School of Accounting

Auditor Attributes and their Association with Audit Fees in Australia: An Empirical Study

Harjinder Singh

This Thesis is Presented for the Degree of

Doctor of Philosophy

of

Curtin University

December 2010

DECLARATION

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Signature:

Date:

ABSTRACT

This study investigates the existence of cartel pricing and anticompetitive behavior by the *Big4* international providers of auditing services (resulting from the halving in the number of such providers from the *Big8* to *Big4*). Increased audit market concentration, both globally and in Australia, together with the focus by the *Big4* in servicing primarily large clients, raises concern about a lessening of competition in the audit marketplace. Using both a composite and dis-aggregated measure for auditor attributes (namely, auditor reputation, industry specialization, provision of non-audit services and auditor tenure), this study provides a comprehensive analysis of the association between four pivotal auditor attributes and the quantum of audit fees and changes in audit fees paid by Australian publicly listed firms during a five-year time frame. The final usable sample includes 600 firm-year observations as data points for the 2001, 2003 and 2005 calendar years (200 firm-years for each year in the aforementioned observation window) and is obtained entirely from publicly available sources, specifically annual reports. Main results from both cross-sectional and longitudinal multivariate analysis indicate that there is no significant association between the four auditor attributes utilized in this study with both audit fees and variation in audit fees. Robustness and sensitivity testing completed also largely support the non-significance of the association between both constructs. This study, therefore, finds no evidence of cartel pricing and anti-competitive behavior by *Big4* auditors resulting from increased audit market concentration. Results from this study have clear implications for regulators, investors, scholars, corporate management/firms and auditors.

ACKNOWLEDGEMENTS

I would like to thank my two supervisors and friends, Professor J-L.W. Mitchell Van der Zahn and Associate Professor Rick Newby for the guidance and support provided to me over the course of the thesis. I would also like to thank my family, particularly my brothers, Davinder Singh and Iqbal Singh.

In addition, I would also like to place on record the assistance of two colleagues during the course of the thesis: Nigar Sultana and Ross Taplin.

DEDICATION

To my mother, father and Basanthi.

Table of Contents

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

ACCC	Australian Competition and Consumer Commission
ASIC	Australian Securities and Investment Commission
ASX	Australian Securities Exchange
ASX CGC	Australian Securities Exchange Corporate Governance Council
AuASB	Auditing and Assurance Standards Setting Board
CALDB	Companies Auditors and Liquidators Disciplinary Board
CEO	Chief Executive Officer
CLERP 9	Corporate Law Economic Reform Program Act 2004
Corporations Act	The Australian Corporations Act 2001
DTT	Deloitte Touche Tohmatsu
EY	Ernst and Young
FRC	Financial Reporting Council
GAO	General Accounting Office (USA)
GIC	Global Industries Classification
ICAA	Institute of Chartered Accountants
IFRS	International Financial Reporting Standards
IIA	Institute of Internal Auditors
IPO	Initial Public Offering
MAS	Management Advisory Services
NIA	National Institute of Accountants
OLS	Ordinary Least Squares
PWC	PriceWaterhouseCoopers
SOX 2002	Sarbanes-Oxley Act 2002
UK	United Kingdom
USA	United States of America

CHAPTER ONE:
INTRODUCTION

1.1 BACKGROUND AND MOTIVATION

The significant reduction in the number of international providers of auditing services (that is, the *Big8* to *Big6* to *Big5* to *Big4*)[1] since 1989 has enormous implications for the competitiveness of auditing services and on the quantum of audit fees charged by auditors (Hamilton, Li, and Stokes 2008). The halving of audit services providers since 1989 has raised serious questions about whether audit markets remain competitive or if there is cartel pricing and, therefore, anticompetitive behavior by the *Big4* auditors (Hamilton et al. 2008; Simon 1995). Increased audit market concentration, globally and in Australia, together with the *Big4* auditors' focus on servicing large clients, therefore, raises concerns of a lessening of competition in the audit marketplace (Chan and Li 2008; Hamilton et al. 2008).

Audit fees[2] warrant study for three reasons: (1) to assess the competitiveness of audit markets (especially given the small number of international providers of such services); (2) to examine issues relating to contracting between the auditor and client (auditee); and (3) to examine matters relating to auditor independence (Chan and Li 2008; Hay, Knechel, and Wong 2006; Simunic 1980). The rationale in this study, therefore, is to examine audit fees and the changes in audit fees in order to determine the competitiveness of the audit market given the increase in the concentration of international providers of auditing services.

In the early years of the new millennium, a number of major accounting frauds generating huge media attention erupted around the world (for example, Enron and WorldCom in the United States of America (USA), Parlamat in Europe and HIH in Australia). In the wake of the high profile scandals, regulatory changes were made worldwide to improve the quality of corporate governance practices (Joint Committee on Public Accounts and Audit 2002; National Association of Corporate Directors 1996; Securities and Exchange Commission 2000). One major set of reforms is the Sarbanes-Oxley Act 2002 (*SOX 2002*) introduced in the USA. *SOX 2002* also provided the basic template for corporate governance reforms in other nations including Australia in the shape of the *Corporate Law Economic Reform Program* (*Audit Reform and Corporate Disclosure*) *Act*

---

[1] Initially the *Big8* accounting firms were: Arthur Andersen & Co.; Arthur Young & Co.; Coopers & Lybrand; Deloitte Haskins & Sells; Ernst & Winney; Peat Marwick Mitchell; Price Waterhouse; and Touche Ross. Subsequent to two major mergers in 1989, the *Big8* firms were reduced to the *Big6*. This resulted from the merger between Ernst & Winney and Arthur Young & Co. to become Ernst & Young and Deloitte Haskins & Sells with Touche Ross to become Deloitte Touche Ross. As a result of another merger in 1998 between Coopers & Lybrand and Price Waterhouse to form PriceWaterhouseCoopers, the *Big6* was reduced to the *Big5*. Finally, the dissolution of Arthur Andersen & Co. in 2002 as a result of the Enron aftermath reduced the *Big5* to the *Big4*.

[2] The term audit fee/s is used in this study to refer only to the external audit fee paid by firms to the firm's external auditor for the provision of external attestation services. All non-audit fees, therefore, are excluded when the term 'audit fee' is used in this study.

2004 (also known as *CLERP 9*) and the Australian Securities Exchange (*ASX*) Corporate Governance Council's Principles of Good Corporate Governance and Best Practice Recommendations (*ASX CGC 2003*). *CLERP 9* and *ASX CGC 2003* reforms were designed to rectify deficiencies in the corporate environment in Australia highlighted by pivotal local corporate collapses such as HIH, OneTel and Harris Scarfe.

The USA's General Accounting Office (*GAO*) characterizes international audit providers (namely *Big4* auditors) as an oligopoly consisting of a few businesses with significant risks of becoming even more concentrated (Koehn and Del Vecchio 2004). Furthermore, the *GAO* believes that since none of the *Big4* has expertise in every industry, some market segments are actually dominated by just one or two of the *Big4* firms. Audit fees reported by the *Big4* have increased from 25% to 33% in the USA as a result of the *Big4* assisting clients with complying with *SOX 2002* requirements. There are ominous indications that audit fees may continue to rise in the short-term (Koehn and Del Vecchio 2004).[3] The increase in the domination by the *Big4* potentially has an adverse flow-on effect on the nature of the audit market and the quantum of audit fees in Australia.

Changes in audit fees resulting from a reduction in competition between auditors also impact on the contracting relationship between the auditor and auditee. In addition, changes in audit fees also raise concerns and questions[4] about the independence of the auditor; a major hallmark underlying the auditor's role and responsibilities (Parkash and Venable 1993; Simunic 1984; Zhang, Zhou, and Zhou 2007). Research into the relationship between the auditor and auditee is necessary given the critical role that auditors play in the information and capital marketplace (Gay and Simnett 2007).

Consistent with the tenets of agency theory, auditors and auditees interact (that is, contract with one another) in a manner that affects audit fees (Ho and Ng 1996; Watts and Zimmerman 1986). An audit firm may wish to maximize audit fees charged and, therefore, profitability whereas auditees generally wish to mitigate increases in audit fees by making strategic self-interest decisions such as creating an internal audit function. In a world of costly contracting, a major role of the independent auditor is to monitor auditee compliance with the conditions of contracts between the principal (that is, firm shareholders) and agent (that is, firm owners) (Williamson 1984). The complex contracting relationships between the

---

[3] Audit fees are expected to continue to rise post-2005 as a result of ongoing assistance to firms (by the *Big4*) in complying with post - *SOX 2002* regulations and, to a lesser extent, as a result of the oligopolistic nature of the *Big4* (which is partially the subject of interest of this study).

[4] Such questions relate primarily to a potential reduction in audit quality as a result of reduced competition among *Big4* auditors and pressure from the auditee on the quantum of audit fees charged by the *Big4*.

auditor and auditee, therefore, clearly impact on the quantum of audit fees charged by the auditor.

The contractual relationships between an auditor and an auditee are generally of a medium to long term nature rather than a single year. Thus, auditor attributes may influence changes in audit fees across time thus making longitudinal empirical analysis useful when examining the relationship between auditor attributes and audit fees. For example, auditor tenure is cited as a prominent auditor attribute that may influence audit fees (Beck, Frecka, and Solomon 1998a; DeBerg, Kaplan, and Pany 1991; DeFond and Subramanyam 1998; Simon and Francis 1988). It is generally maintained that the longer an auditor services an auditee, the resulting familiarity by the auditor with the auditee's operations and accounting system may prompt a reduction in audit fees (Beck et al. 1998a; DeFond and Subramanyam 1998; Simon and Francis 1988). If an auditor deems that extended tenure is detrimental to their (the auditor's) interests, auditors may strategically seek short appointments. Similarly, if the auditee is continuously switching auditors and/or renegotiating engagements on an on-going basis, audit fees may remain persistently high.

The influence of auditor attributes, therefore, provides additional intrigue to the topic of audit fees since the auditor determines the quantum of the audit fee. The high profile corporate scandals of the early 2000, combined with the demise of Arthur Andersen, have renewed interest in the relationship between auditor attributes and audit fees (Abbott, Parker, Peters, and Raghunandan 2003b; Beatty 1993; Becker, DeFond, Jiambalvo, and Subramanyam 1998; Krishnan 2003; Palmrose 1986a; Zhou and Elder 2002). Despite the development of a wealth of knowledge on the determinants of audit fees, greater understanding is still needed since regulators and corporate governance reformists around the world continually seek to make adjustments/changes to regulations surrounding the auditing environment in an effort to ensure that corporate failures are minimized (Blue Ribbon Committee 1999; Securities and Exchange Commission 2000). Whilst the moral aim of regulators and corporate governance reformists is to improve standards to protect investors, such steps taken without sufficient understanding may lead to adverse rather than positive outcomes. Examining the influence of auditor attributes on changes in audit fees across time can provide valuable insights into the long-term impact of regulations governing auditors.

To the best knowledge of the researcher, there has been no other study undertaken which has sought to determine if there is any evidence of cartel pricing and, therefore, anticompetitive behavior by the *Big4*. Such research is important in order to accurately identify demand and supply side audit fee determinants. For example, attempted reforms on

auditor tenure may have a minor influence in the short term but manifest into a more significant issue across time.

Auditor attributes may also have a significant bearing on how contractual arrangements between auditors and auditees evolve and the resulting audit fees paid. For example, an auditor specializing in a specific industry (another auditor attribute) can influence audit fees (Lim and Tan 2008). The auditor may determine that development of an industry specialization can enable a premium to be charged (due to higher audit quality) on auditing services provided. The premium to be charged leads to higher fees paid by the auditee relative to paying for such services from a non-specialist auditor (De Belde 1997; Hogan and Jeter 1999; Mayhew and Wilkins 2003; Zhou and Elder 2002). Using another example, auditees may choose an auditor perceived to be of a higher quality (that is, typically noted as a *Big4* auditing firm). Due to the perceived quality and reputational capital of a *Big4* audit firm, auditor-auditee contractual arrangements may be more complex and elaborate, thereby, leading to higher audit fees (Goodwin-Stewart and Kent 2006a).

The identification of audit fee determinants in the past literature has generally been of a cross-sectional nature or spanning a two to three-year examination period (Carcello, Hermanson, Neal, and Riley 2002; Felix, Gramling, and Maletta 2001; Karim and Moizer 1996; Naser and Nuseibeh 2007; Sankaraguruswamy and Whisenant 2003; Thinggaard and Kiertzner 2008). To the best knowledge of the researcher, empirical literature published to date into audit fee modeling has as yet not adopted a five-year or more time-series analysis nor utilized a comprehensive range of auditor attributes in examining audit fees. In addition to auditor attributes, corporate governance mechanisms within firms also impact on the amount of audit fees paid by the firms (Goodwin-Stewart and Kent 2006a).

Past audit research has investigated the impact of corporate governance features (such as an external audit) on financial report superiority, earnings quality and the level of audit fees (Brody, Golen, and Reckers 1998; Elliot and Korpi 1978; Firth 1985; Lim and Tan 2008; Wilson 2003). From a theoretical perspective, the separation of ownership from control within firms creates agency problems which impact on the quality of the firm's financial report. Specifically, since managers are not normally owners, there are always incentives for managers to pursue self-interest at the expense of the owners/shareholders (Jensen and Meckling 1976). The situation highlights the critical role that quality audits play as a check to the opportunistic management behavior in the information marketplace.[5] Strong

[5] The demand for such attestation services and for superior quality audits are viewed to be an efficient means of managing the costly contracting problems (Watts and Zimmerman 1986).

governance mechanisms include high-quality audits which mitigate agency costs and the likelihood of fraudulent financial reporting but lead to higher audit fees (Mitra, Hossain, and Deis 2007). Thus, the concept of monitoring holds a key position in motivating auditee demand for high-quality audits. The importance of the monitoring role by auditors of firms is supported by legislation and although auditors have a contractual duty to the agent (firm management), the auditors also have a greater statutory responsibility to principals (firm shareholders) (Jensen and Meckling 1976; Watts and Zimmerman 1986).

1.2 OBJECTIVES, AIMS AND RESEARCH QUESTIONS

Since Simunic's (1980) seminal study, a common methodology has developed for identifying the determinants of audit fees. A regression estimation model is normally derived (on a cross-sectional basis) by regressing audit fees against a number of measures (both within and outside a firm) hypothesized to relate in some way to audit fees (for example, Chan, Ezzamel, and Gwilliam 1993; Ettredge and Greenberg 1990; Gonthier-Besacier and Schatt 2007; Hay, Knechel, and Wong 2006; Ho and Ng 1996; Karim and Moizer 1996; Naser and Nuseibeh 2007; Taffler and Ramalingam 1982; Ward, Elder, and Kattelus 1994). If the coefficients on the independent variables are significant, the hypothesized relationships are deemed to exist. Simunic's (1980) approach has resulted in the population of explanatory variables explaining audit fees growing significantly.

As highlighted in Section 1.1, there are gaps in the literature in relation to examining auditor attributes from a composite perspective and using a longitudinal time horizon. An important gap with unanswered questions, relates to the existence of cartel pricing and, therefore, anticompetitive behavior by the remaining *Big4* audit firms. The public debate on the matter of auditor concentration and the possibility of cartel pricing and anticompetitive behavior in Australia by the *Big4* has resulted in the Australian Competition and Consumer Commission (*ACCC*) examining the issue and agreeing that the international accounting firms mergers raises concerns for competition in the Australian audit market (ACCC 1999). The national concern about reduced competition, therefore, makes this study and its results important.

A study encompassing the Australian audit and business environment using a longitudinal focus is also of significance. Specifically, new corporate governance regulations introduced in Australia following the implementation of *CLERP 9* pertaining to auditors may have considerable influence on audit fees. A feature of this study is that this study can provide insights into whether changes to regulations governing auditors under *CLERP 9* influenced auditor attribute/audit fee insights. Such insights can aid in determining what

impact future changes to corporate governance regulations in Australia may have on auditors, auditees and audit fees.

This study investigates both the existence and extent of competitive audit pricing in the Australian audit services market during a five-year time frame to determine if there is any evidence of cartel pricing and, therefore, anticompetitive behavior by the *Big4* during the five-year period. Since increased supplier concentration by itself is not sufficient evidence of cartel pricing (and therein, anticompetitive behavior), this study initially adopt Simunic's (1980) seminal audit pricing model to investigate audit market competition. Utilizing Simunic's (1980) model can provide evidence on the extent to which the *Big4* (by examining four pivotal auditor attributes) are influential predictors of audit fees/variation in audit fees.

Apart from examining audit fees on a cross-sectional basis, the prior empirical literature has evaluated auditor attributes only in isolation (that is, individually). There is also no published research which has evaluated important auditor attributes on an aggregate basis (and across time). The aggregated/holistic basis adopted by this study can, therefore, evaluate (four) important auditor attributes simultaneously across a five-year observation window when examining the impact on audit fees.

Overall primary objectives of this study are twofold. First, this study seeks to provide a comprehensive analysis of the association between four pivotal auditor attributes (that is, auditor reputation, industry specialization, provision of non-audit services and auditor tenure) and audit fees paid by Australian publicly listed firms. Though studies of auditor attributes and audit fees are not unique, prior research usually focus on auditor attributes in isolation (Choi, Kim, and Zang 2005; Craswell, Francis, and Taylor 1995; Davis, Ricchiute, and Trompeter 1993; Francis 1984; Simon and Francis 1988). The novelty of this study is that this study looks to consider the influence of key auditor attributes in unison, and the association, if any, with audit fees. Specifically, this study will investigate the influence of four pivotal auditor attributes in aggregate (and on a dis-aggregate basis) with audit fees.

Second, this study seeks to determine if the four aforementioned auditor attributes are influential determinants of changes in audit fees paid by Australian publicly listed firms. The second objective is original as prior auditor attribute/audit fee research concentrates on associations within a single time period without considering changes in audit fees across time. The longitudinal aspect is important because changes in auditor attributes and the associated impact on audit fees, if any, provides important evidence on the extent to which

auditor attributes truly impact on changes in audit fees and on the long-term impact on regulations governing the conduct of audits.[6]

Consistent with the two main research objectives, this study's two main research questions are identified as follows:

RQ_1: Are auditor attributes associated with audit fees paid by Australian publicly listed firms?

RQ_2: Are auditor attributes associated with changes in audit fees paid by Australian publicly listed firms?

Aside from investigating the primary objectives and research questions, another objective of this study is to consider a number of important secondary research questions. For example, as described in Section 1.1, new corporate governance regulations impacting on the auditor were recently introduced in Australia in the form of *CLERP 9*. A secondary aim of this study is to determine if associations between auditor attributes and audit fees *pre-CLERP 9* persist *post-CLERP 9* thereby providing insight on the extent of the success of *CLERP 9*. The following, therefore, is a list of the major secondary research questions this study seeks to answer:

SRQ_1: Did the association between auditor attributes and audit fees charged to Australian publicly listed firms change following the introduction of CLERP 9?

SRQ_2: Did the association between auditor attributes and the change in audit fees charged to Australian publicly listed firms change following the introduction of CLERP 9?

SRQ_3: Do different key auditor attributes (that is, (a) Big4 auditor, (b) a specialist industry auditor, (c) non-audit fees, and (d) auditor tenure) have varying influences on audit fees charged to Australian publicly listed firms?

SRQ_4: Do different key auditor attributes (that is, (a) Big4 auditor, (b) a specialist industry auditor, (c) non-audit fees, and (d) auditor tenure) have varying influences on changes in audit fees charged to Australian publicly listed firms?

---

[6] In addition, Australia is also an ideal environment to undertake this study as there has been no research undertaken examining a composite score representing auditor attributes (neither on a cross-sectional and longitudinal basis) and the impact on audit fees.

In addition to answering this study's primary and secondary research questions, a number of other important research objectives shall also be investigated. Given that alternative measures of auditor attributes will be used (for example, alternative measures of auditor specialization and the use of different metrics for auditor attributes such as auditor tenure and non-audit fees), the results can provide valuable insight into the continued appropriateness of using the attributes to reflect key auditor characteristics.

1.3 SIGNIFICANCE OF THIS STUDY

Results from this study make several important contributions. First, researchers will be able to determine how much of the variation in audit fees (both cross-sectionally and longitudinally) of an auditee is directly associated with auditor traits and, importantly, the quantum of the impact. The determination will provide empirical evidence about suggestions of cartel pricing and anticompetitive behavior by auditors who provide such services nationally and internationally (Dopuch and Simunic 1982; Hamilton et al. 2008; Kwon 1996). The resulting empirical evidence, therefore, has important consequences for the efficient and effective operation of capital markets, auditor and auditee operations.

Second, though there have been a number of studies examining specific auditor traits and audit fees (for example, Ashbaugh, LaFond, and Mayhew 2003; Balsam, Krishnan, and Yang 2003; Beatty 1989; Carcello, Hermanson, and McGrath 1992), no study to the author's knowledge has studied the relationship between a number of composite auditor attributes and audit fees. By focusing on the supply side of the demand for auditing, this study also provides a much deeper understanding of an important monitoring mechanism (that is, auditing) and the extent to which it promotes the integrity of reported information by firms.

Third, the results from this study will also be used to determine the extent to which *CLERP 9* regulations are successful in achieving the objectives of using the statutory external auditing process to improve the quality of reported earnings by firms. Therefore, results from this study will build on the existing literature on the success (or lack of) recent legislation such as *SOX 2002* in USA and *CLERP 9* in Australia (ASX CGC 1999).

Fourth, in spite of wide-ranging research on auditor traits (for example, Ashbaugh et al. 2003; Beatty 1989; Carcello and Nagy 2004; Francis 2006), there is still little evidence on which auditor attributes most influence audit fees and, therefore, are most important attributes in improving the integrity of a firm's financial reporting process. Research on the relative importance of auditor traits has economic consequences for both legislators and auditors in the respective roles as regulators and monitors.

Fifth, the data collected will capture a cross-section of industries and this study will also be able to comment on the impact of auditor attributes on audit fees across all ten main

industries in Australia. This will shed important light on the existence of an industry-effect on the quantum of audit fees charged by auditors (for example, whether certain industries are more expensive to audit than others). A common claim made by auditors and researchers has been that certain industries are more difficult to audit than others (DeFond, Francis, and Wong 2000; Gerrard, Houghton, and Woodliff 1994; Mayhew and Wilkins 2003). For example, telecommunication services and utilities have relatively large assets but may be easier to audit compared to firms with extensive receivables and inventories such as manufacturers (DeFond et al. 2000; Gerrard et al. 1994; Mayhew and Wilkins 2003).

Overall, this study will benefit a number of key stakeholders. For example, policymakers and regulators will be able to determine the effectiveness of legislation introduced to improve the quality of financial reporting by firms. This has a flow-on effect of minimizing poor corporate reporting and, potentially, subsequent corporate failure thereby benefiting capital market participants. Auditors will also be able to determine the optimal composition of (the examined) auditor attributes which could maximize audit fees. For example, auditors will know which combination of the four attributes examined (that is, auditor reputation, industry specialization, provision of non-audit services and auditor tenure) can benefit the auditors most. Finally, firms will also benefit from knowing which demand-side characteristics firms exhibit either increase or decrease the audit fees firms pay.

1.4 LIMITATIONS OF THIS STUDY

While this study has a number of strengths, it is not without limitations. First, this study only looks at four specific auditor attributes, and though the attributes selected are the most commonly used and referred to in the prior empirical literature (Balsam et al. 2003; Carcello et al. 1992; Francis 2006; Kim, Chung, and Firth 2003), this is acknowledged as a limitation given that other auditor attributes (though of lesser importance) impact audit fees as well.

Second, sample firms in this study are the same for each of the calendar years examined. This raises a possible concern with independence of samples (that is, repeated measures) issue (Hair, Anderson, Tatham, and Black 1995). However, this is not considered detrimental to this study for two reasons. First, the independence of samples issue only applies to the longitudinal Ordinary Least Squares (OLS) regression models used. Second, almost all of the published past literature (in both accounting and finance fields) using firm-year observations for multivariate testing suggest that there is no other parsimonious way to undertake longitudinal analysis where the changes in selected firm's results are of interest to the researcher/s (Ball and Shivakumar 2006; Gigler and Hemmer 2001; Krishnan 2003; Lara, Osma, and Mora 2005; Pae 2007; Reynolds and Francis 2001; Wallace 1984).

Third, in order to test the hypotheses, data for all of the variables used in this study were collected from annual reports of firms. This limits the amount and type of data that can be collected. For example, other alternative firm-specific measures may exist for the variables used in this study but are excluded from this study given the proprietary nature of the measures.

Fourth, this study uses data from only one country, namely Australia. This has the potential to adversely affect the generalizability of this study's empirical results. Australia has a mature and well developed capital market with active participation by regulators, investors and auditing firms, and is also a leader in audit fee modeling research (Craswell and Taylor 1991; Francis 1984; Francis and Stokes 1986; Goodwin 2003). Therefore, this study's results will provide useful points of reference to other countries and economies which are (or may be in the future) grappling with issues of cartel pricing and anticompetitive behavior by *Big4* auditors.

Fifth, this study only uses data from public firms. Private firms are excluded from the sample since a large number of private firms do not require external auditing in Australia and, therefore, pay no audit fees. Notwithstanding this limitation, given the stratification of the sample across all firms listed on the *ASX* and partitioning when undertaking data analysis, smaller public firms are included in the final sample. Therefore, the results from this study will not be overwhelmed/driven only by the largest firms and will have some applicability to non-public firms; both large and small.

1.5 THESIS OUTLINE

The remainder of the chapters is this thesis is organized as follows. Chapter Two begins with a review of the monitoring role of the auditor in the financial reporting system and briefly identifies the underpinning agency theory to this study. The chapter also provides the background to the association between the auditor and the regulatory environment in Australia. Specifically, the auditing market in Australia is detailed with references to the type and size of the auditing service providers which exist. References are also made to key regulators such as the Australian Securities and Investment Commission (*ASIC*) and the Auditing and Assurance Standards Setting Board (*AuASB*) and to key legislation such as *CLERP 9* and the *ASX* Listing Rules. Chapter Two provides a detailed examination of Simunic's (1980) seminal study on audit fee modeling and goes on to outline the major empirical research papers identifying factors which determine audit fees (including a number of key auditor attributes).

Chapter Three discusses the theoretical underpinnings of this study by detailing agency theory tenants. The chapter begins by outlining the theoretical framework of

corporate governance and discusses the five main underlying theories (that is, institution theory, stakeholder theory, resource dependency theory, stewardship theory and agency theory). After establishing the link between corporate governance and audit fees, the four key auditor attributes of this study (that is, auditor reputation, industry specialization, provision of non-audit services and auditor tenure) are detailed, leading to the testable hypotheses. A conceptual schema is provided to illustrate the key relationships examined in this study.

Chapter Four outlines the sample collection and selection process, justifies the selection of the time period and details the primary research methodology utilized, namely the use of multiple regression. In particular, measures for audit fees (dependent variable), auditor attributes (independent variables) and use of control variables (all supported by prior empirical literature) are detailed. The statistical tests and models adopted for this study are also detailed; namely, the basic test model (when examining auditor attributes in isolation), the comprehensive cross-sectional model (when examining composite auditor attributes) and the longitudinal model (when examining the impact of auditor attributes (both composite and dis-aggregate) on changes in audit fees) are defined.

Chapter Five reports on the descriptive statistics and univariate results. Initially, steps taken to ensure the normality of data collected and the validity of assumptions for the subsequent multiple regressions are outlined, including basic sample descriptive statistics (such as mean, median, standard deviation, 0.25 percentiles and 0.75 percentiles). Then, t-tests of key descriptive characteristics (both cross-sectional and longitudinal) and Spearman and Pearson correlation analyses are provided.

Chapter Six presents the results of the OLS regressions (both cross-sectional and longitudinal variations) testing the relationship between audit fees and the composite auditor attributes examined in this study. Subsequently, individual key auditor attributes and the extent of the association with audit fees is also examined.

Chapter Seven details the robustness and sensitivity tests completed. This includes partitioning the sample by auditee characteristics (on the basis of firm size, complexity, risk and industry) and corporate governance features (such as board of director's independence, number of board of director meetings annually, and the presence of a financial expert on the audit committee). The selection of alternative measures/proxies for both audit fees and auditor attributes is also discussed in Chapter Seven. An analysis of *pre-* versus *post-CLERP 9* implications is then provided.

Chapter Eight ends this study by summarizing the conclusions to the major hypotheses of this study and summarizing its key findings. Implications, contributions, limitations and a summary of the research results are also provided.

CHAPTER TWO:
LITERATURE REVIEW

2.1 OVERVIEW OF THE CHAPTER

Chapter One provided the background and motivation to this study. The research questions and objectives of this study were specified in detail. In addition, the significance and limitations of this study were also identified.

Chapter Two discusses the empirical literature surrounding audit fee modeling. The chapter begins with an identification of the theoretical underpinnings of an audit and the role of the auditor in a financial reporting system. The link between the auditor and the regulatory environment in Australia is then reviewed. The regulatory environment in Australia is discussed in terms of corporate governance development and auditing. A comprehensive overview is then provided of the key prior literature identifying audit fees determinants. Finally, a summary of the Chapter Two is provided.

2.2 ROLE OF THE AUDITOR IN THE FINANCIAL REPORTING SYSTEM

It is clear that the audit function plays a critical role in the information marketplace (Gay and Simnett 2007; Jubb, Topple, Schelluch, Rittenberg, and Schwieger 2008; Watts and Zimmerman 1986). A central definition of auditing is that it is a professional service which involves an independent and objective examination of a subject matter with the purpose of forming an opinion on the subject matter's credibility (Leung, Coram, and Cooper 2007). Auditing practices have changed substantially over the past two decades, primarily in response to changing public expectations on the accountability and complexities associated with the technological and economic development of firms. Specifically, due to the complexity of the information needs of users, auditors not only enhance the credibility of the financial information prepared by management but also provide additional value-added services such as identifying business risks, reporting on internal control weaknesses and providing other non-audit services such as risk management assessments and tax advisory (Gay and Simnett 2007; Hamilton et al. 2008; Spira and Page 2003; Turpin 1995; Zhang et al. 2007).

Essentially, the audit function provides independent assurance to a reader on the integrity and fairness of a firm's presented financial information (Becker et al. 1998; Casterella, Francis, Lewis, and Walker 2004; Collier and Gregory 1996; Simunic 1980, 1984). The audit function is squarely premised on agency theory (that is, when one or more principals engage others as agents to perform a service on behalf of the principals, a principal-agent relationship arises) (Jensen and Meckling 1976). In the case of firms, the owners or shareholders (principals) appoint directors and managers (agents) to conduct the firm's business in the interests of the owners. The managers of the firm assume a

stewardship function and are, therefore, expected to manage the firm in the best interests of the principals. However, given the information asymmetry between principals and agents and each parties differing interests (such as financial rewards and employment opportunities), agents may pursue self-interest objectives to the detriment of the firm and the principals.[7] The concern about information asymmetries and differing motivations of agent and principal, therefore, leads to reservations about the reliability of information produced by the agents.

As a result of the reservations about the reliability of information produced by agents, principals require mechanisms (an external audit is one important example) to reduce potential conflicts and align the interests of agents with their (principal's) own interests. Auditors, therefore, conduct an independent examination of the financial statements generated by management, form an opinion on the credibility of management's financial statements and issue an audit report formally expressing their (auditor's) view (Collier and Gregory 1999; Fama 1980; Jensen and Meckling 1976). The audit function serves a fundamental purpose in increasing confidence and validating the financial information reported by management. This, in turn, plays a wider role in the information marketplace, where economic and financial decisions can be made based on information that has been audited and, therefore, viewed as more useful for decision-making purposes.

2.3 THE AUDITOR AND AUSTRALIA'S REGULATORY ENVIRONMENT

An auditor undertakes his duties and responsibilities within the confines of rules and regulations. The *Australian Corporations Act 2001* (*Corporations Act*) establishes the accountability process in which the directors of a firm are held responsible for the preparation and presentation of financial reports, with an independent audit function appointed by shareholders reporting on the prepared financial reports (Gay and Simnett 2007). Australian firms are also regulated pursuant to the *Corporations Act.* Other relevant rules and regulations include the *ASX* Corporate Governance Council's *Principles of Good Corporate Governance and Best Practice Recommendations* (*ASX CGC 2003*), accounting standards which have the force of law and the Australian government's *CLERP* and the Australian Stock Exchange Listing Rules.

The *ASX* Corporate Governance Council (*ASX CGC*) was established in August 2002 as a collaborative, industry-based body set up to develop international best practice corporate governance recommendations. The *ASX CGC* includes representatives from more than 20 businesses, shareholder and industry groups from disparate business backgrounds

[7] For example, agents may pursue opportunities which benefit themselves (agents) and not principals and/or bias information flows to principals.

each offering valuable guidance and information specific to stakeholder constituencies and industry (ASX CGC 2003). On 1 January 2003, the *ASX CGC* introduced a number of significant amendments to the *ASX* Listing Rules to enhance compliance with corporate governance best practice. Three months later, the *ASX* Principles of Corporate Governance 2003 were released by the *ASX CGC* representing the most comprehensive statement of best practice in Australia (ASX CGC 2003). The adoption of this framework represented a major evolution in corporate governance practices in Australia.

Notwithstanding the groundbreaking nature of the *ASX CGC*'s Principles of Corporate Governance and Best Practice Recommendations 2003, the principles are, nevertheless, guidelines and not prescriptions. *ASX* Listing Rule 4.10.3 provides that a firm must include in the firm's annual report a statement disclosing the extent to which the firm has complied with the *ASX* Principles of Corporate Governance 2003 during the reporting period (ASX CGC 2003). If the firm has not complied with any one of the recommendations then it must provide reasons for the non-compliance. This process is commonly referred to as an 'if not, why not' policy (ASX CGC 2003). It is considered an effective approach because it allows listed firms a degree of flexibility to consider a range of means to address corporate governance issues and avoid particular recommendations that might be particularly onerous for firms to comply with (ASX CGC 2003).

The Australian government's *CLERP* was announced in 1997 as an initiative to improve the regulation of firms operating in Australia. *CLERP* is an ongoing program that seeks to ensure that Australia's business regulation is consistent with international best practice and provides an appropriately secure environment for investment in Australia. The program is specifically aimed at enhancing the transparency of financial information and the accountability of market participants by modernizing the regulation of fundraising, takeovers, director's duties, corporate governance, financial reporting, financial markets and investment products (Commonwealth Government of Australia 2004). The policy frameworks that have been developed under the *CLERP* initiative since 1997 have prompted the enactment of legislation in all key areas of firm regulation.

Given the wide-ranging impact of the *ASX* CGC's Principles of Corporate Governance and Best Practice Recommendations 2003 and *CLERP 9* on the audit function and on listed firms to implement appropriate policies and procedures over risk management and financial reporting processes, the corporate governance practices of listed Australian firms and the auditing practices of audit firms are expected to improve.

2.3.1 Australia's corporate governance environment

The public accounting profession was widely criticized during the past decade for failing to protect investor interests (Blue Ribbon Committee 1999; Securities and Exchange Commission 2000). Such failures by the profession were significant and included: HIH Insurance Ltd, OneTel Ltd and Harris Scarfe Ltd in Australia and Enron Ltd, WorldCom Ltd, Global Crossing Ltd and HealthSouth Ltd in the USA. The Australian government responded to the corporate failures in Australia by initiating several inquiries (for example, Joint Committee on Public Accounts and Audit 2002; Ramsay 2001), instituting the HIH Royal Commission in 2003 and enacting *CLERP 9*.

The corporate failures of the past decade represented failures across all parts of the corporate governance mosaic. The corporate governance failures represented not just failures of management and auditors but also most parts of the corporate governance system (for example, audit committees, professional accounting bodies, standard-setters, regulatory bodies and stock exchanges (Jubb et al. 2008)). A corporate governance system has a number of important but diverse participants and the inter-relationships between the participants are important in achieving effective corporate governance practices within and across firms.

The *ASX* was listed on 13 October 1998, and began operation as a public firm operating as the main national stock exchange for equities, derivatives and fixed-interest securities (Gay and Simnett 2007). Pursuant to Section 769 of the *Corporations Act*, the *ASX* develops or adopts Listing Rules in the interests of the public thus making the *ASX* part of the regulatory regime within which listed firms disclose required financial information. Although the *ASX* does not have a direct role in the oversight of the audit function, the *ASX* does prescribe the form and nature of corporate disclosures through Listing Rules and a continuous disclosure regime backed by the *Corporations Act*. Specifically, the *ASX CGC*'s Principles of Corporate Governance and Best Practice Recommendations 2003 is an example of regulatory changes initiated by the *ASX*.

The recommendations by the *ASX CGC* come in the form of ten principles and 28 recommendations for effective corporate governance in Australia. A number of the *ASX CGC* principles and recommendations have an impact on the audit function. Specifically, Recommendations 2.1 and 2.3 of Principle 2 titled 'Structure the board to add value' recommend that the board of director's should consist of a majority of independent directors and that there be no Chief Executive Officer (CEO) duality.[8] Furthermore, Recommendations 4.2 and 4.3 of Principle 4 titled 'Safeguard integrity in financial

[8] CEO duality refers to a situation where the CEO of the firm is also the Chairman of the board of directors (Carcello, Neal, Palmrose, and Scholz 2006; Donaldson and Davis 1991).

reporting' requires listed firms to establish an audit committee and stipulates the audit committee's composition (ASX CGC 2003). The principles and recommendations have been designed to strengthen the independence of the audit function by having independent directors and appropriately structure audit committees which will be able to make unbiased decisions in the event of auditor-management disputes.

On 6 March 2006, the *ASX CGC* released the results of a user survey issued on November 2005 designed to understand the relevance of corporate governance disclosure to the investment and analyst community. The results of the 2006 *ASX* survey prompted a formal review of the *ASX* Principles of Corporate Governance and Best Practice Recommendations 2003 and the subsequent changes to existing recommendations became effective from 1 July 2007 onwards. Among the changes affecting the audit function was the right of a firm's audit committee to seek access and explanations from the auditors and to make recommendations for the appointment and where necessary, removal of the external auditor. In addition to the *ASX* Principles of Corporate Governance and Best Practice Recommendations 2003, *CLERP 9* also plays a significant role in the corporate governance debate and the audit function.

CLERP 9 has made a significant impact on the audit function. Specifically, *CLERP 9* amended the *Corporations Act* in several ways to deal with the issue of audit standard-setting and auditor independence. The Financial Reporting Council (*FRC*) is charged with oversight over auditor independence. This is achieved by providing the *FRC* oversight over the auditing standard-setting process and reconstituting the previous Australian Auditing Standards Board (*AASB*) to become the *AuASB* effective 1 July 2004, a statutory entity with a government-appointed chairperson reporting to the *FRC* (Jubb et al. 2008). In essence, *CLERP 9* changed the auditor-auditee relationship and moved the process of setting auditing standards from the private sector to the public sector.

Specifically, *CLERP 9* amended the *Corporations Act* dealing with auditor independence by, among other things:

1. requiring the auditor to make annual declarations to the board of directors of auditees that the auditor has maintained independence to the client;
2. strengthened restrictions on the employment opportunities between the auditor and auditee;
3. imposing new restrictions on financial relationships between the auditor and auditee;

4. mandatory disclosure in the annual report of the categories of non-audit fees received by the auditor from the auditee; and
5. making audit lead engagement and review partner rotation compulsory after five years (Commonwealth Government of Australia 2004).

Corporate governance research has focused mainly on four key parties, namely: board of directors, audit committee, internal audit and external audit. The four groups have also been identified as the major stakeholders in the corporate governance mosaic that play a significant role in influencing the role and responsibilities of the audit function (Cohen, Krishnamoorthy, and Wright 2002).

2.3.1.1 Board of directors

Prior research shows that the board of directors plays a vital role in promoting the audit function by, among other things, enhancing auditor independence and acting as an intermediary between the auditor and management (for example, Andersen, Mansi, and Reeb 2003; Beasley 1996; Beasley and Salterio 2001; Carcello et al. 2002; Karamanou and Vafeas 2005; Klein 1998; Kosnik 1987; Vafeas 1999).

The board of directors is generally vested with the power to manage firms. In turn, the board of directors will generally delegate most of the day-to-day tasks and running of the firm to executive officers or managers (Carcello et al. 2002; Fama 1980; Jensen and Meckling 1976; Klein 1998; Vafeas and Theodorou 1998). The board of directors is essentially one of the mechanisms within firms to manage agency costs.

Agency theory suggests that, as a result of information asymmetries and self-interest, principals lack reasons to trust agents and will seek to resolve the concerns by putting in place mechanisms to align the interests of agents with principals. The mechanisms implemented, therefore, reduce the scope for information asymmetries and opportunistic behavior (Simunic 1980; Watts 2003; Watts and Zimmerman 1990).[9] Various such structures/methods may be used to try to align the interests of agents with principals, and to allow principals to measure and control the behavior of, and reinforce trust, in agents (Simunic 1980; Watts 2003; Watts and Zimmerman 1990). One such structure is the board of directors.

The board of directors is formulated to monitor management and ensure that the actions of management are in line with the expectations of shareholders. The board of directors has a broad role in overseeing all accountability activities, including relations with

[9] Differing motivations and information asymmetries lead to concern about the reliability of information, which affects the level of trust that principals will have in agents.

the external audit function. However, given the broad scope and severity of the board of director's responsibilities, the board of directors often delegates accountability responsibilities for the audit function to a sub-committee, the audit committee (DeFond, Hann, and Hu 2005; Kesner 1988; Reinstein and Callaghan 1984).

2.3.1.2 Audit committee

The audit committee is a sub-committee of the board of directors and ordinarily comprises a majority of independent/non-executive directors and represents the owners of the firm rather than management. The audit committee is usually assigned the role of overseeing the financial reporting and auditing process and, thus, the auditor's major dealings with a firm is through the audit committee (Abbott and Parker 2000; Baxter and Pragasam 1999; Carcello, Hollingsworth, Klein, and Neal 2006; Collier and Gregory 1999; Dezoort 1998; Jamieson 1980; Vanasco 1994). The audit committee, therefore, may have a major impact on the audit function.

The development of audit committees in Australia can be traced to the 1970s following the great corporate crashes during the 1970s which undermined confidence in Australian firms (Jamieson 1980). However, very little concrete action was taken in terms of audit committee formation and operation until 1992 when the *ASX* released the 1992 Exposure Draft mandating audit committees for all listed firms (Vanasco 1994). However, the *ASX* decided not to proceed with this initiative because submissions in response to the 1992 Exposure Draft indicated that such requirements can be onerous for many listed firms (Baxter and Pragasam 1999). Instead of mandating audit committee formation, the *ASX* introduced initial requirements regarding audit committees in 1993 through the release of two Listing Rules. Specifically, Listing Rule 4.10.2 of the *ASX* requires a firm to indicate whether the firm has an audit committee at the date of the director's report and if the firm did not, an explanation why (ASX CGC 2003).

Recommendation 4.2 of the *ASX CGC*'s Principles of Good Corporate Governance and Best Practice Recommendations 2003 suggests that listed public firms should have an audit committee. Furthermore, the top 500 firms on the *ASX* must also comply with the audit committee requirements of *ASX* Listing Rule 12.7, which requires any firm included in the Standard & Poors/*ASX* All Ordinaries Index at the beginning of its (the firm's) financial year to have an audit committee during that year. The composition, operations and responsibility of the audit committee must comply with the best practice recommendations of Principle 4 of the *ASX CGC*'s Principles of Good Corporate Governance and Best Practice Recommendations 2003.

It is argued that an effective audit committee takes an active role in overseeing the firm's accounting and financial reporting processes (Abbott and Parker 2000; Carcello and Neal 2000; Klein 2002; Turley and Zaman 2007). Also, the audit committee should maintain a direct line of communication between the board of directors and the firm's auditors, permitting frank discussions of matters such as controversial accounting issues, disagreements with management, weaknesses in the design and/or operation of internal control and difficulties experienced by the auditor during the audit. The audit committee normally discusses the general scope and timing of the external audit with the external auditor but the audit committee does not review the detailed audit work program (Abbott et al. 2003b; Collier and Gregory 1996; Karamanou and Vafeas 2005; Zhang et al. 2007). The audit committee is also normally involved in the nomination of the external auditor, reviews the reasonableness of the audit fees charged and monitors the provision of non-audit services performed by the auditor and the associated impact on auditor independence (Arens, Loebbecke, Best, and Shailer 2002; Gay and Simnett 2007). In addition to liaising with the external auditor, the audit committee often oversees the operations of the firm's internal audit function (if any).

2.3.1.3 Internal audit

Internal audit is an important part of a firm's corporate governance structure. This importance is highlighted by the Institute of Internal Auditor's (*IIA*) Practice Advisory 2130-1 which stresses that internal auditors should take an active role in support of a firm's ethical culture and, in this way, help detect misappropriation of a firm's assets (IIA 2004).

The high profile corporate collapses in the last decade of companies such as Enron, WorldCom, Parlamat and HIH have renewed the emphasis on the relevance of internal auditing as part of overall governance processes (Brody and Lowe 2000; Carcello, Hermanson, and Raghunandan 2005; Felix et al. 2001; Goodwin-Stewart and Kent 2006a). Bailey, Gramling and Ramamoorti (2003) and Goodwin-Stewart and Kent (2006b) noted that unlike past responses to corporate scandals, many stakeholders are looking to the internal audit function as part of the solution to the perceived control, reporting and ethical problems in the corporate sector. The *IIA* certainly sees the objective of internal auditing as both supporting and strengthening a firm's governance mechanisms and evaluating and improving the effectiveness of risk management and internal control mechanisms (IIA 1999). The views of the *IIA* suggests that the value of internal audit as part of the governance structure within a firm is at the operational level rather than as part of a 'higher level' oversight structure. In Australia, recent changes to the *Corporations Act* and the *ASX* Listing Rules have strongly emphasized the importance of good corporate governance structure and

practices. Given the perceived importance of internal audit as part of good corporate governance, the regulatory changes are likely to enhance the role and importance of internal audit, both in Australia and overseas.

Additionally, an effective internal audit function is of considerable benefit to the external audit function (Abbott, Parker, Peters, and Rama 2007; Goodwin-Stewart and Kent 2006b; Singh and Newby 2010). Australian Auditing Standard 610 titled 'Considering the work in internal audit' clearly explains the substantial role that internal audit can play during the course of an external audit. Specifically, internal audit work completed by the internal auditor in the area of internal control evaluation and overall risk management of a firm can be used by an external auditor resulting in a reduction in the nature and extent of the substantive testing by the external auditor (AuASB 2006).

2.3.1.4 External audit

The external audit function serves a vital economic purpose and plays an important role in serving the public interest of strengthening accountability and reinforcing trust and confidence in financial reporting. Audits, therefore, help enhance economic prosperity by expanding the variety, number and value of transactions that stakeholders are prepared to enter into with a firm (Jubb et al. 2008; Leung et al. 2007).

The role of an external audit to provide assurance on the quality of publicly reported accounting information limits the firm's ability to manipulate accounting information. This, in turn, reduces the firm's ability to extract wealth from outside shareholders. For instance, an external auditor can note when a controlling owner manages earnings downward to justify low cash dividends paid to outside shareholders, or when the controlling owner profits from transactions with the firm that the controlling owner manages by manipulating accounting numbers to influence the selling or purchase price of the transactions (Fan and Wong 2005).

In addition, publicly reported accounting information, which measures a firm's financial position and performance, can be used as important input information in various corporate governance mechanisms such as managerial incentive plans (Bushman and Smith 2001). Whether and how reported accounting information is used in the governance of a firm depends on the quality and credibility of such information. The external auditor plays an important role in verifying the reported financial information.

As indicated in Section 2.2, the audit function is one mechanism to manage the agency costs which arise as a result of the differing interests of owners and managers of firms (Collier and Gregory 1999; Fama 1980; Jensen and Meckling 1976). Specifically, the audit function enhances the credibility of financial statements prepared by management and since key corporate governance responsibilities within a firm include ensuring the integrity

of reported financial information and effectiveness of risk management processes by firms, the audit function, therefore, is an integral component of an effective corporate governance regulatory regime.

2.3.1.5 Overall summary

Corporate governance is concerned with the systems of law, regulations and practices that promote enterprise and ensure accountability by encouraging transparency and probity in corporate affairs. Thereby, corporate governance makes a major contribution to improving business standards (Abbott et al. 2007; Daily, Dalton, and Cannella 2003; PWC 1997; Williamson 1984). There are important factors internal to the firm (such as the board of directors, audit committees, internal audit functions) and important external factors to the firm (such as external auditing, laws and regulations and competitive markets) which ensure the proper functioning of an effective corporate governance system.

2.3.2 Australia's auditing environment

Auditing is a unique profession in the sense that auditing is a private enterprise that operates in the public interest and seeks to improve firm operations and practices. In addition, auditing is a diverse profession ranging from multinational public accounting firms to small one-person accounting offices offering a broad range of assurance services (Jubb et al. 2008). Thus, it is unsurprising that there are a number of regulatory/government and professional organizations that exist to help regulate audit services provided by members of the auditing profession.

The *FRC* is a statutory body established under Section 225 (1) of the *ASIC* Act 2001. The *FRC* was established in 1999 to have a broad oversight over the accounting standard-setting process. Since introduction of the recent *CLERP 9* changes, the oversight responsibility of the *FRC* was expanded to include oversight of the auditing standard-setting process, and monitoring auditor independence (Gay and Simnett 2007).

The *ASIC* is an independent Commonwealth body established on 1 January 1991 responsible for the registration of all company auditors. *ASIC* has the power to investigate all serious breaches of the *Corporations Act 2001*, recover property or damages and to lodge criminal prosecutions. Following *CLERP 9* amendments, *ASIC*'s responsibilities were enhanced particularly in relation to enforcing auditor independence and registration requirements (Arens et al. 2002). The Companies Auditors and Liquidators Disciplinary Board is responsible for the discipline of auditors. *ASIC* can apply to the *CALDB* to have an auditor's license suspended or cancelled if there is a breach by that auditor of the *Corporations Act 2001*.

The *ASX* operates as a listed firm but is also part of the regulatory regime within which listed firms disclose required financial information. Whilst not having a direct oversight function over the audit function, the *ASX* nevertheless mandates the form and nature of corporate disclosures via Listing Rules and continuous disclosure requirements (Jubb et al. 2008; Leung et al. 2007). The *ASX*, therefore, influences the external audit function.

In addition to regulatory agencies that play a role in monitoring the audit function, there are also a number of professional organizations that represent the public accounting profession in Australia. These include: *CPA Australia*; the Institute of Chartered Accountants in Australia (*ICAA*); and the National Institute of Accountants (*NIA*). Membership to *CPA Australia*, *ICAA* or the *NIA* is necessary to satisfy the registration qualifications for auditors and liquidators. Also *CPA Australia*, *ICAA* and the *NIA* provide a broad range of services to respective members to ensure that the members serve the public interest when performing quality professional services (Hay, Knechel, and Ling 2008; Leung et al. 2007).

The public accounting profession in Australia comprises a broad range of practitioners that can be classified into four groups: international, national and regional and suburban/local. International accounting/auditing firms have offices in major cities throughout the world and dominate the practice of public accountancy having the resources needed to service multinational firms. The largest firms among the international practices are (currently) commonly referred to as the *Big4* and comprise of PricewaterhouseCoopers (PwC), KPMG, Ernst & Young (EY) and Deloitte Touche Tohmatsu (DTT) (Leung et al. 2007).

The *Big4* auditors dominate the auditing services of the top firms listed in the *ASX*. In August 2006, Business Review Weekly (*BRW*) published details of the total fees and professional services provided by the *Big4* to the top 200 *ASX* listed firms. Specifically, according to the *BRW* (2006): PwC had a 31% share with billings of $99.88 million and 63 clients of the top 200 *ASX* listed firms (as clients); KPMG had a 27% share with total billings of $127.42 million and 55 clients audited; EY had a 24% share with billings of $102.87 million and 47 clients; and DTT had a 11% share with billings of $28.24 million and 22 clients. Meanwhile, smaller firms serviced the final 7% with billings of $3.25 million and 13 clients audited (2006).

National firms have offices in major cities in Australia and service mainly medium-sized and small clients (Business Review Weekly 2006). Many national firms have some association with similar-sized firms in other countries to handle the international needs of

clients (PWC 1997). There are also regional and local firms whose size and type depends on the services provided and the needs of clients. Generally, regional and local firms serve small businesses and individuals in a restricted geographical area in the city or country and can range from individual practitioners with no professional staff to partnerships with five or more partners and between 15 to 20 professional staff (Business Review Weekly 2006).

The widespread corporate collapses and subsequent audit reforms at the beginning of the 21st Century has resulted in the accounting and auditing profession revisiting core values and objectives, identifying major changes and initiatives for regaining public trust and safeguarding public interest. As a result of this paradigm shift, the role and functions of the auditing profession has diverged from the previous roles with a much sharper focus on safeguarding the integrity of a firm's financial information with legally enforceable and internationally aligned auditing standards (Gay and Simnett 2007; Leung et al. 2007). The various private and public sector regulatory agencies and professional accounting organizations in Australia collectively play a critical role in ensuring the successful transition of the audit function into this current environment by focusing on factors such as standard setting, quality control and government regulation (Arens et al. 2002).

2.4 FACTORS INFLUENCING AUDIT FEES

Determining an audit fee which is mutually acceptable to auditors and auditees is a dilemma common to both parties due to the multiple conflicting business environment relationships. For instance, auditors deserves fair compensation for services provided and auditees should be assured key stakeholders are getting appropriate value from auditors for audit fees paid (Maher, Tiessen, Colson, and Broman 1992). Regulators, meanwhile, are responsible for protecting the interests of the investing public whilst independent auditors help maintain confidence in the marketplace (Jensen and Meckling 1976).

Much of the research in audit fee markets (Felix et al. 2001; Hay et al. 2006) has followed the seminal work by Simunic (1980) and investigated a number of firm and auditor attributes associated with audit fee variation such as firm size, complexity, risk and auditor size and specialization. Such attributes have consistently been found to influence audit fees across various studies, sample sizes and countries (Hay et al. 2006). In fact, a common methodology has developed from the literature examining the determinants of audit fees, largely based on Simunic's (1980) original work. Typically, an estimation model is created by regressing audit fees against a range of measures which proxy for attributes hypothesized to increase or decrease audit fees (Gonthier-Besacier and Schatt 2007; Ho and Ng 1996; Thinggaard and Kiertzner 2008).

Simunic (1980) initiated the research on audit fee modeling by investigating the level of competition in the USA audit market for publicly held firms using a multiple regression model with ten independent variables classified into three audit cost categories (that is, loss exposure, loss sharing and auditor production function) and a dichotomous variable for firm type (*Big8* versus non-*Big8* auditor). The audit fee was the dependent variable. Data was collected from 397 firms that responded to a 1977 survey. Details of the independent variables in each category of his seminal study are provided in Table 2.1.

Table 2.1:
Audit Cost Categories in Simunic's (1980) Study

Loss exposure	Loss sharing	Auditor production function
Total assets at year-end	Net income divided by total assets	Number of years auditee has used current auditor
Number of subsidiaries	Dummy variable given the value of 1 if auditee incurred a loss in any of the last 3 years, and 0 otherwise	
Industry classification	Dummy variable given the value of 1 if auditee received a qualified audit opinion, and 0 otherwise	
Foreign assets divided by total assets at year-end		
Accounts, loans and notes receivable divided by total assets at year-end		
Inventories divided by total assets at year-end		

The Simunic (1980) study revealed that the market for audit services was competitive in the USA for both large and small auditee segments, with larger audit firms having economies of scale. However, there were no overall price differences between *Big8* and non-*Big8* auditors of both large and small auditees. This suggested that the higher charge-out rates of *Big8* audit firms counteracted any economies of scale (hence, the cost savings were not passed onto auditees). The seminal study by Simunic (1980) led to numerous replications and extensions in the audit markets of other countries to test for what is often referred to as 'quality-differentiated' audit pricing. Simunic's (1980) seminal study also represents one of the first audit fee studies attempting to distinguish between the various theories explaining the higher pricing of audits by brand name audit firms.

Essentially, Simunic (1980) presented a production perspective of the auditing process in which he (Simunic 1980) believed that there were certain common drivers associated with the variation of audit fees.[10] The number of explanatory drivers/variables has grown substantially since the work of Simunic (1980). In a competitive market with homogeneous products and audit production processes, a strong association of cost and audit fees is unsurprising.

[10] Simunic (1980) deemed that the identified drivers caused the auditor to alter the number and type of audit procedures used during the audit.

The number and extent of audit procedures applied should be the primary determinants of audit fees since the auditor determines the audit fee (Chan et al. 1993; Chung and Lindsay 1988; Hay et al. 2006; Simunic 1980; Taffler and Ramalingam 1982; Turpin 1995). However, since most audit procedures cannot be observed explicitly when undertaken or appropriate access to auditor working papers achieved, alternative measures are needed to proxy for the audit procedures. For example, the literature has formulated various firm attributes such as size, complexity and risk as appropriate proxies for the number and extent of audit procedures completed by the external auditor. This study adopts a similar approach and uses a number of attributes to proxy for audit work undertaken by the auditor.

The remainder of this section provides an overview of the empirical literature impacting audit fees.[11] The literature is classified under the various proxies/measures that have been used to investigate the association between the firm and auditor attributes and audit fees. Table 2.2 at the end of the chapter provides details of the studies in chronological order.

2.4.1 Firm size

It is often argued (and empirically found) that the larger the firm being audited, the greater the audit fee charged to the firm (Abbott, Parker, Peters, and Raghunandan 2003a; Caneghem 2010; Carcello et al. 2002; Karim and Moizer 1996; Mitra et al. 2007; Naser and Nuseibeh 2007; Redmayne, Bradbury, and Cahan 2010; Simon and Francis 1988; Thinggaard and Kiertzner 2008; Venkataraman, Weber, and Willenborg 2008). It is logical given that, (*ceteris paribus*), the larger the firm the greater the number of work processes and amount of transactions require audit attention. This will manifest itself in the form of increased audit procedures that will, in turn, increase audit fees (Carcello and Nagy 2004; Francis 1984). Firm size is typically measured by total assets, although researchers have also used total sales, net assets and number of employees as alternative measures (Pfeffer 1973; Reynolds and Francis 2001; Zhou and Elder 2002). Studies using firm size as a determinant of audit fees are detailed below under the headings of the proxies/measures used.

2.4.1.1 Total assets

Virtually every study (beginning with Simunic (1980)) examining audit fee modeling, regardless of country and period of study, has documented a significant positive relationship between a firm's total assets and audit fees (Al-Harshani 2008; Beasley and Petroni 2001; Carcello and Nagy 2004; Chan et al. 1993; Dunmore and Shao 2006; Wang

[11] The groupings/headings used in the following paragraphs (that is, firm size, complexity, risk and audit firm characteristics) are purely for exposition purposes and are not necessarily intended to be categories used in subsequent analysis.

and Sewon 2009; Zang, Choi, and Kim 2010). The empirical results of prior research clearly indicate that larger firms require greater audit effort thereby resulting in higher audit fees.

Three studies deserve individual attention given that the studies occurred in Australia. The studies in question were undertaken by Francis (1984), Gerrard, Houghton and Woodliff (1994) and Goodwin-Stewart and Kent (2006a). Francis (1984) adapted Simunic's (1980) model for use in studying the Australian audit market. Francis (1984) used a random sample of 30 industrial firms listed on the Sydney Stock Exchange from each of the years 1974-1978, totaling 150. Seventy-one (71) firms employed *Big8* accounting firms and 79 employed non-*Big8* firms. This is consistent with the fact that *Big8* firms audited approximately half the publicly-traded firms in Australia at that time. The sample was partitioned into 'small' and 'large' auditees (based on the median auditee asset value) to assess the joint effects of product differentiation and economies of scale. One of two hypotheses tested, suggested that audit practice size had no effect on audit prices in Australia. The audit practice size hypothesis was rejected, supporting the existence of product differentiation by the *Big8* audit firms in the Australian audit services market. Francis (1984) found that *Big8* firms were associated with higher audit fees for large auditees, consistent with the perception that the larger audit practices provide higher quality audits.

Gerrard, Houghton and Woodliff (1994) sought to determine the extent to which audit fees could be explained by variables already identified in the prior literature. Firms selected for inclusion in this study were the 300 largest publicly-listed firms (by asset size) in Australia during the 1980s. The authors selected 13 alternative measures of auditee size, four measures of firm complexity, internal audit, type of auditor and industry differences as possible explanatory and control variables (Gerrard et al. 1994). The results indicated that auditee size (particularly total assets) and complexity were clearly significant, with various alternative measures for both auditee size and complexity achieving high levels of explanatory power also.

Finally, Goodwin-Stewart and Kent (2006a) published the results of a study conducted in Australia which examined the relationship between the number of employees in an internal audit function and audit fees. The data was collected from a survey of all Australian publicly listed firms in October 2000, from which there were 406 usable responses.[12] The results of this study suggest a significant positive association between the

[12] Additional information on the 406 firms was also obtained from the firm's annual reports.

internal audit function and audit fees (with the highest explanatory variable in the regression model being the firm's total assets).

2.4.1.2 Total sales

Other studies sought to examine if sales was a significant predictor of audit fees. Taylor and Baker (1981), after examining the regression estimation model for audit fees first formulated by Simunic (1980), sought to determine if firm size continued to have a significant relationship with audit fees if a firm's total sales was used as a proxy/measure for firm size instead of total assets. The Taylor and Baker (1981) study (and others (for example, Chan et al. 1993; Chaney, Jeter, and Shivakumar 2004; Clatworthy and Peel 2007; Firth 1985)) using a firm's total sales as a proxy for firm size concluded that firm's total sales was also a significant explanatory variable for audit fees.

2.4.1.3 Net assets and number of employees as proxies for firm size

Firth (1985) utilized net assets of a firm whilst Naser and Nuseibeh (2007) used total number of employees within a firm as alternative measures to investigate the extent of the association between firm size and audit fees. In both cases, results from Firth (1985) and Naser and Nuseibeh (2007) indicated that a firm's net assets, or number of employees, were significant surrogates for firm size in explaining the variation in audit fees (although the explanatory power for net assets and number of employees was less than that of total assets and sales). Subsequent studies have also indicated the positive relationship between the number of employees and audit fees (Choi, Kim, Kim, and Zang 2010; Mitra, Deis, and Hossain 2009; Zang et al. 2010).

2.4.2 Firm complexity

The more complex the nature of the firm, the more difficult the firm will be to audit. More time, therefore, will be needed to complete the audit. This resulting task complexity will, in turn, increase the audit effort to first, understand, and second, develop appropriate audit procedures to manage the complexity. The increase in audit effort will, naturally, translate into higher audit fees (for example, Anderson and Zeghal 1994; Chan et al. 1993; Choi et al. 2005; Chung and Lindsay 1988; Firth 1985; Francis 1984; Francis and Simon 1987; Ho and Ng 1996; Karim and Moizer 1996; Low, Tan, and Koh 1990; Simon, Ramanan, and Dugar 1986; Simunic 1980; Taffler and Ramalingam 1982; Taylor 1997).

Firm complexity has been measured in a number of different ways by researchers (Maher et al. 1992; Thinggaard and Kiertzner 2008). The most typical measures include: number of domestic subsidiaries; number of foreign subsidiaries; the number of business and geographic segments; and certain types of general ledger balances. Overall, while the choice of proxies measuring firm complexity has varied across studies, the empirical evidence

clearly supports a significant positive relationship between firm complexity and audit fees. Studies using firm complexity as a determinant of audit fees are detailed below under the headings of the proxies/measures used.

2.4.2.1 Decentralization and diversified operations

A decentralized and diversified firm has much greater complexity of operations than a firm that operates as a single entity in one industry and location. Published studies have suggested that audit fees are higher when a firm has: (a) a greater number of domestic and/or foreign subsidiaries (Dunmore and Shao 2006; Ho and Hutchinson 2010; Redmayne et al. 2010; Simunic 1980; Taylor and Baker 1981; Thinggaard and Kiertzner 2008); (b) a high number of locations and countries of operations (Al-Harshani 2008; Felix et al. 2001; Palmrose 1986b; Taylor and Baker 1981; Zang et al. 2010); (c) operates in more than one industry (Low et al. 1990); (d) has more than one business segment (Choi et al. 2005; Hoitash, Markelevich, and Barragato 2007; Mitra et al. 2009); and (e) conducts foreign sales (Clatworthy and Peel 2007). In terms of the impact on audit fee, the complex nature of the firm's operations, result in the auditor spending more time and effort in planning, coordinating and executing auditing procedures. In addition, the greater the complexity of transactions and processes within the firm, the greater the number and type of difficulties expected to arise during the audit (Firth and Liau-Tan 1998; Ho and Ng 1996).

2.4.2.2 Financial balances of a firm

Certain general ledger balances within a firm require more time for an auditor to verify. Simunic (1980), suggested that accounts receivable and inventory balances pose one such difficulty given the need to undertake confirmation, observation and valuation procedures. Simunic (1980) indicated that valuation tasks in relation to the two aforementioned accounts prove particularly difficult and require a forecast of future events which proved difficult and time-consuming for the auditor to verify (for example, the likelihood of non-receipt of bad/doubtful debts for accounts receivable and determining the net realizable value for inventory).

Other research utilizing accounts receivable and inventory as a percentage of total assets has been undertaken in other countries, time-periods and sample sizes (Caneghem 2010; Iyer and Iyer 1996; Jeong, Jung, and Lee 2005; Wang and Sewon 2009). Results are generally consistent with Simunic (1980). The results suggested that accounts receivable and inventory balances, when used as explanatory variables for firm complexity, had a significant positive association with audit fees (Gonthier-Besacier and Schatt 2007; Hoitash et al. 2007; Mitra et al. 2009; Simon et al. 1986).

2.4.3 Firm risk

Audit fees are also thought to be positively associated with the risk of the audit engagement as certain parts of an audit may have a higher risk of error (Goodwin-Stewart and Kent 2006a; Simunic 1980). Examples of such risk indicators include low firm profitability, poor liquidity/solvency ratios, operating losses sustained by a firm and the issuance of a qualified audit report by the auditor. Such risks require the formulation of additional and specialized audit procedures by the auditor in order to prevent the issuance of an incorrect audit opinion (Goodwin-Stewart and Kent 2006a; Simunic 1980). The auditor will, therefore, increase both the number and type of audit procedures in order to ensure that the financial statements of the firm truthfully and fairly reflect the financial performance of the firm.

Firm profitability is often considered a measure of risk faced by the auditor as it represents the extent to which the auditor may be susceptible to legal exposure if the firm is no longer financially solvent (Simunic 1980). Generally, the poorer the financial performance of the firm, the greater the risk of manipulation by management (for example, in the form of asset revaluations and earnings management) (Menon and Williams 2001; Parkash and Venable 1993; Taylor and Baker 1981). This risk increases both the number and complexity of auditing procedures employed by the auditor which, in turn, increases audit fees. The types of variables normally used in prior studies to measure firm risk are: profitability ratios (for example, return on assets (*ROA*) and return on equity (*ROE*)); solvency and liquidity ratios (for example, current, quick and debt ratios); the existence of an operating loss; and the issuance of a qualified audit opinion in the prior period (Simon and Taylor 1997; Solomon, Shields, and Whittington 1999; Taylor and Baker 1981; Turpin 1995). Studies using firm risk as a determinant of audit fees are detailed below under the headings of the proxies/measures used.

2.4.3.1 Profitability ratios

Profitability ratios reflect the financial performance of a firm. Poor profitability ratios suggest that a firm is not performing well financially. This poor financial performance increases audit risk resulting in a greater number of audit procedures and, therefore, a higher audit fee. The past literature has used a number of different profitability ratios as a proxy for firm risk when assessing impact on audit fees. Such profitability ratios include: *ROA*; *ROE* and book-to-market-ratio (*BTM*) (Chan et al. 1993; Choi et al. 2010; Clatworthy and Peel 2007; Francis 1984).

Simunic (1980) was the first to utilize *ROA* as a profitability ratio to proxy for firm risk when investigating audit fee variation. The successful use by Simunic's (1980) of *ROA*

as a proxy for firm risk resulted in other researchers using alternative profitability ratios such as *ROE* (Al-Harshani 2008; Chan et al. 1993; Clatworthy and Peel 2007; Dunmore and Shao 2006; Francis 1984; Ho and Hutchinson 2010; Naser and Nuseibeh 2007) and *BTM* (Antle, Gordon, Narayanamoorthy, and Zhou 2006; Hoitash et al. 2007; Zang et al. 2010). Most of the research using *ROE* and *BTM* as proxies for firm risk also resulted in a significant association with audit fees.

2.4.3.2 Liquidity/solvency ratios

Researchers have also used a wide range of liquidity/solvency ratios to proxy for firm risk: including current ratio (Caneghem 2010; Chaney et al. 2004; Francis 1984; Hay et al. 2008; Low et al. 1990); quick ratio (Al-Harshani 2008; Antle et al. 2006; Chaney et al. 2004; Dunmore and Shao 2006; Francis 1984; Mitra et al. 2009); leverage ratio (Antle et al. 2006; Choi et al. 2005; Clatworthy and Peel 2007; Felix et al. 2001; Givoly and Hayn 2002; Ho and Hutchinson 2010; Hoitash et al. 2007; Jeong et al. 2005; Karim and Moizer 1996; Naser and Nuseibeh 2007; Redmayne et al. 2010; Simon et al. 1986; Thinggaard and Kiertzner 2008; Venkataraman et al. 2008); and debt ratio (Al-Harshani 2008; Chaney et al. 2004; Dunmore and Shao 2006; Firth 1997; Goodwin-Stewart and Kent 2006a; Singh and Newby 2010).

In Australia, Francis (1984) was the first researcher to use the current and quick ratios to proxy for firm risk when assessing the joint effects of *Big8* auditor product differentiation and economies of scale in the Australian audit market. Francis (1984) concluded that the current and quick ratios had significant explanatory power in supporting the existence of product differentiation by the *Big8* audit firms in the Australian audit services market.

Simon et al. (1986) were the first researchers to use the leverage ratio to proxy for firm risk when investigating audit fee variation in India. Simon et al. (1986) concluded that firm risk variables (proxied by the leverage ratio) were significant in explaining why *Big8* auditors received higher audit fees in the Indian audit market than other firms. Firth (1997) used a 'new' ratio (debt ratio) to proxy for firm risk when investigating audit fee variation in Norway. Firth's (1997) results showed that although total assets (proxying for firm assets) were significant in explaining the variation of audit fees, the debt ratio was not significant. The result suggests possibly that long-term assets or liabilities do not play a significant role in the determination of annual audit fees (Firth 1997).

2.4.3.3 Operating loss

The existence of an operating loss can increase the risk to a firm's long-term survival. A number of researchers have investigated the relationship between loss (proxying

for firm risk) and audit fees (Ho and Hutchinson 2010; Low et al. 1990; Venkataraman et al. 2008). Surprisingly, results have been mixed. A number of studies indicate that the operating loss of a firm has no significant bearing on the amount of audit fees charged by auditors (Dunmore and Shao 2006; Firth 1985; Venkataraman et al. 2008). Other researchers, meanwhile, have discovered a significant positive relationship between the operating loss by a firm and higher audit fees charged (Choi et al. 2005; Hoitash et al. 2007; Low et al. 1990; Wang and Sewon 2009). Although results appear mixed, generally the empirical results suggest that the operating loss by a firm does not have a significant association with the variation in audit fees. This suggests that auditors do not consider the operating loss of a firm as a major factor in the risk assessment of a firm.

2.4.3.4 Qualified audit opinion

Issuance, by an auditor, of a qualified audit opinion to a firm suggests to users that the auditor has an unresolved disagreement with management about the true and fair nature of the financial statements produced by management. The qualified audit opinion suggests that there exist significant uncertainties about the firm's operations that may result in future losses to the firm (Simunic 1980). As is the case for operating losses proxying for firm risk, the issuance of a qualified audit report as a proxy for firm risk has received mixed support from prior empirical results. Simunic (1980) and Jeong et al. (2005) suggest that a qualified audit opinion does significantly increase audit fees (as a result of the higher audit risk). However, a number of studies using a qualified audit opinion as a proxy for firm risk indicate that audit fees do not alter significantly when a firm is issued a qualified audit report (for example, Antle et al. 2006; Fama 1980; Francis 1984; Goodwin-Stewart and Kent 2006a; Jeong et al. 2005; Johnson, Walker, and Westergaard 1995; Low et al. 1990).

2.4.4 Audit firm characteristics

Higher audit fees might be expected when an auditor is recognized to be of superior quality. Generally, researchers have used a dummy variable for auditing firms classified as being a Big Firm (Gonthier-Besacier and Schatt 2007; Gore, Pope, and Singh 2001; Krishnan 2003). The literature postulates that a Big Firm auditor brings a higher level of quality to the engagement and will, therefore, charge a higher audit fee as a result of this quality/product differentiation (Basu, Hwang, and Jan 2000; Choi, Kim, Liu, and Simunic 2008; Ferguson and Stokes 2002; Francis, Maydew, and Sparks 1999; Krishnan 2003; Willenborg 2002). Although the literature generally supports this relationship, some studies have failed to find a significant relationship between a Big Firm auditor and audit fees (Chaney et al. 2004; Firth 1985; Johnson et al. 1995).

Industry specialist auditors may also charge higher audit fees. Specialist auditors are likely to invest more in staff recruitment and training, information technology and state-of-the-art audit technologies compared to non-specialist auditors (Dopuch and Simunic 1982). In addition to having more resources and expertise compared to non-specialist auditors, specialist auditors also enjoy a brand-name reputation which auditors protect. The reputational argument is consistent with O'Keefe et al. (1994) that specialist auditors exhibit greater compliance with auditing standards than non-specialist auditors in a desire to reduce reputational damage and litigation risk. Specialist auditors, therefore, seek to re-coup the investment in resources, expertise and reputation by charging a higher audit fee to the auditee.

A third audit firm characteristics used in investigating audit fee variation is the provision of non-audit services by the external auditor. Non-audit services may result in an increase in audit fees due to two reasons: (1), such services may lead to changes in a firm which will then require additional auditing (Hoitash et al. 2007); and, (2), the firm may have no choice but to pay a higher audit fee as a result of becoming dependent on such non-audit services (Palmrose 1986b). On the other hand, it is also argued that the provision of non-audit services can lead to lower audit fees as a result of cross-subsidization of fees or synergies between audit and non-audit services (Dunmore and Shao 2006; Felix et al. 2001).[13]

A fourth audit firm characteristic that has been examined is auditor tenure. It is postulated that auditors with longer ties with firms have a greater familiarity with the firm, the firm's accounting system and related internal controls (Beck et al. 1998a; Ghosh and Moon 2005). Given that the familiarity reduces firm complexity, the auditor requires less effort annually to understand the firm's operations and the saving in time translates to a lower audit fee (Kesner 1988; Mansi, Maxwell, and Miller 2004).

Studies using audit firm characteristics as a determinant of audit fees are detailed below under the headings of the proxies/measures used.

2.4.4.1 Big Firm auditor

Large international auditing providers may receive a fee premium for services consistent with the existence of a quality-differentiated audit. Simunic (1980) was the first researcher to investigate and confirm that the existence of a Big Firm auditor increases audit fees. Subsequent to Simunic (1980), almost all subsequent audit fee modeling literature has

[13] For example, Simunic (1984) suggests that the provision of auditing and non-auditing services to a firm may result in knowledge advantages which allow cost savings to be passed on to the firm in the form a lower audit fee.

used a Big Firm variable to either assess or control for audit fee variation. The literature suggests that Big Firms auditors do have a significant positive relationship with audit fees (Antle et al. 2006; Caneghem 2010; Gerrard et al. 1994; Goodwin-Stewart and Kent 2006a; Karim and Moizer 1996).

2.4.4.2 Auditor industry specialization

Bonner and Lewis (1990) found that, on average, more experienced auditors outperformed less experienced auditors. Bedard and Biggs (1991) observed that auditors with more manufacturing experience were better able to identify errors in a manufacturing client's data than auditors with less manufacturing experience. The observation is consistent with Johnson et al. (1991) that industry experience is associated with an enhanced ability to detect fraud. Maletta and Wright (1996) noted fundamental differences in error characteristics and methods of detection across industries. This suggested that auditors with a more comprehensive understanding of an industry's characteristics and trends will be more effective in an audit than auditors without such industry knowledge. Specialist auditors are also more likely to develop databases detailing industry-specific best practices, industry-specific risks and errors and unusual transactions, all of which serve to enhance overall audit effectiveness (Krishnan 2003). Specialist auditors, therefore, seek higher audit fees in exchange for the superior audit quality brought to the engagement (Choi et al. 2010; Redmayne et al. 2010).

2.4.4.3 Non-audit services

Palmrose (1986b) was the first researcher to provide evidence of a positive relationship between fees for audit services and fees for three other categories of non-audit services (that is, accounting-related management advisory services (*MAS*), non-accounting *MAS* and taxation services). The positive relationship between audit fees and non-audit fees rested on the premise of joint-supply benefits where the firm perceived (rightly or not) that the firm was better off with the joint supply of audit and non-audit services. Subsequent research examining the audit fees and non-audit fees relationship also found support for the joint-supply theory (Choi et al. 2010; Dunmore and Shao 2006; Felix et al. 2001; Hoitash et al. 2007; Lee, Mande, and Ortman 2003a). However, prior empirical literature also points, in a few instances, to circumstances where there is a negative relationship between the quantum of audit fees and the amount of non-audit services provided to the auditee by the incumbent auditor (Antle et al. 2006; Jeong et al. 2005). The suggestion, in the latter case, is that the supply of non-audit services is more productive than auditing services.

2.4.4.4 Auditor tenure

Simunic (1980) believed that the greater the length of relationship between the auditor and firm, the greater the knowledge and understanding the auditor has of the firm's operations and accounting system. This translated into less audit work and consequently, a lower audit fee. Surprisingly, Simunic's (1980) results indicated that there was no significant relationship in auditor tenure for explaining variations of audit fees. One possible reason for this is that the auditor may not be passing 'cost-savings' derived from the reduced audit work to the firm. In fact, subsequent studies examining auditor tenure (in terms of measures such as length of years, new auditor or change of auditor) have produced mixed results. Some studies have shown a positive relationship between auditor tenure and audit fees (Felix et al. 2001; Hoitash et al. 2007; Wang and Sewon 2009). Alternative studies show no significant association between auditor tenure and audit fees (Antle et al. 2006; Caneghem 2010; Johnson et al. 1995).

2.4.4.5 Other audit firm characteristics

Over time, a number of researchers have used other proxies to measure audit firm characteristics in an effort to determine the association with audit fees (Dunmore and Shao 2006; Francis et al. 1999). Iyer and Iyer (1996), for example, examined the effects of the 1989 mergers of four *Big8* firms in the United Kingdom (*UK*) on audit fees. Their (Iyer and Iyer 1996) results indicated that there were no differences in the level of audit fees between the two periods. Jeong, Jung and Lee (2005), meanwhile, gathered data on firms listed on the Korean Stock Exchange to investigate the relationship among audit fees, mandatory auditor assignment and the joint provision of non-audit and audit services. They (Jeong, Jung and Lee 2005) discovered that assigned auditors charged significantly higher audit fees than freely selected auditors suggesting that mandatory auditor assignment may improve auditor independence (as reflected in higher audit fees).

Hay, Knechel and Ling (2008), in an effort to provide evidence on whether internal control and external auditing act as substitutes for one another or complement each other, found that a 'new' auditor variable had no significant explanatory role in the determination of audit fees.[14] Gonthier-Besacier and Schatt (2007) sought to research the factors that influenced audit fees in France where the law requires a joint auditing process involving two separate auditors for firms that publish consolidated financial statements. They (Gonthier-Besacier and Schatt 2007) used the amount of consulting fees paid by the firm to the auditor (as a proxy for the audit firm) and determined that consulting fees did not have significant explanatory power in explaining the variation in audit fees. Finally, Venkataraman et al.

[14] The 'new' auditor variable referred to the firm having appointed a new auditor for the year.

(2008) used the initial public offerings (*IPOs*) setting in USA to examine the relationship between auditor exposure to legal liability and audit fees. Venkataraman et al.'s (2008) findings support the view that, in an *IPO* market where significant information asymmetries exist, auditors receive higher fees for the increase in litigation risk.

2.4.5 Corporate governance

It is suggested in prior research that a number of corporate governance variables affect audit fees (Abbott et al. 2003b; Carcello et al. 2002). Subsequent to a number of high profile corporate collapses within Australia and overseas in the early part of the century, existing rules and regulations were amended/strengthened in a number of countries to improve, among other things, the quality of corporate financial reporting processes. Specifically, regulatory changes were made to the composition and structure of corporate governance mechanisms such as the board of directors and audit committees within listed firms (ASX CGC 2003). It was postulated that a firm with better corporate governance practices choose to pay higher audit fees given that the external audit is viewed as a monitoring activity in improving the overall corporate governance profile of the firm (Abbott et al. 2007; Cohen et al. 2002; Dhaliwal, Naiker, and Navissi 2006; Krishnan and Visvanathan 2007; Singh and Newby 2010; Xie, Davidson, and DaDalt 2003). Studies using corporate governance characteristics as determinants of audit fees are detailed below under the headings of the proxies/measures used.

2.4.5.1 Board of directors

A firm's board of directors has the ultimate responsibility for accountability matters within a firm and report to shareholders. The board of directors also interacts with the audit function in an effort to both maintain auditor independence and assist the auditor with any problems during the conduct of the audit. A number of studies have attempted to investigate the link between board of director's characteristics and audit fees. Goodwin-Stewart and Kent (2006a) and Hay, Knechel, and Ling (2008) both determined that firms with external/independent board members who met regularly paid higher audit fees to auditors. This confirmed the complementary relationship thought to exist between key corporate governance mechanisms of firms and external audit.

2.4.5.2 Audit committees

The formation of the audit committee is the result of the renewed emphasis on corporate governance since early 1990s. While the board of directors is acknowledged as the ultimate corporate governance mechanism for monitoring the financial reporting process within a firm, responsibility for the general and day-to-day oversight is ordinarily delegated to the audit committee (Abbott et al. 2003b; Carcello, Hollingsworth, and Neal 2006; Klein

2002). Specifically, one of the key responsibilities of the audit committee is to provide oversight over the quality of financial reporting and corporate accountability (Lee and Mande 2005; Pincus, Rusbarsky, and Wong 1989). In this respect, the audit committee is also the agent between the board of directors and the external auditor. The audit committee deals extensively with the external auditor in order to ensure the external auditor's independence and overall audit effectiveness (Hay et al. 2008). In this respect, an audit committee is expected to impact positively on the quantum of audit fees charged to the firm.

Goodwin-Stewart and Kent (2006a) published a study conducted in Australia in which, among other things, the relationship between several structural and operational features of an audit committee were used to assess changes in audit fees. Specifically, Goodwin-Stewart and Kent (2006a) utilized audit committee member independence, member financial expertise and frequency of meetings as proxies for an effective audit committee and concluded that firms with effective audit committees tended to pay higher audit fees signaling the complementary association between both forms (that is, audit committees and external audit) of corporate monitoring.

2.4.5.3 Internal audit

The internal audit function is viewed by many scholars as part of the solution to the perceived control, reporting and ethical problems in the corporate sector (for example, Brody and Kaplan 1996; Brody and Lowe 2000; Carcello et al. 2005; Hayland and Verrault 2003). Unlike the audit committee, the internal audit function's benefit to a firm lies at the operational level rather than as part of a 'higher level' oversight structure. Research into the relationship between internal audit and audit fees has highlighted both a negative and positive relationship between the two monitoring mechanisms (Felix et al. 2001; Hay et al. 2006; Ho and Hutchinson 2010; Singh and Newby 2010).

Findings showing a negative relationship between internal audit and audit fees suggest that internal audit can be regarded, at least in part, as a substitute for external audit, as internal auditors can be involved in the actual conduct of an external audit by working as assistants under the direct supervision of external auditors (particularly, in the USA) (Felix et al. 2001). Alternatively, this relationship could arise from a lower assessment of audit risk resulting from internal audit involvement in strengthening controls within the organization (Felix et al. 2001; Palmrose 1986a; Wallace 1984).

Alternatively, findings showing a positive relationship between internal audit and audit fees suggest that internal audit and external audit can be regarded as complementary means of increasing the overall monitoring in an organization (Gerrard et al. 1994). This is consistent with the broader role of internal audit since early 2000, which has evolved from

one which was narrowly focused on controls to one which now also embraces risk management and corporate governance principles (Anderson and Zeghal 1994; Gerrard et al. 1994; Goodwin-Stewart and Kent 2006a; Hay et al. 2008). Hence, firms more committed to a strong corporate governance culture are likely to engage in greater levels of internal auditing as well as being prepared to pay for a higher quality external audit (Goodwin-Stewart and Kent 2006a; Hay et al. 2006). This view suggests that the internal audit function is unlikely to be restricted to activities directly related to the external audit and that firms which are more committed to strong corporate governance are likely to engage in both greater levels of internal auditing as well as external audit.

Goodwin-Stewart and Kent's (2006a) study (conducted in Australia) examined the relationship between the number of employees in an internal audit function (winsorized to a maximum of 25) and audit fees. Data was collected from a survey of all Australian publicly listed firms in 2000 resulting in 406 usable responses.[15] The results of this study suggest a significant positive association between the internal audit function and audit fees, implying that firms use internal audit and external auditors as complementary monitoring mechanisms rather than viewing internal audit as a substitute for the external audit (Goodwin-Stewart and Kent 2006a; Hay et al. 2006).

2.4.6 Other measures

Other measures exist which are postulated to impact audit fees. A common claim made by auditors and researchers is that certain industries are more difficult to audit than others (Gerrard et al. 1994; Gramling and Stone 2001; Kwon 1996). For example, telecommunication services and utilities have relatively large assets but are easier to audit than firms with extensive receivables and inventories, such as manufacturers (Goodwin-Stewart and Kent 2006a; Simunic 1980). A number of researchers have used industry dummy variables to investigate if there is an industry-effect on audit fees (Gerrard et al. 1994; Gramling, Johnson, and Khurana 2000). Results from published studies are conflicting with some studies indicating a significant relationship between industry with audit fees (Anderson and Zeghal 1994; Gerrard et al. 1994; Hoitash et al. 2007; Karim and Moizer 1996; Naser and Nuseibeh 2007; Simunic 1980). Meanwhile, other studies indicate no relationship between industry and audit fees (Antle et al. 2006; Caneghem 2010; Clatworthy and Peel 2007; Gonthier-Besacier and Schatt 2007; Goodwin-Stewart and Kent 2006a; Lee and Mande 2005; Palmrose 1986a).

[15] Additional information on the sampled 406 firms was also obtained from the annual reports.

Studies have also been completed suggesting that the legal regime of a country (Choi et al. 2005) and litigation risk (Venkataraman et al. 2008) have a significant positive relationship with audit fees. As such, given the riskier auditing environment for auditors, additional compensation is sought (in the form of higher audit fees) by auditors for the risks which the auditors undertake.

2.4.7 Summary of audit fee determinants

This study of audit fee determinants has made significant contributions in several areas since Simunic's (1980) seminal study and led to a greater understanding of differences in the worldwide market for audit services. Subsequent research extended variations of Simunic's (1980) model to a number of countries in varying stages of economic development. The results of such studies have shown remarkable consistency in the groupings/factors that explain audit fees. Specifically, in most studies, firm size, complexity and risk measures explain the majority of the variation in audit fees charged by external auditors to firms. Table 2.2 provides details of key empirical studies which have investigated audit fee modeling over the last 30 years.

Table 2.2:
Summary of Prior Studies on Audit Fee Modeling: Chronological Order

No.	Author/s (year)	Country	Sample size	Period of study	Firm size	Firm complexity	Firm risk	Audit firm characteristics	Corporate governance characteristics	Other	Main results
1	Simunic, D. (1980)	USA	1 207 firms	1977	Total assets	Number of subsidiaries, accounts receivable and inventory balances	*ROA* and issuance of a qualified opinion.	*Big8* auditor and length of auditor tenure with client.	-	Industries in which firms operates	The market for audit services was competitive in the USA in both the large and small firm segments, with large audit firms having economies of scale. However, there were no overall price differences between *Big8* and non-*Big8* auditors of both small and large auditees, suggesting that the higher charge-out rates of *Big8* audit firms counteracted the economies of scale (hence, the cost savings were not passed onto to firms).
2	Taylor, M. E. and Baker, R. L. (1981)	UK	126 firms	1976 and 1977	Total assets and total sales	Number of subsidiaries and countries of operation	-	-	-	-	Firm size and complexity measures were positively associated with audit fees.
3	Francis, J. (1984)	Australia	150 firms	1974 to 1978	Total assets	Total number of subsidiaries	Current ratio, Quick ratio, *ROA*, *ROE* and issuance of a qualified audit opinion.	*Big8* auditor	-	-	*Big8* audit firms were associated with higher audit fees for both large and small auditees.
4	Wallace, W. (1984)	USA	32 firms	-	-	-	-	-	Cost of internal audit function	-	A significant negative association existed between the total monetary resources consumed by an internal audit (used as a surrogate measure of external auditor's reliance of the internal audit function) and audit fees, suggesting a negative relationship between the internal audit contribution to the financial statement audit and audit fees.
5	Firth, M. (1985)	New Zealand	96 firms	1981 and 1983	Total assets, net assets and total sales	Total number of subsidiaries, receivables over total assets and inventory over total assets	Operating loss and variability of profitability	*Big8* auditor	-	-	There was no Big Firm fee premium effect, that is, the major audit firms did not charge more for their (Big Firm) services when the effects of other factors were controlled.

Table 2.2:
Summary of prior studies on audit fee modeling: Chronological order (continued)

No.	Author/s (year)	Country	Sample size	Period of study	Firm size	Firm complexity	Firm risk	Audit firm characteristics	Corporate governance characteristics	Other	Main results
6	Francis, J. and Stokes, D (1986)	Australia	96 smallest and 96 largest firms	1983	-	-	-	*Big8* auditor	-	-	*Big8* audit prices were significantly higher than non-*Big8* prices, suggesting the existence of product differentiation with respect to *Big8* firms. Moreover, there are no significant differences in audit prices charged by the *Big8* versus non-*Big8* firms.
7	Palmrose, Z. V. (1986a)	USA	361 firms	1980	Total assets	Number of operating locations	-	Total of non-audit services	Extent of internal audit involvement in external audit	Dummy variable for all industries	Larger firms were more likely to purchase MAS and that audit fees were higher for such firms, regardless of whether the MAS were provided by the principal auditor or another auditor.
8	Simon, D. T., Ramanan, R. and Dugar, A. (1986)	India	276 firms	1982-1984	Total assets	Total number of subsidiaries, receivables and inventory over total assets	Operating loss and leverage ratio	*Big8* auditor	-	-	The *Big8* firms received higher audit fees in the Indian market than other firms, apparently as a result of product differentiation.
9	Francis, J. and Simon, D. T. (1987)	USA	210 firms	1984-1985	Total assets	Total number of subsidiaries, total foreign subsidiaries over total subsidiaries, receivables and inventory over total assets	-	*Big8* auditor	-	-	*Big8* audit fees were significantly higher than other firm types.
10	Low, L., Tan, P. H. and Koh, H. C. (1990)	Singapore	291 firms	1986	Total assets	Number of different industries operating in, receivables over total assets and inventory over total assets	Operating loss, current ratio and issuance of a qualified audit opinion	-	-	-	The results of the investigation showed a strong association between audit fees and the determinants in the audit fees model. Specifically, firm size was by far the most important factor in the determination of audit fees.

Table 2.2:
Summary of prior studies on audit fee modeling: Chronological order (continued)

No.	Author/s (year)	Country	Sample size	Period of study	Firm size	Firm complexity	Firm risk	Audit firm characteristics	Corporate governance characteristics	Other	Main results
11	Simon, D. T., Teo, S. and Trompeter, G. (1992)	Hong Kong, Malaysia, Singapore	357 firms	1987	Total assets	Total number of subsidiaries	-	*Big6* auditor	-	-	There was evidence of a *Big6* audit firm fee premium in Hong Kong and Singapore but not in Malaysia. National regulations on foreign ownership and a significant number of family-controlled firms in Malaysia were considered as potential explanations for a lower demand for quality-differentiated audits in Malaysia.
12	Iyer, V. M. and Iyer, G. S. (1996)	UK	150 firms	1988-1989 and 1990 - 1991	Total assets	Receivables over total assets and inventory over total assets	-	Auditor involved in a merger	-	-	Firm size and complexity measures were significantly associated with audit fees, but that the merger status of the audit firm was not significant in either *pre*- or *post*-merger periods (implying that the mergers had no effect on audit fees). The results of the regression model also indicated that there were no differences in the level of audit fees between the two periods.
13	Chan, P., Ezzamel, M. and Gwilliam, D. (1993)	UK	985 firms	1989	Total sales	Total number of subsidiaries	*ROE*	*Big8* auditor	-	-	A *Big8* audit firm fee premium was observed for both large and small size auditees and three new variables: namely, extent of diversification, ownership control and audit location were also found to be significant predictors of audit fees.
14	Gerrard, I. Houghton, K. and Woodliff, D. (1994)	Australia	300 firms	1980s	Total assets	Total number of subsidiaries	-	*Big6/8* auditor	Internal audit existence	-	The results indicated that auditee size and complexity were clearly significant, with the various alternative measures for both auditee size and complexity successfully used in various regression models to achieve high levels of explanatory power. Additionally, there were marked industry differences in the models explaining audit fees and also differences between particular audit firms within the market for audit services.

Table 2.2:
Summary of prior studies on audit fee modeling: Chronological order (continued)

No.	Author/s (year)	Country	Sample size	Period of study	Firm size	Firm complexity	Firm risk	Audit firm characteristics	Corporate governance characteristics	Other	Main results
15	Anderson, T. and Zeghal, D. (1994)	Canada	172 firms	1980, 1982 and 1984	Total assets	Total number of subsidiaries, receivables and inventory over total assets	-	*Big8* auditor	Cost of internal audit function	Dummy variable for all industries	The results indicated a significant positive relationship between audit fees and firm size and complexity variables. There was also a significant relationship between audit fees and firm expenditures on internal auditing for the large firm segment of the sample.
16	Johnson, E. N., Walker, K. B. and Westergaard, E. (1995)	New Zealand	300 firms	1989	Total assets	Total number of subsidiaries, receivables and inventory over total assets	Operating loss and issuance of a qualified opinion	*Big5* auditor and tenure of auditor	-	-	The regression results for the large listed and small unlisted firm sub-samples also indicated large audit firm fee premiums averaging 12% in such market segments. However, no large audit firm fee premiums were noted in the large unlisted and small listed firm sub-samples, suggesting that large firm audit services were not quality differentiated in the segments of the New Zealand market.
17	Karim, A. K. M. and Moizer, P. (1996)	Bangladesh	157 firms	1992	Total assets	-	Leverage ratio	*Big5* auditor	-	Financial sector	The results show that auditee size is the most significant determinant of audit fees. The employment of a qualified accountant, auditor size and whether the firm was a subsidiary of overseas multinational parent firms were also found to determine higher audit fees.
18	Firth, M. (1997)	Norway	157 observations	1991-1992	Total assets	Total number of subsidiaries, receivables over total assets and inventory over total assets	*ROA* and debt ratio	Name of auditor	-	Dummy variable for all industries	The size of the firm (measured by total assets) was the major factor in determining the quantum of audit fees.
19	Felix, W. L., Gramling, A. A. and Maletta, M. J. (2001)	USA	70 firms	Not provided	Total assets	Number of operating locations	Leverage ratio	Tenure of auditor and provision of non-audit services	Extent of internal audit contribution to external audit	-	Internal audit was a significant determinant of audit fees and the greater the internal audit contribution to the financial statement audit, the lower the audit fees.

Table 2.2:
Summary of prior studies on audit fee modeling: Chronological order (continued)

No.	Author/s (year)	Country	Sample size	Period of study	Firm size	Firm complexity	Firm risk	Audit firm characteristics	Corporate governance characteristics	Other	Main results
20	Lee, H. and Mande, V. (2005)	USA	792 firms	2000	-	-	-	Amount of non-audit fee	Audit committee member independence, existence of a financial expert and number of meetings	Dummy variable for all industries	Variables proxying for the effectiveness of audit committees (specifically, percentage of outside members on the audit committee, number of audit committee meetings and extent of financial expertise of the audit committee) were positively associated with audit fees.
21	Chaney,P. K., Jeter, D. C. and Shivakumar, L. (2004)	UK	15 255 observations	1994-1998	Total assets, total assets over total sales	-	*ROA*, current, debt and quick ratios	-	-	-	The results indicated no Big Firm auditor differentiation and auditees, when not compelled by market pressures to choose a *Big5* auditor, chose the lowest cost auditor available.
22	Choi, J., Kim, J. B., Liu, X. and Simunic, D. A. (2005)	USA	9820 observations	2000-2003	Total assets	Receivables and inventory over total assets and number of business and geographic segments	Operating loss, *ROA* and leverage ratio	*Big4/5/6/8* auditor	-	Legal regime	Abnormal audit fees and audit quality (measured by earnings management) were not significantly related to audit fees.
23	Jeong, S. W., Jung, K. and Lee, S. (2005)	Korea	2025 firms	1999-2002	Total assets	Receivables and inventory over total assets	Leverage ratio and issuance of a qualified opinion	*Big5* auditor and new auditor	-	-	Assigned auditors charged significantly higher audit fees than freely selected auditors.
24	Goodwin-Stewart, J. and Kent, P. (2006a)	Australia	All publicly listed firms	2000	Total assets	Total number of subsidiaries and ratio of foreign subsidiaries to total subsidiaries	*ROA* debt ratio and issuance of a qualified opinion	*Big5* auditor	Internal audit function, board independence and meetings, audit committee independence, existence of a financial expert and number of meetings	Mining	The results of the study suggest a significant positive association between the internal audit function and audit fees, implying that firms use internal audit and external auditors as complementary monitoring mechanisms rather than viewing internal audit as a substitute for the external audit.

Table 2.2:
Summary of prior studies on audit fee modeling: Chronological order (continued)

No.	Author/s (year)	Country	Sample size	Period of study	Firm size	Firm complexity	Firm risk	Audit firm characteristics	Corporate governance characteristics	Other	Main results
25	Antle, R., Gordon, E., Narayanamoorthy, G. and Zhou, L. (2006)	UK, USA	2 924 UK firms and 1 570 US firms	1992 - 2000	Total assets	Receivables over total assets and inventory over total assets	Operating loss, *BTM*, *ROA*, leverage and quick ratios and issuance of a qualified opinion	*Big6* auditor and auditor tenure	-	High litigation industry	By using a system of simultaneous equations, there is evidence consistent with knowledge spillovers from auditing to non-audit services and vice-versa. As part of the overall findings, audit fees increase abnormal accruals, consistent with the behavioral theories of unconscious influence or bias in the auditor-firm relation.
26	Dunmore, P. V. and Shao, Y. S. (2006)	New Zealand	86 firms	2002	Total assets	Total number of subsidiaries, receivables and inventory over total assets	Operating loss, *ROE*, debt and quick ratios	*Big4* auditor and amount non-audit services	-	-	In this respect, non-audit fees are not significant in explaining the variation in audit fees.
27	Clatworthy, M. A. and Peel, M. J. (2007)	UK	51 428 firms	2003	Total assets and total sales	Total number of subsidiaries and foreign sales over total sales	*ROA*, *ROE*, leverage ratio and issuance of a qualified audit opinion.	*Big4* auditor.	-	Dummy variable for all industries	Firms quoted on the main market are charged the highest audit fees whereas private limited firms are charged the lowest fees.
28	Naser, K. and Nuseibeh, R. (2007)	Jordan	181 firms	200-2001	Total number of employees	Receivables over total assets and inventory over total assets	*ROE* and leverage ratio	*Big4* auditor	-	Dummy variable for all industries	Corporate size, status of the audit firm, industry type, degree of corporate complexity and firm risk were the main determinants of audit fees in Jordan.
29	Gonthier-Besacier, N. and Schatt, A. (2007)	France	127 firms	2002	Total assets	Receivables and inventory over total assets	*ROE*	Big Firm and amount of consulting fees	-	Information Technology industry	French audit fees depended on firm size, risk, and the presence of two of the *Big4* firms.

Table 2.2:
Summary of prior studies on audit fee modeling: Chronological order (continued)

No.	Author/s (year)	Country	Sample size	Period of study	Firm size	Firm complexity	Firm risk	Audit firm characteristics	Corporate governance characteristics	Other	Main results
30	Hoitash, R. Markelevich, A. and Baragato, C. A. (2007)	USA	13 830 observations	2000-2003	Total assets	Number of business segments, existence of foreign operations and receivables and inventory over total assets	Operating loss, *ROA*, *BTM* and current and leverage ratios	*Big5* auditor, non-audit fees and auditor tenure	-	High litigation industry	The authors document a statistically significant negative association between total fees and both audit quality proxies over all years. The results (*pre*- and *post*-SOX) are consistent with economic bonding being a determinant of audit behavior rather than auditor reputational concerns. Policy-makers should, therefore, note that the current restrictions on the provision of non-audit services may not sufficiently resolve the issue of economic bonding and its impact on auditor independence.
31	Thinggaard, F. and Kiertzner, L. (2008)	Denmark	126 firms	2002	Total assets	Total number of subsidiaries and receivables, inventory and internally generated intangible assets over total assets	Leverage ratio	*Big4* auditor	-	-	Joint audits, where both auditors have significant stakes in the audit, reduce audit fees compared to audits where one auditor is dominant, albeit only for the larger firms. This is attributable to competition between the auditors.
32	Al-Harshani, M. O. (2008)	Kuwait	49 firms	2005	Total assets	Number of operating locations	*ROE*, quick and debt ratios	Big Firm	-	-	The results of the study revealed that firm size and risk measures were the main determinants of audit fees and that firm complexity and auditor type were not significant explanatory predictors of audit fees.
33	Hay, D. Knechel, W. R. and Ling, H. (2008)	New Zealand	213 firms	1995-2005	Total assets	Receivables and inventory over total assets	Current ratio	*Big6* auditor and change of auditor	Internal audit function, AC existence, number of external board directors and major shareholder existence	-	Measures of internal audit, corporate governance and concentration of ownership were all positively related to audit fees, consistent with the theory that controls (including external audit) are complementary.

Table 2.2
Summary of prior studies on audit fee modeling: Chronological order (continued)

No.	Author/s (year)	Country	Sample size	Period of study	Firm size	Firm complexity	Firm risk	Audit firm characteristics	Corporate governance characteristics	Other	Main results
34	Choi, J. H., Kim, J. B., Liu, X. and Simunic, D. A. (2008)	15 countries	21 559 observations	1996-2002	-	-	-	*Big4* auditor	-	Legal liability regime	The authors find that: first, the strength of a country's legal liability regime is an important fee-increasing factor after controlling for the firm specific audit fee determinants and other country-level and institutional/macroeconomic variables; second, given a legal liability regime, *Big4* auditors charge higher audit fees than non-*Big4* auditors after controlling for other fee determinants; and third, *Big4* audit fee premiums decrease when countries legal liability regimes change from weak to strong.
35	Venkataraman, R. Weber, J. P. and Willenborg, M. (2008)	USA	149 IPOs	2000-2002	Total assets	Receivables and inventory over total assets	Operating loss, *ROA* and leverage ratio	*Big5* auditor and auditor exposure to legal liability	-	Litigation risk	In an IPO market, auditors receive higher fees for the increase in litigations risk and the extent the litigation risk helps to explain the higher audit fee levels.
36	Wang, K. and Sewon, Z. A. (2009)	China	109 firms with both A- and B-shares	2005-2006	Total assets	Subsidiaries, receivables and inventory over total assets	Operating loss and qualified audit opinion	*Big4*, *tier2* firms, auditor specialization and tenure	-	Foreign shareholding	Using annual reports prepared by publicly traded firms that issued both domestic and foreign shares, results provide evidence of *Big4* premiums for brand name and industry specialization in both statutory and supplementary markets. In terms of second tiered audit firms, only industry specialization proved significant for such firms to gain economies of scale and reduce audit fees.
37	Mitra, S., Deis, D. R. and Hossain, M. (2009)	USA	1 142 firms	2000-2005	Total assets	Foreign subsidiaries, number of business segments, receivables over total assets and inventory over total assets	Operating loss, *ROA*, leverage ratio , quick ratio and qualified audit opinion	-	-	Fiscal year-end 31 December	Results suggest that audit efforts consistent with client-specific business attributes and reflected in expected audit fees mitigate financial reporting biases, the effect of which is observable (to some extent) to some extent in the post-*SOX* period. The test results show no evidence of auditor independence problems associated with high expected and unexpected audit fees.

Table 2.2:
Summary of prior studies on audit fee modeling: Chronological order (continued)

No.	Author/s (year)	Country	Sample size	Period of study	Firm size	Firm complexity	Firm risk	Audit firm characteristics	Corporate governance characteristics	Other	Main results
38	Caneghem, V. T. (2009)	Belgium	4 403 observations	2007	Total assets and asset turnover	Receivables and inventory over total assets	Loss, leverage ratio and current ratio.	*Big4* and new auditor,	-	Industry, listing status and fiscal year-end 31 December	Using the traditional audit fee model composed by Simunic (1980), results suggest that *Big4* auditors are able to charge an audit fee premium compared to non-*Big4* auditors. Nevertheless, when allowing the regression coefficients to vary across *Big4* and non-*Big4* auditors and controlling for self-selection, the main result does not hold. The results, therefore, reveal differences in audit fee structures between *Big4* and non-*Big4* auditors.
39	Redmayne, N. B., Bradbury, M. E. and Cahan, S. F. (2010)	New Zealand	327 public sector observations	1998-2000	Total assets	Subsidiaries and receivables and inventory over total assets	Loss and leverage ratio	*Big4*, industry specialist, nonaudit fees and switched auditor		Press mentions for each firm (political visibility)	Auditors risk-adjust audit fees upwards for political visibility. The increase in fees is the result of greater audit effort rather than increasing the level of expertise within the audit team. The relationship between audit fees and press mentions appears monotonic suggesting 'defensive bolstering' of the audit opinion as the main reason for collecting supplementary evidence.
40	Ho, S. and Hutchinson, M. (2010)	Hong Kong	53 non-finance firms	2004	Total assets	Subsidiaries	Operating loss, *ROA*, and leverage ratio	*Big4*, internal audit size and qualifications		Fiscal year-end 31 December	The results of the study suggest that external auditors of firms in Hong Kong rely on the internal audit function and subsequently charge a lower audit fee. Lower audit fees are linked with internal audit effort spent on activities reviewing financial statements, systems development, issues relating to operating efficiency and effectiveness and unlimited access to the working papers of the internal auditors.
41	Choi, J., Kim, C., Kim, J. and Zang, Y. (2010)	USA	19 499 observations	2000-2005	Total assets and number of employees	Number of business and geographic segments, and receivables and inventory over total assets	Operating loss, *ROA*, *BTM* and leverage ratio	*Big4*, industry specialist, nonaudit fees, and location of auditor		Foreign income tax paid and issue of either debt or equity on last three years	The office size of the auditor has significantly positive relations with both audit fees and audit quality even after controlling for national-level audit firm size and office-level industry expertise. The positive relationship supports the view that large local offices provide higher-quality audits compared to small local offices.

Table 2.2:
Summary of prior studies on audit fee modeling: Chronological order (continued)

No.	Author/s (year)	Country	Sample size	Period of study	Firm size	Firm complexity	Firm risk	Audit firm characteristics	Corporate governance characteristics	Other	Main results
42	Singh, H. and Newby, R. (2010)	Australia	272 firms	2005	Total assets	Subsidiaries, receivables and inventory	Operating loss, *ROA*, debt ratio and qualified audit opinion	*Big4* and internal audit existence	Non-executive and independent board members, annual board and audit committee meetings and financial expertise on audit committee	Industry	Using publicly available data, the authors conclude that a firm's internal audit function and audit fees move in a complementary manner. The positive direction of the relationship suggests that the two monitoring mechanisms within a firm both interact to play a role in strengthening a firms overall monitoring/control environment.
43	Choi, J., Kim, J. and Zang, Y. (2010)	USA	9 815 observations	2000-2003	Total assets and number of employees	Number of business and geographic segments, and receivables and inventory over total assets	Operating loss, *ROA*, *BTM*, liquid and leverage ratios	*Big4* and new auditor		Foreign income tax paid, extraordinary gains/losses and issue of either debt or equity on last three years	Results reveal that the association between absolute discretionary accruals and abnormal audit fees is asymmetric given the sign of the abnormal audit fee. Specially, for observations with negative abnormal audit fees, there is no significant association between audit quality and abnormal audit fee. However, the opposite is the case for observations with positive abnormal audit fees. The findings suggest that auditors' incentives to deter biased financial reporting differ systematically depending on whether clients pay more or less than the normal level of audit fee.

2.5 SUMMARY OF THE CHAPTER

Chapter Two began with a general discussion on the nature of an audit and the important role that an auditor plays in the financial reporting system. Australia's regulatory environment and the auditor's place in it were subsequently discussed within the context of corporate governance in general and the four main features of corporate governance (that is, board of directors, audit committee, internal audit and external audit). The audit market in Australia was then explored with details provided on the key public and private regulators and professional accounting bodies involved in the regulation of the auditing profession. The determinants of audit fees were then discussed. In this respect, 30 years of published empirical research on audit fee modeling was identified, summarized and also tabulated in Table 2.2.

Given that the audit function is premised directly on agency theory, Chapter Three will provide an additional theoretical perspective to this study by outlining the five main theories underpinning corporate governance: namely agency theory; institutional theory; stewardship theory; resource dependency theory; and stakeholder theory. Chapter Three will also provide a more focused discussion (by reference to the prior empirical literature) of specific auditor attributes that influence audit fees. Subsequently, the four main hypotheses of this study are outlined and the rationale for each auditor's (that is, brand, specialization, independence and tenure) attributes expected relationship to audit fees detailed.

CHAPTER THREE:
THEORETICAL PERSPECTIVE AND HYPOTHESES DEVELOPMENT

3.1 OVERVIEW OF THE CHAPTER

Chapter Two began with a review of the monitoring role of the auditor in the financial reporting system and identified the underpinning agency theory to this study. It also provided the background to the association between the auditor and the regulatory environment in Australia before detailing the prior literature on audit fee modeling.

Chapter Three discusses the theoretical framework of this study and the empirical literature relating to the hypotheses tested. The five theories underpinning the concept of corporate governance are discussed and compared: namely agency theory; institutional theory; stewardship theory; resource dependency theory; and stakeholder theory. Subsequently, the influence of four selected auditor attributes on audit fees is outlined before the general hypothesis of this study provided. The empirical literature relating to each of the four key auditor attributes examined in this study is then discussed and the justification for each auditor attributes expected relationship to audit fees detailed. A conceptual schema is subsequently provided outlining the key relationships examined in this study. Finally, a summary of Chapter Three is provided.

3.2 THEORETICAL PERSPECTIVE – CORPORATE GOVERNANCE

There are five principal theories underpinning the corporate governance research literature: agency theory, institutional theory, stewardship theory, resource dependency theory and stakeholder theory. The following sub-sections discuss each theory and the theory's link with the corporate governance structures of firms.

3.2.1 Agency theory

Perhaps the single most theoretical influence on corporate governance research has been agency theory. Agency theory applies to any relationship between a person who delegates work (principal) and the person to whom the work is delegated (agent) (Eisenhardt 1988). Since the work and resulting authority is delegated, the interests of the principal and agent will tend to diverge, there arises the probability of under-fulfillment of the principal's wishes (Hendry 2002). This under-fulfillment is termed agency loss (Jensen and Meckling 1976). Agency theory attempts to provide insight into how agency losses can be minimized (Pratt and Zeckhauser 1991). In the corporate governance arena, agency theory is concerned with aligning the interests of owners and managers (Fama 1980; Fama and Jensen 1983; Jensen and Meckling 1976; Stano 1976) and is based on the premise that there is an inherent conflict between the interests of a firm's principals (owners) and agents (managers).

The majority of the corporate governance research has been concerned with problems caused by the fact that owners are not managers in most firms, particularly publicly listed firms. The scope of this principal-agent relationship was initially documented by Berle and Means (1932), who set out how managers possessed superior knowledge and expertise to the firm's owners and were, therefore, in a position to pursue self-interested action at the expense of the owners. Agency theorists argue that corporate governance structures (for example, board of directors, audit committees and the external audit function) are mechanisms to reduce agency conflicts (Fama and Jensen 1983; Williamson 1984). Such mechanisms are postulated to play a crucial role in monitoring managers in order to minimize agency costs and, therefore, safeguarding shareholder wealth (Stiles and Taylor 2001).

Interest in agency theory grew with the formalized mathematical model provided by economists Jensen and Meckling (1976). Jensen and Meckling (1976) argued that because owner's and manager's interests are not identical, costs exist within the relationship between owners and managers. In particular, Jensen and Meckling (1976) highlighted the costs for owners of monitoring managers or of providing incentive payments to managers to align the interests of both parties.

The original agency dilemma presented by Jensen and Meckling (1976) (first identified by Berle and Means 1932) has since been elaborated in a string of key articles (Eisenhardt 1989; Fama 1980; Fama and Jensen 1983; Hendry 2002; Tirole 2001) which suggest that management self-interest can be detected in clear and tangible benefits such as perquisites (such as large offices, traveling first class) and in less easily identified motivations such as the pursuit of growth at the expense of profit. Corporate governance mechanisms within firms, therefore, add value by monitoring and controlling management. For example, the board of directors and audit committees constantly strive to reduce agency costs and protect shareholders from management's conflict of interest (Fama and Jensen 1983).

3.2.2 Stakeholder theory

A debate exists around the shareholder versus the stakeholder organizational perspectives. Whereas agency theorists view the firm in the context of the manager serving the shareholder, stakeholder theorists argue that managers of firms have a number of additional relationships (that is, stakeholders) to serve. Consequently, stakeholder theory considers the firm from a much broader perspective wherein shareholders are only one of many potential stakeholder groups (Donaldson and Preston 1995; Freeman 1984; Hill and Jones 1992). Other potential stakeholders can include creditors, employees, regulators and

even society as a whole. The rationale, therefore, is that key stakeholders are impacted upon and also impact the firm. The fundamental argument is that society provides the social structure and framework in which firms can prosper and in return, firms which ignore society or key members of society will threaten the equilibrium between the firm and society (Donaldson and Preston 1995; Freeman 1984).

One of the original advocates of stakeholder theory, Freeman (1984), identified the emergence of stakeholder groups as an important element to a firm, thereby, requiring consideration. Freeman (1984) suggested a re-engineering of theoretical perspectives that extended beyond the owner-manager position and recognized the existence of numerous stakeholder groups.

Donaldson and Preston (1995) provided a more detailed explanation of stakeholder theory and the impact of stakeholder theory on the firm. They (Donaldson and Preston 1995) explained that stakeholder theory views the firm as an organizational entity through which numerous and diverse participants accomplish multiple, though not always congruent goals. Further, the central core of stakeholder theory presumes that managers and other agents act as if all stakeholder's interests have intrinsic though not necessarily equal value.

Stakeholder theory rejects the assumption that the sole important relationship is that between principals (owners) and agents (managers). Stakeholder theory offers a framework for determining the structure and operation of the firm that is cognizant of the myriad participants who seek multiple and sometimes diverging goals (Donaldson and Preston 1995). In such a stakeholder setting, corporate governance practices of firms are one of the key strategies to help firms recognize, appreciate and successfully manage different stakeholder relationships.

3.2.3 Resource dependence theory

The third major theory of corporate governance is that of resource dependence, which maintains that key corporate governance mechanisms such as the board of directors, audit committee and external auditors are an essential link between a firm and the essential resources which the firm needs to maximize performance (Pfeffer 1973; Pfeffer and Salancik 1978). Sociologists have tended to concentrate on three distinct types of links. These links are namely between key corporate governance mechanisms of a firm and members of the business elite (Useem 1984), access to capital markets (Mizruchi 1988; Stearns and Mizruchi 1993) and links to competitors (Mizruchi 1992, 1996). In each instance, researchers make credible arguments that the link (resource) in question is a key determinant of success (Hillman, Cannella, and Paetzold 2000; Hillman and Dalziel 2003).

Management scholars have tended to take a more generic approach with Hillman, Cannella and Paetzold (2000) and Palmer and Barber (2001), for example, view the board of directors as a potentially important resource for the firm, especially with the board of director's link to the external environment. For example, from major reviews of the board-performance literature, the ability of the board of directors to link into significant resources is seen as one of the board of director's key roles (Korac-Kakabadse, Kakabadse, and Kouzmin 2001; Zahra and Pearce 1989). There is a clear theoretical argument that a board of directors with high levels of links to the external environment will provide the firm with a higher level of access to various important and necessary resources compared to board of directors without such high levels of risk.

While undoubtedly agency theory remains relevant to corporate governance research, Udayasankar (2006) suggests that agency theory's value lies in explaining relationships between constructs in the corporate governance schema but points out that the governance schema is largely imbedded in another theoretical context, that is, resource dependency which better relates to a broader tradition based on the view that competitive advantage fundamentally arises from firm heterogeneity (Udayasankar 2006). The resource dependence view of corporate governance stems from the fundamental logic that various elements of corporate governance can act as critical resources for a firm.

While based on the more general form of the resource-dependence theory (Pfeffer and Salancik 1978), in the context of corporate governance, resource dependence theory can be applied to suggest that effective corporate governance structures within firms can lead to the generation of resources. Particularly, boards of director's contribute to a firm though expertise and linkages to other firms and institutions and directors can also contribute to the positive valuation of a firm through reputation. Board of directors can be a key source of accessing various resources (Pfeffer 1972), based on human capital and social capital (Certo 2003). The former includes director's advice and expertise and the latter covers resources such as legitimacy (Westphal and Zajac 1994) and links to other firms. Cumulatively, the resources are all described as of director's capital (Hillman and Dalziel 2003). The relationship between board of director's capital and firm performance is well documented (Dalton, Daily, Johnson, and Ellstrand 1999; Pfeffer 1972), thereby making the resource dependence theory a key theory in corporate governance.

3.2.4 Institutional theory

Institutional theory does not emphasize the importance of individual self-interest motives. Rather, institutional theory focuses instead on institutional factors or pressures that lie beyond the organizational boundary (Hoffman 1999). Institutional theory views firms as

operating within a nexus of norms, values and assumptions about what constitutes appropriate or acceptable economic behavior (Oliver 1997).

Scott (1987) points out that institutional theory has many variants. He (Scott 1987) identified four formulations of institutional theory based on: the process of instilling value in a firm (Selznick 1957); the process of creating a social reality which is seen as validly independent of an individual's own views which are taken for granted (Berger and Luckman 1966; Meyer and Rowan 1977; Zucker 1987); the premise that firms conform to multiple institutionalized belief systems because firms are rewarded for doing so with increased legitimacy, resources and survival capabilities (DiMaggio and Powell 1983; Meyer and Scott 1983); and the traditional view of institutions which focuses on patterned human activities that arise and persist in all societies (Scott 1987). In general, institutional theory focuses on factors or environmental pressures over which the managers within firms are powerless to resist in the long-term, even if the self-interest motives of managers are opposed to the decision imposed by the institutional environment.

Institutional theory, therefore, is a useful paradigm for corporate governance research because institutional theory considers how environmental influences, institutional and firm pressures constrain accounting choice selection by managers. Constraints exist on the choices that managers make in the accounting arena and there can be institutional pressures to conform or resist conforming to professionally endorsed accounting and auditing practices. The influences can be political, regulatory or legal in nature.

3.2.5 Stewardship theory

Despite the predominance of agency theory, research into board of directors and agency theory has highlighted problems with the universal application of agency theory (Hirsh, Michaels, and Friedman 1987; Perrow 1986; Pfeffer 1997). Calls for a broadening of the corporate governance agenda beyond the agency conflict (Daily et al. 2003; Leblanc and Gillies 2005) reflect growing criticism of the agency theory paradigm. In particular, several of the key assumptions which underlie agency theory are argued to theoretically limit the application of agency theory (Ghoshal and Moran 1996; Hirsh et al. 1987; Perrow 1986; Pfeffer 1997). Specifically, the most widespread concern voiced about agency theory is the assumption that all managers are self-interested and opportunistic utility maximizers bent on extracting maximum returns from firms (Donaldson 1990).

The agency theory assumption that managers are economically rational self-interested and opportunistic maximizers (Davis, Schoorman, and Donaldson 1997; Doucouliagos 1994; Frank 1994) is in direct contrast with the assumptions and evidence from several other social science disciplines such as sociology and psychology. It is difficult

to reconcile agency theory's continuously self-motivated actor with the conflicting evidence that a manager's motivation at work often includes intrinsic motivation factors (Benabou 2003; Donaldson and Davis 1991) such as altruism, beliefs, need for achievement of responsibility or even the desire to take part in satisfying work (Gagne and Deci 2005; Wood and Bandura 1989).

As a result of the criticisms, particularly the limited view of human behavior envisioned by agency theory, stewardship theory (Davis et al. 1997) has emerged to answer calls to reinterpret the relationship between owners and managers (Doucouliagos 1994). Stewardship theory posits that managers are not self-interested and opportunistic utility maximizers but rather that managers are stewards whose motives are aligned with the objectives of owners (Davis et al. 1997).

Stewardship theory proposes managers are good stewards of organizational resources for a number of reasons. For instance, managers can be assumed to be decent people who generally try and do the right thing by the firms that managers manage (Donaldson and Davis 1991). Also, there is significant evidence that many senior managers are incentivized by intrinsic motivations such as achievement and being successful at work (that is, self-actualization) rather than by extrinsic motivations such as economic remuneration (Benabou 2003; Donaldson and Davis 1991). There is also a strong argument that a manager's reputation is his/her key asset and, as a result, self-interested behavior will be balanced against possible damage to this important asset (Barney 1990; Donaldson 1990; Donaldson and Preston 1995).

In a corporate governance arena, stewardship theory indicates that, in the presence of intrinsically-motivated managers who strive for job satisfaction and self-actualization rather than monetary remuneration, there is less pressure on board of directors in firms to closely monitor managers and accounting policy choice selection by the managers.

3.2.6 A critical analysis of agency theory with other theoretical approaches

Following the overview of the literature relating to the five theoretical perspectives, this study now proceeds with a critical analysis of the five paradigms. The dominant theoretical perspective in corporate governance is agency theory and, as such, agency theory provides the benchmark against which the other four theories are considered and evaluated.

3.2.6.1 Agency theory and stakeholder theory

Agency theory recognizes the relationship between two parties, the principal and agent. The stakeholder theory widens the traditional relationship to incorporate other stakeholders. Under agency theory, the manager must be controlled to align his/her interests with the interests of the principal. The stakeholder theory, however, brings a multi-interest

dynamic into the agency model of the firm. The focus of stakeholder theory, therefore, is to question the purpose of the firm and who management are responsible to, rather than on the control of the manager and manager-interest alignment.

Hill and Jones (1992) attempted to integrate the stakeholder concept with agency theory. They (Hill and Jones 1992) widened the standard principal-agent paradigm of financial economics to create a stakeholder agency theory which instituted a generalized theory of agency. Donaldson and Preston (1995), citing Hill and Jones (1992), explained that managers can be viewed as the agents of other stakeholders. Hill and Jones (1992) explained that stakeholders are distinguished by different stakes in a firm in the sense that each stakeholder is part of a nexus of contracts with managers being at the centre. Managers are the only group of stakeholders who enter into a contractual relationship with all other stakeholders. Managers must, therefore, make decisions and allocate resources in a manner consistent with the claims of other stakeholders. Hill and Jones (1992) do not suggest that all other stakeholders are principals as posited under agency theory but describe the principal-agent relationship as a subset of the more general class of stakeholder-agent relationship.

3.2.6.2 Agency theory and resource dependence theory

Resource dependency theory focuses on the board of director's resource role. The board of directors is well researched as a mechanism of corporate control under the perspective of agency theory. In contrast, resource dependency theory focuses on the role that directors play in providing or securing essential resources to a firm through linkages with the external environment.

Muth and Donaldson (1998) predicted that higher firm performance is achieved when board of directors display independence and high network connections. When independence is lacking, managerial waste and inefficiency is anticipated and when network connections are sparse, the firm's ability to co-opt needed resources is limited. A combination of low independence and low network connections, therefore, results in low overall firm performance.

3.2.6.3 Comparison of agency theory and institutional theory

The central agency problem relates to how the principal holds the agent responsible for achieving outcomes preferred by the principal. Though institutional theory does look at the same issue of principal versus agent and the respective interests, institutional theory looks at the relationship via a agency lens in which agencies (that is, firms) may consider the agencies own best interests (for example, in a quest for legitimacy) to achieve certain objectives which may or may not always coincide with the preferences of the principals of the firms (Eisenhardt 1988).

3.2.6.4 Agency theory and stewardship theory

Advocates of stewardship theory challenge the singular view of principals and agents, positing a more complex behavioral and contextual model for the two parties. Whereas agency theory argues that management actions depart from the actions required to maximize shareholder wealth, stewardship theory argues that managers are motivated by a desire to achieve, gain satisfaction, successfully perform work and gain the admiration of peers and bosses (Benabou 2003; Donaldson and Davis 1991).

Davis et al. (1997) argued that the choice between agency and stewardship perspectives is determined with reference to the principals and managers perceived risk and degree of trust towards the other party. The principals and managers behavioral position and corporate culture will influence the relationship dynamics. Fit is achieved, therefore, when the principals and managers' selections are aligned, whether pure-stewardship relationship or pure-agency relationship. Adversarial implications arise when 'mixed-motive choice' occurs (Benabou 2003). Specifically, Davis et al. (1997) argued that utility maximization is achieved when principals and managers' choose a steward-principal relationship whereas agency costs are minimized when both choose an agent-principal relationship. When both parties are individualists, an agent-principal relationship is appropriate and when both parties are collectivists, a steward-principal relationship is appropriate.[16]

3.2.7 Application of theoretical framework in accounting

In attempting to identify the most appropriate theoretical base for this study, it is necessary to develop the necessary framework for the literature analysis. Burrell and Morgan's (1979) fourfold typology of social science approach provides a useful context for analyzing accounting research. Burrell and Morgan (1979) propose that social science research is carried out within four research paradigms: namely, the functionalist view; the radical-structuralist view; the radical-humanist view; and the interpretive view.

Each of the paradigms is unique in terms of ontology, epistemology and the perception of human nature. Differences between the paradigms also exist in terms of the methodological approach adopted by each paradigm. The major features of each of the four paradigms, as outlined by Burrell and Morgan (1979) is briefly outlined below:

3.2.7.1 Functionalist view

The functionalist view is that reality is an objective and measurable premise which can be studied independently. The main features of the view are: (1) society is cohesive and well-structured; and (2) research issues encompass the explanation of observed behavior,

[16] For a detailed discussion of the fit between principal and agent under both agency and stewardship theories, see Davis, Schoorman and Donaldson (1997).

seeking to define cause-effect relationships and generalist laws through the adoption of a scientific approach. Theoretical examples of the functionalist view include costly contracting and contingency theories.

3.2.7.2 Radical-structuralist view

The radical-structuralist view is that reality is an independently observable object reflecting the domination of powerful groups in society. The main feature of the view is that accounting perpetuates the existing order of things. A theoretical example includes accountability-regulation studies.

3.2.7.3 Radical-humanist view

The radical-humanist view is that reality is a subjective notion that cannot be scientifically measured. The main features of the view are: (1) society (including accounting) reflects the dominance of powerful groups; and (2) society is constantly being re-defined. A theoretical example includes critical theory.

3.2.7.4 Interpretive view

The interpretive view is that reality is shaped and influenced by various factors (including accounting). The main features of the view are: (1) accounting is influenced by and influences the environment: and (2) reality is defined as uncertain and problematic. Theoretical examples of the functionalist view include accountability, legitimacy, stakeholder and political theories.

3.2.7.5 Theory selection

While there are five main theories underpinning corporate governance practices, the theory most relevant to the current study is agency theory given that the focus of this study is examining the extent of the association between auditor attributes and audit fees. The core benefit from an audit is the ability of an auditor to provide independent assurance to a reader on the integrity and fairness of the presented financial information. The existence of the audit function is premised on agency theory. Given information asymmetry between principals and agents and the differing interests (such as financial rewards and employment opportunities), agents may pursue self-interest to the detriment of the firm and the principals (Jensen and Meckling 1976). This concern about information asymmetries and differing motivations between agent and principal, therefore, leads to reservations about the reliability of information produced by the agents.

Given the resulting reservations, principals require mechanisms (an external audit is one example) to reduce potential conflicts and align the interests of agents with the principal's interests. Audits, therefore, serve a fundamental purpose in increasing confidence and validating the financial information reported by agents. This, in turn, plays a wider role

in the information marketplace, where economic and financial decisions can be made based on information that has been audited and, therefore, viewed as more useful for decision-making purposes (Leung et al. 2007).

3.2.8 Auditing and the corporate governance framework

As noted in the US Blue Ribbon Committee (1999), the three critical components of quality corporate governance structures within firms are board of directors including the audit committee, financial management including the internal auditor and the external auditor. This trilogy is often referred to as the 'three-legged stool' which supports responsible financial disclosure and active and participatory oversight (Blue Ribbon Committee 1999).[17]

Clearly, there are corporate governance benefits accruing from the audit function. Psaros (2009) suggests three main corporate governance benefits resulting from the audit function. First, the original and primary purpose of an audit is still to provide an opinion on a set of financial statements produced by a firm. Inherently, the audit process adds value to the financial statements in terms of an increase in reliability and, hence, credibility. Second, the audit function has a vital role in reviewing the firm's internal control structure because the review will have a bearing on the amount and type of evidence that needs to be collected during the audit. If significant deficiencies in the internal control structure within the firm are discovered, the auditor reports the deficiencies to management for explanations and also follow-ups during the next audit. Finally, the audit function also results in other incidental benefits to a firm such as the contribution to the operations of the audit committee, general advise on risk management and synergistic operations with the internal audit function (Psaros 2009).

3.3 INFLUENCE OF AUDITOR ATTRIBUTES ON AUDIT FEES

Simunic (1980) presented a production perspective of the auditing process in which he (Simunic 1980) believed that there were certain common drivers associated with the variation of audit fees.[18] Over time, the literature has identified various auditor and auditee attributes (such as auditor location, auditor opinion, audit report lag, firm size, firm complexity and firm risk). as appropriate proxies for the number and extent of audit procedures completed by the external auditor (Francis and Simon 1987; Goodwin-Stewart and Kent 2006a; Hay et al. 2006; Simunic 1980). This study adopts a similar approach, using a number of attributes to proxy for audit work undertaken by the auditor.

---

[17] In Australia, the Ramsay Report (2001) points out the importance of the external audit function to effective corporate governance structures within firms.

[18] Simunic (1980) deemed the identified drivers caused the auditor to alter the number and type of audit procedures used during the audit.

As highlighted in Section 1.2, given the gaps in the literature in relation to examining auditor attributes from a composite perspective and using a longitudinal time horizon, the results from this study will provide answers to important unanswered questions about the existence of cartel pricing and, therefore, anticompetitive behavior by the remaining *Big4* audit firms.

This study investigates both the existence and extent of competitive audit pricing in the Australian audit services market during a five-year time frame to determine if there is any evidence of cartel pricing and, therefore, anticompetitive behavior by the *Big4* during this period. Since increased supplier concentration by itself is not sufficient evidence of cartel pricing and, therefore, anticompetitive behavior, this study will adopt (initially) Simunic's (1980) seminal audit pricing model to investigate audit market competition.

Apart from examining audit fees on a cross-sectional basis, the prior empirical literature has evaluated auditor attributes only in isolation (that is, individually) and there is also no published research which has evaluated important auditor attributes on an aggregate basis (and across time). The aggregated/holistic basis adopted by this study will, therefore, evaluate (four) important auditor attributes simultaneously across a five-year observation window when examining the impact on audit fees.

Thus, for the purposes of this study, the following general hypotheses are postulated:

GH_1: *An auditee engaging an auditor composed of a higher set of quality attributes will pay higher audit fees than an auditee engaging an auditor with a lower set of quality attributes.*

GH_2: *An auditee engaging an auditor composed of a higher set of quality attributes will have higher changes in audit fees across time than an auditee engaging an auditor with a lower set of quality attributes.*

3.4 KEY AUDITOR ATTRIBUTES AND IMPACT ON AUDIT FEES

This study examines the influence of four pivotal auditor attributes on contemporaneous audit fees and changes in the audit fees. The four attributes of interest are: (1) audit quality (as defined by *Big4* versus non-*Big4* status); (2) auditor industry specialization; (3) independence (as defined by the provision of non-audit services); and (4) auditor tenure. The four auditor attributes were selected as the attributes are frequently cited in the extant literature as having a significant influence on audit fees (Abbott and Parker 2001; Beatty 1989; Beck, Frecka, and Solomon 1998b; Carcello and Nagy 2004; Craswell et al. 1995; DeAngelo 1981; Hoitash et al. 2007). Hypotheses related to the four auditor attributes are individually developed in the following sub-sections.

3.4.1 Audit quality: Big Firm auditor

Higher audit fees are expected when an auditor is recognized to be of a superior quality. The literature postulates that a Big Firm auditor brings a higher level of quality (in the form of better audit planning, risk assessment, formulation of audit procedures, collection of audit evidence, audit reporting, reduction of mistakes) to the audit engagement and, therefore, will charge a higher audit fee as a result of this quality/product differentiation. Generally, researchers have used a dummy variable for auditing firms classified as being either a *Big8/6/5/4* as a proxy for superior audit quality (Simon 1995; Simunic 1980).

The empirical literature has generally produced mixed results on whether a Big Firm auditor does charge a higher audit fee as a result of the higher level of quality from the Big Firm auditor. Simunic (1980) was the first researcher to investigate and confirm that the existence of a Big Firm auditor increases audit fees. Research post-Simunic (1980) has almost always used a Big Firm variable to either assess or control for audit fee variation.

A significant portion of the literature suggests that the existence of Big Firm auditors does have a significantly positive relationship with audit fees (Chan et al. 1993; Choi et al. 2005; Francis 1984; Francis and Stokes 1986; Johnson et al. 1995; Karim and Moizer 1996; Palmrose 1986a). However, a number of studies have also indicated no significant relationship between a Big Firm auditor and the quantum of audit fees paid by firms (Al-Harshani 2008; Hoitash et al. 2007). The absence of a statistically significant relationship between the existence of a Big Firm auditor and audit fees suggests that the Big Firm auditor may be selected not on the basis of quality differentiation (to non-Big Firm auditors) but perhaps due to economic bonding (Hoitash et al. 2007), market pressures (Chaney et al. 2004) or the desire by a firm to signal the firm's quality to the market.

Given the overwhelming support in the prior literature for the association between a Big Firm auditor and audit fees paid by a firm, the following hypotheses are proposed to test the extent of the association between a *Big4* auditor and audit fees/variation in audit fees:

H_{1a}: *An auditee engaging a Big4 auditor will pay a higher audit fee than an auditee engaging a non-Big4 auditor.*

H_{1b}: *An auditee engaging a Big4 auditor will have higher changes in audit fees paid across time than an auditee engaging a non-Big4 auditor.*

3.4.2 Auditor industry: Specialization

Auditors with industry specializations and who make investments in developing a reputation for performing quality audits in particular industries are especially concerned about preserving reputational capital and avoiding reputational damage through litigation

exposure (Lim and Tan 2008). Similarly, at the audit firm level, audit firms that make strategic choices and invest organizational resources in developing intellectual capital in particular industries, have greater concerns about reputation preservation. These audit firms are, therefore, less likely to submit to client pressures (Lim and Tan 2008).

Consistent with this argument, prior research has shown that industry-specialist auditors are much more likely to: (a) comply with auditing standards (O'Keefe et al. 1994); (b) have clients that are less likely to be associated with regulatory enforcement actions (Carcello and Nagy 2004); and (c) have clients with lower discretionary accruals (Balsam et al. 2003; Krishnan 2003). Prior literature has also shown that auditors with industry specializations have superior knowledge and performance relative to non-specialists (Owhoso, Messier, and Lynch 2002; Solomon et al. 1999). The literature clearly suggests that industry-specialist auditors (versus non-industry specialist auditors) have the background knowledge to more effectively perform the audit of a client from a specialized industry and, thereby, increase audit quality. As a result of this investment in time, resources and knowledge by auditors, the auditors are more likely to seek compensation from an auditee in the form of higher audit fees.

The following hypotheses, therefore, are proposed to test the extent of the association between an industry specialist auditor and audit fees/variation in audit fees:

H_{2a}: *An auditee engaging an industry specialist auditor will pay a higher audit fee than an auditee engaging a non-industry specialist auditor.*

H_{2b}: *An auditee engaging an industry specialist auditor will have higher changes in audit fees across time than an auditee engaging a non-industry specialist auditor.*

3.4.3 Independence: Non-audit services

Non-audit services provided by the external auditor can result in an increase in audit fees due to two reasons. First, such services may lead to changes within an auditee which will then require additional auditing by the incumbent auditor (Davis et al. 1993). Second, the auditee may have no choice but to pay a higher audit fee as a result of becoming economically dependent on such non-audit services by the auditor (Palmrose 1986b). On the other hand, it has been argued that the provision of non-audit services can lead to lower audit fees as a result of cross-subsidization of fees (or synergies) between audit and non-audit services (Simunic 1984).

Palmrose (1986b) was the first researcher to provide evidence of a positive relationship between fees for audit services and fees for three other categories of non-audit

services (that is, accounting-related MAS, non-accounting MAS and taxation). The positive relationship between audit fees and non-audit fees rested on the premise of joint-supply benefits where the firm perceived (rightly or not) that the firm was better off with the joint supply of audit and non-audit services. Subsequent research examining the audit fees and non-audit fees relationship also found similar support for the joint-supply theory (Dunmore and Shao 2006; Felix et al. 2001; Hoitash et al. 2007; Lee et al. 2003a). Also, Simunic (1984) provided evidence that a firm which employed the same external auditor in the provision of both external audit and non-audit services paid a significantly lower audit fee to the auditor. He (Simunic 1984) suggests that the provision of auditing and non-auditing services to an auditee may result in knowledge advantages/spillovers that allow cost savings to be passed on to the auditee in the form a lower audit fee.

Given the proclivity in the prior literature toward a positive relationship between non-audit services and audit fees, the following hypotheses are proposed to test the extent of the association between non-audit fees and audit fees/variation in audit fees:

H_{3a}: *An auditee paying higher non-audit fees to the auditor will also pay higher audit fees than an auditee paying lower non-audit service fees to the incumbent auditor.*

H_{3b}: *An auditee paying higher non-audit fees to the auditor across time will also have higher changes in audit fees than an auditee paying lower non-audit service fees to the incumbent auditor across time.*

3.4.4 Auditor tenure

The length of the relationship between the external auditor and auditee is thought to have an impact on the quantum of audit fees charged by the auditor. Auditors who have longer ties with auditees will, in all likelihood, have greater familiarity with the auditee, the auditee's accounting systems, financial records and related internal controls. Given that this familiarity reduces auditee complexity and audit risk, the auditor requires less effort annually to understand the auditee's operations and this, in turn, may translate to a lower audit fee. However, auditees with longer ties to auditors may, instead, pay higher audit fees due to the economic bonding argument suggested by Palmrose (1986b) or, as a result of the increasing familiarity with the external auditor, choose not to change auditors.

Simunic (1980) believed that the greater the length of relationship between the auditor and auditee, the greater the knowledge and understanding the auditor has of the firm's operations and accounting system. He (Simunic 1984) believed that this translated into less audit work and, therefore, audit fee. Simunic's (1980) results indicated that there

was no significant relationship in auditor tenure explaining variation of audit fees. One possible reason for this (suggested by Simunic (1980)) may be that the auditor may not be passing 'cost-savings' derived from the reduced audit work to the auditee. Subsequent studies examining auditor tenure (in terms of length of years, new auditor or change of auditor) have produced mixed results. A number of studies show no real significant association between auditor tenure and audit fees (Antle et al. 2006; Johnson et al. 1995) but a greater number of studies have shown a positive relationship between auditor tenure and audit fees (Felix et al. 2001; Ghosh and Moon 2005; Hoitash et al. 2007).

Given that the prior empirical literature principally supports a positive relationship between auditor tenure and audit fees, the following hypotheses are proposed to test the extent of the association between auditor tenure and audit fees/variation in audit fees:

H_{4a}: *An auditee engaging an auditor with a longer tenure period will pay higher audit fees than an auditee engaging an auditor with a shorter tenure period.*

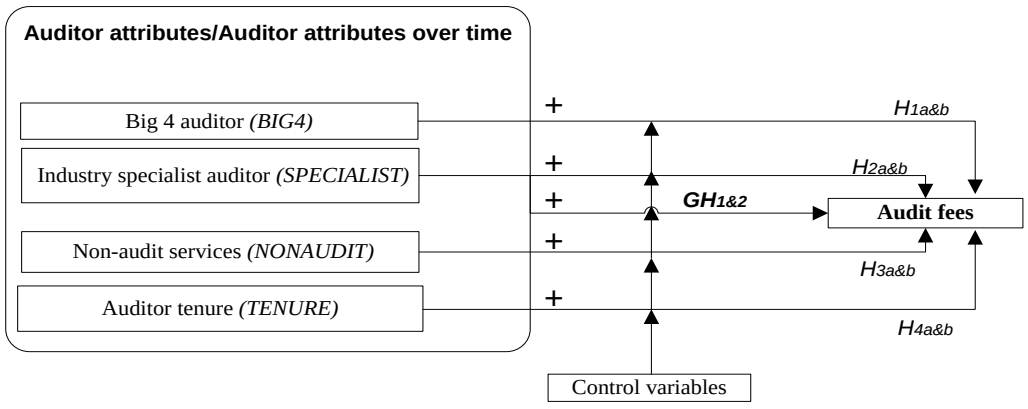
H_{4b}: *An auditee engaging an auditor with a longer tenure period will have higher changes in audit fees across time than an auditee engaging an auditor with a shorter tenure period.*

The general hypotheses and individual hypotheses are conceptualized in the following section.

3.5 CONCEPTUAL SCHEMA

Figure 3.1 below provides a conceptual schema underlying the general hypotheses and individual hypotheses used in this study:

Figure 3.1:
Conceptual Schema



As suggested by Figure 3.1, the general hypotheses (that is, GH_1 and GH_2) to be tested suggests a positive relationship between auditor attributes (on an aggregate basis) and

audit fees. The individual hypotheses (that is, H_{1a} to H_{4b}) suggest a similar relationship but on a dis-aggregated basis between the four key components of auditor attributes (that is, auditor quality, auditor industry-specialization, non-audit services and auditor tenure) and audit fees.

3.6 SUMMARY OF THE CHAPTER

Chapter Three documented the five theories underpinning corporate governance, identified the general hypothesis and discussed the prior literature relating to the four (auditor) attributes hypotheses tested in this study. The influence of the four auditor attributes on audit fees was also discussed before a conceptual schema provided.

Having provided the theoretical perspective to and hypotheses of this study, Chapter Four will provide details of the research method utilized in this study. Specifically, details of the sample, documentation and time period is provided along with the measures used to operationalize audit fees (the dependent variable), the four auditor attributes (independent variables) and control variables. Chapter Four will also specify the basic regression model, the comprehensive cross-sectional model and the longitudinal model that will be utilized to answer the research questions of this study.

CHAPTER FOUR:
RESEARCH METHOD

4.1 OVERVIEW OF THE CHAPTER

Chapter Three outlined the theoretical framework of corporate governance and discussed the five main theories underlying corporate governance including agency theory. The four key auditor attributes of this study were then detailed leading to the testable hypotheses.

Chapter Four provides details of the research method used to test the hypotheses of this study. The chapter starts with a justification of the sample selected, the source documentation chosen and time period analyzed. The subsequent section documents how the dependent variable of this study, audit fees, will be measured. Measures to operationalize the auditor attributes examined in this study are then provided (that is, measures for auditor quality, auditor industry specialization, non-audit fees and auditor tenure). The sensitivity tests to be undertaken are subsequently identified before the statistical tests and regression models utilized to test the hypotheses are outlined. Finally, a summary of Chapter Four is provided.

4.2 SAMPLE, DOCUMENTATION AND TIME PERIOD

The following sub-sections provide a justification of the sample firms selected, source documentation chosen and time period analyzed.

4.2.1 Selection justification

The initial sample comprises all Australian publicly listed firms registered on the *ASX* continuously across the observation window of 2001, 2003 and 2005 calendar years. Consistent with prior empirical research, financial institutions, banks and stock brokerages are excluded.[19] Firms that are not continuously listed on *ASX* are also excluded in order to avoid undue influences of unexpected rise in share price. In addition, consistent with Clifford and Evans (1997), unit trusts and foreign firms domiciled outside Australia were excluded because their (unit trusts and foreign firms domiciled outside Australia) financial statements are not always prepared in accordance with the normal disclosure requirements for other firms listed on the *ASX*. From this initial pool, 100 firms are selected from the top firms (by market capitalization) on the *ASX* as at reporting dates in 2001. Since one of the major drivers of firm performance is the need to maximize shareholder value (Gewald and Gellrich 2007; Lee 1979), this measure is best reflected by the market capitalization of a firm.

[19] This is consistent with Simunic (1980).

Admittedly, the use of market capitalization as a criterion to select a sample has limitations in terms of generalizability. To overcome this limitation and to increase the generalizability of this study, a further 100 firms (per year) will be selected using a stratified-random approach.[20] Each calendar year (that is, 1 January to 31 December) within the observation period is considered an individual firm-year for firms included in the sample. Data will be collected for each firm selected from each firm-year covered in this study. The resulting sample will provide approximately 600 firm-year observations for use as data points in the subsequent testing.

4.2.2 Source documentation justification

Data for this study are obtained from archival data in the form of listed firm annual reports.[21] Listed firms were selected since listed entities provide readily available information in an appropriate useable form. Australian Accounting Standards Board 101 (specifically, paragraphs 126.1 and 126.2) requires a detailed breakdown of all fees charged by a firm's auditor in Australia.[22] The *Annual Reports Collection* (Connect 4 Pty Ltd) was used to collect the data to construct all the measures for the variables used in this study.

4.2.3 Time period selection

As a key component of this study is a longitudinal analysis, the time period for observation will be the 2001, 2003 and 2005 calendar years. This time frame is selected as the time frame will transcend key periods in the financial accounting and corporate governance landscape in Australia such as the adoption of International Financial Reporting Standards (*IFRS*), implementation of *CLERP 9* recommendations and the *ASX CGC's* 2003 recommendations. The time-frame is also selected to collect the timeliest information available. However, in order to avoid the volatility in the market arising from the credit-crunch in 2007 and 2008 (which had emerged by second quarter, 2007), both 2007 and 2008 have been excluded from the time frame (Gamble 2008). The time frame selected, therefore, will facilitate answering a number of this study's important research questions.

In the next sections, measurements for the dependent variable (audit fees) and independent variables (auditor attributes) are outlined.

---

[20] This will be done by industry in order to capture an appropriate cross-section of all the industries on the *ASX*. Additionally, the firms will be the same for each of the three years examined. This has adverse implications in relation to the independence of samples and this is discussed in Section 8.5.

[21] Archival data was selected due to: the inherent limitations of survey research (Baxter and Pragasam 1999); the ready access of annual reports from a variety of electronic databases (that is, the use of data does not suffer from non-response bias); and objective measures for all the variables of interest can be obtained from data in annual reports.

[22] This is consistent with the provisions of *CLERP*.

4.3 MEASUREMENT OF THE DEPENDENT VARIABLE

As indicated in Section 4.2.2, data for the dependent variable, audit fees (*AF*), will be obtained from the annual reports of firms sampled.[23] This variable will be deflated by auditee size (principally total assets ($ASSETS_{t-1}$)) to control for cross-sectional differences associated with larger firms paying higher audit fees purely due to firm size.

Traditionally, in the audit fee modeling literature, data for audit fees normally requires transformation due to issues with linearity (Hair et al. 1995; Simunic 1980). Ordinarily, a logarithm transformation is necessary to ensure a better linear fit and the subsequent OLS regression testing can then be undertaken with confidence.[24] Alternatively, another way to ensure linearity is to deflate audit fees by auditee size so that any variation in audit fees as a result of auditor attributes is unlikely to be due to auditee-size effects.[25] The latter is the approach taken by this study.

4.4 MEASUREMENT OF THE INDEPENDENT VARIABLES

The independent variables of interest are a number of selected auditor attributes. Data for the independent variables will be gathered from the annual reports of 200 Australian publicly listed firms in Australia (as at the respective reporting dates) for the 2001, 2003 and 2005 calendar years.[26] Measurement proxies for the independent variables are detailed in the Sections 4.4.1 to 4.4.4.[27]

4.4.1 Auditor quality (*BIG4*)

Large international Big Firms normally receive a fee premium for services consistent with the existence of a quality-differentiated audit. A Big Firm auditor brings a higher level of quality to the engagement and, therefore, will charge a higher audit fee as a result of this quality/product differentiation. For auditor quality, the proxy *BIG4* is used in this study. In terms of measurement, therefore, an auditee *i* is scored one (1) if in time period *t* the engaged auditor is a *BIG4* auditor. Otherwise the auditee *i* in time period *t* is scored zero (0).

4.4.2 Auditor industry specialization (*SPECIALIST*)

Auditors with industry specializations have superior industry knowledge and, therefore, performance compared to non-industry specialist auditors and re-coup the superior

---

[23] Annual reports of firms are also viewed as a better source of data for audit fees since it is the source document prepared by the firm compared to other databases such as *Who Audits Australia?* database (Craswell et al. 1995).

[24] A logarithmic transformation is also applied given that total audit fees are likely to increase at a decreasing rate with firm size.

[25] This approach is also supported by the prior literature (Frankel, Johnson, and Nelson 2002).

[26] Any issue in relation to the potential problem with how the annual report year-ends fits within each respective calendar years is overcome by the fact that alterative years of 2001, 2003 and 2005 are selected.

[27] In terms of scale of measurement, the independent variables used in this study will be represented by two dummy variables and two metric variables (*BIG4* and *SPECIALIST* being dummy variables and *NONAUDIT* and *TENURE* being metric variables).

performance in the form of higher audit fees from the auditee (Balsam et al. 2003; DeFond et al. 2000; Zhou and Elder 2002).

Auditee sales are used to estimate the industry market share of the auditors. Specifically, the sum of all sales for a particular auditor in each industry is totaled and forms the numerator. The denominator is the sales of all clients in all industries summed over all audit firms (this will include both the *Big4* auditors and other audit firms auditing in the industry).[28] Consistent with the prior literature (Craswell et al. 1995; Lim and Tan 2008), an auditor with a 20% market share of a given industry is defined as an industry specialist for that industry. Thus, for *SPECIALIST*, an auditee *i* in industry *k* is scored one (1) if in time period *t* an auditor defined as an industry specialist in industry *k* is engaged; otherwise auditee *i* is scored zero (0).

4.4.3 Non-audit fees (*CNON-AUDIT* and *RNON-AUDIT*)

In order to capture the extent of the economic bonding between the auditor and auditee, this study focuses on two different measures of non-audit fees. First, where the influence of non-audit fees is considered as a composite component of auditor attributes in a holistic manner and individually, a dichotomous variable of *CNON-AUDIT* is used.[29] Specifically, for *CNON-AUDIT* firm *i* is scored one (1) for time period *t* if the ratio of non-audit fees to total fees is less than 0.25 (Palmrose 1986b). Otherwise, auditee *i* is scored zero (0). Second, this study also focuses on the ratio of non-audit to total fees. Hence, the variable *RNON-AUDIT* represents the ratio of non-audit fees to total fees paid to the auditor *j* by auditee *i* during time period *t*. Information for non-audit and total fees will be collected from the auditee's annual reports during the observation window.

4.4.4 Auditor tenure (*CTENURE* and *NTENURE*)

The auditor tenure variable is operationalized by reference to the length of time (in years) during which the current auditor has been the principal auditor for the auditee. As with non-audit services, both dichotomous and continuous measures are applied when considering the influence of auditor tenure (in isolation and as a component of auditor attributes as a whole). For *CTENURE*, an auditee *i* in time period *t* is scored one (1) if the number of years the incumbent auditor *j* has been the principal auditor is three (3) or more years (Felix et al. 2001). Otherwise, auditee *i* is scored zero (0).[30] In terms of a continuous measure,

---

[28] The operationalizing of *SPECIALIST* is consistent with (Lim and Tan 2008). In order to estimate the industry market share in a given industry for a particular year in Australia, all 10 main industries in the Standard & Poors July 2002 Global Industry Classification Standard will be utilized.

[29] For sensitivity purposes, when considering the influence of non-audit fees as an isolated variable, a continuous measure will be applied. This is denoted as *RNON-AUDIT* which is the ratio of non-audit fees to total fees of firm *i* in time period *t*.

[30] When used for sensitivity purposes, *NTENURE* is the number of years the incumbent auditor *j* has been the principal auditor of auditee *i* as at time period *t* (up to a maximum of ten years).

NTENURE denotes the length of time (in years up to a maximum of 10) during which the auditor has remained unchanged for auditee *i* at time period *t*. Data to determine both *CTENURE* and *NTENURE* will be collected from FinAnalysis or DatAnalysis (on-line repositories from the Aspect Huntley database).

4.4.5 Composite auditor attributes (*AA*)

To determine the combined influence of the four key auditor attributes on contemporaneous audit fees and changes in audit fees across time, a composite score based on the four proxy measures for auditor quality, industry specialization, provision of non-audit services and length of tenure is developed. This composite score is denoted *AA*. Thus, the *AA* score for auditee *i* in time period *t* is equal to$\sum$ ($BIG4_{it}$, $SPECIALIST_{it}$, $CNON\text{-}AUDIT_{it}$, and $CTENURE_{it}$).

4.5 MEASUREMENT OF THE CONTROL VARIABLES

Whilst various analytical techniques will be employed to test the data,[31] multivariate regression analysis will form the principal means to test the association between the selected auditor attributes and audit fees. To minimize cross-sectional influences, a number of control variables will also be incorporated into the analysis.[32] Prior research suggests auditee features and corporate governance characteristics may influence auditee fees. In respect to auditee features, control variables will include measures pertaining to: (1) auditee complexity: (a) square of number of subsidiaries; and (b) squared number of business segments: (2) auditee risk: (a) earnings before interest and tax divided by total assets; and (b) current ratio: and industry.[33] For corporate governance characteristics, controls in the multivariate analysis will include: (a) percentage of non-executive directors to total directors; (b) frequency of board of directors meetings annually; and (c) the presence of at least one financial expert on the audit committee. Table 4.1 specifies the control variables to be used in this study and Section 4.5.1 provides a brief justification of the need to include each control variable. Some of the variables are subject to (where appropriate) square root or logarithmic transformation to provide a better linear fit with the dependent variable.[34]

---

[31] Such techniques will include t-tests, analysis of variance, bivariate analysis and Pearson correlations.

[32] Bartov, Gul and Tsui (2000) point out that the omission of control variables could incorrectly result in the rejection of the null hypothesis.

[33] As the dependent variable will be deflated for auditee size, there will be no need to utilize control variables to proxy for auditee size (except for robustness purposes).

[34] The use of the control variables in Table 4.1 and the need to transform them (where necessary) is fully supported by the audit fee modelling literature.

Table 4.1:
Details of Control Variables

Explanatory variable (proxy measure)	Definition of proxy measure	Expected direction of relationship
Auditee complexity		
SUBSIDSR	Square root of number of subsidiaries for firm *i* at time period *t*.	+
LNNBS	Natural log of 1 plus number of business segments for firm *i* at time period *t*.	+
Auditee risk		
ROA	Earnings before interest and tax divided by total assets for firm *i* at time period *t*.	-
CURRENT	Current assets divided by current liabilities for firm *i* at time period *t*.	-
Corporate governance characteristics		
PERNEXBD	The percentage of non-executive directors on the board of directors for firm *i* at time period *t*.	+
BODMEET	The number of board of directors meetings held during the year for firm *i* at time period *t*.	+
FINEXPAC	A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*.	+
Other characteristics		
ENERGY	A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise.	?
MATERIALS	A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise.	?
INDUSTRIALS	A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise.	?
CONSUMERDISC	A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise.	?
CONSUMERSTAP	A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise.	?
HEALTHCARE	A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise.	?
FINANCIALS	A dummy variable given the value of 1 if the firm is in the financial industry and 0 if otherwise.	?
INFORMATION TECHNOLOGY	A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise.	?
TELECOMM UNICATIONS	A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise.	?
UTIITIES	A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.	?

4.5.1 Justification for inclusion of control variables

Audit fee models used in prior research have included a variety of variables to control for cross-sectional differences associated with firm size, firm complexity and firm risk (Boo and Sharma 2008; Lee and Mande 2005; Maher et al. 1992; Naser and Nuseibeh 2007). The regression models used in the prior research (detailed in Section 2.4) have provided significant explanatory power and been robust across countries, industries and time periods. The prior audit fee models have been used as a basis for selecting the control variables used in this study. Sections 4.5.1.1. to 4.5.1.4, which follow, provide a brief justification of the need to include each control variable.

4.5.1.1 Firm complexity

There are a number of different aspects to firm complexity which may impact on audit fees. An increase in firm complexity will equate to greater task complexity and this, in

turn, increases the audit effort required for: (a) understanding the higher level of firm complexity; (b) coordinating the audit function; and, (c) developing either more sophisticated or a greater number of auditing procedures. This increase in effort by the auditor, therefore, results in higher audit fees. The measures used are identified below.

4.5.1.1.1 Number of subsidiaries

The number of subsidiaries which a firm controls is a common measure of firm complexity (Anderson and Zeghal 1994; Chan et al. 1993; Choi et al. 2005; Chung and Lindsay 1988; Firth 1985; Francis 1984; Francis and Simon 1987; Ho and Ng 1996; Karim and Moizer 1996; Low et al. 1990; Simon et al. 1986; Simunic 1980; Taffler and Ramalingam 1982; Taylor 1997). A firm with a high number of subsidiaries will have a higher level of complexity in its financial statements due to the need for the firm to, among other things, consolidate and eliminate inter-firm transactions and balances. The resulting accounting transactions will, in turn, require greater attention from experienced auditors (who charge more for such time) and this, in turn, will result in a more costly audit for the client. For the purposes of this study, the variable *SUBSIDSR* represents the square root of number of subsidiaries for firm *i* at time period *t*.

4.5.1.1.2 Business segments

Research has also been undertaken using the number of business segments as a measure of firm complexity (Choi et al. 2005; Iyer and Iyer 1996). The rationale for this is that the greater the number of business segments within which the firm operates, the more complex the firm's operations. This, therefore, has a positive relationship with audit fees due to the additional audit resources required to understand the diverse operations and to formulate appropriate procedures to audit the operations. For the purposes of this study, the variable *LNNBS* represents the natural log of 1 plus number of business segments for firm *i* at time period *t*.

4.5.1.2 Firm risk

There are a number of different aspects to risk which can impact on audit fees. The greater the risk, the greater the concerns of the auditor about firm profitability, solvency and incentives for management to manage earnings. This is because the auditor might be sued by shareholders/stakeholders who have suffered a negative pay-out, caused (at least in part) by the auditor negligently concluding that the auditee's financial statements were drawn up to reflect a true and fair view when this was not the case (Butterworth and Houghton 1995). The legal hazard may increase the inherent risk of the audit engagement for the auditor and (in accordance with the requirements of the audit risk model) decrease the detection risk which the auditor applies to the audit (Leung et al. 2007). The decrease in detection risk, in

turn, increases both the number and type of substantive procedures (that is, audit procedures) which the auditor can utilize (especially around the year-end of the firm) and hence, audit fees. The measures of risk are identified below.

4.5.1.2.1 ROA and liquidity measures

This study uses earnings before interest and tax divided by total assets at year-end. The lower the return, the poorer the financial performance of the firm. There is, therefore, greater pressure on the firm to demonstrate superior financial performance (Frankel et al. 2002). Hence, there is more incentive for management to misrepresent the financial results of the firm. This pressure to exhibit better financial performance increases the risk that the firm might not faithfully prepare the financial statements to provide a true and fair view to users. This risk increases agency costs such that the auditor devotes resources in the form of additional audit procedures (for example, by closely checking discretionary accruals) to mitigate this risk, thereby increasing audit fees. For the purposes of this study, the variable *ROA* represents earnings before interest and tax divided by total assets for firm *i* at time period *t*.

4.5.1.2.2 Current ratio

The current ratio is commonly viewed as a liquidity ratio and has been used in the prior literature examining audit fee determinants (Chaney et al. 2004; Francis 1984; Low et al. 1990). The current ratio is calculated by current assets divided by current liabilities. The lower the ratio, the greater the risk that the firm will not be able to continue trading and pay the firm's debts as and when such debts fall due. The increased risk of insolvency to the client increases the inherent risk of the audit for the auditor and, in accordance with the requirements of the audit risk model (Leung et al. 2007), additional audit procedures will be undertaken by the auditor to maintain audit risk at an acceptable level. This will, in turn, increase audit fees. For the purposes of this study, the variable *CURRENT* represents current assets divided by current liabilities for firm *i* at time period *t*.

4.5.1.3 Corporate governance characteristics

Three corporate governance measures will be analyzed to determine the effect, if any, on audit fees. The measures are: (1) the percentage of non-executive directors on the board of directors for firm *i* at time period *t* (*PERNEXBD*); (2) the number of board of directors meetings held during the year for firm *i* at time period *t* (*BODMEET*); and (3) a dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t* (*FINEXPAC*). According to Goodwin-Stewart and Kent (2006a), the existence and effective operation of corporate governance variables increases audit fees as firms endeavor to use both corporate governance and

external audit activities in a complementary manner to improve the management of the firm and the firm's financial reporting practices. In relation to the variable *FINEXPAC*, the following definition is used in this study: audit committee members who are either a CPA member of *CPA Australia* or a CA member of the *ICAA* are deemed to have accounting expertise. Additionally, a description (in the director's report of an annual report) of any audit committee member who has substantial experience in finance positions will satisfy the definition of finance expertise.

4.5.1.4 Other characteristics

A significant number of researchers have attempted to determine if the relationship between the determinants of audit fees are influenced by the industry in which the firm is operating (Anderson and Zeghal 1994; Firth 1985; Gerrard et al. 1994; Low et al. 1990; Palmrose 1986a; Simunic 1980). Depending on the industry in which the auditee is operating, that industry may impact the audit fee paid by the auditee, either positively or negatively, relative to other industries. As an example, firms in the mining industry have lower audit fees since the extent of the transactional testing undertaken by the auditor is limited due to the relatively unimportant role which the Profit and Loss Statement plays (Butterworth and Houghton 1995; Goodwin-Stewart and Kent 2006a). This is primarily due to the exploratory nature of the industry where: first, there is a less diverse asset base; second, fewer inventory and receivables balances; and, third, a small number of customers. Different industries have different risk profiles and this is clearly the case given such different inherent risks (as evidenced by, for example, the market betas). Industries may vary systematically for some of the ratios discussed earlier. This study will examine nine industries in Australia within which the sample firms operate and determine if any industry/ries impact on the relationship between the selected auditor attributes and audit fees.[35]

4.6 STATISTICAL TESTS AND MODELS

This study uses OLS multiple regression to analyze the relationship between the selected auditor attributes and audit fees. The hypotheses of this study will be tested formally through this multivariate technique; specifically, by using a number of cross-sectional and longitudinal OLS regression models.

[35] Consistent with prior literature, firms in the financial industry are excluded from this study (Simunic 1980; Singh and Newby 2010).

4.6.1 Basic test model

The basic statistical model to be used in this study is defined as:[36]

$$AF_{it} = \beta_0 + \beta_1 AA_{it} + \beta_2 SRSUBSID_{it} + \beta_3 LNNBS_{it} + \beta_4 ROA_{it} + \beta_5 CURRENT_{it} + \beta_6 PERNEXBD_{it} + \beta_7 BODMEET_{it} + \beta_8 FINEXPAC_{it} + \beta_9 INDUSTRY_{it} + \varepsilon_{it} \quad [1]$$

Where:

AF_{it}	=	The amount of audit fees deflated for total assets of size of firm i at time period t;
AA_{it}	=	$\sum$ ($BIG4_{it}$, $SPECIALIST_{it}$, $CNON\text{-}AUDIT_{it}$, $CTENURE_{it}$);
$BIG4_{it}$	=	Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is a *Big4* audit firm; otherwise auditee *i* in time period *t* is scored zero (0).
$SPECIALIST_{it}$	=	Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is an industry specialist in industry *k*; otherwise auditee *i* in time period *t* is scored zero (0).
$CNON\text{-}AUDIT_{it}$	=	Auditee *i* in time period *t* is scored one (1) if the ratio of non-audit fees to total fees paid to the incumbent auditor *j* in time period *t* is less than 0.25; otherwise auditee *i* in time period *t* is scored zero (0).
$CTENURE_{it}$	=	Auditee *i* in time period *t* is scored one (1) if number of years the incumbent auditor *j* till time period *t* has been engaged as the principal auditor is 3 years or more; otherwise auditee *i* in time period *t* is scored zero (0).
$SRSUBSID_{it}$	=	Square root of number of subsidiaries for firm *i* at time period *t*.
$LNNBS_{it}$	=	Natural log of 1 plus number of business segments for firm *i* at time period *t*.
ROA_{it}	=	Earnings before interest and tax divided by total assets for firm *i* at time period *t*.
$CURRENT_{it}$	=	Current assets divided by current liabilities for firm *i* at time period *t*.
$PERNEXBD_{it}$	=	The percentage of non-executive directors on the board of directors for firm *i* at time period *t*.
$BODMEET_{it}$	=	The number of board of directors meetings held during the year for firm *i* at time period *t*.
$FINEXPAC_{it}$	=	A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*.
$INDUSTRY_{it}$	=	$ENERGY_{it}$ + $MATERIALS_{it}$ + $INDUSTRIALS_{it}$ + $CONSUMERDISC_{it}$ + $CONSUMERSTAP_{it}$ + $HEALTHCARE_{it}$ + $INFORMATION\ TECHNOLOGY_{it}$ + $TELECOMMUNICATIONS_{it}$ + $UTILITIES_{it}$
$ENERGY_{it}$	=	A dummy variable given the value of 1 if the company is in the energy industry and 0 if otherwise in 2001.
$MATERIALS_{it}$	=	A dummy variable given the value of 1 if the company is in the materials industry and 0 if otherwise in 2001.
$INDUSTRIALS_{it}$	=	A dummy variable given the value of 1 if the company is in the industrials industry and 0 if otherwise in 2001.
$CONSUMERDISC_{it}$	=	A dummy variable given the value of 1 if the company is in the consumer discretionary industry and 0 if otherwise in 2001.
$CONSUMERSTAP_{it}$	=	A dummy variable given the value of 1 if the company is in the consumer staples industry and 0 if otherwise in 2001.
$HEALTHCARE_{it}$	=	A dummy variable given the value of 1 if the company is in the health-care industry and 0 if otherwise in 2001.
$INFORMATION\ TECHNOLOGY_{it}$	=	A dummy variable given the value of 1 if the company is in the information technology industry and 0 if otherwise in 2001.
$TELECOMM\ UNICATIONS_{it}$	=	A dummy variable given the value of 1 if the company is in the telecommunications industry and 0 if otherwise in 2001.
$UTILITIES_{it}$	=	A dummy variable given the value of 1 if the company is in the utilities industry and 0 if otherwise in 2001.
β	=	Coefficients on variable 0 through 9.
ε_{it}	=	The error term.

The model in *Equation 1* has been specified to examine the relationship (cross-sectionally) between a composite score capturing the four key auditor attributes and audit fees. The regression model will be run four times (one for each of the calendar years-ending 2001, 2003, 2005 and 2001 to 2005). Details of the specific OLS regression models to test the variables of interest of this study individually are specified in *Equations 2* to *4*.

[36] To address the cross-sectional focus of this study, the basic test model (specified in Section 4.6.1) and the comprehensive cross-sectional model (specified in Section 4.6.2) will be used to examine GH_1, H_{1a}, H_{2a}, H_{3a} and H_{4a}.

4.6.2 Comprehensive cross-sectional model

Twelve (12) cross-sectional OLS regression models will be run to provide results of the association between the selected auditor attributes (independent variable) and audit fees (dependent variable). Specifically, in order to analyze all four auditor attributes individually, four individual regression models will need to be run within each year; resulting in a total of 12 regressions (given that there are three calendar years to be investigated). The overall model to be used, therefore, is defined in *Equation 2*:

$$AF_{it} = \beta_0 + \beta_1 BIG4_{it} + \beta_2 SPECIALIST_{it} + \beta_3 CNONAUDIT_{it} + \beta_4 CTENURE_{it} + \beta_5 SRSUBSID_{it} + \beta_6 LNNBS_{it} + \beta_7 ROA_{it} + \beta_8 CURRENT_{it} + \beta_9 PERNEXBD_{it} + \beta_{10} BODMEET_{it} + \beta_{11} FINEXPAC_{it} + \beta_{12} INDUSTRY_{it} + \varepsilon_{it} \quad [2]$$

Where:

AF_{it}	=	Amount of audit fees paid by auditee *i* at time period *t* deflated by *ASSETS*;
$BIG4_{it}$	=	Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is a *Big4* audit firm; otherwise auditee *i* in time period *t* is scored zero (0).
$SPECIALIST_{it}$	=	Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is an industry specialist in industry *k*; otherwise auditee *i* in time period *t* is scored zero (0).
$CNON\text{-}AUDIT_{it}$	=	Auditee *i* in time period *t* is scored one (1) if the ratio of non-audit fees to total fees paid to the incumbent auditor *j* in time period *t* is less than 0.25; otherwise auditee *i* in time period *t* is scored zero (0);
$CTENURE_{it}$	=	Auditee *i* in time period *t* is scored one (1) if number of years the incumbent auditor *j* till time period *t* has been engaged
$SRSUBSID_{it}$	=	Square root of number of subsidiaries for firm *i* at time period *t*.
$LNNBS_{it}$	=	Natural log of 1 plus number of business segments for firm *i* at time period *t*.
ROA_{it}	=	Earnings before interest and tax divided by total assets for firm *i* at time period *t*.
$CURRENT_{it}$	=	Current assets divided by current liabilities for firm *i* at time period *t*.
$PERNEXBD_{it}$	=	The percentage of non-executive directors on the board of directors for firm *i* at time period *t*.
$BODMEET_{it}$	=	The number of board of directors meetings held during the year for firm *i* at time period *t*.
$FINEXPAC_{it}$	=	A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*.
$INDUSTRY_{it}$	=	$ENERGY_{it} + MATERIALS_{it} + INDUSTRIALS_{it} + CONSUMERDISC_{it} + CONSUMERSTAP_{it} + HEALTHCARE_{it} + INFORMATION\ TECHNOLOGY_{it} + TELECOMMUNICATIONS_{it} + UTILITIES_{it}$
$ENERGY_{it}$	=	A dummy variable given the value of 1 if the company is in the energy industry and 0 if otherwise in 2001.
$MATERIALS_{it}$	=	A dummy variable given the value of 1 if the company is in the materials industry and 0 if otherwise in 2001.
$INDUSTRIALS_{it}$	=	A dummy variable given the value of 1 if the company is in the industrials industry and 0 if otherwise in 2001.
$CONSUMERDISC_{it}$	=	A dummy variable given the value of 1 if the company is in the consumer discretionary industry and 0 if otherwise in 2001.
$CONSUMERSTAP_{it}$	=	A dummy variable given the value of 1 if the company is in the consumer staples industry and 0 if otherwise in 2001.
$HEALTHCARE_{it}$	=	A dummy variable given the value of 1 if the company is in the health-care industry and 0 if otherwise in 2001.
$INFORMATION\ TECHNOLOGY_{it}$	=	A dummy variable given the value of 1 if the company is in the information technology industry and 0 if otherwise in 2001.
$TELECOMM\ UNICATIONS_{it}$	=	A dummy variable given the value of 1 if the company is in the telecommunications industry and 0 if otherwise in 2001.
$UTILITIES_{it}$	=	A dummy variable given the value of 1 if the company is in the utilities industry and 0 if otherwise in 2001.
β	=	Coefficients on variables 0 through 12.
ε_{it}	=	The error term.

4.6.3 Longitudinal model

Given that this study is also longitudinal in nature, changes in audit fees over this study period will also be investigated. The overall model to be used, therefore, is defined in *Equations 3* and *4*:[37]

$$\Delta AF_{it} = \beta_0 + \beta_1 AA_{it} + \beta_2 SRSUBSID_{it} + \beta_3 LNNBS_{it} + \beta_4 ROA_{it} + \beta_5 CURRENT_{it} + \beta_6 PERNEXBD_{it} + \beta_7 BODMEET_{it} + \beta_8 FINEXPAC_{it} + \beta_9 INDUSTRY_{it} + \varepsilon_{it} \quad [3]$$

$$\Delta AF_{it} = \beta_0 + \beta_1 BIG4_{it} + \beta_2 SPECIALIST_{it} + \beta_3 CNON\text{-}AUDIT_{it} + \beta_4 CTENURE_{it} + \beta_5 SRSUBSID_{it} + \beta_6 LNNBS_{it} + \beta_7 ROA_{it} + \beta_8 CURRENT_{it} + \beta_9 PERNEXBD_{it} + \beta_{10} BODMEET_{it} + \beta_{11} FINEXPAC_{it} + \beta_{12} INDUSTRY_{it} + \varepsilon_{it} \quad [4]$$

Where:

ΔAF_{it}	=	Change in amount of audit fees paid by firm *i* at time period *t* deflated by opening total assets of auditee *i*; and
$BIG4_{it}$	=	Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is a *Big4* audit firm; otherwise auditee *i* in time period *t* is scored zero (0).
$SPECIALIST_{it}$	=	Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is an industry specialist in industry *k*; otherwise auditee *i* in time period *t* is scored zero (0).
$CNON\text{-}AUDIT_{it}$	=	Auditee *i* in time period *t* is scored one (1) if the ratio of non-audit fees to total fees paid to the incumbent auditor *j* in time period *t* is less than 0.25; otherwise auditee *i* in time period *t* is scored zero (0);
$CTENURE_{it}$	=	Auditee *i* in time period *t* is scored one (1) if number of years the incumbent auditor *j* till time period *t* has been engaged as the principal auditor is 3 years or more; otherwise auditee *i* in time period *t* is scored zero (0).
$SRSUBSID_{it}$	=	Square root of number of subsidiaries for firm *i* at time period *t*.
$LNNBS_{it}$	=	Natural log of 1 plus number of business segments for firm *i* at time period *t*.
ROA_{it}	=	Earnings before interest and tax divided by total assets for firm *i* at time period *t*.
$CURRENT_{it}$	=	Current assets divided by current liabilities for firm *i* at time period *t*.
$PERNEXBD_{it}$	=	The percentage of non-executive directors on the board of directors for firm *i* at time period *t*.
$BODMEET_{it}$	=	The number of board of directors meetings held during the year for firm *i* at time period *t*.
$FINEXPAC_{it}$	=	A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*.
$INDUSTRY_{it}$	=	$ENERGY_{it}$ + $MATERIALS_{it}$ + $INDUSTRIALS_{it}$ + $CONSUMERDISC_{it}$ + $CONSUMERSTAP_{it}$ + $HEALTHCARE_{it}$ + $INFORMATION\ TECHNOLOGY_{it}$ + $TELECOMMUNICATIONS_{it}$ + $UTILITIES_{it}$
$ENERGY_{it}$	=	A dummy variable given the value of 1 if the company is in the energy industry and 0 if otherwise in 2001.
$MATERIALS_{it}$	=	A dummy variable given the value of 1 if the company is in the materials industry and 0 if otherwise in 2001.
$INDUSTRIALS_{it}$	=	A dummy variable given the value of 1 if the company is in the industrials industry and 0 if otherwise in 2001.
$CONSUMERDISC_{it}$	=	A dummy variable given the value of 1 if the company is in the consumer discretionary industry and 0 if otherwise in 2001.
$CONSUMERSTAP_{it}$	=	A dummy variable given the value of 1 if the company is in the consumer staples industry and 0 if otherwise in 2001.
$HEALTHCARE_{it}$	=	A dummy variable given the value of 1 if the company is in the health-care industry and 0 if otherwise in 2001.
$INFORMATION\ TECHNOLOGY_{it}$	=	A dummy variable given the value of 1 if the company is in the information technology industry and 0 if otherwise in 2001.
$TELECOMM\ UNICATIONS_{it}$	=	A dummy variable given the value of 1 if the company is in the telecommunications industry and 0 if otherwise in 2001.
$UTILITIES_{it}$	=	A dummy variable given the value of 1 if the company is in the utilities industry and 0 if otherwise in 2001.
β	=	Coefficients on variables 0 through 12.
ε_{it}	=	The error term.

[37] To address the longitudinal focus of this study, the models in *Equations 3* and *4* are tested to examined GH_2, H_{1b}, H_{2b}, H_{3b} *and* H_{4b} respectively. For brevity, year indicator variables have not been included in *Equation 3* (Lim and Tan 2008).

4.7 SENSITIVITY ANALYSIS

Sensitivity tests will be undertaken to validate the robustness of the findings. Initially, the sample is partitioned by the following four audit characteristics of: firm size, firm complexity, firm risk and industry. Partitioning the sample by the four auditee characteristics (individually) is undertaken to determine if the main regression results in Chapter Six are influenced by firm size, firm complexity, firm risk and industry. Subsequently, the sample is partitioned by the following three corporate governance features: non-executive board of directors' members, number of board of directors meetings annually and the presence of a financial expert on the audit committee. Once again, partitioning the sample by the following three corporate governance features (individually) is undertaken to determine if the main regression results are influenced by the three corporate governance features.

The main regression model as defined in *Equation 1* is amended to include an alternative measure of audit fees. Specifically, a new variable, the natural logarithm of the audit fees paid to the external auditor for the provision of external audit services for firm *i* at time period *t* (AF_{it}) is utilized as the dependent variable (and, therefore, the natural logarithm of total assets for firm *i* at time period *t* ($ASSETS_{it}$) is introduced into the regression models as an additional control variable). The alternative measure of audit fees is derived to determine if the main regression results in Chapter Six are influenced by the choice of the measure of audit fees used (that is, $AF_{it}/ASSETS_{it}$).

The main regression model as defined in *Equation 2* is also amended to include alternative measures of auditor attributes. Specifically, the regression models are amended to replace the two dichotomous variables of $CNON\text{-}AUDIT_{it}$ and $CTENURE_{it}$ with continuous proxies of $RNON\text{-}AUDIT_{it}$ (ratio of non-audit fees to total fees paid to the auditor *j* by auditee *i* during time period *t*) and $NTENURE_{it}$ (length of time (in years up to a maximum of 10) during which the auditor has remained unchanged for auditee *i* at time period *t*).[38] The alternative measures of auditor attributes are derived to determine if the main regression results in Chapter Six are influenced by the measures used to proxy for auditor attributes.

Finally, the results of multiple regression using a dichotomous composite score of auditor attributes (that is, AA_{it}) as an explanatory variable were re-run to analyze the variation of audit fees for the years – ended 2001 and 2005 and also the change in audit fees

[38] It is not possible to replace the two remaining dichotomous variables of $BIG4_{it}$ (Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is a *Big4* audit firm; otherwise auditee *i* in time period *t* is scored zero (0)) and $SPECIALIST_{it}$ (Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is an industry specialist in industry *k*; otherwise auditee *i* in time period *t* is scored zero (0)) as there are no continuous measures in the prior literature to operationalize the two dichotomous variables.

for 2001 to 2003 and 2003 to 2005. The objective in undertaking this partitioning is to determine if the introduction of *CLERP 9* in 2003 improved the relationship between AA_{it} and audit fees before and after the introduction of *CLERP 9* (that is, between 2001 and 2005) in Australia.

4.8 SUMMARY OF THE CHAPTER

Chapter Four detailed the research method used to test the hypotheses of this study. Initially, there was a justification of the sample selected, source documentation chosen and time period analyzed. Subsequently, measures for the dependent (audit fees) and independent variables (auditor attributes) used in this study were outlined before the main empirical tests to be undertaken in this study identified.

Chapter Five will provide the descriptive statistics and univariate analyses of the sample. Initially, details pertaining to cleaning and excluding the data are provided. Sample descriptive statistics such as the mean, standard deviation, 0.25 percentile, median and 0.75 percentile will also be provided. Details of t-tests from key descriptive sample characteristics for both cross-sectional and longitudinal factors along with correlation analyses are also provided in Chapter Five.

CHAPTER FIVE:
DESCRIPTIVE STATISTICS AND UNIVARIATE ANALYSIS

5.1 OVERVIEW OF THE CHAPTER

Chapter Four outlined the sample collection and selection process. Measures for audit fees, auditor attributes and use of control variables were also discussed. The statistical tests and models adopted for this study were also detailed.

Chapter Five reviews the descriptive statistics for the variables used in this study. After discussing data cleaning, the chapter continues with a description of the sample selection process and identifies the industry breakdowns in the final usable sample. Subsequently, a comprehensive discussion is undertaken of the descriptive statistics for the dependent variable, independent variables, firm characteristic variables, corporate governance and industry variables. The second part of the chapter provides t-tests for the key descriptive characteristics of the sample. Specifically, independent samples t-tests and two-way ANOVA results are reported. Correlation analysis is subsequently provided before a summary is outlined at the end of Chapter Five.

5.2 CLEANING OF THE DATA

Prior to data analysis, data screening checks are undertaken for each of the variables used in this study. Such checks include accuracy of data entry, missing values and normality assessments. In relation to accuracy of data entry and missing values, a data authentication check is undertaken, on a sample basis, by re-visiting data already entered. In total, approximately ten (10) percent of the completed dataset is examined in this manner. There were a very small number of errors noted (three in total all of which were transpositional) and the errors were correctly easily.

Additionally, each continuous variable in this study is tested for normality by examining the variable's skewness, kurtosis and Kolmogorov-Smirnov p-value. After examining normality, a number of variables in this study are subject to logarithmic or square root transformation to provide a better linear fit with the dependent variable (that is, audit fees).[39] While some of the subsequent transformations did not result in normal distributions, the continued inclusion of the variables is justified by the prior research (Carcello and Nagy 2004; Chaney et al. 2004; Gerrard et al. 1994; Sankaraguruswamy and Whisenant 2003). In addition, Central Limit Theorem principle suggests that large samples (of at least 30) can be used with confidence for subsequent multivariate testing, depending on the number of degrees of freedom and independent variables employed (Hair et al. 1995).

[39] The variables subject to transformation have a p-value below the Kolmogorov-Smirnov threshold normality test of 0.05.

Univariate outliers in the dataset were identified by using box plots and an examination of standardized scores in excess of 3.29 (Tabachnick and Fidell 2001). Once outliers were identified, the data entered (for that variable) is checked for accuracy. Following this, an examination is conducted for all cases of outliers to determine whether the outliers are properly part of the population intended for the sample. For the purposes of this study, identified outliers are retained in the sample for the subsequent analysis. However the analysis is also re-run without the outliers to discern whether the outlier impacts the results.

5.3 BASIC SAMPLE DESCRIPTIVE STATISTICS

5.3.1 Sample selection process and industry breakdown

Table 5.1 Panel A outlines the sample selection process. The final usable sample for this study consists of 200 firms per calendar year for 2001, 2003 and 2005. Initially, 100 of the 200 firms selected in 2001 were chosen because the firms are listed at the top of the *ASX* based on market capitalization. The remaining 100 firms for 2001 are selected from the rest of the *ASX* randomly by industry stratification. After obtaining the final sample of 200 firms for 2001, the same firms are also selected for 2003 and 2005 resulting in a total final usable sample of 600 firms. When finalizing the initial sample of 200 firms for 2001, a number of exclusions are necessary in keeping with the established prior literature. Specifically, the initial sample of 2 128 firms comprises all publicly listed firms trading on the *ASX* as at 1 January 2001. Consistent with the prior literature, financial institutions (338), trusts and investments (23), foreign incorporated firms (67) and firms not continuously listed during the observation period of 2001 to 2005 (994) are excluded (Hay et al. 2006; La Porta, Lopez-de-Silanes, and Schleifer 1999; O'Regan, O'Donnell, Kennedy, Bontis, and Cleary 2005; Simunic 1980; Stearns and Mizruchi 1993; Taylor and Baker 1981; Vafeas 2005). From the resulting pool of 706 firms, 100 firms are selected based on market capitalization and the remaining 100 firms randomly selected on the basis of industry. For purposes of brevity and convenience of reference, the 100 firms selected based on market capitalization are referred to as the *ASX T100* sub-sample and the remaining 100 firms randomly selected based on industry are referred to as *ASX RI 100* sub-sample.

Table 5.1:
Sample Selection and Industry Breakdown

Panel A: Sample Selection		
Number of Firms Listed on the *ASX* as at 1 January, 2001		2 128
Exclusions:		
Financial Institutions	338	
Trusts and Investments	23	
Foreign Incorporated Firms	67	
Firms not Continuously Listed	994	(1 422)
Sample Pool for Random Selection		706
Firms by Market Capitalization	100	
Random Selection of Remaining Firms by Industry	100	
Final Useable Sample (2001)		200

Panel B: Sample Firm Breakdown by Industry in 2001	No. of Firms	% of Sample
ASX Industry		
Energy	23	11.50
Materials	34	17.00
Industrials	33	16.50
Consumer Discretionary	33	16.50
Consumer Staples	20	10.00
Health Care	24	12.00
Information Technology	13	6.50
Telecommunications	12	6.00
Utilities	8	4.00
Total	200	100

Table 5.1 Panel B presents the industry breakdown of the sample firms. Materials, industrials and consumer discretionary sectors collectively represent the highest proportion (that is, 50%) of the final sample of 200 firms in 2001. This spread is also proportionally representative of the *ASX* market as a whole. Therefore, each industry contains sufficient observations to control for industry effects in the subsequent multivariate analysis.

5.3.2 Descriptive statistics (dependent variable)

Table 5.2 shows the descriptive statistics for the dependent variable in the sample, audit fees. The discussion of the descriptive statistics in this chapter is organized within tables in order of market capitalization (for example, n=100 in Table 5.2 Panel A), random-selection by industry (for example, n=100 in Table 5.2 Panel B) and by total (for example, n=200 in Table 5.2 Panel C).

Table 5.2 Panel A reports that audit fees paid by firms in the *ASX T100* sub-sample have a mean of $1 026 721 and a standard deviation of $1 468 396 in 2001. Table 5.2 Panel A also reports that audit fees paid by firms in the *ASX T100* sub-sample range from $247 525 (at 0.25 percentile) to $1 196 051 (at 0.75 percentile) in 2001. The values increase steadily in 2003 and 2005. Table 5.2 Panel A reports that total assets of firms in the *ASX T100* sub-sample have a mean of $2 246 252 876 and a standard deviation of $4 297 496 199 in 2001. The total assets of the 100 firms on the *ASX* by market capitalization in Table 5.2 Panel A range from $378 942 750 (at 0.25 percentile) to $2 443 462 250 (at 0.75 percentile) in 2001.

This is unsurprising given that Table 5.2 contains 100 of the top public firms on the *ASX* by market capitalization. As is the case with audit fees, the total asset values generally steadily in 2003 before reducing slightly in 2005.

Table 5.2:
Descriptive Statistics – Audit Fees (Dependent Variable)

Panel A: ***ASX T100 sub-sample*** **(n = 100)**	**Mean**	**Standard deviation**	**25th percentile**	**Median (50th percentile)**	**75th percentile**
AF/ASSETS_01	0.0011	0.0016	0.0003	0.0006	0.0012
AF/ASSETS_03	0.0012	0.0017	0.0003	0.0007	0.0013
AF/ASSETS_05	0.0017	0.0032	0.0003	0.0009	0.0015
AF_01 ($)	1 026 721	1 468 396	247 525	560 952	1 196 051
AF_03 ($)	1 116 002	1 596 083	269 049	609 731	1 300 055
AF_05 ($)	1 200 272	1 690 471	293 372	648 650	1 383 038
ASSETS_01 ($)	2 246 252 876	4 297 496 199	378 942 750	784 166 500	2 443 462 250
ASSETS_03 ($)	2 255 358 006	4 295 567 223	380 442 350	797 206 750	2 563 474 250
ASSETS_05 ($)	2 088 770 231	4 253 220 873	289 617 500	841 327 500	2 233 180 500
LNAF_01	13.1333	1.2897	12.4193	13.2372	13.9936
LNAF_03	13.2167	1.2897	12.5026	13.3206	14.0769
LNAF_05	13.3750	1.1404	12.5891	13.3825	14.1388
Panel B: ***ASX RI 100 sub-sample*** **(n = 100)**	**Mean**	**Standard deviation**	**25th percentile**	**Median (50th percentile)**	**75th percentile**
AF/ASSETS_01	0.0078	0.0127	0.0013	0.0029	0.0089
AF/ASSETS_03	0.0082	0.0136	0.0014	0.0033	0.0082
AF/ASSETS_05	0.0056	0.0124	0.0014	0.0031	0.0061
AF_01 ($)	56 961	69 429	17 372	38 060	67 558
AF_03 ($)	61 914	75 466	18 882	41 370	73 433
AF_05 ($)	52 853	44 144	19 700	40 285	72 659
ASSETS_01 ($)	32 546 656	58 428 801	4 271 093	11 387 460	26 184 514
ASSETS_03 ($)	28 872 812	46 889 462	4 551 192	11 048 460	25 864 750
ASSETS_05 ($)	32 095 305	64 850 728	6 037 535	10 586 921	26 840 972
LNAF_01	10.4829	0.9803	9.7626	10.5469	11.1207
LNAF_03	10.5663	0.9802	9.8459	10.6303	11.2041
LNAF_05	10.5324	0.8880	9.8883	10.6035	11.1933
Panel C: ***Pooled Sample*** **(n = 200)**	**Mean**	**Standard deviation**	**25th percentile**	**Median (50th percentile)**	**75th percentile**
AF/ASSETS_01	0.0044	0.0096	0.0005	0.0012	0.003
AF/ASSETS_03	0.0047	0.0103	0.0005	0.0014	0.0039
AF/ASSETS_05	0.0036	0.0092	0.0007	0.0014	0.0037
AF_01 ($)	541 842	1 145 148	32 256	115 518	566 379
AF_03 ($)	588 958	1 244 726	35 063	125 563	615 630
AF_05 ($)	626 563	1 324 172	38 000	133 578	654 925
ASSETS_01 ($)	1 139 399 766	3 228 128 278	11 338 190	114 187 961	789 859 250
ASSETS_03 ($)	1 142 115 409	3 228 965 516	10 928 230	111 294 961	789 859 250
ASSETS_05 ($)	1 060 432 768	3 172 440 079	10 282 790	92 782 602	847 283 750
LNAF_01	11.8100	1.7500	10.3800	11.6600	13.2500
LNAF_03	11.8900	1.7500	10.4600	11.7400	13.3300
LNAF_05	11.9500	1.7500	10.5500	11.8000	13.3900

Where:
AF/ASSETS_01 = The amount of audit fees paid by the firm in 2001 deflated by total assets; *AF/ASSETS_03* = The amount of audit fees paid by the firm in 2003 deflated by total assets; *AF/ASSETS_05* = The amount of audit fees paid by the firm in 2005 deflated by total assets; *AF_01* = The amount of audit fees paid to the external auditor in 2001 for the provision of external audit services for the firm; *AF_03* = The amount of audit fees paid to the external auditor in 2003 for the provision of external audit services for the firm; *AF_05* = The amount of audit fees paid to the external auditor in 2005 for the provision of external audit services for the firm; *ASSETS_01* = Total assets of the firm in 2001; *ASSETS_03* = Total assets of the firm in 2003; *ASSETS_05* = Total assets of the firm in 2005; *LNAF_01* = Natural logarithmic transformation of audit fees for the firm in 2001; *LNAF_03* = Natural logarithmic transformation of audit fees for the firm in 2003; *LNAF_05* = Natural logarithmic transformation of audit fees for the firm in 2005

Table 5.2 Panel B reports that audit fees paid by firms in the *ASX RI 100* sub-sample have a mean of $56 961 and a standard deviation of $69 429 in 2001. Table 5.2 Panel B also reports that audit fees paid by firms in the *ASX RI 100* sub-sample range from $17 372 (at 0.25 percentile) to $67 558 (at 0.75 percentile) in 2001. As is the case for the top 100 firms by market capitalization on the *ASX*, the values for firms in the *ASX RI 100* sub-sample on the *ASX* increase in 2003 before declining slightly in 2005. Table 5.2 Panel B reports that total assets of firms in the *ASX RI 100* sub-sample have a mean of $32 546 656 and a standard deviation of $58 428 801 in 2001. The total assets of the firms randomly selected by industry in Table 5.2 Panel B range from $4 271 093 (at 0.25 percentile) to $26 184 514 (at 0.75 percentile) in 2001. As is the case with audit fees, the increase in mean suggests that total asset values increase steadily in 2003 and 2005.

Table 5.2 Panel C shows the descriptive statistics for audit fees across the pooled sample. The descriptive statistics for the pooled sample follow a similar pattern to the *ASX T100* and *ASX RI 100* sub-samples.

5.3.3 Descriptive statistics (independent variable)

Tables 5.3 and 5.4 show the descriptive statistics for the dichotomous independent variables and continuous independent variables respectively in the sample (that is, four selected auditor attributes).

5.3.3.1 Descriptive statistics (*dichotomous independent variables*)

Table 5.3 Panel A shows that 92% of firms in the *ASX T100* sub-sample employ a *Big4* auditor for 2001, 2003 and 2005. In respect to auditor specialization, 50% of the firms in Table 5.3 Panel A employ an industry specialist auditor with the number of firms increasing to 54 in 2003 and 57 in 2005 suggesting a greater desire by firms for higher levels of auditor quality. Fifty-one percent (51%) of firms have incumbent auditors who provide non-audit services equaling less than 25% of total fees charged for 2001, 2003 and 2005. In relation to auditor tenure, 87% of firms in Table 5.3 Panel A have an incumbent auditor who has been engaged as the principal auditor for three years or more in 2001. Over time, this value has increased to 90% in 2003 and 99% in 2005 suggesting that the biggest firms in Australia tend to stay with the same auditor over time. Most importantly, the composite dichotomous score (reported in Table 5.3 Panel A) based on the four auditor attributes (that is, *Big4*, industry specialization, provision of non-audit services and auditor tenure) indicates that in 2001, a total of 63 firms of firms in the *ASX T100* sub-sample obtain a cumulative

composite score of either three or greater (specifically, 43 firms scoring three and 20 firms scoring four). The result remains fairly constant during 2003 and 2005 also.[40]

Table 5.3:
Descriptive Statistics – Auditor Attributes (Dichotomous Independent Variables)

Panel A: ***ASX T100 sub-sample***	**2001**	**2003**	**2005**
$BIG4_{it}$			
Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is a *Big4* audit firm; otherwise auditee *i* in time period *t* is scored zero (0).	92	92	92
Auditee *i* in time period *t* is not audited by a *Big4* auditor.	8	8	8
Total	100	100	100
$SPECIALIST_{it}$			
Auditee i in time period *t* is scored one (1) if the incumbent auditor j in time period *t* is an industry specialist in industry *k*; otherwise auditee *i* in time period *t* is scored zero (0).	50	54	57
Auditee *i* in time period *t* is not audited by an industry specialist in industry *k*	50	46	43
Total	100	100	100
$CNON\text{-}AUDIT_{it}$			
Auditee *i* in time period *t* is scored one (1) if the ratio of non-audit fees to total fees paid to the incumbent auditor *j* in time period t is less than 0.25; otherwise auditee *i* in time period *t* is scored zero (0).	51	51	51
Auditee *i* in time period *t* pays more than 0.25 of the ratio of non-audit fees to total fees to the incumbent auditor.	49	49	49
Total	100	100	100
$CTENURE_{it}$			
Auditee *i* in time period *t* is scored one (1) if number of years the incumbent auditor *j* till time period *t* has been engaged as the principal auditor is 3 years or more; otherwise auditee *i* in time period *t* is scored zero (0).	87	90	99
Auditee i in time period *t* has engaged the incumbent auditor for less than three years.	13	10	1
Total	100	100	100
$\sum$ ($BIG4_{it}$, $SPECIALIST_{it}$, $CNON\text{-}AUDIT_{it}$, $CTENURE_{it}$). A composite dichotomous score based on the four proxy measures for auditor attributes: *Big4*, industry specialization, provision of non-audit services and length of tenure is developed that is, AA_{it}			
Number of firms scoring 0	0	0	0
Number of firms scoring 1	3	1	2
Number of firms scoring 2	34	33	38
Number of firms scoring 3	43	44	19
Number of firms scoring 4	20	22	41
Total	100	100	100
Panel B: ***ASX RI 100 sub-sample***	**2001**	**2003**	**2005**
$BIG4_{it}$			
Auditee i in time period t is scored one (1) if the incumbent auditor *j* in time period *t* is a *Big4* audit firm; otherwise auditee *i* in time period *t* is scored zero (0).	47	47	45
Auditee *i* in time period *t* is not audited by a *Big4* auditor.	53	53	55
Total	100	100	100
$SPECIALIST_{it}$			
Auditee i in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is an industry specialist in industry *k*; otherwise auditee *i* in time period *t* is scored zero (0).	46	49	54
Auditee *i* in time period *t* is not audited by an industry specialist in industry *k*	54	51	46
Total	100	100	100

[40] It is noteworthy to mention that in 2005, there were only 19 firms with a score of three but a significant 41 firms with an auditor attributes dichotomous score of four.

Table 5.3:

Descriptive Statistics – Auditor Attributes (Dichotomous Independent Variables) (continued)

Panel B continued: *ASX RI 100 sub-sample*	**2001**	**2003**	**2005**
CNON-AUDIT$_{it}$			
Auditee *i* in time period *t* is scored one (1) if the ratio of non-audit fees to total fees paid to the incumbent auditor *j* in time period *t* is less than 0.25; otherwise auditee *i* in time period *t* is scored zero (0).	45	43	39
Auditee *i* in time period *t* pays more than 0.25 of the ratio of non-audit fees to total fees to the incumbent auditor.	55	57	61
Total	100	100	100
CTENURE$_{it}$			
Auditee *i* in time period *t* is scored one (1) if number of years the incumbent auditor *j* till time period *t* has been engaged as the principal auditor is 3 years or more; otherwise auditee *i* in time period *t* is scored zero (0).	86	90	95
Auditee *i* in time period *t* has engaged the incumbent auditor for less than three years.	14	10	5
Total	100	100	100
∑ (*BIG4*$_{it}$, *SPECIALIST*$_{it}$, *CNON-AUDIT*$_{it}$, *CTENURE*$_{it}$). A composite dichotomous score based on the four proxy measures for auditor attributes: *Big4*, industry specialization, provision of non-audit services and length of tenure is developed that is, *AA*$_{it}$			
Number of firms scoring 0	2	2	1
Number of firms scoring 1	20	16	19
Number of firms scoring 2	38	42	41
Number of firms scoring 3	32	31	24
Number of firms scoring 4	8	9	15
Total	100	100	100

Panel C: *Pooled Sample*	**2001**	**2003**	**2005**
BIG4$_{it}$			
Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is a *Big4* audit firm; otherwise auditee *i* in time period *t* is scored zero (0).	139	139	137
Auditee *i* in time period *t* is not audited by a *Big4* auditor.	61	61	63
Total	200	200	200
SPECIALIST$_{it}$			
Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is an industry specialist in industry *k*; otherwise auditee *i* in time period *t* is scored zero (0).	96	103	111
Auditee *i* in time period *t* is not audited by an industry specialist in industry *k*	104	97	89
Total	200	200	200
CNON-AUDIT$_{it}$			
Auditee *i* in time period *t* is scored one (1) if the ratio of non-audit fees to total fees paid to the incumbent auditor *j* in time period *t* is less than 0.25; otherwise auditee *i* in time period *t* is scored zero (0).	96	94	90
Auditee *i* in time period *t* pays more than 0.25 of the ratio of non-audit fees to total fees to the incumbent auditor.	104	106	110
Total	200	200	200
CTENURE$_{it}$			
Auditee *i* in time period *t* is scored one (1) if number of years the incumbent auditor *j* till time period *t* has been engaged as the principal auditor is 3 years or more; otherwise auditee *i* in time period *t* is scored zero (0).	173	180	194
Auditee *i* in time period *t* has engaged the incumbent auditor for less than three years.	27	20	6
Total	200	200	200
∑ (*BIG4*$_{it}$, *SPECIALIST*$_{it}$, *CNON-AUDIT*$_{it}$, *CTENURE*$_{it}$). A composite dichotomous score based on the four proxy measures for auditor attributes: *Big4*, industry specialization, provision of non-audit services and length of tenure is developed that is, *AA*$_{it}$			
Number of firms scoring 0	2	2	1
Number of firms scoring 1	23	17	21
Number of firms scoring 2	72	75	79
Number of firms scoring 3	75	75	43
Number of firms scoring 4	28	31	56
Total	200	200	200

Table 5.3 Panel B shows that only 47% of firms randomly selected by industry employ a *Big4* auditor in 2001 and 2003 with a slight reduction in the value in 2005.[41] This contrasts sharply with 92 % of the firms on the *ASX* with the largest market capitalization in Table 5.3 Panel A across a similar time span. In respect of auditor specialization, Table 5.3 Panel B indicates that 46% of the firms randomly selected by industry employ an industry specialist auditor in 2001 with the number increasing to 49 in 2003 and 54 in 2005 suggesting a greater desire by smaller firms for higher levels of auditor quality. Overall, across the *ASX RI 100* sample, the upward change in auditor specialization suggests an overall intention by the entire market to align with auditors of greater quality. Forty-five percent (45%) of firms have incumbent auditors who provide non-audit services equaling less than 25% of total fees charged for 2001. This value decreases in 2003 to 43% and 2005 to 39%. The decline suggests that over time auditors of smaller firms in the *ASX* are undertaking a greater amount of non-audit services in addition to the statutory audit.[42] In relation to auditor tenure, 86% of firms in Table 5.3 Panel B have an incumbent auditor who has been engaged as the principal auditor for three years or more in 2001. Over time, this value increased to 90% in 2003 and 95% in 2005. This trend is similar to firms in the *ASX T100* sub-sample (that is, Table 5.3 Panel A) suggesting that most firms tend to stay with the same auditor over time. Importantly, the composite dichotomous score (reported in Table 5.3 Panel B) based on the four auditor attributes (that is, *Big4*, industry specialization, provision of non-audit services and auditor tenure) indicates that for firms randomly selected by industry in 2001, a total of 40 firms obtain a cumulative score of either three or more (specifically, 32 firms scoring three and eight firms scoring four). The result remains fairly constant during 2003 and 2005. In terms of comparing the results for the composite dichotomous score for auditor attributes between the two types of sample drawn for this study, it is evident that the largest firms on the *ASX* have 20 firms with a dichotomous score of four for auditor attributes compared to only eight firms (within the firms sampled in 2001) with a similar score of four. Furthermore, the variance in the score of four between the two groups of samples increases in 2003 and especially in 2005.

Table 5.3 Panel C shows the descriptive statistics for audit fees across the pooled sample. The descriptive statistics for the pooled sample follow a similar pattern to the *ASX T100* and *ASX RI 100* sub-samples.

---

[41] This is consistent with prior research suggesting that smaller public firms do not necessarily gravitate towards *Big4* auditors (Francis and Simon 1987; Thinggaard and Kiertzner 2008).

[42] However, firms randomly selected by industry have a smaller percentage of firms paying incumbent auditors for non-audit services compared to firms in the *ASX T100* sub-sample who have an average of 51%.

5.3.3.2 Descriptive statistics (*continuous independent variables*)

Table 5.4 Panel A reports that non-audit fees paid by firms in the *ASX T100* sub-sample have a mean of $376 618 and a standard deviation of $509 931 in 2001. Table 5.4 Panel A shows that non-audit fees paid by firms in the *ASX T100* sub-sample range from $57 045 (at 0.25 percentile) to $535 326 (at 0.75 percentile) in 2001. The values increase steadily in 2003 and 2005. Table 5.4 Panel A reports that the ratio of non-audit fees to total audit fees paid to the auditor of the 100 firms on the *ASX* by market capitalization has a mean of 0.2853 with a standard deviation of 0.2128 in 2001. Table 5.4 Panel A shows that the ratio of non-audit fees to total audit fees paid to the auditor of the 100 firms on the *ASX* by market capitalization range from 0.1100 (at 0.25 percentile) to 0.4278 (at 0.75 percentile) in 2001. The values stay generally unchanged in 2003 and 2005. Table 5.4 Panel A reports that in terms of the length of time in years (up to a maximum of 10 years) during which the auditor remains unchanged, firms in the *ASX T100* sub-sample have a mean of 8 years with a standard deviation of 3 years. Table 5.4 Panel A also shows that in terms of the length of time in years (up to a maximum of 10 years) during which the auditor remains unchanged, most of firms in the *ASX T100* sub-sample range from 7 years (at 0.25 percentile) to 10 years (at 0.75 percentile) in 2001. The values increase steadily in 2003 and 2005 suggesting that over time, firms in the *ASX T100* sub-sample choose to stay longer with the incumbent auditor. This is also evident with the standard deviation of auditor tenure decreasing from 3 years in 2001 and 2003 to 2 years in 2005.

Table 5.4:
Descriptive Statistics (Continuous Independent Variables)

Panel A: ***ASX T100 sub-sample*** **(n = 100)**	**Mean**	**Standard deviation**	**25th percentile**	**Median (50th percentile)**	**75th percentile**
NON-AUDIT_01 (*$*)	376 618	509 931	57 045	168 245	535 326
NON-AUDIT_03 (*$*)	396 440	536 770	60 048	177 100	563 501
NON-AUDIT_05 (*$*)	434 111	581 483	73 050	192 500	612 501
RNON-AUDIT_01	0.2853	0.2128	0.1100	0.2596	0.4278
RNON-AUDIT_03	0.2785	0.2107	0.1069	0.2534	0.4200
RNON-AUDIT_05	0.2827	0.2122	0.1090	0.2575	0.4252
NTENURE_01	8	3	7	9	10
NTENURE_03	8	3	8	10	10
NTENURE_05	9	2	9	10	10
Panel B: ***ASX RI 100 sub-sample*** **(n = 100)**	**Mean**	**Standard deviation**	**25th percentile**	**Median (50th percentile)**	**75th percentile**
NON-AUDIT_01 (*$*)	23 173	35 279	219	9 002	27 915
NON-AUDIT_03 (*$*)	23 818	37415	0	8818	29 384
NON-AUDIT_05 (*$*)	20 867	35489	0	6968	27 648
RNON-AUDIT_01	0.2383	0.2142	0.0051	0.1999	0.4071
RNON-AUDIT_03	0.2229	0.2141	0.0000	0.1708	0.3884
RNON-AUDIT_05	0.2022	0.2093	0.0000	0.1404	0.3496
NTENURE_01	6	3	3	5	9
NTENURE_03	6	3	4	6	10
NTENURE_05	7	2	5	7	9
Panel C: ***Pooled Sample*** **(n = 200)**	**Mean**	**Standard deviation**	**25th percentile**	**Median (50th percentile)**	**75th percentile**
NON-AUDIT_01 (*$*)	199 896	401 707	5 574	31 932	168 464
NON-AUDIT_03 (*$*)	210 129	422 989	5 158	33 613	177 330
NON-AUDIT_05 (*$*)	227 489	460 159	3 320	33 593	192 750
RNON-AUDIT_01	0.2609	0.2142	0.0782	0.2308	0.4199
RNON-AUDIT_03	0.2507	0.2137	0.0640	0.2204	0.4085
RNON-AUDIT_05	0.2424	0.2140	0.0328	0.2148	0.4066
NTENURE_01	7	3	4	8	9
NTENURE_03	7	3	5	9	10
NTENURE_05	8	2	6	9	10

Where:
NON-AUDIT_01 = Non-audit fees paid to the incumbent auditor in 2001; *NON-AUDIT_03*= Non-audit fees paid to the incumbent auditor in 2003; *NON-AUDIT_05* = Non-audit fees paid to the incumbent auditor in 2005; *RNON-AUDIT_01* = Ratio of non-audit fees to total fees paid to the auditor in 2001; *RNON-AUDIT_03* = Ratio of non-audit fees to total fees paid to the auditor in 2003; *RNON-AUDIT_05* = Ratio of non-audit fees to total fees paid to the auditor in 2005; *NTENURE_01* = Length of time (in years up to a maximum of 10) during which the auditor has remained unchanged from 2001; *NTENURE_03* = Length of time (in years up to a maximum of 10) during which the auditor has remained unchanged from 2003; *NTENURE_05* = Length of time (in years up to a maximum of 10) during which the auditor has remained unchanged from 2005.

Table 5.4 Panel B reports that non-audit fees paid by firms in the *ASX RI 100* sub-sample have a mean of $23 173 with a standard deviation of $35 279 in 2001. Table 5.4 Panel B also shows that non-audit fees paid by firms randomly selected by industry to auditors range from $219 (at 0.25 percentile) to $27 915 (at 0.75 percentile) in 2001. Given the reduction in such non-audit fees paid to auditors in 2003 and 2005 to $0 (at 0.25 percentile) and the marginal change over 2003 and 2005 (at 0.75 percentile and the mean), the data suggests that non-audit fees represent a declining proportion of total audit fees paid by smaller firms on the *ASX*. Table 5.4 Panel B reports that non-audit to total audit fees paid to the auditor of firms randomly selected by industry have a mean of 0.2383 with a standard

deviation of 0.2142 in 2001. Table 5.4 Panel B also shows that non-audit fees to total audit fees paid to the auditor of firms randomly selected by industry range from 0.0051 (at 0.25 percentile) to 0.4071 (at 0.75 percentile) in 2001. As is the case for non-audit fees, the reduction in the ratio of non-audit fees to total audit fees paid to auditors in 2003 and 2005 to $0 (at 0.25 percentile) and the marginal change over 2003 and 2005 (at 0.75 percentile and the mean), the data confirms that non-audit fees do not represent a significant proportion of total audit fees paid by smaller firms on the *ASX* over time. Table 5.4 Panel B reports that in terms of the length of time in years (up to a maximum of 10 years) during which the auditor remains unchanged, the firms randomly selected by industry have a mean of 6 years with a standard deviation of 3 years in 2001. Table 5.4 Panel B also shows that in terms of the length of time in years (up to a maximum of 10 years) during which the auditor remains unchanged, the firms randomly selected by industry range from 3 years (at 0.25 percentile) to 9 years (at 0.75 percentile) in 2001. The values increase steadily in 2003 and 2005 suggesting that over time, firms in the *ASX RI 100* sub-sample choose to stay with the incumbent auditor. However, in terms of comparisons with firms in the *ASX T100* sub-sample, the firms randomly selected by industry have a much shorter tenure (at 0.25 and 0.75 percentiles) with the incumbent auditors suggesting that smaller firms do not stay as long with auditors compared to larger firms. This is particularly evident with the standard deviation of auditor tenure decreasing from 3 years in 2001 and 2003 to 2 years in 2005 in Table 5.4 Panel B.

Table 5.4 Panel C shows the descriptive statistics for audit fees across the pooled sample. The descriptive statistics for the pooled sample follow a similar pattern to the *ASX T100* and *ASX RI 100* sub-samples.

5.3.4 Descriptive statistics (firm characteristics variables)

Table 5.5 Panel A reports that sales by firms in the *ASX T100* sub-sample have a mean of $1 783 346 925 and a standard deviation of $3 484 452 840 in 2001. Table 5.5 Panel A also reports that the quantum of sales by firms in the *ASX T100* sub-sample range from $224 337 750 (at 0.25 percentile) to $1 646 690 000 (at 0.75 percentile) in 2001.[43] In relation to number of employees, Table 5.5 Panel A reports that firms in the *ASX T100* sub-sample have a mean of 5 036 employees and a standard deviation of 8 929 employees in 2001. Table 5.5 Panel A also reports that the top 100 firms on the *ASX* range from having 461 employees (at 0.25 percentile) to 5 522 (at 0.75 percentile) in 2001. Table 5.5 Panel A reveals that the number of subsidiaries in the sample of firms in the *ASX T100* sub-sample have a mean of 54 and a standard deviation of 83 in 2001. Table 5.5 Panel A also reports that the number of

[43] This is unsurprising given that the sample consists of firms in the *ASX T100* sub-sample.

subsidiaries in the sample of firms in the *ASX T100* sub-sample range from 14 (at 0.25 percentile) to 63 (at 0.75 percentile) in 2001. As is the case for sales and numbers of employees, the numbers of subsidiaries in the sample of firms in the *ASX T100* sub-sample increase steadily in 2003 and 2005. In terms of number of business segments, Table 5.5 Panel A reports that firms in the *ASX T100* sub-sample have a mean of 3 business segments and a standard deviation of 2 business segments in 2001. Table 5.5 Panel A also reports that the number of business segments in the sample of firms in the *ASX T100* sub-sample range from 1 (at the 0.25 percentile) to 4 (at 0.75 percentile) in 2001. The values remain relatively constant in 2003 and 2005.

Descriptive statistics for profitability and liquidity ratios reported in Table 5.5 Panel A (that is, earnings before interest and tax divided by total assets and current assets divided by current liabilities) show firms in the *ASX T100* sub-sample at various stages of firm profitability and risk. Specifically, in terms of profitability, the *ROA* reveals a mean of 0.0463 and a standard deviation 0.1356. Results range from 0.0344 (at 0.25 percentile) to 0.0804 (at 0.75 percentile) for 2001. The values increase steadily in 2003 and 2005 suggesting higher levels of profitability across all of the larger firms in the sample. The current ratio reports firms with a mean of 2.8003 and a standard deviation of 13.2465 in 2001. The current ratio ranges from 0.9650 (at 0.25 percentile) to 1.6600 (at 0.75 percentile) in 2001. Values decrease in 2003 and 2005 suggesting greater levels of liquidity for Australia's largest firms.

Table 5.5:
Descriptive Statistics (Firm Characteristics Variables)

Panel A: ***ASX T100 sub-sample*** **(n = 100)**	**Mean**	**Standard deviation**	**25th percentile**	**Median (50th percentile)**	**75th percentile**
Firm Size					
LNASSETS_01	20.6027	1.4571	19.7529	20.4800	21.6166
LNASSETS_03	20.6098	1.4588	19.7529	20.4800	21.6166
LNASSETS_05	20.4602	1.5460	19.4840	20.5504	21.5262
LNSALES_01	19.9501	2.3129	19.2284	20.2643	21.2220
LNSALES_03	20.2735	1.7659	19.3302	20.3913	21.3800
LNSALES_05	20.4503	1.8488	19.5486	20.5749	21.6702
SALES_01 ($)	1 783 346 925	3 484 452 840	224 337 750	631 956 500	1 646 690 000
SALES_03 ($)	2 046 061 137	3 958 721 197	248 304 000	717 602 500	1 928 538 000
SALES_05 ($)	2 441 476 754	4 624 237 359	309 072 250	862 229 000	2 577 883 500
SREMPLOYEES_01	53.4706	46.8904	21.4278	39.2804	74.3041
SREMPLOYEES_03	55.6925	48.9468	22.3432	40.9567	77.4634
SREMPLOYEES_05	58.8599	51.4407	23.5470	43.1676	81.6519
EMPLOYEES_01	5036	8929	461	1543	5522
EMPLOYEES_03	5473	9706	502	1678	6001
EMPLOYEES_05	6084	10783	557	1864	6668

Table 5.5:
Descriptive Statistics (Firm Characteristics Variables) (continued)

Panel A continued: ***ASX T100 sub-sample*** **(n = 100)**	**Mean**	**Standard deviation**	**25th percentile**	**Median (50th percentile)**	**75th percentile**
Firm Complexity					
SRSUBSID_01	6.2000	3.9221	3.7745	5.8310	7.9039
SRSUBSID_03	6.3845	4.0538	3.9047	6.0000	8.1532
SRSUBSID_05	6.6095	4.0843	4.0607	6.0828	8.4557
SUBSID_01	54	83	14	34	63
SUBSID_03	57	88	15	36	67
SUBSID_05	60	91	17	37	72
LNNBS_01	0.7901	0.6489	0.0000	0.6931	1.3863
LNNBS_03	0.7939	0.6561	0.0000	0.6931	1.3863
LNNBS_05	0.8181	0.6688	0.0000	0.6931	1.3863
NBS_01	3	2	1	2	4
NBS_03	3	2	1	2	4
NBS_05	3	2	1	2	4
Firm Risk					
ROA_01	0.0463	0.1356	0.0344	0.0554	0.0804
ROA_03	0.0652	0.1171	0.0476	0.0617	0.0982
ROA_05	0.0697	0.1013	0.0477	0.0777	0.0956
CURRENT_01	2.8003	13.2465	0.9650	1.2650	1.6600
CURRENT_03	1.9923	03.0108	1.0525	1.3750	1.8150
CURRENT_05	8.5353	68.6507	1.0000	1.2900	1.7900

Panel B: ***ASX RI 100 sub-sample*** **(n = 100)**	**Mean**	**Standard deviation**	**25th percentile**	**Median (50th percentile)**	**75th percentile**
Firm Size					
LNASSETS_01	16.2426	1.4916	15.2672	16.2480	17.0807
LNASSETS_03	16.2204	1.4289	15.3298	16.2176	17.0682
LNASSETS_05	16.3715	1.2878	15.6135	16.1751	17.1053
LNSALES_01	14.4198	3.9210	13.2304	15.0026	16.8817
LNSALES_03	14.6615	3.6416	12.6119	15.4821	17.0073
LNSALES_05	15.5342	2.5461	13.8316	15.8125	17.3621
SALES_01 ($)	38 363 133	104 521 552	560 369	3 279 049	21 480 332
SALES_03 ($)	35 284 189	79 375 065	300 100	5 307 009	24 354 668
SALES_05 ($)	42 594 737	96 462 251	1 021 855	7 368 701	34 702 575
SREMPLOYEES_01	6.4512	6.1826	2.2361	4.4721	7.4325
SREMPLOYEES_03	6.7120	6.4549	2.4495	4.5826	7.7616
SREMPLOYEES_05	6.8487	6.7797	2.4495	4.7958	8.0000
EMPLOYEES_01	79	172	5	20	55
EMPLOYEES_03	86	187	6	21	60
EMPLOYEES_05	92	207	6	23	64
Firm Complexity					
SRSUBSID_01	2.4621	1.5596	1.7321	2.2361	2.9571
SRSUBSID_03	2.4971	1.6189	1.7321	2.2361	2.9571
SRSUBSID_05	2.3725	1.4568	1.4142	2.2361	2.8284
SUBSID_01	8	15	3	5	9
SUBSID_03	9	15	3	5	9
SUBSID_05	8	13	2	5	8
LNNBS_01	0.6190	0.5329	0.0000	0.6931	1.0986
LNNBS_03	0.6300	0.5404	0.0000	0.6931	1.0986
LNNBS_05	0.6278	0.5277	0.0000	0.6931	1.0986
NBS_01	2	1	1	2	3
NBS_03	2	1	1	2	3
NBS_05	2	1	1	2	3
Firm Risk					
ROA_01	-0.3276	0.9336	-0.3338	-0.0476	0.0654
ROA_03	-0.2335	0.5340	-0.3380	-0.0895	0.0501
ROA_05	-0.1655	0.5513	-0.2557	-0.0266	0.0705
CURRENT_01	9.3400	23.7353	1.1250	1.8500	4.9500
CURRENT_03	3.9222	7.4418	1.0500	1.7200	3.1050
CURRENT_05	4.8371	7.0646	1.1975	1.8600	5.0900

Table 5.5:
Descriptive Statistics (Firm Characteristics Variables) (continued)

Panel C: ***Pooled Sample*** **(n = 200)**	**Mean**	**Standard deviation**	**25th percentile**	**Median (50th percentile)**	**75th percentile**
Firm Size					
LNASSETS_01	18.4226	2.6344	16.2437	18.5534	20.4873
LNASSETS_03	18.4151	2.6297	16.2067	18.5274	20.4873
LNASSETS_05	18.4159	2.4929	16.1459	18.3458	20.5575
LNSALES_01	17.1849	4.2420	14.7930	18.0491	20.3006
LNSALES_03	17.4675	4.0077	15.3355	18.2778	20.4002
LNSALES_05	17.9923	3.3163	15.7396	18.6528	20.5816
SALES_01 (*$*)	910 855 029	2 609 732 192	2 660 833	68 976 571	655 423 000
SALES_03 (*$*)	1 040 672 663	2 969 070 726	4 572 111	86 696 500	724 029 250
SALES_05 (*$*)	1 242 035 746	3 476 862 852	6 849 274	126 129 975	867 926 000
SREMPLOYEES_01	29.9609	40.8452	3.6396	11.5325	39.3886
SREMPLOYEES_03	31.2023	42.6074	3.7745	12.0208	41.0696
SREMPLOYEES_05	32.8543	44.9331	3.9047	12.6490	43.2863
EMPLOYEES_01	2 558	6 771	13	133	1 552
EMPLOYEES_03	2 780	7 360	14	145	1 687
EMPLOYEES_05	3 089	8 178	15	160	1 874
Firm Complexity					
SRSUBSID_01	4.3311	3.5176	2.0000	3.1623	5.8948
SRSUBSID_03	4.4408	3.6436	2.0000	3.3166	6.0621
SRSUBSID_05	4.4910	3.7236	2.0000	3.3166	6.1440
SUBSID_01	31	63	4	10	35
SUBSID_03	33	67	4	11	37
SUBSID_05	34	70	4	11	38
LNNBS_01	0.7046	0.5984	0.0000	0.6931	1.0986
LNNBS_03	0.7120	0.6052	0.0000	0.6931	1.0986
LNNBS_05	0.7229	0.6084	0.0000	0.6931	1.0986
NBS_01	2	12	1	2	3
NBS_03	2	2	1	2	3
NBS_05	2	2	1	2	3
Firm Risk					
ROA_01	-0.1406	0.6913	-0.0830	0.0384	0.0743
ROA_03	-0.0841	0.4136	-0.1114	0.0489	0.0814
ROA_05	-0.0479	0.4125	-0.0429	0.0520	0.0916
CURRENT_01	6.0702	19.4501	1.0325	1.4450	2.3800
CURRENT_03	2.9573	5.7442	1.0525	1.4950	2.3775
CURRENT_05	6.6862	48.7123	1.0600	1.4650	2.6350

Where:
LNASSETS_01 = Natural logarithmic of total assets for firm in 2001; *LNASSETS_03* = Natural logarithmic of total assets for firm in 2003; *LNASSETS_05* = Natural logarithmic of total assets for firm in 2005; *LNSALES_01* = Natural logarithmic of sales/revenue for firm in 2001; *LNSALES_03* = Natural logarithmic of sales/revenue for firm in 2003; *LNSALES_05* = Natural logarithmic of sales/revenue for firm in 2005; *SALES_01* = Sales/revenue for firm in 2001; *SALES_03* = Sales/revenue for firm in 2003; *SALES_05* = Sales/revenue for firm in 2005; *SREMPLOYEES_01* = Square root of number of employees for firm in 2001; *SREMPLOYEES_03* = Square root of number of employees for firm in 2003; *SREMPLOYEES_03* = Square root of number of employees for firm in 2003; *EMPLOYEES_01* = Number of employees for firm in 2001; *EMPLOYEES_03* = Number of employees for firm in 2003; *EMPLOYEES_05* = Number of employees for firm in 2005; *SRSUBSID_01* = Square root of number of subsidiaries for firm in 2001; *SRSUBSID_03* = Square root of number of subsidiaries for firm in 2003; *SRSUBSID_05* = Square root of number of subsidiaries for firm in 2005; *SUBSID_01* = Total number of subsidiaries for firm in 2001; *SUBSID_03* = Total number of subsidiaries for firm in 2003; *SUBSID_05* = Total number of subsidiaries for firm in 2005; *LNNBS_01* = Natural logarithmic of 1 plus number of business segments for firm in 2001; *LNNBS_03* = Natural logarithmic of 1 plus number of business segments for firm in 2003; *LNNBS_05* = Natural logarithmic of 1 plus number of business segments for firm in 2005; *NBS_01* = Number of business segments for firm in 2001; *NBS_03* = Number of business segments for firm in 2003; *NBS_05* = Number of business segments for firm in 2005; *ROA_01* = Earnings before interest and tax divided by total assets for firm in 2001; *ROA_03* = Earnings before interest and tax divided by total assets for firm in 2003; *ROA_05* = Earnings before interest and tax divided by total assets for firm in 2005; *CURRENT_01* = Current assets divided by current liabilities for firm in 2001; *CURRENT_03* = Current assets divided by current liabilities for firm in 2003; and *CURRENT_05* = Current assets divided by current liabilities for firm in 2005;

Table 5.5 Panel B reports that sales of firms in the *ASX RI 100* sub-sample have a mean of $38 363 133 with a standard deviation of $104 521 552 in 2001. Table 5.5 Panel B also shows that the sales range from $560 369 (at 0.25 percentile) to $21 480 332 (at 0.75

percentile) in 2001. As evidenced by the increase in mean, values increase steadily in 2003 and 2005. Table 5.5 Panel B reports that the number of employees of firms in the *ASX RI 100* sub-sample has a mean of 79 employees with a standard deviation of 172 employees in 2001. Table 5.5 Panel B also shows that the number of employees range from 5 employees (at 0.25 percentile) to 55 (at 0.75 percentile) in 2001. Table 5.5 Panel B reports that the number of subsidiaries of firms in the *ASX RI 100* sub-sample has a mean of 8 subsidiaries with a standard deviation of 15 subsidiaries in 2001. Table 5.5 Panel B also shows that the number of subsidiaries range from 3 subsidiaries (at 0.25 percentile) to 9 subsidiaries (at 0.75 percentile) in 2001. As is the case for employees, the number of subsidiaries in the sample of firms randomly selected by industry generally increased steadily in 2003 and 2005. In terms of number of business segments, Table 5.5 Panel B reports that firms in the *ASX RI 100* sub-sample have a mean of 2 business segments with a standard deviation of 1 business segments in 2001. Table 5.5 Panel B also shows that the firms in the *ASX RI 100* sub-sample have business segments ranging from 1 business segments (at 0.25 percentile) to 3 business segments (at 0.75 percentile) in 2001. The profitability ratio in Table 5.5 Panel B (that is, earnings before interest and tax divided by total assets) shows the firms randomly selected by industry performing poorly in terms of profitability. Specifically, the *ROA* measure reveals mean results of -0.3276 and a standard deviation of 0.9336 and values ranging from -0.3338 (at 0.25 percentile) to 0.0654 (at 0.75 percentile) in 2001. The *ROA* values move in no discernable pattern in 2003 and 2005 suggesting differing levels of profitability across the smaller firms in the sample. The current ratio of firms in the *ASX RI 100* sub-sample not suggest firms with significant liquidity problems within the observation window with a mean ratio of 9.3400 and a standard deviations of 23.7353 in 2001. The current ratio ranges from 1.1250 (at 0.25 percentile) to 4.9500 (at 0.75 percentile) in 2001. The current ratio values decrease initially in 2003 before increasing in 2005 suggesting an overall reduction in liquidity levels amongst Australia's smaller firms.

Table 5.5 Panel C shows the descriptive statistics for audit fees across the pooled sample. The descriptive statistics for the pooled sample follow a similar pattern to the *ASX T100* and *ASX RI 100* sub-samples.

5.3.5 Descriptive statistics (corporate governance variable)

Tables 5.6 and 5.7 show the descriptive statistics for the dichotomous and continuous corporate governance variables respectively in the sample.

5.3.5.1 Descriptive statistics (*dichotomous corporate governance variable*)

Table 5.6 Panel A shows that 72% of firms in the *ASX T100* sub-sample have audit committees consisting of at least one financial expert during 2001. The percentage increases to 82% in 2003 and 89% in 2005.

Table 5.6:
Descriptive Statistics (Dichotomous Corporate Governance Variable)

Panel A: ***ASX T100 sub-sample***	**2001**	**2003**	**2005**
$FINEXPAC_{it}$			
A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*. otherwise auditee *i* in time period *t* is scored zero (0).	72	82	89
The audit committee does not consist of at least one financial expert during the year for firm *i* at time period *t*.	28	18	11
Total	100	100	100

Panel B: ***ASX RI 100 sub-sample***	**2001**	**2003**	**2005**
$FINEXPAC_{it}$			
A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*. otherwise auditee *i* in time period *t* is scored zero (0).	53	62	64
The audit committee does not consist of at least one financial expert during the year for firm *i* at time period *t*.	47	38	36
Total	100	100	100

Panel C: ***Pooled Sample***	**2001**	**2003**	**2005**
$FINEXPAC_{it}$			
A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*. otherwise auditee *i* in time period *t* is scored zero (0).	125	144	153
The audit committee does not consist of at least one financial expert during the year for firm *i* at time period *t*.	75	56	47
Total	200	200	200

Table 5.6 Panel B shows that 53% of the firms randomly selected by industry have audit committees consisting of at least one financial expert during 2001 with the percentage increasing to 62% in 2003 and 64% in 2005. It is clearly suggested by Table 5.6 Panels A and B that the larger firms on the *ASX* have a greater percentage of financial experts on audit committees than the remaining firms on the *ASX*. Table 5.6 Panel C shows the representation of at least one financial expert on the audit committee for the pooled sample.

5.3.5.2 Descriptive statistics (*continuous corporate governance variables*)

Table 5.7 Panel A reports the mean percentage of non-executive directors on the board of directors for firms in the *ASX T100* sub-sample is 41% with a standard deviation of 18% in 2001. Also, Table 5.7 Panel A also reports that the percentage of non-executive directors on the board of directors for firms in the *ASX T100* sub-sample ranges from 26% (at 0.25 percentile) to 60% (at the 0.75 percentile) in 2001. Values increase in 2003 and 2005

suggesting an improvement in the independence of board members. Table 5.7 Panel A reports that number of board of directors meetings of firms in the *ASX T100* sub-sample has a mean of 11 and a standard deviation of 4 in 2001. The number of board of directors meetings in 2001 ranges from 8 (at 0.25 percentile) to 15 (at the 0.75 percentile in 2001. The number of board meetings increased in 2003 and 2005.

Table 5.7:
Descriptive Statistics (Continuous Corporate Governance Variables)

Panel A: ***ASX T100 sub-sample*** **(n = 100)**	**Mean**	**Standard deviation**	**25th percentile**	**Median (50th percentile)**	**75th percentile**
PERNEXBD_01	0.41	0.18	0.26	0.38	0.60
PERNEXBD_03	0.48	0.22	0.30	0.45	0.70
PERNEXBD_05	0.54	0.24	0.33	0.50	0.78
BODMEET_01	11	4	8	10	15
BODMEET_03	13	5	9	11	17
BODMEET_05	14	5	9	12	18
PERINDAC_01	0.76	0.21	0.67	0.75	1.00
PERINDAC_03	0.81	0.20	0.67	0.75	1.00
PERINDAC_05	0.83	0.19	0.69	0.78	1.00
Panel B: ***ASX RI 100 sub-sample*** **(n = 100)**	**Mean**	**Standard deviation**	**25th percentile**	**Median (50th percentile)**	**75th percentile**
PERNEXBD_01	0.49	0.19	0.38	0.51	0.61
PERNEXBD_03	0.57	0.22	0.45	0.60	0.72
PERNEXBD_05	0.64	0.24	0.50	0.68	0.80
BODMEET_01	9	4	6	9	11
BODMEET_03	10	4	7	9	12
BODMEET_05	10	4	7	10	13
PERINDAC_01	0.65	0.29	0.43	0.67	1.00
PERINDAC_03	0.68	0.30	0.50	0.67	1.00
PERINDAC_05	0.71	0.31	0.50	0.75	1.00
Panel C: ***Pooled Sample*** **(n = 200)**	**Mean**	**Standard deviation**	**25th percentile**	**Median (50th percentile)**	**75th percentile**
PERNEXBD_01	0.45	0.19	0.26	0.46	0.61
PERNEXBD_03	0.53	0.22	0.30	0.54	0.72
PERNEXBD_05	0.59	0.25	0.33	0.60	0.80
BODMEET_01	10	4	7	10	12
BODMEET_03	11	5	8	11	13
BODMEET_05	12	5	8	12	14
PERINDAC_01	0.70	0.26	0.60	0.75	1.00
PERINDAC_03	0.75	0.26	0.67	0.75	1.00
PERINDAC_05	0.77	0.26	0.67	0.75	1.00

Where:
PERNEXBD_01 = The percentage of non-executive directors on the board of directors for firm in 2001; *PERNEXBD_03* = The percentage of non-executive directors on the board of directors for firm in 2003; *PERNEXBD_05* = The percentage of non-executive directors on the board of directors for firm in 2005; *BODMEET_01* = The number of board of directors meetings held during the year for firm in 2001; *BODMEET_03* = The number of board of directors meetings held during the year for firm in 2003; *BODMEET_05* = The number of board of directors meetings held during the year for firm in 2005; *PERINDAC_01* = The percentage of independent directors on the audit committee for firm in 2001; *PERINDAC_03* = The percentage of independent directors on the audit committee for firm in 2003; and *PERINDAC_05* = The percentage of independent directors on the audit committee for firm in 2005.

Table 5.7 Panel B reports that the percentage of non-executive directors on the board of directors for firms in the *ASX RI 100* sub-sample has a mean of 49% with a standard deviation of 19% in 2001. The percentage of non-executive directors on the board of

directors for the firms randomly selected by industry range from 38% (at 0.25 percentile) to 61% (at the 0.75 percentile) in 2001. Values for the representation of non-executive directors on the board of directors' increase in 2003 and 2005 suggesting an improvement in the independence of board members.[44] Table 5.7 Panel B reports that number of board of directors meetings of firms in the *ASX RI 100* sub-sample has a mean of 9 and a standard deviation of 4 in 2001. The number of board of directors meetings in 2001 ranges from 6 (at 0.25 percentile) to 11 (at the 0.75 percentile) in 2001. In 2003 and 2005, the number of board meetings increased.

Table 5.7 Panel C shows the descriptive statistics for audit fees across the pooled sample. The descriptive statistics for the pooled sample follow a similar pattern to the *ASX T100* and *ASX RI 100* sub-samples.

5.3.6 Descriptive statistics (industry variables)

Table 5.8 Panel A shows a breakdown of the various industries within which firms in the *ASX T100* sub-sample operate. Firms with the greatest representation within the sample are in the industrials, materials and consumer discretionary industries with utilities and information technology sectors the most poorly represented (within firms in the *ASX T100* sub-sample).[45]

[44] In fact, the result relating to the percentage of non-executive directors on the board of directors within the firms randomly selected by industry is better the similar results of the top firms on the *ASX* by market capitalization.

[45] It is unsurprising that there is no change of industries by firms for the years 2003 and 2005 as ordinarily changes in principal activities by firms (and, therefore, industries) do not occur frequently.

Table 5.8:
Descriptive Statistics (Dichotomous Industry Variables)

Panel A:
ASX T100 sub-sample

	2001	2003	2005
$ENERGY_{it}$ - A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise.	10	10	10
$MATERIALS_{it}$ - A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise.	20	20	20
$INDUSTRIALS_{it}$ - A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise.	22	22	22
$CONSUMER\ DISCRETIONARY_{it}$ - A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise.	20	20	20
$CONSUMER\ STAPLES_{it}$ - A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise.	8	8	8
$HEALTH\ CARE_{it}$ - A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise.	13	13	13
$INFORMATION\ TECHNOLOGY_{it}$ - A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise.	2	2	2
$TELECOMMUNICATIONS_{it}$ - A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise.	4	4	4
$UTILITIES_{it}$ - A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.	1	1	1
TOTAL	100	100	100

Panel B:
ASX RI 100 sub-sample

	2001	2003	2005
$ENERGY_{it}$ - A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise.	13	13	13
$MATERIALS_{it}$ - A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise.	14	14	14
$INDUSTRIALS_{it}$ - A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise.	11	11	11
$CONSUMER\ DISCRETIONARY_{it}$ - A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise.	13	13	13
$CONSUMER\ STAPLES_{it}$ - A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise.	12	12	12
$HEALTH\ CARE_{it}$ - A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise.	11	11	11
$INFORMATION\ TECHNOLOGY_{it}$ - A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise.	11	11	11
$TELECOMMUNICATIONS_{it}$ - A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise.	8	8	8
$UTILITIES_{it}$ - A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.	7	7	7
TOTAL	100	100	100

Panel C:
Pooled Sample

	2001	2003	2005
$ENERGY_{it}$ - A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise.	23	23	23
$MATERIALS_{it}$ - A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise.	34	34	34
$INDUSTRIALS_{it}$ - A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise.	33	33	33
$CONSUMER\ DISCRETIONARY_{it}$ - A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise.	33	33	33
$CONSUMER\ STAPLES_{it}$ - A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise.	20	20	20
$HEALTH\ CARE_{it}$ - A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise.	24	24	24
$INFORMATION\ TECHNOLOGY_{it}$ - A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise.	13	13	13
$TELECOMMUNICATIONS_{it}$ - A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise.	12	12	12
$UTILITIES_{it}$ - A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.	8	8	8
TOTAL	200	200	200

Table 5.8 Panel B shows a breakdown of the various industries within which firms randomly selected by industry operate. As discussed in Section 4.2.1, 100 firms in the final sample for 2005 were chosen randomly by industry. However, as part of the necessary exclusions (in an effort to be consistent with the prior literature), the financial sector was excluded leaving only nine Global Industries Classification (*GIC*) Sectors to select the sample of 100 firms from. Furthermore, not all of the remaining nine sectors have enough observations within to allow for each of the sectors to have equal numbers of observations for the total sample of 100 firms.[46] Table 5.8 Panel C shows the breakdown of the various industries for the pooled sample.

5.4 T-TESTS OF KEY DESCRIPTIVE SAMPLE CHARACTERISTICS

Sections 5.4.1 and 5.4.2 present univariate results comparing means and changes in means of the variables used in this study. Specifically, independent samples t-tests and two way ANOVA tests are completed and results discussed.

5.4.1 T-tests

T-tests are completed for the dichotomous variables collected in this study. Specifically, the objective in undertaking the independent samples t-tests is to examine the relationship between audit fees deflated by total assets and the dichotomous variables (on a univariate basis) to determine if the quantum of audit fees paid by firms significantly differ depending on whether the dichotomous variable/s existed or not.

An overall review of Table 5.9 shows a number of significant relationships in 2001. In relation to the independent variables examined in this study, audit fees deflated by total assets have a statistically significant association with a *Big4* auditor (in this case, $BIG4_{it}$ with a p-value<0.05). The association suggests that firms employing a *Big4* auditor pay a significantly different quantum of audit fees compared to firms which do not utilize a *Big4* auditor in 2001. This can be explained on the basis of the *Big4* auditor's greater expertise, experience and resources (Choi et al. 2008; Ferguson and Stokes 2002; Iyer and Iyer 1996; Willenborg 2002).

Table 5.9 also reports that industry variables also have a significant association with the dependent variable, audit fees deflated by total assets. Specifically, firms in the consumer staples (in this case, $CONSUMERSTAP_{it}$ with a p-value<0.01), industrials (in this case, $INDUSTRIALS_{it}$ with a p-value<0.01), information technology (in this case, $INFORMATION\ TECHNOLOGY_{it}$ with a p-value<0.05) and telecommunications (in this case,

[46] Nevertheless, the resulting 100 observations are representative of the *ASX* market as a whole.

TELECOMMUNICATIONS$_{it}$ with a p-value<0.05) industries all pay a statistically different quantum of audit fees to firms in other industries in 2001.

It is also noteworthy from Table 5.9 that the presence of a financial expert on a firm's audit committee (in this case, *FINEXPAC*$_{it}$) does not, on a univariate basis, have any statistically significant association with the amount of audit fees paid by a firm in 2001.[47] With respect to the t-tests results for the financial years 2003 and 2005, two main observations can be made. First, in relation to both *BIG4*$_{it}$ and *SPECIALIST*$_{it}$ in 2003, the p-value for both variables diminishes in terms of statistical significance compared to 2001 but increases in terms of significance in 2005 (compared to 2003). Second, the statistical significance of both *CNON-AUDIT*$_{it}$ and *CTENURE*$_{it}$ with audit fees deflated by total assets diminishes in terms of strength of the association in 2003 and 2005 (compared to 2001)

.

[47] However, the results of multivariate testing (discussed in Chapter Six) will have the greatest bearing on the significance of audit fees deflated by total assets and the remaining variables in this study. This is because multivariate testing not only examines the significance of the relationship between the experimental variable (in this case, a range of auditor attributes) and the dependent variable (in this case, audit fees deflated by assets), but, more importantly, controls for the effects of a number of other independent variables in the relationship.

Table 5.9:
Independent Samples T-test - Changes to Mean of Audit Fees Deflated by Assets to Dichotomous Variables

	2001				2003				2005			
	Yes ($\bar{x}$)	No ($\bar{x}$)	t-statistic	p-value	Yes ($\bar{x}$)	No ($\bar{x}$)	t-statistic	p-value	Yes ($\bar{x}$)	No ($\bar{x}$)	t-statistic	p-value
Independent Variables												
$BIG4_{it}$	0.0033	0.0071	2.3115	0.0231	0.0036	0.0073	-2.1694	0.0326	0.0026	0.0060	-2.4286	0.0161
$SPECIALIST_{it}$	0.0036	0.0052	1.1947	0.2336	0.0045	0.0049	-0.2719	0.7860	0.0043	0.0028	1.1372	0.2568
$CNON\text{-}AUDIT_{it}$	0.0039	0.0049	0.7821	0.4351	0.0043	0.0051	-0.5640	0.5734	0.0033	0.0039	-0.4455	0.6565
$CTENURE_{it}$	0.0042	0.0061	0.7533	0.4572	0.0048	0.0042	0.2504	0.8025	0.0037	0.0031	0.1468	0.8835
Corporate Governance Variables												
$FINEXPAC_{it}$	0.0041	0.0050	0.6098	0.5427	0.0107	0.0057	-0.8618	0.3898	0.0027	0.0068	-1.6076	0.1146
Industry Variables												
$ENERGY_{it}$ [48]	0.0064	0.0042	-1.0459	0.2969	0.0070	0.0044	1.1848	0.2375	0.0088	0.0030	1.1149	0.2768
$MATERIALS_{it}$	0.0033	0.0047	0.7363	0.4624	0.0036	0.0049	-0.6757	0.5000	0.0018	0.0040	-1.2622	0.2084
$INDUSTRIALS_{it}$	0.0016	0.0050	3.8446	0.0002	0.0018	0.0053	-3.7609	0.0002	0.0024	0.0039	-0.8273	0.4091
$CONSUMERDISC_{it}$	0.0025	0.0048	1.2896	0.1987	0.0027	0.0051	-1.2448	0.2147	0.0022	0.0039	-1.0083	0.3145
$CONSUMERSTAP_{it}$	0.0015	0.0048	3.9674	0.0001	0.0016	0.0050	-3.8866	0.0001	0.0022	0.0038	-0.7130	0.4767
$HEALTH\ CARE_{it}$	0.0058	0.0042	-0.7718	0.4412	0.0064	0.0045	0.8411	0.4013	0.0033	0.0037	-0.2015	0.8405
$INFORMATION\ TECHNOLOGY_{it}$	0.0125	0.0039	-2.1780	0.0489	0.0136	0.0041	2.2066	0.0464	0.0067	0.0034	1.2353	0.2182
$TELECOMMUNICATIONS_{it}$	0.0099	0.0041	-2.0406	0.0426	0.0087	0.0044	1.3837	0.1680	0.0064	0.0035	1.0871	0.2873
$UTILITIES_{it}$	0.0049	0.0044	-0.1515	0.8797	0.0048	0.0047	0.0236	0.9812	0.0031	0.0037	-0.1640	0.8699

Where:
$BIG4_{it}$ = Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is a *Big4* audit firm; otherwise auditee *i* in time period *t* is scored zero (0); $SPECIALIST_{it}$ = Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is an industry specialist in industry *k*; otherwise auditee *i* in time period *t* is scored zero (0); $CNON\text{-}AUDIT_{it}$ = Auditee *i* in time period *t* is scored one (1) if the ratio of non-audit fees to total fees paid to the incumbent auditor *j* in time period *t* is less than 0.25; otherwise auditee *i* in time period *t* is scored zero (0); $CTENURE_{it}$ = Auditee *i* in time period *t* is scored one (1) if number of years the incumbent auditor *j* till time period *t* has been engaged as the principal auditor is 3 years or more; otherwise auditee *i* in time period *t* is scored zero (0); $FINEXPAC_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; $ENERGY_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; $MATERIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; $INDUSTRIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; $CONSUMERDISC_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; $CONSUMERSTAP_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; $HEALTH\ CARE_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; $INFORMATION\ TECHNOLOGY_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; $TELECOMMUNICATIONS_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; $UTILITIES_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

[48] For purposes of brevity, all industry variables in this study relate to firm *i* at time period *t* although not expressly stated in the legend to each table.

5.4.2 Two-way ANOVA

Two-way ANOVA tests are completed for the continuous variables collected in this study. Specifically, the objective in undertaking the two-way ANOVA tests is to determine if the means of the continuous variables differed significantly over the observation window of 2001, 2003 and 2005 given that the firms are identical across the observation window. In other words, the intention is to examine the significant effects of two factors simultaneously (in this case, the observation window of 2001, 2003 and 2005 and firm identity) on the means of the continuous variables collected in this study.

A review of Table 5.10 indicates that, on a univariate basis, a number of variables examined in this study vary significantly across the observation window of 2001, 2003 and 2005. For instance, the length of time (in years up to a maximum of 10 years) during which the auditor has remained unchanged varies significantly (in this instance, $NTENURE_{it}$ with a p-value<0.01) between 2001, 2003 and 2005. Similarly, both corporate governance variables (namely, $PERNEXBD_{it}$ and $BODMEET_{it}$) vary significantly across the observation period (all with p-values<0.01).[49]

[49] As an additional statistical check, one-way ANOVA tests were also completed for the continuous variables collected in this study. Specifically, the objective in undertaking the one-way ANOVA tests is to determine if the means of the continuous variables significantly differed over the observation window of 2001, 2003 and 2005. In other words, the intention is to examine the significant effects of one factor only (in this case, the observation window of 2001, 2003 and 2005) on the means of the continuous variables collected in this study. The duplication of firms across the observation window is, therefore, not taken into account when undertaking the one-way ANOVA tests. The results from the one-way ANOVA tests fully support the results from the two-way ANOVA tests. Specifically, on a univariate basis, a number of variables examined in this study vary significantly across the observation window of 2001, 2003 and 2005. For instance, the length of time (in years up to a maximum of 10 years) during which the auditor has remained unchanged varies significantly (in this instance, $NTENURE_{it}$ with a p-value of 0.0002) between 2001, 2003 and 2005. Similarly both corporate governance variables (namely, $PERNEXBD_{it}$ and $BODMEET_{it}$) vary significantly across the observation period (all with p-values less than 0.0000). After confirming that population differences existed as identified above, Tukey post hoc tests are completed to identify where the significant differences in means were within the 2001, 2003 and 2005 observation window. The Tukey post hoc tests confirm that all of the three significant differences in means were for the financial years-ending 2001 and 2005 (namely, $NTENURE_{it}$, $PERNEXBD_{it}$, $BODMEET_{it}$).

Table 5.10:
Results – Two-way ANOVA

	F-stat	p-value
Dependent Variable		
$AF_{it}ASSETS_{it}$	1.2273	0.2942
Independent Variables		
$RNONAUDIT_{it}$	2.8415	0.0595
$NTENURE_{it}$	165.8474	0.0000
Firm Characteristics		
$SRSUBSID_{it}$	1.5276	0.2183
$LNNBS_{it}$	0.5839	0.5582
ROA_{it}	2.1567	0.1171
$CURRENT_{it}$	0.8831	0.4143
Corporate Governance Variables		
$PERNEXBD_{it}$	584.2750	0.0000
$BODMEET_{it}$	112.2423	0.0000

Where:
$AF_{it}/ASSETS_{it}$ = The amount of audit fees paid by firm *i* at time period *t* deflated by total assets for firm *i* at time period *t.;* $RNONAUDIT_{it}$ = Ratio of non-audit fees to total fees paid to the auditor *j* by auditee *i* during time period *t*; $NTENURE_{it}$ = Length of time (in years up to a maximum of 10) during which the auditor has remained unchanged for auditee *i* at time period *t;* $SRSUBSID_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t;* $LNNBS_{it}$ = Natural log of 1 plus number of business segments for firm *i* at time period *t;* ROA_{it} = Earnings before interest and tax divided by total assets for firm *i* at time period *t;* $CURRENT_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t;* $PERNEXBD_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; and $BODMEET_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*.

5.5 CORRELATION ANALYSIS

Tables 5.11 to 5.13 present a correlation matrix reporting Pearson listwise correlation coefficients for both the continuous and dichotomous variables used in this study for the years-ending 2001, 2003 and 2005. A review of the correlation coefficients in Table 5.11 highlights a number of observations. First, it is clear that the independent variable of this study, audit fees deflated by total assets is significantly correlated with one of the four auditor attributes examined in this study (namely, the existence of a *Big4* auditor (in this case, *BIG4_01*)). Second, audit fees deflated by total assets are significantly correlated with proxies that measure firm complexity (in this case, square root of the number of subsidiaries (*SRSUBSID_01*) and firm risk (in this case, *ROA_01*). This is unsurprising given that the published prior literature into audit fee determinants (detailed in Chapter Three) demonstrated the significant link between firm complexity, firm risk and audit fees.[50] Finally, Table 5.11 also confirms that the quantum of audit fees paid by a firm is sensitive to one of the three corporate governance variables in this study (namely the number of board of directors meetings held during 2001 (*BODMEET_01*)). A review of the subsequent tables

[50] Given that the independent variable in this study, audit fees, is deflated by total assets (a firm size proxy), it is not necessary to include any firm size proxies in Tables 5.10 to 5.13 and in the subsequent main regressions.

(that is, Tables 5.12 and 5.13 (reporting correlation coefficients for 2003 and 2005 respectively)) indicates largely similar correlations to that observed in 2001. However, the strength and extent of the correlations in Tables 5.12 and 5.13 appear to diminish somewhat in the latter years of 2003 and 2005 (from 2001).

A review of Table 5.11 also suggests that the correlation on the quantum of non-audit fees paid to the external auditor (that is, *RNONAUDIT_01* and *CNONAUDIT_01*) is above the critical multicollinearity limit of 0.8 (Hair et al. 1995). Given that *RNONAUDIT_01* and *CNONAUDIT_01* are continuous and dichotomous variables (respectively) measuring the same proxy (that is, the quantum of non-audit fees paid to the external auditor) and will not be used in the same multivariate analysis in Chapter Six, the high correlation between *RNONAUDIT_01* and *CNONAUDIT_01* is not of concern. The above issue (and the associated resolution) is also observed in Tables 5.12 and 5.13 (that is, for years-ended 2003 and 2005 respectively). As such, at this stage, based on the Pearson listwise correlations, standard interpretations of the univariate coefficients in Tables 5.11 to 5.13 can be made.[51]

[51] Non-parametric Spearman's rank coefficient correlations are also completed as additional tests but not reported herein. The Spearman correlation coefficient is often thought of as being the Pearson correlation coefficient between the ranked variables given the Spearman correlation coefficient converts continuous variables into ranked variables before undertaking the associated correlation analysis (Hair et al. 1995; Tabachnick and Fidell 2001). Given the subsequent decrease in the stringency of the statistical power when using the Spearman's rank coefficient correlations, it is unsurprising that the results from the Spearman's rank coefficient correlations fully support the correlation results using the Pearson correlation tests for this study.

Table 5.11:
Pearson Correlation Coefficients (Transformed Variables) – 2001

	AF/ASSETS 01	*BIG4 01*	*SPECIALIST 01*	*CNONAUDIT 01*	*RNONAUDIT _01*	*CTENURE 01*	*NTENURE 01*	*SRSUBSID 01*	*LNNBS 01*	*ROA 01*	*CURRENT 01*	*PERNEXBD 01*	*BODMEET 01*	*FINEXPAC _01*
AF/ASSETS_01	1.0000													
BIG4_01	-0.1820**	1.0000												
SPECIALISTt_01	-0.0846	-0.0591	1.0000											
CNONAUDIT_01	-0.0555	-0.1026	0.0785	1.0000										
RNONAUDITt_01	-0.0880	-0.0124	0.0074	0.8400**	1.0000									
CTENURE_01	-0.0693	0.0561	-0.0305	0.0574	0.0286	1.0000								
NTENURE_01	-0.1306	0.2370**	-0.0952	0.0065	-0.0423	0.6840**	1.0000							
SRSUBSID_01	-0.1940**	0.3060**	0.2190**	-0.0957	-0.0520	0.0273	0.2370**	1.0000						
LNNBS_01	-0.1169	0.1009	0.2170**	-0.1317	-0.1010	-0.0364	0.0255	0.4050**	1.0000					
ROA_01	-0.3300**	0.2330**	0.1450*	0.0867	0.1197	0.2600**	0.1920**	0.2100**	0.1680*	1.0000				
CURRENT_01	-0.0408	-0.0733	0.2000**	0.0326	-0.0431	0.0456	0.0083	-0.1305	-0.1830**	0.0001	1.0000			
PERNEXBD_01	0.1300	-0.1277	-0.1440*	-0.0778	-0.0149	-0.1118	-0.0890	-0.2320**	-0.1610*	-0.0869	0.1351	1.0000		
BODMEET_01	-0.1560*	0.2020**	0.0186	-0.0122	0.0112	0.0032	0.1400*	0.1910**	0.0161	0.1540*	-0.0226	-0.2030**	1.0000	
FINEXPAC_01	-0.0433	0.0925	-0.0207	0.0000	0.0137	0.1780*	0.1960**	0.1480*	-0.0553	0.1326	0.0390	-0.0977	0.3110**	1.0000

* Correlation is significant at the 0.05 level (2-tailed) ** Correlation is significant at the 0.01 level (2-tailed)

Where:
AF/ASSETS_01 = the amount of audit fees paid to the auditor deflated by total assets of auditee in 2001; *BIG4_01* = auditee is scored one (1) if the incumbent auditor in 2001 is a *Big4* audit firm; otherwise auditee is scored zero (0); *SPECIALIST_01* = auditee is scored one (1) if the incumbent auditor in 2001 is an industry specialist; otherwise auditee is scored zero (0); *CNONAUDIT_01* = auditee is scored one (1) if the ratio of non-audit fees to total fees paid to the incumbent auditor in 2001 is less than 0.25; otherwise auditee is scored zero (0); *RNONAUDIT_01* = ratio of non-audit fees to total fees paid to the auditor by auditee in 2001; *CTENURE_01* = auditee is scored one (1) if, as at 2001, the number of years the incumbent auditor has been engaged as the principal auditor is 3 years or more; otherwise auditee is scored zero (0); *NTENURE_01* = length of time (in years up to a maximum of 10), as at 2001, during which the auditor has remained unchanged for auditee; *SRSUBSID_01* = square root of the number of subsidiaries of a firm in 2001; *LNNBS_01* = natural log of 1 plus the number of business segments of firm in 2001; ROA_01 = earnings before interest and tax divided by total assets of firm in 2001; *CURRENT_01* = current assets divided by current liabilities of firm in 2001; *PERNEXBD_01*=the percentage of non-executive directors on the board of directors of firm in 2001; *BODMEET_01* = the number of board of directors meetings held during the year of firm in 2001; and *FINEXPAC_01* = a dummy variable given the value of 1 if the audit committee of firm in 2001 consists of at least one financial expert during the year.

Table 5.12:
Pearson Correlation Coefficients (Transformed Variables) – 2003

	AF/ASSETS 03	*BIG4 03*	*SPECIALIST 03*	*CNONAUDIT 03*	*RNONAUDIT 03*	*CTENURE 03*	*NTENURE 03*	*SRSUBSID 03*	*LNNBS 03*	*ROA 03*	*CURRENT 03*	*PERNEXBD 03*	*BODMEET 03*	*FINEXPAC 03*
AF/ASSETS_03	1.0000													
BIG4_03	-0.1690*	1.0000												
SPECIALIST_03	-0.0193	-0.0344	1.0000											
CNONAUDIT_03	-0.0401	-0.0725	0.0785	1.0000										
RNONAUDIT_03	-0.0814	0.0129	0.0074	0.8400**	1.0000									
CTENURE_03	0.0178	0.0326	-0.0305	0.0574	0.0286	1.0000								
NTENURE_03	-0.1066	0.2570**	-0.0952	0.0065	-0.0423	0.6840**	1.0000							
SRSUBSID_03	-0.1890**	0.3080**	0.2190**	-0.0957	-0.0520	0.0273	0.2370**	1.0000						
LNNBS_03	-0.1239	0.0845	0.2170**	-0.1317	-0.1010	-0.0364	0.0255	0.4050**	1.0000					
ROA_03	-0.4010**	0.1840**	0.1450*	0.0867	0.1197	0.2600**	0.1920**	0.2100**	0.1680*	1.0000				
CURRENT_03	0.0032	-0.0816	-0.2000**	0.0326	-0.0431	0.0456	0.0083	-0.1305	-0.1830**	0.0001	1.0000			
PERNEXBD_03	0.1161	-0.1277	-0.1440*	-0.0778	-0.0149	-0.1118	-0.0890	-0.2320**	00.1610*	-0.0869	0.1351	1.0000		
BODMEET_03	-0.1430*	0.1950**	0.0186	-0.0122	0.0112	0.0032	0.1400*	0.1910**	0.0161	0.1540*	-0.0226	-0.2030**	1.0000	
FINEXPAC_03	-0.0611	0.0706	-0.0207	0.0000	0.0137	0.1780*	0.1960**	0.1480*	-0.0553	0.1326	0.0390	-0.0977	0.3110**	1.0000

* Correlation is significant at the 0.05 level (2-tailed) ** Correlation is significant at the 0.01 level (2-tailed)

Where:
AF/ASSETS_03 = the amount of audit fees paid to the auditor deflated by total assets of auditee in 2003; *BIG4*_03 = auditee is scored one (1) if the incumbent auditor in 2003 is a *Big4* audit firm; otherwise auditee is scored zero (0); *SPECIALIST_03* = auditee is scored one (1) if the incumbent auditor in 2003 is an industry specialist; otherwise auditee is scored zero (0); *CNONAUDIT_03* = auditee is scored one (1) if the ratio of non-audit fees to total fees paid to the incumbent auditor in 2003 is less than 0.25; otherwise auditee is scored zero (0); *RNONAUDIT_03* = ratio of non-audit fees to total fees paid to the auditor by auditee in 2003; *CTENURE_03* = auditee is scored one (1) if, as at 2003, the number of years the incumbent auditor has been engaged as the principal auditor is 3 years or more; otherwise auditee is scored zero (0); *NTENURE_03* = length of time (in years up to a maximum of 10), as at 2003, during which the auditor has remained unchanged for auditee; *SRSUBSID_03* = square root of the number of subsidiaries of a firm in 2003; *LNNBS_03* = natural logarithmic of 1 plus the number of business segments of firm in 2003; *ROA_03* = earnings before interest and tax divided by total assets of firm in 2003; *CURRENT_03* = current assets divided by current liabilities of firm in 2003; *PERNEXBD_03*=the percentage of non-executive directors on the board of directors of firm in 2003; *BODMEET_03* = the number of board of directors meetings held during the year of firm in 2003; and *FINEXPAC_03* = a dummy variable given the value of 1 if the audit committee of firm in 2003 consists of at least one financial expert during the year.

Table 5.13:
Pearson Correlation Coefficients (Transformed Variables) – 2005

	AF/ASSETS 05	*BIG4 05*	*SPECIALIST 05*	*CNONAUDIT 05*	*RNONAUDIT 05*	*CTENURE 05*	*NTENURE 05*	*SRSUBSID 05*	*LNNBS 05*	*ROA _05*	*CURRENT 05*	*PERNEXBD 05*	*BODMEET 05*	*FINEXPAC 05*
AF/ASSETS_05	1.0000													
BIG4_05	-0.1700*	1.0000												
SPECIALIST_05	0.0806	-0.1091	1.0000											
CNONAUDIT_05	-0.0316	-0.0141	0.7090**	1.0000										
RNONAUDIT_05	-0.0488	0.0751	0.5670**	0.8450**	1.0000									
CTENURE_05	0.0104	0.1960**	-0.0985	-0.1355	-0.0970	1.0000								
NTENURE_05	-0.1610*	0.2540**	-0.0765	0.0232	-0.0152	0.4160**	1.0000							
SRSUBSID_05	-0.1720*	0.3300**	-0.0339	-0.0607	-0.0019	0.0431	0.2080**	1.0000						
LNNBS_05	-0.1345	0.1086	-0.0593	-0.0892	-0.0571	0.0118	0.0025	0.4030**	1.0000					
ROA_05	-0.0026	0.1990**	0.1066	0.0837	0.0954	0.2340**	0.1620*	0.2000**	0.0294	1.0000				
CURRENT_05	-0.0106	0.0333	0.0669	-0.0729	-0.0611	0.0178	-0.1362	0.0815	-0.1038	-0.0065	1.0000			
PERNEXBD_05	-0.0051	-0.1299	-0.1090	-0.0857	-0.0130	-0.0778	-0.0840	-0.2320**	-0.1480*	-0.1710*	0.0399	1.0000		
BODMEET_05	-0.1460*	0.2100**	-0.0125	0.0331	0.0519	-0.0357	0.1670*	0.1940**	0.0235	-0.0162	-0.0702	-0.2100**	1.0000	
FINEXPAC_05	-0.1211	0.1319	0.0495	0.0984	0.1083	0.0408	0.1400*	0.2230**	0.0193	0.1790*	0.0224	-0.1470*	0.3010**	1.0000

* Correlation is significant at the 0.05 level (2-tailed) ** Correlation is significant at the 0.01 level (2-tailed)

Where:
AF/ASSETS_05 = the amount of audit fees paid to the auditor deflated by total assets of auditee in 2005; *BIG4_05*=auditee is scored one (1) if the incumbent auditor in 2005 is a *Big4* audit firm; otherwise auditee is scored zero (0); *SPECIALIST_05* = auditee is scored one (1) if the incumbent auditor in 2005 is an industry specialist; otherwise auditee is scored zero (0); *CNONAUDIT_05* = auditee is scored one (1) if the ratio of non-audit fees to total fees paid to the incumbent auditor in 2005 is less than 0.25; otherwise auditee is scored zero (0); *RNONAUDIT_05* = ratio of non-audit fees to total fees paid to the auditor by auditee in 2005; *CTENURE_05* = auditee is scored one (1) if, as at 2005, the number of years the incumbent auditor has been engaged as the principal auditor is 3 years or more; otherwise auditee is scored zero (0); *NTENURE_05* = length of time (in years up to a maximum of 10), as at 2005, during which the auditor has remained unchanged for auditee; *SRSUBSID_05* = square root of the number of subsidiaries of a firm in 2005; *LNNBS_05* = natural logarithmic of 1 plus the number of business segments of firm in 2005; *ROA_05* = earnings before interest and tax divided by total assets of firm in 2005; *CURRENT_05* = current assets divided by current liabilities of firm in 2005; *PERNEXBD_05*=the percentage of non-executive directors on the board of directors of firm in 2005; *BODMEET_05* = the number of board of directors meetings held during the year of firm in 2005; and *FINEXPAC_05* = a dummy variable given the value of 1 if the audit committee of firm in 2005 consists of at least one financial expert during the year.

5.6 SUMMARY OF THE CHAPTER

Chapter Five provided the descriptive statistics for the data examined in this study. The sample selection process was detailed. An industry breakdown of the final usable sample is provided before a comprehensive review undertaken of the descriptive statistics of variables. Subsequently, results from t-tests and correlations were reported and discussed.

Chapter Six discusses the main empirical results obtained in this study. Initially, regression results using a dichotomous composite score for auditor attributes is reported against audit fees. Subsequently, the composite score is decomposed into the four key auditor attributes of brand, specialization, independence and tenure with regressions re-run against the dependent variable (that is, audit fees deflated for total assets). The analysis is completed both cross-sectionally and longitudinally.

CHAPTER SIX:
MULTIVARIATE ANALYSIS – MULTIPLE REGRESSIONS

6.1 OVERVIEW OF THE CHAPTER

Chapter Five reported the descriptive statistics and univariate results of this study. Steps taken to ensure the normality of data and the validity of assumptions for multiple regression were outlined. T-tests of key descriptive characteristics, along with Spearman and Pearson correlation analyses, were also provided.

Chapter Six reports and discusses the main empirical results of this study. Initial regression is completed using a dichotomous composite score capturing four key auditor attributes and regressing the score against the dependent variable of this study (that is, audit fees deflated by total assets). The resulting regression results are analyzed on both a cross-sectional and longitudinal time-scale. Subsequently, the composite score of auditor attributes is dis-aggregated into the four main components of auditor brand, auditor specialization, auditor independence and auditor tenure. All of the four individual attributes are then (independently) regressed against audit fees deflated by total assets in isolation. Once again, the regression results are analyzed both cross-sectionally and longitudinally. Finally, a summary of Chapter Six is provided.

6.2 COMPOSITE AUDITOR ATTRIBUTES AND AUDIT FEES

This section will discuss the multivariate results arising from examining the association between a dichotomous composite score capturing four key auditor attributes and audit fees deflated by total assets. Initially, the association is examined cross-sectionally and subsequently, on a longitudinally time-frame.

6.2.1 Composite score and cross-sectional variations

Table 6.1 documents the results of OLS regression using a dichotomous composite score of auditor attributes (that is, AA_{it}) as an explanatory variable in analyzing the variation of audit fees for the years – ended 2001 (n=200), 2003 (n=200) and 2005 (n=200) and 2001 to 2005 (n=600) inclusive. The results from Table 6.1 Columns 1 and 2 suggest that the coefficient on AA_{it} (the independent variable) is negative and statistically insignificant for 2001. A review of Table 6.1 Columns 3 and 5 also shows that the coefficient on AA_{it} becomes positive in 2003 before reverting to being negative again in 2005. The p-value remains insignificant and moves in no discernable pattern across the observation window (see Table 6.1 Columns 2, 4 and 6 respectively).

A further review of Table 6.1 Columns 1 and 2 indicates that the coefficient on return on assets (ROA_{it}) is negative but significant (p-value<0.01) for 2001. The strength of the relationship increases in 2003 (see Column 4) (p-value<0.01) before becoming

statistically insignificant in 2005 (see Column 6). The coefficient on ROA_{it} remains negative in 2003 (see Column 3) but in 2005 (see Column 5), the coefficient on ROA_{it} becomes positive. In relation to the corporate governance variables examined in this study, only the presence of a financial expert on a firm's audit committee ($FINEXPAC_{it}$) has a significant relationship (p-value<0.05) with $AF_{it}/ASSETS_{it}$ in 2005 (see Column 6) with the coefficient being negative (see Column 5). Only three industry variables (that is, $ENERGY_{it}$, $INFORMATION\ TECHNOLOGY_{it}$, and $TELECOMMUNICATIONS_{it}$) have statistically significant relationships with $AF_{it}/ASSETS_{it}$ (namely firms in the information technology and telecommunications industries (p-value<0.01 and p-value<0.05 respectively) in 2001 (see Column 2) and the energy industry (p-value<0.05) in 2005 (see Column 6)). The coefficients for all the significant industry variables (that is, $ENERGY_{it}$, $INFORMATION\ TECHNOLOGY_{it}$, and $TELECOMMUNICATIONS_{it}$) are positive across the observation window of 2001, 2003 and 2005 (see Table 6.1 Columns 1, 3 and 5 respectively).

The regression models run to examine the association between the independent variables and dependent variables across the observation window have an adjusted R^2 ranging from 0.1445 (in 2001 (see Column 1/2)), 0.0584 (in 2003 (see Column 3/4)) and 0.0585 (in 2005 (see Column 5/6)). Specifically, for 2001, the variables entered into the regression model explain 14.45% of the variation in the dependent variable, $AF_{it}/ASSETS_{it}$ however the goodness-of-fit (that is, adjusted R^2) falls markedly in 2003 and 2005. Table 6.1 Columns 7 and 8 report regression results for identical variables but with all firm-year observations from 2001, 2003 and 2005 included in one regression model (that is, n=600).

Table 6.1:
AA_{it} (Composite Score) - OLS Regression Results
Audit Fees for 2001, 2003, 2005 and 2001 to 2005 inclusive

	2001 (n=200)		2003 (n=200)		2005 (n=200)		2001 – 2005 (n=600)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
Constant	0.0048	0.2540	0.0106	0.3066	0.0122	0.0013	0.0125	0.1841
Independent Variable								
AA_{it}	-0.0002	0.8373	0.0000	0.9948	-0.0004	0.5362	-0.0001	0.7544
Control Variables - *Firm Complexity Variables*								
$SRSUBSID_{it}$	-0.0002	0.4067	-0.0001	0.5762	-0.0002	0.3081	-0.0002	0.1779
$LNNBS_{it}$	-0.0007	0.5575	-0.0011	0.3721	-0.0010	0.4137	-0.0011	0.1335
Control Variables - *Firm Risk Variables*								
ROA_{it}	-0.0036	0.0006	-0.0080	0.0000	0.0017	0.3229	-0.0032	0.0000
$CURRENT_{it}$	-4.2754	0.2105	-0.0001	0.2508	0.0000	0.4861	0.0000	0.2811
Control Variables - *Corporate Governance Variables*								
$PERNEXBD_{it}$	0.0031	0.3860	0.0010	0.7601	-0.0039	0.1584	-0.0007	0.6844
$BODMEET_{it}$	-0.0003	0.1123	-0.0002	0.1658	-0.0002	0.2890	-0.0002	0.0079
$FINEXPAC_{it}$	0.0012	0.3895	0.0008	0.6296	-0.0036	0.0304	-0.0002	0.8195
Control Variables - *Industry Variables*								
$ENERGY_{it}$	0.0009	0.7426	-0.0024	0.8057	0.0062	0.0207	-0.0016	0.8595
$MATERIALS_{it}$	0.0004	0.8403	-0.0041	0.6897	-0.0006	0.7719	-0.0047	0.6137
$INDUSTRIALS_{it}$	0.0006	0.7520	-0.0050	0.7089	-0.0008	0.6970	-0.0047	0.5976
$CONSUMERDISC_{it}$	-0.0001	0.9605	-0.0044	0.6627	0.0001	0.9653	-0.0048	0.6095
$CONSUMERSTAP_{it}$	-0.0003	0.9027	-0.0055	0.5956	-0.0004	0.8668	-0.0054	0.5640
$HEALTH\ CARE_{it}$	0.0029	0.2546	-0.0029	0.7636	0.0010	0.6906	-0.0030	0.7444
$INFORMATION\ TECHNOLOGY_{it}$	0.0084	0.0068	0.0026	0.8021	0.0044	0.1526	0.0018	0.8464
$TELECOMM\ UNICATIONS_{it}$	0.0071	0.0253	0.0012	0.9059	0.0038	0.2200	0.0005	0.9579
$UTILITIES_{it}$	0.0010	0.7858	-0.0046	0.6633	-0.0008	0.8171	-0.0044	0.6396
F-statistic (p-value)	3.1004	0.0000	1.9502	0.0272	1.7721	0.0378	5.7315	0.0000
Adjusted R^2	0.1445		0.0584		0.0585		0.1184	

Where:
$AA_{it} = \sum (BIG4_{it}, SPECIALIST_{it}, CNON\text{-}AUDIT_{it}, CTENURE_{it})$. A composite dichotomous score based on the four proxy measures for auditor attributes: *Big4*, industry specialization, provision of non-audit services and length of tenure; $SRSUBSID_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; $LNNBS_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; ROA_{it} = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; $CURRENT_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; $PERNEXBD_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; $BODMEET_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*; $FINEXPAC_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; $ENERGY_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; $MATERIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; $INDUSTRIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; $CONSUMERDISC_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; $CONSUMERSTAP_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; $HEALTH\ CARE_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; $INFORMATION\ TECHNOLOGY_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; $TELECOMMUNICATIONS_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; $UTILITIES_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

6.2.2 Composite score and longitudinal variations

Table 6.2 documents the results of OLS regression using a composite score of auditor attributes (that is, AA_{it}) as an explanatory variable in analyzing changes in audit fees (that is, $AF_{it}/ASSETS_{it}$) at three points in time: the change from 2001 from 2003; the change from 2003 from 2005; and the overall change from 2001 from 2005. The results from Table 6.2 Columns 1 and 2 suggest that the coefficient on AA_{it} (the independent variable) is positive and statistically insignificant for the period 2001 to 2003. A review of Table 6.2 also shows that the coefficient on AA_{it} remains positive throughout 2003 to 2005 (see Column 3)

and 2001 to 2005 (see Column 5). The statistical significance of the relationship between AA_{it} and the change in $AF_{it}/ASSETS_{it}$ becomes stronger over the observation window (the p-value changes from 0.6061 for the period 2001 to 2003 (see Column 2) to 0.5135 for the period 2003 to 2005 (Columns 4) and 0.4585 for the period 2001 to 2005 (Columns 6)). Nevertheless, the relationship is not significant at conventional levels.

A further review of Table 6.2 Columns 1 and 2 indicates that the coefficient on return on assets (ROA_{it}) is negative but significant (p-value<0.05) for the period 2001 to 2003. The significance of the relationship between ROA_{it} and the change in $AF_{it}/ASSETS_{it}$, however, reduces for the period 2003 to 2005 (see Column 4) (p-value<0.05) and for the period 2001 to 2005 (see Column 6) (p-value<0.05). The coefficient on ROA_{it} also becomes positive for the period 2003 to 2005 (see Column 3) and for the period 2001 to 2005 (see Column 5). None of the corporate governance and industry variables suggest any significant statistical association with the change in $AF_{it}/ASSETS_{it}$.

The regression models run to examine the association between the independent variables and dependent variables have an adjusted R^2 ranging from 0.0182 (change in $AF_{it}/ASSETS_{it}$ from 2001 to 2003 (see Columns 1/2), 0.0026 (change in $AF_{it}/ASSETS_{it}$ from 2003 to 2005 (see Columns 3/4) to 0.0002 (change in $AF_{it}/ASSETS_{it}$ from 2001 to 2005 (see Columns 5/6)). Specifically, for the period 2001 to 2003, the variables entered into the regression model explain only 1.82% of the change in the variation in the dependent variable, $AF_{it}/ASSETS_{it}$ with the goodness-of-fit (that is, adjusted R^2) falling even further in the subsequent periods of 2003 to 2005 and 2001 to 2005.

Table 6.2:
AA_{it} (Composite Score) - OLS Regression Results
Change in Audit Fees over 2001 to 2003, 2003 to 2005 and 2001 to 2005

	Change from 2001 to 2003 (n=200)		Change from 2003 to 2005 (n=200)		Change from 2001 to 2005 (n=200)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
Constant	0.0011	0.6035	0.0036	0.4795	0.0041	0.4230
Independent Variable						
AA_{it}	0.0001	0.6061	0.0006	0.5135	0.0007	0.4585
Control Variables - *Firm Complexity Variables*						
$SRSUBSID_{it}$	0.0000	0.8913	0.0001	0.7050	0.0001	0.7623
$LNNBS_{it}$	-0.0001	0.5750	0.0000	0.9863	-0.0001	0.9720
Control Variables - *Firm Risk Variables*						
ROA_{it}	-0.0009	0.0167	0.0052	0.0281	0.0047	0.0448
$CURRENT_{it}$	0.0000	0.9028	0.0000	0.8724	0.0000	0.8139
Control Variables - *Corporate Governance Variables*						
$PERNEXBD_{it}$	-0.0006	0.3946	-0.0051	0.1721	-0.0056	0.1383
$BODMEET_{it}$	0.0000	0.6391	-0.0001	0.4462	-0.0001	0.4361
$FINEXPAC_{it}$	0.0001	0.7542	-0.0012	0.5866	-0.0013	0.5585
Control Variables - *Industry Variables*						
$ENERGY_{it}$	-0.0001	0.9665	0.0022	0.5490	0.0029	0.4211
$MATERIALS_{it}$	-0.0006	0.7841	-0.0015	0.6260	-0.0013	0.6569
$INDUSTRIALS_{it}$	-0.0007	0.7298	-0.0016	0.7050	-0.0014	0.6999
$CONSUMERDISC_{it}$	-0.0006	0.7630	-0.0013	0.6708	-0.0012	0.6935
$CONSUMERSTAP_{it}$	-0.0007	0.7409	0.0005	0.8825	0.0005	0.8775
$HEALTH\ CARE_{it}$	-0.0006	0.7696	-0.0024	0.4817	-0.0021	0.5291
$INFORMATION\ TECHNOLOGY_{it}$	-0.0001	0.9799	-0.0043	0.3005	-0.0036	0.3868
$TELECOMM\ UNICATIONS_{it}$	-0.0020	0.3350	-0.0004	0.9164	-0.0019	0.6453
$UTILITIES_{it}$	-0.0010	0.6413	-0.0002	0.9642	-0.0006	0.9013
F-statistic (p-value)	1.2174	0.2545	1.0329	0.4241	1.0025	0.4561
Adjusted R^2	0.0182		0.0026		0.0002	

Where:
$AA_{it} = \sum (BIG4_{it}, SPECIALIST_{it}, CNON\text{-}AUDIT_{it}, CTENURE_{it})$. A composite dichotomous score based on the four proxy measures for auditor attributes: *Big4*, industry specialization, provision of non-audit services and length of tenure; $SRSUBSID_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; $LNNBS_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; ROA_{it} = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; $CURRENT_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; $PERNEXBD_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; $BODMEET_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*; $FINEXPAC_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; $ENERGY_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; $MATERIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; $INDUSTRIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; $CONSUMERDISC_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; $CONSUMERSTAP_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; $HEALTH\ CARE_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; $INFORMATION\ TECHNOLOGY_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; $TELECOMMUNICATIONS_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; $UTILITIES_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

6.3 KEY AUDITOR ATTRIBUTES AND AUDIT FEES

This section will discuss the multivariate results arising from examining the association between four key individual auditor attributes and audit fees deflated by total assets. Initially, the association is examined cross-sectionally and subsequently, on a longitudinally time-frame.

6.3.1 Key auditor attributes – cross-sectional variations

This sub-section will outline results from examining the multivariate relationship between the four key (individual) auditor attributes of auditor brand, auditor specialization, auditor independence and auditor tenure and audit fees deflated by total assets for the years-ended 2001, 2003, 2005 and 2001 to 2005 inclusive.

6.3.1.1 Brand

Table 6.3 documents the results of OLS regression using an auditor attribute measure (that is, $BIG4_{it}$) as an explanatory variable in analyzing the variation of audit fees for the years – ended 2001, 2003 and 2005 and 2001 to 2005 inclusive. The results from Table 6.3 Columns 1 and 2 suggest that the coefficient on $BIG4_{it}$ (the independent variable) is negative and statistically insignificant for 2001. A review of Table 6.3 Columns 3 and 5 also shows that the coefficient on $BIG4_{it}$ remains negative throughout 2003 and 2005 and the p-value remains insignificant and moves in no discernable pattern across the observation window (see Table 6.3 Columns 2, 4 and 6 respectively).

A further review of Table 6.3 Columns 1 and 2 indicates that the coefficient on return on assets (ROA_{it}) is negative and significant (p-value<0.01) for 2001. The strength of the relationship increases in 2003 (see Column 4) (p-value<0.01) before becoming statistically insignificant in 2005 (see Column 6). The coefficient on ROA_{it} remains negative in 2003 (see Column 3) but reverts to being positive in 2005 (see Column 5). In relation to the corporate governance variables examined in this study, only the presence of a financial expert on a firm's audit committee ($FINEXPAC_{it}$) has a significant relationship (p-value<0.05) in 2005 (see Column 6) with $AF_{it}/ASSETS_{it}$ with the coefficient of the relationship being negative (see Column 5). Three industry variables (that is, $ENERGY_{it}$, $INFORMATION\ TECHNOLOGY_{it}$, and $TELECOMMUNICATIONS_{it}$) have statistically significant relationships with $AF_{it}/ASSETS_{it}$, (namely, firms in the information technology and telecommunications industries (p-value<0.01 and p-value<0.05 respectively) in 2001 (see Column 2) and the energy industry (p-value<0.05) in 2005 (see Column 6)). The coefficients for all the significant industry variables are positive across the observation window of 2001, 2003 and 2005 (see Table 6.3 Columns 1, 3 and 5 respectively).

The regression models run to examine the association between the independent variables and dependent variables across the observation window have an adjusted R^2 ranging from 0.1497 in 2001 (see Columns 1/2), 0.1552 in 2003 (see Columns 3/4) and 0.0669 in 2005 (see Column 5/6). Specifically, for 2001, the variables entered into the regression model explain 14.97% of the variation in the dependent variable, (that is,

$AF_{it}/ASSETS_{it}$). The goodness-of-fit (that is, adjusted R^2) improves marginally in 2003 before falling markedly in 2005.

Table 6.3 Columns 7 and 8 report regression results for identical variables but with all firm-year observations from 2001, 2003 and 2005 included in one regression model (that is, n=600). Table 6.3 Column 8 suggests that the variables $BIG4_{it}$, ROA_{it} and $BODMEET_{it}$ are significant predictors of audit fees variation. Additionally, the adjusted R^2 suggests that the variables in the regression model account for 12.28% of the change in audit fees for the period 2001 to 2005 (see Columns 7/8).

Table 6.3:
***BIG4*$_{it}$ (Individual Score) - OLS Regression Results**
Audit Fees for 2001, 2003, 2005 and 2001 to 2005 inclusive

	2001 (n=200)		**2003 (n=200)**		**2005 (n=200)**		**2001 – 2005 (n=600)**	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
Constant	0.0051	0.1266	0.0112	0.2743	0.0122	0.0003	0.0129	0.1687
Independent Variable								
$BIG4_{it}$	-0.0013	0.3783	-0.0013	0.4064	-0.0022	0.1542	-0.0016	0.0821
Control Variables - *Firm Complexity Variables*								
$SRSUBSID_{it}$	-0.0001	0.5186	-0.0001	0.7197	-0.0001	0.4872	-0.0001	0.3454
$LNNBS_{it}$	-0.0007	0.5439	-0.0012	0.3499	-0.0010	0.4115	-0.0011	0.1210
Control Variables - *Firm Risk Variables*								
ROA_{it}	-0.0035	0.0005	-0.0078	0.0000	0.0019	0.2715	-0.0031	0.0001
$CURRENT_{it}$	0.0000	0.1966	-0.0001	0.2382	0.0000	0.5152	0.0000	0.2838
Control Variables - *Corporate Governance Variables*								
$PERNEXBD_{it}$	0.0032	0.3676	0.0010	0.7647	-0.0037	0.1746	-0.0007	0.6754
$BODMEET_{it}$	-0.0002	0.1420	-0.0002	0.2046	-0.0001	0.3813	-0.0002	0.0149
$FINEXPAC_{it}$	0.0012	0.3943	0.0008	0.6516	-0.0036	0.0278	-0.0002	0.7861
Control Variables - *Industry Variables*								
$ENERGY_{it}$	0.0008	0.7580	-0.0025	0.7999	0.0057	0.0326	-0.0017	0.8541
$MATERIALS_{it}$	0.0004	0.8608	-0.0040	0.6935	-0.0007	0.7388	-0.0047	0.6178
$INDUSTRIALS_{it}$	0.0003	0.7020	-0.0048	0.6394	-0.0006	0.6205	-0.0048	0.6084
$CONSUMERDISC_{it}$	-0.0003	0.8973	-0.0045	0.6553	-0.0006	0.7896	-0.0049	0.5996
$CONSUMERSTAP_{it}$	-0.0005	0.8482	-0.0055	0.5896	-0.0007	0.7874	-0.0055	0.5569
$HEALTH\ CARE_{it}$	0.0031	0.2141	-0.0027	0.7842	0.0009	0.7138	-0.0028	0.7637
$INFORMATION\ TECHNOLOGY_{it}$	0.0081	0.0074	0.0024	0.8128	0.0039	0.2048	0.0016	0.8606
$TELECOMM\ UNICATIONS_{it}$	0.0070	0.0223	0.0012	0.9064	0.0036	0.2429	0.0005	0.9541
$UTILITIES_{it}$	0.0009	0.8139	-0.0047	0.6555	-0.0014	0.7074	-0.0046	0.6284
F-statistic (p-value)	3.1590	0.0000	3.1505	0.0000	1.8920	0.0235	5.9330	0.0000
Adjusted R^2	0.1479		0.1552		0.0669		0.1228	

Where:
$BIG4_{it}$ = Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is a *Big4* audit firm; otherwise auditee *i* in time period *t* is scored zero (0); $SRSUBSID_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; $LNNBS_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; ROA_{it} = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; $CURRENT_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; $PERNEXBD_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; $BODMEET_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*; $FINEXPAC_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; $ENERGY_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; $MATERIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; $INDUSTRIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; $CONSUMERDISC_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; $CONSUMERSTAP_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; $HEALTH\ CARE_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; $INFORMATION\ TECHNOLOGY_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; $TELECOMMUNICATIONS_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; $UTILITIES_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

6.3.1.2 Specialization

Table 6.4 documents the results of OLS regression using an auditor attribute measure (that is, $SPECIALIST_{it}$) as an explanatory variable in analyzing the variation of audit fees for the years – ended 2001, 2003 and 2005 and 2001 to 2005 inclusive. The results from Table 6.4 Columns 1 and 2 suggest that the coefficient on $SPECIALIST_{it}$ (the independent variable) is positive and statistically insignificant for 2001. A review of Table 6.4 Columns 3 and 5 also shows that the coefficient on $SPECIALIST_{it}$ remains positive throughout 2003 and 2005. However, the p-value becomes marginally significant (p-value=0.1024) in 2003 (see Column 4) before becoming insignificant again in 2005 (see Column 6). Nevertheless, the relationship is not significant at conventional levels.

A further review of Table 6.4 Columns 1 and 2 indicates that the coefficient on return on assets (ROA_{it}) is negative and significant (p-value<0.01) for 2001. The strength of the relationship increases in 2003 (see Column 4) (p-value<0.01). In 2005 (see Column 5), the coefficient on ROA_{it} becomes positive and the relationship between ROA_{it} and audit fees deflated by assets ($AF_{it}/ASSETS_{it}$) becomes statistically insignificant (see Column 6). In relation to the corporate governance variables examined in this study, only the presence of a financial expert on a firm's audit committee ($FINEXPAC_{it}$) has a significant relationship (p-value<0.05) in 2005 (see Column 6) with $AF_{it}/ASSETS_{it}$, with the coefficient of the relationship being negative (see Column 5). Three industry variables (that is, $ENERGY_{it}$, $INFORMATION\ TECHNOLOGY_{it}$ and $TELECOMMUNICATIONS_{it}$) have statistically significant relationships with $AF_{it}/ASSETS_{it}$, (namely firms in the information technology (p-value<0.01) and telecommunications (p-value<0.01) industries in 2001 (see Column 2) and the energy (p-value<0.05) industry in 2005 (see Column 6)). The coefficients for all the significant industry variables are positive across the observation window of 2001, 2003 and 2005 (see Table 6.4 Columns 1, 3 and 5 respectively).

The regression models run to examine the association between the independent variables and dependent variables across the observation window have an adjusted R^2 of 0.1506 in 2001 (see Columns 1/2), 0.1644 in 2003 (see Column 3/4) and 0.0612 in 2005 (see Column 5/6). Specifically, for 2001, the variables entered into the regression model explain 15.06% of the variation in the dependent variable, $AF_{it}/ASSETS_{it}$. However, the goodness-of-fit (that is, adjusted R^2) improves marginally in 2003 before falling markedly in 2005.

Table 6.4 Columns 7 and 8 report regression results for identical variables but with all firm-year observations from 2001, 2003 and 2005 included in one regression model (that is, n=600). Table 6.4 Column 8 suggests that the variables $SPECIALIST_{it}$, ROA_{it} and $BODMEET_{it}$ are significant predictors of audit fees variation. Additionally, the adjusted R^2

suggests that the variables in the regression model account for 12.57% of the change in audit fees for the period 2001 to 2005 (see Columns 7/8).

Table 6.4:
***SPECIALIST*$_{it}$ (Individual Score) - OLS Regression Results**
Audit Fees for 2001, 2003, 2005 and 2001 to 2005 inclusive

	2001 (n=200)		2003 (n = 200)		2005 (n=200)		2001 – 2005 (n=600)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
Constant	0.0025	0.4820	0.0119	0.2427	0.0101	0.0028	0.0127	0.1723
Independent Variable								
SPECIALIST$_{it}$	0.0019	0.2432	0.0027	0.1024	0.0013	0.3387	0.0018	0.0261
Control Variables - *Firm Complexity Variables*								
SRSUBSID$_{it}$	-0.0002	0.3420	-0.0002	0.4800	-0.0002	0.3223	-0.0002	0.1489
LNNBS$_{it}$	-0.0008	0.5292	-0.0012	0.3322	-0.0009	0.4555	-0.0011	0.1252
Control Variables - *Firm Risk Variables*								
ROA$_{it}$	-0.0036	0.0003	-0.0077	0.0000	0.0014	0.4231	-0.0033	0.0000
CURRENT$_{it}$	0.0000	0.2852	-0.0001	0.2733	0.0000	0.4387	0.0000	0.2603
Control Variables - *Corporate Governance Variables*								
PERNEXBD$_{it}$	0.0035	0.3241	0.0011	0.7287	-0.0035	0.2123	-0.0005	0.7788
BODMEET$_{it}$	-0.0003	0.1245	-0.0002	0.2087	-0.0002	0.2903	-0.0002	0.0090
FINEXPAC$_{it}$	0.0012	0.3781	0.0005	0.7725	-0.0037	0.0258	-0.0003	0.7474
Control Variables - *Industry Variables*								
ENERGY$_{it}$	0.0023	0.4112	-0.0041	0.6763	0.0062	0.0192	-0.0028	0.7621
MATERIALS$_{it}$	0.0010	0.6606	-0.0069	0.5000	-0.0005	0.8302	-0.0064	0.4951
INDUSTRIALS$_{it}$	-0.0009	0.6786	-0.0086	0.4082	-0.0080	0.4004	-0.0075	0.4085
CONSUMERDISC$_{it}$	0.0008	0.7246	-0.0068	0.5032	-0.0003	0.9054	-0.0003	0.9054
CONSUMERSTAP$_{it}$	-0.0002	0.9376	-0.0089	0.3911	-0.0002	0.9480	-0.0002	0.9480
HEALTH CARE$_{it}$	0.0044	0.1068	-0.0049	0.6145	0.0008	0.7595	0.0008	0.7595
INFORMATION TECHNOLOGY$_{it}$	0.0094	0.0025	0.0004	0.9691	0.0043	0.1572	0.0043	0.1572
TELECOMM UNICATIONS$_{it}$	0.0087	0.0090	-0.0003	0.9743	0.0038	0.2193	0.0038	0.2193
UTILITIES$_{it}$	0.0023	0.5389	-0.0066	0.5323	-0.0006	0.8647	-0.0006	0.8647
F-statistic (p-value)	3.2059	0.0000	3.3024	0.0000	1.8108	0.0325	6.0665	0.0000
Adjusted R^2	0.1506		0.1644		0.0612		0.1257	

Where:
SPECIALIST$_{it}$ = Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is an industry specialist in industry *k*; otherwise auditee *i* in time period *t* is scored zero (0); *SRSUBSID*$_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; *LNNBS*$_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; *ROA*$_{it}$ = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; *CURRENT*$_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; *PERNEXBD*$_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; *BODMEET*$_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*; *FINEXPAC*$_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; *ENERGY*$_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; *MATERIALS*$_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; *INDUSTRIALS*$_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; *CONSUMERDISC*$_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; *CONSUMERSTAP*$_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; *HEALTH CARE*$_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; *INFORMATION TECHNOLOGY*$_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; *TELECOMMUNICATIONS*$_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; *UTILITIES*$_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

6.3.1.3 Independence

Table 6.5 documents the results of OLS regression using an auditor attribute measure (that is, *CNON-AUDIT*$_{it}$) as an explanatory variable in analyzing the variation of audit fees for the years – ended 2001, 2003 and 2005 and 2001 to 2005 inclusive. The results from Table 6.5 Columns 1 and 2 suggest that the coefficient on *CNON-AUDIT*$_{it}$ (the independent variable) is negative and statistically insignificant for 2001. A review of Table

6.5 Columns 3 and 5 also shows that the coefficient on $CNON\text{-}AUDIT_{it}$ remains negative throughout 2003 and 2005. The p-value, however, becomes more significant (p-value=0.4516) in 2003 (see Column 4) and 2005 (see Column 6) (p-value=0.3895) compared to 2001 (see Column 2) (p-value=0.5603). Nevertheless, the relationship is not significant at conventional levels.

A further review of Table 6.5 Columns 1 and 2 indicates that the coefficient on return on assets (ROA_{it}) is negative and significant (p-value<0.01) for 2001. The strength of the relationship increases in 2003 (see Column 4) (p-value<0.01). In 2005 (see Columns 5 and 6), though, the coefficient on ROA_{it} becomes positive whilst the relationship between ROA_{it} and audit fees deflated by assets ($AF_{it}/ASSETS_{it}$) becomes statistically insignificant. None of the corporate governance measures prove significant explanatory variables in determining the variation of audit fees. Only three industry variables (that is, $ENERGY_{it}$, $INFORMATION\ TECHNOLOGY_{it}$ and $TELECOMMUNICATIONS_{it}$) have statistically significant relationships with $AF_{it}/ASSETS_{it}$, that is firms in the information technology (p-value<0.01) and telecommunications (p-value<0.05) industries in 2001 (see Column 2) and the energy (p-value<0.05) industry in 2005 (see Column 6) are significant. The coefficients for all the significant industry variables are positive across the observation window of 2001, 2003 and 2005 (see Table 6.5 Columns 1, 3 and 5 respectively).

The regression models run to examine the association between the independent variables and dependent variables across the observation window have an adjusted R^2 changing from 0.1459 in 2001 (see Columns 1/2) to 0.1546 in 2003 (see Columns 3/4) and finally 0.0603 in 2005 (see Columns 5/6). Specifically, for 2001, the variables entered into the regression model explain 14.59% of the variation in the dependent variable, $AF_{it}/ASSETS_{it}$. The goodness-of-fit (that is, adjusted R^2) improves marginally in 2003 before falling markedly in 2005.

Table 6.5 Columns 7 and 8 report regression results for identical variables but with all firm-year observations from 2001, 2003 and 2005 included in one regression model (that is, n=600). Table 6.5 Column 8 suggests that the variables ROA_{it} and $BODMEET_{it}$ are significant predictors of audit fees variation. Additionally, the adjusted R^2 suggests that the variables in the regression model account for 9.45% of the change in audit fees for the period 2001 to 2005 (see Columns 7/8).

Table 6.5:
***CNON-AUDIT*$_{it}$ (Individual Score) - OLS Regression Results**
Audit Fees for 2001, 2003, 2005 and 2001 to 2005 inclusive

	2001 (n=200)		2003 (n=200)		2005 (n=200)		2001 – 2005 (n=600)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
Constant	0.0049	0.1465	0.0117	0.2597	0.0118	0.0005	0.0133	0.1555
Independent Variable								
CNON-AUDIT$_{it}$	-0.0008	0.5603	-0.0010	0.4516	-0.0011	0.3895	-0.0010	0.1782
Control Variables - *Firm Complexity Variables*								
SRSUBSID$_{it}$	-0.0002	0.3678	-0.0001	0.5371	-0.0002	0.2697	-0.0002	0.1389
LNNBS$_{it}$	-0.0008	0.5271	-0.0012	0.3393	-0.0010	0.4009	-0.0011	0.1089
Control Variables - *Firm Risk Variables*								
ROA$_{it}$	-0.0036	0.0004	-0.0079	0.0000	0.0016	0.3447	-0.0032	0.0000
CURRENT$_{it}$	0.0000	0.2199	-0.0001	0.2803	0.0000	0.4401	0.0000	0.2618
Control Variables - *Corporate Governance Variables*								
PERNEXBD$_{it}$	0.0030	0.4002	0.0008	0.8121	-0.0039	0.1555	-0.0009	0.6120
BODMEET$_{it}$	-0.0003	0.1087	-0.0002	0.1580	-0.0002	0.2765	-0.0002	0.0069
FINEXPAC$_{it}$	0.0012	0.3988	0.0009	0.5780	-0.0035	0.3320	-0.0002	0.8564
Control Variables - *Industry Variables*								
ENERGY$_{it}$	0.0010	0.6984	-0.0028	0.7764	0.0062	0.0188	-0.0020	0.8250
MATERIALS$_{it}$	0.0005	0.8334	-0.0045	0.6588	-0.0007	0.7645	-0.0052	0.5751
INDUSTRIALS$_{it}$	0.0006	0.6623	-0.0053	0.6055	-0.0009	0.5844	-0.0054	0.5623
CONSUMERDISC$_{it}$	0.0000	0.9982	-0.0048	0.6390	0.0000	0.9849	-0.0052	0.5794
CONSUMERSTAP$_{it}$	-0.0004	0.8825	-0.0060	0.5616	-0.0004	0.8702	-0.0060	0.5225
HEALTH CARE$_{it}$	0.0029	0.2348	-0.0034	0.7293	0.0008	0.7333	-0.0035	0.7029
INFORMATION TECHNOLOGY$_{it}$	0.0085	0.0050	0.0022	0.8332	0.0044	0.1485	0.0014	0.8821
TELECOMM UNICATIONS$_{it}$	0.0072	0.0191	0.0009	0.9314	0.0039	0.2120	0.0001	0.9900
UTILITIES$_{it}$	0.0010	0.7746	-0.0052	0.6233	-0.0009	0.8061	-0.0050	0.5948
F-statistic (p-value)	3.1241	0.0000	3.1412	0.0000	1.7981	0.0341	5.8495	0.1210
Adjusted R^2	0.1459		0.1546		0.0603		0.0945	

Where:
CNON-AUDIT$_{it}$ = Auditee *i* in time period *t* is scored one (1) if the ratio of non-audit fees to total fees paid to the incumbent auditor *j* in time period *t* is less than 0.25; otherwise auditee *i* in time period *t* is scored zero (0); *SRSUBSID*$_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; *LNNBS*$_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; *ROA*$_{it}$ = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; *CURRENT*$_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; *PERNEXBD*$_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; *BODMEET*$_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*; *FINEXPAC*$_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; *ENERGY*$_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; *MATERIALS*$_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; *INDUSTRIALS*$_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; *CONSUMERDISC*$_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; *CONSUMERSTAP*$_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; *HEALTH CARE*$_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; *INFORMATION TECHNOLOGY*$_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; *TELECOMMUNICATIONS*$_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; *UTILITIES*$_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

6.3.1.4 Tenure

Table 6.6 documents the results of OLS regression using an auditor attribute measure (that is, *CTENURE*$_{it}$) as an explanatory variable in analyzing the variation of audit fees for the years – ended 2001, 2003 and 2005 and 2001 to 2005 inclusive. The results from Table 6.6 Columns 1 and 2 suggest that the coefficient on *CTENURE*$_{it}$ (the independent variable) is positive and statistically insignificant for 2001. A review of Table 6.6 Columns 3 and 5 also shows that the coefficient on *CTENURE*$_{it}$ remains positive throughout 2003 and 2005 though the p-value reduces marginally in significance (p-value=0.9055) in 2003 (see

Column 4) before becoming more significant in 2005 (see Column 6) (p-value=0.7753). Nevertheless, the relationship is not significant at conventional levels.

A further review of Table 6.6 Columns 1 and 2 indicates that the coefficient on return on assets (ROA_{it}) is negative and significant (p-value<0.01) for 2001. The strength of the relationship increases in 2003 (see Column 4) (p-value<0.01). In 2005 (see Columns 5 and 6), the coefficient on ROA_{it} becomes positive whilst the relationship between ROA_{it} and audit fees deflated by assets ($AF_{it}/ASSETS_{it}$) becomes statistically insignificant. None of the corporate governance measures prove significant explanatory variables in determining the variation of audit fees. Only three industry variables (that is, $ENERGY_{it}$, $INFORMATION\ TECHNOLOGY_{it}$ and $TELECOMMUNICATIONS_{it}$) have statistically significant relationships with $AF_{it}/ASSETS_{it}$, that is firms in the information technology (p-value<0.01) and telecommunications (p-value<0.05) industries in 2001 (see Column 2) and the energy (p-value<0.05) industry in 2005 (see Column 6) are significant. The coefficients for all the significant industry variables are positive across the observation window of 2001, 2003 and 2005 (see Table 6.6 Columns 1, 3 and 5 respectively).

The regression models run to examine the association between the independent variables and dependent variables across the observation window have an adjusted R^2 changing from 0.1443 in 2001 (see Columns 1/2), 0.1521 in 2003 (see Column 3/4) and finally 0.0549 in 2005 (see Column 5/6). Specifically, for 2001, the variables entered into the regression model explain 14.43% of the variation in the dependent variable, $AF_{it}/ASSETS_{it}$. The goodness-of-fit (that is, adjusted R^2) improves marginally in 2003 before falling markedly in 2005.

Table 6.6 Columns 7 and 8 report regression results for identical variables but with all firm-year observations from 2001, 2003 and 2005 included in one regression model (that is, n=600). Table 6.6 Column 8 suggests that the variables ROA_{it} and $BODMEET_{it}$ are significant predictors of audit fees variation. Additionally, the adjusted R^2 suggests that the variables in the regression model account for 11.83% of the change in audit fees for the period 2001 to 2005 (see Columns 7/8).

Table 6.6:
***CTENURE*$_{it}$ (Individual Score) - OLS Regression Results**
Audit Fees for 2001, 2003, 2005 and 2001 to 2005 inclusive

	2001 (n=200)		2003 (n=200)		2005 (n=200)		2001 – 2005 (n=600)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
Constant	0.0040	0.2836	0.0104	0.3233	0.0122	0.0167	0.0118	0.2100
Independent Variable								
$CTENURE_{it}$	0.0002	0.9026	0.0003	0.9055	-0.0011	0.7753	0.0004	0.7850
Control Variables - *Firm Complexity Variables*								
$SRSUBSID_{it}$	-0.0002	0.3948	-0.0001	0.5767	-0.0002	0.2981	-0.0002	0.1715
$LNNBS_{it}$	-0.0007	0.5726	-0.0011	0.3725	-0.0009	0.4388	-0.0011	0.1385
Control Variables - *Firm Risk Variables*								
ROA_{it}	-0.0037	0.0004	-0.0079	0.0000	0.0016	0.3516	-0.0033	0.0000
$CURRENT_{it}$	0.0000	0.2140	-0.0001	0.2516	0.0000	0.4812	0.0000	0.2806
Control Variables - *Corporate Governance Variables*								
$PERNEXBD_{it}$	0.0033	0.3582	0.0011	0.7486	-0.0038	0.1716	-0.0006	0.7173
$BODMEET_{it}$	-0.0003	0.1170	-0.0002	0.1647	-0.0002	0.2737	-0.0002	0.0077
$FINEXPAC_{it}$	0.0012	0.4093	0.0008	0.6281	-0.0037	0.0277	-0.0002	0.7885
Control Variables - *Industry Variables*								
$ENERGY_{it}$	0.0010	0.7065	-0.0025	0.8030	0.0063	0.0185	-0.0017	0.8557
$MATERIALS_{it}$	0.0005	0.8262	-0.0041	0.6881	-0.0006	0.8037	-0.0048	0.6093
$INDUSTRIALS_{it}$	0.0007	0.8270	-0.0050	0.6260	-0.0012	0.8807	-0.0050	0.5899
$CONSUMERDISC_{it}$	0.0000	0.9989	-0.0045	0.6617	-0.0001	0.9731	-0.0048	0.6069
$CONSUMERSTAP_{it}$	-0.0002	0.9287	-0.0055	0.5934	-0.0003	0.9151	-0.0054	0.5614
$HEALTH\ CARE_{it}$	0.0030	0.2304	-0.0030	0.7611	0.0010	0.6855	-0.0031	0.7377
$INFORMATION\ TECHNOLOGY_{it}$	0.0085	0.0048	0.0026	0.8019	0.0045	0.1436	0.0018	0.8485
$TELECOMM\ UNICATIONS_{it}$	0.0072	0.0194	0.0012	0.9057	0.0038	0.2193	0.0005	0.9587
$UTILITIES_{it}$	0.0011	0.7517	-0.0046	0.6604	-0.0006	0.8773	-0.0045	0.6379
F-statistic (p-value)	3.0982	0.0000	3.0991	0.0000	1.7504	0.0411	5.7299	0.0000
Adjusted R^2	0.1443		0.1521		0.0549		0.1183	

Where:
$CTENURE_{it}$ = Auditee *i* in time period *t* is scored one (1) if number of years the incumbent auditor *j* till time period *t* has been engaged as the principal auditor is 3 years or more; otherwise auditee *i* in time period *t* is scored zero (0); $SRSUBSID_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; $LNNBS_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; ROA_{it} = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; $CURRENT_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; $PERNEXBD_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; $BODMEET_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*; $FINEXPAC_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; $ENERGY_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; $MATERIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; $INDUSTRIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; $CONSUMERDISC_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; $CONSUMERSTAP_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; $HEALTH\ CARE_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; $INFORMATION\ TECHNOLOGY_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; $TELECOMMUNICATIONS_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; $UTILITIES_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

6.3.2 Key auditor attributes – longitudinal variations

This sub-section will outline results from examining the multivariate relationship between the four key (individual) auditor attributes of auditor brand, auditor specialization, auditor independence and auditor tenure and audit fees deflated by total assets for the financial periods 2001 to 2003, 2003 to 2005 and 2001 to 2005.

6.3.2.1 Brand

Table 6.7 documents the results of OLS regression using an auditor attribute measure (that is, $BIG4_{it}$) as an explanatory variable in analyzing changes in audit fees (that is, $AF_{it}/ASSETS_{it}$) at three points in time: the change from 2001 from 2003; the change from 2003 from 2005; and the change from 2001 from 2005. Results from Table 6.7 Columns 1 and 2 suggest that the coefficient on $BIG4_{it}$ (the independent variable) is positive and statistically insignificant for the period 2001 to 2003. A review of Table 6.7 also shows that the coefficient on $BIG4_{it}$ remains positive throughout 2003 to 2005 (see Column 3) and 2001 to 2005 (see Column 5) and the statistical significance of the relationship between $BIG4_{it}$ and the change in $AF_{it}/ASSETS_{it}$ becomes weaker over the observation window (the p-value changes from 0.4583 for the period 2001 to 2003 (see Column 2) to 0.8100 for the period 2003 to 2005 (see Column 4) and 0.7828 (see Column 6) for the period 2001 to 2005). Nevertheless, the relationship is not significant at conventional levels.

A further review of Table 6.7 indicates that the coefficient on return on assets (ROA_{it}) is negative but significant (p-value<0.05) for the period 2001 to 2003. The significance of the relationship between ROA_{it} and the change in $AF_{it}/ASSETS_{it}$, however, reduces marginally for the period 2003 to 2005 (see Column 4) (p-value<0.05) and for the period 2001 to 2005 (see Column 6) (p-value<0.05). The coefficient on ROA_{it} also becomes positive for the period 2003 to 2005 (see Column 3) and for the period 2001 to 2005 (see Column 5). None of the corporate governance and industry variables suggest any significant statistical association with the change in $AF_{it}/ASSETS_{it}$ over the observation period.

The regression models run to examine the association between the independent variables and dependent variables have an adjusted R^2 ranging from 0.0198 (change in $AF_{it}/ASSETS_{it}$ from 2001 to 2003 (see Columns 1/2)), -0.0105 (change in $AF_{it}/ASSETS_{it}$ from 2003 to 2005 (see Column 3/4)) to -0.0145 (change in $AF_{it}/ASSETS_{it}$ from 2001 to 2005 (see Column 5/6)). Specifically, for the period 2001 to 2003, the variables entered into the regression model explain only 1.98% of the change in the variation in the dependent variable, $AF_{it}/ASSETS_{it}$ with the goodness-of-fit (that is, adjusted R^2) falling even further in the subsequent periods of 2003 to 2005 and 2001 to 2005.

Table 6.7:
***BIG4*$_{it}$ (Individual Score) - OLS Regression Results**
Change in Audit Fees over 2001 to 2003, 2003 to 2005 and 2001 to 2005

	Change from 2001 to 2003 (n=200)		Change from 2003 to 2005 (n=200)		Change from 2001 to 2005 (n=200)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
Constant	0.0011	0.5808	0.0007	0.8616	0.0005	0.9142
Independent Variable						
$BIG4_{it}$	0.0002	0.4583	0.0005	0.8100	0.0006	0.7828
Control Variables - *Firm Complexity Variables*						
$SRSUBSID_{it}$	0.0000	0.9844	0.0001	0.6377	0.0001	0.6982
$LNNBS_{it}$	-0.0001	0.5776	0.0001	0.9410	0.0001	0.9680
Control Variables - *Firm Risk Variables*						
ROA_{it}	-0.0009	0.0139	0.0057	0.0158	0.0052	0.0272
$CURRENT_{it}$	0.0000	0.9278	0.0000	0.8690	0.0000	0.8236
Control Variables - *Corporate Governance Variables*						
$PERNEXBD_{it}$	-0.0006	0.3621	0.0007	0.8423	0.0018	0.6343
$BODMEET_{it}$	0.0000	0.5800	-0.0001	0.5867	-0.0001	0.5856
$FINEXPAC_{it}$	0.0001	0.6923	-0.0012	0.6235	-0.0015	0.5386
Control Variables - *Industry Variables*						
$ENERGY_{it}$	0.0000	0.9835	0.0017	0.6416	0.0024	0.5071
$MATERIALS_{it}$	-0.0005	0.8039	-0.0018	0.5468	-0.0018	0.5608
$INDUSTRIALS_{it}$	-0.0006	0.7559	-0.0020	0.5052	-0.0025	0.5066
$CONSUMERDISC_{it}$	-0.0005	0.7866	-0.0012	0.6920	-0.0011	0.7255
$CONSUMERSTAP_{it}$	-0.0006	0.7713	0.0001	0.9674	0.0001	0.9783
$HEALTH\ CARE_{it}$	-0.0006	0.7714	-0.0024	0.4706	-0.0022	0.5122
$INFORMATION\ TECHNOLOGY_{it}$	0.0000	0.9997	-0.0045	0.2893	-0.0038	0.3691
$TELECOMM\ UNICATIONS_{it}$	-0.0020	0.3400	-0.0008	0.8573	-0.0023	0.5903
$UTILITIES_{it}$	-0.0009	0.6551	-0.0008	0.8691	-0.0013	0.7962
F-statistic (p-value)	1.2361	0.2404	0.8707	0.6037	0.8220	0.6596
Adjusted R^2	0.0198		-0.0105		-0.0145	

Where:
$BIG4_{it}$ = Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is a *Big4* audit firm; otherwise auditee *i* in time period *t* is scored zero (0); $SRSUBSID_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; $LNNBS_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; ROA_{it} = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; $CURRENT_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; $PERNEXBD_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; $BODMEET_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*; $FINEXPAC_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; $ENERGY_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; $MATERIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; $INDUSTRIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; $CONSUMERDISC_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; $CONSUMERSTAP_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; $HEALTH\ CARE_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; $INFORMATION\ TECHNOLOGY_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; $TELECOMMUNICATIONS_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; $UTILITIES_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

6.3.2.2 Specialization

Table 6.8 documents the results of OLS regression using an auditor attribute measure (that is, $SPECIALIST_{it}$) as an explanatory variable in analyzing changes in audit fees (that is, $AF_{it}/ASSETS_{it}$) at three points in time: the change from 2001 from 2003; the change from 2003 from 2005; and the change from 2001 from 2005. The results from Table 6.8 Column 1 and 2 suggest that the coefficient on $SPECIALIST_{it}$ (the independent variable) is

positive and statistically insignificant for the period 2001 to 2003. A review of Table 6.8 also shows that the coefficient on $SPECIALIST_{it}$ remains positive throughout 2003 to 2005 (see Column 3) and 2001 to 2005 (see Column 5) and the statistical significance of the relationship between $SPECIALIST_{it}$ and the change in $AF_{it}/ASSETS_{it}$ becomes stronger over the observation window (the p-value changes from 0.7602 for the period 2001 to 2003 (see Column 2) to 0.1882 for the period 2003 to 2005 (see Column 4) and 0.1574 for the period 2001 to 2005 (see Column 6)). Nevertheless, the relationship is not significant at conventional levels.

A further review of Table 6.8 Columns 1 and 2 indicates that the coefficient on return on assets (ROA_{it}) is negative but significant (p-value<0.05) for the period 2001 to 2003. The significance of the relationship between ROA_{it} and the change in $AF_{it}/ASSETS_{it}$, however, reduces marginally for the period 2003 to 2005 (see Column 4) (p-value<0.05) and for the period 2001 to 2005 (see Column 6) (p-value<0.05). The coefficient on ROA_{it} also becomes positive for the period 2003 to 2005 (see Column 3) and for the period 2001 to 2005 (see Column 5). None of the corporate governance and industry variables suggest any significant statistical association with the change in $AF_{it}/ASSETS_{it}$ over the observation period.

The regression models run to examine the association between the independent variables and dependent variables have an adjusted R^2 ranging from 0.0173 (change in $AF_{it}/ASSETS_{it}$ from 2001 to 2003 (see Columns 1/2)), 0.0097 (change in $AF_{it}/ASSETS_{it}$ from 2003 to 2005 (see Columns 3/4)) to 0.0081 (change in $AF_{it}/ASSETS_{it}$ from 2001 to 2005 (see Columns 5/6)). Specifically, for the period 2001 to 2003, the variables entered into the regression model explain only 1.73% of the change in the variation in the dependent variable, $AF_{it}/ASSETS_{it}$ with the goodness-of-fit (that is, adjusted R^2) falling even further in the subsequent periods of 2003 to 2005 and 2001 to 2005.

Table 6.8:
***SPECIALIST*$_{it}$ (Individual Score) - OLS Regression Results**
Change in Audit Fees over 2001 to 2003, 2003 to 2005 and 2001 to 2005

	Change from 2001 to 2003 (n=200)		Change from 2003 to 2005 (n=200)		Change from 2001 to 2005 (n=200)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
Constant	0.0013	0.5293	0.0036	0.4311	0.0041	0.3601
Independent Variable						
SPECIALIST$_{it}$	0.0001	0.7602	0.0024	0.1882	0.0025	0.1574
Control Variables - *Firm Complexity Variables*						
SRSUBSID$_{it}$	0.0000	0.8671	0.0001	0.6317	0.0001	0.6803
LNNBS$_{it}$	-0.0002	0.5448	0.0000	0.9804	0.0000	0.9762
Control Variables - *Firm Risk Variables*						
ROA$_{it}$	-0.0008	0.0184	0.0052	0.0253	0.0047	0.0401
CURRENT$_{it}$	0.0000	0.9158	0.0000	0.8051	0.0000	0.7432
Control Variables - *Corporate Governance Variables*						
PERNEXBD$_{it}$	-0.0006	0.3619	-0.0049	0.1947	-0.0053	0.1575
BODMEET$_{it}$	0.0000	0.6654	-0.0001	0.4869	-0.0001	0.4804
FINEXPAC$_{it}$	0.0001	0.7436	-0.0012	0.5882	-0.0013	0.5616
Control Variables - *Industry Variables*						
ENERGY$_{it}$	-0.0001	0.9535	0.0020	0.5710	0.0027	0.4421
MATERIALS$_{it}$	-0.0006	0.7719	-0.0015	0.6105	-0.0014	0.6378
INDUSTRIALS$_{it}$	-0.0007	0.7249	-0.0017	0.6020	-0.0015	0.6150
CONSUMERDISC$_{it}$	-0.0007	0.7498	-0.0017	0.5745	-0.0016	0.5880
CONSUMERSTAP$_{it}$	-0.0007	0.7254	0.0004	0.9030	0.0004	0.9031
HEALTH CARE$_{it}$	-0.0006	0.7635	-0.0027	0.4272	-0.0024	0.4680
INFORMATION TECHNOLOGY$_{it}$	-0.0001	0.9588	-0.0045	0.2756	-0.0038	0.3550
TELECOMM UNICATIONS$_{it}$	-0.0020	0.3283	-0.0005	0.8996	-0.0020	0.6276
UTILITIES$_{it}$	-0.0010	0.6263	-0.0005	0.9164	-0.0009	0.8469
F-statistic (p-value)	1.2061	0.2634	1.1224	0.3372	1.1017	0.3563
Adjusted R^2	0.0173		0.0097		0.0081	

Where:
SPECIALIST$_{it}$ = Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is an industry specialist in industry *k*; otherwise auditee *i* in time period *t* is scored zero (0); *SRSUBSID*$_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; *LNNBS*$_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; *ROA*$_{it}$ = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; *CURRENT*$_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; *PERNEXBD*$_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; *BODMEET*$_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*; *FINEXPAC*$_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; *ENERGY*$_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; *MATERIALS*$_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; *INDUSTRIALS*$_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; *CONSUMERDISC*$_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; *CONSUMERSTAP*$_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; *HEALTH CARE*$_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; *INFORMATION TECHNOLOGY*$_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; *TELECOMMUNICATIONS*$_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; *UTILITIES*$_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

6.2.2.3 Independence

Table 6.9 documents the results of OLS regression using an auditor attribute measure (that is, *CNON-AUDIT*$_{it}$) as an explanatory variable in analyzing changes in audit fees (that is, *AF*$_{it}$*/ASSETS*$_{it}$) at three points in time: the change from 2001 from 2003; the change from 2003 from 2005; and the change from 2001 from 2005. The results from Table

6.9 Columns 1 and 2 suggest that the coefficient on $CNON\text{-}AUDIT_{it}$ (the independent variable) is positive and statistically insignificant for the period 2001 to 2003. A review of Table 6.9 also shows that the coefficient on $CNON\text{-}AUDIT_{it}$ remains positive throughout 2003 to 2005 (see Column 3) and 2001 to 2005 (see Column 5) and the statistical significance of the relationship between $CNON\text{-}AUDIT_{it}$ and the change in $AF_{it}/ASSETS_{it}$ becomes weaker for the period 2003 to 2005 (the p-value changes from 0.7815 for the period 2001 to 2003 (see Column 2) to 0.9103 for the period 2003 to 2005 (see Column 4) before becoming stronger for the period 2001 to 2005 (see Column 6) (p-value=0.8885). Nevertheless, the relationship is not significant at conventional levels.

A further review of Table 6.9 Columns 1 and 2 indicates that the coefficient on return on assets (ROA_{it}) is negative but significant (p-value<0.05) for the period 2001 to 2003. The significance of the relationship between ROA_{it} and the change in $AF_{it}/ASSETS_{it}$, however, reduces for the period 2003 to 2005 (see Column 4) (p-value<0.05) and for the period 2001 to 2005 (see Column 6) (p-value<0.05). The coefficient on ROA_{it} also becomes positive for the period 2003 to 2005 (see Column 3) and for the period 2001 to 2005 (see Column 5). None of the corporate governance and industry variables suggest any significant statistical association with the change in $AF_{it}/ASSETS_{it}$ over the observation period.

The regression models run to examine the association between the independent variables and dependent variables have an adjusted R^2 ranging from 0.0172 (change in $AF_{it}/ASSETS_{it}$ from 2001 to 2003 (see columns 1/2)), 0.0004 (change in $AF_{it}/ASSETS_{it}$ from 2003 to 2005 (see Columns 3/4)) to -0.0027 (change in $AF_{it}/ASSETS_{it}$ from 2001 to 2005 (see Columns 5/6)). Specifically, for the period 2001 to 2003, the variables entered into the regression model explain only 1.72% of the change in the variation in the dependent variable, $AF_{it}/ASSETS_{it}$ with the goodness-of-fit (that is, adjusted R^2) falling even further in the subsequent periods of 2003 to 2005 and 2001 to 2005.

Table 6.9:
***CNON-AUDIT*$_{it}$ (Individual Score) - OLS Regression Results**
Change in Audit Fees over 2001 to 2003, 2003 to 2005 and 2001 to 2005

	Change from 2001 to 2003 (n=200)		Change from 2003 to 2005 (n=200)		Change from 2001 to 2005 (n=200)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
Constant	0.0012	0.5729	0.0052	0.2524	0.0058	0.1958
Independent Variable						
CNON-AUDIT$_{it}$	0.0001	0.7815	0.0002	0.9103	0.0002	0.8885
Control Variables - *Firm Complexity Variables*						
SRSUBSID$_{it}$	0.0000	0.8304	0.0001	0.6814	0.0001	0.7339
LNNBS$_{it}$	-0.0001	0.5705	0.0000	0.9877	-0.0001	0.9433
Control Variables - *Firm Risk Variables*						
ROA$_{it}$	-0.0009	0.0166	0.0054	0.0193	0.0050	0.0306
CURRENT$_{it}$	0.0000	0.8877	0.0000	0.8876	0.0000	0.8319
Control Variables - *Corporate Governance Variables*						
PERNEXBD$_{it}$	-0.0006	0.3739	-0.0054	0.1543	-0.0058	0.1217
BODMEET$_{it}$	0.0000	0.6527	-0.0001	0.4627	-0.0001	0.4548
FINEXPAC$_{it}$	0.0001	0.7361	-0.0012	0.6072	-0.0012	0.5808
Control Variables - *Industry Variables*						
ENERGY$_{it}$	0.000	0.9898	0.0020	0.5691	0.0028	0.4412
MATERIALS$_{it}$	-0.0005	0.8210	-0.0016	0.5940	-0.0015	0.6205
INDUSTRIALS$_{it}$	-0.0006	0.7774	-0.0019	0.5990	-0.0020	0.6200
CONSUMERDISC$_{it}$	-0.0005	0.7902	-0.0013	0.6597	-0.0012	0.6807
CONSUMERSTAP$_{it}$	-0.0006	0.7817	0.0003	0.9338	0.0003	0.9350
HEALTH CARE$_{it}$	-0.0005	0.8038	-0.0023	0.4958	-0.0020	0.5462
INFORMATION TECHNOLOGY$_{it}$	0.0000	0.9981	-0.0044	0.2954	-0.0036	0.3800
TELECOMM UNICATIONS$_{it}$	-0.0019	0.3468	-0.0005	0.9082	-0.0020	0.6371
UTILITIES$_{it}$	-0.0009	0.6651	-0.0005	0.9220	-0.0009	0.8547
F-statistic (p-value)	1.2050	0.2642	1.0046	0.4539	0.9664	0.4953
Adjusted R^2	0.0172		0.0004		-0.0027	

Where:
CNON-AUDIT$_{it}$ = Auditee *i* in time period *t* is scored one (1) if the ratio of non-audit fees to total fees paid to the incumbent auditor *j* in time period *t* is less than 0.25; otherwise auditee *i* in time period *t* is scored zero (0); *SRSUBSID*$_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; *LNNBS*$_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; *ROA*$_{it}$ = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; *CURRENT*$_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; *PERNEXBD*$_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; *BODMEET*$_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*; *FINEXPAC*$_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; *ENERGY*$_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; *MATERIALS*$_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; *INDUSTRIALS*$_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; *CONSUMERDISC*$_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; *CONSUMERSTAP*$_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; *HEALTH CARE*$_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; *INFORMATION TECHNOLOGY*$_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; *TELECOMMUNICATIONS*$_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; *UTILITIES*$_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

6.3.2.4 Tenure

Table 6.10 documents the results of OLS regression using an auditor attribute measure (that is, *CTENURE*$_{it}$) as an explanatory variable in analyzing changes in audit fees (that is, *AF*$_{it}$*/ASSETS*$_{it}$) at three points in time: the change from 2001 from 2003; the change from 2003 from 2005; and the change from 2001 from 2005. The results from Table 6.10

Columns 1 and 2 suggest that the coefficient on $CTENURE_{it}$ (the independent variable) is negative and statistically insignificant for the period 2001 to 2003. A review of Table 6.10 also shows that the coefficient on $CTENURE_{it}$ remains negative throughout 2003 to 2005 (see Column 3) and 2001 to 2005 (see Column 5) and the statistical significance of the relationship between $CTENURE_{it}$ and the change in $AF_{it}/ASSETS_{it}$ becomes stronger (the p-value changes from 0.5850 for the period 2001 to 2003 (see Column 2) to 0.2892 for the period 2003 to 2005 (see Column 4) and 0.2856 for the period 2001 to 2005 (see Column 6). Nevertheless, the relationship is not significant at conventional levels.

A further review of Table 6.10 Columns 1 and 2 indicates that the coefficient on return on assets (ROA_{it}) is negative but significant (p-value<0.05) for the period 2001 to 2003. The significance of the relationship between ROA_{it} and the change in $AF_{it}/ASSETS_{it}$, however, increases for the period 2003 to 2005 (see Column 4) (p-value<0.05) before becoming weaker for the period 2001 to 2005 (see Column 6) (p-value<0.05). The coefficient on ROA_{it} also becomes positive for the period 2003 to 2005 (see Column 3) and for the period 2001 to 2005 (see Column 5). None of the corporate governance and industry variables suggest any significant statistical association with the change in $AF_{it}/ASSETS_{it}$ over the observation period.

The regression models run to examine the association between the independent variables and dependent variables have an adjusted R^2 ranging from 0.0184 (change in $AF_{it}/ASSETS_{it}$ from 2001 to 2003 (see Columns 1/2)), 0.0064 (change in $AF_{it}/ASSETS_{it}$ from 2003 to 2005 (see Columns 3/4)) to 0.0034 (change in $AF_{it}/ASSETS_{it}$ from 2001 to 2005 (see Columns 5/6)). Specifically, for the period 2001 to 2003, the variables entered into the regression model explain only 1.84% of the change in the variation in the dependent variable, $AF_{it}/ASSETS_{it}$ with the goodness-of-fit (that is, adjusted R^2) falling even further in the subsequent periods of 2003 to 2005 and 2001 to 2005.

Table 6.10:
***CTENURE*$_{it}$ (Individual Score) - OLS Regression Results**
Change in Audit Fees over 2001 to 2003, 2003 to 2005 and 2001 to 2005

	Change from 2001 to 2003 (n=200)		Change from 2003 to 2005 (n=200)		Change from 2001 to 2005 (n=200)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value
Constant	0.0015	0.4801	0.0109	0.1122	0.0116	0.0898
Independent Variable						
$CTENURE_{it}$	-0.0002	0.5850	-0.0056	0.2892	-0.0056	0.2856
Control Variables - *Firm Complexity Variables*						
$SRSUBSID_{it}$	0.0000	0.8620	0.0001	0.6795	0.0001	0.7337
$LNNBS_{it}$	-0.0002	0.5471	0.0000	0.9978	-0.0001	0.9517
Control Variables - *Firm Risk Variables*						
ROA_{it}	-0.0009	0.0156	0.0061	0.0110	0.0056	0.0177
$CURRENT_{it}$	0.0000	0.8996	0.0000	0.8826	0.0000	0.8249
Control Variables - *Corporate Governance Variables*						
$PERNEXBD_{it}$	-0.0006	0.3276	-0.0056	0.1340	-0.0061	0.1042
$BODMEET_{it}$	0.0000	0.6578	-0.0001	0.4416	-0.0002	0.4337
$FINEXPAC_{it}$	0.0001	0.7156	-0.0011	0.6121	-0.0012	0.5869
Control Variables - *Industry Variables*						
$ENERGY_{it}$	0.0000	0.9907	0.0023	0.5228	0.0030	0.4005
$MATERIALS_{it}$	-0.0005	0.8125	-0.0017	0.5638	-0.0016	0.5884
$INDUSTRIALS_{it}$	-0.0006	0.7714	-0.0019	0.5602	-0.0015	0.0013
$CONSUMERDISC_{it}$	-0.0006	0.7833	-0.0014	0.6498	-0.0013	0.6709
$CONSUMERSTAP_{it}$	-0.0006	0.7726	0.0002	0.9631	0.0001	0.9661
$HEALTH\ CARE_{it}$	-0.0005	0.7997	-0.0020	0.5474	-0.0017	0.5999
$INFORMATION\ TECHNOLOGY_{it}$	0.0000	0.9887	-0.0039	0.3520	-0.0032	0.4462
$TELECOMM\ UNICATIONS_{it}$	-0.0020	0.3389	-0.0006	0.8925	-0.0021	0.6225
$UTILITIES_{it}$	-0.0009	0.6628	-0.0002	0.9666	-0.0006	0.8971
F-statistic (p-value)	1.2195	0.2529	1.0806	0.3764	1.0428	0.4140
Adjusted R^2	0.0184		0.0064		0.0034	

Where:
$CTENURE_{it}$ = Auditee *i* in time period *t* is scored one (1) if number of years the incumbent auditor *j* till time period *t* has been engaged as the principal auditor is 3 years or more; otherwise auditee *i* in time period *t* is scored zero (0); $SRSUBSID_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; $LNNBS_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; ROA_{it} = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; $CURRENT_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; $PERNEXBD_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; $BODMEET_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*; $FINEXPAC_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; $ENERGY_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; $MATERIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; $INDUSTRIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; $CONSUMERDISC_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; $CONSUMERSTAP_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; $HEALTH\ CARE_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; $INFORMATION\ TECHNOLOGY_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; $TELECOMMUNICATIONS_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; $UTILITIES_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

6.4 SUMMARY OF THE CHAPTER

Chapter Six reported the empirical results of this study. Initially, regression results examining the relationship between a composite score (capturing four key auditor attributes) against audit fees deflated by total assets is examined on both a cross-sectional and longitudinal time-scale. Subsequently, the regression results are re-run but with the four

auditor attributes regressed (individually) against audit fees deflated by total assets; once again, both cross-sectionally and longitudinally.

Chapter Seven will discuss the results of the robustness tests and sensitivity analysis completed. Specifically, the sample in this study will be partitioned by key auditee characteristics and corporate governance features and multivariate analyses re-run. Subsequently, alternative measures of both audit fees and auditor attributes will be utilized to assess the robustness of this study's main results. Finally, *pre-CLERP 9* and *post-CLERP 9* analyses will also be completed.

CHAPTER SEVEN:
ROBUSTNESS AND SENSITIVITY ANALYSIS

7.1 OVERVIEW OF THE CHAPTER

Chapter Six presented the results of the OLS regressions (both cross-sectional and longitudinal variations) on the relationship between audit fees and the composite auditor attributes examined in this study. Subsequently, individual key auditor attributes and the extent of the association with audit fees were also examined.

Chapter Seven discusses the robustness and sensitivity of the main results in Chapter Six. Initially, the sample is partitioned by four key auditee characteristics and the regression models in Chapter Six individually re-run (that is, using a dichotomous composite score capturing four key auditor attributes. Subsequently, the sample is partitioned by three key corporate governance features and the main results in Chapter Six re-run. Alternative measures of audit fees and auditor attributes are then utilized before a *pre-* versus *post-CLERP 9* analyses undertaken of the main results. Finally, a summary is of Chapter Seven provided.

7.2 PARTITIONING OF THE SAMPLE BY AUDITEE CHARACTERISTICS

The following section will discuss the robustness and sensitivity of the main results in Chapter Six. Initially, the sample is partitioned by the following four auditee characteristics: firm size, firm complexity, firm risk and industry. The following approach is utilized when partitioning the sample in the following manner: (1) for each individual year (that is, 2001, 2003 and 2005), the relevant split point for the auditee characteristics is identified;[52] (2) the sample is then partitioned per individual year based on the identified split point; (3) the individual year-based split points are re-combined into a pooled sample of 600 observations; and (4) the robustness and sensitivity tests are then run using the pooled sample. Sections 7.2.1 to 7.2.4 will discuss the results of examining the association between a dichotomous composite score capturing four key auditor attributes and audit fees deflated by total assets after the sample is partitioned by the four auditee characteristics.

7.2.1 Composite score and firm size

Table 7.1 shows the regression results when the sample is partitioned by firm size and the main multivariate regression results in Chapter Six re-run. Partitioning by firm size is undertaken to determine if the main regression results in Chapter Six are influenced by firm size effects. Specifically, the Table 7.1 regressions test whether larger or smaller firms in the sample (as measured by market capitalization ($MARCAP_{it}$)) are driving the main regression results.

[52] The split point for each of the four auditee characteristics is the median.

Table 7.1:
AA_{it} (Composite Score) - OLS Regression Results
Partitioning by Firm Size
Audit Fees for 2001 to 2005 inclusive

	2001 – 2005 (n=300)		2001 – 2005 (n=300)	
	Large Firms		Small Firms	
	Coeff	p-value	Coeff	p-value
Constant	0.0068	0.0140	0.0159	0.1326
Independent Variable				
AA_{it}	-0.0001	0.9258	-0.0002	0.8219
Control Variables - *Firm Complexity Variables*				
$SRSUBSID_{it}$	0.0000	0.7424	-0.0003	0.1349
$LNNBS_{it}$	-0.0012	0.1703	-0.0010	0.3757
Control Variables - *Firm Risk Variables*				
ROA_{it}	-0.0030	0.0008	-0.0034	0.0136
$CURRENT_{it}$	0.0000	0.3677	-0.0001	0.1298
Control Variables - *Corporate Governance Variables*				
$PERNEXBD_{it}$	0.0021	0.3479	-0.0034	0.2173
$BODMEET_{it}$	-0.0004	0.0003	-0.0001	0.5530
$FINEXPAC_{it}$	0.0017	0.1593	-0.0018	0.1944
Control Variables - *Industry Variables*				
$ENERGY_{it}$	0.0008	0.6348	0.0004	0.9707
$MATERIALS_{it}$	-0.0050	0.4058	-0.0060	0.5712
$INDUSTRIALS_{it}$	-0.0001	0.9557	-0.0071	0.5010
$CONSUMERDISC_{it}$	-0.0004	0.8262	-0.0065	0.5312
$CONSUMERSTAP_{it}$	-0.0002	0.8894	-0.0074	0.4879
$HEALTH\ CARE_{it}$	0.0020	0.2450	-0.0047	0.6467
$INFORMATION\ TECHNOLOGY_{it}$	0.0048	0.0343	0.0008	0.9378
$TELECOMM\ UNICATIONS_{it}$	0.0080	0.0010	-0.0034	0.7493
$UTILITIES_{it}$	0.0007	0.7858	-0.0067	0.5331
F-statistic (p-value)	4.1246	0.0000	3.0865	0.0000
Adjusted R^2	0.1433		0.1061	

Where:
AA_{it} = $\sum$ ($BIG4_{it}$, $SPECIALIST_{it}$, $CNON\text{-}AUDIT_{it}$, $CTENURE_{it}$). A composite dichotomous score based on the four proxy measures for auditor attributes: *Big4*, industry specialization, provision of non-audit services and length of tenure; $SRSUBSID_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; $LNNBS_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; ROA_{it} = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; $CURRENT_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; $PERNEXBD_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; $BODMEET_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*; $FINEXPAC_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; $ENERGY_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; $MATERIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; $INDUSTRIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; $CONSUMERDISC_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; $CONSUMERSTAP_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; $HEALTH\ CARE_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; $INFORMATION\ TECHNOLOGY_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; $TELECOMMUNICATIONS_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; $UTILITIES_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

The regression results in Table 7.1 support the main results of this study. Specifically, the results from Table 7.1 Columns 1 to 4 suggest that the coefficient on AA_{it} (the independent variable) is negative and statistically insignificant for 2001 to 2005 for both large firms (p-value = 0.9258 (see Column 2)) and small firms (p-value = 0.8219 (see Column 4)) in the sample. Table 7.1 results clearly support the main results shown in Chapter Six, that is, the dichotomous composite score capturing four key auditor attributes is not significantly associated with audit fees even after partitioning the sample by firm size.

7.2.2 Composite score and firm complexity

Table 7.2 shows the regression results when the sample is partitioned by firm complexity and the main multivariate regression results in Chapter Six re-run. Partitioning by firm complexity is undertaken to determine if the main regression results are influenced by firm complexity effects. Specifically, the Table 7.2 regressions test whether more or less complex firms in the sample (as measured by the square root of the number of subsidiaries for each firm ($SRSUBSID_{it}$)) are driving the main regression results.

Table 7.2:
AA_{it} (Composite Score) - OLS Regression Results
Partitioning by Firm Complexity
Audit Fees for 2001 to 2005 inclusive

	2001 – 2005 (n=300)		2001 – 2005 (n=300)	
	Complex Firms		**Less Complex Firms**	
	Coeff	p-value	Coeff	p-value
Constant	0.0095	0.0038	0.0123	0.1714
Independent Variable				
AA_{it}	0.0000	0.9753	-0.0004	0.5364
Control Variables - *Firm Complexity Variables*				
$SRSUBSID_{it}$	-0.0001	0.5364	-0.0002	0.2104
$LNNBS_{it}$	-0.0018	0.0928	-0.0005	0.5775
Control Variables - *Firm Risk Variables*				
ROA_{it}	-0.0038	0.0002	-0.0018	0.1512
$CURRENT_{it}$	0.0000	0.4503	0.0000	0.1738
Control Variables - *Corporate Governance Variables*				
$PERNEXBD_{it}$	0.0005	0.8652	-0.0023	0.3116
$BODMEET_{it}$	-0.0006	0.0000	0.0001	0.6336
Control Variables - *Industry Variables*				
$ENERGY_{it}$	-0.0001	0.9653	0.0016	0.8563
$MATERIALS_{it}$	-0.0004	0.7090	-0.0056	0.5325
$INDUSTRIALS_{it}$	-0.0009	0.6590	-0.0054	0.5484
$CONSUMERDISC_{it}$	-0.0002	0.9365	-0.0044	0.6181
$CONSUMERSTAP_{it}$	-0.0006	0.7678	-0.0053	0.5531
$HEALTH\ CARE_{it}$	0.0039	0.0616	-0.0045	0.6039
$INFORMATION\ TECHNOLOGY_{it}$	0.0048	0.0737	0.0031	0.7297
$TELECOMM\ UNICATIONS_{it}$	0.0087	0.0006	-0.0028	0.7551
$UTILITIES_{it}$	0.0007	0.8036	-0.0047	0.6156
F-statistic (p-value)	4.6511	0.0000	3.3953	0.0000
Adjusted R^2	0.1634		0.1199	

Where:
AA_{it} = $\sum$ ($BIG4_{it}$, $SPECIALIST_{it}$, $CNON\text{-}AUDIT_{it}$, $CTENURE_{it}$). A composite dichotomous score based on the four proxy measures for auditor attributes: *Big4*, industry specialization, provision of non-audit services and length of tenure; $SRSUBSID_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; $LNNBS_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; ROA_{it} = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; $CURRENT_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; $PERNEXBD_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; $BODMEET_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*; $FINEXPAC_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; $ENERGY_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; $MATERIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; $INDUSTRIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; $CONSUMERDISC_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; $CONSUMERSTAP_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; $HEALTH\ CARE_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; $INFORMATION\ TECHNOLOGY_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; $TELECOMMUNICATIONS_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; $UTILITIES_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

The regression results in Table 7.2 support the main results of this study. Specifically, the results from Table 7.2 Columns 1 and 2 suggest that the coefficient on AA_{it} (the independent variable) is positive and statistically insignificant for 2001 to 2005 for the more complex firms (p-value = 0.9753). In contrast, the coefficient on AA_{it} is negative (though still statistically insignificant) for the less complex firms (p-value = 0.5364) in the sample (see Columns 3 and 4). Table 7.2 results clearly support the main results in Chapter Six that the dichotomous composite score capturing four key auditor attributes is not significantly associated with audit fees even after partitioning the sample by firm complexity.

7.2.3 Composite score and firm risk

Table 7.3 shows the regression results when the sample is partitioned by firm risk and the main multivariate regression results in Chapter Six re-run. Partitioning by firm risk is undertaken to determine if the main regression results are influenced by firm risk effects. Specifically, the Table 7.3 regressions test whether more or less risky firms in the sample (as measured by the return on assets for each firm (ROA_{it})) are driving the main regression results.

Table 7.3:
AA_{it} (Composite Score) - OLS Regression Results
Partitioning by Firm Risk
Audit Fees for 2001 to 2005 inclusive

	2001 – 2005 (n=300)		2001 – 2005 (n=300)	
	Less Risky Firms		**More Risky Firms**	
	Coeff	p-value	Coeff	p-value
Constant	0.0113	0.0014	0.0101	0.2279
Independent Variable				
AA_{it}	-0.0005	0.4488	0.0002	0.7605
Control Variables - *Firm Complexity Variables*				
$SRSUBSID_{it}$	-0.0002	0.3119	-0.0003	0.1241
$LNNBS_{it}$	-0.0012	0.3258	-0.0009	0.2631
Control Variables - *Firm Risk Variables*				
ROA_{it}	-0.0026	0.0100	-0.0040	0.0054
$CURRENT_{it}$	0.0000	0.3774	-0.0002	0.1043
Control Variables - *Corporate Governance Va*riables				
$PERNEXBD_{it}$	-0.0015	0.6183	-0.0007	0.7349
$BODMEET_{it}$	-0.0002	0.1500	-0.0003	0.0045
$FINEXPAC_{it}$	-0.0019	0.1915	0.0012	0.2895
Control Variables - *Industry Variables*				
$ENERGY_{it}$	0.0040	0.0532	-0.0035	0.6615
$MATERIALS_{it}$	-0.0007	0.5320	-0.0041	0.6236
$INDUSTRIALS_{it}$	-0.0010	0.6255	-0.0030	0.7206
$CONSUMERDISC_{it}$	-0.0009	0.6882	-0.0028	0.7323
$CONSUMERSTAP_{it}$	-0.0016	0.4358	-0.0039	0.6468
$HEALTH\ CARE_{it}$	-0.0016	0.4750	0.0008	0.9176
$INFORMATION\ TECHNOLOGY_{it}$	0.0052	0.0511	0.0035	0.6752
$TELECOMM\ UNICATIONS_{it}$	0.0082	0.0173	0.0015	0.8576
$UTILITIES_{it}$	-0.0010	0.7137	-0.0034	0.6999
F-statistic (p-value)	3.3502	0.0000	3.8392	0.000
Adjusted R^2	0.1117		0.1390	

Where:
AA_{it} = $\sum$ ($BIG4_{it}$, $SPECIALIST_{it}$, $CNON\text{-}AUDIT_{it}$, $CTENURE_{it}$). A composite dichotomous score based on the four proxy measures for auditor attributes: *Big4*, industry specialization, provision of non-audit services and length of tenure; $SRSUBSID_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; $LNNBS_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; ROA_{it} = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; $CURRENT_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; $PERNEXBD_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; $BODMEET_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*; $FINEXPAC_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; $ENERGY_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; $MATERIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; $INDUSTRIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; $CONSUMERDISC_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; $CONSUMERSTAP_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; $HEALTH\ CARE_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; $INFORMATION\ TECHNOLOGY_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; $TELECOMMUNICATIONS_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; $UTILITIES_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

The regression results in Table 7.3 support the main results of this study. Specifically, the results from Table 7.3 Columns 1and 2 suggest that the coefficient on AA_{it} (the independent variable) is negative and statistically insignificant for 2001 to 2005 for the more risky firms (p-value = 0.4488). The coefficient on AA_{it} is positive (though still statistically insignificant) for the less risky firms (p-value = 0.7605) in the sample (see Columns 3 and 4). Table 7.3 results clearly supports the main results in Chapter Six that the dichotomous composite score capturing four key auditor attributes is not significantly associated with audit fees even after partitioning the sample by firm risk.

7.2.4 Composite score and firm industry

Table 7.4 shows the regression results when the sample is partitioned by industry and the main multivariate regression results in Chapter Six re-run. Partitioning by industry is undertaken to determine if the main regression results are influenced by firm industry. Specifically, the Table 7.4 regressions test whether the industry that the firm is in (as split by $Materials_{it}$, $Industrials_{it}$, $Energy_{it}$ and others) is driving the main regression results.

Table 7.4:
AA_{it} (Composite Score) - OLS Regression Results
Partitioning by Firm Industry
Audit Fees for 2001 to 2005 inclusive

	2001 – 2005 (n=270) Materials, Industrials and Energy Industries		2001 – 2005 (n=330) All Other Industries	
	Coeff	p-value	Coeff	p-value
Constant	0.0200	0.0771	0.0058	0.0132
Independent Variable				
AA_{it}	-0.0005	0.4858	0.0002	0.7443
Control Variables - *Firm Complexity Variables*				
$SRSUBSID_{it}$	-0.0002	0.4386	-0.0002	0.0882
$LNNBS_{it}$	-0.0022	0.0824	0.0000	0.9827
Control Variables - *Firm Risk Variables*				
ROA_{it}	-0.0004	0.7316	-0.0060	0.0000
$CURRENT_{it}$	0.0000	0.3005	0.0000	0.6495
Control Variables - *Corporate Governance Variables*				
$PERNEXBD_{it}$	-0.0026	0.3982	-0.0008	0.6978
$BODMEET_{it}$	-0.0003	0.0672	-0.0002	0.0420
$FINEXPAC_{it}$	-0.0017	0.2570	0.0009	0.3738
Control Variables - *Industry Variables*				
ENERGYit	-0.0011	0.9172	0.0007	0.6716
MATERIALSit	-0.0083	0.4523	-0.0008	0.7712
INDUSTRIALSit	-0.0077	0.4860	-0.0006	0.6896
CONSUMERDISCit	-0.0074	0.5064	-0.0008	0.5955
CONSUMERSTAPit	-0.0089	0.4244	-0.0008	0.6193
HEALTH CAREit	-0.0057	0.5950	0.0009	0.5871
INFORMATION TECHNOLOGYit	-0.0019	0.8626	0.0051	0.0145
TELECOMM UNICATIONSit	0.0019	0.8667	0.0005	0.8110
UTILITIESit	-0.0069	0.5515	-0.0010	0.6529
F-statistic (p-value)	2.7992	0.0000	5.5870	0.0000
Adjusted R^2		0.1021		0.1824

Where:
AA_{it} = $\sum$ ($BIG4_{it}$, $SPECIALIST_{it}$, $CNON\text{-}AUDIT_{it}$, $CTENURE_{it}$). A composite dichotomous score based on the four proxy measures for auditor attributes: *Big4*, industry specialization, provision of non-audit services and length of tenure; $SRSUBSID_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; $LNNBS_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; ROA_{it} = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; $CURRENT_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; $PERNEXBD_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; $BODMEET_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*; $FINEXPAC_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; $ENERGY_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; $MATERIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; $INDUSTRIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; $CONSUMERDISC_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; $CONSUMERSTAP_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; $HEALTH\ CARE_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; $INFORMATION\ TECHNOLOGY_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; $TELECOMMUNICATIONS_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; $UTILITIES_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

The regression results in Table 7.4 support the main results of this study. Specifically, the results from Table 7.4 Columns 1 and 2 suggest that the coefficient on AA_{it} (the independent variable) is negative and statistically insignificant for 2001 to 2005 for firms in the materials, industrials and energy Industries (p-value = 0.4858). In contrast, the coefficient on AA_{it} is positive (though still statistically insignificant) for firms in the other industries (p-value = 0.7443) in the sample (see Columns 3 and 4). Table 7.4 results clearly supports the main results in Chapter Six that the dichotomous composite score capturing four key auditor attributes is not significantly associated with audit fees even after partitioning the sample by firm industry.

7.3 PARTITIONING SAMPLE BY CORPORATE GOVERNANCE FEATURES

This section discusses the robustness and sensitivity of the main results in Chapter Six when the sample is partitioned by the following three corporate governance features: non-executive board of director members, number of board of directors meetings annually and the presence of a financial expert on the audit committee. The following approach is utilized when partitioning the sample: first, for each individual year (that is, 2001, 2003 and 2005), the relevant split point for the corporate governance features are identified;[53] second, the sample is then partitioned per individual year based on the identified split point; third, the individual year-based split points are re-combined into a pooled sample of 600 observations; and last, the robustness and sensitivity tests are then run using the pooled sample. Sections 7.3.1 to 7.3.3 discuss the results of examining the association between a dichotomous composite score capturing four key auditor attributes and audit fees deflated by total assets after the sample is partitioned by the three aforementioned corporate governance features.

7.3.1 Composite score and non-executive board of directors members

Table 7.5 shows the regression results when the sample is partitioned by non-executive members (at the 50th percentile) and the main multivariate regression results in Chapter Six re-run. Partitioning by non-executive board members is undertaken to determine if the main regression results are influenced by the percentage of non-executive board members. Specifically, the Table 7.5 regressions test whether the degree of independence of board members within the firms in the sample (as measured $PERNEXBD_{it}$) are driving the main regression results.

[53] The split point differs depending on the corporate governance feature being partitioned. Sections 7.3.1 to 7.3.3 document the individual split points.

Table 7.5:
AA_{it} (Composite Score) - OLS Regression Results
Partitioning by Non-Executive Board of Directors Members
Audit Fees for 2001 to 2005 inclusive

	2001 – 2005 (n=356)		2001 – 2005 (n=244)	
	Boards with more than 50% non-executive members		Boards with less than 50% non-executive members	
	Coeff	p-value	Coeff	p-value
Constant	0.0088	0.2034	0.0112	0.0100
Independent Variable				
AA_{it}	-0.0004	0.3503	0.0002	0.8544
Control Variables - *Firm Complexity Variables*				
$SRSUBSID_{it}$	0.0001	0.5443	-0.0005	0.0681
$LNNBS_{it}$	-0.0009	0.1707	-0.0011	0.4866
Control Variables - *Firm Risk Variables*				
ROA_{it}	-0.0059	0.0000	-0.0015	0.2225
$CURRENT_{it}$	0.0000	0.2748	-0.0001	0.2276
Control Variables - *Corporate Governance Variables*				
$PERNEXBD_{it}$	0.0005	0.7460	-0.0024	0.4817
$BODMEET_{it}$	-0.0001	0.2338	-0.0005	0.0125
$FINEXPAC_{it}$	-0.0001	0.9318	0.0004	0.8225
Control Variables - *Industry Variables*				
$ENERGY_{it}$	-0.0005	0.9376	0.0040	0.1238
$MATERIALS_{it}$	-0.0037	0.5943	-0.0008	0.8092
$INDUSTRIALS_{it}$	-0.0043	0.5309	0.0006	0.8183
$CONSUMERDISC_{it}$	-0.0042	0.5367	0.0018	0.5428
$CONSUMERSTAP_{it}$	-0.0044	0.5222	-0.0004	0.8955
$HEALTH\ CARE_{it}$	-0.0045	0.5032	0.0057	0.0463
$INFORMATION\ TECHNOLOGY_{it}$	0.0026	0.7023	0.0039	0.2955
$TELECOMM\ UNICATIONS_{it}$	0.0037	0.5891	0.0019	0.6094
$UTILITIES_{it}$	-0.0035	0.6192	0.0003	0.9430
F-statistic (p-value)	8.2275	0.0000	2.1438	0.0076
Adjusted R^2	0.2571		0.0700	

Where:
AA_{it} = $\sum$ ($BIG4_{it}$, $SPECIALIST_{it}$, $CNON\text{-}AUDIT_{it}$, $CTENURE_{it}$). A composite dichotomous score based on the four proxy measures for auditor attributes: *Big4*, industry specialization, provision of non-audit services and length of tenure; $SRSUBSID_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; $LNNBS_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; ROA_{it} = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; $CURRENT_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; $PERNEXBD_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; $BODMEET_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*; $FINEXPAC_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; $ENERGY_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; $MATERIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; $INDUSTRIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; $CONSUMERDISC_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; $CONSUMERSTAP_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; $HEALTH\ CARE_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; $INFORMATION\ TECHNOLOGY_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; $TELECOMMUNICATIONS_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; $UTILITIES_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

The regression results in Table 7.5 support the main results of this study. Specifically, the results from Table 7.5 Columns 1 and 2 suggest that the coefficient on AA_{it} (the independent variable) is negative and statistically insignificant for 2001 to 2005 for firms with board of directors comprising more than 50% non-executive members (p-value = 0.3503). In contrast, the coefficient on AA_{it} positive (though still statistically insignificant) for firms with board of directors comprising less than 50% non-executive members (p-value = 0.8544) in the sample (see Columns 3 and 4). Table 7.5 results clearly support the main results in Chapter Six that the dichotomous composite score capturing four key auditor attributes is not significantly associated with audit fees even after partitioning the sample by firms with board of directors comprising more and less than 50% non-executive members.

7.3.2 Composite score and number of board of directors meetings annually

Table 7.6 shows the regression results when the sample is partitioned by board of directors which meet at least 10 meetings per year and the main multivariate regression results in Chapter Six re-run. Partitioning by board of directors with at least 10 meetings annually is undertaken to determine if the main regression results are influenced by the number of annual board of directors meetings. Specifically, the Table 7.6 regressions test whether the number of annual board of directors meetings of firms in the sample (as measured by the number of board of directors meetings annually for each firm ($BODMEET_{it}$)) are driving the main regression results.

Table 7.6:
AA_{it} (Composite Score) - OLS Regression Results
Frequency of Annual Board of Directors Meetings
Audit Fees for 2001 to 2005 inclusive

	2001 – 2005 (n=346) Boards with at least 10 meetings annually		2001 – 2005 (n=254) Boards with less than 10 meetings annually	
	Coeff	p-value	Coeff	p-value
Constant	0.0058	0.0799	0.0070	0.4621
Independent Variable				
AA_{it}	0.0007	0.3295	-0.0007	0.1731
Control Variables - *Firm Complexity Variables*				
$SRSUBSID_{it}$	-0.0002	0.1785	0.0000	0.8004
$LNNBS_{it}$	-0.0006	0.6052	-0.0010	0.2022
Control Variables - *Firm Risk Variables*				
ROA_{it}	-0.0015	0.1149	-0.0139	0.0000
$CURRENT_{it}$	0.0000	0.3700	-0.0001	0.0716
Control Variables - *Corporate Governance Variables*				
$PERNEXBD_{it}$	-0.0008	0.7643	-0.0017	0.4070
$BODMEET_{it}$	-0.0002	0.1528	-0.0002	0.0384
$FINEXPAC_{it}$	-0.0024	0.0838	0.0025	0.0106
Control Variables - *Industry Variables*				
$ENERGY_{it}$	0.0050	0.0083	-0.0003	0.9632
$MATERIALS_{it}$	0.0065	0.0074	-0.0015	0.8717
$INDUSTRIALS_{it}$	0.0005	0.8402	-0.0002	0.9847
$CONSUMERDISC_{it}$	0.0004	0.8626	-0.0002	0.9799
$CONSUMERSTAP_{it}$	-0.0001	0.9724	0.0000	0.9963
$HEALTH\ CARE_{it}$	0.0048	0.0178	-0.0009	0.9215
$INFORMATION\ TECHNOLOGY_{it}$	0.0108	0.0000	0.0024	0.7988
$TELECOMM\ UNICATIONS_{it}$	0.0030	0.4135	0.0071	0.4556
$UTILITIES_{it}$	0.0004	0.8901	-0.0019	0.8481
F-statistic (p-value)	4.1147	0.0000	6.9050	0.0000
Adjusted R^2	0.1262		0.2841	

Where:
$AA_{it} = \sum (BIG4_{it}, SPECIALIST_{it}, CNON\text{-}AUDIT_{it}, CTENURE_{it})$. A composite dichotomous score based on the four proxy measures for auditor attributes: *Big4*, industry specialization, provision of non-audit services and length of tenure; $SRSUBSID_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; $LNNBS_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; ROA_{it} = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; $CURRENT_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; $PERNEXBD_{it}$ = The percentage of non-executive directors on the board of directors for firm *i* at time period *t*; $BODMEET_{it}$ = The number of board of directors meetings held during the year for firm *i* at time period *t*; $FINEXPAC_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; $ENERGY_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; $MATERIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; $INDUSTRIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; $CONSUMERDISC_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; $CONSUMERSTAP_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; $HEALTH\ CARE_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; $INFORMATION\ TECHNOLOGY_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; $TELECOMMUNICATIONS_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; $UTILITIES_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

The regression results in Table 7.6 support the main results of this study. Specifically, the results from Table 7.6 Columns 1 and 2 suggest that the coefficient on AA_{it} (the independent variable) is positive and statistically insignificant for 2001 to 2005 for firms with board of directors meeting at least 10 times annually (p-value = 0.3295). In contrast, coefficient on AA_{it} is negative (though still statistically insignificant) for firms with board of directors meeting less than 10 times annually (p-value = 0.1731 (see Columns 3 and 4)). Table 7.6 results clearly support the main results in Chapter Six that the dichotomous composite score capturing four key auditor attributes is not significantly associated with audit fees even after partitioning the sample by firms with board of directors meeting more and less than 10 times annually.

7.3.3 Composite score and presence of a financial expert on audit committee

Table 7.7 shows the regression results when the sample is partitioned by the presence of a financial expert on a firm's audit committee and the main multivariate regression results in Chapter Six re-run. Partitioning by the presence of a financial expert on a firm's audit committee is undertaken to determine if the main regression results are influenced by the presence of a financial expert on the audit committee. Specifically, the Table 7.7 regressions test whether the presence of a financial expert on a firm's audit committee (as measured $FINEXPAC_{it}$) are driving the main regression results.

Table 7.7:
AA_{it} (Composite Score) - OLS Regression Results
Partitioning by Presence of a Financial Expert on Audit Committee
Audit Fees for 2001 to 2005 inclusive

	2001 – 2005 (n=422)		2001 – 2005 (n=178)	
	Financial Expert on Audit Committee		No Financial Expert on Audit Committee	
	Coeff	p-value	Coeff	p-value
Constant	0.0097	0.0008	0.0048	0.0575
Independent Variable				
AA_{it}	0.0000	0.9977	-0.0002	0.7066
Control Variables - *Firm Complexity Variables*				
$SRSUBSID_{it}$	-0.0001	0.3376	-0.0002	0.2719
$LNNBS_{it}$	-0.0013	0.1726	-0.0006	0.4455
Control Variables - *Firm Risk Variables*				
ROA_{it}	-0.0022	0.0248	-0.0053	0.0000
$CURRENT_{it}$	0.0000	0.2969	-0.0001	0.2394
Control Variables - *Corporate Governance Variables*				
$PERNEXBD_{it}$	-0.0013	0.5775	-0.0001	0.9656
$BODMEET_{it}$	-0.0004	0.0019	0.0000	0.8701
$FINEXPAC_{it}$	-0.0004	0.7290	0.0002	0.8396
Control Variables - *Industry Variables*				
$ENERGY_{it}$	0.0030	0.0690	0.0008	0.8910
$MATERIALS_{it}$	-0.0007	0.7545	0.0009	0.8875
$INDUSTRIALS_{it}$	-0.0009	0.6942	0.0007	0.7507
$CONSUMERDISC_{it}$	-0.0004	0.8334	0.0000	0.9814
$CONSUMERSTAP_{it}$	-0.0008	0.6452	0.0006	0.8989
$HEALTH\ CARE_{it}$	0.0038	0.0533	-0.0005	0.6847
$INFORMATION\ TECHNOLOGY_{it}$	0.0071	0.0173	0.0054	0.0021
$TELECOMM\ UNICATIONS_{it}$	0.0057	0.0061	0.0005	0.5645
$UTILITIES_{it}$	0.0004	0.8815	0.0000	0.9897
F-statistic (p-value)	3.7068	0.0000	7.9487	0.0000
Adjusted R^2	0.0933		0.3202	

Where:
$AA_{it} = \sum (BIG4_{it}, SPECIALIST_{it}, CNON\text{-}AUDIT_{it}, CTENURE_{it})$. A composite dichotomous score based on the four proxy measures for auditor attributes: *Big4*, industry specialization, provision of non-audit services and length of tenure; $SRSUBSID_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; $LNNBS_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; ROA_{it} = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; $CURRENT_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; $PERNEXBD_{it}$ = The percentage of non-executive directors on the board of directors of directors for firm *i* at time period *t*; $BODMEET_{it}$ = The number of board of directors of directors meetings held during the year for firm *i* at time period *t*; $FINEXPAC_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; $ENERGY_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; $MATERIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; $INDUSTRIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; $CONSUMERDISC_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; $CONSUMERSTAP_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; $HEALTH\ CARE_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; $INFORMATION\ TECHNOLOGY_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; $TELECOMMUNICATIONS_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; $UTILITIES_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

The regression results in Table 7.7 support the main results of this study. Specifically, the results from Table 7.7 Columns 1 and 2 suggest that the coefficient on AA_{it} (the independent variable) is positive and statistically insignificant for 2001 to 2005 for firms with a financial expert on the audit committee (p-value = 0.9977). In contrast, the coefficient on AA_{it} is negative (though still statistically insignificant) for firms without a financial expert on the audit committee (p-value = 0.7066 (see Columns 3 and 4)). Table 7.7 results clearly support the main results in Chapter Six that the dichotomous composite score capturing four key auditor attributes is not significantly associated with audit fees even after partitioning the sample by firms with and without a financial expert on the audit committee.

7.4 ALTERNATIVE MEASURES OF AUDIT FEES

Table 7.8 shows the regression results when an alternative measure for audit fees (that is, the amount of audit fees paid by firm *i* at time period *t* deflated by total assets for firm *i* at time period *t* ($AF_{it}/ASSETS_{it}$)) is utilized and main multivariate regression results in Chapter Six re-run. Specifically, the regression models utilized to date in this study are amended to include the natural logarithm of the audit fees paid to the external auditor for the provision of external audit services for firm *i* at time period *t* (AF_{it}) as the dependent variable and, therefore, the natural logarithm of total assets for firm *i* at time period *t* ($AF_{it}/ASSETS_{it}$) is introduced into the multiple regression model as an additional control variable. The alternative measure of audit fees (as tabulated in Table 7.8) is derived to determine if the main regression results in Chapter Six are influenced by the choice of the measure of audit fees used (that is, the amount of audit fees paid by firm *i* at time period *t* deflated by total assets for firm *i* at time period *t* ($AF_{it}/ASSETS_{it}$).[54]

[54] In order to re-run the main results in Chapter Six, it is necessary to undertake the sensitivity tests (after utilizing an alternative measure of audit fees) for the individual years of 2001, 2003, 2005 and 2001 to 2005.

Table 7.8:
AA_{it} (Composite Score) - OLS Regression Results
Natural Logarithmic of Audit Fees for 2001, 2003, 2005 and 2001 to 2005 inclusive

	2001 (n=200)		2003 (n=200)		2005 (n=200)		2001 – 2005 (n=600)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
Constant	2.6716	0.0001	2.1075	0.0698	1.7628	0.0040	1.7416	0.0635
Independent Variable								
AA_{it}	0.1286	0.1267	0.1527	0.0731	0.0406	0.5066	0.1019	0.0142
Control Variables – *Firm Size Vari*able								
$LNASSETS_{it}$	0.4082	0.0000	0.4141	0.0000	0.5136	0.0000	0.4398	0.0000
Control Variables - *Firm Complexity Variables*								
$SRSUBSID_{it}$	0.1308	0.0000	0.1266	0.0000	0.0905	0.0001	0.1203	0.0000
$LNNBS_{it}$	0.2570	0.0393	0.2493	0.0456	0.1413	0.2058	0.2272	0.0008
Control Variables - *Firm Risk Variable*s								
ROA_{it}	-0.0042	0.9679	-0.1158	0.5464	0.1057	0.5053	-0.0096	0.8979
$CURRENT_{it}$	-0.0087	0.0134	-0.0141	0.2382	-0.0003	0.7798	-0.0016	0.1771
Control Variables - *Corporate Governance Variable*s								
$PERNEXBD_{it}$	0.4205	0.2548	0.1523	0.6326	0.0347	0.8901	0.1775	0.2822
$BODMEET_{it}$	0.0148	0.3936	0.0181	0.2717	0.0083	0.5375	0.0133	0.1257
$FINEXPAC_{it}$	0.3056	0.0356	0.0866	0.5951	0.0551	0.7151	0.1787	0.0372
Control Variables - *Industry Variables*								
$ENERGY_{it}$	0.1390	0.6098	0.8255	0.3879	-0.0063	0.9792	0.7950	0.3654
$MATERIALS_{it}$	-0.0697	0.7584	0.6117	0.5367	-0.1998	0.3240	0.6092	0.4934
$INDUSTRIALS_{it}$	-0.0762	0.7020	0.6347	0.5243	-0.1550	0.4380	0.7136	0.4232
$CONSUMERDISC_{it}$	-0.0992	0.6685	0.5884	0.5522	-0.1106	0.5866	0.6071	0.4950
$CONSUMERSTAP_{it}$	-0.0843	0.7471	0.4921	0.6227	-0.1376	0.5554	0.5660	0.5259
$HEALTH\ CARE_{it}$	0.2415	0.3470	0.7796	0.4132	-0.0447	0.8420	0.7732	0.3785
$INFORMATION\ TECHNOLOGY_{it}$	0.4243	0.1838	1.0741	0.2852	0.4150	0.1424	1.1064	0.2163
$TELECOMM\ UNICATIONS_{it}$	0.6178	0.0560	1.1996	0.2357	0.2760	0.3313	1.1695	0.1920
$UTILITIES_{it}$	-0.1033	0.7832	0.5550	0.5884	-0.2379	0.4725	0.5947	0.5093
F-statistic (p-value)	33.2101	0.0000	30.0645	0.0000	43.5351	0.0000	103.1857	0.0000
Adjusted R^2	0.7334		0.7244		0.7842		0.7543	

Where:
AA_{it} = $\sum$ ($BIG4_{it}$, $SPECIALIST_{it}$, $CNON\text{-}AUDIT_{it}$, $CTENURE_{it}$). A composite dichotomous score based on the four proxy measures for auditor attributes: *Big4*, industry specialization, provision of non-audit services and length of tenure; $LNASSETS_{it}$ = Natural logarithmic of total assets for firm *i* at time period *t*; $SRSUBSID_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; $LNNBS_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; ROA_{it} = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; $CURRENT_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; $PERNEXBD_{it}$ = The percentage of non-executive directors on the board of directors of directors for firm *i* at time period *t*; $BODMEET_{it}$ = The number of board of directors of directors meetings held during the year for firm *i* at time period *t*; $FINEXPAC_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; $ENERGY_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; $MATERIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; $INDUSTRIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; $CONSUMERDISC_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; $CONSUMERSTAP_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; $HEALTH\ CARE_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; $INFORMATION\ TECHNOLOGY_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; $TELECOMMUNICATIONS_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; $UTILITIES_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

The regression results in Table 7.8 provide mixed support to the main results of this study. Specifically, the results from Table 7.8 suggest that the coefficient on AA_{it} (the independent variable) is positive across all time periods (see Columns 1, 3, 5 and 7) and statistically (i) insignificant for 2001 (p-value = 0.1267 (see Column 2)), (ii) significant for 2003 (p-value<0.10 (see Column 4)), (iii) insignificant for 2005 (p-value = 0.5066 (see Column 6)) and (iv) significant for the cumulative years to 2001 to 2005 (where n = 600 and

p-value<0.05 (see Column 8)). A closer examination of Table 7.8, however, suggests that the significant result between the alternative measure of audit fees (that is, $ASSETS_{it}$) and the dichotomous composite score capturing four key auditor attributes is most likely driven by the natural logarithm of total assets (p-value<0.01 across all time periods (see Columns 2, 4, 6 and 8)) which is inserted as a control variable in the multivariate regression.[55] Given the likelihood, therefore, that $ASSETS_{it}$ is driving the relationship between the predictor and dependent variables, Table 7.8 results support the main results in Chapter Six. Specifically, the dichotomous composite score capturing four key auditor attributes is not significantly associated with audit fees even after utilizing an alternative measure of audit fees.[56]

7.5 ALTERNATIVE MEASURES OF AUDITOR ATTRIBUTES

Table 7.9 shows the regression results when alternative measures of auditor attributes (that is, alternative measures to a composite dichotomous score based on the four proxy measures for auditor attributes of $BIG4_{it}$, $SPECIALIST_{it}$, $CNON\text{-}AUDIT_{it}$ and $CTENURE_{it}$) are utilized and the main multivariate regression results in Chapter Six re-run. Specifically, the regression models utilized are amended to replace the two dichotomous variables of $CNON\text{-}AUDIT_{it}$ and $CTENURE_{it}$ with continuous proxy measures of $RNON\text{-}AUDIT_{it}$ (ratio of non-audit fees to total fees paid to the auditor *j* by auditee *i* during time period *t*) and $NTENURE_{it}$ (length of time (in years up to a maximum of 10) during which the auditor has remained unchanged for auditee *i* at time period *t*).[57] The alternative measures of auditor attributes (tabulated in Table 7.9) are derived to determine if the main regression results in Chapter Six are influenced by the measures used to proxy for auditor attributes.

---

[55] Similarly, the higher adjusted R^2 in Table 7.8 compared to the much lower adjusted R^2 in Chapter Six can also be largely explained by the likelihood that the natural logarithm of total assets (p-value = 0.0000) is driving the significant result between the alternative measure of audit fees (that is, $ASSETS_{it}$) and the dichotomous composite score capturing four key auditor attributes.

[56] In addition to using the natural logarithm of total assets as a control variable in the multivariate regression, the natural logarithm of total sales was also used as a substitute to the natural logarithm of total assets. Using the the natural logarithm of total sales resulted in results and p-values that were of lesser significance than results using the natural logarithm of total assets.

[57] It is not possible to replace the two remaining dichotomous variables of $BIG4_{it}$ (Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is a *Big4* audit firm; otherwise auditee *i* in time period *t* is scored zero (0)) and $SPECIALIST_{it}$ (Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is an industry specialist in industry *k*; otherwise auditee *i* in time period *t* is scored zero (0)) as there are no continuous measures in the prior literature to operationalize the two dichotomous variables.

Table 7.9:
***BIG4*$_{it}$, *SPECIALIST*$_{it}$, *RNON-AUDIT*$_{it}$ and *NTENURE*$_{it}$ (Decomposed *AA*$_{it}$ Scores) - OLS Regression Results**
Audit Fees for 2001, 2003, 2005 and 2001 to 2005 inclusive

	2001 (n=200)		2003 (n=200)		2005 (n=200)		2001 – 2005 (n=600)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
Constant	0.0054	0.1938	0.0155	0.1380	0.0148	0.0002	0.0169	0.0709
Independent Variable								
BIG4$_{it}$	-0.0010	0.5322	-0.0007	0.6787	-0.0012	0.4295	-0.0010	0.2818
SPECIALIST$_{it}$	0.0017	0.3240	0.0026	0.1205	0.0023	0.1617	0.0020	0.0156
RNON-AUDIT$_{it}$	-0.0038	0.2102	-0.0044	0.1717	-0.0057	0.1257	-0.0046	0.0121
NTENURE$_{it}$	-0.0001	0.5268	-0.0002	0.4125	-0.0005	0.0507	-0.0002	0.0866
Control Variables - *Firm Complexity Variable*s								
SRSUBSID$_{it}$	-0.0002	0.4802	-0.0001	0.6598	-0.0001	0.7046	-0.0001	0.3677
LNNBS$_{it}$	-0.0010	0.4246	-0.0014	0.2703	-0.0012	0.3209	-0.0013	0.0639
Control Variables - *Firm Risk Variable*s								
ROA$_{it}$	-0.0032	0.0017	-0.0075	0.0001	0.0022	0.2062	-0.0028	0.0002
CURRENT$_{it}$	0.0000	0.2301	-0.0001	0.2816	0.0000	0.2077	0.0000	0.1600
Control Variables - *Corporate Governance Varia*bles								
PERNEXBD$_{it}$	0.0033	0.3520	0.0011	0.7449	-0.0031	0.2545	-0.0005	0.7801
BODMEET$_{it}$	-0.0002	0.1511	-0.0002	0.2449	-0.0001	0.4827	-0.0002	0.0194
FINEXPAC$_{it}$	0.0013	0.3478	0.0008	0.6488	-0.0033	0.0425	0.0000	0.9556
Control Variables - *Industry Variables*								
ENERGY$_{it}$	0.0021	0.4613	-0.0050	0.6096	0.0061	0.0204	-0.0039	0.6684
MATERIALS$_{it}$	0.0008	0.7099	-0.0078	0.4470	-0.0008	0.7159	-0.0077	0.4103
INDUSTRIALS$_{it}$	0.0010	0.6850	-0.0093	0.3721	-0.0009	0.7256	-0.0081	0.3832
CONSUMERDISC$_{it}$	0.0004	0.8530	-0.0078	0.4449	-0.0009	0.6906	-0.0077	0.4063
CONSUMERSTAP$_{it}$	-0.0008	0.7602	-0.0103	0.3249	-0.0011	0.6564	-0.0091	03277
HEALTH CARE$_{it}$	0.0045	0.1022	-0.0054	0.5856	0.0013	0.5951	-0.0049	0.5905
INFORMATION TECHNOLOGY$_{it}$	0.0088	0.0055	-0.0009	0.9338	0.0038	0.2134	-0.0012	0.9015
TELECOMM UNICATIONS$_{it}$	0.0086	0.0114	-0.0010	0.9204	0.0041	0.1860	-0.0015	0.8766
UTILITIES$_{it}$	0.0016	0.6815	-0.0080	0.4511	-0.0019	0.6085	-0.0075	0.4279
F-statistic (p-value)	2.8104	0.0000	2.9420	0.0000	1.9734	0.0117	5.7632	0.0000
Adjusted R^2	0.1474		0.1633		0.0850		0.1372	

Where:
BIG4$_{it}$ = Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is a *Big4* audit firm; otherwise auditee *i* in time period *t* is scored zero (0); *SPECIALIST*$_{it}$ = Auditee *i* in time period *t* is scored one (1) if the incumbent auditor *j* in time period *t* is an industry specialist in industry *k*; otherwise auditee *i* in time period *t* is scored zero (0); *RNON-AUDIT*$_{it}$ = Ratio of non-audit fees to total fees paid to the auditor *j* by auditee *i* during time period *t*; *NTENURE*$_{it}$ = Length of time (in years up to a maximum of 10) during which the auditor has remained unchanged for auditee *i* at time period *t*; *SRSUBSID*$_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; *LNNBS*$_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; *ROA*$_{it}$ = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; *CURRENT*$_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; *PERNEXBD*$_{it}$ = The percentage of non-executive directors on the board of directors of directors for firm *i* at time period *t*; *BODMEET*$_{it}$ = The number of board of directors of directors meetings held during the year for firm *i* at time period *t*; *FINEXPAC*$_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; *ENERGY*$_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; *MATERIALS*$_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; *INDUSTRIALS*$_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; *CONSUMERDISC*$_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; *CONSUMERSTAP*$_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; *HEALTH CARE*$_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; *INFORMATION TECHNOLOGY*$_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; *TELECOMMUNICATIONS*$_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; *UTILITIES*$_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

Regression results in Table 7.9 provide support for the main results of this study. Specifically, the results from Table 7.9 Columns 1, 3, 5 and 7 suggest that the coefficient on *AA*$_{it}$ (the independent variable) is negative (the exception being *SPECIALIST*$_{it}$ for the 2001 to 2005 time period) and statistically insignificant for all four decomposed auditor attributes

across the time periods of 2001, 2003 and 2005 (see Columns 2, 4, 6 and 8). However, there are two exceptions to this: (1) $NTENURE_{it}$ which is significant (p-value<0.10) in 2005 (see Column 6); and (2) three variables ($SPECIALIST_{it}$, $RNON\text{-}AUDIT_{it}$ and $NTENURE_{it}$) have significant p-values (<0.05, <0.05 and <0.10 respectively) for the period 2001- 2005 (see Column 8). Nevertheless, Table 7.9 results support the main results in Chapter Six. That is, the decomposed score capturing each of the four individual auditor attributes is not significantly associated with audit fees even after utilizing alternative measures of auditor attributes.

7.6 *PRE*- VERSUS *POST*- *CLERP 9* ANALYSIS

Table 7.10 documents the results of OLS regressions using a dichotomous composite score of auditor attributes (that is, AA_{it}) as an explanatory variable in analyzing the variation of audit fees for the years – ended 2001 and 2005 and also the change in audit fees for 2001 to 2003 compared to 2003 to 2005. The objective in undertaking this partitioning is to determine if the introduction of *CLERP 9* in 2003 improved the relationship between AA_{it} and audit fees both before and after the introduction of *CLERP 9* (that is, between 2001 and 2005) in Australia.

Table 7.10:
AA_{it} (Composite Score) - OLS Regression Results
Audit Fees for 2001, 2005 and Change in Audit Fees over 2001 to 2003 and 2003 to 2005.

	2001 (n=200)		2005 (n=200)		Change from 2001 to 2003 (n=200)		Change from 2003 to 2005 (n=200)	
	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
Constant	0.0048	0.2540	0.0122	0.0013	0.0011	0.6035	0.0036	0.4795
Independent Variable								
AA_{it}	-0.0002	0.8373	-0.0004	0.5362	0.0001	0.6061	0.0006	0.5135
Control Variables - *Firm Complexity Variable*s								
$SRSUBSID_{it}$	-0.0002	0.4067	-0.0002	0.3081	0.0000	0.8913	0.0001	0.7050
$LNNBS_{it}$	-0.0007	0.5575	-0.0010	0.4137	-0.0001	0.5750	0.0000	0.9863
Control Variables - *Firm Risk Variable*s								
ROA_{it}	-0.0036	0.0006	0.0017	0.3229	-0.0009	0.0167	0.0052	0.0281
$CURRENT_{it}$	-4.2754	0.2105	0.0000	0.4861	0.0000	0.9028	0.0000	0.8724
Control Variables - *Corporate Governance Variables*								
$PERNEXBD_{it}$	0.0031	0.3860	-0.0039	0.1584	-0.0006	0.3946	-0.0051	0.1721
$BODMEET_{it}$	-0.0003	0.1123	-0.0002	0.2890	0.0000	0.6391	-0.0001	0.4462
$FINEXPAC_{it}$	0.0012	0.3895	-0.0036	0.0304	0.0001	0.7542	-0.0012	0.5866
Control Variables - *Industry Variables*								
$ENERGY_{it}$	0.0009	0.7426	0.0062	0.0207	-0.0001	0.9665	0.0022	0.5490
$MATERIALS_{it}$	0.0004	0.8403	-0.0006	0.7719	-0.0006	0.7841	-0.0015	0.6260
$INDUSTRIALS_{it}$	0.0006	0.7520	-0.0008	0.6970	-0.0007	0.7298	-0.0016	0.7050
$CONSUMERDISC_{it}$	-0.0001	0.9605	0.0001	0.9653	-0.0006	0.7630	-0.0013	0.6708
$CONSUMERSTAP_{it}$	-0.0003	0.9027	-0.0004	0.8668	-0.0007	0.7409	0.0005	0.8825
$HEALTH\ CARE_{it}$	0.0029	0.2546	0.0010	0.6906	-0.0006	0.7696	-0.0024	0.4817
$INFORMATION\ TECHNOLOGY_{it}$	0.0084	0.0068	0.0044	0.1526	-0.0001	0.9799	-0.0043	0.3005
$TELECOMM\ UNICATIONS_{it}$	0.0071	0.0253	0.0038	0.2200	-0.0020	0.3350	-0.0004	0.9164
$UTILITIES_{it}$	0.0010	0.7858	-0.0008	0.8171	-0.0010	0.6413	-0.0002	0.9642
F-statistic (p-value)	3.1004	0.0000	1.7721	0.0378	1.2174	0.2545	1.0329	0.4241
Adjusted R^2	0.1445		0.0585		0.0182		0.0026	

Where:
$AA_{it} = \sum (BIG4_{it}, SPECIALIST_{it}, CNON\text{-}AUDIT_{it}, CTENURE_{it})$. A composite dichotomous score based on the four proxy measures for auditor attributes: *Big4*, industry specialization, provision of non-audit services and length of tenure; $SRSUBSID_{it}$ = Square root of number of subsidiaries for firm *i* at time period *t*; $LNNBS_{it}$ = Natural logarithmic of 1 plus number of business segments for firm *i* at time period *t*; ROA_{it} = Earnings before interest and tax divided by total assets for firm *i* at time period *t*; $CURRENT_{it}$ = Current assets divided by current liabilities for firm *i* at time period *t*; $PERNEXBD_{it}$ = The percentage of non-executive directors on the board of directors of directors for firm *i* at time period *t*; $BODMEET_{it}$ = The number of board of directors of directors meetings held during the year for firm *i* at time period *t*; $FINEXPAC_{it}$ = A dummy variable given the value of 1 if the audit committee consists of at least one financial expert during the year for firm *i* at time period *t*; $ENERGY_{it}$ = A dummy variable given the value of 1 if the firm is in the energy industry and 0 if otherwise; $MATERIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the materials industry and 0 if otherwise; $INDUSTRIALS_{it}$ = A dummy variable given the value of 1 if the firm is in the industrials industry and 0 if otherwise; $CONSUMERDISC_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer discretionary industry and 0 if otherwise; $CONSUMERSTAP_{it}$ = A dummy variable given the value of 1 if the firm is in the consumer staples industry and 0 if otherwise; $HEALTH\ CARE_{it}$ = A dummy variable given the value of 1 if the firm is in the health-care industry and 0 if otherwise; $INFORMATION\ TECHNOLOGY_{it}$ = A dummy variable given the value of 1 if the firm is in the information technology industry and 0 if otherwise; $TELECOMMUNICATIONS_{it}$ = A dummy variable given the value of 1 if the firm is in the telecommunications industry and 0 if otherwise; $UTILITIES_{it}$ = A dummy variable given the value of 1 if the firm is in the utilities industry and 0 if otherwise.

The results from Table 7.10 suggest that the coefficient on AA_{it} (the independent variable) is negative and statistically insignificant for the stand-alone years of 2001 and 2005. The coefficient on AA_{it} has a p-value that changes from 0.8373 in 2001 to 0.5362. As the coefficient on AA_{it} continues to be negative, it appears that, cross-sectionally, the introduction of *CLERP 9* has not improved the relationship between $AF/ASSETS_{it}$ and AA_{it}. However, when analyzing the association between changes in audit fees ($AF/ASSETS_{it}$) and auditor attributes (AA_{it}), the direction and significance of the relationship changes for the

period 2001 to 2003 relative to 2003 to 2005 (see Columns 5 to 8). Specifically, the coefficient on AA_{it} (the independent variable) is positive and statistically insignificant for the longitudinal years of 2001 to 2003 and 2003 to 2005. However, the coefficient on AA_{it} has a p-value that changes from 0.6061 in 2001 to 0.5135 suggesting that the introduction of *CLERP 9* has improved the strength relationship between $AF/ASSETS_{it}$ and AA_{it}. The relationship, however, is not statistically significant at the conventional levels.

7.7 SUMMARY OF THE CHAPTER

This chapter discussed the robustness and sensitivity of the main results in Chapter Six. The sample was partitioned by four key auditee characteristics and the regression in Chapter Six re-run using a dichotomous composite score capturing four key auditor attributes. Subsequently, the sample was partitioned by three corporate governance features and the main results in Chapter Six re-run again. Alternative measures of audit fees and auditor attributes were utilized before a *pre-* versus *post- CLERP 9* analyses undertaken of the main results.

Chapter Eight will outline the implications of the results and an overall conclusion to this study. In this respect, the major hypotheses of this study will be answered. Subsequently, the overall implications, contributions and limitations of this study will be detailed. Finally, there will be a summarization of this study.

CHAPTER EIGHT:
IMPLICATIONS AND CONCLUSIONS

8.1 OVERVIEW OF THE CHAPTER

Chapter Seven detailed the main findings from the comprehensive robustness and sensitivity tests completed. Specifically, results of regressions – based on Chapter Six analysis – were shown following partitioning of the sample by auditee characteristics and corporate governance features. In addition, the results of regressions using alternative proxy measures for both audit fees and auditor attributes were reported and discussed. Finally, an analysis of tests performed on *pre-CLERP 9* and versus *post-CLERP 9* data was reported.

Chapter Eight summarizes this study's major conclusions and implications. Justification for the acceptance or rejection of the major hypotheses based on the empirical results and analysis is detailed, in conjunction with elucidating this study's key findings. Implications and contributions are then drawn with limitations and future research opportunities also highlighted. An overarching final summary of the entire study is provided at the end of the chapter.

8.2 STUDY OVERVIEW

This study investigated both the existence and extent of competitive audit pricing in the Australian audit services market during a five-year time frame to determine if there is any evidence of cartel pricing and, hence, anti-competitive behavior by the *Big4* during the five-year period.[58] Specifically, the primary objectives of this study are twofold. First, this study sought to provide a comprehensive analysis of the association between four pivotal auditor attributes (that is, auditor brand name, industry specialization, provision of non-audit services and tenure) and audit fees paid by Australian publicly listed firms. Second, this study aimed to determine if the four aforementioned auditor attributes are influential determinants of changes in audit fees paid by Australian publicly listed firms.[59]

The empirical analysis presented in this study adopted both cross-sectional and longitudinal perspectives. The longitudinal perspective was critical given that changes in auditor attributes, and the resulting impact on audit fees (if any), provides important evidence on the extent to which auditor attributes truly impact changes in audit fees and the long-term impact of regulations governing the conduct of audits. For purposes of this study,

---

[58] The public debate on the matter of auditor concentration and the possibility of cartel pricing and anticompetitive behavior in Australia by the *Big4* has resulted in the *ACCC* examining the issue and agreeing that the international accounting firms mergers raises concerns for competition in the Australian audit market (ACCC 1999).

[59] This study also considered a number of important secondary research questions. For example, as described in Section 1.1, new corporate governance regulations impacting the auditor were introduced in Australia in the form of *CLERP 9*. A secondary aim of this study was to determine if associations between auditor attributes and audit fees *pre-CLERP 9* persist *post-CLERP 9* thereby providing insight on the extent of the success of *CLERP 9* recommendations. Please refer to Section 1.1 for a discussion of other secondary research questions explored in this study.

agency theory (within the context of contracting theory) was adopted as the overarching theoretical perspective. The agency theory theoretical perspective best befits the analytical approach of this study, and is the most relevant given the focus on a major corporate governance issue (that is, external audit).[60]

Drawing on the underlying tenets of agency theory and findings of related prior research, a number of directional hypotheses postulating the association between the four selected auditor attributes (independent variables) and audit fees (dependent variable) were developed. For purposes of empirical analysis to formally test the derived hypotheses, the independent variables of interest were regressed in two different ways with the dependent variable. First, to determine the combined influence of the four key auditor attributes on contemporaneous audit fees and changes in audit fees across time, a dichotomous composite score based on four proxy measures (that is, for auditor brand name, industry specialization, provision of non-audit services and length of tenure respectively) was developed. Second, the composite score was decomposed into each of the auditor attributes constituting the score and each individual auditor attribute was regressed against audit fees and changes in audit fees.

For the analysis, an initial pool of all Australian publicly listed firms continuously registered on the *ASX* across the observation window comprising the 2001, 2003 and 2005 calendar years was established. From this pool and after necessary exclusions, 100 of the remaining largest firms were selected from the *ASX* (based on market capitalization for the 2001 calendar year).[61] To enhance the ability to generalize results, a further 100 firms were selected using an industry derived stratified-random approach.[62] The resulting initial sample comprised 600 firm-year observations (200 observations for each of the years 2001, 2003 and 2005). Data to construct the independent and dependent variables (in addition to control variables) was extracted from annual reports collected from the *Annual Reports Collection* (Connect 4 Pty Ltd).

8.3 MAJOR HYPOTHESES CONCLUSIONS

The overall acceptance or rejection of the testable hypotheses (based on the empirical analysis in Chapters Six and Seven) is summarized in this section. Table 8.1

---

[60] Agency theorists argue that corporate governance structures (for example, board of directors, audit committees and the external audit function) are mechanisms to reduce agency conflicts (Collier and Gregory 1999; Eisenhardt 1989; Fama 1980; Hill and Jones 1992). Such mechanisms are postulated to play a crucial role in monitoring managers in order to minimize agency costs and, therefore, safeguarding shareholder wealth (Stiles and Taylor 2001).

[61] This time frame was selected as the time frame will transcend key periods in the financial accounting and corporate governance landscape in Australia such as the adoption of *IFRS*, implementation of *CLERP 9* recommendations and the *ASX CGC's* 2003 recommendations.

[62] This was done by industry in order to capture an appropriate cross-section of all the industries on the *ASX*. Additionally, the firms were the same for each of the three years examined. This has adverse implications in relation to the independence of samples and this is discussed in Section 8.6.

summarizes each testable hypotheses formulated and examined in this study, and the respective acceptance or rejection of that hypothesis. A detailed discussion of the acceptance/rejection of each hypothesis is subsequently provided in the sub-sections 8.3.1 – 8.3.10.

Table 8.1:
Acceptance/Rejection of All Hypotheses

Variable	Hypothesis	Description	Accepted/Rejected
Auditor attributes dichotomous composite score - Cross-sectional	GH_1	An auditee engaging an auditor composed of a higher set of quality attributes will pay higher audit fees than an auditee engaging an auditor with a lower set of quality attributes.	Rejected
Auditor attributes dichotomous composite score - Longitudinal	GH_2	An auditee engaging an auditor composed of a higher set of quality attributes will have higher changes in audit fees across time than an auditee engaging an auditor with a lower set of quality attributes.	Rejected
Big4 auditor - Cross-sectional	H_{1a}	An auditee engaging a *Big4* auditor will pay a higher audit fee than an auditee engaging a Non-*Big4* auditor.	Rejected
Big4 auditor - Longitudinal	H_{1b}	An auditee engaging a *Big4* auditor will have higher changes in audit fees paid across time than an auditee engaging a Non-*Big4* auditor.	Rejected
Industry specialist auditor – Cross - sectional	H_{2a}	An auditee engaging an industry specialist auditor will pay a higher audit fee than an auditee engaging a non-industry specialist auditor.	Rejected
Industry specialist auditor - Longitudinal	H_{2b}	An auditee engaging an industry specialist auditor will have higher changes in audit fees across time than an auditee engaging a non-industry specialist auditor.	Rejected
Non-audit fees - Cross-sectional	H_{3a}	An auditee paying higher non-audit fees to the auditor will also pay higher audit fees than an auditee paying lower non-audit service fees to the incumbent auditor.	Rejected
Non-audit fees - Longitudinal	H_{3b}	An auditee paying higher non-audit fees to the auditor across time will also have higher changes in audit fees than an auditee paying lower non-audit service fees to the incumbent auditor across time.	Rejected
Tenure - Cross-sectional	H_{4a}	An auditee engaging an auditor with a longer tenure period will pay higher audit fees than an auditee engaging an auditor with a shorter tenure period.	Rejected
Tenure - Longitudinal	H_{4b}	An auditee engaging an auditor with a longer tenure period will have higher changes in audit fees across time than an auditee engaging an auditor with a shorter tenure period.	Rejected

8.3.1 Auditor attributes dichotomous composite score – cross-sectional

Based on the main results shown in Table 6.1, the empirical analysis indicated an auditee engaging an auditor composed of a higher set of quality attributes did not pay significantly higher audit fees than an auditee engaging an auditor with a lower set of quality attributes. The association between the auditor attribute composite score (capturing the four key auditor attributes) and audit fees was consistently insignificant for the pooled period (that is, all firm-year observations combined) and across each individual cross-sectional year (that is, 2001, 2003 and 2005) within the observation window. Further, across each individual cross-sectional observation year, the coefficient on the auditor attribute composite score (that is, AA_{it}) did not change (either upward or downward) in magnitude or direction by any discernible trend. Therefore, GH_1 is rejected based on the main findings.

However, when conducting the sensitivity analysis, it was noted that when the natural logarithm of the audit fees paid to the external auditor for the provision of external audit services for firm *i* at time period *t* (that is, AF_{it}) is used as an alternative measure of audit fees, there was a statistically significant positive association between an auditee engaging an auditor composed of a higher set of quality attributes and the audit fee compared to an auditee engaging an auditor with a lower set of quality attributes (see Table 7.8 Column 4). Results using 2001 and 2005 firm-year observations, however, still supported the non-significance of the main results (as reported in Table 6.1). Furthermore, other sensitivity tests (for example, partition of the sample by auditee characteristics (specifically, auditee size, complexity, risk and industry) and corporate governance features (specifically, number of non-executive board of directors members, number of board of directors meetings annually and the presence of a financial expert on the audit committee) undertaken (see Tables 7.1 through 7.7)) also indicated no statistical significance in the association between an auditee engaging an auditor composed of a higher set of quality attributes and audit fees compared to an auditee engaging an auditor with a lower set of quality attributes.[63]

Whilst the results shown in Table 7.8 Column 4 related to the 2003 observation year imply some caution, as a result of the overall empirical analysis (for example, see Table 6.1, sensitivity results for 2001 and 2005 in Table 7.8 and partitioning of sample results in Tables 7.1 through 7.7), GH_1 is rejected.

8.3.2 Auditor attributes dichotomous composite score – longitudinal

The main results reported in Table 6.2 indicated no statistically significant difference in the amount of audit fees paid across time by an auditee engaging an auditor composed of a higher set of quality attributes than an auditee engaging an auditor with a lower set of quality attributes. The lack of association between the composite score capturing four key auditor attributes and changes in audit fees persisted across all of the temporal time period examined (that is, 2001 to 2003, 2003 to 2005 and 2001 to 2005, see Table 6.2 for the results). Therefore, GH_2 is rejected.

8.3.3 *Big4* auditor - cross-sectional

It was postulated in H_{1a} that an auditee engaging a *Big4* auditor will likely pay a higher audit fee than an auditee engaging a Non-*Big4* auditor. The main results tabulated in Table 6.3 fail to support H_{1a}.[64] Specifically, the empirical results indicated the lack of a

[63] Please refer to Section 7.2 for details of the process adopted.

[64] It is not possible to undertake sensitivity tests on the auditor brand name variable since there are no alternative measures in the prior literature to operationalize the variable.

statistically significant association when using either the pooled sample or samples for individual observation years (that is, 2001, 2003, and 2005). Therefore, H_{1a} is rejected.

8.3.4 *Big4* auditor - longitudinal

The premise of H1b was that an auditee engaging a *Big4* auditor will have significantly higher changes in audit fees paid across time than an auditee engaging a Non-*Big4* auditor. The main results reported in Table 6.7, however, do not support H1b. The lack of a statistically significant association persisted regardless of testing the pooled sample or using samples from individual observation years. Therefore, H_{1b} is rejected.

8.3.5 Industry specialist auditor - cross-sectional

The main results from Table 6.4 do not support H_{2a} with findings indicating a non-association when the sample tested included either all firm-year observations or only firm observations for a specific time period.[65] Specifically, H_{2a} suggested that an auditee engaging an industry specialist auditor will pay a higher audit fee than an auditee engaging a non-industry specialist auditor. Given the lack of empirical support for this association, H_{2a} is rejected.

8.3.6 Industry specialist auditor - longitudinal

For H2b it was argued an auditee engaging an auditor defined as an industry specialist will have significantly higher changes in audit fees across time than an auditee engaging a non-industry specialist auditor. Main results tabulated in Table 6.8, however, failed to indicate a significant difference. The insignificant association between industry specialist auditor and the change in audit fees paid across time persisted across all temporal time periods examined (that is, 2001 to 2003, 2003 to 2005 and 2001 to 2005). Based on these empirical findings H_{2b} is rejected.

8.3.7 Non-audit fees – cross-sectional

With regards to H_{3a}, it was postulated an auditee paying higher non-audit fees to the auditor was also likely to be paying pay higher audit fees than an auditee paying lower non-audit service fees to the incumbent auditor. Whilst a range of empirical tests were performed using the pooled sample and partitioned proportions based on temporal time period, results (as tabulated in Table 6.5) do not support H_{3a}. Therefore, based on the main results, H_{3a} is rejected.

However, some caution must be taken before universally rejecting H_{3a} when the ratio of non-audit fees to total fees paid to the auditor *j* by auditee *i* during time period *t* (that is,

[65] It is not possible to undertake sensitivity tests on the industry specialist auditor variable since there are no alternative measures in the prior literature to operationalize the variable.

RNON-AUDIT$_{it}$) is used as an alternative measure. Specifically, additional regression results (tabulated in Table 7.9 Column 8) where the alternative measure and pooled sample were used, indicated a statistically significant negative association. As the additional tests yielding a significant association appeared to be an isolated case, H_{3a} was, on the balance of all empirical tests, rejected. Nonetheless, some caution may be warranted as results may have some minor sensitivity to the manner of measuring non-audit services.

8.3.8 Non-audit fees – longitudinal

In the case of H_{3b}, it was suggested in this study that an auditee paying higher non-audit fees to the auditor will have higher changes in audit fees than an auditee paying lower non-audit service fees to the incumbent auditor. Again, main regression results (tabulated in Table 6.9) do not provide support for H_{3b}. The lack of an association was consistent for all temporal time periods examined (that is, 2001 to 2003, 2003 to 2005 and 2001 to 2005). Based on these findings, H_{3b} is rejected.

8.3.9 Tenure – cross-sectional

The main results in Table 6.6 do not support H_{4a} which predicted an auditee engaging an auditor with a longer tenure period will pay higher audit fees than an auditee engaging an auditor with a shorter tenure period. The main results held regardless of using the pooled sample of observations or the individual temporal time periods. Therefore, H_{4a} is rejected. However, though the main results did not yield a significant association, sensitivity analysis showed some statistically significant results. Specifically, when the length of time (in years to a maximum of 10) during which the auditor remained unchanged for auditee *i* at time period *t* is used, Table 7.9 Columns 6 and 8 results indicate that for the regression (a) using only 2005 firm-year observations, and (b) all firm-year observations (that is, pooled sample), there is a statistically significant negative association between an auditee engaging an incumbent auditor with a longer tenure period and the quantum of audit fees.

Overall, as the majority of empirical tests failed to support the notion an auditee engaging an auditor with a longer tenure period will pay higher audit fees than an auditee engaging an auditor with a shorter tenure period, H_{4a} is rejected though with caveat that the result be interpreted with caution.

8.3.10 Tenure – longitudinal

Finally, H_{4b} suggested an auditee engaging an auditor with a longer tenure period will have higher changes in audit fees than an auditee engaging an auditor with a shorter tenure period. The main results from Table 6.10 do not support H_{4b}. The association between an auditee engaging an auditor with a longer tenure period and changes in audit fees paid

across time is consistently insignificant for all temporal time periods examined (that is, 2001 to 2003, 2003 to 2005 and 2001 to 2005). Therefore, H_{4b} is rejected.

8.4 IMPLICATIONS OF THIS STUDY

Findings from this study provide a number of important insights into audit fee determinants and by association, audit quality. In addition, results provide important inferences with implications for key stakeholders (for example, regulators, investors, scholars and auditees/corporate management). The implications for the respective key stakeholders are discussed in the following sub-sections.

8.4.1 Regulators

The audit fee modelling literature since Simunic (1980) has clearly established the link between audit fees and audit quality. This literature maintains that a high quality audit involves a greater number of audit procedures (both in terms of nature and extent) undertaken by experienced and capable auditors. The greater the amount of audit effort inevitably results in higher audit fees (Boo and Sharma 2008; Clatworthy and Peel 2007; Hay et al. 2008; Jeong et al. 2005).

Results from this study suggested that the selected auditor attributes in this study (that is, auditor reputation, industry specialization, provision of non-audit services and auditor tenure) do not have a statistically significant association with audit fees and, therefore, are unlikely to have a significant influence on audit quality. A major consequence of this lack of association for regulators is that if they (regulators) seek to influence audit quality by introducing policies and/or requirements based on auditor attributes, this may inevitably (and potentially unwittingly) impose increased costs on firms without yielding any effective benefits. By way of illustration, regulators in the past have sought to mandate compulsory audit partner rotation with the aim of increasing audit quality. Based on the results of this study, the introduction of mandatory requirements in Australia to rotate audit partners at regular intervals may not significantly improve audit quality. Indeed, compulsory audit partner rotation may result in firms/auditees unnecessarily bearing increased costs and additional time for a new audit partner to learn the nuances of a client.

If regulators persist in attempting to influence audit quality via factors within the purview of the audit engagement, results of this study imply such factors need to be beyond the scope of the four attributes examined. Other audit engagement factors could include (but not be limited to) attempts to reduce the workload compression of external auditors (that is, increasing the duration of the busy season), increasing audit lag (that is, allowing a greater lag between balance sheet date and the date of the audit report thereby reducing the time pressure on the external auditor) and requiring the external auditor to actively utilize work

already completed by internal auditors[66] within firms (as is the case in the USA). Such factors may be more effective mechanisms in increasing audit quality.

Aside from factors associated with the audit engagement, regulators attempting to improve audit quality could aim to strengthen other key firm-level corporate governance mechanisms. For example, by regulating the structure, composition, authority levels and diligence of a firm's audit committee, there may be a greater likelihood of increased audit quality by external auditors such that benefits outweigh the costs associated with mandating audit committee features. Support for this view is based on the premise that audit committees are increasingly charged with overseeing the financial reporting process by firms (and, therefore, actively liaise with and monitor external auditors).[67] Specific ways in which regulators can improve monitoring by the audit committee of the external auditor may include requiring minimum levels of financial literacy/expertise among audit committee board members, mandating minimum audit committee meeting frequency and stipulating independence levels amongst audit committee members (Abbott, Park, and Parker 2000; Carcello and Neal 2000; DeFond et al. 2005).

8.4.2 Investors

Investors require reliable information to make economic decisions on whether to buy, sell or hold investments. A fundamental purpose of an external audit is to add credibility to the financial information reported by firms (Jubb et al. 2008; Leung et al. 2007). Therefore, the greater the quality of the external audit process, the higher the credibility of the financial information reported by firms and the better the quality financial information available to investors to base the decision-making process upon. It has also been suggested (particularly within the IPO literature) that investors can also use audit quality as a mechanism for differentiating between investment choices (Copley and Douthett 2002; Firth and Liau-Tan 1998; Lee, Stokes, Taylor, and Walter 2003b).

Traditionally, an avenue available to investors to assess auditor quality has been to use publicly available information to gather details on the identifiable auditor attributes (such as the four examined in this study) since such details are available from such sources for example, annual reports. Based on the information collected, investors can use the information to form an opinion on audit quality (Bushman and Smith 2001; Singh and Newby 2010). However, based on the findings of this study (that is, no statistically

[66] Given that internal auditors spend significant time, effort and resources in evaluating the design and monitoring the operating effectiveness of a firm's internal control structure, it is reasonable to expect external auditors to utilize such work already completed by the internal auditor in verifying the efficacy of internal controls within the financial reporting process in firms.

[67] Refer to Principle 4.2 of the *ASX CGC*'s Principles of Good Corporate Governance and Best Practice Recommendation (ASX CGC 2003).

significant determinants of audit fees and, therefore, no influential predictors of audit quality amongst the four auditor attributes investigated) investors in the Australian capital market will have difficulty in: (a) determining the expected quality of an audit; and (b) differentiating between alternative equity investment opportunities based on drawing a distinction between credibility of financial information and/or quality of the audit. Results of this study imply Australian capital market investors need to exercise caution when attempting to discern audit quality based on auditor attributes as results from this study indicate such attributes may not yield differences between auditors and the subsequent quality of the audit.

Overall, results of this study suggest Australian capital market investors may need to identify alternative ways of determining audit quality when making investing decisions within their (that is, investors') individual risk management framework rather than rely on traditional auditor attributes routinely offered in the extant literature. Other such ways may include assessing the strength of the corporate governance mechanisms within firms and giving such mechanisms greater weighting than auditor attributes when making resource-allocation decisions. Specifically, such corporate governance mechanisms may include audit committee features (see Section 8.4.1) and the board of directors. In relation to the latter, investors may be able to discern audit quality by assessing factors such as the extent of independence of board of directors, CEO duality and COE compensation packages. Given that the board of directors within a firm interacts with the external auditor during the audit of the firm's financial statements, effective board of directors may potentially increase audit quality (Andersen et al. 2003; Carcello et al. 2002; Chen and Zhou 2007). Capital market investors in Australia may also wish to assess other auditor attributes beyond the four stipulated in this study. However, the increased concentration of audit firms within the market during the past several decades that service publicly listed firms may have negated any benefits of assessing audit quality via such auditor attributes.

8.4.3 Scholars

Given the substantial role that financial reporting plays in ensuring the efficient operation of capital markets, scholars have worked prodigiously in investigating the quality of financial reporting by firms. The achievement of high quality financial reporting is underpinned by agency theory and agency theory can be mitigated by, amongst other things, audit quality.[68] Results from this study indicate that the four auditor attributes investigated are not significantly associated with audit fees. This, in turn, suggests that the four attributes do not influence audit quality and therefore do not play a significant role in reducing the

[68] Please refer to Section 3.2.1 for a more detailed discussion of agency theory.

agency costs for firms.[69] Scholars undertaking future research need to exercise caution when using auditor attributes (certainly the attributes examined in this study) as a means of measuring audit quality. Instead, scholars should consider utilizing other measures of audit quality including variables related to the audit process such as planning, evaluation of internal controls and audit risk. Whilst agency theory remains central to the issue of both audit quality and financial reporting quality, scholars may need to recognize that choice of variable selection is an important consideration when improving the explanatory power of models of audit fees.

This study utilized multiple regressions as the principal statistical tool to analyze the association between the selected auditor attributes and audit fees. Given that this study is, therefore, quantitative in nature, scholars should include the use of other qualitative techniques such as interviews and case studies.[70] This observation is particularly valid given that audit quality is a complex and multi-dimensional construct and may require a number of different approaches to capture it (audit quality) best. Finally, given that this study adopted a single nation focus (that is, Australia), this also has implications for scholars in that only one dimension of economic, social, cultural and institutional settings was examined. Scholars undertaking future research, therefore, should consider other settings across national boundaries and differing economic conditions.

8.4.4 Auditees/corporate management

The results of this study also have important implications for auditees/corporate management. Given that this study indicates that auditee (that is, demand-side) features (as opposed to the auditor (that is, supply-side) features examined) are significantly associated with audit fees, and changes in audit fees, auditees can utilize this information to their (auditee's) advantage. Specifically, the results from this study indicate that auditee size, complexity, risk and corporate governance features predominantly drive audit fee and audit fee variation. Hence, an auditee can implement initiatives in an effort to mitigate audit fee costs.

One initiative could involve the introduction of an internal audit function (*IAF*). Internal auditors within an internal audit function (*IAF*) traditionally spend at least 50 per cent of the time reviewing and monitoring the design and operating effectiveness of internal controls within the auditee (Brody and Lowe 2000; Carey, Craswell, and Simnett 2000; Goodwin-Stewart and Kent 2006b). The reviewing and monitoring of internal controls by

[69] Prior literature indicates that audit quality reduces agency costs (Abbott et al. 2007; Hoitash et al. 2007; Venkataraman et al. 2008).

[70] It may also be appropriate for scholars to adopt other quantitative techniques such as factor analysis and simultaneous equation modelling.

internal auditors has a direct impact on the quality of financial information produced by an auditee, a key responsibility of the external auditor. The external auditor, therefore, can potentially rely on the work completed by the internal auditors during the course of the external audit.[71] The reliance by the external auditor on work already completed by internal auditors can ultimately reduce the audit procedures undertaken by the external auditor and, in turn, reduce audit fees and hence, costs to auditees.[72]

Aside from development of an effective *IAF*, auditees can also reduce audit fees by strengthening key in-house corporate governance mechanisms. For instance, as elaborated in greater detail in prior sub-sections, the audit committee can play an important monitoring role. By increasing audit committee effectiveness through greater diligence, appropriate resourcing, adequate authority and structural composition, the audit committee may reduce the possibility of errors occurring in the financial statements. In turn, this can reduce reliance on the external audit leading to lower audit fees.

8.4.5 The auditing profession

Notwithstanding fears of increased supplier concentration in the audit market and (potentially) the existence/charging of cartel pricing by the remaining providers of international auditing services (that is, *Big4*), the results of this study indicate that the four pivotal auditor attributes examined in this study are not significantly associated with audit fees/variation in audit fees, that is, supply-side features of an audit engagement do not drive audit fees/variation in audit fees. Instead, results clearly indicate that demand-side features of the audit engagement largely influence audit fees/variation in audit fees (for example, auditee size, complexity, risk and corporate governance features). The absence of cartel pricing by the *Big4* has important ramifications for competition within the auditing profession in the sense that public firms continue to have choice among audit firms from which to select auditors. Although the reputation and market concentration of the *Big4* remains strong, many other international, regional and national auditing firms can also expect to gain appointment as external auditors for publicly listed firms. In essence, there remains scope for auditing firms apart from the *Big4* to audit large public firms. The existence of both choice and competition within the auditing profession, therefore, suggests that neither regulatory nor market intervention is necessary. Specifically, calls for compulsory auditor rotation, joint audit engagements and even the mandatory division/break-up of large audit firms may be unwarranted.

---

[71] This is entirely consistent with Australian Auditing Standard 610 'Using the Work of Internal Auditors'.

[72] The extent of the reliance by the external auditor on work completed by internal auditors within the *IAF* depends on a number of important factors such as the organisational status of the *IAF*, the scope of the *IAF* function, the technical competence of the internal auditors and the level of due professional care exercised by the internal auditors (AuASB 2006).

8.5 MAJOR CONTRIBUTIONS OF THIS STUDY

Results from this study make various important contributions: First, the results suggest that the four pivotal auditor attributes examined in this study are not significantly associated with variation in audit fees (both cross-sectionally and longitudinally). This provides evidence contrary to concerns about the existence/charging of cartel pricing and anticompetitive behavior by auditors who provide such services nationally and internationally (that is, *Big4*). The result, therefore, has important consequences for the efficient and effective operation of capital markets, scholars, auditors and auditee operations.

Second, by examining a number of composite auditor attributes and audit fees (both on an aggregated and dis-aggregated basis) and by focusing on the supply side of the demand for auditing, this study provides a much deeper understanding of an important monitoring mechanism (that is, auditing) and the extent to which supply-side features impact audit fees.

Third, results of this study indicate that *CLERP 9* regulations have not impacted auditor attributes significantly enough to vary audit fees.[73] Table 7.10 points out that the introduction of *CLERP 9* has only (marginally) improved the relationship between AA_{it} and audit fees between 2001 and 2005 although the association is not statistically significant at conventional levels. The non-significant result, on the other hand, may be due to the fact that other auditor attributes (not examined in this study) may have been impacted by the *CLERP 9* regulations or that there is a lag between the introduction of the *CLERP 9* regulations and time the regulations impact auditor attributes and by association, audit fees. At this stage, however, results indicate that, based solely on the auditor attributes examined in this study and the timeframe examined, *CLERP 9* regulations have not been successful in achieving the objectives of using the statutory external auditing process to improve audit quality (via an increase in audit fees) and thus the quality of reported earnings by firms.

Fourth, given that the results suggest that the four pivotal auditor attributes examined in this study are not significantly associated with variation in audit fees (both cross-sectionally and longitudinally), regulators, scholars, and auditors can utilize the results to investigate/regulate other key corporate governance mechanisms which may play a more effective role in promoting increased audit quality and, therefore, improving the integrity of a firm's financial reporting process. The results of this study, therefore, have real economic consequences for regulators, scholars, and auditors.

---

[73] This study attempted to answer a number of secondary research questions, including questions pertaining to the effectiveness of *CLERP 9* recommendations enacted in 2003. The objective is to determine if the introduction of *CLERP 9* in 2003 improved the relationship between a dichotomous composite score of auditor attributes (that is, AA_{it}) and audit fees before and after the introduction of *CLERP 9* (that is, between 2001 and 2005) in Australia.

Fifth, given that this study captured a cross-section of industries, results provide evidence on the existence of an industry-effect on the quantum of audit fees charged by auditors, for example, whether certain industries are more expensive to audit than others. Results reveal that firms in the energy, information technology and telecommunications industries pay a statistically higher amount of audit fees than other industries.[74] This result is contrary to the prior literature (Balsam et al. 2003; DeFond et al. 2000; Gerrard et al. 1994; Willenborg 2002) but the difference can be explained by the fact that post-2005, external auditors (particularly the *Big4*) have changed their (auditor's) audit strategy with clients and adopted a 'balance sheet' approach to an audit engagement as opposed to the prior approach which was 'profit and loss' based. The change in auditor's approach has necessitated a more rigorous approach to balance sheet items (compared to profit and loss items) thus increasing the associated audit fee.[75]

Overall, this study will benefit a number of key stakeholders. Policymakers and regulators are able to determine the effectiveness of legislation introduced to improve the quality of financial reporting by firms. This has a flow-on effect of minimizing poor corporate reporting and, potentially, subsequent corporate failure thereby benefiting capital market participants. Both auditors and auditees benefit by knowing that demand-side features of an audit engagement largely drive audit fees. Auditors can use the information to make strategic decisions on whether it is beneficial to invest heavily in a particular industry to the extent of becoming an industry specialist or to provide non-audit services to clients in addition to the annual statutory external audit. Auditees also benefit from knowing which demand-side characteristics they (auditees) exhibit either increase or decrease the audit fees auditees pay. Scholars will also benefit from the results of this study by being able to examine demand and supply-side features of an audit engagement in greater detail and the associated links with audit fees and audit quality.

8.6 LIMITATIONS AND FUTURE RESEARCH

While this study has a number of strengths, it is not without limitations. For instance, audit quality is a multi-dimensional, complex construct that can be determined by a number of auditor attributes. This study only examined four specific auditor attributes. Though the attributes selected are the most commonly used and cited in prior empirical literature (Ashbaugh et al. 2003; Balsam et al. 2003; Beatty 1989; Carcello et al. 1992; Carcello and

[74] In accordance with prior literature, firms in the financial industry are excluded from the sample and hence, this study (Felix et al. 2001; Gonthier-Besacier and Schatt 2007; Singh and Newby 2010).

[75] Firms in the telecommunication services and utilities industry have relatively large assets and were therefore thought easier to audit prior to 2005 compared to firms with extensive receivables and inventories such as manufacturers (Gerrard et al. 1994; Simunic 1980).

Nagy 2004; Francis 2006; Hogan and Jeter 1999; Kim et al. 2003) as being pivotal factors underpinning audit quality, other attributes (albeit of lesser importance) may be significantly associated with audit fees.

Also, sample firms in this study are identical for each calendar year examined during the observation window (that is, 2001, 2003 and 2005). This raised possible concern with independence of sample (that is, repeated measures) concerns (Hair et al. 1995). However, this is not considered detrimental to this study for two reasons. First, the independence of samples issue only applies to the longitudinal OLS regression models used. Second, almost all of the published past literature (in both accounting and finance fields) using firm-year observations for multivariate testing suggest that there is no other parsimonious way to undertake longitudinal analysis where the changes in selected firm's results are of interest to the researcher/s (Ball and Shivakumar 2006; Gigler and Hemmer 2001; Krishnan 2003; Lara et al. 2005; Pae 2007; Reynolds and Francis 2001; Wallace 1984). In addition, this study addresses its research objectives utilizing the 2001 to 2005 timeframe. Although this timeframe may appear outdated, the period was selected so that results from this study could offer some commentary on whether key financial and corporate governance changes in Australia such as the introduction on *IFRS* and *CLERP 9* influenced the impact of auditor attributes on audit fees.[76] Nevertheless, the timeframe selected for examination is acknowledged as a potential limitation.

Another limitation was the fact that this study used data from only one country, namely Australia. This single-nation focus potentially limits the ability to generalize study's empirical results to other domestic and institutional settings. Australia, however, has a mature and well developed capital market with active participation by regulators, investors and audit firms alike (Francis 1984; Francis and Stokes 1986; Gerrard et al. 1994; Goodwin-Stewart and Kent 2006a). Furthermore, the institutional structures present in Australia are founded on principles and values entrenched in many other developed economies, particularly those with a historical linkage to the *UK*. Consequently, this provides confidence that results from this study can be used as guidance for research based on alternative domestic settings. Therefore, notwithstanding the limitation of a focus on a single nation, this study's results does provide useful points of reference to other countries and economies which are (or may be in the future) grappling with issues of cartel pricing and anticompetitive behavior by *Big4* auditors.

[76] In addition, time-periods 2007 and 2008 were excluded from this study on the basis of potential undue influences arising from the credit-crunch and *GFC* during this period.

A further limitation was that in order to test the hypotheses, data for all of the variables used in this study were collected from annual reports. Such an approach to data collection potentially limits the amount and type of data that can be collected. For example, other alternative (firm-specific) proxy measures for the auditor attributes used in this study may exist. However, such proxy measures were excluded given the proprietary nature of the measures. Also, this study only used data from publicly firms. As publicly listed firms make up only a fraction of all businesses, the narrow focus implies results may not be applicable to business as a whole. Also, the sample represented a snapshot of full population of publicly listed firms in Australia. Notwithstanding these limitations, stratification of the sample (across all firms listed on the *ASX*) and partitioning used when undertaking aspects of the data analysis, ensured that smaller public firms were included in the sample. As such, results from this study are not overwhelmed (or driven solely) by the largest firms. Also, results are likely to still be applicable to non-public firms both large and small.[77]

The scope, objectives and findings of this study opens avenues for further research. At a minimum, future research can begin by addressing the limitations identified above. Therefore, future research should consider other auditor features to assess the validity of findings from this study and any resulting association with audit fees.[78] To assess the external validity of the findings from this study, future research can be undertaken outside Australia particularly in developing countries where capital markets and economies are in formative stages.[79] It may also be particularly useful to undertake subsequent research by examining countries with different regulatory and institutional settings (for example, jurisdictions with differing levels of legal and investor protection and the degree of institutional ownership in corporate entities). Additionally, this study examined the 2001 to 2005 time period. Subsequent research can adopt a more contemporaneous timeframe or shorter time periods to consider the impact of a specific event. For example, in the case of the former, this study can be re-performed after the effects of the *GFC* (which started in 2007) have passed.

---

[77] The limitations listed and discussed in this section are not designed to provide an exhaustive list. Rather, limitations discussed are used as examples to highlight the boundaries of this study and scope to which results may be applied without application of caution. A full exhaustive list will provide little incremental value, and is be beyond the scope of this study.

[78] Examples of auditor features include (but not limited to) auditor location (to measure a 'city effect'), number of reports generated by the auditor for the auditee, and the issuance of a qualified audit report. In addition, future research can collect auditor attributes not only from secondary data but also from firm-specific sources (through the use of questionnaires and interviews) given the proprietary nature of some of the alternative auditor attribute measures. Collection of such data, therefore, may involve the adoption of other research methods beyond archival collection.

[79] Future research can also include smaller public and private firms although such a research option may be of limited benefit given the results of this study that audit fee variation is driven by demand-side features of an audit engagement such as auditee size, complexity, risk and, such demand-side features are more prevalent in larger public firms.

8.7 SUMMARIZATION OF THIS STUDY

The cross-sectional and longitudinal analysis of this study yielded important insights into the association between four pivotal auditor attributes (that is, auditor brand name, industry specialization, provision of non-audit services and tenure) and the quantum of audit fees paid by Australian publicly listed firms. An investigation into the auditor attributes - audit fee linkage is of regulatory, professional and capital market investor interest with significant concerns having been expressed about the growing possibility of cartel auditing pricing within the Australian audit services market and the resulting prospect of anticompetitive behavior by large accounting practices, particularly the *Big4* auditors. Findings from this study suggest that audit fee variation is not driven by supply-side features of an audit engagement (that is, auditor attributes) but rather is influenced by demand-side features such as auditee size, complexity and risk. Therefore, this study finds no evidence to suggest the existence of cartel pricing and anticompetitive conduct by *Big4* auditors. The findings/results of this study are based on a substantial sample of Australian publicly listed firms thereby providing an in-depth cross-sectional coverage of the Australian capital market. Results provide essential information to key stakeholders on the determinants of audit fees. However, this study is not without limitations but the limitations also provide a fruitful avenue for future research.

REFERENCES

Abbott, L. J., Y. Park, and S. Parker. 2000. The effects of audit committee activity and independence on corporate fraud. *Managerial Finance* 26 (11): 55-67.

Abbott, L. J., and S. Parker. 2000. Auditor selection and audit committee characteristics *Auditing: A Journal of Practice and Theory* 19 (2): 47-66.

Abbott, L. J., and S. Parker. 2001. Audit committee characteristics and auditor selection: Evidence from auditor switches. *Research in Accounting Regulation* 15 (1): 151-166.

Abbott, L. J., S. Parker, G. Peters, and K. Raghunandan. 2003a. The association between audit committee characteristics and audit fees. *Auditing: A Journal of Practice and Theory* 22 (2): 17-32.

Abbott, L. J., S. Parker, G. Peters, and K. Raghunandan. 2003b. An empirical investigation of audit fees, nonaudit fees and audit committees. *Contemporary Accounting Research* 20 (2): 215-234.

Abbott, L. J., S. Parker, G. F. Peters, and D. V. Rama. 2007. Corporate governance, audit quality, and the Sarbanes-Oxley Act: Evidence from internal audit outsourcing. *The Accounting Review* 82 (4): 803-835.

Al-Harshani, M. O. 2008. The pricing of audit services: Evidence from Kuwait. *Managerial Auditing Journal* 23 (7): 685-696.

Andersen, R. C., S. A. Mansi, and D. M. Reeb. 2003. Board characteristics, accounting reporting integrity, and the cost of debt. *Journal of Accounting and Economics* 37 (3): 315-327.

Anderson, T., and D. Zeghal. 1994. The pricing of audit services: Further evidence from the Canadian market. *Accounting and Business Research* 24 (95): 195-207.

Antle, R., E. Gordon, G. Narayanamoorthy, and L. Zhou. 2006. The joint determination of audit fees, non-audit fees and abnormal accruals. *Review of Quantitative Finance and Accounting* 27 (3): 235-266.

Arens, A. A., J. K. Loebbecke, P. J. Best, and G. E. P. Shailer. 2002. *Auditing in Australia*. Frenchs Forest, NSW, Australia: Pearson Education Australia Pty Ltd.

Ashbaugh, H., R. LaFond, and B. W. Mayhew. 2003. Do non-audit services compromise auditor independence? Further evidence. *The Accounting Review* 78 (3): 611-639.

ASX Corporate Governance Council (ASX CGC). 2003. *Principles of Good Corporate Governance and Best Practice Recommendations*. Sydney, Australia: ASX Corporate Governance Council.

Auditing and Assurances Standards Board. 2006. *ASA 610: Considering the Work of Internal Audit*. Melbourne, Australia: Auditing and Assurances Standards Board.

Australian Competition and Consumer Commission (ACCC). 1999. Merger Guidelines 1999.

Bailey, A. D., A. A. Gramling, and R. Ramamoorti. 2003. *Research opportunities in internal auditing*. Altamonte Springs, FL, U.S.A.: Institute of Internal Auditors.

Ball, R., and L. Shivakumar. 2006. The role of accruals in asymmetrically timely gains and loss recognition. *Journal of Accounting Research* 44 (2): 207-242.

Balsam, S., J. Krishnan, and Y. S. Yang. 2003. Auditor industry specialization and the earnings response coefficient. *Auditing: A Journal of Practice and Theory* 22 (2): 71-97.

Barney, J. B. 1990. The debate between traditional management theory and organizational economics: Substantive differences or intergroup conflict? *Academy of Management Review* 15 (3): 382-393.

Bartov, E., F. A. Gul, and J. S. L. Tsui. 2000. Discretionary-accruals models and audit qualifications. *Journal of Accounting and Economics* 30 (4): 421-452.

Basu, S., L. Hwang, and C. Jan. 2000. Differences in conservatism between big eight and non-big eight auditors. Working paper. City University of New York, NY, U.S.A.

Baxter, B., and J. Pragasam. 1999. Audit committees: One size fits all. *Australian CPA* 4 (1): 42-43.

Beasley, M. S. 1996. An empirical analysis of the relation between the board of director composition and financial statement fraud. *The Accounting Review* 71 (4): 443-465.

Beasley, M. S., and K. Petroni. 2001. Board independence and audit firm type. *Auditing: A Journal of Practice and Theory* 20 (1): 97-114.

Beasley, M. S., and S. Salterio. 2001. The relationship between board characteristics and voluntary improvements in audit committee composition and experience. *Contemporary Accounting Research* 18 (4): 539-570.

Beatty, R. P. 1989. Auditor reputation and the pricing of initial public offerings. *The Accounting Review* 64 (4): 693-709.

Beatty, R. P. 1993. Economic determinants of auditor compensation. *Journal of Accounting Research* 31 (2): 294-302.

Beck, P. J., T. J. Frecka, and I. Solomon. 1998a. An empirical analysis of the relationship between MAS involvement and auditor tenure: Implications for auditor independence. *Journal of Accounting Literature* 7 (1): 65-84.

Beck, P. J., T. J. Frecka, and I. Solomon. 1998b. A model of the market for MAS and audit services: Knowledge spillovers and auditor-auditee bonding. *Journal of Accounting Literature* 7 (1): 50-64.

Becker, C. L., M. L. DeFond, J. Jiambalvo, and K. R. Subramanyam. 1998. The effect of audit quality on earnings management. *Contemporary Accounting Research* 15 (1): 1-24.

Bedard, J., and S. Biggs. 1991 The effect of domain-specific experience on evaluation of management representations in analytical procedures. *Auditing: A Journal of Practice and Theory* 10 Supplement: 77-95.

Benabou, R. 2003. Intrinsic and extrinsic motivation. *Review of Economic Studies* 70 (244): 489-520.

Berger, P. L., and T. Luckman. 1966. *The social construction of reality*. New York, NY, U.S.A: Double Day.

Berle, A. A., and G. C. Means. 1932. *The modern corporation and private property*. New York, NY, U.S.A.: MacMillan.

Blue Ribbon Committee. 1999. *The Report and Recommendations of the Blue Ribbon Committee on Improving the Effectiveness of Corporate Audit Committees*. New York, NY, U.S.A.: New York Stock Exchange.

Bonner, S. E., and B. L. Lewis. 1990. Determinants of auditor expertise. *Journal of Accounting Research* 28 (3): 1-20.

Boo, A., and D. Sharma. 2008. Effect of regulatory oversight on the association between internal governance characteristics and audit fees. *Accounting and Finance* 48 (1): 51-71.

Brody, R. G., S. P. Golen, and P. M. J. Reckers. 1998. An empirical investigation of the interface between internal and external auditors. *Accounting and Business Research* 28 (3): 160-171.

Brody, R. G., and S. E. Kaplan. 1996. Escalation of commitment among internal auditors. *Auditing: A Journal of Practice and Theory* 15 (1): 1-15.

Brody, R. G., and D. J. Lowe. 2000. The new role of the internal auditor: Implications for internal auditor objectivity. *International Journal of Auditing* 4 (2): 169-176.

Burrell, G., and G. Morgan. 1979. *Sociological paradigms and organisational analysis.* London, U.K.: Heineman.

Bushman, R. M., and A. J. Smith. 2001. Financial accounting information and corporate governance. *Journal of Accounting and Economics* 32 (1/3): 237-333.

Business Review Weekly. 2006. Top 100 accounting firms. 17-23 August.

Butterworth, S., and K. Houghton. 1995. Auditor switching: The pricing of audit services. *Journal of Business, Finance and Accounting* 22 (3): 323-344.

Caneghem, T. V. 2010. Audit pricing and the Big4 premium: Evidence from Belgium. *Managerial Auditing Journal* 25 (2): 122-139.

Carcello, J. V., D. R. Hermanson, and N. McGrath. 1992. Audit quality attributes: The perceptions of audit partners, preparers and financial statement users. *Auditing: A Journal of Practice and Theory* 11 (1): 1-15.

Carcello, J. V., D. R. Hermanson, T. L. Neal, and R. A. Riley. 2002. Board characteristics and audit fees. *Contemporary Accounting Research* 18 (3): 365-384.

Carcello, J. V., D. R. Hermanson, and K. Raghunandan. 2005. Factors associated with U.S.A. public companies' investment in internal auditing. *Accounting Horizons* 19 (2): 69-84.

Carcello, J. V., C. W. Hollingsworth, A. Klein, and T. L. Neal. 2006. Audit committee financial expertise, competing corporate governance mechanisms and earnings management. Working paper. University of Tennessee, TN, U.S.A.

Carcello, J. V., C. W. Hollingsworth, and T. L. Neal. 2006. Audit committee financial experts: A closer examination using firm designations. *Accounting Horizons* 20 (4): 351-373.

Carcello, J. V., and A. L. Nagy. 2004. Client size, auditor specialization and fraudulent financial reporting. *Managerial Auditing Journal* 19 (5): 651-668.

Carcello, J. V., and T. L. Neal. 2000. Audit committee composition and auditor reporting. *The Accounting Review* 75 (4): 453-467.

Carcello, J. V., T. L. Neal, Z. Palmrose, and S. Scholz. 2006. CEO involvement in selecting board members and audit committee effectiveness. Working paper. University of Tennessee, TN, U.S.A.

Carey, P., A. Craswell, and R. Simnett. 2000. The association between the external audit fee and external auditor's reliance on the work of internal audit. Working paper. Monash University, VIC, Australia.

Casterella, J. R., J. Francis, B. L. Lewis, and P. L. Walker. 2004. Auditor industry specialization, client bargaining power and audit pricing. *Auditing: A Journal of Practice and Theory* 23 (1): 123-140.

Certo, T. S. 2003. Influencing initial public offering investors with prestige: Signaling with board structures. *Academy of Management Review* 28 (3): 432-446.

Chan, K. C., and J. Li. 2008. Audit committee and firm value: Evidence on outside top executives as expert-independent directors. *Corporate Governance - An International Review* 16 (1): 16-31.

Chan, P., M. Ezzamel, and D. Gwilliam. 1993. Determinants of audit fees for quoted U.K. companies. *Journal of Business, Finance and Accounting* 20 (6): 765-786.

Chaney, P. K., D. C. Jeter, and L. Shivakumar. 2004. Self-selection of auditors and audit pricing in private firms. *The Accounting Review* 79 (1): 51-72.

Chen, K. Y., and J. Zhou. 2007. Audit committee, board characteristics and auditor switches by Andersen's clients. *Contemporary Accounting Research* 24 (4): 1085-1117.

Choi, J., C. Kim, J. Kim, and Y. Zang. 2010. Audit office size, audit quality and audit pricing. *Auditing: A Journal of Practice and Theory* 29 (1): 73-97.

Choi, J., J. Kim, X. Liu, and D. Simunic. 2008. Audit pricing, legal liability regimes and Big 4 premiums: Theory and cross-country evidence. *Contemporary Accounting Research* 25 (1): 55-99.

Choi, J. H., J. B. Kim, and Y. Zang. 2005. *The association between audit quality and abnormal audit fees*. Hong Kong, P.R.C.: The Hong Kong University of Science and Technology.

Chung, D. H., and W. D. Lindsay. 1988. The pricing of audit services: The Canadian perspective. *Contemporary Accounting Research* 5 (1): 19-46.

Clatworthy, M. A., and M. J. Peel. 2007. The effect of corporate status on external audit fees: Evidence from the U.K. *Journal of Business, Finance and Accounting* 34 (1/2): 169-201.

Clifford, P., and R. Evans. 1997. Non-executive directors: A question of independence. *Corporate Governance: An International Review* 5 (4): 224-231.

Cohen, J., G. Krishnamoorthy, and A. M. Wright. 2002. Corporate governance and the audit process. *Contemporary Accounting Research* 19 (4): 573-594.

Collier, P., and A. Gregory. 1999. Audit committee activity and agency costs. *Journal of Accounting and Public Policy* 18 (4/5): 311-332.

Collier, P. A., and A. Gregory. 1996. Audit committee effectiveness and the audit fee. *European Accounting Review* 5 (2): 177-198.

Commonwealth Government of Australia. 2004. Corporate Law Economic Reform Program (CLERP) (Audit Reform and Corporate Disclosure) Act 2004. Canberra, ACT, Australia.

Copley, P. A., and E. B. Douthett. 2002. The association between audit quality, ownership retained and earnings disclosure by firms making initial public offerings. *Contemporary Accounting Research* 19 (1): 49-75.

Craswell, A., J. Francis, and S. Taylor. 1995. Auditor brand name reputation and industry specialization. *Journal of Accounting and Economics* 20 (3): 297-322.

Craswell, A., and S. L. Taylor. 1991. The market structure of auditing in Australia: The role of industry specialization. *Research in Accounting Regulation* 5 (1): 55-77.

Daily, C. M., D. R. Dalton, and A. A. J. Cannella. 2003. Corporate governance: Decades of dialogue and data. *Academy of Management Review* 28 (3): 371-382.

Dalton, D. R., C. M. Daily, J. L. Johnson, and A. E. Ellstrand. 1999. Number of directors and financial performance: A meta-analysis. *Academy of Management Review* 42 (6): 674-686.

Davis, J. H., F. D. Schoorman, and L. Donaldson. 1997. Toward a stewardship theory of management. *Academy of Management Review* 22 (1): 20-47.

Davis, L., D. Ricchiute, and G. Trompeter. 1993. Audit effort, audit fees, and the provision of non-audit services to audit clients. *The Accounting Review* 68 (1): 135-150.

De Belde, I. 1997. An exploratory investigation of industry specialization of large accounting firms. *International Journal of Accounting* 32 (4): 337-355.

DeAngelo, L. 1981. Auditor size and audit quality. *Journal of Accounting and Economics* 3 (1): 183-199.

DeBerg, C., L. Kaplan, and K. Pany. 1991. An examination of some relationships between non-audit services and auditor change. *Accounting Horizons* 5 (1): 17-28.

DeFond, M., R. N. Hann, and X. Hu. 2005. Does the market value financial expertise on audit committees of board of directors? *Journal of Accounting Research* 43 (2): 153-193.

DeFond, M. L., J. Francis, and T. J. Wong. 2000. Auditor industry specialization and market segmentation: Evidence from Hong Kong. *Auditing: A Journal of Practice and Theory* 19 (1): 49-66.

DeFond, M. L., and K. R. Subramanyam. 1998. Auditor changes and discretionary accruals. *Journal of Accounting and Economics* 25 (1): 36-67.

Dezoort, F. T. 1998. An analysis of experience effects on audit committee members' oversight judgments. *Accounting, Organizations and Society* 23 (1): 1-21.

Dhaliwal, D., V. Naiker, and F. Navissi. 2006. Audit committee financial expertise, corporate governance and accruals quality: An empirical analysis. Working paper. University of Arizona, TX, U.S.A.

DiMaggio, P. J., and W. W. Powell. 1983. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review* 4 (2): 147-160.

Donaldson, L. 1990. The ethereal hand: Organizational economics and management theory. *Academy of Management Review* 15 (3): 369-381.

Donaldson, L., and J. H. Davis. 1991. Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of Management* 16 (3): 49-64.

Donaldson, L., and L. E. Preston. 1995. The stakeholder theory of the corporation: Concepts, evidence and implications. *Academy of Management Review* 20 (1): 65-91.

Dopuch, N., and D. Simunic. 1982. Competition in auditing: An assessment. In *Fourth Symposium on Auditing Research*. University of Illinois, IL, U.S.A.

Doucouliagos, C. 1994. A note on the evolution of homo economicus. *Journal of Economic Issues* 28 (3): 877-883.

Dunmore, P. V., and Y. S. Shao. 2006. Audit and non-audit fees: New Zealand evidence. *Pacific Accounting Review* 18 (2): 32-46.

Eisenhardt, K. M. 1988. Agency and institutional-theory explanations: The case of retail sales compensation. *Academy of Management Journal* 31 (3): 488-511.

Eisenhardt, K. M. 1989. Agency theory: An assessment and review. *Academy of Management Review* 14 (1): 57-74.

Elliot, R. K., and A. R. Korpi. 1978. *Factors affecting audit fees. Cost-benefit analysis of auditing* New York, NY, USA: American Institute of Certified Practicing Accountants.

Ettredge, M., and R. Greenberg. 1990. Determinants of fee cutting on initial audit engagements. *Journal of Accounting Research* 28 (1): 198-210.

Fama, E. 1980. Agency problems and the theory of the firm. *Journal of Political Economy* 88 (2): 288-307.

Fama, E. F., and M. C. Jensen. 1983. Separation of ownership and control. *Journal of Law and Economics* 26 (2): 301-325.

Fan, J. P. H., and T. J. Wong. 2005. Do external auditors perform a corporate governance role in emerging markets? Evidence from East Asia. *Journal of Accounting Research* 43 (1): 35-72.

Felix, W. L., A. A. Gramling, and M. J. Maletta. 2001. The contribution of internal audit as a determinant of external audit fees and factors influencing this contribution. *Journal of Accounting Research* 39 (3): 513-534.

Ferguson, A., and D. Stokes. 2002. Brand name, audit pricing, industry specialization and leadership premiums post-Big 8 and Big 6 mergers. *Contemporary Accounting Research* 19 (1): 77-110.

Firth, M. 1985. An analysis of audit fees and their determinants in New Zealand. *Auditing: A Journal of Practice and Theory* 4 (2): 23-37.

Firth, M. 1997. The provision of non-audit services and the pricing of audit fees. *Journal of Business, Finance and Accounting* 24 (3): 511-525.

Firth, M., and C. Liau-Tan. 1998. Auditor quality, signalling and the valuation of initial price offerings. *Journal of Business, Finance and Accounting* 25 (1/2): 145-165.

Francis, J. 1984. The effect of firm size on audit prices: A study of the Australian market. *Journal of Accounting and Economics* 6 (1): 133-151.

Francis, J., E. L. Maydew, and H. C. Sparks. 1999. The role of Big-6 auditors in the credible reporting accruals. *Auditing: A Journal of Practice and Theory* 18 (2): 17-34.

Francis, J., and D. T. Simon. 1987. A test of audit pricing in the small client segment of the U.S.A. audit market. *The Accounting Review* 62 (1): 145-157.

Francis, J., and D. Stokes. 1986. Audit prices, product differentiation and scale economies: Further evidence from the Australian audit market. *Journal of Accounting Research* 24 (2): 383-393.

Francis, J. R. 2006. Are auditors compromised by nonaudit services? Assessing the evidence. *Contemporary Accounting Research* 23 (3): 747-760.

Frank, R. H. 1994. *Microeconomics and behavior*. New York, NY, U.S.A.: McGraw-Hill.

Frankel, R. M., M. F. Johnson, and K. K. Nelson. 2002. The relation between auditors' fees for non-audit services and earnings management. *The Accounting Review* 77 Supplement: 71-105.

Freeman, E. 1984. *Strategic management: A stakeholder approach*. New Jersey, NJ, U.S.A.: Prentice-Hall.

Gagne, M., and E. L. Deci. 2005. Self-determination theory and work motivation. *Journal of Organizational Behavior* 26 (4): 331-362.
Gamble, R. 2008. Crunch time for treasury financing. *Treasury and Risk* 5: 34-35.
Gay, G., and R. Simnett. 2007. *Auditing and assurance services in Australia: 3rd Edition*. North Ryde, NSW, Australia: McGraw Hill.
Gerrard, I., K. Houghton, and D. Woodliff. 1994. Audit fees: The effects of auditee, auditor and industry differences. *Managerial Auditing Journal* 9 (7): 3-11.
Gewald, H., and T. Gellrich. 2007. The impact of perceived risk on the capital market's reaction to outsourcing announcements. *Information Technology and Management* 8 (4): 279-297.
Ghosh, A., and D. Moon. 2005. Audit tenure and perceptions of audit quality. *The Accounting Review* 80 (2): 585-612.
Ghoshal, S., and P. Moran. 1996. Bad for practice: A critique of transaction cost theory. *Academy of Management Review* 21 (1): 13-47.
Gigler, F. B., and T. Hemmer. 2001. Conservatism, optimal disclosure policy, and the timeliness of financial reports. *The Accounting Review* 76 (4): 471-493.
Givoly, D., and C. Hayn. 2002. Rising conservatism: Implications for financial analysts. *Financial Analysts Journal* 58 (1): 56-74.
Gonthier-Besacier, N., and A. Schatt. 2007. Determinants of audit fees for French quoted firms. *Managerial Auditing Journal* 22 (2): 139-160.
Goodwin-Stewart, J., and P. Kent. 2006a. Relation between external audit fees, audit committee characteristics and internal audit. *Journal of Accounting and Finance* 46 (4): 387-404.
Goodwin-Stewart, J., and P. Kent. 2006b. The use of internal audit by Australian companies. *Managerial Auditing Journal* 21 (1/2): 81-102.
Goodwin, J. 2003. The relationship between the audit committee and the internal audit function: Evidence from Australia and New Zealand. *International Journal of Auditing* 7 (3): 263-278.
Gore, P., P. F. Pope, and A. Singh. 2001. Nonaudit services, auditor independence and earnings management. Working paper. Lancaster University, Lancaster, U.K.
Gramling, A. A., V. E. Johnson, and I. K. Khurana. 2000. The association between audit firm industry experience and financial reporting quality. Working paper. Georgia State University, GA, U.S.A.
Gramling, A. A., and D. Stone. 2001. Archival industry research in auditing: A review. *Journal of Accounting Literature* 20 (1): 1-27.
Hair, J. F., R. E. Anderson, R. L. Tatham, and W. C. Black. 1995. *Multivariate data analysis 4th Edition*. Englewood Cliffs, NJ, U.S.A: Prentice Hall.
Hamilton, J., Y. Li, and D. Stokes. 2008. Is the audit services market competitive following Arthur Andersen's collapse? *Accounting and Finance* 48 (2): 233-258.
Hay, D., W. R. Knechel, and H. Ling. 2008. Evidence on the impact of internal control and corporate governance on audit fees. *International Journal of Auditing* 12 (1): 9-24.
Hay, D. C., W. R. Knechel, and N. Wong. 2006. Audit fees: A meta-analysis of the effect of supply and demand attributes. *Contemporary Accounting Research* 23 (1): 141-191.
Hayland, M. M., and D. A. Verrault. 2003. Developing a strategic internal audit - human resource management relationship: A model survey. *Managerial Auditing Journal* 18 (6/7): 465-478.
Hendry, J. 2002. The principal's other problems: Honest incompetence and the specification of objectives. *Academy of Management Review* 27 (1): 98-113.
Hill, C. W. L., and T. M. Jones. 1992. Stakeholder-agency theory. *Journal of Management Studies* 29 (2): 131-154.
Hillman, A. J., A. A. J. Cannella, and R. L. Paetzold. 2000. The resource dependence role of corporate directors: Strategic adaptation of board composition in response to environmental change. *Academy of Management Studies* 37 (2): 235-255.

Hillman, A. J., and T. Dalziel. 2003. Boards of directors and firm performance: Integrating agency and resource dependence perspectives. *Academy of Management Review* 28 (3): 383-396.

Hirsh, P., S. Michaels, and R. Friedman. 1987. "Dirty hands" versus "clean models": Is sociology in danger of being seduced by economics? *Theory and Society* 16 (3): 317-336.

Ho, S., and M. Hutchinson. 2010. Internal audit department characteristics/activities and audit fees: Some evidence from Hong Kong. *Journal of International Accounting, Auditing and Taxation* 19 (2): 121-136.

Ho, S. W. M., and P. Y. H. Ng. 1996. The determinants of audit fees in Hong Kong: An empirical study. *Asian Review of Accounting* 4 (2): 32-50.

Hoffman, A. 1999. Institutional evolution and change: Environmentalism and the U.S.A. chemical industry. *Academy of Management Journal* 42 (4): 351-371.

Hogan, C., and D. Jeter. 1999. Industry specialization by auditors. *Auditing: A Journal of Practice and Theory* 18 (1): 1-17.

Hoitash, R., A. Markelevich, and C. A. Barragato. 2007. Auditor fees and audit quality. *Managerial Auditing Journal* 22 (8): 761-786.

Institute of Internal Auditors. 1999. *Definition of internal auditing*. Altamonte Springs, FL, U.S.A.: Institute of Internal Auditors,.

Institute of Internal Auditors. 2004. *Practice Advisory 2130-1: Role of the internal audit activity and internal auditor in the ethical culture of an organization*. Altamonte Springs, FL, U.S.A.: Institute of Internal Auditors.

Iyer, V. M., and G. S. Iyer. 1996. Effect of Big Eight mergers on audit fees: Evidence from the U.K. *Auditing: A Journal of Practice and Theory* 15 (2): 123-132.

Jamieson, B. 1980. Audit committees. *Australian Society of Accountants* 25: 42-55.

Jensen, M. C., and W. H. Meckling. 1976. Theory of the firm: Managerial behaviour, agency costs and ownership structure. *Journal of Financial Economics* 3 (3): 305-360.

Jeong, S. W., K. Jung, and S. Lee. 2005. The effect of mandatory auditor assignment and non-audit service on audit fees: Evidence from Korea. *International Journal of Accounting* 40 (3): 233-248.

Johnson, E. N., K. B. Walker, and E. Westergaard. 1995. Supplier concentration and pricing of audit services in New Zealand. *Auditing: A Journal of Practice and Theory* 14 (2): 74-89.

Johnson, P., K. Jamal, and R. Berryman. 1991. Effects of framing on auditor decisions. *Organizational Behavior and Human Decision Processes* 50 (1): 75-105.

Joint Committee on Public Accounts and Audit. 2002. Review of Independent Auditing by Registered Company Auditors. Report 391. Canberra, ACT, Australia. Commonwealth of Australia.

Jubb, C., S. Topple, P. Schelluch, L. Rittenberg, and B. Schwieger. 2008. *Assurance and auditing: Concepts for a changing environment: 2nd Edition*. Melbourne, VIC, Australia: Nelson Education.

Karamanou, I., and N. Vafeas. 2005. The association between boards and audit committees with management earnings forecasts: An empirical analysis. *Journal of Accounting Research* 43 (3): 453-486.

Karim, A. K. M., and P. Moizer. 1996. Determinants of audit fees in Bangladesh. *International Journal of Accounting* 31 (4): 497-509.

Kesner, I. E. 1988. Directors' characteristics and committee membership: An investigation of type, occupation, tenure and gender. *Academy of Management Journal* 31 (1): 66-84.

Kim, J. B., R. Chung, and M. Firth. 2003. Auditor conservatism, asymmetric monitoring and earnings management. *Contemporary Accounting Research* 20 (2): 323-359.

Klein, A. 1998. Firm performance and board committee structure. *Journal of Law and Economics* 41 (1): 275-303.

Klein, A. 2002. Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics* 33 (3): 375-400.

Koehn, J. L., and S. C. Del Vecchio. 2004. Ripple effects of the Sarbanes-Oxley Act. *The CPA Journal* 74 (2): 36-40.

Korac-Kakabadse, N., A. K. Kakabadse, and A. Kouzmin. 2001. Board governance and company performance: Any correlations? *Corporate Governance* 1 (1): 24-30.

Kosnik, R. D. 1987. Greenmail: A study of board performance in corporate governance. *Administrative Science Quarterly* 32 (3): 163-185.

Krishnan, G. V. 2003. Does Big 6 auditor industry expertise constrain earnings management? *Accounting Horizons* 17 Supplement: 1-16.

Krishnan, G. V., and G. Visvanathan. 2007. Reporting internal control deficiencies in the post-Sarbanes-Oxley era: The role of auditors and corporate governance. *International Journal of Auditing* 11 (2): 73-90.

Kwon, S. Y. 1996. The impact of competition within the client's industry on the auditor selection decision. *Auditing: A Journal of Practice and Theory* 15 (1): 53-70.

La Porta, R., F. Lopez-de-Silanes, and A. Schleifer. 1999. Corporate ownership around the world. *Journal of Finance* 54 (2): 471-517.

Lara, J. M. G., B. G. Osma, and A. Mora. 2005. The effect of earnings management on the asymmetric timeliness of earnings. *Journal of Business, Finance and Accounting* 32 (3/4): 691-726.

Leblanc, R., and J. Gillies. 2005. *Inside the boardroom: How boards really work and the coming revolution in corporate governance*. Toronto, BC, Canada: John Wiley & Sons.

Lee, H., V. Mande, and R. Ortman, eds. 2003a. *Audit committee independence and auditor resignation*: California State University, CA, U.S.A.

Lee, H. Y., and V. Mande. 2005. The relationship of audit committee characteristics with endogenously determined audit and non-audit fees. *Quarterly Journal of Business and Economics* 44 (3/4): 93-111.

Lee, L. W. 1979. A theory of management and its implications for capital structure and merger. *Southern Economic Journal* 46 (1): 107-112.

Lee, P., D. Stokes, S. Taylor, and T. Walter. 2003b. The association between audit quality, accounting disclosures and firm-specific risk: Evidence from initial public offerings. *Journal of Accounting and Public Policy* 22 (5): 377-400.

Leung, P., P. Coram, and B. J. Cooper. 2007. *Modern auditing & assurance services: 3rd Edition*. Milton, NSW, Australia: John Wiley & Sons Australia Ltd.

Lim, C., and H. Tan. 2008. Non-audit service fees and audit quality: The impact of auditor specialization. *Journal of Accounting Research* 46 (1): 199-246.

Low, L., P. H. Tan, and H. C. Koh. 1990. The determinant of audit fees: An analysis in the Singapore context. *Journal of Business, Finance and Accounting* 17 (2): 285-295.

Maher, M., P. Tiessen, R. Colson, and A. Broman. 1992. Competition and audit fees. *The Accounting Review* 67 (2): 199-211.

Maletta, M., and A. Wright. 1996. Audit evidence planning: An examination of industry error characteristics. *Auditing: A Journal of Practice and Theory* 15 (1): 71-86.

Mansi, S. A., W. F. Maxwell, and D. P. Miller. 2004. Does auditor quality and tenure to investors? Evidence from the bond market. *Journal of Accounting Research* 42 (3): 755-793.

Mayhew, B. W., and M. S. Wilkins. 2003. Audit firm industry specialization as a differentiation strategy: Evidence from fees charged to firms going public. *Auditing: A Journal of Practice and Theory* 22 (2): 33-52.

Menon, K., and D. D. Williams. 2001. Long-term trends in audit fees. *Auditing: A Journal of Practice and Theory* 20 (1): 115-136.

Meyer, J. W., and B. Rowan. 1977. Institutional organizations: Formal structures as myth and ceremony. *American Journal of Sociology* 83 (3): 310-363.

Meyer, J. W., and R. Scott. 1983. *Centralization and legitimacy problems of local government in organizational environments: Ritual and rationality*. Los Angeles, CA, U.S.A.: Sage Publications.

Mitra, S., D. R. Deis, and M. Hossain. 2009. The association between audit fees and reported earnings quality in pre- and post- Sarbanes-Oxley regimes. *Review of Accounting and Finance* 8 (3): 232-252.

Mitra, S., M. Hossain, and D. R. Deis. 2007. The empirical relationship between ownership characteristics and audit fees. *Review of Quantitative Finance and Accounting* 28 (3): 257-285.

Mizruchi, M. S. 1988. A longitudinal study of the formation of interlocking directorates. *Administrative Science Quarterly* 33 (2): 194-210.

Mizruchi, M. S. 1992. *The structure of corporate political action: Interfirm relations and their consequences*. Cambridge, London, U.K.: Harvard University Press.

Mizruchi, M. S. 1996. What do interlocks do? An analysis, critique and assessment of research on interlocking directorates. *An Annual Review of Sociology* 22 (1): 271-298.

Muth, M. M., and L. Donaldson. 1998. Stewardship and board structure: A contingency approach. *Scholarship Research and Theory* 6 (1): 35-47.

Naser, K., and R. Nuseibeh. 2007. Determinants of audit fees: Empirical evidence from an emerging economy. *International Journal of Commerce and Management* 17 (3): 239-254.

National Association of Corporate Directors. 1996. *NACD Blue Ribbon Commission Report on Director Professionalism*. Washington, WA, U.S.A.: National Association of Corporate Directors.

O'Keefe, T. B., D. Simunic, and M. T. Stein. 1994. The production of non-audit services: Evidence from a major public accounting firm. *Journal of Accounting Research* 32 (2): 241-261.

O'Regan, P., D. O'Donnell, T. Kennedy, N. Bontis, and P. Cleary. 2005. Board composition, non-executive directors and governance cultures in Irish ICT firms. *Corporate Governance: The International Journal of Business in Society* 5 (4): 56-63.

Oliver, C. 1997. Sustainable competitive advantage: Combining institutional and resource-based views. *Strategic Management Journal* 18 (9): 697-713.

Owhoso, V. E., W. F. Messier, and J. G. Lynch. 2002. Error detection by industry-specialized teams during sequential audit review. *Journal of Accounting Research* 40 (3): 883-900.

Pae, J. 2007. Unexpected accruals and conditional accounting conservatism. *Journal of Business, Finance and Accounting* 34 (5/6): 681-704.

Palmer, D., and B. M. Barber. 2001. Challengers, elites and owning families: A social class theory of corporate acquisitions in the 1960s. *Administrative Science Quarterly* 46 (1): 87-120.

Palmrose, Z. V. 1986a. Audit fees and auditor size: Further evidence. *Journal of Accounting Research* 24 (1): 97-110.

Palmrose, Z. V. 1986b. The effect of non-audit services on the pricing of audit services: Further evidence. *Journal of Accounting Research* 24 (3): 405-411.

Parkash, M., and C. Venable. 1993. Auditee incentives for auditor independence: The case of non-audit services. *The Accounting Review* 68 (1): 113-134.

Perrow, C. 1986. *Complex organizations: A critical essay*. New York, NY, U.S.A.: McGraw-Hill.

Pfeffer, J. 1972. Size and composition of corporate boards of directors: The organization and its environment. *Administrative Science Quarterly* 17 (2): 218-228.

Pfeffer, J. 1973. Size, composition and function of hospital boards of directors: A study of organization-environment linkage. *Administrative Science Quarterly* 18 (3): 349-364.

Pfeffer, J. 1997. *New directions for organization theory: Problems and prospects*. Oxford, London, U.K.: Oxford University Press.

Pfeffer, J., and G. Salancik. 1978. *The external control of organizations*. New York, NY, U.S.A.: Harper & Row.

Pincus, K., M. Rusbarsky, and J. Wong. 1989. Voluntary formation of audit committees among NASDAQ firms. *Journal of Accounting and Public Policy* 8 (4): 239-265.

Pratt, J. W., and R. J. Zeckhauser. 1991. *Principals and agents: The structure of business*. Massachusetts, MA, U.S.A.: Harvard Business School Press.

PriceWaterhouseCoopers. 1997. *Survey of Corporate Governance in Singapore*. Singapore

Psaros, J. 2009. *Australian corporate governance: A review and analysis of key issues*. Sydney, NSW, Australia: Pearson Education.

Ramsay, I. 2001. Independence of Australian Company Auditors. Canberra, ACT, Australia. Commonwealth of Australia.

Redmayne, N. B., M. E. Bradbury, and S. F. Cahan. 2010. The effect of political visibility on audit effort and audit pricing. *Accounting and Finance* 50 (4): 921-939.

Reinstein, A., J. Callaghan, and B. L. 1984. Corporate audit committees: Reducing directors' legal liabilities. *Journal of Urban Law* 61 (3): 375-389.

Reynolds, J., and J. Francis. 2001. Does size matter? The influence of large clients on office-level auditor reporting decision. *Journal of Accounting and Economics* 30 (3): 375-400.

Sankaraguruswamy, S., and S. Whisenant. 2003. Pricing initial audit engagements: Empirical evidence following public disclosure of audit fees. Working paper. University of Houston, TX, U.S.A.

Scott, R. W. 1987. The adolescence of institutional theory. *Administrative Science Quarterly* 32: 493-511.

Securities and Exchange Commission. 2000. *Final Rule: Revision of the Commission's Auditor Independence Requirements*. Washington DC , WA, U.S.A.

Selznick, P. 1957. *Leadership in administration*. New York, NY, U.S.A.: Harper & Row.

Simon, D. T. 1995. The audit services market: Additional empirical evidence. *Auditing: A Journal of Practice and Theory* 5 (1): 71-78.

Simon, D. T., and J. R. Francis. 1988. The effects of auditor change on audit fees: Tests of price cutting and price recovery. *The Accounting Review* 63 (2): 255-269.

Simon, D. T., R. Ramanan, and A. Dugar. 1986. The market for audit services in India: An empirical examination. *International Journal of Accounting and Research* 18 (3): 27-35.

Simon, D. T., and M. H. Taylor. 1997. The market for audit services in Pakistan. *Advances in International Accounting* 10: 87-101.

Simon, D. T., S. Teo, and G. Trompeter. 1992. A comparative study of the market for audit services in Hong Kong, Malaysia and Singapore. *International Journal of Accounting* 34 (3): 234-240.

Simunic, D. A. 1980. The pricing of audit services: Theory and evidence. *Journal of Accounting Research* 18 (1): 161-190.

Simunic, D. A. 1984. Auditing, consulting and auditor independence. *Journal of Accounting Research* 22 (2): 679-702.

Singh, H., and R. Newby. 2010. Internal audit and audit fees: Further evidence. *Managerial Auditing Journal* 25 (4): 309-327.

Solomon, I., M. Shields, and O. R. Whittington. 1999. What do industry-specialist auditors know? *Journal of Accounting Research* 38 (1): 191-208.

Spira, L. F., and M. Page. 2003. Risk management: The reinvention of internal control and the changing role of internal audit. *Accounting, Auditing and Accountability Journal* 16 (4): 640-662.

Stano, M. 1976. Monopoly power, ownership control, and corporate performance. *Bell Journal of Economics* 7 (2): 672-679.

Stearns, L. B., and M. S. Mizruchi. 1993. Board composition and corporate financing: The impact of financial institution representation on borrowing. *Academy of Management Journal* 36 (3): 603-618.

Stiles, P., and B. Taylor. 2001. *Boards at work: How directors view their roles and responsibilities*. Oxford, London, U.K.

Tabachnick, B. G., and L. S. Fidell. 2001. *Using multivariate statistics 4th Edition*. New York, NY, U.S.A.: Allyn and Bason.

Taffler, R. J., and K. S. Ramalingam. 1982. *The determinants of audit fees in the U.K.: An exploratory study*. London, U.K.: The City University Business School.

Taylor, M. E., and R. L. Baker. 1981. An analysis of the external audit fee. *Accounting and Business Research* 11 (40): 55-60.

Taylor, M. H. 1997. The market for audit services in Japan. *Pacific Accounting Review* 9 (2): 59-74.

Thinggaard, F., and L. Kiertzner. 2008. Determinants of audit fees: Evidence from a small capital market with a joint audit requirement. *International Journal of Auditing* 12 (2): 141-158.

Tirole, J. 2001. Corporate governance. *Econometrica* 69 (1): 1-35.

Turley, S., and M. Zaman. 2007. Audit committee effectiveness, informal processes and behavioural effects. *Accounting, Auditing and Accountability Journal* 20 (5): 765-788.

Turpin, R. A. 1995. Audit fees - What research tells us. *CPA Journal* 12 (1): 54-56.

Udayasankar, K. 2006. The foundations of corporate governance: A case for the resource-dependence perspective. Working paper. National University of Singapore, Singapore.

Useem, M. 1984. *The inner circle: Large corporations and the rise of business political activity in the U.S.A.* New York, NY, U.S.A.: Oxford University Press.

Vafeas, N. 1999. Board meeting frequency and firm performance. *Journal of Financial Economics* 53 (1): 113-142.

Vafeas, N. 2005. Audit committees, boards and the quality of reported earnings. *Contemporary Accounting Research* 22 (4): 1093-1122.

Vafeas, N., and E. Theodorou. 1998. The relationship between board structure and firm performance in the United Kingdom. *The British Accounting Review* 30 (4): 383-407.

Vanasco, R. 1994. The audit committee: An international perspective. *Managerial Auditing Journal* 9 (8): 18-42.

Venkataraman, R., J. P. Weber, and M. Willenborg. 2008. Litigation risk, audit quality and audit fees: Evidence from initial public offerings. *The Accounting Review* 83 (5): 1315-1345.

Wallace, W. 1984. *A times series analysis of the effect of internal audit activities on external fees*. Altamonte Springs, FL, U.S.A.: Institute of Internal Auditors.

Wang, K., and Z. A. Sewon. 2009. Audit pricing and auditor industry specialization in an emerging market: Evidence from China. *Journal of International Accounting, Auditing and Taxation* 18 (1): 60-72.

Ward, D. D., R. J. Elder, and S. C. Kattelus. 1994. Further evidence on the determinants of municipal audit fees. *The Accounting Review* 69 (2): 399-411.

Watts, R. 2003. Conservatism in accounting - Part 1: Explanations and implications. *Accounting Horizons* 17 (3): 207-221.

Watts, R. L., and J. Zimmerman. 1986. *Positive accounting theory*. Edited by P. Hall. New Jersey, NJ, U.S.A.: Prentice Hall.

Watts, R. L., and J. L. Zimmerman. 1990. Positive accounting theory: A ten year perspective. *The Accounting Review* 65 (1): 131-156.

Westphal, J. D., and E. J. Zajac. 1994. Substance and symbolism in CEO's long-term incentive plans. *Administrative Science Quarterly* 39 (3): 367-390.

Willenborg, M. 2002. Discussion of: Brand name audit pricing, industry specialization and leadership premiums post-Big 8 and Big 6 mergers. *Contemporary Accounting Research* 19 (1): 111-115.

Williamson, O. E. 1984. Corporate governance. *Yale Law Journal*. 93 (3): 1197-1230.

Wilson, T. E. 2003. Further evidence on the determinants of audit fees of energy firms. *Petroleum Accounting and Financial Management Journal* 22 (3): 58-68.

Wood, R. E., and A. Bandura. 1989. Impact of conceptions of ability on self-regulatory mechanisms and complex decision-making. *Journal of Personality and Social Psychology* 56 (3): 407-415.

Xie, B., W. N. Davidson, and P. J. DaDalt. 2003. Earnings management and corporate governance: The role of the board and audit committee. *Journal of Corporate Finance* 9 (3): 295-316.

Zahra, S. A., and J. A. I. Pearce. 1989. Boards of directors and corporate financial performance: A review and integrative model. *Journal of Management* 15 (2): 291-334.

Zang, Y., J. Choi, and J. Kim. 2010. Do abnormally high audit fees impair audit quality? *Auditing: A Journal of Practice and Theory* 29 (2): 115-140.

Zhang, Y., J. Zhou, and N. Zhou. 2007. Audit committee quality, auditor independence, and internal control weaknesses. *Journal of Accounting and Public Policy* 26 (3): 300-327.

Zhou, J., and R. Elder. 2002. Audit firm size, industry specialization and earnings management by initial public offering firms. Working paper. Binghampton University, NY, U.S.A.

Zucker, L. G. 1987. Institutional theories of organization. *Annual Review of Sociology* 13 (2): 443-464.