures raises concerns that the audit market for private companies may exceed the tight oligopoly threshold. This is consistent with evidence from the public company audit market which reports the Big Four audit firms focusing on larger, less risky clients (Jones and Raghunandan, 1998; Rama and Read, 2006; Hogan and Martin, 2009; Abidin et al., 2010).

Next, the HHI is calculated using Equation (4.2) and the different measures of market share in Panel A to D of Table 4.5. With the exception of 2007 to 2012 when market share is based on total assets, the HHI for the remaining years and market share measures are consistently below 1,000 and, therefore, below the European threshold for a concentrated market. In contrast to the concentration ratio, the HHI suggests lower concentration in the audit market for private firms. However, when comparing the two measures it is important to note that the HHI is a market-wide concentration measure, accounting for all active audit firms, whereas the concentration ratio only accounts for the market share of the largest n firms, ignoring all others (Pong, 1999). The private market differs to the listed-firm market in that it contains a large number of diverse companies with different audit requirements, as detailed in Table 4.3 and Table 4.4. As

a result, a larger number of active audit firms compete to meet this demand. Therefore, while this reduces the HHI, it also highlights the importance of examining the market concentration based on company size.

Calculating the Gini coefficient using Equation (4.3) shows considerable inequality across auditor participants for all four measures of market share ranging from 55.82 when market share is based on the number of audits to 93.77 when based on total sales for the pooled sample. By comparison, Abidin et al. (2010) reported a Gini coefficient between 86.12 and 96.09 between 1998-2003 for market share measured based on either the number of audits or audit fees for their sample of listed UK companies. The similar levels, therefore, suggest a similar inequality in the audit market for private companies as that already documented within the audit market for listed companies. In sum, the results in Table 4.5 show an increased dominance of large audit firms as the size of private companies increases, a finding well established for listed companies by prior studies (e.g., Abidin et al., 2010). The final analysis, therefore, partitions the sample of private companies in order to re-examine the concentration of the audit market for private firms across size deciles.

4.5.2   Audit Market Concentration by Company Size

Table 4.6 reports audit market concentration, using Equations (4.1) to (4.3), across size deciles based on total assets and measuring market share based on the number of audits and audit fees.

Table 4.6 Auditor concentration by company size according to turnover

	Size decile									
	Small									Large
	1	2	3	4	5	6	7	8	9	10
	(n= 3,616)	(n= 3,612)	(n = 3,612)	(n = 3,612)	(n= 3,609)	(n = 3,613)	(n= 3,612)	(n = 3,612)	(n= 3,612)	(n= 3,608)
Panel A: Market share based on number of audits										
CR4	4.95	4.49	6.06	6.01	7.09	9.16	11.02	12.76	18.99	42.68
CR8	10.20	10.27	11.57	13.90	17.10	21.23	24.89	30.40	38.23	61.81
CR20	18.39	17.69	19.93	23.50	28.29	33.10	35.35	43.36	50.78	71.70
HHI	117	69	48	47	65	88	113	173	245	586
Gini	55.18	51.43	49.81	50.78	55.10	57.93	60.01	64.82	68.22	77.42
Panel B: Market share based on audit fees										
CR4	8.93	7.34	6.66	7.27	8.61	10.30	13.14	15.01	24.37	62.46
CR8	18.61	18.98	15.78	18.87	22.30	25.22	30.07	33.70	44.61	77.33
CR20	31.01	29.58	26.18	29.32	34.40	38.35	41.50	48.10	55.91	83.71
HHI	103	82	63	76	99	122	162	215	316	1,095
Gini	64.79	66.29	62.76	64.22	66.79	67.71	70.60	72.80	75.06	89.10

The sample consists of 36,118 firm year observations for 8,314 unique private companies for the period 2005-2015. The size deciles are according to company turnover. The number of companies present in each size decile vary for each year of the sample (i.e. one decile always contains 10% of the sample for that year) with the same firm potentially appearing in different deciles depending on yearly sample composition. To control for this, when reporting results by decile, the figures in the table are calculated on both a yearly and an aggregate basis, with the average of the yearly figures being compared with the aggregate figures. Variable definitions: *CR4*, k-firm concentration ratio calculated for the Big Four audit firms; *CR8*, k-firm concentration ratio calculated for the Big Eight (Big Four and Mid Four) audit firms; *CR20*, k-firm concentration ratio calculated for the top 20 audit firms (Big Eight and Small-Tier firms); *HHI*, the Hirschman-Herfindahl Index; *Gini*, Gini-coefficient. The averages shown are the aggregate means for each decile.

Table 4.6 Panel A shows significant differences for the concentration ratios measured using the number of audit clients across the size deciles. While the Big Four are only responsible for auditing approximately 5% to 19% of companies in the first nine deciles, comparable to the pooled sample in Table 4.5 Panel A, the Big Four share more than doubles to 43% for the largest decile of private companies. However, while the Big Four audit almost half of the largest private companies the HHI of 586 in Table 4.6 Panel A implies a number of additional audit firms competing in decile 10. Yet, the Gini of 77.42 suggests considerable inequality across these participants and highlights the need to examine market concentration using alternative measures.

Using audit fees, therefore, to measure market share, show a similar trend in Panel B with the Big Four share rising from 9% to 24% across the first nine deciles, but more than doubling to 63%, exceeding the tight oligopoly threshold, for the largest decile of private companies. Moreover, while the Big Four and Mid Four appear to have an equal market share of the private company audit market across the first nine deciles, the Big Four are responsible for the majority of audit fees earned from the largest private companies. The Big Four, therefore, appear to dominate the audits of larger private companies, which provide the greatest economic rents.

Moreover, in Table 4.6 Panel B, while the HHI is below the CMA standard for a concentrated market in the first nine deciles, the HHI of 1,095 for the largest decile is considered concentrated according to CMA standards. To put this into context with the listed company audit market, the HHI based on audit fees was 2,561 for the FTSE 100 and 1,739 for the FTSE Fledgling for the year 2004 (Oxera, 2006). This again highlights the dominance of a few large audit firms in the audit market for the largest private companies. Regardless of listing status, therefore, audit markets appear to be

segmented with the Big Four dominating the audits of the largest private companies and, consequently, it may be inappropriate to define a Public Interest Entity for the purposes of more stringent audit regulation based on a company's corporate status without reference to its size. The findings, therefore, highlight the need for regulators to revisit the audit regulatory requirements for large private companies and consider revising their definition of a Public Interest Entity to include more of these economically important firms.

4.6 Summary and Discussion

New regulation on the Statutory Audit of Public Interest Entities came into effect in June 2016 requiring the mandatory rotation of a company's auditors every ten years, prohibiting the provision of certain non-audit services by audit firms to their clients and capping the fees charged for non-audit services that are provided. These reforms should result in greater levels of audit assurance by reducing the overfamiliarity between auditors and their clients, increasing the choice between audit firms, and lowering the levels of concentration in the top-end of the audit market. However, rather than affecting all companies, these changes only apply to those firms defined as 'Public Interest Entities'. Which, according to the European Commission, are companies where undetected material misstatements would have disproportionally greater consequences for society, shareholders and investors compared to any other undertakings.

The imprecise nature of this definition has led, therefore, to a variety of interpretations across EU Member States, which could limit the intended impact and success of these reforms. Moreover, the narrow definition of a Public Interest Entity applied in the UK has been met with unease from the European Commission and

questions have been raised as to whether UK legislation is being implemented to suit existing structures (ICAEW, 2015a). This leads to the question as to whether the definition of a Public Interest Entity in the UK is justified or whether, by excluding private companies from the definition, it results in the exclusion of audit markets that potentially warrant regulatory changes similar to Public Interest Entities.

Using a large panel of independent private company audits in the UK from 2005 to 2012, the chapter provides a comprehensive analysis of the private company audit market. The key findings show that concentration measures based on the number of audit appointments significantly understates the market share of the larger audit firms when compared to concentration measures based on audit fees or auditee size. Therefore, larger audit firms, and most notably the Big Four, audit the majority of private companies that provide the greatest economic rents. Further, partitioning the sample by auditee size reveals an audit market where the Big Four maintain a tight oligopoly of the largest independent private company audits. Regardless of listing status, therefore, audit markets appear to be segmented with Big Four dominance among the largest public and private firms.

Currently, the UK has excluded private companies from more rigorous audit requirements. However, given the findings regarding supplier concentration and the economic importance of private companies, it may be inappropriate to define a Public Interest Entity for the purpose of more stringent audit regulations based on a company's corporate status, without reference to its size. Regulators therefore need to reconsider the risk of excluding these businesses from the more stringent audit regulations applicable to other Public Interest Entities. The definition and scope of a Public Interest

Entity needs revisiting both within the UK and across all EU Member States, with a view to including more of these economically important private companies.

In addition to analysing the audit market for private UK firms in terms of supplier concentration, the chapter also looked at the frequency of auditor switching. The findings show that switching rates for private companies are comparably low to those reported for the public firm audit market. This suggests that the private company audit market will continue to exhibit high levels of concentration for larger sized entities unless direct regulatory intervention is planned. Moreover, with switching occurring so infrequently, it prompts questions regarding the consequences for a firm trying to switch auditor in such an environment. Existing studies have found that listed firms, who operate in a similarly concentrated audit market with low switching frequencies, generally experience adverse capital market effects following a change in auditor. However, to date, it is unknown whether private firms face negative market reactions to auditor switches, and if they do face a negative reaction, it is unknown exactly how this affects private firms.

To determine whether this is the case the following empirical chapter, Chapter 5, therefore examines whether there are any economic consequences for private companies following a change in auditor. In the case of listed firms, capital market reactions have been measured via the change in share price following a change in auditor. As private companies do not have a share price, economic consequences will be measured via the change in a company's credit ratings. As well as being available for the majority of private firms, given their reliance on bank-based forms of financing, credit ratings are hugely important for private companies.

5
The Economic Consequences of Auditor Switching

5.1 Introduction

In a recent review of auditor switching studies, Stefaniak et al. (2009) questioned whether firms switching auditor encountered capital market repercussions and, if so, what were they? They found evidence to suggest that listed firms generally experience adverse capital market effects following a change in auditor (e.g., Fried and Schiff, 1981; Fisher and Fisher, 1993; Lu, 2006) such as a decline in client's stock price (e.g., Knechel et al., 2007; Weiss and Kalbers, 2008). However Stefaniak et al. (2009) did not find any prior studies which looked at this issue for private companies. The studies focusing on the consequences of auditor switching are predominantly based on samples of publicly listed firms in the US.

This is likely because, in comparison to the more opaque private firm market, it is easier to investigate the economic consequences for listed firms resulting from an auditor switch through analysing the reactions of capital market participants. Subsequently, little is known about the reaction to auditor switches by private firms and whether changing auditor holds any economic consequences. However, given the similarities between the listed and private company audit markets found in Chapter 4, this has become an increasingly important research topic. Consequently, this chapter considers the effect of switching auditor on the credit ratings of UK private companies.

Private firms constitute the majority of the EU economy and the EU market for audit services (Van Tendeloo and Vanstraelen, 2008) and recent data illustrates that over the

past 20 years the number of publicly listed companies has declined across a number of Western economies (Economides et al., 2016). For example, since 1997 the number of public companies has fallen by 38% in America and by 48% during the last decade in Britain (The Economist, 2012). With public companies in the UK only accounting for 0.3% of the Companies House register at the beginning of 2013. As a consequence, the performance of private firms impacts on the performance of the wider EU economy resulting in them being important for both employment and economic growth (Langli and Svanström, 2013).

In terms of financing, banks are often the main source of financing for private firms, with bank overdrafts, credit cards and leasing/hire purchase the most commonly used forms of finance for UK small- and medium-sized enterprises in particular (Cosh and Hughes, 1998; Cosh et al., 2009). Access to such forms of finance is largely dependent on a company's credit rating. Although prior studies have considered the effects of a voluntary audit (Lennox and Pittman, 2011; Dedman and Kausar, 2012) or the choice of a particular auditor (Fortin and Pittman, 2007) on a company's credit ratings, it is not yet known whether a *change* in auditor has any effect. Given their economic importance, coupled with the findings from public firm based research, there needs to be more empirical evidence on whether there are any economic consequences for private firms associated with switching auditor. If a change in auditor does result in adverse economic consequences, such as a change to a company's credit ratings, it is important that private companies are properly informed due to their reliance on bank-based financing.

Extant literature classifies the determinants of auditor switching into three broad groups - auditor initiated resignation, client initiated change or mandatory legal

requirements for auditor rotation. In the case of non-mandatory auditor switching, changes in auditor can often occur for very valid reasons, for example the growth of a client-firm (Haskins and Williams, 1990; Johnson and Lys, 1990). However, studies have also looked at determinants of non-mandatory auditor switches related to risk factors such as client-firm financial distress (Schwartz and Menon, 1985; Hudaib and Cooke, 2005), opinion shopping (Chow and Rice, 1982; Craswell, 1988; Citron and Taffler, 1992; Lennox, 2000) and disagreements with auditors over reporting matters (DeAngelo, 1982; Magee and Tseng, 1990). There are, however, inherent difficulties in determining the precise reason(s) for an auditor switch. Moreover, in certain circumstances the reason provided for the switch may actually mask the true underlying determinant of the switch (McConnell, 1984; Krishnan, 1994).

As there are different reasons underlying an auditor switch, the exact reaction of capital markets and the subsequent effect to stock prices may be uncertain (Shu, 2000). For example, in their study of voluntary auditor realignments Johnson and Lys (1990) failed to find a significant reaction to auditor changes. Whereas DeFond et al. (1997) and Wells and Loudder (1997) find that auditor resignations in particular are met with a negative reaction in stock prices. However, as highlighted by Stefaniak et al. (2009), prior studies are predominantly based on samples of publicly listed firms in the US where the reason for a switch (e.g., Fried and Schiff, 1981) and the side which initiated it (auditor resignation or client dismissal) is often known to researchers via a form 8-K.[38]

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[38] Form 8-K is the current report US companies must file with the Securities and Exchange Commission (SEC) to announce major events that shareholders should know about. If an auditor is dismissed or resigns this then triggers Item 4.01 of Form 8-K, resulting in a company having to file a Form 8-K in the next four days following this (SEC, 2016).

In the UK, on the other hand, information on the instigator of an auditor switch or the reason underlying it is often not readily available to researchers. Since the 6th April 2008, according to Sections 522 to 525 of the amended Companies Act 2006, auditors and companies have been required to send statements and notices to the 'appropriate audit authority' when an auditor ceases to hold office. However, the requirements differ depending on whether a company is a listed or a public interest company, with a lesser set of requirements applicable to private companies. Moreover, in 2015 UK auditor cessation requirements were simplified, with companies no longer required to notify Companies House when an auditor resigns or is removed from office by shareholder resolution. This is more in line with that fact that companies are not required to inform Companies House of the appointment of an auditor. Thus UK auditor change information, especially information on the party instigating the change, is not readily available from Companies House based databases.

When a client firm switches auditor it can result in extensive costs, not only for themselves but also for the auditor. DeAngelo (1982) claims the low rate at which firms change auditors is evidence of these significant switching costs. As a result, in addition to the inherent difficulties in determining the precise reason for the switch, concerns can therefore often be raised by both regulatory bodies and investors as to the true underlying reason for the switch (Kwon and Pan, 2010). This is why switching auditor may influence outcomes, such as a company's stock price or cost of capital. However, in the case of private firms in the UK it remains an empirical question whether there are consequences for private firms stemming from a change in auditor, as this is yet to be the focus of an empirical investigation.

Consequently, this chapter considers the effect of switching auditor on the credit ratings of UK private companies. The contributions of which are threefold. First, the analysis will provide evidence on whether there are economic consequences to private firms resulting from a change in auditor whilst also controlling for any changes in the level of auditor assurance, i.e. a change between two different tiers of audit firm. Although a few studies have touched upon the subject in detail, extant evidence suggests that, in the case of private companies, it is the external audit itself and not necessarily the choice of audit firm which appears to be of informational value to credit stakeholders (Fortin and Pittman, 2007; Kim et al., 2011; Lennox and Pittman, 2011). Moreover, relative to the public firm audit market, as Chapter 4 showed, the private firm audit market is more heterogeneous with the larger audit firms, such as the Big Four, having a more varied market share of clients depending on the segment of the market under consideration. Thus, in the case of private firms, credit rating agencies may place more of an emphasis on the act of switching auditor, rather than on the type of audit firms involved in the switch.

Second, comparing credit scores after an auditor change are more likely to provide an informative and less noisy measure of audit assurance, relative to alternative measures such as the cost of capital or interest rates (Dedman and Kausar, 2012). For example, some companies do not require a loan and subsequently do not have an interest rate measure. Further, for those firms with loans, there is also the chance that they are not necessarily renegotiated each year. Thus it is not always possible to compare average interest expense rates immediately following a change in audit firm. In addition, in the case of private companies, a director's ability to provide personal security for business loans may influence the availability and cost of capital for private

firms, a factor which does not affect company credit ratings constructed from publicly available information (Dedman and Kausar, 2012, p.401). Relative to alternative measures, credit ratings are therefore a major informative source for lenders, in addition to being updated regularly by credit scoring agencies (Lennox and Pittman, 2011).

Third, when it comes to a client-firm choosing an auditor there exists an element of self-selection which subsequently results in the potential for coefficient bias in estimation procedures such as ordinary least squares (OLS) (Maddala, 1991; Chaney et al., 2004; Clatworthy et al., 2009; Lawrence et al., 2011; Eshleman and Guo, 2014). Much of the accounting literature uses the Heckman (1979) two-step procedure to address the issue of self-selection (e.g., Chaney et al., 2004; Mansi et al., 2004; Pittman and Fortin, 2004). However, the successful application of the Heckman model relies on the identification of exclusion restrictions, which in practice is very difficult to do, being referred to as an 'intractable task' by Lennox and Pittman (2010). The two-step Heckman procedure is also susceptible to econometric problems, with the model recently shown to be sensitive to both model specification and sample composition (Puhani, 2000; Lennox and Pittman, 2010; Lennox et al., 2011).

The propensity score matching approach has therefore been found to be superior to the Heckman two-step model in the current context because it does not involve the identification of an exogenous variable that meets the required exclusion criteria (Lennox and Pittman, 2010; Eshleman and Guo, 2014). Due to the challenges associated with the Heckman two-step procedure, recent studies have applied the propensity score matching approach to control for self-selection bias e.g., Clatworthy et al. (2009), Boone et al. (2010), Lawrence et al. (2011), and Eshleman and Guo (2014). The chapter therefore investigates the consequences of auditor switching after

controlling for self-selection using a propensity score matching technique. Using this statistical technique, switching firms are matched to a non-switching firm with the closest propensity score in the year of an auditor switch, with regressions then performed on the matched-pairs sample of firms. Any differences in credit ratings between switching and non-switching firms are then able to be attributed to changing auditor and not to a client-firm's pre-existing characteristics (Lawrence et al., 2011).

The analysis is conducted using a propensity score matched sample of 767 pairs of switching and non-switching private UK firms for the period 2006 - 2012. The initial descriptive statistics show, that after matching on similar observable firm characteristics, companies switching auditor possess below average credit scores. Regression results then show, after controlling for other known determinants of credit ratings such as profitability, switching auditor negatively affects a company's credit score. When the direction of the auditor switch is then taken into consideration, upward, downward or lateral movements between audit firm tiers, the results hold for the firms switching laterally between the same tier of audit firm. The findings suggest that although an auditor switch can occur for a number of reasons, when a company changes to an auditor of the same tier, the reasons for the switch is harder to explain which subsequently transmits a negative signal about a company's credit risk to those external to the firm.

The remainder of the chapter is as follows. Section 5.2 discusses prior literature and evidence, from which the hypotheses are determined. Section 5.3 outlines the research design and propensity score matching procedure. Section 5.4 provides descriptive statistics and Section 5.5 discusses the regression results. Finally, Section 5.6 provides a summary and discussion of the findings.

5.2 Prior Literature and Hypothesis Development

In contrast to public firms, private firms typically have more opaque information structures (Brav, 2009; Langli and Svanström, 2013). For private companies, debt contracting is therefore more sensitive to information relative to public companies, with lenders likely to demand higher yields on private company debt to compensate for the poorer information asymmetry (Fenn, 2000; Santos, 2006; Brav, 2009). Relative to public firms, forms of bank financing such as bank overdrafts, credit cards and leasing/hire purchase are often the main source of financing for private firms (Cosh and Hughes, 1998; Cosh et al., 2009). With access to such forms of finance largely dependent on a company's credit rating. Consequently, as a result of the opaque information environment, coupled with the greater reliance on the various forms of bank financing, the links between auditing and credit ratings are likely to be strong in private companies (Lennox and Pittman, 2011).

A small number of studies have previously examined the effect of voluntarily purchasing an audit, or audit presence, on a private company's cost of capital or credit ratings. Evidence from outside the UK suggests that client-firms voluntarily purchasing an audit benefit from increased access to capital and lower borrowing costs. Blackwell et al. (1998) study the effect of voluntarily purchasing an audit on 212 revolving credit agreements from six banks in the US and find that audited companies pay significantly lower interest rates on their revolving credit agreements relative to non-audited companies. Similarly, Allee and Yohn (2009) examine the financial reporting practices of privately held US companies which are not subject to regulation by the Securities and Exchange Commission (SEC) to test whether voluntarily purchasing an audit has an effect on a client-firm's access to non-equity finance. Using data on US private

companies from the Federal Reserve's National Survey of Small Business Finances (NSSBF), they provide evidence to suggest that companies having their financial statements audited benefit in the form of greater access to credit.

Kim et al. (2011) extend the research of Blackwell et al. (1998) on a larger scale by exploiting the institutional setting of South Korea. In South Korea all companies are required to produce financial statements, with companies with total assets less than 7 billion South Korean won (approximately £4.2 million) exempt from the audit requirement. After controlling for other company factors - such as size, leverage, profitability and growth - Kim et al. (2011) provide evidence to show private companies voluntarily purchasing an external audit benefit from significantly lower interest rate spreads by an average of 56-124 basis points.

Using a large sample of US private firm data, Minnis (2011) examines whether the verification of financial statements influences debt pricing with an endogenous switching model and finds audited companies to have a 69 basis point lower interest rate compared to the unaudited companies in his sample. Therefore further confirming the earlier findings of Blackwell et al. (1998) and Kim et al. (2011).

In comparison to the non-UK evidence that focuses on borrowing costs, empirical research in the UK has focused on the effect of voluntarily purchasing an audit, or audit presence, on a company's credit ratings. Two studies by Lennox and Pittman (2011) and Dedman and Kausar (2012) both exploit a natural experiment in which voluntary audits replaced mandatory audits for UK private companies in order to analyse the

economic outcome for private companies stemming from the regime switch. [39] Lennox

and Pittman (2011) analyse a sample of 5,139 private companies and provide evidence

to show companies that remain audited once exempt from the requirement enjoy

significantly higher credit ratings. Similarly, using a sample of 4,873 newly exempt

private firms Dedman and Kausar (2012) find firms which retain an audit have

significantly higher credit scores in comparison to those which opt out of an audit.

Even after controlling for known determinants of credit score such as profitability,

client-firm size, and liquidity.

In addition to the question of whether audit presence has an effect on credit ratings or

a company's cost of debt, there is also the issue of auditor choice. For public

companies, prior research suggests that the Big Four audit firms supply 'higher-quality'

audits relative to their smaller counterparts (e.g., Lennox, 1999; Peel and Roberts, 2003;

Francis, 2004; Mansi et al., 2004; McMeeking et al., 2007). However, evidence on the

effect of a Big Four auditor on a company's cost of capital or credit ratings is mixed

depending on the type of client-firm in question, likely due to the significant differences

between the public and private company environments (Chaney et al., 2004; Ball and

Shivakumar, 2005). For example, Mansi et al. (2004) use credit ratings to measure the

perceived benefits to public US companies of employing a Big Four versus a non-Big

Four auditor and find both auditor quality and tenure to be negatively and significantly

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[39] In 1994 the UK applied the EC 4th Directive which permitted the UK government to dispense with the requirement for small companies to undergo an audit. Article 51 of the 4th Company Law Directive (78/660/EEC) requires all limited companies to have their accounts audited. However, Article 11 gives member states an option to exempt smaller companies. In January 2004 the thresholds for defining a company as 'small' were raised to EU maxima (SI 2004/16), so a company qualified as 'small' if for two successive years it met two out of the three size criteria, turnover up to £5.6m, balance sheet total not exceeding £2.8m and average employees less than 50. Consequently, companies qualifying as small, with a turnover of up to £5.6m and total assets value up to £2.8m were made exempt from statutory audit following the exemption change in January 2004.

related to the cost of debt financing. Similarly, Pittman and Fortin (2004) report that for a sample of newly public US firms, the choice of a Big Six auditor can reduce debt monitoring costs which in turn results in lower interest rates.

In contrast to public firm studies, the evidence on the effect of a Big Four auditor on a company's cost of capital or credit ratings is sparse for private companies. Fortin and Pittman (2007) extend prior research on the role of auditor choice in debt pricing in public firms (e.g., Mansi et al., 2004; Pittman and Fortin, 2004) to private firms. They estimate the influence of the presence of a Big Four auditor, along with control variables, on the credit ratings assigned to 144A bonds issued by US private firms. After controlling for other determinants of debt pricing and non-random selection of external auditors, Fortin and Pittman (2007) fail to find that choosing a Big Four auditor affects the yield spreads or credit ratings on 144A bonds issued by private firms. However, the authors acknowledge that the generality of the results are likely to be reduced because the study is based on the more litigious US environment and focuses on the 144A debt market. Thus emphasising the need for similar UK based research.

In the UK, although not a focus of their paper, Lennox and Pittman (2011) consider the effects of auditor choice on credit ratings by removing any observations in which there was a change in auditor and repeating their analysis on the reduced sample. They find their results to be very similar and conclude that the change in credit ratings is driven by the signal stemming from the decision to remain audited rather than from a company's choice of auditor. However, Lennox and Pittman (2011) acknowledge that the companies in their sample are very small which will consequently impact on auditor choice and, as a result, their sample might not be very representative of UK private firms in general. Similar to Lennox and Pittman (2011), despite investigating a

different regulatory environment, Kim et al. (2011) also report that for their sample of Korean private firms it is the external audit by itself which appears to be of information value to credit stakeholders, rather than whether the companies in their sample are audited by a Big Four or non-Big Four audit firm.

Auditor presence and auditor choice have therefore been a focus of previous research, with mixed findings depending on the country and type of firm in question. Existing auditing studies are, however, yet to investigate whether there are any economic consequences resulting from a change in the choice of auditor, or rather auditor switching, for a representative sample of private companies in the UK. Changing auditor can have far reaching consequences for audit firms, client-firms, and other stakeholders (Stefaniak et al., 2009). So it is important that this topic is given further consideration in the context of the private company audit market, especially as private firms make up the majority of the UK economy and can subsequently impact on its performance. For listed firms, it is easier to investigate the economic consequences resulting from an auditor switch through analysing the reactions of capital market participants, with research finding that client-firms generally experience adverse capital market effects following a change in auditor (e.g., Fried and Schiff, 1981; Fisher and Fisher, 1993; Lu, 2006). In contrast, due to the more opaque reporting environment in which they operate, it is more difficult to assess whether there are any economic consequences for private firms resulting from a change in auditor - hence the dearth of research in this area.

As previously discussed, there are issues with using interest rates as a proxy for the economic consequences following a change in auditor. Such as the fact that some companies do not require a loan and subsequently do not have an interest rate measure

and, for those firms with loans, there also exists the possibility that they are not necessarily renegotiated each year. In addition, in the case of private companies, a director's ability to provide personal security for business loans may influence the availability and cost of capital for private firms, a factor which does not affect company credit ratings constructed from publicly available information (Dedman and Kausar, 2012, p.401). Credit scores provided by an external credit ratings agency are therefore more likely to provide an objective measure of the solvency of the firm, thus resulting in credit ratings being a less noisy measure relative to interest rates. Moreover, with access to the *Bureau Van Dijk* 'Financial Analysis Made Easy' (FAME) database, credit ratings are available to download for the majority of private companies in the UK.

The study therefore initially investigates whether there are economic consequences stemming from a company's decision to change their auditor. Although there is purported to be a strong link between auditing and credit ratings in private companies, due to the limited empirical studies actually focusing on credit ratings and the mixed findings from extant studies it is difficult to propose a specific directional relationship with auditor switching. Consequently, the following research question is proposed:

RQ1: Does switching auditor affect a company's credit ratings?

As previously discussed, in addition to the question of whether audit presence has an effect on credit ratings or a company's cost of debt, studies have also considered the effect of the choice of a particular auditor. However, to date, there is yet to be a study that focuses on the economic consequences resulting from a *change* in auditor choice. With mixed evidence on the effect of a Big Four auditor on a company's cost of capital or credit ratings, there exists the possibility that a switch to an auditor of a particular tier,

such as the Big Four, has different economic consequences depending on the direction of the switch in question.

For example, a change between two different tiers of audit firm will involve a client moving between auditors of different reputations, such as changing from a higher tier to a lower tier auditor, thus potentially sending a specific signal to credit rating agencies. On the other hand, for lateral changes between audit tiers, significant differences in reputation or technological ability are less likely to be observed (Simon and Francis, 1988). Therefore the focus will largely be on the fact that the company has changed auditor, rather than 'upgraded' or 'downgraded' auditor and, in this instance, credit rating agencies may therefore discount the choice of auditor and focus on the act of switching itself.

Distinguishing between upward and downward switches (where there is a change in auditor tier) and lateral switches (where the change is within the same tier) will therefore determine whether it is the choice of auditor that sends a signal to credit rating agencies, or whether it is the act of switching by itself. This results in a second research question:

RQ2: Does switching auditor affect a company's credit ratings in different ways depending on the type of switch in question?

5.3 Research Design and Data

5.3.1 Sample

Using the *Bureau Van Dijk* 'Financial Analysis Made Easy' (FAME) database all active, independent, private companies with audited financial statements for the period 2005-

2012 are downloaded.[40] The restriction is imposed that the company is independent due to the fact that the analysis focuses on firms changing their auditor and auditor hiring decisions are routinely made by the ultimate owner rather than at the company level (Lennox and Pittman, 2011). The independence restriction therefore ensures that no firms in the sample have an individual shareholder with sole power to influence the choice of auditor when switching

Firms identified as changing their company status from a private to public or public to private company during the sample period, firms without a valid SIC (2007) code and firms in the financial or utilities sectors are then removed from the initial download (Firth, 1997; Lennox and Pittman, 2011; Dedman and Kausar, 2012). Firms in the financial or utilities sectors have unique operating reporting requirements and are subject to different audit requirements. Next, firms without credit ratings or the necessary annual accounting data such as total assets, a minimum turnover of £1,000, a disclosed profit or loss figure, a minimum audit fee of £1,000, and a registered office location are removed.[41] A firm's registered office location is taken into consideration because credit scores are not available for companies without a registered business name or business address. Lagged accounting data is required for the first stage of the propensity score matching procedure, so companies without at least two consecutive years of data are also removed. Following Ball and Shivakumar (2005), all firm-years

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[40] The FAME database characterises the degree of independence of a company with regard to the ownership of shareholders. This is discussed in more detail in Chapter 3.

[41] Oxera (2006) finds median audit fees as a percentage of company turnover for FTSE 100 firms to be 0.05%, increasing to 0.20% for the smaller FTSE fledgling companies. In a sample of smaller private firms, audit fees as a percentage of sales is expected to be higher than those for listed firms and a fees to sales ratio of 10% would provide us with a minimum fee threshold of around £1,000 (based on the minimum turnover in the final sample being £13,000).

where either the key accounting or audit information is missing or internally inconsistent are also removed.

As the analysis is focused on companies changing auditor the definition of a change of auditor requires some care (Gregory and Collier, 1996). Prior to identifying auditor switches, companies with joint auditors are excluded from the sample as a change in one auditor cannot be captured in a binary auditor switching indicator variable. In addition, auditor switches as a result of audit firm mergers are removed, as are companies switching multiple times during the panel. These companies are removed as not to confound the inferences being made from the switching models and to ensure switching rates only account for a client-firm changing their audit firm to another non-related audit firm. Following this, to identify instances where a change in auditor has taken place, using the individual company records, current and prior year auditors are compared with a binary indicator variable created to denote the occurrence of an auditor switch. As a final data filter, accounting variables at the top and bottom 1% are trimmed.[42]

The sample selection process results in an initial sample of 33,498 firm-year observations for the period 2005 to 2012.[43] In total there are 7,825 unique private companies, of which, 940 companies switch auditor during the sample period. The resulting sample is then used for the propensity score matching procedure.

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[42] For example, profit to sales ratio, fees to sales ratio, return on assets and percentage change in audit fees.

[43] As auditor information is not available for the year prior to 2005, firms switching auditors are unable to be identified in this year. Auditor switches in the final sample therefore span 2006-2012, with 2005 used to provide data for lagged variables for switching and control firms before removing the year from the final sample.

5.3.2 *Propensity Score Matching*

A propensity score matching procedure is applied to the initial sample of private firms in order to obtain a matched sample of switching and non-switching firms. Originally developed by Rosenbaum and Rubin (1983), propensity score matching is a statistical matching technique which attempts to estimate the effect of a treatment (for example, switching auditors) conditional on a vector of characteristics which predict receiving the treatment in the first place. The first step in propensity score matching is to run a propensity score model on the complete sample of firms (switching and non-switching) within each year, on variables which prior research has shown to act as determinants for an auditor switch. Following Eshleman and Guo (2014) a logit regression is used to estimate the model and is as follows:

$$Prob(Treat = 1) = \frac{1}{1 + e^{-\beta X}} \; where:$$

$$\beta X = \alpha_0 + \alpha_1 LNASSETS_{i,t-1} + \alpha_2 ATURN_{i,t-1} + \alpha_3 CURR_{i,t-1} + \alpha_4 LEV_{i,t-1} +$$
$$\alpha_5 ROA_{i,t-1} + \alpha_6 REC\_INV_{i,t-1} + \alpha_7 QUAL_{i,t-1} + \alpha IND_{j\,i,t} + \alpha YR_{k\,i,t} + \varepsilon_{i,t}$$

(5.1)

Where *Treat* $= 1$ if the firm is in the treatment group (i.e. switched auditor during the panel). Subscripts *i* and *t* indicate firm and year respectively, *IND* is a vector of dummy industry variables and *YR* indicates dummy variables for the year of data. [44]

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[44] Industry groupings are according to 2-digit SIC codes.

Following prior studies a number of controls are included in the model (e.g., Krishnan and Krishnan, 1997; Chaney et al., 2004; Landsman et al., 2009). The natural logarithm of total assets (*LNASSETS*) and the level of sales divided by total assets (*ATURN*) are included in the model to control for size (Chaney et al., 2004). The current ratio (*CURR*), the ratio of debt to total assets (*LEV*), and return on assets (*ROA*) are included to control for a client's financial status (Landsman et al., 2009; Eshleman and Guo, 2014). Receivables and inventory as a fraction of total assets (*REC_INV*) are also included in the model to control for the level of inherent risk (Landsman et al., 2009). Finally, a dummy variable (*QUAL*) is included to indicate the issuance of an audit opinion other than unqualified to proxy for risk in completing the audit (Krishnan and Krishnan, 1997; Landsman et al., 2009). As with prior switching studies, the explanatory variables are one-year lagged.

The fitted values of the logit model, or the propensity scores, represent the probability that a firm will switch auditor given the set of independent variables. Once each firm has a propensity score it is used to match each treatment (switching) firm with a control (non-switching) firm with the closest fitted value in the same year. During the matching process, following Lawrence et al. (2011), a caliper of 0.03 is imposed to ensure a close match is found. Following DeFond et al. (2014) matching with replacement is used as it reduces the bias in the treatment effect because each treatment firm can be matched to the closest control firm even if that control firm is already matched to another treatment firm (DeFond et al., 2014, p.10).

Of the 940 companies switching auditor 767 are matched to a suitable control firm using the caliper of 0.03. The remaining 173 switching firms are not deemed to have a

match close enough, even with replacement, and are therefore not included in the final matched sample.

5.3.3   Credit Ratings Model

To analyse the consequences of switching auditor on a company's credit ratings, the following credit ratings model is used:

$$QUISCORE_{it} = \beta_0 + \beta_1\,SWITCH_{it} + \beta_2\,INTCOV_{it} + \beta_3 LEV_{it} + \beta_4 QUAL_{it} +$$

$$\beta_5 LNSAL_{it} + \beta_6 LNAGE_{it} + \beta IND_{j\,i,t} + \varepsilon_{it}$$

$$(5.2)$$

Where i and t denote company i in year t, and *IND* is a vector of industry dummy variables.[45]

5.3.3.1   Credit Ratings

A credit rating measures the level of credit risk and differentiates individual credits by the risk that they pose. Credit rating systems can either be internal, for example to monitor and evaluate a financial institution's credit portfolio, or external such as those developed by credit agencies as tools which can be used to measure the risk of any firm (Doumpos and Pasiouras, 2005). Following Lennox and Pittman (2011) and Dedman and Kausar (2012) the credit ratings analysed are based on the credit ratings issued by Qui Credit Assessment Limited and are provided in the FAME database.[46] The credit

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[45] Industry groupings are according to 2-digit SIC codes.
[46] Doumpos and Pasiouras (2005) provide evidence that the ratings provided by Qui Credit Assessment Limited are accurate indicators of default risk and reliably capture borrower credit quality (Lennox and Pittman, 2011).

ratings provided by Qui Credit Assessment Limited, or the 'Qui Scores' (*QUISCORE*) are on a numerical scale from 0 to 100, and quantify the agency's assessment of the likelihood of corporate failure within the next 12 months, with higher ratings representing a lower perceived risk of financial failure (Lennox and Pittman, 2011).

5.3.3.2   Switch Variables

The switch variable *(SWITCH)* is the main variable of interest in the model as it identifies whether a change in auditor has an effect on a company's credit ratings. It is important to remember that the coefficient on *SWITCH* captures the average effect of all switches and in the second set of regressions the *SWITCH* variable is replaced with more refined switch variables to denote the direction of a switch.

To provide additional detail, the traditional distinction between the Big Four and non-Big Four audit firms is further refined into the Big Four, the Mid Four and the remaining Small-Tier audit firms. In current studies, after the Big Four, the cut-off point for leading mid-tier auditors is optional. The largest four auditors after the Big Four are therefore identified using the FRC's 'Key Facts and Trends in the Accountancy Profession' reports for the relevant years covered by the sample period (Peel, 2013) and includes Baker Tilly, BDO, Grant Thornton and PKF (UK). As well as being differentiated from other non-Big Four audit firms in terms of income, these four mid-tier auditors are the only non-Big Four auditors covered by the ICAEW Audit Firm Governance Code.[47]

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[47] The Audit Firm Governance Code, published in January 2010, applies to eight audit firms that together audit about 95% of the companies listed on the Main Market of the London Stock Exchange. For these audit firms, the code sets a benchmark for good governance which other audit firms may wish to voluntarily adopt in full or in part (ICAEW, 2010).

The direction of a switch is then determined by considering the tier of the previous and the new auditor, with three types of auditor switches being identified: *UPWARD* = 1 if a client-firm switches from a lower tier to a higher tier auditor, which includes changes from Small-tier to Mid Four or Big Four audit firms and changes from Mid Four to Big Four firms; *LATERAL* = 1 if a client-firm changes auditor but both the previous and new auditor are from the same tier; *DOWNWARD* = 1 if a client-firm switches from a higher tier to a lower tier auditor, which includes changes from Big Four to either Mid Four or Small-tier firms, and changes from Mid Four to Small-tier audit firms. Of the 767 auditor switches in the matched pair sample 88 are upward switches, 494 are lateral switches, and 185 are downward switches.

5.3.3.3   Control Variables

The set of control variables follows recent research on the determinants of credit ratings (e.g., Pittman and Fortin, 2004; Doumpos and Pasiouras, 2005; Ashbaugh-Skaife et al., 2006; Lennox and Pittman, 2011; Dedman and Kausar, 2012). To control for the age of a company, the log of company *i*'s age in year *t (LNAGE)* is included in the model. A positive association is expected with credit score because information asymmetry between borrowers and lenders is thought to decrease with firm age (Pittman and Fortin, 2004; Dedman and Kausar, 2012). To control for the adequacy of cash flows generated through earnings in meeting debt and lease obligations, a company's interest cover ratio *(INTCOV)* is included. Credit ratings are expected to be higher for companies with greater interest coverage because it implies a better ability to meet obligations (Doumpos and Pasiouras, 2005).

To control for firm size the log of total sales *(LNSAL)* is included in the model.[48] Credit ratings are expected to be higher for companies that are larger as suppliers of finance are more likely to retrieve their money even if the company runs into financial difficulties if there are more assets to sell (Dedman and Kausar, 2012). To measure the liquidity of a firm, the quick ratio *(QUICK)* is included in the model. As the quick ratio excludes inventory it is thought to provide more reliable information on the actual liquidity of a firm, relative to the alternative current ratio, with higher credit ratings expected for firms with greater liquidity (Doumpos and Pasiouras, 2005). Finally, the ratio of total liabilities to total assets *(LEV)* is included in the model. If a firm has a lower amount of debt relative to its assets there is likely to be a lower risk of financial failure, thus a negative relationship between leverage and credit ratings is expected.

During the period under study, economic conditions will have been mixed across the years of data, due to the Financial Crisis taking place around 2008, thus potentially also having an effect on a firm's financial status and subsequent credit rating. To control for this, the sample mean values of credit ratings are subtracted from the individual firm credit ratings for each year of the sample. For example, the deviation between company *i*'s credit rating in 2006 and the mean rating given to every other company in the sample in 2006 is calculated as: $QUISCORE_{i2006} - QUISCORE_{2006}$. Similarly, following Lennox and Pittman (2011) all of the control variables are purged of any yearly effects $(X_{it} - X_t)$, so when running the regressions the modified credit ratings model becomes:

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[48] In previous studies (e.g., Lennox and Pittman, 2011) to control for firm size the log of total sales (*LNSAL*) and also the log of total assets (*LNASSETS*) are included in the model. Due to multicollinearity concerns only one size variable is included in the model. This is discussed further in the results section.

$$QUISCORE_{it} - QUISCORE_t = \beta_0 + \beta_1\, SWITCH_{it} + \beta_2(INTCOV_{it} - INTCOV_t) +$$

$$\beta_3(LEV_{it} - LEV_t) + \beta_4(QUICK_{it} - QUICK_t) + \beta_5(LNSAL_{it} - LNSAL_t) +$$

$$\beta_6(LNAGE_{it} - LNAGE_t) + \beta IND_{j\, i,t} + \varepsilon_{it}$$

$$(5.3)$$

In order to answer the second research question, the *SWITCH* variable will be replaced with the three separate variables to denote the direction of an auditor switch. So the regression equation becomes:

$$QUISCORE_{it} - QUISCORE_t$$

$$= \beta_0 + \beta_1\, UPWARD_{it} + \beta_2\, LATERAL + \beta_3\, DOWNWARD_{it}$$

$$+ \beta_4(INTCOV_{it} - INTCOV_t) + \beta_5(LEV_{it} - LEV_t)$$

$$+ \beta_6(QUICK_{it} - QUICK_t) + \beta_7(LNSAL_{it} - LNSAL_t)$$

$$+ \beta_8(LNAGE_{it} - LNAGE_t) + \beta IND_{j\, i,t} + \varepsilon_{it}$$

$$(5.4)$$

5.4 Descriptive Statistics

Table 5.1 Panel A provides the industry composition of the sample companies. There are 1,534 companies, of which there are 23.01% operating in the business services sector and 20.73% operating in the wholesale and retail trade sector. One fifth of companies (20.47%) also operate in the manufacturing sector. The research design controls for differences between industries by including indicator variables for industry classification according to 2-digit SIC codes. Table 5.1 Panel B details the frequency of auditor switches for each year in the sample, and subsequently the number of matched-

pairs of firms for each year of the sample. The number of auditor switches ranges from

87 to 152 across the seven year period. The increasing number of switches reflects the

growing number of firms in the FAME database in more recent sample years.

Table 5.1 Sample composition – industry comparisons and the yearly distribution of auditor switches

Panel A: Industry composition

Industry	Percentage of Sample
Agriculture, hunting, farming and fishing	1.56%
Business services	23.01%
Construction	11.67%
Hotels and restaurants	3.52%
Manufacturing	20.47%
Mining	0.59%
Other service activities	7.04%
Transport, storage and communication	11.41%
Wholesale and retail trade	20.73%

Panel B: Sample distribution of auditor switches

Year	Switches	Treatment firms	Total firms
2006	95	95	190
2007	87	87	174
2008	89	89	178
2009	101	101	202
2010	111	111	222
2011	132	132	264
2012	152	152	304

Table 5.1 shows the sample composition of the matched-pairs sample of 1,534 firms, for which there is one yearly observation – the year of the switch/match. Panel A denotes the industry composition of the 1,534 sample firms. The broad industry classifications are based on the United Kingdom Standard Industrial Classification of Economic Activities (SIC) which is used to classify business establishments and other standard units by the type of economic activity in which they are engaged. The most recent version of these codes (SIC 2007) was adopted by the UK as from 1st January 2008. Panel B details the number of firms switching auditor each year, after performing the propensity score matching procedure.

Table 5.2 presents the descriptive statistics for the pooled, switching (treatment) and non-switching (control) firms. From looking at the descriptive statistics and comparing the two groups with the pooled statistics, it can be seen that, as expected following the propensity score matching procedure, both switching and non-switching firms are similar in terms of firm-characteristics. In terms of size, switching companies have a log of total assets (sales) of 15.45 (15.62) and non-switching companies having a log of total assets (sales) of 15.78 (15.95). Table 5.2 also shows that on average, companies in the sample are profitable with switching companies earning a mean (median) return on assets of 6% (4%) and non-switching companies earning a mean (median) return on assets of 7% (5%). On average, both switching and non-switching companies are also similar in terms of liquidity *(CURRENT* and *QUICK)* and leverage *(LEV)*. On average, less than 1% of sample companies receive a qualified audit opinion *(QUAL)*.

Table 5.2 Descriptive statistics

Variables	Pooled sample (n = 1,534)			Switching firms (n = 767)			Non-switching firms (n = 767)		
	Mean	Med.	S.D.	Mean	Med.	S.D.	Mean	Med.	S.D.
QUISCORE	85.90	90.00	12.18	83.16	90.00	14.70	88.63	91.00	8.11
$QUISCORE_{it}$ - $QUISCORE_{t}$	0.00	3.90	11.97	-2.74	2.45	14.22	2.74	4.90	8.35
ATURN	1.88	1.56	1.64	1.89	1.53	1.65	1.87	1.60	1.63
CURRENT	2.19	1.36	3.54	1.89	1.25	2.64	2.49	1.46	4.25
INTCOV	0.62	0.19	0.79	0.70	0.27	0.81	0.54	0.13	0.76
LEV	0.62	0.60	0.43	0.66	0.66	0.34	0.59	0.53	0.50
LNAGE	3.25	3.18	0.69	3.07	2.94	0.69	3.42	3.37	0.64
LNASSETS	15.61	15.69	1.73	15.45	15.59	1.78	15.78	15.82	1.65
LNSAL	15.78	16.04	1.74	15.62	15.93	1.77	15.95	16.14	1.69
QUAL	0.02	0.00	0.13	0.01	0.00	0.11	0.02	0.00	0.15
QUICK	1.64	1.05	2.43	1.48	0.96	2.52	1.80	1.15	2.34
REC_INV	0.27	0.22	0.24	0.26	0.21	0.24	0.28	0.25	0.24
ROA	0.07	0.05	0.17	0.06	0.04	0.19	0.07	0.05	0.13

Notes: The sample comprises 767 matched-pairs of switching and non-switching firms across the period 2006 – 2012. Variable definitions: QUISCORE = the credit score (from 1 to 100), where a higher score implies a better rating for company i in year t; $QUISCORE_{it}$ - $QUISCORE_{t}$ = deviation of company i's credit score in year t from the yearly average credit score of the sample in year t; ATURN = sales divided by total assets; CURRENT = current ratio (current assets/current liabilities); INTCOV = interest expense divided by earnings before interest and taxation (following Lennox and Pittman (2011) the interest cover ratio is capped at 2.00, and a value of 2.00 is assigned if earnings before interest and taxation are negative); LEVERAGE = total liabilities divided by total assets; LNAGE = log of the age of company i in year t; LNASSETS = log of total assets; LNSAL = log of total sales; QUAL = 1 if the company has a qualified audit report, 0 otherwise; QUICK = quick ratio ((current assets - inventory)/current liabilities); REC_INV = trade receivables plus inventory divided by total assets; ROA = net income divided by total assets; TOTAL ASSETS = total assets; TURNOVER = turnover.

With regards to the credit ratings of the switching and non-switching firms, switching firms have lower credit ratings on average. The average Qui Score for the sample of switching firms is 83.16 and the average for the sample of non-switching firms is 5 points higher at 88.63. When the deviation of each company's credit score from the average Qui Score is considered ($QUISCORE_{it}$ - $QUISCORE_t$) Table 5.2 shows companies switching auditor have, on average, a credit rating 2.74 points below the mean credit rating. The standard deviation is also larger for the sample of switching companies, with the standard deviation at 14.22 in comparison to a standard deviation of 8.35 for the sample of non-switching firms, suggesting a greater variation in the credit ratings for the firms changing auditor.

Figure 5.1 builds on the information regarding the Qui Score shown in Table 5.2 and presents the yearly average Qui Scores for the pooled sample of firms. From Figure 1 it can be seen that average Qui Scores fluctuate across the sample period, with a significant decline in the year 2008 and with averages picking up again in the year 2009 onwards. This pattern most likely results from the fact that during the period under study economic conditions will have been mixed across the years of data due to the Financial Crisis taking place around 2008. Thus potentially affecting a firm's financial status and subsequent credit rating and hence why it is important to control for any economic effects such as this during the panel by purging the variables of any yearly effects.

Figure 5-1 Average yearly credit ratings measured by the Qui Score, 2006 - 2012
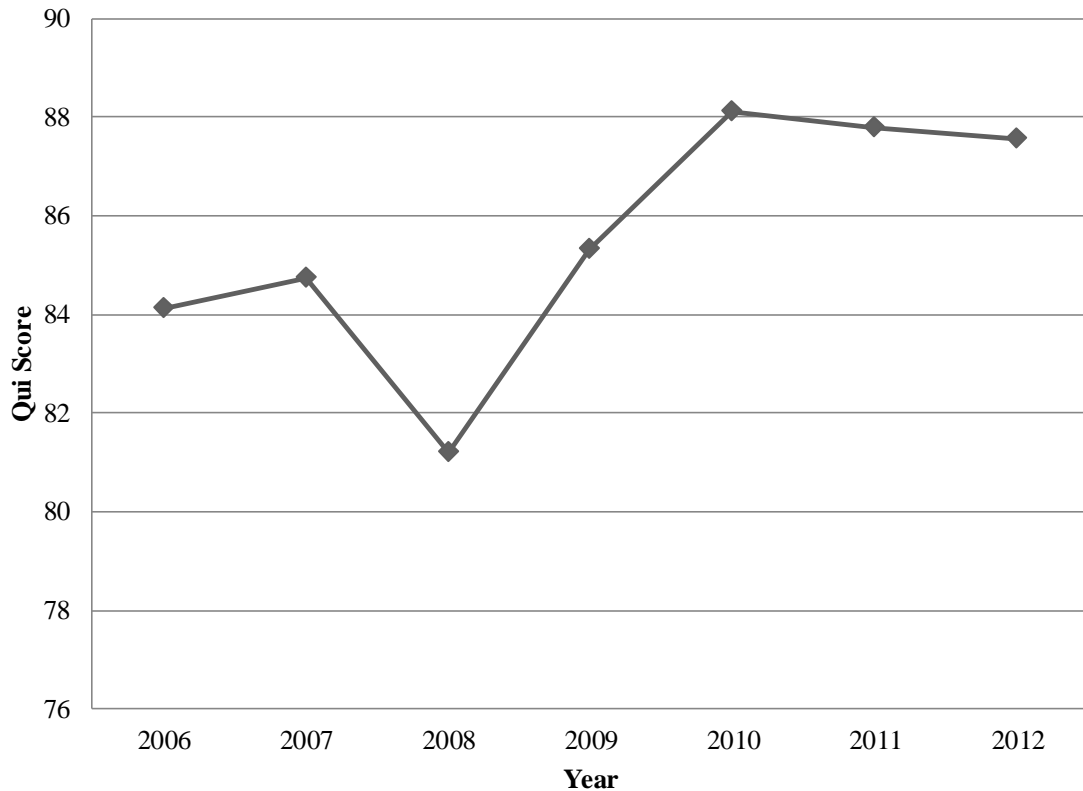
Figure 5.1 displays the yearly average credit ratings or 'Qui Scores' for the matched-pairs sample of 1,534 switching and non-switching firms for the period 2006 – 2012. The Qui Scores are issued by Qui Credit Assessment Limited and are on a numerical scale from 0 to 100, and quantify the agency's assessment of the likelihood of corporate failure within the next 12 months, with higher ratings representing a lower perceived risk of financial failure.

Table 5.3 presents a correlation matrix for the variables in the credit ratings model. The main variables of interest (*QUISCORE* and *SWITCH*) are negatively and significantly correlated (-0.225), thus suggesting that a switch in auditor is associated with lower credit ratings. Although judgement about the relationship between auditor switching and credit scores is reserved until the regressions have been conducted, the initial descriptive statistics (Table 5.2) and the correlation matrix (Table 5.3) appear to show companies switching auditor have poorer credit ratings in comparison to non-

switching firms. Despite both groups of firms being similar across a number of firm characteristics, such as size and profitability

Table 5.3 also shows that, consistent with prior research (e.g., Lennox and Pittman, 2011) credit ratings are significantly higher for companies that are older, larger and with better liquidity. While credit ratings are lower for companies that have poor interest coverage and higher leverage. These correlations are consistent with the evidence presented in Doumpos and Pasiouras (2005) that Qui's credit ratings are accurate indicators of default risk.

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Table 5.3 Correlation matrix of key variables used in the credit ratings model

	QUISCORE	SWITCH	INTCOV	LEV	QUICK	LNSAL
SWITCH	- 0.225					
	(0.000)					
INTCOV	- 0.284	0.103				
	(0.000)	(0.000)				
LEV	- 0.292	0.083	0.254			
	(0.000)	(0.001)	(0.000)			
QUICK	0.037	- 0.066	- 0.059	- 0.297		
	(0.146)	(0.009)	(0.021)	(0.000)		
LNSAL	0.459	- 0.097	- 0.049	0.019	- 0.206	
	(0.000)	(0.000)	(0.056)	(0.467)	(0.000)	
LNAGE	0.358	- 0.259	- 0.065	- 0.344	0.080	0.078
	(0.000)	(0.000)	(0.011)	(0.000)	(0.002)	(0.002)

This table shows the correlation between the key variables, with the p-values in parentheses. The sample consists of 767 matched-pairs of switching and non-switching firms for the period 2006 – 2012. For variable definitions, please see Table 5.2.

5.5   Regression Results

5.5.1   Binary Switch Variable

Table 5.4 presents the regression results for the credit rating model for all types of
auditor switch *(SWITCH)* in order to answer the first research question.   The table
presents the mean coefficients, two tailed p-values, mean variance inflation factors (VIF)
and R^2 values.   In addition, the model includes controls for the industry classification,
but these are not reported in the table for brevity.   Standard errors are robust to
heteroscedasticity and autocorrelation.

   The results for the control variables are generally consistent with prior research that
examines the determinants of private company credit ratings (e.g., Fortin and Pittman,
2007; Lennox and Pittman, 2011).   For example, firms receive higher credit scores
when they are older *(LNAGE)*, larger *(LNSAL)* and have better liquidity *(QUICK)*
(Pittman and Fortin, 2004; Lennox and Pittman, 2011; Dedman and Kausar, 2012). [49]
In line with Lennox and Pittman (2011), the negative and significant coefficient on
INTCOV shows companies also attract lower credit scores when they have lower
interest cover and when they are more highly leveraged *(LEV)*.

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[49] In previous studies (e.g., Lennox and Pittman, 2011) to control for firm size the log of total sales
(*LNSAL*) and also the log of total assets (*LNASSETS*) are included in the model. Due to multicollinearity
concerns only one size variable is included in the main credit ratings model. For robustness, the model is
re-run with *LNASSETS* in place of *LNSAL* and with both size variables in the model, with the results
qualitatively similar. Please see Section 5.5.3 for these results.

Table 5.4 The effect of switching auditor on credit ratings: binary switching variable

$$QUISCORE_{it} - QUISCORE_t = \beta_0 + \beta_1 SWITCH_{it} + \beta_2(INTCOV_{it} - INTCOV_t) + \beta_3(LEV_{it} - LEV_t) + \beta_4(QUICK_{it} - QUICK_t) + \beta_5(LNSAL_{it} - LNSAL_t) + \beta_6(LNAGE_{it} - LNAGE_t) + \beta IND_{j\,i,t} + \varepsilon_{it}$$

Variables	Expected sign	Column (1)	Column (2)
Intercept		3.682**	1.983
		(0.048)	(0.288)
SWITCH	?	-5.310***	-2.159***
		(0.000)	(0.000)
$INTCOV_{it}$ - $INTCOV_t$	−		-3.020***
			(0.000)
LEV_{it} - LEV_t	−		-4.044***
			(0.000)
$QUICK_{it}$ - $QUICK_t$	+		0.258***
			(0.006)
$LNSAL_{it}$ - $LNSAL_t$	+		3.257***
			(0.000)
$LNAGE_{it}$ - $LNAGE_t$	+		3.901***
			(0.000)
Industry dummies		Yes	Yes
VIF Mean		2.97	2.90
n		1,534	1,534
R-squared		0.155	0.453

The regression is performed on the complete matched-pairs sample which includes 1,534 matched treatment and control firms for the period 2006 - 2012. Standard errors are robust to heteroscedasticity and autocorrelation. Two-tailed p-values are presented in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% percent levels respectively. *SWITCH* = 1 if a company changed auditor, 0 otherwise. For the remaining variable definitions please see Table 5.2.

The first research question asks whether changing auditor affects a company's credit ratings. Starting with the model without controls in Column 1, looking at the *SWITCH* variable the coefficient is negative (-5.310) and statistically significant (p<0.01). After the control variables are added to the model (Column 2) the coefficient on the switch

variable *(SWITCH)* remains negative and highly significant, (-2.159; $p< 0.01$). This implies that for the companies that switched auditor, credit ratings decreased by over 2 points. This finding also reinforces the descriptive evidence in Table 5.2, that firms switching auditor have lower credit scores relative to those not changing their auditor.

As the issue of self-selection has been controlled for using propensity score matching, the differences in credit ratings between switching and non-switching firms can be attributed to changing auditor and not to the financial characteristics of the client-firm. Moreover, the finding that the results are similar regardless of whether control variables are included in the credit ratings model is reassuring as it suggests that the results are unlikely to be affected by extraneous independent variables (Lennox and Pittman, 2011).

The first set of regressions therefore provide consistent evidence that firms switching auditor experience a decrease in credit ratings compared to companies who do not change their auditor. This initial finding provides further motivation for the second hypothesis to determine whether these results hold across the different types of auditor switches.

5.5.2   Switch Direction

To answer the second research question the binary *SWITCH* variable is replaced by three separate variables to denote the direction of an auditor switch, with the direction determined according to the change in auditor tier. As previously discussed, in order to provide additional detail, the traditional distinction between the Big Four and non-Big Four audit firms is further refined into the Big Four, the Mid Four and the remaining Small-Tier audit firms. The direction of a switch is then determined by considering the tier of the previous and the new auditor, with three types of auditor switches identified. The first type of switch, an upward switch *(UPWARD),* is classified as a change from a

lower tier to a higher tier auditor, which includes a change from a Small-tier to a Mid Four or a Big Four audit firm and a change from a Mid Four to a Big Four firm. Lateral switches *(LATERAL)* are classified as a change in auditor but both the previous and new auditor are from the same tier. The final type of switch, a downward switch (*DOWNWARD*) is classified as a change from a higher tier to a lower tier auditor, which includes a change from a Big Four firm to either a Mid Four or Small-tier firm, and a change from a Mid Four to a Small-tier audit firm. In the sample there are 88 upward switches, 494 lateral switches and 185 downward switches.

Table 5.5 presents the regression results for the credit rating model with the directional switch variables included. As with the first set of regressions, the coefficients on the control variables are consistent with prior research that examines the determinants of private company credit ratings (e.g., Fortin and Pittman, 2007; Lennox and Pittman, 2011).

In answer to the second research question, starting with the regression minus the control variables, Column 1 of Table 5.5 shows the three directional switch variables to all have negative coefficients. With the coefficients on both the *LATERAL* and *DOWNWARD* variables significant at the 1% level. The insignificant coefficient on *UPWARD* implies that for companies moving up an auditor tier there are no effects to credit ratings resulting from the switch. One possible explanation for this is that companies moving to a higher tier auditor do so for reasons such as growth or profitability (Johnson and Lys, 1990) and are therefore potentially less of a credit risk. For companies such as this, their reason for switching auditor can be more easily explained. The results therefore suggest that companies switching upwards send a different signal about their credit risk relative to those switching downwards or laterally.

However, following the addition of the control variables (Column 2) the coefficients

on the *UPWARD* and *DOWNWARD* variables are both insignificant. In Table 5.5 the

coefficient on the *LATERAL* switch variable is the only switch direction variable that

remains negative and highly significant (-3.418; $p < 0.01$). With a lateral switch,

significant differences in reputation or technological ability are less likely to be

observed between auditors of the same tier (Simon and Francis, 1988) consequently

leading to questions regarding the underlying reason for the change in auditor.

Table 5.5 The effect of switching auditor on credit ratings: switch according to direction

$$QUISCORE_{it} - QUISCORE_t = \beta_0 + \beta_1\ UPWARD_{it} + \beta_2\ LATERAL + \beta_3\ DOWNWARD_{it} + \beta_4(INTCOV_{it} - INTCOV_t) + \beta_5(LEV_{it} - LEV_t) + \beta_6(QUICK_{it} - QUICK_t) + \beta_7(LNSAL_{it} - LNSAL_t) + \beta_8(LNAGE_{it} - LNAGE_t) + \beta IND_{j\ i,t} + \varepsilon_{it}$$

Variables	Expected sign	Column (1)	Column (2)
Intercept		3.483*	1.642
		(0.050)	(0.351)
UPWARD	?	-1.301	0.401
		(0.198)	(0.667)
LATERAL	?	-6.780***	-3.418***
		(0.000)	(0.000)
DOWNWARD	?	-3.425***	0.002
		(0.000)	(0.998)
$INTCOV_{it}$ - $INTCOV_t$	–		-3.126***
			(0.000)
LEV_{it} - LEV_t	–		-4.053***
			(0.000)
$QUICK_{it}$ - $QUICK_t$	+		0.245***
			(0.009)
$LNSAL_{it}$ - $LNSAL_t$	+		3.150***
			(0.000)
$LNAGE_{it}$ - $LNAGE_t$	+		4.050***
			(0.000)
Industry dummies		Yes	Yes
VIF Mean		2.93	2.86
n		1,534	1,534
R-squared		0.168	0.462

The regression is performed on the complete matched-pairs sample which includes 1,534 matched treatment and control firms for the period 2006 - 2012. Standard errors are robust to heteroscedasticity and autocorrelation. Two-tailed p-values are presented in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% percent levels respectively. *UPWARD* = 1 if a client-firm switches from a lower tier to a higher tier auditor, which includes changes from Small-tier to Mid Four or Big Four audit firms and changes from Mid Four to Big Four firms; *LATERAL* = 1 if a client-firm changes auditor but both the previous and new auditor are from the same tier; *DOWNWARD* = 1 if a client-firm switches from a higher tier to a lower tier auditor, which includes changes from Big Four to either Mid Four or Small-tier firms, and changes from Mid Four to Small-tier audit firms. For the remaining variable definitions please see Table 5.2.

5.5.3   Robustness

In previous studies (e.g., Lennox and Pittman, 2011) to control for firm size the log of total sales *(LNSAL)* and also the log of total assets *(LNASSETS)* are both included in regression models. Due to multicollinearity concerns, only one size variable is initially included in the main credit ratings model, the log of total sales *(LNSAL)*. However, for robustness, the original credit ratings model is re-run with *LNASSETS* in place of *LNSAL* followed by the inclusion of both of the size variables *(LNASSETS* and *LNSAL)* in the model.

As Table 5.6 shows, in both versions of the model the results for the control variables remain consistent with prior research that examines the determinants of private company credit ratings. For the model in Column 1 which includes *LNASSETS* in place of *LNSAL*, the coefficient on the *SWITCH* variable remains negative (-2.356) and statistically significant ($p<0.01$). The coefficient on the switch variable *(SWITCH)* also remains negative and highly significant, (-2.180; $p< 0.01$) when both size variables are included in the model (Column 2).

Also reported in Table 5.6, are the mean Variance Inflation Factors (VIF), used to identify potential problems of multicollinearity. Multicollinearity is usually regarded as being high when the VIF is above 10. In Column 2 when both size variables are included in the model, the mean VIF is similar to the mean VIF when only one of the size variables is included in the model. Thus, the results for the credit ratings model are qualitatively similar regardless of the size variable(s) included and multicollinearity does not appear to be an issue.

Table 5.6 The effect of switching auditor on credit ratings: alternative size measures

Model 1:

$$QUISCORE_{it} - QUISCORE_t$$
$$= \beta_0 + \beta_1 SWITCH_{it} + \beta_2(INTCOV_{it} - INTCOV_t) + \beta_3(LEV_{it} - LEV_t)$$
$$+ \beta_4(QUICK_{it} - QUICK_t) + \beta_5(LNASSETS_{it} - LNASSETS_t)$$
$$+ \beta_6(LNAGE_{it} - LNAGE_t) + \beta IND_{j\,i,t} + \varepsilon_{it}$$

Model 2:

$$QUISCORE_{it} - QUISCORE_t$$
$$= \beta_0 + \beta_1 SWITCH_{it} + \beta_2(INTCOV_{it} - INTCOV_t) + \beta_3(LEV_{it} - LEV_t)$$
$$+ \beta_4(QUICK_{it} - QUICK_t) + \beta_5(LNSAL_{it} - LNSAL_t)$$
$$+ \beta_6(LNASSETS_{it} - LNASSETS_t) + \beta_7(LNAGE_{it} - LNAGE_t) + \beta IND_{j\,i,t} + \varepsilon_{it}$$

Variables	Expected sign	Column (1)	Column (2)
Intercept		0.560	1.423
		(0.722)	(0.411)
SWITCH	?	-2.356***	-2.180***
		(0.000)	(0.000)
INTCOV_{it} - INTCOV_t	−	-3.615***	-3.288***
		(0.000)	(0.000)
LEV_{it} - LEV_t	−	-2.984***	-3.538***
		(0.003)	(0.001)
QUICK_{it} - QUICK_t	+	-0.009	0.170*
		(0.913)	(0.072)
LNSAL_{it} - LNSAL_t	+	-	2.022***
		-	(0.000)
LNASSETS_{it} - LNASSETS_t	+	2.972***	1.356***
		(0.000)	(0.000)
LNAGE_{it} - LNAGE_t	+	3.694***	3.764***
		(0.000)	(0.000)
Industry dummies		Yes	Yes
VIF Mean		2.89	2.98
n		1,534	1,534
R-squared		0.445	0.461

The regression is performed on the complete matched-pairs sample, which includes 1,534 matched treatment and control firms for the period 2006 - 2012. Standard errors are robust to heteroscedasticity and autocorrelation. Two-tailed p-values are presented in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% percent levels respectively. *SWITCH* = 1 if a company changed auditor, 0 otherwise. For the remaining variable definitions please see Table 5.2.

5.6   Summary and Discussion

In light of the findings from empirical Chapter 4, regarding the high levels of supplier concentration and low frequency of auditor switches, this analysis provides an important first step in shedding light on the economic consequences to private companies resulting from a change in auditor by considering the effects of a switch on a firm's credit ratings.

To date, a number of studies have touched upon the consequences of auditor switching in a public firm context, with the empirical evidence generally supportive of the notion that switching auditor is met with negative responses from capital markets, such as a reduction in stock price (e.g., Knechel et al., 2007; Weiss and Kalbers, 2008). Relative to public firms, for which the consequences of switching can be measured via capital markets, there is minimal information known about the consequences of switching auditor in a private firm context. Given their economic importance, and their reliance on bank-based forms of financing, it is important that private firms are properly informed of the economic consequences that might occur from switching auditor, especially while switching remains non-mandatory for this group of firms. Although a change in auditor may occur for valid reasons, such as firm growth (Johnson and Lys, 1990) the reasons underlying an auditor switch are still not readily available to outsiders.

In the analysis, to control for the issue of self-selection involved in the auditor choice decision, a propensity score matching procedure is used on a sample of UK private firms to generate a matched-pairs sample of 1,534 switching and control firms for the period 2006 – 2012. The initial descriptive statistics show both switching and non-switching firms to be similar in terms of firm characteristics such as profitability and leverage but companies switching auditor possess below average credit scores. The

initial regressions then present evidence to show that, after controlling for other known determinants of credit ratings such as profitability, companies switching auditor experience a significant decrease in their credit ratings compared to non-switching companies.

When the direction of the switch is then considered, the results show that only companies switching laterally between the same tier of auditor experience a decrease in credit ratings. Although it initially appeared that downward switches also attracted a significant decrease in credit ratings in the regression model without controls, this finding could be explained by the addition of the explanatory variables. When a lateral change in auditor occurs differences in reputation or technological ability are less likely to be observed between auditors of the same tier consequently leading to questions regarding the underlying reason for the change in auditor.

Although an auditor switch can occur for a number of reasons, when a company changes to an auditor of the same tier, the reason for the switch is harder to explain and it subsequently transmits a negative signal about a company's credit risk to those external to the firm. With credit ratings playing such an important role in the financing of private companies, it is therefore questioned what drives a company to switch auditor if they risk the chance of being penalised by credit ratings agencies. This consequently leads to the question as to whether audit firms are doing anything to attract new audit clients through specific pricing strategies, given the lesser audit regulations present the in the private firm audit market.

The final empirical chapter, Chapter 6, therefore examines whether the high levels of supplier concentration present in the private company audit market and the low frequency of auditor switches has resulted in audit firms attempting to attract new

clients via particular pricing strategies. In particular whether there is discounting by audit firms on initial audit engagements, in addition to whether any discounts are followed by subsequent price recovery. Should this be found to be the case, it raises concerns regarding competitive pricing and the level of auditor independence in the private company audit market. Moreover, it reinforces the idea of extending some of the more stringent audit requirements introduced by the EU Regulation on the Statutory Audits of Public Interest Entities to ensure that these economically important firms have sufficient oversight.

6
Playing Low-Ball: The Pricing of Initial Audit Engagements for UK Private Firms

6.1 Introduction

The pricing of initial audit engagements has been of interest to both academics and regulators for a number of years because of the potential threat to the independence of auditors. In addition to the subsequent undermining of audit quality resulting from particular pricing strategies involving a discount in audit fees. In initial audit pricing literature the terms 'initial discounting' and 'low-balling' are often used interchangeably despite referring to slightly different facets of pricing by a new auditor. A price discount or price cutting by a new auditor is an initial discount in audit fees for a new-client without explicit consideration of the relationship between the audit fee and audit costs. Whereas in literature, the practice of 'low-balling' has been defined by DeAngelo (1981) as the setting of the initial audit fee below the sum of start-up costs plus normal profits. Low-balling therefore takes audit *costs* into consideration with a critical aspect of the pricing strategy being the initial discounting of the audit fee followed by later price recovery (Gregory and Collier, 1996).

   With regards to low-balling, the main concern of regulators is that if an auditor accepts an engagement with the expectation that they can offset any losses resulting from an initial discount in audit fees with fees or services to be charged in future audits then it gives the auditor an interest in the financial success of the client-firm. This could subsequently influence their objectivity when carrying out the examination because it creates an economic incentive for the auditor to give a more favourable audit

opinion to ensure the client's continued existence (Cohen Commission, 1978; Ghosh and Lustgarten, 2006; Huang et al., 2009).[50] When severe price competition exists in the form of low-balling, concerns have also been expressed over the potential excessive time and budget pressures faced by an auditor, as such pressures are believed to heighten the incentive to 'under-audit' in an attempt to control costs (Stanley et al., 2015, p.626).

In reality, low-balling of audit fees (pricing below cost) cannot technically be evaluated without knowledge of an auditor's costs. In spite of the non-observability of auditor's costs, research has examined if discounts are given in the initial year of an audit, with a reduction in fees taken to imply that the presence of low-balling is more likely (Huang et al., 2009). Moreover, studies often conclude that if low-balling is found to be present that it is a competitive outcome aimed at securing future economic rents (DeAngelo, 1981; Peel, 2013). Yet there has been very little empirical investigation specifically aimed at understanding or providing a link between initial audit engagement discounts *and* the adverse outcomes potentially associated with an initial discount, as it is often beyond the scope of analysis (Stanley et al., 2015).

Of the literature examining the pricing of initial audit engagements, only a few have been UK based but provide findings to suggest that there is some form of price discounting in the UK listed company audit market (Pong and Whittington, 1994; Gregory and Collier, 1996; Peel, 2013). However, largely due to data constraints,

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[50] Initial year audits typically involve additional effort from an auditor and if the extra start-up costs are not passed along to a client in the form of additional fees the extra costs can be viewed as an investment by the auditor who expects a return on these (Huang et al., 2009). The theoretical model of DeAngelo (1981) argues that additional costs in the initial year are sunk costs and economic theory suggests that sunk costs should be irrelevant. However, organisational behaviour research exists (Staw, 1976; Staw and Ross, 1987) to show that people do not ignore sunk costs, which forms the basis of the concerns of regulators about the impact of low-balling on auditor independence (Huang et al., 2009, p.172).

empirical UK-based analysis of the subsequent price recovery of initial audit fee discounts has only been considered on a pooled (Gregory and Collier, 1996) or single year (Peel, 2013) basis. Therefore, a UK-based study that considers price recovery over a number of years is yet to be conducted.

Of the UK-based studies, to date, only Peel (2013) has considered the pricing of initial audit engagements for a sample of private firms by investigating the extent of initial audit fee discounting by the largest eight audit firms. Although Peel (2013) finds discounts to be present for larger quoted companies, the findings suggest that there is an absence of price rivalry between the largest eight audit firms to secure initial audit engagements in the private corporate market. In comparison to the public firm audit market, the audit market for private firms is more heterogeneous and the overall share of audits carried out by the larger audit firms is significantly lower (Langli and Svanström, 2013).

However, as shown in Chapter 4, market share varies according to the basis of measurement and the Big Four audit firms still dominate audits among the largest private firms. As supplier concentration in the private audit market is more varied, considering the discounts associated with switches only involving the largest eight audit firms may not, therefore, provide a true picture of initial audit pricing in the private company audit market. Moreover, recent research from the US presents evidence to show that switches between smaller auditors attract larger discounts because they are operating in a more competitive market segment (Ghosh and Lustgarten, 2006). Therefore, before it can be concluded whether competitive pricing or low-balling is present in the private firm audit market, a more comprehensive analysis of initial audit pricing and patterns of price recovery is required.

Regardless of the audit market in question, when determining the presence of an initial audit fee discount, an important factor to consider is the type of auditor change taking place. Changes between two different tiers of audit firm will involve a client moving between auditors of different reputations, thus potentially introducing bias into the results (Ghosh and Lustgarten, 2006). Although switches of different directions have been considered in previous studies, the potential bias resulting from reputational or quality differences is often overlooked or not properly factored in when analysing regression coefficients.

For example, in the initial audit pricing literature, a significant and negative coefficient is taken to imply the presence of a fee discount. However, in the case of downward switches, which involve moving from a higher- to a lower-tier auditor, a reduction in fees is to be expected because of the differences between the average client-size, as shown in Chapter 3, and the subsequent average audit fees in each tier. In this instance, caution therefore needs to be warranted in interpreting a significant and negative coefficient as evidence of a price *discount*. Similarly, the absence of a significant and positive coefficient is taken to imply that on average, initial start-up costs are being discounted because a premium has not been charged to cover them (Pong and Whittington, 1994; Peel, 2013). However, in the case of auditor upgrades, on average, a higher tier auditor is expected to have higher fees because of their client base, thus increased fees are not necessarily a premium to recover start-up costs.

In light of the above discussion, the aims of this chapter are threefold. First, in line with the overarching aim of the thesis to provide more detail on the private company audit market, the chapter will provide a comprehensive analysis of initial audit pricing and price recovery for the three years following an auditor switch for a panel of private

UK firms. Given the economic importance of private firms and the limited knowledge of their audit market (Francis et al., 2011) it is important that both academics and regulators are properly informed of audit pricing practices in the private firm audit market. As noted by Peel (2013) there are few extant academic studies that have researched the initial pricing of audit engagements comprehensively. Second, the chapter will assess the pricing of initial discounts relative to the type of auditor change that has taken place, in order to take account of the potential bias from audit quality and reputational differences. This will enable conclusions to be made about initial *discounts relative* to a reduction in audit fees.

Third, due to the focus on auditor switching, the results of the majority of prior initial audit fee literature are potentially confounded by self-selection problems. A propensity score matching technique is therefore applied to take account of this potential bias. Using this statistical technique, switching firms are matched to a non-switching firm with the closest propensity score in the year of an auditor switch with regressions then performed on a matched-pairs sample of firms. Any differences in audit fees between switching and non-switching firms are then able to be attributed to changing auditor and not to a client-firm's pre-existing characteristics (Lawrence et al., 2011).

The focus of the chapter is therefore on investigating audit pricing and recovery, the findings of which will provide valuable information to both academics and regulators regarding audit pricing in the private audit market, while also providing a comprehensive initial audit pricing study. Though inferences about auditor independence and audit quality can be made in light of the findings of the chapter, it is beyond the scope of the analysis to test these directly, thus also providing a potential avenue for future research.

The analysis is conducted using a matched-pairs sample of 1,596 private UK firms spanning an eight year period from 2005 – 2012. The findings show that a discount is associated with initial audit engagements for private firms in the UK. When auditor switches are refined by direction, the results are mixed, with physical discounts present for companies switching laterally between audit firms of the same tier and implicit discounts present for companies upgrading their auditor. When price recovery of these discounts is considered, for companies upgrading their auditor or switching laterally, audit fees increase over the following three year period, thus suggesting that low-balling is present in the private company audit market in the UK. Not only do these findings have implications for the private company audit market in the UK, but they also demonstrate the importance of considering the type of auditor change relative to the potential bias that this might introduce to results.

The remainder of the chapter is organised as follows. Section 6.2 provides a summary of prior theoretical and empirical literature on audit fee discounting. Section 6.3 poses research questions and Section 6.4 describes the data, variables and method of analysis. Section 6.5 provides descriptive statistics and results, while Section 6.6 concludes.

6.2 Literature Review: Audit Fee Discounting

6.2.1 Theoretical Explanations

Academic research has used a number of theoretical models to explain the practice of cutting fees on initial audit engagements. In one of the first theoretical models, DeAngelo (1981) defines the practice of 'low-balling' as the setting of the initial audit fee below the sum of start-up costs plus normal profits. This practice of cutting fees on

initial engagements is said to arise because incumbent auditors have comparative cost advantages over successor auditors as a result of the significant start-up costs in audit technology and the transaction costs associated with switching auditors. As a result, incumbent auditors can raise future audit fees above the avoidable costs of producing audits, subsequently earning client-specific '*quasi-rents*' (DeAngelo, 1981). A '*quasi-rent*' is defined by DeAngelo (1981) as the difference between the costs of subsequent audits and anticipated future fees, and it is competition among auditors for this stream of future quasi-rents that creates the incentives for potential successor auditors to low-ball.

With regards to the implications of low-balling on auditor independence, DeAngelo (1981) argues that the initial price discount is actually a competitive response to the expectation of future quasi-rents and it is these anticipated quasi-rents that are the real source of impaired auditor independence, not the low-balling itself as 'fee reductions are sunk in future periods' (DeAngelo, 1981, p.113). In an analysis of start-up costs on audit competition, Chan (1999) also argues that price cuts in the initial engagement year are a natural consequence of competition among audit firms but contrary to DeAngelo (1981) argues that low-balling only occurs in certain market segments where there is fierce competition between audit firms.

Dye (1991) agrees with DeAngelo (1981) and concludes that low-balling should be observed in the pricing of audit services, but offers an alternative explanation as to how this comes about. Dye (1991) argues that a critical feature of DeAngelo's (1981) model is the assumption that the incumbent auditor has superior bargaining power relative to the client and that it is this power that allows them to raise fees above costs for subsequent audits. Dye (1991) concludes that low-balling is actually driven by the non-

observability of quasi-rents, rather than the transaction costs of providing the audit services. Firms are then obligated to engage in low-balling to offset investors' expectations that auditors have agreed to attest to 'boosted' financial reports (Dye, 1991, p.363). Thus Dye's (1991) model implies that the practice of low-balling occurs because quasi-rents are not publicly disclosed.

An alternative theoretical explanation for the practice of cutting fees on initial audit engagements focuses on the information asymmetry between the incumbent and successor auditors. Schatzberg and Sevcik (1994) modify DeAngelo's (1981) model and posit that low-balling does not result from transaction costs but rather the informational advantage held by the incumbent auditor. Using a similar theory of information asymmetry between incumbent and successor auditors, Coate and Loeb (1997) claim that audit costs include a component common to all auditors but that there is also a private component which varies across auditors. It is this common component of audit costs which subsequently gives rise to a '*winner's curse*' scenario. A winner's curse is said to exist because if an auditor bidding for a new audit engagement does not consider the informational advantage held by the incumbent auditor (the private component) then they are expected to generate a loss from winning the audit engagement because they will subsequently bid a below cost price for the audit. When sophisticated bidders compete for new audits, they raise their bids by an amount to compensate for this winner's curse, and it is this adjustment in bids which is shown to play a significant role in determining the degree of low-balling (Coate and Loeb, 1997). However, they do not associate low-balling with any loss in audit quality.

The previous theoretical models have been used to explain the discounts associated with a general change in auditor. For audit changes of a particular type, for example

movements between two different tiers of auditors, Experience Good Theory has been used to explain the initial discounting of audit fees. According to the theory, brand name auditors, such as the Big Four, offer initial audit fee discounts to clients not previously audited by an auditor of the same tier in order to let them experience the quality of the audit services which they offer. Discount pricing of higher-priced higher-quality *experience* goods (such as a Big Four audit) therefore act as an incentive to purchase an audit because it helps to overcome the information asymmetry between the audit firm and the audit client regarding the quality of the services offered (Craswell and Francis, 1999).

6.2.2   Non UK-based Empirical Evidence

Empirical evidence on the initial discounting of audits fees tends to be both time and country specific and thus the findings largely depend on the audit market in question. For example, the Australian audit market studies by Francis (1984) and Butterworth and Houghton (1995) do not find any evidence of initial discounting of audit fees. Whereas a later study by Craswell and Francis (1999) finds there to be some evidence of price discounting but in the case of upward switches from a non-Big Eight to a Big Eight auditor only.

The US audit market has received the most attention from academics looking to research the pricing of initial audit engagements, and in some cases subsequent price recovery, with studies tending to report significant price discounts. Prior to 2001 US firms were not required to publicly disclose audit fees, so studies carried out before this

date rely on private surveys. [51] Using a questionnaire survey of 440 publicly traded

client-firms for the period 1979-1984, Simon and Francis (1988) find fees for initial

audit engagements to be 24% lower than for continuing engagements.[52] This discount

then drops to 15% for the next two years and following this there is no evidence of a

significant discount. Simon and Francis (1988) also repeat their analysis on a sample

limited to only those firms switching to an auditor of the same tier to mitigate any

potential confounding effects due to either technological or auditor reputation effects.

As the analysis using same-tier auditor changes produces the same results as their full

sample tests, Simon and Francis (1988) conclude that fee cutting may actually

aggravate the independence problem posed by the existence of quasi-rents discussed by

DeAngelo (1981). However tests to prove this were beyond the scope of the study.

Extending the research of Simon and Francis (1988), Ettredge and Greenberg (1990)

examine all auditor switches covered in issues of the Public Accounting Report (PAR),

an industry newsletter, for the period 1983 to 1987. For the 389 firms that switched

auditors, they also find the average discount for initial engagements to be 24%.

Similarly Turpen (1990) also surveys a sample of publicly traded US companies for the

period 1982-1984, which includes 57 initial and 89 continuing audit engagements.

Audit fees for new clients are found to be significantly lower than those for continuing

engagements (19%) with additional tests also indicating that the discount persists for the

second year following an auditor change.

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[51] On the 15th November 2001 the Securities and Exchange Commission (SEC) approved new auditor
independence requirements which apply to all proxy statements filed on or after 5th February 2001. Item
9 of the SEC's proxy regulations (Schedule 14a) requires firms to disclose information about the fees
paid to an independent auditor (Ghosh and Lustgarten, 2006, p.347).
[52] Using an unmatched control sample – Simon and Francis (1988) treat 226 firms that did not change
auditors over the period as control firms.

More recently, using publicly disclosed audit fees from Standard & Poor's, Ghosh and Lustgarten (2006) compare the initial discounts given to client-firms in different segments of the US audit market, namely the oligopolistic (containing the four largest auditors) and atomistic (containing the remaining auditors) segments. Moreover, to overcome the potential biases arising from the impact of audit quality differences between auditors, in addition to considering aggregate switches, Ghosh and Lustgarten (2006) also focus on lateral switches within each market. They find that rivalries among sellers are more intense among small audit firms and that audit fee discounting is actually more extensive in the atomistic segment, with clients receiving an initial discount of 24%, compared to a discount of 4% in the oligopolistic market. Thus the findings imply that the magnitude of discounting varies according to the degree of competition among auditors.

Using a similar methodology, for a sample of 17,602 public company firm-year observations for the period 2002 – 2005, Ghosh and Pawlewicz (2009) examine whether the practice of fee discounting on initial audit engagements changed following the implementation of the Sarbanes-Oxley Act (SOX) in 2002. Similar to Ghosh and Lustgarten (2006) they present evidence of fee discounting prior to the implementation of SOX. Following the enactment of SOX, however, price discounts only appear in the atomistic market segment, suggesting that post-SOX large audit firms in the US no longer provide fee discounts for new clients. One of the explanations put forward by Ghosh and Pawlewicz (2009) for their findings is that the increased threat of litigation limits large auditors from offering price discounts to new clients on initial audit engagements in the post-SOX years. However, although robust to alternative

specifications, their conclusions are based on an aggregate switch variable that does not take account of switch direction.

A similar US-based study by Huang et al. (2009) also presents findings to further suggest that in the post-SOX period new clients of the Big Four audit firms no longer appear to receive a discount on their audit fees. Moreover, for robustness Huang et al. (2009) also perform a matched-pairs test to ensure that their results are not being driven by industry clustering effects. After matching each switching firm with a non-switching firm on the basis of year, industry and size their results further confirm their original findings.

6.2.3   UK-based Empirical Evidence

In the UK, only a few studies have examined the pricing of initial audit engagements, fewer still which concern private firms. Pong and Whittington (1994) were the first to examine the pricing of initial audit engagements in the UK market. Using a sample of 577 large listed companies for the period 1981-1988 they document statistically significant price cutting behaviour - but only if a client-firm switched to a non-big eight auditor. However, although the tier of the new auditor was considered, the direction of the switch is not able to be determined exactly, resulting in the potential for bias in the case of downward switches. [53] They also comment 'it is also possible to argue that low-balling takes place whenever a new auditor does not charge a premium to cover set-up costs' (Pong and Whittington, 1994, p.1094).

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[53] Pong and Whittington (1994) interact the auditor change variable with a Big Eight variable. Switches to a Big Eight auditor, for example, will be therefore be inclusive of both lateral and upward switches resulting in some of the switches potentially being affected by a positive bias (upward) and other switches (lateral) not.

Building on the work of Pong and Whittington (1994), Gregory and Collier (1996) examine whether there is any evidence of fee discounting following a change in auditor, in addition to investigating whether there is any evidence of price recovery taking place in later years. For a sample of 399 listed firms for the period 1987 - 1991, they find that the initial fee reduction is both large and significant at 22.4% but that it does not persist over the following three years. Gregory and Collier (1996) also investigate whether the type of auditor change makes a difference to the fee reduction experienced, with companies switching laterally between the Big Six audit firms benefitting from a discount of 20.2%, and companies changing from a non-Big Six to a Big Six auditor benefitting from a discount of 33.6%. They take this finding to imply that in addition to offering initial fee discounts, large auditors have to forego the Big Six audit fee premium as an incentive for auditees of smaller firms to change to a premium auditor, similar to the theoretical explanation put forward by Experience Good Theory. However, due to sample selection issues and the small number of switches of a particular direction considered, they issue caution in applying their conclusions to the entire UK market for audits.

A recent study by Peel (2013) investigates whether there is competitive pricing for initial audit engagements between the Big Four and the largest four mid-tier auditors (the Mid Four). To estimate the initial engagement models Peel (2013) uses a sample of 7,651 companies, of which 6,084 are private and 1,555 are public, for the year 2007. More recent data for the year 2010 is then downloaded to test for evidence of price recovery. Peel (2013) presents evidence to show quoted companies switching auditor benefit from an average discount of 18.2%. When the switches are refined by direction Peel (2013) finds that larger quoted companies switching between the Big Four benefit

from substantial price discounts of 26.7%. Although quoted clients switching to the mid-tier auditors also attract discounts, these are found to be smaller in magnitude. However, as previously discussed, a reduction in fees is expected for switches from a higher- to a lower-tier auditor, thus it is hard to distinguish between a discount and a reduction. For the aggregate switches, Peel (2013) also provides evidence of price recovery in subsequent audits, although due to data availability he warrants caution when interpreting the results from particular price recovery years.[54]

For the sample of private firms, Peel (2013) finds the evidence to be generally consistent with initial start-up costs being discounted, but there is an absence of low-balling for switches to both Big Four and mid-tier auditors, which he attributes to factors such as the premium brand of these auditors, and the comparatively smaller market shares held by these large audit firms. [55] Despite the contributions to existing literature, Peel (2013) comments that further research on initial engagements is still warranted, particularly the use of panel models to estimate initial discount and price recovery models over a longer duration.

6.3   Development of Research Questions

Although Peel (2013) found there to be an absence of low-balling in the private audit market, it should be acknowledged that the sample was only inclusive of switches which involved the largest eight auditors. By comparison to the listed company audit

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[54] Caution is warranted in interpreting the parameters of the variable denoting the year following the initial engagement due to limited observations. For the price recovery model for all auditees there are 3, 39, 188 and 9 observations for the first to fourth years following a switch respectively (Peel, 2013, p.654).

[55] Due to data availability, Peel (2013) is unable to run a separate price recovery regression for the sample of private companies only.

market which is heavily dominated by the Big Four (Oxera, 2006), as documented in Chapter 4, supplier concentration in the private company audit market differs significantly depending on the size of the client-firm in question. For example, for a large sample of private firms Peel (1997) found the Big Six to audit 28.6% of client-firms, yet when the sample was divided by company turnover, the Big Six market share varied from 15.9% for the subdivision of the smallest to 94.1% for the subdivision of the largest private companies.

Similar to Peel (1997), Chaney et al. (2004) report that the Big Five audited around half their sample of private firms but when the sample was then divided by client-firm size the share of the Big Five varied from 28% for the smallest companies to 87% for the largest companies. As with the listed company audit market, the Big N audit firms therefore dominate the audits among the largest private firms, with supplier concentration at the upper end of the market at concerningly high levels. However, the market share of the Big N is considerably reduced when only smaller-client firms are taken into consideration. As supplier concentration in the private audit market is much more varied across different size-segments of client-firm, an analysis of price discounting in the private firm audit market would therefore benefit from considering switches involving all types of audit firm and not just the largest eight.

When it comes to changing audit firm a client will do so for a variety of reasons: audit opinions (Chow and Rice, 1982; Craswell, 1988; Citron and Taffler, 1992); a change in corporate management (Schwartz and Menon, 1985; Hudaib and Cooke, 2005); disagreements over reporting matters (DeAngelo, 1982); audit fees (Eichenseher and Shields, 1986; Magee and Tseng, 1990); and, financial distress (Schwartz and Menon, 1985; Hudaib and Cooke, 2005). For auditor switches unconnected to fee

reduction, the reasons behind the switch are therefore likely to affect the type of switch that takes place. In addition to the subsequent fees that are charged to a new client by a successor auditor relative to the incumbent auditor's fees, thus affecting the interpretation of 'price discounts' on initial audit fees.

As highlighted by Ghosh and Lustgarten (2006), if fees are on average higher for large auditors because of quality and reputational differences then estimates for auditor upgrades in a regression may be positively biased. While the parameter estimates for auditor downgrades may be negatively biased (Ghosh and Lustgarten, 2006, p.359). The only way to mitigate any potential bias from audit quality differences resulting from a change in auditor tier is to therefore look at lateral audit switches rather than upgrades or downgrades (Ghosh and Lustgarten, 2006). Lateral changes in auditor are unlikely to occur as a result of technological or reputation-related reasons because significant differences in reputation or technological ability are less likely to be observed between auditors of the same tier (Simon and Francis, 1988).[56] The potential biases therefore call into question the sensibility of considering price discounts for initial engagements on an aggregate basis. Following Simon and Francis (1988) and Ghosh and Lustgarten (2006), analysis on auditor changes according to tier are therefore likely to provide more information about price discounting in the private company audit market.

However, predicting the direction of a fee change for each different switch direction and subsequently proposing why this might be the case is not easy to do. For example,

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[56] This point was originally highlighted by Simon and Francis (1988) who repeated their analysis of price discounting using only observations auditor changes between the same tier of firm. Their results suggest that initial discounts are not driven by firms which had technological or reputational reasons for changing auditors but that they are more consistent with price cutting on new engagements (Simon and Francis, 1988).

if a company wishes to move up to a higher tier auditor because they believe that it will add credibility to the company's reported profits in the financial markets the company may not seek a reduction in the audit fee at the time of change. In fact they may even be prepared to pay a higher fee (Gregory and Collier, 1996, p.14). Another factor to take into consideration is the purported fee premium involved with big brand-name auditors such as the Big Four (e.g., Pong and Whittington, 1994; Clatworthy and Peel, 2007; McMeeking et al., 2007). In a meta-analysis of 147 published audit fee studies, Hay et al. (2006) find that the results on audit quality strongly support the observation that an audit undertaken by the Big N is strongly associated with higher fees (Hay et al., 2006, p.176) and in the UK the Big Four premium has been estimated as being as high as 18% (Oxera, 2006). Moreover, for private companies in particular, because there are not any current requirements for audit committees or tendering, it is thought that leading auditors are more likely to be directly approached by clients. Resulting in them being able to 'cherry pick' potential new clients and potentially resulting in less of a discount (Peel, 2013).

On the other hand, according to Experience Good Theory, private companies considering moving to a higher tier auditor will have imperfect information about the true 'superior' value of the audit service. In order to convince clients of their acclaimed brand name services, brand name auditors will therefore have to build their reputation to a potential private client. This can be done via a low introductory price followed by a higher regular price in subsequent periods as soon as the consumer has experienced the higher (than initially perceived) value of the good (Craswell and Francis, 1999; Dutillieux et al., 2013).

Alternatively, along a similar premise to Experience Good Theory, a larger, more reputable audit firm could agree to continue to audit the company for the same price as their previous auditor in the client's initial engagement year. On paper this would appear as if the new audit firm had not given the new client a discount, thus not flagging any independence concerns by regulators. However, the continuation of the previous auditor's fees could actually be deemed to be an 'implicit reduction'. On average, fees are higher for larger auditors mainly because of the average size of their clients. Thus when a new client moves to a larger auditor the apparent 'no discount' is actually a discount *relative* to the audit firm's average fees. Moreover, if fees then increase in the following years then the larger auditor could subsequently be accused of low-balling, despite not appearing to provide an initial 'discount'. The reason for this different approach for low-balling could be that as audit firms become larger, or more prominent, the level of litigation risk increases and auditors are subject to greater levels of scrutiny. In these situations, auditors will therefore want to remain to appear independent and not as if they are involved with low-balling as to not draw the attention of regulators.

When moving to a lower tier auditor, the presence of lower audit fees will not necessarily be due to price cutting behaviour (Simon and Francis, 1988). Fees might be lower because the reputation of the new auditor is lower. Although the direction of auditor change has been considered in prior literature, potential bias from audit quality differences is often overlooked when interpreting the coefficients on different switch variables, particularly when a client-firm moves to a lower tier auditor when it is difficult to differentiate a *reduction* in audit fees from a genuine *price discount*. Due to the potential bias to results from reputation and quality differences between auditors, when investigating initial audit pricing it is therefore important to take into account the

type of auditor switch that has occurred. At present, this issue has not been considered for the private audit market in the UK. The conflicting theories result in it being difficult to propose exact hypotheses to test so in light of the above discussion the following research question is therefore proposed for the private company audit market:

RQ1: Do private firms switching auditor receive a discount in the initial year?

A critical aspect of low-balling behaviour is the initial reduction of the audit fee followed by later price recovery (Gregory and Collier, 1996, p.14). In extant literature, the exact period of price recovery differs but tends to be over a period of 1 to 5 years (Simon and Francis, 1988; Gregory and Collier, 1996; Ghosh and Lustgarten, 2006; Peel, 2013). If discounts persist and audit fees do not recover to normal levels, an alternative conjecture put forward by Gregory and Collier (1996) is that this may actually represent 'short-cutting' of fees which might persist into future audits. The potential for short-cutting means that it is essential to consider the price recovery of initial audit fees before any conclusions can begin to be made regarding low-balling. This results in a second research question:

RQ2: Do any observed discounts provide evidence of price recovery?

6.4   Research Design and Data

6.4.1   Fee Discounting Model and Variables

To answer the research questions the following regression model is used, with the variable definitions listed in Table 6.1:

$$LNAFEE = \alpha + \beta_1 SWITCH_{i,t} + \beta_2 LNASSETS_{i,t} + \beta_3 LNSAL_{i,t} + \beta_4 SQSUBS_{i,t} +$$

$$\beta_5 REC\_INV_{i,t} + \beta_6 ROA_{i,t} + \beta_7 LEV_{i,t} + \beta_8 QUAL_{i,t} + \beta_9 BIGFOUR_{i,t} +$$

$$\beta_{10} MIDFOUR_{i,t} + \beta_{11} BUSY_{i,t} + \beta_{12} LOND_{i,t} + \beta IND_{j\,i,t} + \beta YR_{k\,i,t} + \varepsilon_{i,t}$$

$$(6.1)$$

Where i and t denote company i in year t, and *IND* is a vector of dummy industry variables and *YR* indicates dummy variables for the year of data.[57]

6.4.1.1   Switch Variables

The switch variable *(SWITCH)* is the main variable of interest in the model as it identifies any initial discounting of audit fees. In the regression models, relative to non-switching (control) companies, a statistically significant and negative coefficient would imply that price-discounting is present (Peel, 2013, p.641). However, as discussed, this should actually be interpreted in light of the direction of the switch in question. Following prior research (Simon and Francis, 1988; Gregory and Collier, 1996; Peel, 2013) implied audit fee discounts are calculated via the following transformation:

$$r = (e^x) - 1 \qquad\qquad (6.2)$$

Where x is the reported co-efficient on the *SWITCH* variable, for example, if the reported co-efficient is -0.064 the implied fee reduction is 6.20%.

It is important to remember that the coefficient on *SWITCH* captures the average effect of all switches and in later regressions the *SWITCH* variable is replaced with

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[57] Industry groupings are according to 2-digit SIC codes.

more refined switch variables to denote the direction of a switch. To determine the direction of a switch three separate tiers of auditor are considered: the Big Four, the Mid Four and Small-tier. After the Big Four, the cut-off point for leading mid-tier auditors is optional. Following Peel (2013) the group of Mid Four auditors is ascertained with reference to the FRC's 'Key Facts and Trends in the Accountancy Profession' reports for the relevant years covered by the sample period and includes: Baker Tilly, BDO, Grant Thornton and PKF (UK). As well as being differentiated from other non-Big Four audit firms in terms of income, these four mid-tier auditors are the only non-Big Four auditors covered by the ICAEW Audit Firm Governance Code.[58]

The direction of a switch is then determined by considering the tier of the previous and the new auditor, with three types of auditor switches being identified: *UPWARD* = 1 if a client-firm switches from a lower tier to a higher tier auditor, which includes changes from Small-tier to Mid Four or Big Four audit firms and changes from Mid Four to Big Four firms; *LATERAL* = 1 if a client-firm changes auditor but both the previous and new auditor are from the same tier; *DOWNWARD* = 1 if a client-firm switches from a higher tier to a lower tier auditor, which includes changes from Big Four to either Mid Four or Small-tier firms, and changes from Mid Four to Small-tier audit firms.

To test for price recovery, following Peel (2013) the *SWITCH* variable is replaced by binary variables (*SWITCH1*, *SWITCH2* and *SWITCH3*) to denote the three years following the auditor change.

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[58] The Audit Firm Governance Code, published in January 2010, applies to eight audit firms that together audit about 95% of the companies listed on the Main Market of the London Stock Exchange. For these audit firms, the code sets a benchmark for good governance which other audit firms may wish to voluntarily adopt in full or in part (ICAEW, 2010).

6.4.1.2   Control Variables

The principal determinant of audit fees has been found to be client size (e.g., Pong and Whittington, 1994; Hay et al., 2006; Peel, 2013). Pong and Whittington (1994) posit that audits have two broad dimensions, 'an audit of transactions and verification of assets, with the former related to turnover and the latter to total assets' (Pong and Whittington, 1994, p.1075). Two size variables are therefore included in the audit fee model - the logarithm of total assets *(LNASSETS)* and the logarithm of total sales *(LNSAL)* (Clatworthy and Peel, 2007; Peel, 2013).[59] Using the natural logarithm of the raw data improves the linear relationship of the size variables with audit fees (Hay et al., 2006).

In addition to the size of the client-firm, the complexity of their audit may be seen as a dimension of the amount of work involved and a subsequent measure of the time required to complete the audit (Simunic, 1980; Hay et al., 2006). In prior literature a number of proxies have been used to measure complexity, the model contains two of these: the square root of the number of subsidiaries *(SQSUBS)* and the amount of receivables and inventory scaled by total assets *(REC_INV)*.[60] Certain parts of an audit require specialised audit procedures which subsequently act to increase audit fees and potentially pose a higher risk of error and the two areas most frequently cited as being difficult to audit are inventory and receivables (Simunic, 1980; Hay et al., 2006). A

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[59] For robustness, in place of *LNSAL*, following Chaney et al. (2004), sales divided by total assets *(ATURN)* is included in an alternative specification of the model to help to attenuate collinearity with total assets. This is discussed in more detail in the results section.

[60] Following Peel (2013) the square root of the number of subsidiaries is used, rather than the log of the number of subsidiaries as sometimes used in previous studies because 42% of the sample have zero subsidiaries. The log of this variable would therefore result in almost half of the sample having missing values for this complexity measure.

combined measure is used as this has been found to act as a better proxy than considering these accounts separately (Hay et al., 2006).

Risk is also an important consideration for auditors, bearing in mind the possibility of legal action for auditor negligence and the potential loss of income from future audit services, both of which could arise from the failure of the client-firm (Pong and Whittington, 1994, p.1076). A client's profitability is considered to be a measure of risk because it reflects the extent to which an auditor could be exposed to loss in the event that a client is not financially viable (Simunic, 1980; Hay et al., 2006). Following Chaney et al. (2004) the return on assets ratio *(ROA)* is included in the model to proxy for financial risk. In addition, leverage can also be used to measure the risk of a client failing because it potentially exposes an auditor to loss (Simunic, 1980; Hay et al., 2006). To control for this, the ratio of total debt to total assets *(LEV)* is also included in the model (Chaney et al., 2004). If an auditor encounters problems when completing an audit it can also increase the risk assumed by the auditor due to the additional work required which can subsequently act to increase audit fees (Simunic, 1980). The most common proxy for this is a dummy variable *(QUAL)* to indicate the issuance of an audit opinion other than unqualified (Hay et al., 2006).

Prior literature also strongly supports the observation that the Big N audit firms are associated with higher audit fees (Hay et al., 2006). Following Peel (2013) A binary variable denoting a Big Four audit firm *(BIGFOUR)* is included in the model. Following Clatworthy and Peel (2007), a dummy variable indicating a Mid Four auditor *(MIDFOUR)* is also included. In addition to the type of auditor employed, a variable to denote whether a client's year-end falls in December or March known as the 'busy' audit period is also included in the model *(BUSY)*. Any audits conducted during this

time may be more costly if audit staff are required to work additional hours. Conversely, audit firms might offer discounted audit fees for work outside of this period (Hay et al., 2006; Peel, 2013). A variable to denote whether the auditee is located in London *(LOND)* where fees are expected to reflect higher cost of living differentials is also included (Peel, 2013). Audit fees have been reported to differ systematically by industry sectors (Gregory and Collier, 1996; Peel, 2013), following Peel (2013) the model also includes industry dummy variables *(IND)* based on a company's 2-digit SIC code. These variables are unreported for brevity.

Table 6.1 Variable definitions

Variables	Definition
Audit Fee Related Variables	
AFEE	Audit fees
CHG_AFEE	Change in audit fees from previous year
LNAFEE	Natural log of audit fees
Dependent Variables	
ASSET	Total assets
ATURN	Sales divided by total assets
BIGFOUR	1 if the auditor is one of the Big Four, 0 otherwise
BUSY	1 if a company has their year-end in March or December, 0 otherwise
LEV	Ratio of total debt to total assets
LNASSET	Natural log of total assets
LNSAL	Natural log of total sales
LOND	1 if company is located in London, 0 otherwise
MIDFOUR	1 if the auditor is one of the Mid Four, 0 otherwise
QUAL	1 if the company has a qualified audit report, 0 otherwise
REC_INV	Trade receivables plus inventory divided by total assets
ROA	Net income divided by total assets
SAL	Total sales
SQSUBS	Square root of the number of subsidiaries
Switch Variables	
SWITCH	1 if a company switched auditor, 0 otherwise
UPWARD	1 if a company switches auditor with the direction of the change being from a lower to a higher tier auditor. This includes: Small-tier to Mid Four; Small-tier to Big Four; Mid Four to Big Four.
LATERAL	1 if a company switches between auditors of the same tier.
DOWNWARD	1 if a company switches auditor with the direction of the change being from a higher to a lower tier auditor. This includes: Mid Four to Small-tier; Big Four to Small-Tier; Big Four to Mid Four.
Price Recovery Variables	
SWITCH1	1 if the first year after an auditor switch has taken place, 0 otherwise.
SWITCH2	1 if the second year after an auditor switch has taken place, 0 otherwise.
SWITCH3	1 if the third year after an auditor switch has taken place, 0 otherwise.

6.4.2 Data

Consistent with prior studies examining the audit market for private UK companies, the data for this sample is extracted from the *Bureau Van Dijk* 'Financial Analysis Made Easy' (FAME) database. To ensure that no firms in the sample have an individual shareholder with sole power to influence the choice of auditor when switching, the sample is started by selecting all active independent, private companies with audited financial statements for the period 2005-2012.[61] Next, firms identified as switching status from a private to public or public to private company during the sample period are removed. Further, to identify and remove firms within the financial or utilities sectors only companies with a valid SIC (2007) code are retained. Firms in these industries have unique operating and reporting requirements and are therefore subject to different audit requirements and regulations which could result in them being more inclined to choose a particular audit firm (Dedman and Kausar, 2012).

From this sample, firms without the necessary annual accounting data such as total assets, a minimum turnover of £1,000, a disclosed profit or loss figure, a minimum audit fee of £1,000, and a registered office location are removed.[62] A firm's registered office location is taken into consideration because audit fees of firms located in particular regions, for example London, are expected to reflect the higher cost of living differentials (Peel, 2013) which may affect the fees charged should they switch audit

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[61] The FAME database characterises the degree of independence of a company with regard to the ownership of shareholders and included in the download are companies which do not possess a single shareholder with enough power to solely influence auditor choice. This is discussed in more detail in Chapter 3.

[62] Oxera (2006) finds median audit fees as a percentage of company turnover for FTSE 100 firms to be 0.05%, increasing to 0.20% for the smaller FTSE fledgling companies. In a sample of smaller private firms, audit fees as a percentage of sales is expected to be higher than those for listed firms and a fees to sales ratio of 10% would provide a minimum fee threshold of £1,000 (based on the minimum turnover in the final sample being £13,000).

firm. Companies with non-consecutive panels of data are also removed as it prevents identification of a potential auditor change in the missing year. Following Ball and Shivakumar (2005) all firm-years where either the key accounting or audit information is missing or internally inconsistent are excluded. As a final data filter, accounting variables are trimmed at the 1% and 99% levels.[63]

Following this, using the individual company records, current and prior year auditors are compared to identify instances where a change in auditor has taken place. Companies with joint auditors are excluded from the sample as a change in one auditor could not be captured in the binary switching variable. In addition, auditor switches resulting from audit firm mergers are removed, as are companies switching multiple times during the panel. These companies are removed as not to confound the inferences being made from the switching models and to ensure switching rates only account for a client-firm changing their audit firm to another non-related audit firm.

Moreover, by investigating the effect of involuntary auditor changes (as opposed to audit firm mergers) any price discounts and subsequent price recovery observed will provide evidence of low-balling rather than observing economies of scale or scope (Gregory and Collier, 1996). The sample selection process results in a final sample of 34,525 observations for 8,215 independent companies for the period 2005 to 2012, during which 981 client-firms switch auditors.[64]

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[63] For example, profit to sales ratio, fees to sales ratio, return on assets and percentage change in audit fees.

[64] As auditor information is not available for the year prior to 2005, firms switching auditors are unable to be identified in this year. Auditor switches in the final sample therefore span 2006-2012, with 2005 used to provide data for lagged variables for switching and control firms before being removing the year from the sample.

6.4.3   Propensity Score Matching

It is widely accepted in principle that clients self-select their auditors which subsequently results in the potential for coefficient bias in estimation procedures such as ordinary least squares (OLS) (Maddala, 1991; Chaney et al., 2004; Clatworthy et al., 2009; Lawrence et al., 2011; Eshleman and Guo, 2014). As the study concerns the decision to change auditors, the issue of self-selection is therefore relevant. To address the issue of self-selection, much of the accounting literature uses the Heckman (1979) two-step procedure (e.g., Chaney et al., 2004; Mansi et al., 2004; Pittman and Fortin, 2004). However, successful application of this model relies on the identification of exclusion restrictions, for example (in the case of this study) finding an exogenous variable that is related to the probability of switching auditor in the first stage model, but that does not associate with the dependent variable in the second stage model. In practice this is very difficult to do, being referred to as an 'intractable task' by Lennox and Pittman (2010). In addition to the difficulties in implementing the two-step procedure the approach is susceptible to econometric problems (Puhani, 2000; Lennox and Pittman, 2010), with the Heckman two-step model recently shown to be sensitive to both model specification and sample composition (Lennox et al., 2011).

Consequently, as a result of the challenges associated with the Heckman two-step procedure, many studies have applied a propensity score matching approach to control for self-selection bias e.g., Clatworthy et al. (2009), Boone et al. (2010), Lawrence et al. (2011), and Eshleman and Guo (2014). Propensity score matching, originally developed by Rosenbaum and Rubin (1983), is a statistical matching technique which attempts to estimate the effect of a treatment (for example, switching auditors) conditional on a vector of characteristics which predict receiving the treatment in the

first place. In the current context it has been found to be superior to the Heckman two-step model because it does not involve the identification of an exogenous variable that meets the required exclusion criteria (Lennox and Pittman, 2010; Eshleman and Guo, 2014).

The first step in propensity score matching is to run a logit propensity score model on the complete set of firms (switching and non-switching) within each year, on variables which have been shown in prior literature to act as determinants for an auditor switch. Following Eshleman and Guo (2014) a logit regression is used to estimate the model and is as follows:

$$Prob(Treat = 1) = \frac{1}{1 + e^{-\beta X}} \ where:$$

$$\beta X = \ \alpha_0 + \ \alpha_1 LNASSETS_{i,t-1} + \alpha_2 ATURN_{i,t-1} + \alpha_3 CURR_{i,t-1} + \alpha_4 LEV_{i,t-1}$$
$$+ \alpha_5 ROA_{i,t-1} + \alpha_6 REC\_INV_{i,t-1} + \alpha_7 QUAL_{i,t-1} + \ \alpha IND_{j\ i,t}$$
$$+ \alpha YR_{k\ i,t} + \ \varepsilon_{i,t}$$

(6.3)

Where *Treat* = 1 if the firm is in the treatment group (i.e. switched auditor during the panel). Subscripts *i* and *t* indicate firm and year respectively, *IND* is a vector of dummy industry variables and *YR* indicates dummy variables for the year of data. The remaining independent variables are defined in Table 6.1.

Following prior literature a number of controls are included in the model. The natural logarithm of total assets *(LNASSETS)* and the level of sales divided by total

assets *(ATURN)* are included in the model to control for size (Chaney et al., 2004). The current ratio *(CURR)*, the ratio of debt to total assets *(LEV)*, and return on assets *(ROA)* are included to control for a client's financial status (Landsman et al., 2009; Eshleman and Guo, 2014). Receivables and inventory as a fraction of total assets *(REC_INV)* are also included in the model to control for the level of inherent risk (Landsman et al., 2009). Finally, a dummy variable *(QUAL)* is included to indicate the issuance of an audit opinion other than unqualified to proxy for risk in completing the audit (Krishnan and Krishnan, 1997; Landsman et al., 2009). As with prior switching studies, the variables are one-year lagged.

The fitted values of the logit model represent the propensity scores, or the probability that a firm switches auditor, given the set of independent variables. After obtaining the propensity scores each treatment (switching) firm is matched with the control (non-switching) firm with the closest fitted value in the same year within a caliper of 0.03 following (Lawrence et al., 2011). The matching with replacement is used, with matches restricted to the common range of propensity scores. Matching with replacement reduces the bias in the treatment effect, because each treatment firm can be matched to the closest control firm even if that control firm is already matched to another treatment firm (DeFond et al., 2014, p.10). In effect, the propensity score matching procedure creates a pseudo 'random' sample that consists of two groups of firms – treatment and control. Any differences between the two groups can therefore be attributed to the treatment effect and not to the client-firm's pre-existing characteristics (Lawrence et al., 2011).

The procedure results in a final sample of 798 pairs of treatment and matched control firms on which the regression analysis to test for the presence of price discounting will

be performed.[65] Following an auditor switch, existing studies indicate that fees return to normal levels over periods of 1-5 years (Simon and Francis, 1988; Gregory and Collier, 1996; Ghosh and Lustgarten, 2006). To test for price recovery, as the analysis will no longer be focussed on price discounting, the year of the auditor switch and the three years following a change in auditor will therefore be examined. In order to be included in the price recovery sample companies are therefore required to possess complete data for the year of the switch and the following three years. This restriction limits the switches that can be examined to the years 2006 – 2009 which reduces the sample to 246 matched-pairs of treatment and control firms.

6.5   Descriptive Statistics and Results

6.5.1   Descriptive Statistics

Table 6.2 presents descriptive statistics for the key variables used to investigate price discounting and presents the mean, median and standard deviation for all variables for the matched-pairs sample of 1,596 treatment and control firms, containing 5,490 firm-year observations for the period 2005 – 2012.

Table 6.2 shows companies in the sample have average total assets and sales of £52.2 million and £31.7 million respectively, and average audit fees are around £23,000.   On average, approximately a third of current assets are made up of receivables and inventory and companies have a very small number of subsidiaries, the average likely being driven by the 42% that have no subsidiaries, hence the need for a second complexity variable.   Only a small number of firms receive an audit

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[65] Of the 981 companies switching auditor 798 are matched to a suitable control firm using a caliper of 0.03. The remaining 183 switching firms are not deemed to have a match close enough, even when with replacement is used, and are therefore not included in the final matched sample.

qualification during the panel and on average 60% of firm-year observations have audits during the 'busy' audit period.

Table 6.2 Descriptive statistics for the full matched-pairs sample

Variables	Full matched-pairs sample (5,490 firm-years)		
	Mean	Median	Standard Dev.
AFEE (£m)	0.023	0.012	0.058
LNAFEE	9.439	9.393	1.024
ASSETS (£m)	52.200	7.240	566.000
SAL (£m)	31.700	9.705	148.000
SQSUBS	1.065	1.000	1.207
REC_INV	0.271	0.228	0.245
ROA	0.050	0.033	0.156
LEV	0.612	0.593	0.408
QUAL	0.023	0.000	0.149
BIGFOUR	0.182	0.000	0.386
MIDFOUR	0.147	0.000	0.354
BUSY	0.576	1.000	0.494
LOND	0.202	0.000	0.402

The table displays descriptive statistics for the 798 pairs of matched treatment and control firms for the period 2005-2012. Please see Table 6.1 for variable definitions.

Table 6.3 presents both a Spearman and Pearson correlation matrix for the main variables included in the fee discount models using the matched-pairs sample. Consistent with the expectation that larger firms will have larger audit fees, Table 6.3 reports a high correlation between size *(LNASSETS and LNSAL)* and audit fees *(LNAFEE)*. The majority of the remaining correlations are below 0.30.

Table 6.3 Correlation matrix for the key variables used in the price discounting and price recovery models

Spearman (below the diagonal) and Pearson (above the diagonal) correlations

Variable	LNAFEE	LNASSETS	LNSAL	SQSUBS	REC_INV	ROA	LEV	QUAL	BIGFOUR	MIDFOUR	BUSY	LOND
LNAFEE		0.760*	0.786*	0.617*	0.056*	-0.146*	0.003	0.021	0.254*	0.132*	0.083*	-0.034
LNASSETS	0.730*		0.744*	0.521*	-0.119*	-0.206*	-0.112*	0.036	0.235*	0.109*	0.060*	-0.148*
LNSAL	0.750*	0.720*		0.449*	0.255*	-0.086*	0.044	-0.051*	0.206*	0.058*	0.023	-0.159*
SQSUBS	0.630*	0.552*	0.448*		-0.050*	-0.108*	-0.043	0.050*	0.078*	0.142*	0.045	-0.097*
REC_INV	0.131*	-0.107*	0.324*	0.003		0.037	0.142*	-0.068*	-0.060*	-0.042	-0.042	-0.040
ROA	-0.137*	-0.182*	0.00	-0.162*	0.119*		-0.135*	-0.024	-0.036	-0.042	-0.020	0.065*
LEV	0.027	-0.078*	0.099*	-0.031	0.182*	-0.179*		-0.055*	0.089*	0.009	0.003	0.040
QUAL	0.029	0.048*	-0.051*	0.059*	-0.079*	-0.015	-0.076*		-0.025	0.043	0.040	0.002
BIGFOUR	0.236*	0.212*	0.193*	0.072*	-0.054*	-0.034	0.066*	-0.025		-0.196*	0.067*	-0.023
MIDFOUR	0.146*	0.116*	0.057*	0.138*	-0.034	-0.046*	0.021	0.043	-0.196*		0.018	-0.007
BUSY	0.067*	0.045	0.024	0.048*	-0.045	-0.026	-0.007	0.040	0.067*	0.018		0.054*
LOND	-0.034	-0.133*	-0.159*	-0.109*	-0.069*	0.044	0.009	0.002	-0.023	-0.007	0.054*	

Correlations are shown for the full matched-pairs sample containing 5,490 firm-year observations. * denotes correlation coefficient is significant at the 5% level for two-tailed tests. Please see Table 6.1 for variable definitions.

Table 6.4 Descriptive statistics: matched-pairs and price recovery sample

Panel A: Matched-pairs sample (798 switches)

	Switch type		
	Upward	Lateral	Downward
Proportion of total switches (%)	11.40	64.00	24.60
Audit fees (£m)	0.03	0.02	0.02
Change in fees (%)	0.15	0.04	-0.10
Assets (£m)	28.10	64.60	24.90
Sales (£m)	42.60	35.80	22.90
Return on Assets	0.03	0.07	0.02

Panel B: Price recovery sample (246 switches)

	Switch type		
	Upward	Lateral	Downward
Proportion of total switches (%)	11.40	50.80	37.80
Audit fees (£m)	0.02	0.02	0.03
Change in fees (%)	0.13	0.08	-0.05
Assets (£m)	21.50	39.60	27.60
Sales (£m)	27.30	38.60	27.80
Return on Assets	0.04	0.07	0.01

The figures shown for audit fees, change in fees, assets, sales, and return on assets are the averages for each switch type for the year of the switch only.

Table 6.4 provides information on the composition of the different switch types, for both the matched-pairs sample and the price recovery sample, in addition to key size and profitability measures. Table 6.4 Panel A shows that of the 798 switches in the matched-pairs sample, the majority are between auditors of the same tier (64.0%), with upgrades and downgrade accounting for 11.4% and 24.6% of total switches respectively. On average, companies upgrading auditor see an increase in fees by 15% whereas companies downgrading auditor experience a decrease in fees by 10%. To test

for price recovery, as previously mentioned, only the year of the switch and the following three years will be included in the regression model. This restriction limits the switches that can be examined to the years 2006 – 2009, which reduces the sample to 246 matched-pairs of treatment and control firms.

Table 6.4 Panel B shows the composition of switch types is relatively similar across the two samples, with the majority of switches being lateral switches (50.8%). Companies upgrading auditor still experience a similar increase in fees, 13% on average, and companies downgrading auditor experience a decrease in fees, 5% on average. The average size of each company, and hence audit fees, also remains largely similar across the two samples, as does average profitability.

6.5.2   Regression Results: Fee Discounting

Table 6.5 presents the price discount regression models for all aggregate switches *(SWITCH)*. The table presents the mean coefficients, two tailed p-values, and R^2 values. In addition, the models include controls for the industry classification and year, but are not reported in the table for brevity. Standard errors are adjusted for firm level clustering, and are robust to heteroscedasticity and autocorrelation. With reference to the R^2s, all multivariate regression models appear well determined.

Table 6.5 Regression results: price discounting model for aggregate switches

$$LNAFEE = \alpha + \beta_1 SWITCH_{i,t} + \beta_2 LNASSETS_{i,t} + \beta_3 LNSAL_{i,t} + \beta_4 SQSUBS_{i,t} + \beta_5 REC\_INV_{i,t}$$
$$+ \beta_6 ROA_{i,t} + \beta_7 LEV_{i,t} + \beta_8 QUAL_{i,t} + \beta_9 BIGFOUR_{i,t} + \beta_{10} MIDFOUR_{i,t}$$
$$+ \beta_{11} BUSY_{i,t} + \beta_{12} LOND_{i,t} + \beta IND_{j\ i,t} + \beta YR_{k\ i,t} + \varepsilon_{i,t}$$

Variables	Exp. sign	Column (1)	Column (2)
Constant		8.808***	1.772***
		(0.000)	(0.000)
SWITCH	?	-0.190***	-0.051***
		(0.000)	(0.006)
LNASSETS	+		0.179***
			(0.000)
LNSAL	+		0.268***
			(0.000)
SQSUBS	+		0.216***
			(0.000)
REC_INV	+		-0.066*
			(0.063)
ROA	-		-0.164***
			(0.000)
LEV	+		-0.006
			(0.725)
QUAL	+		0.177***
			(0.000)
BIGFOUR	+		0.198***
			(0.000)
MIDFOUR	+		0.137***
			(0.000)
BUSY	+		0.052***
			(0.000)
LOND	+		0.258***
			(0.000)
Industry fixed effects		Yes	Yes
Year fixed effects		Yes	Yes
Obs.		5,490	5,490
R-squared		0.140	0.781

The regression is performed on the complete matched-pairs sample which includes 1,596 matched treatment and control firms and 798 switches for the period 2005-2012. The results are robust to heteroscedasticity and autocorrelation and are reported after controlling for firm level clustering. Two-tailed p-values are presented in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% percent levels respectively. For variable definitions see Table 6.1.

With regards to the control variables, the model in Column 2 shows that the majority

of the control variables attract coefficients with the expected sign and most are highly

significant. The positive and significant coefficients on *LNASSETS* and *LNSAL* show that, as expected, the size of a company is a significant driver of audit fees.[66] The two complexity variables provide mixed findings, the presence of subsidiaries (*SQSUBS*) increases audit fees, but the amount of receivables and inventory (*REC_INV*) do not, which suggests that these balance sheet items are potentially not as much of a factor for the audit fees of private companies relative to listed companies. The coefficient on *ROA* is also in the expected direction and significant, thus implying that profitability helps to reduce fees. Taken together, size and profitability both appear to be contributing factors when determining audit fees.

In addition to the size of a client-firm, the presence the issuance of a qualified audit opinion (*QUAL*), if a client firm has their audit during the busy audit period (*BUSY*), or is located in London (*LOND*) also act to increase fees. As previously discussed, larger client-firms are more likely to be audited by a larger audit firm so the average audit fees of larger auditors are likely to reflect the size of their clients which is reflected in the positive and significant coefficients on *BIGFOUR* and *MIDFOUR*.

The first research question asks whether a price is discount associated with initial audit engagements, regardless of the type of switch in question. Starting with the model without controls in Column 1, the coefficient on the *SWITCH* variable is negative (-0.190) and statistically significant. Using this coefficient in the transformation in Equation (6.2) the 798 companies which changed auditors benefit from a mean discount of 17.3% relative to the matched sample of continuing audits, implying that price-

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[66] To address the potential multicollinearity concerns associated with the inclusion of two size variables in the regressions in Table 6.4, following Chaney et al. (2004) the regressions are repeated with the logarithm of total assets *(LNASSETS)* and asset turnover *(ATURN)* to attenuate the collinearity with total assets. This is discussed further in the robustness section.

discounting is present. When the same model is run including the control variables, (Column 2) the coefficient on *SWITCH* is again negative (-0.051) and statistically significant, and implies a mean discount of 5.0% relative to non-switching firms. These findings are in contrast to the findings of Peel (2013), who did not find a significant negative switch coefficient for his sample of private firms. The differences between these findings and those of Peel (2013) can be attributed to the different groups of audit firms considered which, highlights the importance of considering price discounting for all audit firms and not just the largest eight when focusing on the private company audit market. These results answer the first research question and imply that price discounting is present for private companies switching auditors. However, the *SWITCH* variable needs to be refined before true price discounts can be identified and generalisations can be made.

Although the coefficient on the aggregate switch variable (*SWITCH*) is negative and significant, as discussed in Section 6.3, a lower audit fee in the initial year with a new audit firm does not necessarily imply the presence of an audit fee discount. Similarly, the lack of one does not imply the absence of a discount either. Changes in audit fee need to be evaluated in terms of the auditor change in question. Table 6.6 therefore presents the price discount regression models for the refined switch variables *(UPWARD*, *LATERAL* and *DOWNWARD)*. As with the first set of regressions, the majority of the control variables attract coefficients with the expected sign and most are highly significant.

Table 6.6 Regression results: price discounting model for directional switches

$$LNAFEE = \alpha + \beta_1 SWITCH_{i,t} + \beta_2 LNASSETS_{i,t} + \beta_3 LNSAL_{i,t} + \beta_4 SQSUBS_{i,t} + \beta_5 REC\_INV_{i,t}$$
$$+ \beta_6 ROA_{i,t} + \beta_7 LEV_{i,t} + \beta_8 QUAL_{i,t} + \beta_9 BIGFOUR_{i,t} + \beta_{10} MIDFOUR_{i,t}$$
$$+ \beta_{11} BUSY_{i,t} + \beta_{12} LOND_{i,t} + \beta IND_{j\,i,t} + \beta YR_{k\,i,t} + \varepsilon_{i,t}$$

Variables	Exp. sign	Column (1)	Column (2)	Column (3)	Column (4)	Column (5)	Column (6)
Constant		9.905***	9.357***	8.389***	1.996***	1.860***	1.887***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
UPWARD	?	0.024			-0.052		
		(0.807)			(0.346)		
LATERAL	?		-0.233***			-0.057**	
			(0.000)			(0.016)	
DOWNWARD	?			-0.115*			-0.012
				(0.069)			(0.739)
LNASSETS	+				0.186***	0.173***	0.193***
					(0.000)	(0.000)	(0.000)
LNSAL	+				0.279***	0.277***	0.226***
					(0.000)	(0.000)	(0.000)
SQSUBS	+				0.221***	0.215***	0.207***
					(0.000)	(0.000)	(0.000)
REC_INV	+				-0.225**	-0.067	0.055
					(0.031)	(0.138)	(0.406)
ROA	-				-0.070	-0.073	-0.367***
					(0.702)	(0.166)	(0.004)
LEV	+				0.028	-0.019	0.009
					(0.445)	(0.357)	(0.838)
QUAL	+				0.077	0.175***	0.125
					(0.590)	(0.002)	(0.229)
BIGFOUR	+				0.089	0.184***	0.220***
					(0.104)	(0.000)	(0.000)
MIDFOUR	+				0.049	0.180***	0.160***
					(0.316)	(0.000)	(0.000)
BUSY	+				0.115***	0.036**	0.091***
					(0.009)	(0.048)	(0.001)
LOND	+				0.429***	0.234***	0.239***
					(0.000)	(0.000)	(0.000)
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Obs.		620	3,348	1,522	620	3,348	1,522
R-squared		0.322	0.186	0.291	0.844	0.798	0.778

The regression is performed on the complete matched-pairs sample which includes 1,596 matched treatment and control firms and 798 switches for the period 2005-2012. The results are robust to heteroscedasticity and autocorrelation and are reported after controlling for firm level clustering. Two-tailed p-values are presented in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% percent levels respectively. For variable definitions see Table 6.1.

Columns 1 and 3 of Table 6.6 present the regression results for the price discount model using the refined switch variable *UPWARD*, excluding and then including the control variables respectively. In the specification of the model without controls, the coefficient on *UPWARD* is positive but insignificant, whereas in the model with controls the coefficient is negative and insignificant. According to traditional price-discounting literature, the absence of a negative and significant coefficient on the switch variable implies that price discounting is not present. However, it is also possible to argue that low-balling has taken place whenever a new auditor does not charge a premium to cover set-up costs (Pong and Whittington, 1994, p.1094).

The findings could be indicative of larger audit firms using an alternative form of low-balling, as to prevent drawing attention to the fact that they are participating in something which could potentially be seen as impairing their independence. Rather than reducing fees below the figure of the previous year, which would result in a negative and significant coefficient, the higher-tier audit firm agrees to carry out the initial year audit at the same price as the previous lower-tier auditor. This is despite the costs to the auditor involved with a first-year audit and the higher average audit fees associated with higher-tier auditors, thus the discount is *implicit*. Moreover, if the audit fees in subsequent years increase then it can be argued that the practice of low-balling is present. The subsequent analysis on price recovery in the following section will be able to confirm or refute this supposition.

Columns 2 and 4 of Table 6.6 present the regression results for the price discount model using the refined switch variable *LATERAL*, excluding and then including the control variables respectively. As aforementioned, the only way to mitigate any potential bias from audit quality differences resulting from a change in auditor tier is to

look at lateral audit switches rather than upgrades or downgrades because they are unlikely to occur as a result of technological or reputation-related reasons (Simon and Francis, 1988; Ghosh and Lustgarten, 2006). For both specifications of the model, the coefficients on *LATERAL* are negative (-0.223, -0.057) and significant, implying average discounts of 20.0% and 5.5% respectively.

Columns 3 and 6 of Table 6.6 present the regression results for the price discount model using the refined switch variable *DOWNWARD*, excluding and then including the control variables respectively. For both specifications of the model, the coefficient is negative, and only just significant in the model without control variables. When interpreting this coefficient it is important to remember that fees might be lower for firms who switch from a large to a small audit firm because the quality of the new auditor is lower and this lower fee can erroneously be interpreted as fee discounting (Ghosh and Lustgarten, 2006). For the downward switches, the absence of a significant coefficient in the model including controls is therefore in line with expectations. The negative sign simply confirms (in this case) that audit fees are reduced relative to the fees of the previous year. This is not necessarily a discount per se.

In summary, of the three refined switch variables only the coefficients on *LATERAL* show there to be an initial price discount (in the traditional sense). The negative and significant coefficient provides evidence of an initial price discount for clients moving between auditors of the same tier, i.e. from one direct competitor to another. Although the coefficient on *UPWARD* is not significant, it does not imply that price discounts are not given to new clients upgrading their auditor. Rather, it implies that instead of an actual discount being given to new clients, i.e. a reduced fee relative to the previous year's fee, auditors hold audit fees constant for the initial year with a new client - thus

the discount is implicit. In light of these findings, the next step is to determine whether audit fees increase in subsequent periods to identify whether there is evidence of price recovery of initial audit fee discounts – in terms of both actual discounts and implicit discounts.

6.5.3   Regression Results: Price Recovery

As Peel (2013) points out, previous studies test for evidence of price recovery by including variables to represent companies which had switched auditors in previous periods and they were not the same companies which had been the subject of the tests for initial audit engagement discounts (Peel, 2013, p.652). This results in the possibility that tests for price recovery are being conducted on companies where initial discounts on audit fees were not actually received. The sample used in this chapter is a panel, thus the same companies which were tested for initial discounts can be tested for price recovery.

Using the same regression model as in Equation (6.1), following Peel (2013) the *SWITCH* variable is replaced with variables which are coded to denote whether a subsequent audit is for the first *(SWITCH1)*, second *(SWITCH2)* or third *(SWITCH3)* year following the initial audit engagement. In order to be able to follow the same company's initial engagement audit fees and the subsequent recovery of these fees the three years following the switch are required. This reduces the sample to switches which occurred between 2006 and 2009 and leaves 246 pairs of treatment and matched control firms in the sample, for which there is a similar composition of upward, lateral and downward switches as in the original matched-pairs sample.

Although the requirement for three years of data following the initial engagement year reduces the number of switches for analysis, there are an equal number of

observations for each of the price recovery years. A facet of price recovery analysis that is unique to this study. Table 6.7 provides the regression results for the price recovery models. In Table 6.7, Column 1, the recovery patterns of all aggregate auditor switches are reported. Following the initial engagement year the coefficients on the *SWITCH* variables become positive, which implies that the initial discount given to firms following a switch is only provided in the first year with a new auditor.

In the remaining Columns of Table 6.7, price recovery patterns for auditor switches refined with respect to direction are reported. As discussed in the previous section, although companies upgrading their auditor did not receive a physical discount, the absence of a significant increase in fees implied that there could be a different form of low-balling present which could only be determined once the pattern of price recovery was also considered. In the years following an upward switch (Column 2) the coefficients on the switch variables become positive. This finding, coupled with the absence of an initial discount suggests that larger audit firms do take part in 'low-balling' to secure new clients, albeit in a different form to the traditional physical discount focused on in the majority of prior literature.

Table 6.7 Regression results: price recovery model

$$LNAFEE = \alpha + \beta_1 SWITCH1_{i,t} + \beta_2 SWITCH2_{i,t} + \beta_3 SWITCH3_{i,t} + \beta_4 LNASSETS_{i,t} + \beta_5 LNSAL_{i,t}$$
$$+ \beta_6 SQSUBS_{i,t} + \beta_7 REC\_INV_{i,t} + \beta_8 ROA_{i,t} + \beta_9 LEV_{i,t} + \beta_{10} QUAL_{i,t}$$
$$+ \beta_{11} BIGFOUR_{i,t} + \beta_{12} MIDFOUR_{i,t} + \beta_{13} BUSY_{i,t} + \beta_{14} LOND_{i,t} + \beta IND_{j\,i,t}$$
$$+ \beta YR_{k\,i,t} + \varepsilon_{i,t}$$

Variables	(1) All switches	(2) Upward	(3) Lateral	(4) Downward
Constant	1.316***	1.694**	1.269***	1.612***
	(0.000)	(0.013)	(0.000)	(0.000)
SWITCH1	0.001	0.022	0.022	0.003
	(0.984)	(0.798)	(0.605)	(0.954)
SWITCH2	0.015	0.162	0.089*	-0.031
	(0.690)	(0.147)	(0.071)	(0.610)
SWITCH3	0.023	0.154	0.131**	-0.023
	(0.579)	(0.281)	(0.025)	(0.750)
LNASSETS	0.193***	0.225***	0.176***	0.231***
	(0.000)	(0.001)	(0.000)	(0.000)
LNSAL	0.282***	0.262***	0.311***	0.216***
	(0.000)	(0.001)	(0.000)	(0.000)
SQSUBS	0.207***	0.233***	0.202***	0.201***
	(0.000)	(0.000)	(0.000)	(0.000)
REC_INV	0.029	-0.032	-0.079	0.133
	(0.610)	(0.845)	(0.317)	(0.111)
ROA	-0.172**	-0.938***	-0.072	-0.267
	(0.034)	(0.0014)	(0.190)	(0.234)
LEV	-0.114***	-0.307***	-0.084***	-0.136*
	(0.000)	(0.003)	(0.002)	(0.075)
QUAL	0.106	0.145	-0.052	0.271**
	(0.177)	(0.585)	(0.660)	(0.017)
BIGFOUR	0.133***	0.073	0.141***	0.027
	(0.000)	(0.485)	(0.001)	(0.712)
MIDFOUR	0.064**	0.270***	0.154***	0.079
	(0.024)	(0.004)	(0.001)	(0.183)
BUSY	0.018	0.261***	0.010	0.030
	(0.460)	(0.002)	(0.783)	(0.458)
LOND	0.260***	0.380***	0.222***	0.245***
	1.316***	1.694**	1.269***	1.612***
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	1,968	224	1,000	744
R-squared	0.797	0.907	0.844	0.813

The regression is performed on a sub-sample of the matched-pairs sample and includes matched treatment and control firms for the year of the switch and for the three years following the switch which includes 246 switches which occur between 2005 and 2012. The results are robust to heteroscedasticity and autocorrelation and are reported after controlling for firm level clustering. Two-tailed p-values are presented in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% percent levels respectively. For variable definitions see Table 6.1.

As reported in the previous section, the only refined switch variable showing an

initial price discount to be present (in the traditional sense) was *LATERAL*. Table 6.7,

Column 3 reports that for the first year following a lateral switch the coefficient on *SWITCH1* is positive and insignificant, suggesting that the discount does not carry on past the first year. Following this in the second *(SWITCH2)* and third *(SWITCH3)* years the coefficients are positive and become increasingly significant, thus implying an increase in fees in these years. These findings provide strong evidence of low-balling for private companies switching laterally. Moreover, they also raise concerns regarding the independence and quality of auditors who are willing to discount the initial fees for client-firms previously audited by their direct competitors.

For companies downgrading their auditor (Column 4) the coefficients largely remain negative and significant, thus suggesting that fees remain reduced in the years following a change to a lower tier auditor. This finding is line with expectations, a company changing to a lower tier auditor receives lower audit fees to reflect this, and it is important to think of these reduced fees as a *reduction* rather than as a discount per se. As discussed, this concept is often overlooked by literature considering the low-balling of audit fees.

6.5.4   Robustness

To address the potential multicollinearity concerns associated with the inclusion of two size variables in the initial price discounting regressions, for robustness, following Chaney et al. (2004) the regressions are repeated with asset turnover *(ATURN)* in place of the log of total sales *(LNSAL)* to attenuate the collinearity with total assets. Table 6.8 therefore reports the regression results when the price discount regressions for the aggregate switch model (Column 1) and directional switch models (Columns 2 – 4) are repeated with the alternative size measure, asset turnover *(ATURN)*.

Table 6.8 Additional price discount regressions: alternative size measures

$$LNAFEE = \alpha + \beta_1 SWITCH_{i,t} + \beta_2 LNASSETS_{i,t} + \beta_3 ATURN_{i,t} + \beta_4 SQSUBS_{i,t} + \beta_5 REC\_INV_{i,t}$$
$$+ \beta_6 ROA_{i,t} + \beta_7 LEV_{i,t} + \beta_8 QUAL_{i,t} + \beta_9 BIGFOUR_{i,t} + \beta_{10} MIDFOUR_{i,t}$$
$$+ \beta_{11} BUSY_{i,t} + \beta_{12} LOND_{i,t} + \beta IND_{j\,i,t} + \beta YR_{k\,i,t} + \varepsilon_{i,t}$$

Variables	Expected sign	Column (1)	Column (2)	Column (3)	Column (4)
Constant		2.250***	2.377***	2.588***	1.893***
		(0.000)	(0.000)	(0.000)	(0.000)
SWITCH	?	-0.056***			
		(0.006)			
UPWARD	?		-0.031		
			(0.611)		
LATERAL	?			-0.064**	
				(0.013)	
DOWNWARD	?				-0.010
					(0.786)
LNASSETS	+	0.400***	0.424***	0.396***	0.399***
		(0.000)	(0.000)	(0.000)	(0.000)
ATURN	+	0.031**	0.056**	0.023**	0.088***
		(0.020)	(0.034)	(0.030)	(0.000)
SQSUBS	+	0.243***	0.244***	0.244***	0.225***
		(0.000)	(0.000)	(0.000)	(0.000)
REC_INV	+	0.277***	0.083	0.299***	0.241***
		(0.000)	(0.516)	(0.000)	(0.000)
ROA	-	-0.004	0.165	0.061	-0.256*
		(0.940)	(0.347)	(0.286)	(0.062)
LEV	+	0.045**	0.107**	0.030	0.006
		(0.048)	(0.014)	(0.214)	(0.894)
QUAL	+	0.111**	-0.276**	0.120**	0.057
		(0.024)	(0.034)	(0.032)	(0.608)
BIGFOUR	+	0.216***	0.086	0.213***	0.222***
		(0.000)	(0.137)	(0.000)	(0.000)
MIDFOUR	+	0.127***	0.024	0.193***	0.145***
		(0.000)	(0.663)	(0.000)	(0.000)
BUSY	+	0.043***	0.153***	0.025	0.073**
		(0.005)	(0.001)	(0.206)	(0.013)
LOND	+	0.238***	0.421***	0.218***	0.207***
		(0.000)	(0.000)	(0.000)	(0.000)
Industry fixed effects		Yes	Yes	Yes	Yes
Year fixed effects		Yes	Yes	Yes	Yes
Observations		5,490	620	3,348	1,522
R-squared		0.746	0.817	0.763	0.758

The regression is performed on the complete matched-pairs sample, which includes 1,596 matched treatment and control firms and 798 switches for the period 2005-2012. The results are robust to heteroscedasticity and autocorrelation and are reported after controlling for firm level clustering. Two-tailed p-values are presented in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% percent levels respectively. For variable definitions see Table 6.1.

As Table 6.8 shows, the results for the control variables remain consistent, with the majority attracting coefficients with the expected sign and significance from the previous regressions. With reference to the R^2s, all of the regression models appear to remain well determined.   For the model which includes the aggregate switches in Column 1, the coefficient on the *SWITCH* variable remains negative (-0.056) and statistically significant ($p<0.01$). This implies a discount of 5.4% for the 798 companies that changed auditors relative to the matched sample of continuing audits.   For the directional switch models the coefficient on the directional switch variable *(LATERAL)* also remains negative and significant, (-0.064; $p< 0.05$), implying a discount of 6.2% relative to continuing audits. Thus, the findings remain qualitatively similar regardless of the size variable(s) included in the model.

In addition, to ensure the discounts genuinely reflect the change in audit fee at the initial engagement, the price discount regressions for the directional switch regression models are repeated on a reduced sample, which includes the year prior to the switch and the year of the switch only. Table 6.9 reports the regression results for the reduced sample and shows the results to be qualitatively similar. The majority of the control variables attract coefficients with the expected sign and significance from the previous regressions. The coefficients and significance on the directional switch variables also remain largely similar. For both specifications of the model, i.e. with and without controls, the only significant directional switch variable is *LATERAL*, with the negative coefficients (-0.223, -0.082) implying average discounts of 20.0% and 7.9% respectively. The initial findings regarding price discounting therefore also hold for the reduced sample.

Table 6.9 Additional price discount regressions: reduced version of the matched-pairs sample

$$LNAFEE = \alpha + \beta_1 SWITCH_{i,t} + \beta_2 LNASSETS_{i,t} + \beta_3 LNSAL_{i,t} + \beta_4 SQSUBS_{i,t} + \beta_5 REC\_INV_{i,t}$$
$$+ \beta_6 ROA_{i,t} + \beta_7 LEV_{i,t} + \beta_8 QUAL_{i,t} + \beta_9 BIGFOUR_{i,t} + \beta_{10} MIDFOUR_{i,t}$$
$$+ \beta_{11} BUSY_{i,t} + \beta_{12} LOND_{i,t} + \beta IND_{j\,i,t} + \beta YR_{k\,i,t} + \varepsilon_{i,t}$$

Variables	Exp. sign	Column (1)	Column (2)	Column (3)	Column (5)	Column (6)	Column (7)
Constant		9.796***	9.192***	8.521***	2.075***	2.153***	1.987***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
UPWARD	?	-0.017			-0.097		
		(0.880)			(0.211)		
LATERAL	?		-0.220***			-0.082***	
			(0.000)			(0.002)	
DOWNWARD	?			-0.0833			-0.003
				(0.2383)			(0.957)
LNASSETS	+				0.155***	0.176***	0.186***
					(0.000)	(0.000)	(0.000)
LNSAL	+				0.305***	0.255***	0.225***
					(0.000)	(0.000)	(0.000)
SQSUBS	+				0.220***	0.233***	0.210***
					(0.000)	(0.000)	(0.000)
REC_INV	+				-0.320**	-0.024	0.036
					(0.030)	(0.698)	(0.706)
ROA	-				-0.247	-0.067	-0.344**
					(0.349)	(0.294)	(0.035)
LEV	+				0.042	-0.005	0.071
					(0.358)	(0.857)	(0.253)
QUAL	+				0.267*	0.203***	-0.055
					(0.088)	(0.002)	(0.738)
BIGFOUR	+				0.175**	0.226***	0.277***
					(0.043)	(0.000)	(0.000)
MIDFOUR	+				0.055	0.187***	0.163***
					(0.460)	(0.000)	(0.001)
BUSY	+				0.112*	0.026	0.107***
					(0.051)	(0.277)	(0.009)
LOND	+				0.421***	0.232***	0.211***
					(0.000)	(0.000)	(0.000)
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Observations		364	2,044	784	364	2,044	784
R-squared		0.335	0.185	0.299	0.845	0.792	0.775

The regression is performed on a reduced version of the matched-pairs sample. This includes the 1,596 matched treatment and control firms and 798 switches for the period 2005-2012, but only includes observations for the year prior to the switch and the year of the switch. The results are robust to heteroscedasticity and autocorrelation and are reported after controlling for Two-tailed p-values are presented in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% percent levels respectively. For variable definitions see Table 6.1.

6.6   Summary and Discussion

The high levels of supplier concentration and low frequency of auditor switching found to be present in the UK private company audit market, highlighted in Chapter 4, resulted in questions raised regarding the economic consequences to private firms changing their auditor.   Consequently, it was found in Chapter 5 that companies switching auditor suffered negative economic consequences to their credit ratings. This, in turn, resulted in the question whether audit firms are doing anything to attract new audit clients through specific pricing strategies.   In light of this, this chapter looks at the initial pricing of audit engagements for private companies changing their auditor. In particular, whether firms changing their auditor are provided with a discount on their audit fees and whether there are any patterns of price recovery in the following three years.

In addition to questions raised in previous chapters, the pricing of initial audit engagements has been of interest to both academics and regulators for a number of years, predominantly because of the independence and quality concerns that can arise if auditors provide new clients with an initial discount on their audit fees.   To date a number of studies have touched upon this issue but UK evidence is limited and largely focuses on the listed company audit market.   Moreover, there has been confusion in the initial audit pricing literature regarding the presence of an initial discount versus the presence of low-balling.   A 'price discount' or 'price cutting' by a new auditor is an initial discount in audit fees for a new-client without explicit consideration of the relationship between the audit fee and audit costs.   Whereas in literature, the practice of 'low-balling' takes audit *costs* into consideration with a critical aspect of the pricing

strategy being the initial discounting of the audit fee followed by later price recovery (Gregory and Collier, 1996).

Yet, largely due to data constraints, not all studies that claim to provide evidence of low-balling consider the price recovery aspect, or those that do are limited to single or combined years – rather than on a panel basis where a pattern of price recovery can be properly identified.   Further, when considering the initial discounts potentially associated with an auditor switch, although switches of different directions have been considered in previous studies, the potential bias resulting from reputational or quality differences has often been overlooked. With, for example, lower fees being erroneously interpreted as fee discounting (Ghosh and Lustgarten, 2006).

As audit pricing studies are both time- and country-specific this aim of this chapter is to fill the gap in literature for the private company audit market in the UK, whilst also aiming to overcome the short-comings of previous initial audit pricing studies. Thus, although the analysis is UK-specific, the issues considered are relevant to future initial audit pricing work. Using a large panel data set spanning an eight year period from 2005 – 2012, private companies switching auditor are identified.   Using propensity score matching these companies are then matched to a non-switching company to create a matched-pairs sample of 798 pairs of switching and control firms. The issue of self-selection is also often overlooked in extant literature so the use of propensity score matching ensures that any differences in audit fees can be attributed to switching auditor and not a firm's pre-existing characteristics (Lawrence et al., 2011).

Using an audit fee discounting regression model, the findings show that a discount is associated with initial audit engagements for private firms in the UK. However, when switches are refined by direction according to the tier of auditor which they move to,

physical discounts are only present for companies switching laterally between audit firms of the same tier. In addition, the results suggest that although an initial discount does not appear to be present for client-firms upgrading their audit firm, when the direction of the switch and potential bias are taken into consideration an *implicit* discount is actually present. Following this, to identify whether low-balling is present, the price recovery of the initial discounts for the three years subsequent to the initial engagement year are considered. For companies upgrading their auditor or switching laterally, audit fees increase over the following three-year period.

The findings therefore provide evidence of price recovery for the firms receiving both physical and implicit discounts, suggesting that low-balling is present in the private company audit market. This, in turn, raises concerns regarding competitive pricing and the level of auditor independence in this market, whilst also reinforcing the idea of extending some of the more stringent audit requirements introduced by the EU Regulation on the Statutory Audits of Public Interest Entities. Moreover, the findings do not only have implications for the private company audit market in the UK, but they also demonstrate for other initial audit pricing studies the importance of considering the type of auditor change relative to the potential bias that this might introduce to results. Otherwise, instances of low-balling could be incorrectly classified or, alternatively, they could be missed altogether.

Although regulators have expressed independence and quality concerns stemming from the practice of low-balling, some of the prior studies providing evidence to suggest the presence of low-balling have argued that it is actually a competitive response aimed at securing future economic rents, thus downplaying any independence of quality concerns (DeAngelo, 1981; Peel, 2013). However, studies focusing on initial audit

pricing do not go on to empirically investigate the link between audit fees and audit quality or independence on new engagements. In general little research has been specifically aimed at understanding the potential impact of low-balling on audit quality (Watkins et al., 2004; Gramling et al., 2010).

Moreover, organisational behaviour research exists to show that people do not ignore sunk costs, which goes back to the concerns of regulators about the impact of low-balling on auditor independence (Staw and Ross, 1987; Huang et al., 2009). Thus the presence of low-balling itself does not seem adequate to make a conclusion either way regarding whether the pricing strategy is solely a competitive response to securing economic rents or whether it leads to independence issues. However, now that findings exist to show that low-balling is present in the private audit market in the UK, it is an issue that warrants further consideration.

7
Conclusions

7.1   Background to the Thesis

Private firms constitute a significant portion of the UK economy and the market for audit services. Yet, to date, largely as a result of data constraints, there is only limited knowledge available regarding the audit market for private companies in terms of supplier concentration, switching frequencies and audit fees - particularly since the Big Four audit firms came into power. This has subsequently resulted in a shortage of research that focuses on private companies with respect to their accounting and auditing choices or the economic consequences of these choices (Francis et al., 2011). In contrast, there have been a number of high profile regulatory investigations and academic studies focusing on the audit market for listed companies in the UK (e.g., Oxera, 2006; Abidin et al., 2010; Competition Commission, 2013c; Peel, 2013) resulting in a number of concerns being raised regarding the statutory audit market for listed firms.

Consequently, in April 2014 the EU statutory audit market underwent a reform, which included a revised Statutory Audit Directive in addition to the introduction of a new EU Regulation on the Statutory Audit of Public Interest Entities. In the UK the definition of a Public Interest Entity has been set at the EU level, with the more stringent audit requirements specified by the new regulation therefore only applicable to listed firms, banks and insurance undertakings. However, because there has been very limited research carried out on auditing in private firms it could be said that private firms have been excluded from the more rigorous audit requirements without sufficient

evidence to justify the decision. As a result, it remains an empirical question whether the definition of a Public Interest Entity in the UK is adequate or whether by excluding private companies has it excluded audit markets that potentially warrant similar regulatory changes?

The overarching purpose of this thesis was therefore to provide a comprehensive analysis of the private company audit market in the UK, in terms of supplier concentration, switching frequency and audit fees. With a view to subsequently investigating issues related to market structure and the recent regulatory reform. To undertake this analysis, the thesis examined a panel of independent private firms in the UK for the period 2005 to 2012. The UK was chosen specifically because it is one of a number of countries that have chosen not to extend the scope of the definition of a Public Interest Entity despite private firms being the dominant form of entity and accounting for the majority of registered businesses.

To examine the private company audit market in the UK, this thesis examined three research questions. In doing so, this thesis provides the first empirical analysis of the private company market in the UK during a period in which the Big Four have been the dominant audit firms. The three research questions are: (i) Does the audit market for large private companies require similar reforms to the auditing regulations applicable for Public Interest Entities? (ii) Are there economic consequences for private companies associated with an auditor switch and does this differ depending on the change in question? (iii) Is there initial discounting of audit fees and subsequent price recovery for the three years following an auditor switch by private firms?

7.2   Summary of Findings

7.2.1   *Regulation of the Statutory Audit for Private UK Companies*

Chapter 4 provides detailed information on the supplier concentration levels present in the private company audit market in the UK, therefore addressing the overarching research aim of the thesis. The results provide evidence to show, similar to the listed company audit market, larger audit firms, and most notably the Big Four, audit the majority of private companies that provide the greatest economic rents. With the audit market for the largest independent private firms characterised by a tight oligopoly, the same as the listed company audit market. Further, when supplier concentration is measured based on the size, as opposed to the number, of clients the results demonstrate how key concentration measures based on the number of audit appointments significantly understate the market share of the larger audit firms. Regardless of listing status, therefore, audit markets appear segmented with the dominance of the Big Four among the largest public and private firms.

Chapter 4 also finds that switching rates for private companies are comparably low to those reported for the public firm audit market, suggesting that the private company audit market will continue to exhibit high levels of concentration for larger sized entities unless there is direct regulatory intervention. Consequently, regulators should reconsider the risk of excluding these businesses from the more stringent audit regulations applicable to other Public Interest Entities. Given the findings and the economic importance of private companies, it may actually be inappropriate to define a Public Interest Entity for the purposes of more stringent audit regulation based on a company's corporate status without reference to its size. The definition and scope of a Public Interest Entity, therefore, needs revisiting both within the UK and across all EU

Member States, with a view to including more of these economically important private companies.

As the private company audit market was shown to be under-regulated, with high levels of supplier concentration and low rates of auditor switching, it also prompted questions regarding the economic consequences for a private firm switching in this type of audit environment. This subsequently formed the basis of empirical Chapter 5.

7.2.2   The Economic Consequences of Auditor Switching

In light of the concerns raised following the findings from Chapter 4, Chapter 5 provides strong evidence that there are economic consequences associated with a change in auditor by private companies. The findings show that companies switching auditor have lower credit scores relative to those not switching auditor. When the direction of the switch is considered, the results show that only companies switching laterally between the same tier of auditor experience a decrease in credit ratings. Although an auditor switch can occur for a number of reasons when a company changes to an auditor of the same tier, the reasons underlying the switch are more difficult to determine and it subsequently transmits a negative signal about a company's credit risk to those external to the firm. This prompted the question whether auditors are undertaking specific pricing strategies in order to attract new clients and encourage them to change auditors in light of the potential economic consequences.

While switching remains non-mandatory for private firms, given their economic importance and their reliance on bank-based forms of financing, it is important that private firms be properly informed of the economic consequences that result from switching auditor. It is important that private firms are not discouraged from switching auditor through the form of reduced credit ratings, as the low rates of auditor switching

will only act to sustain the high concentration levels present in the market. The introduction of additional audit requirements, such as mandatory auditor rotation, as recently enforced on listed firms by the EU Regulation on the Statutory Audit of Public Interest Entities, could therefore be beneficial for the private firm audit market.

7.2.3 *Playing Low-Ball: The Pricing of Initial Audit Engagements for UK Private Firms*

The findings from Chapter 5 questioned whether audit firms were using particular pricing strategies to attract new clients. Using an audit fee discounting regression model, Chapter 6 provides evidence to show that a discount is associated with initial audit engagements for private firms in the UK. However, after refining switches according to the tier of auditor that they move to, *physical* discounts are only present for companies switching laterally between audit firms of the same tier. In addition, the results suggest that although an initial discount does not appear to be present for client-firms upgrading their audit firm, if the direction of the switch and potential bias are considered an *implicit* discount is actually present.

In subsequent analyses, the audit fees for companies switching upwards or laterally are found to increase over the following three-year period. The findings therefore provide evidence of price recovery for the firms receiving both physical and implicit discounts, suggesting that low-balling is present in the private company audit market in the UK, potentially raising related audit independence and quality concerns. Moreover, not only do the findings have potential implications for the private company audit market in the UK but they also demonstrate, for future initial audit pricing research, the

importance of considering the type of auditor change relative to the potential bias that this might introduce to results.

7.3   Policy Implications and Direction for Further Research

In summary, the results of the thesis provide strong support that the definition and scope of a Public Interest Entity needs revisiting both within the UK and across all EU Member States, with a view to including more of these economically important private companies. The aim of the recent audit reform is to provide a more robust auditing environment for Public Interest Entities whilst also reducing the systemic risk to Member States caused by a financial breakdown of one of these entities. Yet the thesis shows UK private firms of a substantial size, and subsequent substantial economic importance, facing similar audit market concerns as listed entities, with no direct regulatory intervention planned to address these concerns. Consequently, given that, to date, both empirical studies and regulatory investigations into the structure of the private company audit market in the UK are almost non-existent, this thesis provides a valuable contribution towards the ongoing debate of whether the more stringent audit regulations should be made applicable to additional entities outside of the EU Public Interest Entity definition.

Moreover, while the thesis provides evidence to show the presence of initial discounting and subsequent price recovery of audit fees following a change in auditor, there is further scope to investigate whether such pricing strategies have an effect on audit quality. Prior studies have found that people do not ignore the sunk costs involved in low-balling, thus the presence of low-balling alone does not seem adequate to make a conclusion either way regarding whether the pricing strategies observed in the audit

market are a competitive response to economic rents or whether it leads to independence issues. Though inferences about auditor independence and audit quality can be made in light of the findings of Chapter 6, it is beyond the scope of the thesis to test these directly, therefore providing a potential avenue for future research. Given the focus of the recent audit reform on improving both audit competition and quality, a direction for future research would therefore be to examine the quality of audits for a similar period following a change in auditor.

8
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