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The Effect of Audit Quality on the Relationship between Audit Committee Effectiveness and Financial Reporting Quality

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Julkaisun nimike

Tilintarkastuksen laadun vaikutus tarkastusvaliokunnan tehokkuuden ja taloudellisen tiedon laadun väliseen suhteeseen

Tiivistelmä

Tässä tutkimuksessa tarkastellaan tilintarkastuksen laadun vaikutusta tarkastusvaliokunnan ja taloudellisen tiedon laadun väliseen suhteeseen. Monet tutkimukset ovat tarkastelleet tarkastusvaliokunnan tehokkuuden, tilintarkastuksen laadun ja taloudellisen tiedon laadun välisiä yhteyksiä. Tämän tutkimuksen tarkoituksena on yhdistää nämä erilliset tutkimussuuntaukset ja muodostaa malli, joka tarkastelee tarkastusvaliokunnan tehokkuuden ja tilintarkastuksen laadun vaikutusta taloudellisen tiedon laatuun yhdessä. Näin ollen tutkimuksessa testataan seuraavia aikaisemmasta kirjallisuudesta johdettuja hypoteeseja: 1) Tarkastusvaliokunnan tehokkuus parantaa taloudellisen tiedon laatua, 2) Tarkastusvaliokunnan tehokkuus lisää tilintarkastuksen laadun kysyntää, 3) Tilintarkastuksen laatu parantaa taloudellisen tiedon laatua ja 4) Tilintarkastuksen laatu toimii välittävänä tekijänä tarkastusvaliokunnan tehokkuuden ja taloudellisen tiedon laadun välisessä suhteessa.

Hypoteesien testaamiseksi käytettiin kahta toisiaan täydentävää menetelmää: Causal Steps –menetelmää ja Sobelin testiä. Causal Steps –menetelmän periaatteiden mukaisesti S&P (Standard & Poor's) 1500 indeksiin kuuluvista yrityksistä koostuvaa aineistoa testattiin erilaisilla regressioanalyyseillä. Tämän lisäksi Sobelin testiä käytettiin soveltuvin osin sen testaamiseksi, onko välittävä vaikutus tilastollisesti merkitsevä. Tilastollisissa testeissä tarkastusvaliokunnan tehokkuutta mitataan kolmella tekijällä: tarkastusvaliokunnan koolla (ACSIZE), tarkastusvaliokunnan asiantuntemusta kuvaavalla suhdeluvulla (ACEXP) ja tarkastusvaliokunnan kokoustiheydellä (ACMEET). Tilintarkastuksen laatua mitataan tilintarkastajalle maksetuilla palkkioilla (AUDITFEE). Lopuksi taloudellisen tiedon laatua mitataan harkinnanvaraisilla erillä (ACC). Näin ollen seuraavia, mittareiden avulla esitettyjä malleja, testataan empiirisesti: ACSIZE→ AUDITFEE→ACC, ACEXP→AUDITFEE→ACC ja ACMEET→AUDITFEE→ACC.

Tutkimuksen tulokset tukevat viimeistä mallia osoittaen, että tarkastusvaliokunnan kokoustiheydellä on sekä suora että välitetty vaikutus taloudellisen tiedon laatuun tilintarkastuksen laadun kautta. Nämä tulokset osoittavat, että tarkastusvaliokunnan kokoukset eivät ole ainoastaan symbolisia, mutta ne myötävaikuttavat taloudellisen tiedon laatuun ja tilintarkastuksen laatuun. Tämän lisäksi tulokset osoittavat, että tarkastusvaliokunnan tehokkuuden ja tilintarkastuksen laadun välille muodostuu jatkumo, joka vaikuttaa edelleen taloudellisen tiedon laatuun. Näin ollen tutkimuksen tulokset tukevat hypoteesia, jonka mukaan tilintarkastuksen laatu välittää tarkastusvaliokunnan tehokkuuden vaikutusta taloudellisen tiedon laatuun. Tutkimuksen tulokset koskien malleja ACSIZE→AUDITFEE→ACC ja ACEXP→AUDITFEE→ACC ovat kuitenkin epäjohdonmukaisia, eivätkä ne yleisesti ottaen tue tutkimuksen hypoteeseja.

Asiasanat

tarkastusvaliokunnan tehokkuus, tilintarkastuksen laatu, taloudellisen tiedon laatu

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Abstract

This study examines the role of audit quality on the relationship between audit committee effectiveness and financial reporting quality. A steady stream of literature has examined relationships between audit committee effectiveness, audit quality and financial reporting quality. The objective of this study is to connect these various streams of research to produce an integrated model depicting the effect of audit committee effectiveness and external audit quality on financial reporting quality. Thus, the following hypotheses, derived from prior research, are tested: 1) Audit committee effectiveness improves financial reporting quality, 2) Audit committee effectiveness increases the demand for audit quality, 3) Audit quality improves financial reporting quality, and 4) Audit quality mediates the relationship between audit committee effectiveness and financial reporting quality.

To provide insight on the above hypotheses two complementary methods were employed, namely the Causal Steps Method and the Sobel Test. Thus, following the principles of the Causal Steps Method a series of multiple regression analyses are employed for a sample of S&P (Standard & Poor's) 1500 firms which had their fiscal years ending during the calendar year 2006. In addition, the Sobel Test statistics are calculated to examine the significance of the mediated effect when applicable. In the analyses audit committee effectiveness is measured by three variables, namely audit committee size (ACSIZE), audit committee expertise ratio (ACEXP) and audit committee meeting frequency (ACMEET). Audit quality is measured by audit fees (AUDITFEE) paid to the incumbent auditor. Finally, financial reporting quality is measured by discretionary accruals (ACC). Thus, in terms of operational measures following models were tested: ACSIZE →AUDITFEE→ACC, ACEXP→AUDITFEE→ACC and ACMEET→AUDITFEE→ACC.

The results support the last model, showing that audit committee meeting frequency has both a direct effect as well as mediated effect through audit fees on discretionary accruals. These results imply that audit committee meetings are not merely symbolic but that they contribute to financial reporting quality as well as external audit quality. In addition, there seems to be a sequence from audit committee effectiveness to audit quality which further contributes to financial reporting quality. Thus, the results regarding the model ACMEET→AUDITFEE→ACC support the hypothesized mediated effect of audit committee effectiveness on financial reporting quality through audit quality. However, the results regarding models ACSIZE→AUDITFEE→ACC, and ACEXP→AUDITFEE→ACC are inconclusive and they do not support the hypothesized relationships.

Keywords

audit committee effectiveness, audit quality, financial reporting quality

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LIST OF ABBREVIATIONS

AMEX	American Stock Exchange
CEO	Chief Executive Officer
CPA	Certified Public Accountant
ERC	Earnings Response Coefficient
GAO	Government Accountability Office
GAAP	Generally Accepted Accounting Principles
GAAS	Generally Accepted Auditing Standards
IPO	Initial Public Offering
NASDAQ	National Association of Securities Dealers Automated Quotation System
NYSE	New York Stock Exchange
SEC	Securities and Exchange Commission
SOX	Sarbanes-Oxley Act

1 INTRODUCTION

This study focuses on two principal actors of corporate governance, namely audit committees and external auditors (Cohen, Krishnamoorthy & Wright 2004). These corporate governance players have a common objective in ensuring financial reporting quality. In addition, audit committees are responsible for hiring and overseeing external auditors' work (e.g. SOX 2002), which gives them great authority over audit quality. When these responsibilities are taken into consideration as a whole, audit quality can be considered to have an effect on the relationship between audit committee effectiveness and financial reporting quality.

As pointed out by Ball (2008) financial reporting is an important economic activity. The demand for financial reporting arises from information asymmetry between the managers and owners of the company (Jensen & Meckling 1976; Healy & Palepu 2001). High quality of financial reporting is a prerequisite for an efficient allocation of capital (Healy et al. 2001). Thus financial reporting quality is of interest to those who use financial reports for decision-making. External financial statement users, including current and potential investors, creditors, and others need reliable financial information on which to base their resource allocation decisions. Auditees, including management, audit committees, and boards of directors have an interest in producing high quality financial reports, for example, to help to reduce the cost of capital and to attract potential investors. In addition, regulators and standard setters can increase the effectiveness of capital markets by promulgating rules and regulations that help ensure financial reporting quality (ISB 2000; Schipper & Vincent 2003).

One of the objectives of a company's corporate governance system is to ensure the quality of that company's financial reporting (Abbott & Parker 2000; Abbott, Parker & Peters 2004; Klein 2003; McMullen & Raghunandan 1996; Stewart & Munro 2007). However, there have been concerns about corporate governance quality in the present environment, where severe corporate failures have come to light. It has been found that the perceived reliability of audited financial information has declined. By contrast, the perceived relevance of audited financial information has increased (Hodge 2003).

Due to these concerns, the impact of corporate governance on a company's financial reporting quality has attracted increasing emphasis among accounting researchers in recent years (Pomeroy & Thornton 2008). Prior research has

indicated that both audit committees and external auditors are able to decrease management discretion over accounting issues and therefore are able to enhance financial reporting quality (e.g. Beasley, Carcello, Hermanson & Lapides 2000; Frankel, Johnson & Nelson 2002; Geiger & Rama 2003; Abbott et al. 2004; Bédard, Chtourou & Courteau 2004; Larcker & Richardson 2004; Bradbury, Mak & Tan 2006). In addition, studies have shown that audit committees are associated with the demand for high quality audit (e.g. Abbott et al. 2000; Abbott, Parker, Peters & Raghunandan 2003a; Chen, Moroney & Houghton 2005).

The objective of this study is to investigate the interplay between audit committees and external auditors in ensuring financial reporting quality. More specifically, as indicated by prior research, it is hypothesized that both audit committee effectiveness and audit quality contribute to financial reporting quality. In addition, audit committee effectiveness is expected to increase audit quality. Finally, these relationships are connected into a more comprehensive model which suggests that audit quality may mediate the relationship between audit committee effectiveness and financial reporting quality. The main contribution of the study arises from the development of the mediation model as well as from its empirical investigation.

1.1 Research problem

The role of external auditing in a company's corporate governance function is a complex one since the auditor interacts with several other actors of the corporate governance function, such as the audit committee, the board of directors, the internal auditors and the management (Cohen et al. 2004). From amongst this complex net of interactions this study focuses on the relationship between audit committees and external auditors in ensuring financial reporting quality. Although earlier studies have recognized that audit committees and external auditors serve as important determinants of financial reporting quality, the relationship between these corporate governance actors has not been thoroughly explored. This is because much of this research has adopted a direct or main effect approach and less attention has been paid to the possibility of more complex effect types which would enable a more thorough analysis of the underlying mechanisms of the relationships. This approach enables research providing a more comprehensive description of companies' corporate governance function and is thus of greater practical significance to interest groups in financial reporting.

Accordingly, this research develops and tests a model that establishes relationships between: 1) audit committee effectiveness and financial reporting

quality, 2) audit committee effectiveness and audit quality, and 3) audit quality and financial reporting quality. In the model developed, audit quality is expected to have a mediating role in the relationship between audit committee effectiveness and financial reporting quality. The mediating role maintains that the effect of audit committee effectiveness on financial reporting quality goes through audit quality, at least partly.

The model is summarized in Figure 1. The theoretical concepts of the model are illustrated at the top of the figure. These are audit committee effectiveness, audit quality and financial reporting quality. Audit committee effectiveness is modelled as the independent variable, audit quality as the mediator and financial reporting quality as the dependent variable in the model. Operational measures for the variables are illustrated at the bottom of Figure 1. Audit committee effectiveness is measured by three variables, namely audit committee size, audit committee meeting frequency, and audit committee expertise ratio. Audit quality is measured by audit fees paid to the incumbent auditor and financial reporting quality is measured by discretionary accruals.

Audit committee effectiveness is the independent variable in the model and in the empirical analyses it is measured by three variables. More specifically, audit committee effectiveness is expected to increase along with audit committee size (ACSIZE), expertise ratio (ACEXP), and meeting frequency (ACMEET) (e.g. Bédard et al. 2004; Goodwin-Stewart & Kent 2006; Vafeas & Waegelein 2007). The model suggests that audit committee effectiveness improves financial reporting quality and increases the demand for audit quality. In addition, audit committee effectiveness is expected to have a mediated effect on financial reporting quality through audit quality.

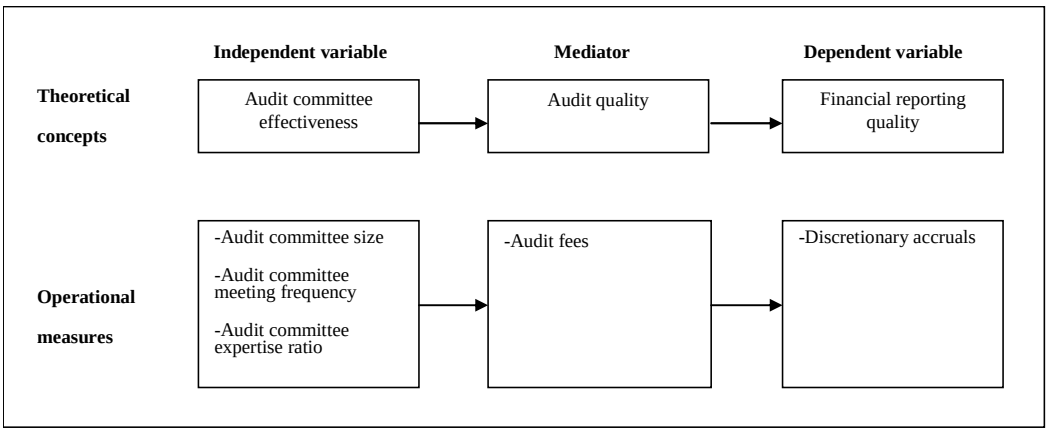

Figure 1. The mediating role of audit quality on the relationship between audit committee effectiveness and financial reporting quality.

Audit quality is the mediating variable in the model. Audit quality is measured by audit fees (AUDITFEE) paid to the incumbent auditor. High levels of audit fees are expected to indicate higher audit engagement effort and thus better audit quality (e.g. Carcello, Hermanson, Neal & Riley 2002; Abbott et al. 2003a; Srinidhi & Gul 2007) after controlling for other variables related to pricing of audit services. Thus, audit quality as determined by audit fees, is expected to improve financial reporting quality. In addition, audit quality is expected to mediate the relationship between audit committee effectiveness and financial reporting quality.

Financial reporting quality is the dependent variable in the model. Following Watkins, Hillison and Morecroft (2004) financial reporting quality refers to how well financial statement information reflects the true economic circumstances of the company. Financial reporting quality is measured by discretionary accruals (ACC)[1] estimated using a modified Dechow and Dichev (2002) model. It is proposed that a higher value of discretionary accruals indicates a greater level of earnings management and thus, lower financial reporting quality.

Collectively, the model is used to test following hypotheses:

H_1: Audit committee effectiveness improves financial reporting quality.

H_2: Audit committee effectiveness increases the demand for audit quality.

H_3: Audit quality improves financial reporting quality.

H_4: Audit quality mediates the relationship between audit committee effectiveness and financial reporting quality.

The model developed is tested with two complementary methods: the Causal Steps Method and the Sobel Test. The Causal Steps Method (see Baron and Kenny 1986) involves probing of four conditions which are analogous with the hypotheses of the study. Thus, the Causal Steps Method involves a multistage regression analysis which assesses following conditions for mediation: 1) the independent variable must have a significant effect on the dependent variable, 2) the independent variable must have a significant effect on the mediator, 3) the mediator must have a significant effect on the dependent variable, and 4) the independent variable should have no effect on the dependent variable when the mediator is held constant (full mediation) or the effect of independent variable

[1] Refers to accruals in which management has discretion over.

should become smaller when the mediator is held constant (partial mediation) (Baron et al. 1986). If all conditions of the Causal Steps Method are met the Sobel Test is also employed. In these situations the Sobel Test provides information regarding the significance of the mediated effect.

The data for this study consists of a sample of S&P 1500 companies[2]. Data is obtained from several sources. Data related to audit committee effectiveness are obtained from Institutional Shareholder Services (ISS). Audit fee data are obtained from the Audit Analytics Database. Finally, financial data is gathered from Thomson Financial Database. The procedures of the Causal Steps Method are carried through separately for the three measures of audit committee effectiveness. Thus, the following models are tested:

1) ACSIZE→AUDITFEE→ACC,

2) ACEXP→AUDITFEE→ACC, and

3) ACMEET→AUDITFEE→ACC.

The results of the Causal Steps Method as well as the Sobel Test provided support for the last model, whereas the results concerning the first two models are inconclusive. In general, the results show that variables related to audit committee composition are not sufficient measures for audit committee effectiveness in the US regulatory environment, likely because the US regulations allow little variation in audit committee composition which results in companies setting up homogeneous audit committees in terms of their size and expertise ratio[3]. Thus, the relationships between audit committee composition measures and financial reporting quality measure as well as audit committee composition measures and audit quality measure cannot be observed with the data employed in the present study.

However, the results show that audit committee meeting frequency can be used to differentiate audit committee effectiveness between companies. More specifically with regard to model ACMEET→AUDITFEE→ACC the following results are found. *Firstly*, the results reveal that audit committee meeting frequency has a negative effect on discretionary accruals. This indicates that more active audit committees are better able to restrict management influence over discretionary

[2] Refers to the S&P (Standard & Poor's) 1500 Composite Index which encompasses all stocks in the S&P 500, S&P 400, and S&P 600 indices.
[3] See e.g. Hay, Knechel & Ling (2008) for more discussion on this issue.

accruals and thus ensure financial reporting quality more effectively. *Secondly*, audit committee meeting frequency is found to have a positive effect on audit fees. This result has several plausible explanations. Audit committee meetings may require more work by external auditors, which leads to higher audit fees. Alternatively more active audit committees may require greater audit quality and audit coverage, which leads to an increase in audit fees. *Thirdly*, audit fees are found to have a modest negative effect on discretionary accruals. This result implies that higher fees reflect greater audit effort, which leads to greater monitoring provided by auditors and thus, to better financial reporting quality. *Finally*, it was found that audit fees partially mediate the relationship between audit committee meeting frequency and discretionary accruals. The fact that only partial mediation was found indicates that there may be other control mechanisms, currently beyond the scope of the model developed, which can function as mediators in the relationship between audit committee effectiveness and financial reporting quality. These control mechanisms include, for example, internal auditing and the internal control mechanism of the company.

1.2 Contribution

This study adds to the existing knowledge regarding the interplay between audit committees and external auditors in ensuring financial reporting quality. More specifically this study develops a model in which audit quality mediates the relationship between audit committee effectiveness and financial reporting quality. This study contributes to the existing literature both theoretically as well as empirically.

Firstly, the model developed can be placed in theoretical frameworks concerned with corporate governance (Cohen et al. 2004), audit committee effectiveness (DeZoort, Hermanson, Archambeault & Reed 2002) and audit quality (Watkins et al. 2004). This study contributes to these frameworks by providing empirical evidence for some of the specific aspects they address. Cohen et al. (2004) discuss the interrelationships between various corporate governance actors functioning inside and outside the company. This study focuses on the interrelationship of two corporate governance actors, namely audit committees and external auditors. The framework by DeZoort et al. (2002) addresses the determinants of audit committee effectiveness. According to the framework this is dependent upon composition, authority, resources and diligence of the audit committee. Consistently the operational measures of audit committee effectiveness employed in this study are related to composition and diligence components of audit committee effectiveness. Finally, Watkins' et al. (2004)

framework models the drivers, components and products of audit quality. The framework maintains that there is a sequence from the drivers of audit quality to components of audit quality and further to products of audit quality. The model developed in the present study is analogous with this view: audit committee effectiveness is expected to lead to audit quality, which is further expected to result in financial reporting quality.

Secondly, the effect of audit committee effectiveness and external audit quality on financial reporting quality is an area which has commanded considerable research interest in empirical studies. In summary, prior research has determined relationships between: 1) audit committee effectiveness and financial reporting quality (e.g. Beasley et al. 2000; Abbott et al. 2004; Bédard et al. 2004), 2) audit committee effectiveness and audit quality (e.g. Abbott & Parker 2001; Abbott et al. 2003a; Vafeas et al. 2007), and 3) audit quality and financial reporting quality (e.g. Nelson, Elliott & Tarpley 2002; Krishnan 2005; Srinidhi et al. 2007). This study contributes to prior research theoretically by placing these relationships into a more comprehensive model. The core of the model developed is the assumption that audit quality mediates the relationship between audit committee effectiveness and financial reporting quality.

Thirdly, the results of the earlier studies regarding the relationships between audit committee effectiveness, audit quality and financial reporting quality have naturally been obtained in several countries and at different times using different sets of data. This study also contributes to earlier studies empirically by examining whether these relationships can be found using a single set of data of US companies from year 2006. If relationships can be found this study provides further support for prior studies and shows that their results have not been driven, for example, by special features in the data. Another empirical contribution of this study arises from the analysis of the mediated effect. Prior audit research has not addressed mediation models and thus, has not employed methods suitable to test mediated effects. This study adopts methods used in other fields of social sciences to test the mediation hypothesis.

1.3 Structure of the study

The overall structure of the study is presented in Figure 2. In general, the chapters of the study form four main phases which are as follows: 1) Introduction, 2) Theory and prior literature, 3) Methodology and results, and 4) Conclusions. The purpose of *the first phase* is to present the research problem area, the research problem as well as the contributions of the study. *The second phase* explains the

theoretical foundations of the study and therefore agency theory and relevant frameworks are discussed. This phase also provides definitions of key theoretical concepts as well as operational measures for these concepts employed by prior studies. Finally, the research model is derived from prior empirical research. *The third phase* explains the statistical methods employed as well as the adaptation of these methods. This phase also presents the results of this study. *The fourth phase* provides concluding remarks including a discussion linking the results of the present study with the existing literature. In addition, the implications of the results and future research opportunities are discussed.

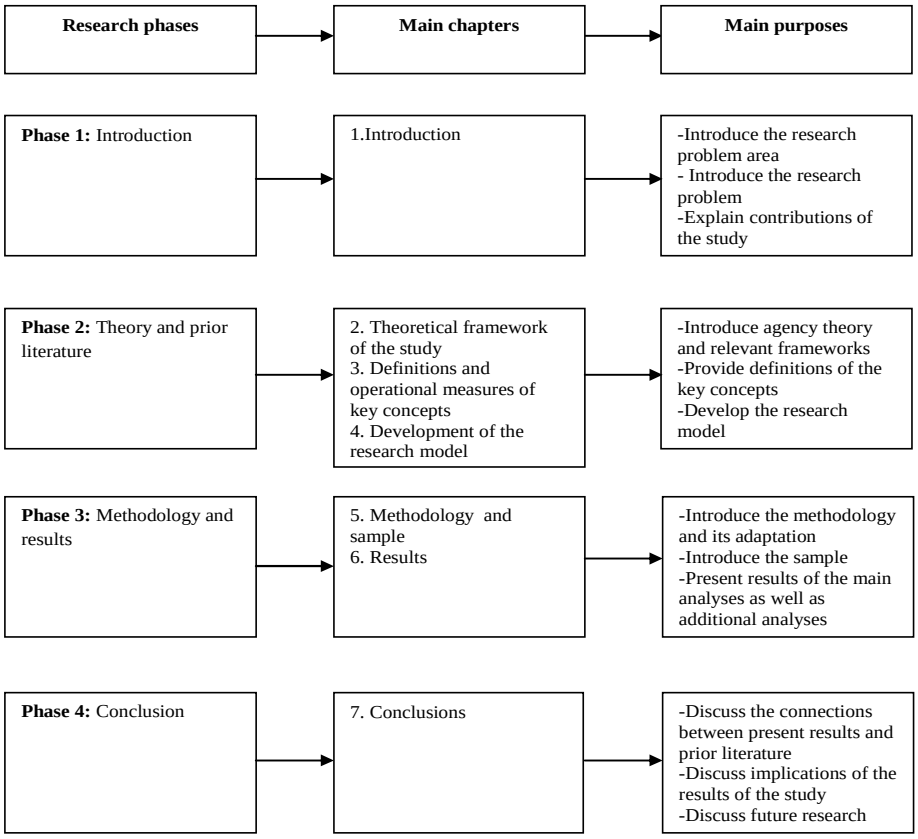

Figure 2. Phases of the study.

More specifically, this study consists of seven chapters organised in the following way. The first chapter introduces the research problem and discusses the contributions of the study. The second chapter introduces the theoretical perspectives underlying the research problem area. Thus, this chapter introduces

the basic premises of agency theory, which explains the demand for financial reporting as well as corporate governance. This chapter also introduces frameworks related to corporate governance, audit committee effectiveness and audit quality. In addition the second chapter introduces the regulatory environment of the study. This discussion is focused on regulations related to audit committee effectiveness and audit quality. The third chapter introduces definitions as well as measures for audit committee effectiveness, audit quality and financial reporting quality used in prior studies. This discussion is based on both theoretical and empirical research. The fourth chapter formulates the hypotheses by reviewing studies focusing on relationships between audit committee effectiveness, audit quality and financial reporting quality. This chapter also discusses the alternative effect types which can be chosen to describe the relationships. Finally, the research model is introduced. The fifth chapter introduces the methodology for testing the mediation effect. In addition, this chapter introduces the operational measures for variables and explains how methods related to mediation effect are adopted in the present study. Chapter Six presents the results of the analyses. Finally Chapter Seven provides concluding remarks for the study.

2 THEORETICAL FRAMEWORK OF THE STUDY

A company's corporate governance function includes five main actors: management, the board of directors, the audit committee, the external auditors and the internal auditors (Cohen et al. 2004). One of the main objectives of corporate governance is to ensure a company's financial reporting quality. The interaction among corporate governance actors is crucial to achieve this objective (SOX 2002; Cohen et al. 2004). This study will focus on two of these corporate governance actors, namely audit committees and external auditors. In particular this study attempts to determine and analyse the type of relationship between audit committees and external auditors in ensuring financial reporting quality.

The aim of this section is to introduce the underlying theoretical foundations for this study which form the basis for the rest of the thesis. *Firstly*, agency theory will be introduced. Agency theory is a general theory of accounting which explains the demand for monitoring provided by audit committees and external auditors. *Secondly*, theoretical frameworks regarding corporate governance, audit committee effectiveness and audit quality are introduced. In addition, the regulatory framework related to the research problem area is discussed. *Finally*, the positioning of the present study into agency theory and the theoretical and regulatory frameworks is explained.

2.1 Agency theory

The theoretical background of this study is based on agency theory, which postulates that so-called agency problems emerge due to the separation of ownership and control. Agency problems are further expected to have an impact on financial reporting quality. This creates a need for monitoring of management and thus produces the need for corporate governance including effective audit committees and high quality external auditors (Jensen et al. 1976; Healy et al. 2001). An underlying notion behind agency theory is that the monitoring provided by audit committees and external auditors will actually contribute to corporate control, thereby increasing a company's financial reporting quality. By contrast, institutional theory, for example, states that many organizational structures such as audit committees are merely symbolic and may be formed to conform to social expectations without having any actual impact on financial reporting quality (Kalbers & Fogarty 1998).

In agency theory emphasis is on rights established by contracts (Coase 1937; Alchian & Demsetz 1972; Jensen et al. 1976; Fama & Jensen 1983). Jensen et al. (1976) model the contract between the shareholder and the owner-manager, which is called an *agency relationship*. An agency relationship is defined as a contract under which one or more persons (the principals) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent (Jensen et al. 1976). In the manager-shareholder contract, the owner-manager is viewed as the agent and the shareholder as the principal (Watts & Zimmerman 1986). Both the principals and the agents are considered utility maximizers (Jensen et al. 1976).

Agency relationship contains two inherent aspects which, in combination, create *agency problems*: 1) the potential conflicts of interests between owners and managers which may cause managers to act against shareholders' interests, and 2) the imperfect observability of managerial actions by shareholders (DeFond 1992). Agency problems can increase management's propensity to produce substandard financial information in order to conceal actions that have not been in the best interest of the shareholders or debt-holders (Jensen et al. 1976). The agency literature suggests that certain company specific characteristics increase management incentives to act against shareholders' or debt-holders' interests, thus increasing agency problems. The primary operational measures for agency problems are leverage, management ownership and free cash flow (see e.g. DeFond 1992).

Firstly, the agency problem of *leverage* postulates that managers (acting on behalf of shareholders) have incentives to transfer wealth from debt-holders by taking various actions such as paying dividends to shareholders at the expense of profitable projects or restructuring of debt (Jensen et al. 1976; Chow 1982; DeFond 1992; Parkash & Venable 1993). Some of these actions can result in a decline in firm value because they involve suboptimal investment policies (Chow 1982). Moreover, the literature suggests that firms with high leverage are more likely to face bankruptcy and such firms are more likely to engage in earnings management since they are closer to debt covenant violations (Gul & Tsui 2001).

Secondly, agency literature recognizes that the level of *management ownership* gives rise to an asymmetric information problem. This maintains that at low levels of management ownership the manager may be better informed about the activities and payoffs of the firm than the owner (Ng 1978; Ng & Stoeckenius 1979). Separation of ownership from management creates monitoring difficulties giving the potential for management to take non-value-maximizing actions. Thus, low management ownership creates an increased demand for accounting-based

contractual constraints which are used to discourage managers from non-value-maximizing actions. Management may be motivated to mitigate these constraints by strategically choosing accounting policies and determining accounting accruals (Jensen et al. 1976). Accordingly it has been found that management ownership is positively associated with earnings explanatory power for returns and negatively related to the magnitude of discretionary accruals (Warfield, Wild & Wild 1995).

Thirdly, the agency problem of *free cash flow* postulates that in the presence of high free cash flow, management has opportunities to make expenditures that have negative Net Present Values (NPVs) rather than paying dividends to shareholders or purchase stock. The free cash flow agency problem can be implicated by a firm's poor financial performance and consequently poor stock market valuations. The free cash flow agency problem is also implicated by a relation between company's free cash flow and accrual activities. Managers in firms with high free cash flow may have incentives to smooth earnings in order to shirk the full impact of wasteful expenditures on earnings. Prior research has documented a negative relation between free cash flow and the magnitude of discretionary accruals. These results can be explained by the following rationale: income-decreasing accruals occur if managers wish to shift profits to future years when the full impact of expenditures hits earnings (Chung, Firth & Kim 2005; Richardson 2006).

Agency theory maintains that there are two main ways in which shareholders can mitigate agency problems. First, the shareholders can establish appropriate incentives for the managers in such a way that their interests coincide with those of the shareholders. Second, the shareholders can monitor the managements' actions. Jensen et al. (1976) describe *agency costs* as the sum of these safeguards, along with the effects of those abuses which could be prevented.

According to agency theory, the demand for financial reporting arises from the manager's needs to provide some description of the firm's payoff for legal and contractual reasons. However, financial reporting is of little use if its provision is not monitored and enforced (Watts et al. 1986). Corporate governance actors, such as audit committees and external auditors, provide monitoring whose main value is dependent on its ability to decrease the likelihood that company's financial reports contain breaches. Agency theory predicts that as agency problems become more severe, management will demand higher quality monitoring in an effort to ensure financial reporting quality to shareholders, debt-holders or other investors (Chow 1982; Francis & Wilson 1988; DeFond 1992; Kalbers et al. 1998; Lennox 2005). Prior empirical studies have addressed this notion and examined for example whether variables related to company's agency

problems produce the need for effective audit committees (e.g. Menon & Williams 1994; Collier & Gregory 1999) or high quality external audit (e.g. Lennox 2005; Nikkinen & Sahlström 2004).

2.1.1 Agency theory and audit committees

Early studies focusing on the association between agency problems and audit committees were conducted prior to the requirement for mandatory formation of audit committees. Thus, studies such as Pincus, Rusbarsky and Wong (1989) and Bradbury (1990) examined whether a company's agency problems affect the voluntary formation of audit committees. It was hypothesized that companies with great agency problems are more likely to employ audit committees in order to enhance the quality of financial reporting by management. The results of these studies were somewhat mixed. Pincus et al. (1989) in their study of US companies reported a number of significant relationships between variables related to agency problems (i.e. leverage, company size, ownership structure) and the formation of audit committee. Bradbury (1990), however, was unable to find significant relationships between agency problem variables (i.e. number of outside shareholders, leverage and assets-in-place) and formation of audit committees for a sample of New Zealand companies.

Studies have also attempted to link agency problems with measures of audit committee effectiveness, such as audit committee independence and activity level. The results of these studies have also been mixed. For example, Menon et al. (1994) found significant relations between selected agency variables (i.e. outside directors on the board, auditor type and company size) and the existence of audit committees, the percentage of outside directors on audit committees, or the frequency of audit committee meetings using a sample of US companies. Collier et al. (1999) attempted to replicate and extend the study by Menon et al. (1994). More specifically they examined audit committee activity level in large companies and by employing another measure of audit committee effectiveness, namely the duration of audit committee meetings. Their results, however, failed to support the findings of Menon et al. (1994) related to the impact of agency variables on the number of audit committee meetings. They did find that the (then) Big Six audit firms and leverage were positively related to audit committee activity. In addition the results revealed that audit committee activity was reduced in firms where the role of chairman and CEO were combined and where insiders were included in the audit committee. Turpin and DeZoort (1998) found a significant positive association between voluntary audit committee report disclosure in annual reports and agency variables - company size, proportion of

outside directors, leverage, and trade on a major stock exchange. In contrast Kalbers et al. (1998) investigated whether audit committee effectiveness is more closely aligned with agency or institutional theory. Their results did not show a strong link between audit committee effectiveness and agency variables, thus providing indirect support for the institutional theory which states that the audit committee is a symbolic structure formed to confirm to social pressures.

Studies have also examined the relationship between boards of directors and audit committees. Since the audit committee is a subcommittee of the board it is expected to have a significant effect on audit committee composition and activities. Beasley and Salterio (2001) examined the effect of boards of directors on voluntary improvements in audit committee composition. They found that audit committee independence level and audit committee knowledge and experience were positively associated with board size, proportion of outsiders on the board, and the separation of board chair and CEO/president. Similarly Klein (2002b) found that audit committee independence was positively associated with board size and board independence and negatively associated with growth opportunities and firms with losses. Klein (2002b) found no effect of leverage, CEO on compensation committee and outside director holdings[4] on audit committee independence.

2.1.2 Agency theory and external auditing

Agency theory has also been applied to external auditing. These studies have examined whether agency problems increase the demand for audit quality. Early studies such as Chow (1982) and Watts and Zimmerman (1983) provide evidence that firms voluntarily engage external auditing in situations of great agency problems. Later studies used auditor reputation (audit firm size or brand name) as a measure of audit quality and documented that companies facing agency problems hire auditors with better reputation (Francis et al. 1988; DeFond 1992; Lennox 2005; Fan & Wong 2005). More recent research has used audit fees as a proxy for audit quality. Gul and Tsui (1998) examined the association between free cash flow and audit fees. They presented evidence of a positive association between free cash flow and audit fees for low growth firms. In addition it was found that debt moderated this relationship. In a subsequent study Gul et al. (2001) examined the association between free cash flow and audit fees for different levels of management ownership. They found a positive association

[4] Outside director holdings was the percentage of shares held by outside directors. Outside directors were defined as directors having no affiliation with the firm other than serving as directors in the board or audit committee whereas inside directors were current employees.

between free cash flow and audit fees. This association was stronger for companies with low management ownership. In addition Nikkinen et al. (2004) examined the relationship between agency problems and total fees paid to incumbent auditors. They found a positive relation between free cash flow and total fees and a negative relation between management ownership and total fees. These results are consistent with the notion that management demands a higher quality audit as firm's agency problems increase. In addition, some other control mechanisms such as debt holders may have an effect on the strength of this relationship.

Prior research has also shown that audit clients distinguish between audit and non-audit services when considering their effect on audit quality and especially auditor independence. The notion behind these studies is that if auditees want to signal audit quality and auditor independence to outsiders they restrict the purchase of non-audit services from their incumbent auditor. This notion is supported by Beck, Frecka and Solomon (1988a), Beck, Frecka and Solomon (1988b), Parkash et al. (1993) and Firth (1997), who found that companies with agency problems reduce the purchase of non-audit services from the incumbent auditor. This can be explained by auditee's wish to safeguard shareholders' perceptions of auditor independence in situations where agency problems are present (Parkash et al. 1993).

2.2 Frameworks

Prior literature includes frameworks which have been developed to improve the understanding of the actors potentially influencing the effectiveness of corporate governance including audit committees and external auditors. In this study the frameworks are divided into three classes: 1) frameworks related to corporate governance, 2) frameworks related to audit committees and 3) frameworks related to audit quality. These frameworks are somewhat overlapping, although they represent alternative theoretical approaches to analyse the functioning of corporate governance, audit committee effectiveness and audit quality. The frameworks are discussed in more detail in the following sections.

2.2.1 Framework for corporate governance

Cohen's et al. (2004) *corporate governance mosaic* aims to describe how a company's corporate governance affects financial reporting quality. This mosaic is presented in Figure 3. *Firstly*, the mosaic identifies actors and mechanisms for

the most part external to the company, which are expected to have an effect on the effectiveness of the organizations corporate governance function. These actors include regulators, legislators, financial analysts, stock exchanges, courts and the legal system as well as the stockholders. *Secondly*, the main actors of corporate governance are identified. These include board of directors, audit committees, internal auditors, external auditors and management. These five actors are also expected to have a more direct impact on a company's financial reporting quality. The framework maintains that there are interrelationships between the various mechanisms and actors in the framework. More specifically, the effectiveness of a company's corporate governance function is dependent on proper communication and interaction between corporate governance actors. This is consistent with SOX (2002), which states that the effectiveness of corporate governance is dependent on the interaction between board of directors, audit committees, external auditors, internal auditors and management.

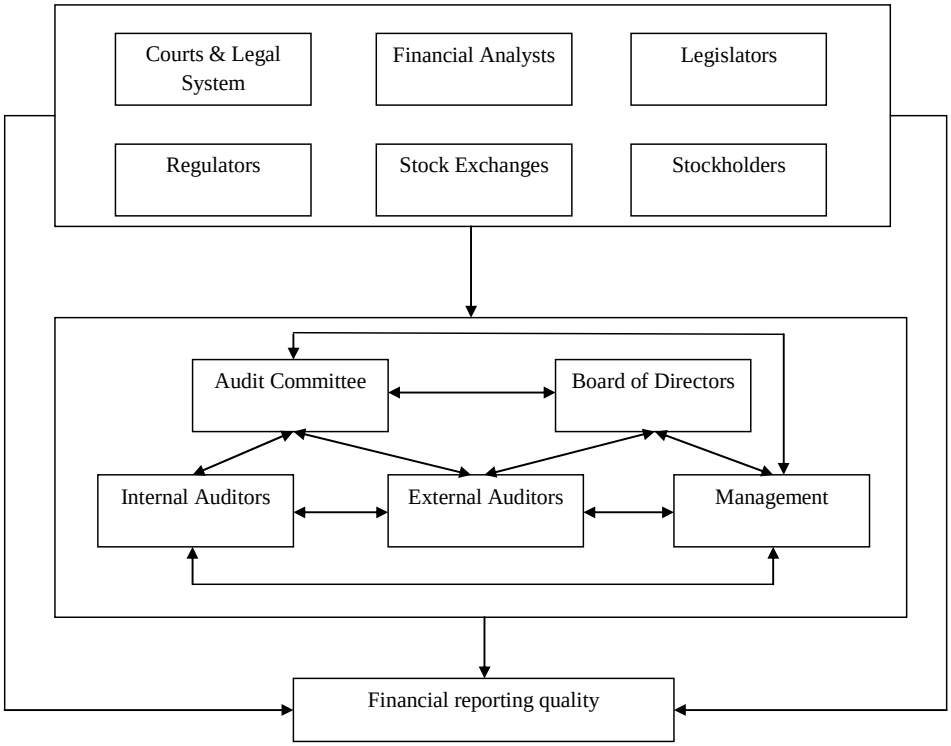

Figure 3. Corporate governance mosaic and financial reporting quality (Cohen et al. 2004).

2.2.2 Framework for audit committee effectiveness

DeZoort et al. (2002) provided a framework for evaluating *audit committee effectiveness*. The framework is presented in Figure 4. This framework DeZoort et al. (2002) consists of three levels of audit committee effectiveness, namely input, process and output levels. The input level of audit committee effectiveness includes components such as composition, authority and resources of the audit committee. These factors create the basic premises for audit committee effectiveness. Audit committee composition refers to audit committee members' mental attributes such as expertise, independence, integrity and objectivity. On the other hand authority refers to the responsibilities and influence of the audit committee. In addition, resources involve audit committee members' access to management as well as internal and external auditors. The process level of audit committee effectiveness includes diligence of the audit committee. It is suggested that input level factors contribute to audit committee effectiveness only if audit committee members are active and devote adequate time and effort to the discharge of their duties regarding the functioning of the audit committee. The input and process components are expected to have a joint effect on the output of audit committee effectiveness. In the framework audit committee is considered effective if it successfully fulfils its responsibilities.

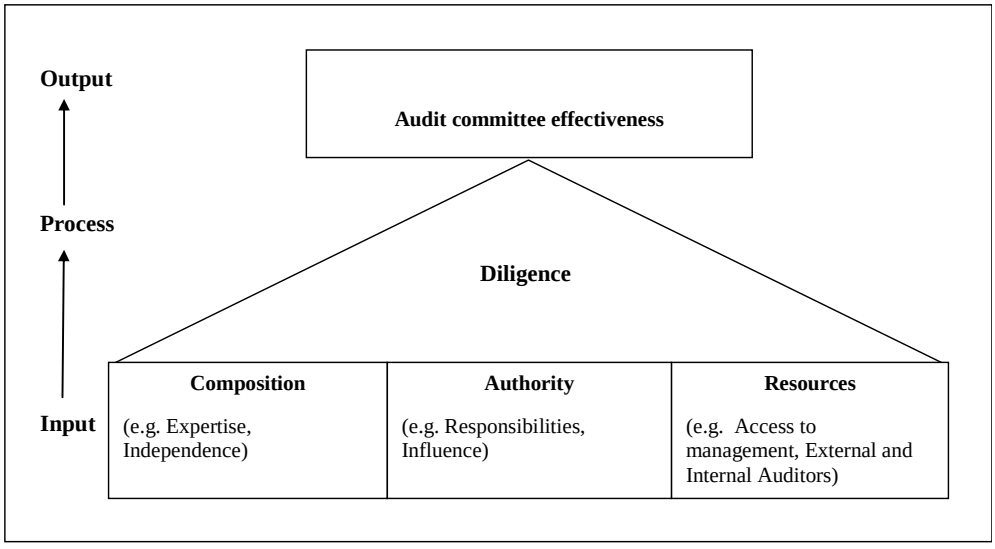

Figure 4. Determinants of audit committee effectiveness (DeZoort et al. 2002).

2.2.3 Frameworks for audit quality

Frameworks related to audit quality include DeAngelo's (1981a; 1981b) seminal model for audit services as well as more recent description of determinants of audit quality by Watkins et al. (2004). DeAngelo's (1981a; 1981b) framework defines determinants of perceived audit quality with a particular focus on auditor independence. More recently, Watkins et al. (2004) developed DeAngelo's (1981a; 1981b) definition further. In comparison to DeAngelo's (1981a; 1981b) definition, which is concerned with perceived audit quality, Watkins et al. (2004) make a distinction between actual and perceived audit quality.

DeAngelo's (1981a; 1981b) definition of perceived audit quality is depicted in Figure 5. DeAngelo (1981a; 1981b) defines audit quality as the market-assessed probability that, given that the financial statements contain material errors, they are discovered and reported. According to the definition the probability of discovery depends on the auditor's *competence*, whereas the probability of reporting refers to the auditor's *independence* from the auditee. According to the framework independence is compromised if the auditor allows the client to use a reporting policy that he or she believes would be viewed as an audit failure. DeAngelo (1981a; 1981b) argues that auditor's decision to retain his or her independence would be impaired if the auditor fears dismissal. Losing a client would mean that the auditor would lose the economic revenue that otherwise would accrue to him or her from repeatedly auditing the same client. The revenues are a result of gaining client specific knowledge. The revenue serves to bind the auditor to the client because client specific knowledge results in audit costs falling while audit fees rise over time (DeAngelo 1981a; DeAngelo 1981b). However, potential loss of reputation from perceived non-independence is seen as counteracting the bonding between auditor and client. Thus, auditor's loss of reputation can reduce the size of the auditors' client portfolio. Ultimately the decision to remain independent results from a comparison of the gains resulting from choosing to lose one's independence with those obtainable from remaining independent (DeAngelo 1981a; DeAngelo 1981b). In addition, DeAngelo (1981a; 1981b) argues that large audit firms are better able to remain independent of the audit client because they have more audit clients than small audit firms. Therefore economic revenues received from one client are typically not as significant to a large audit firm as to a small audit firm.

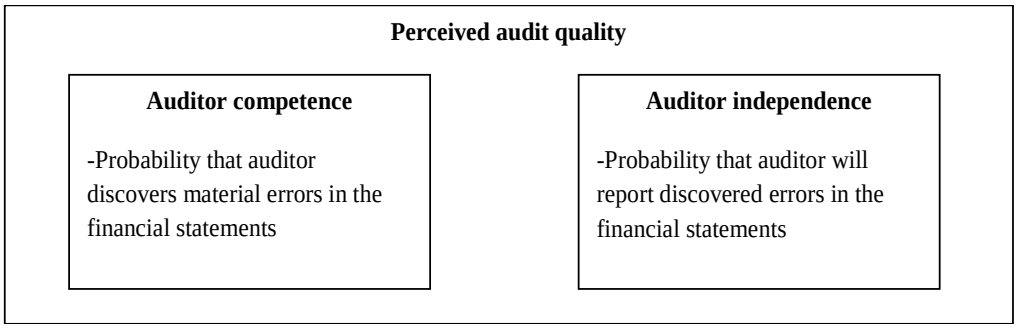

Figure 5. Perceived audit quality (DeAngelo 1981a; DeAngelo 1981b).

The framework by Watkins et al. (2004) extends the definition of audit quality provided by DeAngelo (1981a; 1981b). The framework discusses drivers, dimensions as well as products of audit quality. This framework is presented in Figure 6. *Drivers for audit quality* are divided into demand and supply drivers. Demand drivers include client risk strategies and agency conflicts and supply drivers include auditor risk management strategies and audit fees. *Audit quality* is divided into auditor reputation and auditor monitoring strength. Auditor reputation refers to perceptions of audit quality and auditor monitoring strength refers to actual audit quality. Consistent with DeAngelo (1981a; 1981b), both auditor monitoring strength and auditor reputation can be divided into dimensions of competence and independence. In other words, auditors' monitoring strength (reputation) is dependent on auditors' actual (perceived) competence and actual (perceived) independence. Monitoring strength and reputation are expected to be determinants of information credibility and information quality. Consistently information credibility refers to perceptions of financial reporting quality and information quality refers to actual financial reporting quality in the framework.

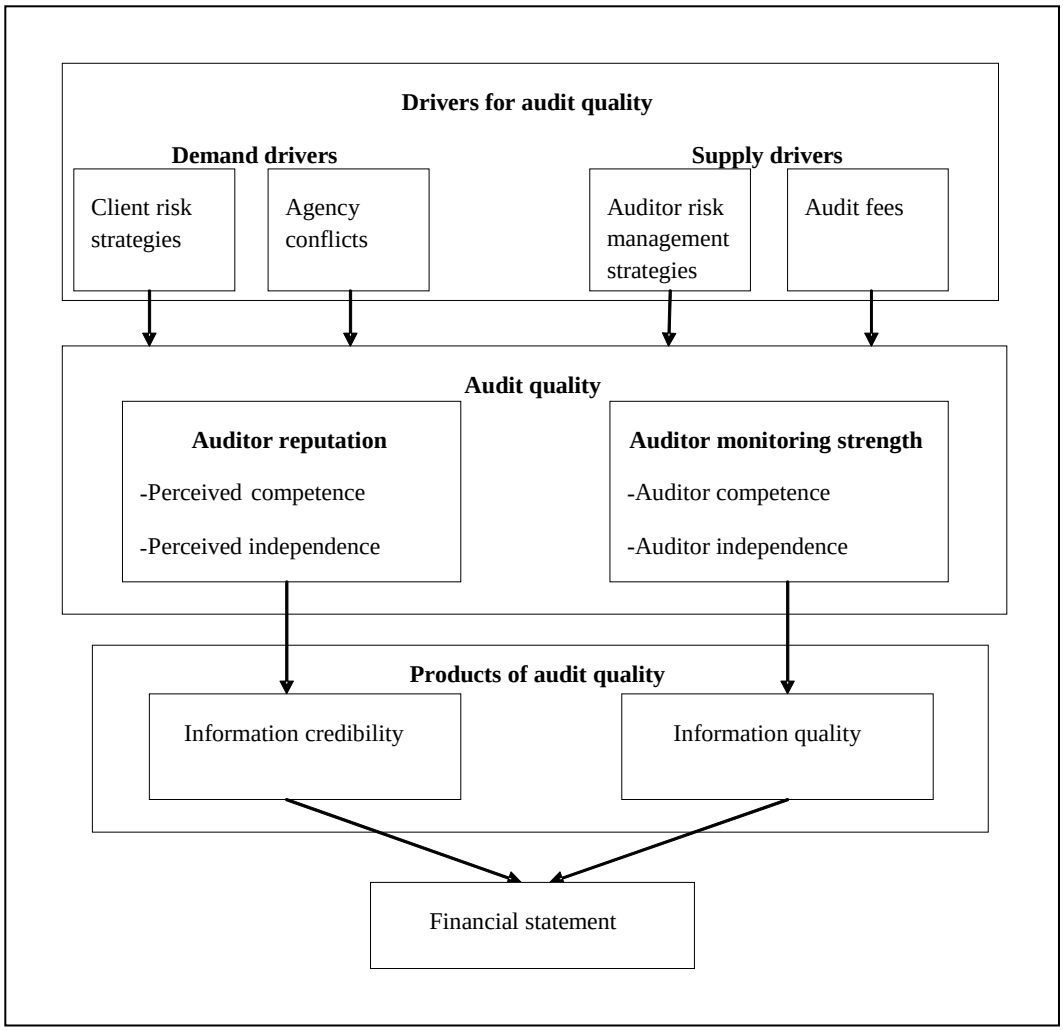

Figure 6. Determinants of audit quality (Watkins et al. 2004).

2.2.4 Regulatory framework

Corporate failures and accounting scandals have provided US regulators with strong impetus to re-evaluate requirements concerning corporate governance. In the aftermath of these scandals the US Congress passed the Sarbanes-Oxley Act in 2002 (hereafter referred to as the SOX 2002). In addition, all major US stock exchanges have renewed their listing standards with regard to corporate governance based on SOX (2002). In general, the purpose of these requirements is to strengthen companies' corporate governance including the functioning of audit committees and external audit. The proper functioning of these actors is believed to ensure a company's financial reporting quality. The following sections will discuss these requirements in more detail. The aim of this section is to provide a description of the regulatory framework of this study.

2.2.4.1 Requirements related to audit committees

The role of the audit committee in corporate governance has been a subject of increasing regulatory interest. Currently, all firms listed on major US stock exchanges (i.e. NYSE, AMEX or NASDAQ) are required to maintain audit committees. Regulations place audit committees in a key position to ensure a company's financial reporting quality. Consistently, for example, the SOX (2002) states that the purpose of an audit committee is to oversee the accounting and financial reporting process of the company as well as the audits of the financial statements of the company. In order to ensure audit committees effectiveness in discharging its responsibilities, regulators have adopted requirements on the functioning of audit committees in a number of areas including audit committee *composition* and *responsibilities*. The main requirements contained by the SOX (2002) and stock exchanges' listing standards are summarized in Appendix 1 and will be discussed in more detail next.

Firstly, the regulations emphasize the importance of *audit committee composition* in achieving audit committee effectiveness. The objective of these requirements is to ensure that audit committees have adequate resources and knowledge base to fulfill their responsibilities. In general the regulations state that an effective audit committee should comprise a sufficient number of directors. NYSE (2003), AMEX (2003) and NASDAQ (2003) listing standards require that audit committees should comprise at least three members. It is further stated that all audit committee members must be independent of the company as well as financially literate. In addition, regulations state that at least one audit committee member must be a financial expert. For example, NYSE (2003) defines audit committee member independence as freedom from relationships to the company that may interfere with the exercise of the director's independence of the management and the company. Financial literacy refers to audit committee members' ability to understand fundamental financial statements, including a company's balance sheet, income statement, and cash flow statement (AMEX 2003). On the other hand financial expertise refers to a director's employment experience in finance or accounting or in other comparable experience which results in the individual's financial sophistication (e.g. NASDAQ 2003).

Secondly, the regulations recognize that proper audit committee composition does not necessarily ensure audit committee effectiveness. Therefore current regulations include requirements related to audit committee *responsibilities.* In general the regulations maintain that audit committees are responsible for assessing the quality of a company's financial reporting by evaluating the implementation of accounting principles as well as changes in them. To fulfil this

responsibility the audit committee is required to communicate regularly with the board, management, external auditors, and internal auditors. With respect to external auditing, the current regulations emphasise the audit committee's position as a main mechanism to ensure proper communication between auditor and the company. The literature has traditionally assumed that management has considerable influence on the audit mandate, including hiring and firing the auditor, as well as negotiating the audit contract, and the audit fees (O'Keefe, Simunic & Stein 1994; Mikol & Standish 1998; Beasley et al. 2001). The literature has suggested that management control over the audit mandate poses a potential threat to audit quality and particularly auditor independence because an auditor's financial dependence on the auditee has depended heavily on management's power to hire and fire the auditor (Ashbaugh 2004; Mayhew & Pike 2004) [5]. However, after the enactment of SOX (2002) management's influence on the external audit mandate has been considerably reduced. This is because under SOX (2002) audit committees are responsible for the appointment, compensation, retention and oversight of external auditors. In addition SOX (2002) expects communication between auditor and audit committee in several issues including a timely report of 1) all critical accounting policies, 2) alternative accounting treatments and disclosures, and 3) a management letter. In addition, the audit committee is required to establish procedures for handling complaints received by the company regarding accounting, internal controls over financial reporting, or auditing matters including confidential submission by company

[5] Empirical research on opportunistic behaviour by management has concentrated on management's ability to change the auditor. There is evidence that some auditor switches are motivated by auditor-management disagreement over auditors' reporting decisions. Specifically, auditees switch auditors more frequently after receiving a qualified audit report (Chow & Rice 1982; Smith 1986). In addition, studies have analysed the discretionary accruals of firms that changed auditors. The results showed that discretionary accruals were significantly income decreasing during the last year of the predecessor auditor, and insignificant during the first year of the successor auditor. These results indicate that conservative accounting choices preferred by auditors give auditees an incentive to change auditor (DeFond & Subramanyam 1998). These findings are related to auditee management ability to "opinion shop", that is to switch auditors in order to avoid unfavourable audit reports. Successful opinion shopping is harmful to audit quality because auditors may avoid issuing qualified audit reports in order to retain incumbency. However, the research evidence on auditees' ability to opinion shop is conflicting. Some studies have concluded that companies can opinion shop because they would have received unfavourable reports more often had they not switched auditors (Lennox 2000), while others suggest that companies do not engage successfully in opinion shopping because post-switch opinions are not more favourable than pre-switch opinions (Krishnan 1994; Krishnan & Stephens 1995). Research on perceived independence has examined management control over audit mandate in several respects. These studies have shown that perceptions of auditor independence are negatively affected when management has: 1) control of auditors' appointment or remuneration (Beattie et al. 1999), 2) the ability to seek a second opinion on contentious issues (Beattie, Brandt & Fearnley 1999) and 3) the ability to negotiate audit fees or determine the deadline for submitting the audit report (Emby & Davidson 1998).

employees of concerns regarding questionable accounting or auditing matters. Audit committees must also pre-approve all audit services and permitted non-audit services provided by external auditors. In order to perform these duties effectively the regulations state that audit committees should meet relatively frequently. For example, both NYSE (2003) and AMEX (2003) require that audit committees must have periodic meetings. More specifically, NYSE (2003) requires that the audit committee must hold separate meetings with management, with internal auditors and with external auditors. NYSE (2003) considers that separate meetings between these parties are more productive than joint sessions for considering issues warranting committee attention.

2.2.4.2 Requirements related to external auditing

One of the main objectives of SOX (2002) is to strengthen audit quality, particularly auditor independence. Thus, the SOX (2002) includes several requirements regarding external auditors. The requirements which are relevant to this research are as follows: requirement to disclose audit and non-audit services fees, mandatory rotation of audit partners, and restrictions regarding non-audit services provided by incumbent auditors.

Disclosure of audit and non-audit services fees is considered a way to enhance audit quality by safeguarding auditors from significant financial dependence. This is because the disclosure gives transparency to the auditor-auditee relationship and is therefore expected to be a sufficient way to inform shareholders, investors, and other parties of the auditor's incentives to compromise their independence (Firth 1997; SEC 2000; Firth 2002). On the other hand, the disclosure may enhance an audit firms' independence because they may be reluctant to provide the types of services or charge the level of fees that might be perceived as threats to independence (Hillison & Kennelley 1988; Firth 1997). Currently the SEC (2000; 2003) requires the disclosure of the amount of all audit and non-audit services fees in proxy statements. SEC (2003) states that fees paid should be divided into the following categories: 1) audit fees, 2) audit-related fees, 3) tax fees and 4) all other fees.

Mandatory auditor rotation has been suggested as a solution to the independence threat caused by long-term audit tenures. It is argued that mandatory rotation gives auditors greater incentives to resist management pressure, thus increasing independence since the tenure period becomes limited. Proponents of rotation argue that it reduces audit failures, forces audit clients to adopt conservative accounting practices and results in more complete financial statement disclosures.

In addition, rotation is expected to ensure that a company's accounting choices, particularly those in subjective and judgmental areas, are reviewed by different auditors (Catanach & Walker 1999). Currently, the SOX (2002) and SEC's (2003) final rule requires a rotation of all partners on the audit engagement team after five years of services.

The prohibition of non-audit services is expected to reduce issues related to audit quality and auditor independence presented by the provision of non-audit services to auditees (e.g. economic dependence, self-review threat to independence). Currently, the SOX (2002) prohibits auditors from supplying the following types of non-audit services: 1) bookkeeping, 2) financial information systems, 3) appraisal, 4) actuarial, 5) internal audit outsourcing, 6) management or human resources, 7) broker or dealer, 8) legal and expert and 9) any other services specified by the SEC. Despite these prohibitions, registrants may still purchase many types of non-audit services from the incumbent auditor such as tax compliance and consulting, employee plan audits, consulting on accounting matters, mergers and acquisition consulting, and consulting on new debt and equity issues (Raghunandan, Read & Whisenant 2003)

2.3 Positioning of the study

This section introduced agency theory as well as some relevant frameworks related to corporate governance, audit committee effectiveness and audit quality. In addition the regulatory framework of this study was discussed. The present study can be positioned into agency theory and frameworks as follows.

Firstly, this study adopts one of the basic premises of agency theory, which maintains that corporate governance in general and audit committees and external auditors in particular are important in ensuring financial reporting quality. In addition, this study subscribes to an underlying notion that certain company specific characteristics which create agency problems drive the demand for monitoring provided by audit committees and external auditors. Accordingly audit committees and external auditors are expected to provide assurance to shareholders that a company's financial statements are in accordance with GAAP. This notion is contradictory, for example, to institutional theory, which states that these monitoring mechanisms are developed as a response to social norms and regulations but do not necessarily improve financial information quality.

Secondly, Cohen's et al. (2004) corporate governance mosaic suggests that interrelationships between corporate governance actors are important for its

effectiveness. The present study does not take into consideration all the interrelationships suggested in Cohen's et al. (2004) framework but focuses on two important corporate governance actors: audit committees and external auditors. In other words, this study examines what type of relationship audit committees and external auditors have in determining financial reporting quality. To achieve this objective the approach is to model the interrelationship between audit committees and external auditors. More specifically, it is suggested that audit quality mediates the relationship between audit committee effectiveness and financial reporting quality.

Thirdly, the framework by DeZoort et al. (2002) focuses on audit committee effectiveness. This framework suggests that audit committee effectiveness is dependent on various aspects related to audit committee composition as well as audit committee diligence. The operational measures for audit committee effectiveness employed in this study are consistent with the framework of DeZoort et al. (2002). This is because the operational measures are related to both audit committee composition as well as audit committee activity level. The operational measures will be discussed in more detail in the subsequent sections of the study.

Fourthly, this study adopts DeAngelo's (1981a; 1981b) and Watkins' et al. (2004) definition of audit quality, which states that audit quality consists of two components: auditor independence and auditor competence. In addition, this study adopts Watkins' et al. (2004) view that audit quality can be divided into auditor reputation and auditor monitoring strength. In particular this study focuses on auditor monitoring strength by testing the effect of measure of audit quality on financial reporting quality. This study also contributes to Watkins' et al. (2004) framework by considering audit committee effectiveness as an important driver for audit quality.

Finally, in addition to the theoretical framework, the US regulatory environment creates a specific research setting where severe scrutiny is applied to audit committee effectiveness and audit quality. Regulations regarding audit committee effectiveness include requirements related to audit committee composition as well as the activities of the audit committee. Under the current regulations all audit committee members are required to be independent of the company and to be financially literate. In addition, at least one audit committee member is expected to possess financial expertise. According to the regulations the audit committee's main objective is to ensure the company's financial reporting quality. With respect to external auditing, audit committees are responsible for hiring, firing and compensating external auditors. The primary measures for audit committee

effectiveness can be derived from these regulations as well as from prior empirical research. Thus, it is suggested that audit committee effectiveness can be measured by audit committee size, audit committee expertise ratio and audit committee meeting frequency. The underlying notion behind this study is that the regulations provide the minimum requirements for audit committee composition and activities and some companies may strive to maintain quality differentiated audit committees. That is, companies with audit committees with stronger attributes than the minimum requirements are expected to be more effective. The next section will provide further justification for the audit committee effectiveness measures employed in this study.

In addition to the requirements regarding audit committees the regulations related to audit quality are relevant for this study. This is because the regulatory environment is expected to affect the interaction between the companies and their external auditors. The discussion here is focused on SOX (2002) because one of its main objectives is to enhance audit quality and particularly auditor independence. Therefore the SOX (2002) includes several requirements regarding external auditors that are relevant for this study. These include requirements for mandatory auditor rotation, the prohibition of non-audit services and disclosure of audit and non-audit services fees**.** Mandatory auditor rotation ensures that audit quality is not affected by long audit mandates. In addition, prohibition of specific types of non-audit services ensures that auditor independence is not threatened by these services. The disclosure of audit and non-audit services fees provides a measure for audit quality employed in this study. It is suggested that audit fees represent audit effort and therefore higher audit fees are expected to indicate better audit quality. This notion is related, for example, to the GAO (2003) report, which documented an increase in audit fees after the enactment of SOX (2002)[6]. GAO (2003) asserted that the fee development is, at least partly, caused by changes in audit environment and increases in the oversight of publicly disclosed financial information. Thus, it is argued that enactment of SOX (2002) has resulted in increase in audit effort and further audit fees. In addition, prior empirical research has linked audit fees with increased financial reporting quality.

[6] Prior research reveals that audit fees stayed flat or decreased slightly from the late 1980s to the mid-1990s (Firth 1997; Menon & Williams 2001).

3 DEFINITIONS AND OPERATIONAL MEASURES OF KEY CONCEPTS

The purpose of this section is to introduce the definitions for audit committee effectiveness, audit quality and financial reporting quality provided by prior literature. In addition, the operational measures for these variables employed in prior studies will be discussed. The primary measures for audit committee effectiveness used in prior literature are audit committee size, audit committee independence, audit committee expertise and audit committee meeting frequency. The most commonly used measures for audit quality are audit firm size, audit firm industry specialization, audit tenure and audit fees. Measures for financial reporting quality can be divided into two groups: those related to financial reporting within GAAP and those related to financial reporting outside GAAP. The section will be concluded with a discussion regarding the definitions and the measures derived from the prior literature. The aim of the discussion is to explain which definitions and measures are regarded as adequate to be employed in the present study. These choices require, among other things, taking into consideration the regulatory environment of this study.

3.1 Audit committee effectiveness

An audit committee is a subcommittee of the board of directors which is particularly designated to oversee the company's financial reporting process. According to Wolnizer (1995) and DeZoort (1997) the responsibilities of audit committees fall into areas of: 1) financial reporting (including internal controls), 2) auditing, and 3) other corporate governance (e.g. facilitate communications between the board and the external auditors). Audit committee effectiveness is often associated with an audit committee's ability to fulfil these responsibilities (Kalbers & Fogarty 1993; DeZoort et al. 2002). There is a common understanding that the mere existence of an audit committee does not guarantee that it will be effective. Thus, the literature determines several attributes which are needed to achieve audit committee effectiveness. According to DeZoort et al. (2002) audit committee effectiveness is dependent on its composition (the independence and expertise of its members), its authority (responsibilities and influence) and its resources (number of members and access to other governance parties). Moreover, audit committees need to be diligent to effectively discharge their responsibilities. In addition, the current US regulations recognize that audit committee effectiveness is dependent on proper audit committee composition and

diligence. Consistently, the primary operational measures employed by prior empirical research include audit committee size, audit committee independence, audit committee expertise and audit committee activity level. The first three measures are concerned with audit committee composition and the last is concerned with audit committee diligence. The following discussion will provide further rationalization for these measures.

3.1.1 Audit committee size

The literature suggests that *audit committee size* measured as the number of audit committee members will have a positive effect on audit committee effectiveness. This is because it is likely that audit committees with a sufficient number of members have better resources than smaller audit committees (DeZoort et al. 2002). In addition, the decision-making literature has indicated that increasing the number of people involved in an activity substantially increases group performance and decreases the opportunity for wrongdoing because collusion becomes more difficult (e.g. Cummings, Huber & Arendt 1974; Burton, Pathak & Zigli 1977). Thus, it can be argued that decision-making in larger audit committees is of better quality than in smaller audit committees[7].

Audit research has also provided evidence that audit committee size is an important determinant of audit committee effectiveness. Vafeas et al. (2007) found a positive relationship between audit committee size and audit fees. This result indicates that the demand for audit increases as the size of the audit committee increases. In addition Archambeault & DeZoort (2001) examined suspicious auditor switches[8]. They found that companies with suspicious auditor switches had smaller audit committees than non-suspicious switching companies. This implies that larger audit committees are better able to safeguard auditors from being unfairly dismissed than smaller audit committees.

[7] It can also be argued that audit committee size has a nonlinear effect on audit committee effectiveness. Initially, adding members to the audit committee is likely to enhance audit committee effectiveness because it ensures that audit committee has required knowledge to make decisions regarding its responsibilities. However, it is likely that audit committee effectiveness may suffer if it becomes too large. This is because large group may create process losses and diffusion of responsibility.

[8] Analysis was conducted by matching switching and non-switching companies with suspicious circumstances (i.e. disclosure of reportable event, qualified audit opinion or other recent auditor switch).

3.1.2 Audit committee independence

Audit committee members' independence is considered to be an essential determinant of audit committee effectiveness (DeZoort et al. 2002; Pomeroy et al. 2008). For example, the SOX (2002) considers that an audit committee member is independent if he or she does not receive any compensation from the company or its affiliates except in the capacity of audit committee member. Independent audit committee members are expected to be better able to oppose management pressure in conflict situations and are therefore expected to contribute to audit committee effectiveness. Prior empirical research has provided evidence supporting this notion.

Several studies have found that audit committee independence is associated with higher earnings quality (Klein 2002a; Bédard et al. 2004; Vafeas 2005; Bradbury et al. 2006). Klein (2002a) found a significant negative association between an audit committee with a majority of independent directors and discretionary accruals. In a similar vein, Bédard et al. (2004) reported a significant reduction in aggressive earnings management when the audit committee was 100 % independent. Bradbury et al. (2006) using data from Singapore and Malaysia found that audit committee independence is associated with lower abnormal working capital accruals. Vafeas (2005) found that audit committees with a higher percentage of insiders on the audit committee are more likely to report small earnings increases. These results indicate that independent audit committees have a constraining effect on managerial behaviour in earnings management.

Several studies have also examined the association between audit committee independence and audit quality. For example, Mitra, Hossain and Deis (2007) and Vafeas et al. (2007) found a significant and positive association between the level of audit committee independence and audit fees indicating that independent audit committees are interested in ensuring high quality service provided by external auditors. Carcello and Neal (2000) examined the relationship between distressed firms' audit committee independence and the likelihood of receiving going-concern audit reports. They found that distressed firms with more independent audit committees were more likely to receive a going-concern audit report. This result may indicate that more independent audit committees provide greater support for auditors in their reporting decisions than less independent audit committees. Moreover, Archambeault et al. (2001) found that more independent audit committees are better able to protect auditors from being suspiciously switched than less independent audit committees.

3.1.3 Audit committee expertise

Audit committee effectiveness is expected to increase as the proportion of *experts* in the audit committee increases. Expertise refers to an audit committee member's knowledge and experience in the areas of accounting and financial reporting, internal controls and auditing (e.g. SOX 2002). In general, it is argued that audit committee members' expertise in these areas enables a better understanding of financial statements and the audit process. This may lead to an enhancement of audit committee effectiveness in several respects. *Firstly*, experts are expected to provide greater oversight on the financial reporting quality than non-expert members. *Secondly*, experts are expected to understand the risks and benefits associated with audit quality better than their non-expert colleagues. *Thirdly*, experts are expected to be better equipped to understand auditor judgments and evaluate the substance of disagreements between management and the external auditor.

Several studies have provided evidence supporting these arguments. *Firstly*, studies have found that expertise affects audit committee member's decision-making. DeZoort (1998) found that audit committee members' experience related to audit and internal control evaluation resulted in internal control judgments more in line with auditors than members' lacking such experience. McDaniel, Martin and Maines (2002) found that expert and financially literate audit committee members' evaluation of the quality of financial reporting items differ. This result implies that the inclusion of financial experts in audit committees is likely to have an effect on audit committee's assessment of a company's financial reporting in general. *Secondly*, Bédard et al. (2004) focused on earnings management and found that audit committees with more expert members are better equipped to restrict earnings management. *Thirdly*, with regard to external auditors DeZoort (1998) and DeZoort & Salterio (2001) found that audit committee members possessing auditing knowledge provide more support for auditors in auditor management disagreements over an ambiguous accounting issue than members lacking such knowledge. Experts were also found to safeguard auditors from being unfairly dismissed (Archambeault et al. 2001). *Finally*, Vafeas et al. (2007) found that audit committee member expertise has a positive relationship with audit fees indicating that experts demand higher quality service by external auditors.

3.1.4 Audit committee meeting frequency

The discussion above reveals that variables related to audit committee composition have a significant influence on audit committee effectiveness. In addition to these variables, audit committee *activity level* has also been recognized as an important process factor needed to achieve audit committee effectiveness (Kalbers et al. 1993; DeZoort et al. 2002). A common measure for audit committee activity level is the number of meetings held by the audit committee. More specifically, audit committee effectiveness is expected to improve with more frequent audit committee meetings (Menon et al. 1994; Abbott et al. 2000; DeZoort et al. 2002; Lee & Mande 2005; Stewart et al. 2007). Thus, in order for the audit committee to be effective audit committee members must be willing to invest a substantial amount of time and energy in the functioning of the audit committee (Kalbers et al. 1993; Lee, Mande & Ortman 2004).

With regard to auditing, regular meetings between the audit committee and the external auditor can be expected to contribute to audit committee knowledge about relevant accounting and auditing issues. Thus it can be argued that audit committees that meet frequently are more diligent in the discharge of their duties (Abbott et al. 2003a; Raghunandan, Read & Rama 2001). More diligent audit committees can also be expected to be more concerned with audit quality. This notion is supported by Goodwin-Stewart et al. (2006), who found that more frequent audit committee meetings were associated with higher audit fees. In addition, Archambeault et al. (2001) reported that audit committees with frequent meetings are more likely to protect auditors from being switched under suspicious circumstances than audit committees with less frequent meetings. Prior studies have also documented that audit committee meeting frequency is associated with higher earnings quality (Xie, Davidson & Dadalt 2003; Vafeas 2005).

3.2 Audit quality

Practitioners often define audit quality relative to auditors' ability to meet legal and professional requirements (Francis 2004; Watkins et al. 2004). In light of this definition audit quality can be considered dichotomous. Audit is considered to be of poor quality if an auditor fails to comply with legal and professional requirements. In other words an audit failure occurs.[9] On the other hand all audits

[9] According to Francis (2004) audit failures can occur in two situations. *Firstly*, audit failure occurs when an auditor fails to enforce GAAP. *Secondly*, audit failure occurs when an auditor fails to issue an appropriate type of audit report: an auditor issues a qualified audit report when

which are legally satisfactory can be considered to be of sufficient quality (Francis 2004). Many audit quality studies, however, have an underlying assumption that most audits meet minimal legal and professional requirements. Thus, these studies focus on audit quality that exceeds minimal legal and regulatory requirements. These studies consider audit quality as a continuum ranging from very poor quality to very good quality. In this approach audit failures occur at the extreme low end of the continuum. In addition, it is considered that legally satisfactory audits can be quality differentiated (Francis 2004).

Researchers provide definitions for audit quality which can be applied when audit quality is considered to be a continuum. As discussed in Section 2.2.3 researchers generally link audit quality to both auditor independence and auditor competence. There is a widespread view in the audit literature that audit quality cannot be directly observed by outside parties or measured by researchers. (DeAngelo 1981a; DeAngelo 1981b; Palmrose 1988; Willekens & Simunic 2007). Therefore, prior studies have used several surrogates for audit quality. The primary surrogates for audit quality are audit firm type (i.e. size or brand name), audit firm industry specialization, auditor tenure and audit fees. These measures will be discussed in more detail in the subsequent sections.

3.2.1 Audit firm size

A*udit firm size* is a conventional measure for audit quality.[10] Audit quality is expected to increase with audit firm size because large audit firms are expected to have superior resources to conduct an audit and they are expected to be better able to remain independent from the auditee than smaller audit firms (Goldman & Barlev 1974; DeAngelo 1981a; Shockley 1981). A related stream of research argues that large audit firms have greater incentives to provide high-quality audits because they have more to lose from an audit failure in terms of their pre-established reputations (i.e. brand name) than smaller audit firms (Francis et al. 1988). Based on these rationalizations several lines of empirical research have focused on the dichotomy between large and small audit firms and reported supporting results for the above notions.

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inappropriate *(false positive reporting)* or auditor issues an unqualified audit report when inappropriate *(false negative reporting)* (Francis 2004).

[10] In this study, the majority of sample companies employed a Big Four audit firm (95 %), thus leaving little opportunity to evaluate audit quality in terms of audit firm size.

Firstly, prior research has provided evidence that audit firm size is associated with better financial reporting quality. A majority of these studies have focused on discretionary accrual paradigm (Jones 1991) and examined whether large audit firms are better able to detect and oppose to managers' opportunistic earnings management than small audit firms. Becker, DeFond, Jiambalvo and Subramanyam (1998) and Francis, Maydew and Sparks (1999) found supporting evidence and suggested that clients of the (then) Big Six auditors reported lower discretionary accruals than clients of non-Big Six auditors. Consistently Nelson's et al. (2002) results show that large audit firms are able to detect earnings management attempts and will object to opportunistic earnings management by managers. Studies also provide evidence that the markets link audit firm size with better financial reporting quality. For example, Beatty's (1989) results showed that the price paid by investors is higher for IPOs involving a large audit firm. Similarly, Teoh and Wong (1993) reported a positive association between audit firm size and the ERC. Contrary to these findings, Piot & Janin (2007) did not find evidence of Big Five audit quality differentiation with respect to earnings management in France.

Secondly, prior studies have also addressed the relationship between audit firm size and auditor reporting decisions. Some studies have shown that the size of the audit firm does not affect the likelihood of a qualified audit report (Wines 1994; Sharma & Sidhu 2001; Craswell, Stokes & Laughton 2002). However Francis and Krishnan (1999) report that large audit firms have lower thresholds for issuing qualified audit reports, which indicates that large audit firms issue more conservative reports than small audit firms. Lennox (1999) also provided evidence of a positive relationship between auditor size and auditor accuracy. Lennox (1999) found using UK data that large auditors issue reports that are more accurate and include more informative signals of financial distress than audit reports issued by small auditors. In a similar vein, Weber and Willenborg (2003) examined audit reports issued before IPO. They found that audit reports issued by Big Four audit firms have better predictive accuracy in terms of future stock returns and subsequent delistings than audit reports issued by small audit firms.

Thirdly, studies focusing on legal actions as well as disciplinary actions by professional bodies against auditors have also provided evidence that large audit firms provide high quality audits. For example, Palmrose (1988) found that Big Four audit firms face legal actions less frequently than small audit firms. In addition, results by Feroz and Pastena (1991) showed that Big Four audit firms are sanctioned less frequently by the SEC than other audit firms. A counter-argument for these results is that large audit firms are not really better but they

have better resources to oppose legislators and professional bodies (Francis 2004).

3.2.2 Auditor industry specialization

In addition to audit firm size, the audit literature suggests that *industry specialization*[11] of an audit firm also contributes to audit quality. It is expected that industry specialization increases the quality of auditor's performance due to the auditor's superior knowledge regarding the specific industry. Empirical studies have addressed this notion and provided supportive evidence. For example Solomon, Shields and Whittington (1999) and Owhoso, Messier and Lynch (2002) provided some evidence that industry-experienced auditors detect errors more effectively within their industry specialisation than outside their specialisation.

In general research regarding audit firm industry specialization is parallel to the audit firm size research. Thus, prior research has investigated whether industry specialization of audit firms is associated with higher financial reporting quality. Balsam, Krishnan and Yang (2003) compared the discretionary accruals of clients of specialist and non-specialist auditors and found that the discretionary accruals of clients of industry specialist auditors were lower than those of clients of non-specialist auditors, thereby supporting the notion that industry specialisation is associated with better financial reporting quality. In addition, Krishnan (2005) found that companies with an industry specialist auditor report more conservative earnings according to Basu's (1997) framework. Research has also indicated that an industry specialist auditor signals higher audit quality as well as financial reporting quality to the markets. An early study by Shockley and Holt (1983) found that audit firms with the largest market share are perceived as higher quality suppliers by the chief financial officers of banks. Balsam et al. (2003) found evidence that clients of industry specialist auditors have higher ERCs (Earnings Response Coefficient) than clients of non-specialist auditors. Similarly, Krishnan (2003) found that market reactions to earnings surprises are more positive for companies with industry specialized auditors.

[11] Industry market share is commonly used as a proxy for audit firm industry specialization (Francis 2004).

3.2.3 Auditor tenure

Auditor tenure has also been recognized as an important determinant of audit quality. The literature, however, does not provide a clear consensus as to how auditor tenure affects audit quality. On the other hand it can be suggested that long-term audit tenures increase audit quality due to auditee-specific knowledge gained by the auditors over time (Simon & Francis 1988) while the counter-argument is that auditor's long term association with the auditee poses a threat to auditor independence[12] thus leading to lower level of audit quality (Mautz & Sharaf 1961; SOX 2002; IFAC 2005). The results of prior studies are also inconclusive since they provide support for both arguments.

For example Myers, Myers and Omer (2003) provided evidence supporting long-term audit tenures reporting that auditors are more likely to restrain management from making extreme reporting decisions concerning accruals when auditor's tenure is longer. In a similar vein, Piot et al. (2007) using French data did not find any evidence that auditor tenure would lead to decrease in earning quality. Furthermore, Ghost and Moon (2005) found a positive association between audit tenure and investor perceptions of earnings quality using ERC as a proxy. On the other hand several studies indicate that long-term audit tenures lead to decline in audit quality. These studies have found that long-term tenures: 1) decrease the likelihood of the auditor to issuing a qualified audit report (Vanstraelen 2000), decreases compliance with GAAS (Deis & Giroux 1992) and, increase the likelihood of receiving a substandard audit (Copley & Doucet 1993). Moreover, the length of audit tenure has been found to have an impact on perceived audit quality. Knapp (1991) found that audit committee members perceived that audit quality declines as auditor tenure lengthens. Long periods of tenure have also been found to have a negative effect on perceived auditor independence (Beck et al. 1988b; Teoh & Lim 1996).

Although prior research does not provide a clear understanding of the effect of audit tenure on audit quality, US regulators adopted a view that auditor tenure should be restricted with mandatory auditor rotation. The SOX (2002) requirements regarding auditor rotation were discussed in Section 3. Empirical research has provided some support for the benefits of rotation. Dopuch, King and Schwartz (2001) found that mandatory rotation requirements decreased auditor's willingness to issue biased reports in favour of management. Additionally, the research evidence indicates that the requirements for auditors to be reappointed

[12] This is because long-term audit tenures may result in too close a relationship between the auditor and the management, which results in the auditor losing his or her independence (Mautz et al. 1961).

annually enhance perceptions of auditor independence (Beattie et al. 1999; Hussey & Lan 2001).

3.2.4 Audit fees

Prior studies have also used *audit fees* as a measure of audit quality. The notion behind these studies is that audit fees reflect the magnitude of audit effort: higher audit fees are expected to indicate more auditing work, which is expected to contribute to audit quality. However, the relationship between audit quality and audit fees is a complex one because audit fees are jointly determined by both demand and supply side drivers (Mitra et al. 2007).

From the *supply side* it can be stated that audit fees reflect the economic costs of the efficient auditor. More specifically, auditors seek to balance their resources between costs arising from additional audit work and losses arising from legal liability. Additional audit effort decreases the probability that the auditor will face liability losses and thus the required audit coverage varies considerably with the characteristics of the company, more risky and complex clients requiring more audit effort. In general, the auditor provides a quantity of audit work that decreases to an acceptable level the probability that the auditor will suffer liability losses (Simunic 1980; Simunic & Stein 1996).

Audit fees may also be affected by *demand side* drivers. The literature provides several complementary explanations for the demand for audit. In summary the following four explanations can be identified: monitoring, information, insurance, and organizational control (Wallace 1980; Dye 1993; Hay et al. 2004). *Firstly*, the monitoring explanation for the demand of audit is based on agency theory, which states that audit services are demanded to reduce agency problems arising from conflict of interests between owners and managers (Jensen et al. 1976; Watts et al. 1983; Chow 1982; Blackwell, Noland & Winters 1998; Carey, Simnett & Tanewski 2000). *Secondly*, the information explanation emphasizes that investors demand audited financial statements because they provide information that is useful in their investment decisions (Wallace 1980; DeAngelo 1981a; Beatty 1989; Dye 1993; Willenborg 1999). *Thirdly*, the insurance or "deep pocket" explanation posits that the demand for audit arises from auditors' extended legal liability, which enables the full or partial recovery of investor losses resulting from financial statement misrepresentations by suing auditors (Dye 1993; Hillison & Pacini 2004; Menon et al. 1994; Baber, Kumar & Verghese 1995; Willenborg 1999; Lennox 1999). *Finally*, the organizational control explanation maintains

that owners regard audits as a compensatory control system for the organizational loss of control in hierarchical organizations (Hay et al. 2004; Abdel-Khalik 1993).

Based on the discussion above it can be concluded that audit fees are affected by both supply side and demand side drivers. From the supply side audit fees reflect auditor's assessment of required audit coverage based on client riskiness and complexity. On the other hand, from the demand side audit fees reflect the demand for audit coverage. Regardless of the viewpoint, since audit fees are expected to reflect audit coverage, they can be linked with audit quality. That is, higher fees reflect a more through audit and so also higher audit quality. Audit fees have commanded considerable research interest and several research streams provide support for this argument.

Firstly, early audit pricing studies examined the association between audit fees and non-audit services fees in order to find evidence of "knowledge spillovers" which are transfers of knowledge from non-audit to audit services and vice versa. Knowledge spillovers are expected to increase the quality of both services and therefore lead to higher fees. These arguments were supported by several studies reporting a significant positive association between audit services and non-audit services fees (Simunic 1984; Simon 1985; Palmrose 1986a; Turpen 1990; Davis, Ricchiute & Trompeter 1993; Butterworth & Houghton 1995; Craswell, Francis & Taylor 1995; Ezzamel, Gwilliam & Holland 1996; Firth 1997; Firth 2002; Antle, Gordon, Narayanamoorthy & Zhou 2006). These studies conclude that the benefits of knowledge spillovers are generally retained by the auditor as higher fees. By contrast, some studies find no evidence of a positive association between audit fees and non-audit services fees (Simon et al. 1988; Abdel-Khalik 1990; Barefield, Gaver & O'Keefe 1993; O'Keefe et al. 1994; Whisenant, Sankaraguruswamy & Raghunandan 2003).

Secondly, audit pricing studies have provided evidence suggesting that auditees are willing to pay a price premium for expected high quality service. For example, Francis and Stokes (1986), Palmrose (1986b), and Simon et al. (1988) detected a price premium for large audit firms likely arising from a higher quality of audit offered by these firms. In addition prior studies have identified a fee premium for industry specialist audit firms. Craswell et al. (1995) found that industry specialist (then) Big Eight auditors charged a 34 % premium over non-specialist Big Eight auditors. DeFond, Francis and Wong (2000) found evidence indicating that the three top industry leaders earn a price premium relative to other large audit firms in Hong Kong. A more recent study by Ferguson and Stokes (2002) also provided evidence that the top two industry leaders are able to earn price premiums over other large audit firms in Australia. Basioudis and

Francis (2007) also found a price premium for city-specific industry leaders relative to other Big Four auditors in the UK. Similarly Ferguson, Francis and Stokes (2003) as well as Francis, Reichelt and Wang (2005) found a price premium for audit firms that were joint national and city-level industry leaders.

Thirdly, studies have linked higher audit fees with a greater demand for audit quality. These studies suggest that the demand for audit quality increases audit effort, which is further reflected in higher audit fees. For example, Gul et al. (1998), Gul et al. (2001) and Nikkinen et al. (2004) found a positive relation between measures of agency problems and fees paid to the incumbent auditor. Similarly, studies on corporate governance have documented a positive association between measures of board or audit committee effectiveness and audit fees (Abbott et al. 2003a; Lee et al. 2005; Goodwin-Stewart et al. 2006; Mitra et al. 2007).

Finally, studies have documented a positive relation between audit fees and financial reporting quality. *Firstly,* Frankel et al. (2002), Larcker et al. (2004) and Srinidhi et al. (2007) linked higher audit fees with smaller discretionary accruals. Frankel et al. (2002) reported that audit fees are negatively related with small earnings surprises and discretionary accruals. In addition they found that non-audit fees were positively associated with these measures of earnings management. These results indicate that audit fees and non-audit fees have an opposite effect on audit quality: higher audit fees are related to higher audit quality whereas higher non-audit services fees are associated with lower audit quality. In a similar vein Srinidhi et al. (2007) found that audit fees result in higher earnings quality whereas non-audit fees result in economic bonding and thus decrease earnings quality. Somewhat contradictorily Larcker et al. (2004) found a negative relation between both audit and non-audit fees and discretionary accruals after identifying clusters of firms with homogeneous regression structure. The strongest relation was found for firms with weak corporate governance structure. According to the authors these results indicate that reputation concerns are an important determinant of auditor behaviour and they enhance auditors' incentives to restrict unusual accounting practices by clients. *Secondly,* Geiger et al. (2003) examined the association between audit and non-audit fees and auditor reporting decisions for financially distressed firms. They found a positive association between audit fees and qualified audit opinions, which implies that additional audit effort results in more accurate audit opinions. In addition, it was reported that non-audit fees did not have a statistically significant effect on audit opinions.

In contrast to the above studies, a substantial amount of audit research has examined the effect of financial dependence on auditor independence. This literature suggests that the auditor's incentives to violate independence increase as the economic bond between the auditor and auditee increases (DeAngelo 1981a)[13]. Studies focusing on independence in fact have investigated whether financial dependence generated by audit fees, non-audit services fees or total fees enables earnings management (e.g. Frankel et al. 2002; Ashbaugh, LaFond & Mayhew 2003; Chung & Kallapur 2003; Reynolds, Deis & Francis 2004; Mitra 2007), increases the number of restated financial statements (e.g. Kinney et al. 2004), decreases auditors' propensity to issue qualified audit reports (e.g. DeFond, Raghunandan & Subramanyam 2002; Geiger et al. 2003), increases the length of audit tenure (e.g. Barkess & Simnett 1994) or exposes an auditor to litigation (Antle, Griffen, Teece and Williamson 1997). Overall, this body of research indicates that auditor independence in fact is not threatened by fees generated by auditees thus providing indirect support for the possible positive link between audit fees and audit quality.

A large body of research has also examined the effect of financial dependence on perceived auditor independence. *Firstly*, studies have investigated whether the joint provision of audit and non-audit services causes a negative stock market reaction (Frankel et al. 2002; Ashbaugh et al. 2003), has an effect on the bond rating process (Brandon, Crabtree & Maher 2004) or has an impact of shareholder ratification of the auditor (Glezen & Millar 1985; Raghunandan 2003; Raghunandan & Rama 2003; Mishra, Raghunandan & Rama 2005). *Secondly*, research has used questionnaires to investigate a wide variety of subjects' perceptions of auditor independence using several measures of financial dependence (e.g. Knapp 1985; McKinley, Pany & Reckers 1985; Gul 1991; Gul & Tsui 1992; Bartlett 1993; Teoh et al. 1996; Beattie et al. 1999). Financial dependence has been hypothesized to develop from audit fees, non-audit services fees or total fees, although some studies do not clearly articulate whether audit fees or total fees are under examination. In general, the results of these studies indicate that financial dependence causes more problems for perceived independence than actual independence.

[13] In general, regulators have not been concerned that audit fees might be too high or that the audit fee itself might result in financial dependence of the auditor on the auditee (Kinney, William, Palmrose & Scholz 2004). On the other hand, regulators in the US (SEC 2000; SEC 2003), Europe (European Commission 2002) and globally (IFAC 2005) have voiced their concerns that the provision of non-audit services to auditees can create economic dependence and thus poses a threat to auditor independence. In addition, regulators recognise that total fees paid by the auditee, regardless of their origin, may compromise independence.

To summarize, the results of the above studies imply that higher audit fees may be associated with higher audit quality, either through more audit effort (more hours) or through superior expertise of the auditor (higher billing rates). It can be argued that a higher audit fee per se does not necessarily ensure a higher quality audit, particularly if accounting firms have pricing power over clients (Francis 2004). However, studies on audit outcomes also provide evidence that higher audit fees are related to better financial reporting quality (e.g. Frankel et al. 2002; Geiger et al. 2003; Larcker et al. 2004; Srinidhi et al. 2007).

3.3 Financial reporting quality

Corporate disclosure may assume a variety of forms: companies may provide disclosure through regulated financial reports and also engage in voluntary communication. Among these different forms of disclosures financial reporting is an important means for management to communicate, among other things, the company's performance to external stakeholders. Financial reporting quality is a prerequisite for efficient capital markets because several individuals and groups base their resource allocation decisions on financial information (Healy et al. 2001).

The objective of regulators and standard setters is to promulgate rules and regulations that help ensure financial reporting quality. Financial reporting quality has also commanded considerable research interest. However, neither researchers nor current US regulations provide a clear definition of what constitutes financial reporting quality (Pomeroy et al. 2008). For example the SOX (2002) requires audit committees and auditors to discuss the quality of the financial reporting methods of the company. However, SOX (2002) does not define what is meant by financial reporting quality and therefore this requirement remains vague (Cohen et al. 2004)[14]. In addition, Watkins et al. (2004) provides a broad definition stating that financial reporting quality refers to how well a company's financial information reflects the true economic circumstances of the company. This definition also highlights the unobservable nature of financial reporting quality (Pomeroy et al. 2008).

Prior research has used several proxies for financial reporting quality (Pomeroy et al. 2008). Many of the studies examining financial reporting quality have focused on situations where there are concerns regarding financial information quality. These situations can be divided into two classes: misstatements outside GAAP

[14] See e.g. Pomeroy et al. (2008) for a discussion on this issue.

and misstatements within GAAP (Jiambalvo 1996). Evidence related to *misstatements outside GAAP* includes financial restatements (Raghunandan et al. 2003; Kinney et al. 2004), litigation (Antle et al. 1997; Bonner, Palmrose & Young 1998), SEC enforcements (Dechow, Sloan & Sweeney 1996) and business failures (Palmrose 1987; Francis & Krishnan 2002). *Misstatements within GAAP* are related to the choices of accounting methods or earnings quality measures. Common indicators of earnings quality are accruals (e.g. Frankel et al. 2002; Ashbaugh et al. 2003; Chung et al. 2003), earnings informativeness (Earnings Response Coefficients) (Teoh et al. 1993; Balsam et al. 2003; Ghost et al. 2005; Wang 2006), predictability of cash flows, measures of income smoothing and measures of timely loss recognition (Jiambalvo 1996). Audit research has also used audit report accuracy as an indicator of the quality of the financial reporting process (DeFond et al. 2002; Geiger et al. 2003).

This study focuses on US listed companies and it is fairly unlikely that they issue financial reports that do not meet the minimum requirements of GAAP. This suggests that the present study focuses on the variation of financial reporting quality within the boundaries of GAAP. Consistent with the literature, the present study focuses on earnings management as an indicator of financial reporting quality.

3.3.1 Definition of earnings management

Earnings management can be defined as a purposeful intervention in the external financial reporting process the purpose of which is to obtain private gain for shareholders or managers (Schipper 1989). Shareholders will gain from earnings management if it is used to signal managers' private information (Healy & Palepu 1995; Subramanyam 1996), to avoid costly debt re-contracting or to reduce political costs (Watts et al. 1986). On the other hand earnings management may be costly to shareholders because managers may use earnings management to pursue their personal gains such as increased compensation (Healy 1985; Holthausen, Larcker & Sloan 1995) or reduced likelihood of dismissal when performance is poor (Weisbach 1988; Peasnell, Pope & Young 2005). This aspect of earnings management may result in financial reports which mislead stakeholders about the underlying economic performance of the firm (Healy & Wahlen 1999).

3.3.2 Types of earnings management

Earnings management may be either income increasing or income decreasing. The literature links income increasing earnings management with situations when earnings fall below certain thresholds. The literature has addressed three thresholds: 1) avoiding reporting a loss, 2) reporting a growth in profits, and 3) meeting analysts' forecasts. Burgstahler and Dichev (1997) and Degeorge, Patel and Zeckhauser (1999)[15] found using US data higher-than-expected frequency of firms which had slightly positive reported earnings and lower-than-expected frequency of firms which had slightly negative reported earnings. These results are consistent with managements' attempts to beat the benchmarks in question (Peasnell et al. 2005).

Managers may also engage in income decreasing earnings management. There are several plausible explanations why managers may have incentives to engage in income decreasing earnings management. Income decreasing earnings management can be driven by managers' desires to shift abnormal positive earnings forward in time in order to make the benchmarks easier to cross in the future (Peasnell et al. 2005). This notion is supported by Degeorge et al. (1999), who found that managers manipulate reported earnings downwards when pre-managed earnings substantially exceed benchmark earnings. Alternatively managers may be reluctant to report large earnings because it might result in increased earnings-based performance targets in the future (Peasnell et al. 2005). Consistently, Healy (1985), Gaver, Gaver and Austin (1995), and Holthausen et al. (1995) found evidence of income-decreasing earnings management when managers' accounting-based bonuses were at their maximum using a sample of US firms.

Management may employ two methods for earnings manipulation: management can manipulate accounting numbers or change the way the firm does business (Peasnell et al. 2005). The former method is likely to involve discretionary accruals because they are regarded as an area where management will use its discretion to manipulate accounting numbers. Managers may prefer accruals to manipulate earnings because generally they do not have direct cash flow consequences and they are relatively difficult to detect. The latter method offers several options: management may, for example, boost reported profit by cutting back on advertising and research and development (Bushee 1998), sell assets (Bartov 1993; Poitras, Wilkins & Kwan 2002), or cut back on staff development

[15] Degeorge et al. (1999) also found that there is a hierarchy to the benchmarks reporting a profit being the most important one followed by reporting growth in earnings. Meeting analysts' forecasts was of importance only if the other two thresholds had been met.

and essential equipment maintenance. These methods, however, are costly to the company because they are likely to have negative effects on the firm's future cash flows as well as firm value. Therefore it is expected that managers would rather manipulate accruals than make chances in investment and operating activities (Peasnell et al. 2005).

3.4 Application of the definitions and operational measures

This section introduced definitions as well as empirical measures for audit committee effectiveness, audit quality and financial reporting quality. The aim of this section was to provide a broad overview of the definitions and measures suggested by prior literature. The objective of the present study is not to apply all the definitions and measures discussed but to adopt those that best represent the variables of interest in the study's environment. Thus, the present study adapts the definitions and measures as follows.

Firstly, audit committee effectiveness is generally linked to audit committee's ability to fulfil its responsibilities. This study adopts this view and focuses on audit committees' ability to enhance financial reporting quality and audit quality. Prior empirical research has used several surrogates for audit committee effectiveness, the most essential being audit committee size, independence, expertise and activity level. Following prior research as well as current US regulations, this study focuses on audit committee effectiveness generated by the size of the audit committee, the expertise of audit committee members and the activity level of the audit committee. In addition it is recognized that audit committee independence is a crucial component of audit committee effectiveness (e.g. Beasley et al. 2000; Abbott et al. 2003a). However, the regulations concerning the sample companies require that all audit committee members need to be independent of management (e.g. SOX 2002). Therefore, this variable is constant for all sample companies and is not included in the scope of this study. The sample companies are expected to comply with the exchanges' and SOX's (2002) requirements concerning the maintenance, composition and responsibilities of the audit committee. However, this study makes a distinction between the form (meeting regulatory requirements) and the substance (the effectiveness of audit committees) of the audit committee. In other words, it is suggested that regulations set the primary requirements for the maintenance and responsibilities of an audit committee. Audit committees which exceed these primary requirements are expected to be more effective to a certain level.

Secondly, following prior audit quality research this study adopts the basic premise that most audits conform to the applicable legal and professional requirements. In other words it is expected that audits are generally legally satisfactory. In addition, it is suggested that audit clients may demand quality differentiated audits and audit committee effectiveness explains, at least partly, this demand. The primary measures for audit quality used in existing studies are audit firm size, audit firm industry specialization, audit tenure and audit fees. This study uses audit fees as a measure of audit quality. It is argued that audit firm size, industry specialization and auditor tenure do not provide sufficient measures for audit quality in the current US audit market. This is because the current US audit market is heavily concentrated and the Big Four audit firms dominate the market for auditing services with a market share of 78 % of all US public companies. In other words, the Big Four firms constitute a tight oligopoly (GAO 2003). Due to the audit market situation, it is suggested that audit firm characteristics (i.e. size or industry expertise) may not be a sufficient measure of audit quality. In addition, the SOX (2002) issues restrictions on auditor tenure. The SOX (2002) requires a rotation of all audit partners after five years' service. Given that audit partner tenure is restricted to five years its ability to have an impact on audit quality is also limited. However, it is reasonable to expect that some companies may still demand a differentially higher audit quality. It is argued that audit fees provide a sufficient measure of audit quality. This is because audit fees are expected to reflect additional audit effort, which leads to a higher level of audit quality by increasing the probability that auditors detect potential problems in the company's financial reporting (DeAngelo 1981a; DeAngelo 1981b; Caramanis & Lennox 2008).[16] Thus, higher audit fees are expected to be related to better financial reporting quality (Carcello et al. 2002; Frankel et al. 2002; Abbott et al. 2003a; Larcker et al. 2004; Srinidhi et al. 2007).

Finally, following the literature this study suggests that discretionary accruals indicate earnings management and can be used as a measure for financial reporting quality. This study focuses on the negative aspect of earnings management and takes the perspective that earnings management is undesirable because it can be costly to shareholders. Consistent with Peasnell et al. (2005) this study adopts a view that both income increasing and income decreasing earnings manipulation may impose costs on shareholders and other external parties of the company. This is because earnings management may result in financial reports which are misleading to shareholders and other external parties. Thus it is

[16] Caramanis et al. (2008) provide direct evidence linking audit effort with audit quality. More specifically, they examine the effect of audit effort, measured by audit hours, on earnings management. Their results show that high audit effort decreases the extent to which managers report aggressively high earnings.

suggested that audit committees and external auditors should be concerned with both income decreasing and income increasing manipulations. In addition, it is suggested that managers prefer using discretionary accruals to manipulate earnings because they do not necessarily have direct cash flow consequences and are difficult for outsiders to discover.

4 DEVELOPMENT OF THE RESEARCH MODEL

The aim of this section is to develop the research model which will be examined empirically in this study. This section is organized as follows. *Firstly*, literature examining relationships between audit committee effectiveness, audit quality and financial reporting quality will be introduced. This literature is divided into three lines as follows. The first line of research examines the relationship between audit committee effectiveness and financial reporting quality. The second line of research examines the relationship between audit committee effectiveness and audit quality. Finally, the third line of research investigates the relationship between audit quality and financial reporting quality. These separate lines of research form the basis for the model developed. The studies that are most significant for the development of the research model are summarized in Appendix 2. *Secondly*, the various effect types which can be used to connect the separate lines of research are introduced. The effect types are derived from other fields of social sciences and include moderated and mediated effects. *Finally*, a model combining the separate lines of research will be introduced. The construction of the model involves considering the compatibility between corporate governance and audit literature and the underlying theoretical perspectives surrounding the alternative effect types.

4.1 Audit committee effectiveness and financial reporting quality

As discussed in previous sections, the main purpose of the audit committee is to contribute to corporate control. More specifically, audit committees are expected to improve a company's financial reporting quality. The effectiveness of audit committees in monitoring control has also commanded considerable research interest. Prior studies have primarily used an archival approach to assess the links between measures of audit committee effectiveness and financial reporting quality (Kalbers et al. 1998). These studies are discussed in more detail in the subsequent sections.

Early studies examined the association between presence of an audit committee and fraudulent financial reporting. Some of these early studies indicate that audit committees do not entirely prevent fraudulent reporting by auditees (Verschoor 1989; Verschoor 1990; Beasley 1996). For example, Beasley (1996) found that the presence of an audit committee does not have an effect on the likelihood of

financial statement fraud. However, the role of audit committees has changed considerably since this study and more recent studies are generally consistent in their findings that audit committees appear to be effective in preventing fraud. Accordingly Dechow et al. (1996) found that firms subject to enforcement actions by the SEC were less likely to have an audit committee. Similarly McMullen et al. (1996) found that the presence of an audit committee is associated with fewer SEC enforcement actions and illegal acts. In addition, Abbott et al. (2000) found that companies with independent and active audit committees were less likely to be sanctioned by the SEC for fraudulent or misleading financial reporting. Beasley et al. (2000) investigated fraudulent companies and their no-fraud benchmarks in three industries: technology, health care and financial services. They found that in general fraudulent companies have weaker governance mechanisms relative to their no-fraud benchmarks. More specifically, fraud companies in technology and financial services industries had fewer audit committees. In addition, fraudulent companies in all industries had less independent audit committees and boards. Audit committee effectiveness has also been examined in relation to financial restatements. For example Abbott et al. (2004) found that audit committee independence and activity level decrease the occurrence of restatements. In addition, audit committee expertise was found to have a negative association with restatements. Also consistent with the notion that effective corporate governance is associated with better financial reporting quality Karamanou and Vafeas (2005) found that companies with more effective boards and audit committees were more likely to make or update an earnings forecast.

Several studies have investigated the relation between audit committee effectiveness and earnings management. Bédard et al. (2004) found that audit committee effectiveness measured by expertise, independence and responsibilities of the audit committee restrict aggressive earnings management. Similarly Klein (2002a), and Bradbury et al. (2006), reported a negative relation between audit committee independence and company's income increasing discretionary accruals. Xie et al. (2003) found that audit committee activity level and its members' financial sophistication constrain the propensity of managers to engage in earnings management. In addition, some studies have examined whether the presence or absence of an audit committee has an effect on financial reporting quality. Results of Peasnell et al. (2005) showed that the presence or absence of an audit committee does not have an effect on earnings management among UK firms. However, Jaggi and Leung (2007) using Hong Kong firms as a sample found that voluntarily established audit committees play a significant role in constraining earnings management. Piot et al. (2007) in a French setting also found that audit committees control for income increasing earnings management. Wild (1996) investigated whether audit committees have an effect on perceived

earnings quality. He found that market's reaction to earnings reports increased after the formation of an audit committee indicating that audit committees improve perceptions of financial reporting quality.

The above findings lead to the first hypothesis:

H_1: Audit committee effectiveness improves financial reporting quality.

4.2 Audit committee effectiveness and audit quality

In general the literature posits that a company's corporate governance and external auditing are complements, whereas a company's internal control and external auditing are considered substitutes (Hay, Kneckel & Ling 2008). The relationship between audit committee effectiveness and audit quality is also considered to be a complex one. Consistent with the more general discussion, the literature provides two possible rationales which may explain how audit committee effectiveness and external audit quality are related: audit committees and external auditors can be considered as either *substitutes* or *complements* for each other[17].

According to the *substitute* rationale audit committee effectiveness should be negatively associated with audit quality and vice versa. This is because the oversight provided by either audit committees or external auditors is expected to be sufficient to ensure financial reporting quality in its own right. According to this rationale both the demand for and supply of assurance provided by the auditor, for example, should be reduced when a company has an effective audit committee. Although the substitution rationale is initially appealing, it does not take into consideration the incentives of audit committee members. It can be argued that audit committee members may wish to invest in external auditing in order to protect their reputational capital (Abbott et al. 2000; Knechel & Willekens 2006) or mitigate the risk of financial liability arising from financial

[17] Previously the roles of audit committees and external auditors were viewed somewhat differently. Prior to the requirements for mandatory audit committee formation it was common that external auditors aided their clients in forming audit committees. This was because audit committees were viewed as a means to enhance the perceptions of auditor independence (Menon et al. 1994). Accordingly early studies such as Eichenseher and Shields (1985) and Menon et al. (1994) found that audit firm type affects the formation of audit committee. More specifically they reported that companies employing a big audit firm were more likely to voluntarily form an audit committee. In addition Collier et al. (1999) found that companies with Big Six audit firm had more active audit committees than companies with non-Big Six audit firm.

statements (Abbott et al. 2000). Thus, the *complement* rationale suggests a positive association between audit committee effectiveness and audit quality. This is because effective audit committees are expected to consist of directors with higher incentives to demand the assurance provided by external auditors (Hay et al. 2008).

The research so far is inconclusive as to which rationale is more appropriate in describing the relationship between audit committee effectiveness and audit quality. Both rationales have been supported by prior research: studies focusing on the auditor's decision-making have provided support for the *substitute* rationale, while studies regarding auditor choice and remuneration have provided support for the *complement* rationale. These studies will be discussed in more detail next.

Research supporting the *substitute* rationale includes studies by Cohen and Hanno (2000), Bédard and Johnstone (2004), Lee et al. (2004), and Stewart et al. (2007). Cohen et al. (2000) examined whether audit planning judgments are affected by the strength of company's corporate governance structure. They found that audit planning judgments were less favourable for companies with audit committees lacking resources and technical experience. In a similar vein, Bédard et al. (2004) reported that increased earnings manipulation risk is associated with increased planned audit hours and billing rates. In addition, an experimental study by Stewart et al. (2007) showed that auditors assess the level of audit risk lower for companies with audit committees, more frequent committee meetings and higher auditor's attendance at meetings. However, the impact of these variables on audit testing and audit efficiency was perceived by auditors to be minimal. Lee et al. (2004) provided further collaborative evidence by examining auditor resignations. They found that auditors are less likely to resign when the company has an effective independent audit committee, which indicates that audit committee effectiveness affects auditors' assessment of audit risk and willingness to continue the audit assignment.

Research related to *the complement* rationale provides evidence indicating that audit committees have a critical role to play in enhancing audit quality at several stages in external auditing (Lee et al. 2004). Research examining the relationship between audit committee effectiveness and audit quality can be divided into the following lines of research (Abbott et al 2003a): 1) auditor selection, 2) audit coverage and audit fees, and 3) audit process and 4) audit opinion. In addition, studies have examined the association between audit committees and perceived audit quality.

The first line of research provides consistent evidence supporting the notion that effective audit committees demand higher level of audit quality. Abbott et al. (2000) focused on an association between audit committee effectiveness and audit firm size and found evidence that companies with independent audit committees that meet frequently were more likely to select a (then) Big Six audit firm when switching auditors. Audit committee effectiveness is also found to have an effect on the selection of an industry specialist auditor. Abbott et al. (2001) reported that audit committees which are independent and active are more likely to use an industry specialist audit firm. In a similar vein, Chen et al. (2005) found that the proportion of independent audit committee members increases the likelihood of employing a specialist audit firm.

The second line of research examines whether audit committee effectiveness affects the demand for greater quantity of audit effort from the incumbent auditor in order to improve audit quality. These studies hypothesize that the amount of the audit fees reflects audit quantity and further audit quality. Thus, a positive association between audit committee effectiveness and audit fees is expected. This positive association can also be expected because the audit committee has the important duty to ensure that audit hours are not reduced to a level that compromises the quality of an audit (Stewart et al. 2007). Research results have generally been consistent with these views. An early study by Collier and Gregory (1996) found that UK companies with audit committees have higher audit fees. However, a later study by Goddard and Masters (2000) did not find this relation. Abbott et al. (2003a) examined the association between audit fees and audit committee independence, expertise and meeting frequency. Abbott et al. (2003a) found a positive association between audit committee independence as well as expertise and audit fees. Number of meetings was not significantly related to audit fees. Similarly, Lee et al. (2005) found a significant association between measures of audit committee effectiveness (independence, activity and expertise) and audit fees. Goodwin-Stewart et al. (2006) also found that the existence of an audit committee, more frequent committee meetings and increased use of internal audit were related to higher audit fees. In addition it was found that the expertise of audit committee members was associated with higher audit fees when meeting frequency and independence was low. Knechel et al. (2006) reported that audit fees are higher when a company has an audit committee. Mitra et al. (2007) demonstrated that more independent audit committees pay higher fees for auditors. However, other measures of audit committee effectiveness including audit committee meeting frequency and audit committee expertise did not have an effect on audit fees. In addition Vafeas et al. (2007) found that audit committee size, independence level and expertise were positively associated with audit fees. Finally Hay et al. (2008) examined the effect of internal auditing, corporate

governance and concentration of ownership on audit fees in a New Zealand setting. They reported that all variables examined, including the existence of an audit committee, were positively related to audit fees in a less regulated environment. However, it was found that these relationships did not hold in a highly regulated environment in which companies have relatively homogeneous control arrangements.

A related vein of research focuses on the relationship between audit committee effectiveness and non-audit services fees and provides further evidence that audit committee effectiveness is related to audit quality. The notion behind these studies is that effective audit committees restrict the purchase of non-audit services from their incumbent auditor in order to ensure auditor independence. Abbott, Parker, Peters and Raghunandan (2003b) supported this notion and showed that non-audit services fees were lower in companies with independent and active audit committees. Lee et al. (2005) also suggested that effective audit committees seek to enhance auditor independence by reducing the non-audit services provided by the incumbent auditor.

The third research stream focuses on the audit committee's role in auditor-management disputes. The underlying notion behind these studies is that an audit committee member's characteristics affect his or her willingness to support the auditor in conflict situations with management. The results of these studies are somewhat inconclusive. Some studies suggest that audit committee members who are current managers of companies (Knapp 1987), possess financial expertise (DeZoort et al. 2001) or are CPAs (Certified Public Accountant) (DeZoort, Hermanson & Houston 2003a) are more likely to support auditors in audit-management disagreements. However, DeZoort et al. (2001) found that audit committee members' concurrent experience as a board member and as a member of senior management was associated with greater support for management, while DeZoort et al. (2003a) did not. DeZoort, Hermanson and Houston (2003b) found that audit committee members who were CPAs were less likely to support adjustments proposed by the auditor.

The fourth research stream focuses on audit committees' ability to mitigate the threat of management replacing the auditor. It is suggested that by mitigating the threat of management replacing the auditor the audit committee can affect the level of audit coverage and promote more truthful reporting by auditors. Carcello et al. (2000) as well as Carcello and Neal (2003b) examined the relation between audit committee effectiveness and auditor's decision to issue a going-concern report. They found that audit firms are more likely to issue going-concern opinions to financially distressed firms with independent audit committees. In

addition, Carcello et al. (2003) found that auditors who issue initial going-concern modifications are less likely to be terminated when audit committee members are independent, possess governance expertise and have low stockholding. Archambeault et al. (2001) examined suspicious auditor switches. They found that companies that made suspicious auditor switches had 1) less independent audit committees, 2) less experienced audit committee members, 3) smaller audit committees, and 4) less active audit committees than matched counterparts.

In addition to the above studies, a related research stream links audit committee effectiveness with perceived audit quality and independence. For example Raghunandan et al. (2003) investigated the association between audit committee effectiveness and shareholder ratification of auditor. The results indicated that in companies with high non-audit fee ratios, shareholders were less likely to vote against auditor ratification if the audit committee had solely independent directors. Raghunandan et al. (2003) concluded that audit committee composition is associated with shareholders' perceptions of audit quality and independence. Teoh et al. (1996) investigated the perceptions of Malaysian accountants and found that the formation of the audit committee had a strong positive impact on enhancing perceived auditor independence. Beattie et al. (1999) also reported similar results on UK data. Goodwin and Seow (2002) investigated the effectiveness of audit committees in enhancing the quality of financial reporting and auditing perceived by auditors and directors in Singapore. A strong audit committee was found to have a significant impact on perceived audit effectiveness and the quality of financial reporting

The above discussion leads to the second hypothesis:

H_2: Audit committee effectiveness increases the demand for audit quality.

4.3 Audit quality and financial reporting quality

The role of the external audit is to ensure financial reporting quality (Cohen et al. 2004). Several empirical studies have examined whether external audit fulfils this role and contributes to financial reporting quality. These studies have used several measures for both audit quality and financial reporting quality. Based on measures of financial reporting quality these studies can be divided into two groups: 1) studies focusing on actual financial reporting quality and 2) studies focusing on perceived financial reporting quality. Overall, this line of research provides evidence that external audit quality contributes to both actual and

perceived financial reporting quality. These studies will be discussed next in more detail.

There is an extensive body of research focusing on the relationship between audit quality and actual financial reporting quality. Many of these studies examine the association between audit quality and earnings quality. These studies suggest that audits of higher quality are more effective in restricting management discretion over accounting issues than audits of lower quality, and thus result in better earnings quality. These studies consider accruals as instruments which management prefers to use in order to manage earnings. Research has provided extensive evidence that audit quality measured by audit firm size (Becker et al 1998; Francis et al. 1999), audit firm industry specialization (Balsam et al. 2003; Krishnan 2005), auditor tenure (Myers et al. 2003; Piot et al. 2007) or audit fees (Frankel et al. 2002; Larcker et al. 2004; Srinidhi et al. 2007) increases earnings quality (i.e. decreases discretionary accruals). In addition to accruals, audit quality has been linked to several other measures of financial reporting quality, such as restated financial statements (e.g. Kinney et al. 2004), audit reports (e.g. Geiger et al. 2003), and litigation (Antle et al. 1997). These studies mainly examine the relationship between auditor remuneration and financial reporting quality on the basic premise that financial dependence threatens auditor independence and thus decreases financial reporting quality. Overall, this line of research fails to support this premise and thus provides indirect support for the notion that audit fees can be considered an indicator of auditor's effort to conduct a high quality audit

Many studies have also examined how audit quality affects perceived financial reporting quality. These studies are also quite consistent in their findings, reporting a positive link between audit quality and perceived financial reporting quality. Studies focusing on ERC have found that audit firm size (Teoh et al. 1993), industry specialization (Balsam et al. 2003) and tenure (Ghost et al. 2005) have an effect on perceived earnings quality. In other words, these studies have documented a positive association between audit quality and ERCs. Similarly studies focusing on IPOs (Initial Public Offering) have found that higher audit quality indicated by audit firm size result in more favorable firm valuations (Beatty 1989). In addition, a study by Krishnan (2003) focused on earnings surprises and reported collaborating evidence showing more positive market reactions to earnings surprises for companies with industry specialized auditors.

The above discussion leads to the third hypothesis:

H_3: Audit quality improves financial reporting quality.

4.4 Effect types

As evidenced by the foregoing discussion the relationships between audit committee effectiveness, audit quality and financial reporting quality have aroused considerable research interest. The objective of the present study is to place the separate relationships emerging from the literature in a more comprehensive model. Since corporate governance and audit research have traditionally focused on direct effects between variables the model is bound to include more complex effect types. Thus the objective of the study involves selection of an effect type which adequately describes the relationships between the variables of interest and is in accordance with the theory and results of empirical research.

The alternative effect types are ultimately derived from other fields of social sciences, in which researchers have found it necessary to invoke conceptual models that include various effect types to describe for example human behavior or decision making[18]. The main effect types addressed in these studies are mediated effects and moderated effects. These effect types are also addressed by management accounting research, which has examined, for example, the effects of moderator and mediator variables on the relationships between company's contingency characteristic and company performance (see e.g. Gerdin & Greve 2004; Jokipii 2006).

Before the selection of an appropriate effect type it is important to make a distinction between these effect types, because they have different theoretical starting points and they answer different research questions. In general, a variable can serve either function depending on the theoretical model under investigation. However, a variable cannot serve both functions in the same analysis. In other words, if a variable is tested as both a moderator and a mediator in competing models and both models yield significant results this should be considered to be a contradictory result (see e.g. Baron et al. 1986; Holmbeck 1997; Muller, Judd & Yzerbyt 2005; Jokipii 2006). The aim of the following sections is to define the concepts of moderator and mediator and provide the basis for the choice regarding the effect type in the model developed.

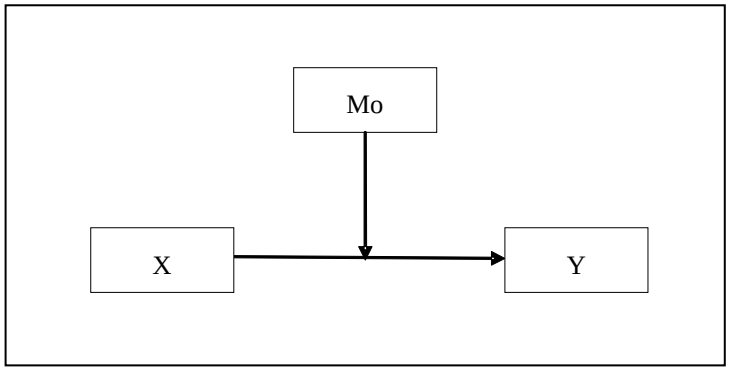
[18] See e.g. MacKinnon, Lockwood, Hoffman, West and Sheets (2002) and MacKinnon, Fairchild and Fritz (2007) for a discussion regarding these research questions.

4.4.1 Moderation effect

Moderated effect focuses on factors having an effect on the strength and/or direction of the relationship between the independent variable and the dependent variable. A moderation variable is often introduced in order to examine the conditions under which the strength of the effect of an independent variable on a dependent variable varies. Alternatively, a moderation variable can be introduced in order to examine the condition under which the direction of effect varies (Muller et al. 2005). Baron et al. (1986) define a moderator variable more specifically as follows:

> "*a qualitative (e.g., sex, race, class) or quantitative…variable that affects the direction and/or strength of a relation between an independent or predictor variable and a dependent or criterion variable…a basic moderator effect can be represented as an interaction between a focal independent variable and a factor (the moderator) that specifies the appropriate conditions for its operation…Moderator variables are typically introduced when there is an unexpectedly weak or inconsistent relation between a predictor and a criterion variable* (p. 1174, 1178)."

The moderation effect is presented diagrammatically in Figure 7. In the figure X refers to an independent variable, Mo refers to a moderation variable and Y refers to a dependent variable. In the figure moderator variable Mo moderates the relationship between the independent variable X and the dependent variable Y (Baron et al. 1986; Holmbeck 1997). As is evident from the figure, the independent variable X and the moderator variable Mo are independent of each other. That is, the independent variable should not have an effect on the moderator variable in the moderation model (Muller et al. 2005).



Notes:
The variables are defined as follows:
Y= Dependent variable
X= Independent variable
Mo= Moderating variable

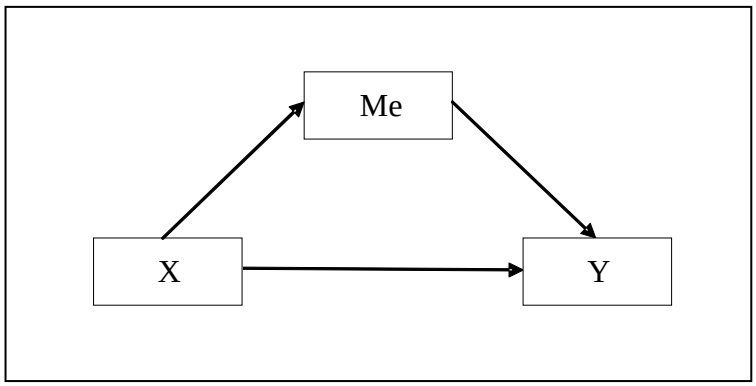
Figure 7. Moderation effect (Baron et al. 1986; Holmbeck 1997).

4.4.2 Mediation effect

The mediation effect consists of a chain of relations where an independent variable affects a mediator variable which then affects the dependent variable. The mediation effect is built on the assumption that there is a significant association between the independent variable and the dependent variable before testing for a mediated effect. The mediator variable is introduced in order to examine whether the effect of an independent variable on a dependent variable goes through a mediating variable. In other words a mediator variable specifies how (or the mechanism by which) a given effect occurs. Baron et al. (1986) describe the mediator variable as follows:

> *"the generative mechanism through which the focal independent variable is able to influence the dependent variable of interest…(and) Mediation …is best done in the case of a strong relation between the predictor and the criterion variable (p. 1173, 1178).*

The mediation effect is depicted diagrammatically in Figure 8. In the figure X refers to the independent variable, Me refers to the mediator variable and Y refers to the dependent variable. In the figure the mediator variable Me mediates the relationship between the independent variable X and the dependent variable Y (Baron et al. 1986; Holmbeck 1997).



Notes:
The variables are defined as follows:
Y= Dependent variable
X= Independent variable
Me= Mediating variable

Figure 8. Mediation effect (Baron et al. 1986; Holmbeck 1997).

The mediated effect may be either full or partial. *A full mediation* occurs when the mediator eliminates the effect of the independent variable on the dependent variable, whereas *a partial mediation* occurs when the mediator significantly decreases the effect of independent variable on dependent variable. It should be noted that a partial mediation may indicate the operation of multiple mediating factors (Baron et al. 1986; Holmbeck 1997).

It should be noted that a distinction can be made between indirect effect and mediated effect, although these concepts are frequently used as synonyms in the literature. Figure 9 depicts an indirect effect. In the figure X denotes the independent variable, I the intervening variable and Y the dependent variable. The difference between indirect and mediated effects arises from the initial relationship between the independent variable and the dependent variable. Following Holmbeck (1997) it is asserted that the mediated effect is possible only if the independent variable has an initial effect on the dependent variable. The mediator variable is expected to account for the relationship between the independent and the dependent variable. However, an indirect effect may occur if significant relationships are found between the independent variable and intervening variable as well as the intervening variable and dependent variable. In the case of indirect effects it cannot be claimed that the independent variable and the dependent variable are significantly related and thus interpretations concerning such effects should be conservative (Streiner 2005; Holmbeck 1997).

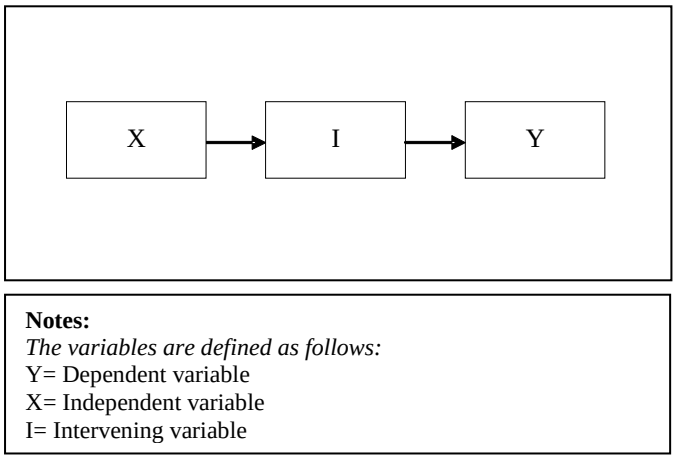


Figure 9. Indirect effect (Streiner 2005).

4.5 Selection of effect type

The literature suggests that the relationships between corporate governance actors are complex (e.g. Cohen et al. 2004). Thus, a substantial amount of research has focused on examining relationships between audit committee effectiveness, audit quality and financial reporting quality. Collectively the existing research provides evidence for relationships between: 1) audit committee effectiveness and financial reporting quality, 2) audit committee effectiveness and audit quality, and 3) audit quality and financial reporting quality. The evidence shows that audit committee effectiveness is associated with better financial reporting quality as well as with greater demand for external audit quality. The results also indicate that audit quality enhances financial reporting quality. No previous research, however, has attempted to place these relationships in a more comprehensive model.

Thus, the objective of this research is to incorporate the above relationships and develop a model which provides a more comprehensive understanding of the relationships. This objective involves selection of an effect type which sufficiently describes the underlying dynamics of the relationships. This study considers two alternative effect types, namely the moderation effect and the mediation effect. These effect types are derived from other fields of social sciences, where they are frequently examined (see e.g. Baron et al. 1986; Holmbeck 1997; Holmbeck 2002; Muller et al. 2005). The main focus of the model developed is on the role audit quality plays in the relationship between audit committee effectiveness and financial reporting quality.

Firstly, audit quality could be modelled as a moderator which alters the strength of the relationship between audit committee effectiveness and financial reporting quality. This effect type can be based either on the *complement* or the *substitute* rationale. Based on a complement rationale it can be suggested that audit quality strengthens the relationship between audit committee effectiveness and financial reporting quality. This notion maintains that external auditors contribute to the monitoring of financial reporting quality provided by audit committees. On the other hand from the substitute perspective the effect could be the opposite. This is because an effective audit committee would decrease the need for high quality audit service and vice versa. However, in the moderation model the independent variable and the moderator cannot be related. The literature provides evidence of a positive effect between audit committee effectiveness and audit quality. Therefore, it is suggested that the moderation effect, on a theoretical basis, cannot be employed to describe the role of audit quality on the relationship between audit committee effectiveness and financial reporting quality (Muller et al. 2005).

Secondly, audit quality may function as a mediator in the relationship between audit committee effectiveness and financial reporting quality. This effect type is in accordance with the *complement* rationale: audit committee effectiveness can be expected to improve audit quality which further improves financial reporting quality. The mediation effect maintains that there are significant relations between 1) independent variable and dependent variable, 2) independent variable and mediator variable, and 3) mediator and dependent variable. If audit committee effectiveness is modelled as an independent variable, audit quality as a mediator variable and financial reporting quality as a dependent variable, the empirical studies provide evidence for all the required relationships. In other words, combining the relationships reported in the existing research forms a sequence from audit committee effectiveness to audit quality and further to financial reporting quality. Thus, empirical research and the theory concerning the mediation effect are analogous. Therefore it is suggested that audit quality functions as a mediator in the relationship between audit committee effectiveness and financial reporting quality.

Based on the above propositions a fourth hypothesis is proposed:

H_4: Audit quality mediates the relationship between audit committee effectiveness and financial reporting quality.

5 METHODOLOGY AND SAMPLE

This research focuses on the interplay between audit committees and external auditors in ensuring financial reporting quality. Following the literature this study examines the relationships between 1) audit committee effectiveness and financial reporting quality, 2) audit committee effectiveness and audit quality, 3) audit quality and financial reporting quality. In addition, as a novel approach, these relationships are combined into a more comprehensive model which suggests that audit quality mediates the relationship between audit committee effectiveness and financial reporting quality. The rationalization for the model developed was presented in the previous section.

This section will introduce the methodology for examining the research model proposed. The section is organized as follows. *Firstly*, the analytic techniques for testing the mediation effect are explained. *Secondly*, operational measures for audit committee effectiveness, audit quality and financial reporting quality as well as control variables are introduced. This part also involves a restatement of the study's hypotheses in terms of operational measures. *Thirdly*, adaption of analytic techniques is explained. *Finally*, sample selection criteria and descriptive statistics are presented.

5.1 Statistical mediation

Prior audit research has mainly tested direct effects between measures of audit committee effectiveness, audit quality and financial reporting quality using multiple regression analysis. Hence, no prior research has addressed the possibility of more sophisticated effect types between the variables. To bridge this apparent gap in the literature the present study investigates an alternative effect type, the mediation effect. More specifically, it is suggested that audit quality functions as a mediator in the relationship between audit committee effectiveness and financial reporting quality. The statistical methods used to test mediation effect are derived from other fields of social sciences, where this type of effect is frequently tested (see e.g. MacKinnon, Lockwood, Hoffman, West & Sheets 2002).

Several methods for testing mediation can be derived from the literature. According to MacKinnon, Fairchild and Fritz (2007) [19] the three major statistical

[19] See e.g. MacKinnon et al. (2007) and Mackinnon et al. (2002) for a review of these methods.

approaches for testing mediation hypothesis are: 1) the Causal Steps Method, 2) the Difference in Coefficients Method and 3) the Product of Coefficients Method. The first method, the Causal Steps Method, originates from the seminal work by Baron et al. (1986). This method involves testing series of relationships (or paths) in the proposed mediation model. The second approach, the Difference in Coefficients Method, focuses on the difference between the regression coefficient before and after adjustment for the mediating variable into a regression model regarding a relationship between the independent variable and the dependent variable. The third approach, the Product of Coefficients Method, attempts to test the significance of the mediated effect (MacKinnon et al. 2002).

The above methods are somewhat overlapping and it has been suggested that combining the Causal Steps Method and the Product of Coefficients Method provides a more thorough analysis of the mediation effect than any single method (see Holmbeck 1997). Thus, following Holmbeck (1997) both the Causal Steps Method and a significance test for the mediated effect (i.e. the Sobel Test) determined by the Product of Coefficients method are employed in this study. The next sections will discuss these methods in more detail.

5.1.1 Causal Steps Method

As discussed in Section 4.4.2 the mediation hypothesis suggests a series of relations where the independent variable affects a mediating variable, which affects the dependent variable (MacKinnon et al. 2007) with an initial assumption that the independent variable affects the dependent variable (Holmbeck 1997). This study employs the Causal Steps Method for examining the presence of the mediated effect. This method was introduced by Baron et al. (1986) and is the most commonly used method for testing mediation, for example, in psychological literature (MacKinnon et al. 2002; MacKinnon et al. 2007). The Causal Steps Method involves the estimation of three regression models which are presented in Table 1 (e.g. Baron et al. 1986; Muller et al. 2005).

Table 1. Regression models required by the Causal Steps Method (Baron et al. 1986).

Condition	Equation no
Condition 1:	
$Y=\beta_{10}+\beta_{11}X+\varepsilon_1$	(1)
Condition 2:	
$Me=\beta_{20}+\beta_{21}X+\varepsilon_2$	(2)
Conditions 3 and 4:	
$Y=\beta_{30}+\beta_{31}X+\beta_{32}Me+\varepsilon_3$	(3)
The variables are defined as follows: Y= Dependent variable X= Independent variable Me= Mediating variable	

The above regression models can also be placed in the mediation model diagram as presented in Figure 10. The first regression model is related to the direct effect between independent variable and dependent variable. The second regression model tests the relation between the independent variable and the mediator. The third regression model tests the effect of the independent variable on dependent variable after the mediator has been included in the regression model. In specific terms the Causal Steps Method requires that four conditions must be met for a variable to be considered a mediator. These conditions are the following (Baron et al. 1986):

1. In Equation 1, the independent variable *X* must have an effect on the dependent variable *Y* (β_{11} is significant).

2. In Equation 2, the independent variable *X* must have an effect on the mediator *Me* (β_{21} is significant).

3. In Equation 3, the mediator *Me* must have an effect on the dependent variable *Y* controlling for the independent variable *X* (β_{32} is significant).

4. In Equation 3, the effect of the independent variable *X* on the dependent variable *Y* (β_{31}) should be smaller, in absolute value, than the effect in Equation 1 (β_{11}).

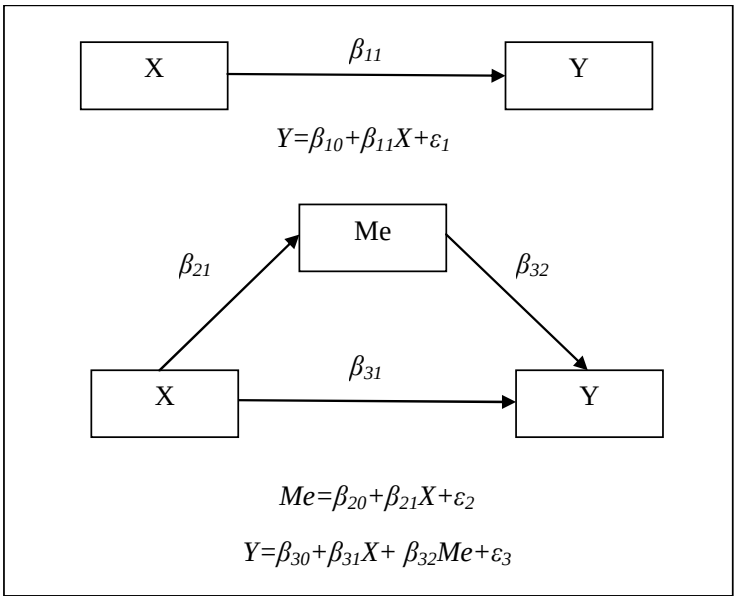


Figure 10. Mediation model diagrammatically and regression models to test the mediated effect (MacKinnon et al. 2002).

The literature has debated whether the first condition is necessary for a mediated effect to occur (Muller et al. 2005). The present study adopts the view that the first condition must be met in order to test the mediation effect. This view is consistent, for example, with Shrout and Bolger (2002) who state that: "*experimentalists who wish to elaborate the mechanism of an experimental effect need to first establish that the effect exists*" (p. 430). In addition, the literature provides several alternatives as to how the fourth condition is established. In general, the results are interpreted as indicating full mediation (i.e. the effect of the independent variable is completely transmitted through the mediating variable) if the independent variable coefficient β_{31} does not differ significantly from zero when the mediating variable is included in the regression model. The literature also recognizes the possibility of partial mediation where the effect of the independent variable is transmitted through the mediating variable only partially (Baron et al. 1986). Thus, a result indicating that $\left| \beta_{31} \right| < \left| \beta_{11} \right|$ is consistent with the existence of partial mediation. Following, for example, Baron et al. (1986) this study adopts the view that both full and partial mediation effects are acceptable.

5.1.2 Sobel Test

Holmbeck (2002) argues that a single implementation of the Causal Steps Method may lead to false-negative or false-positive conclusions regarding the occurrence of the mediation effect. False-negative conclusions refer to the rejection of the mediation hypothesis when it should be accepted and false-positive conclusions refer to acceptance of the mediation hypothesis when it should be rejected. According to Holmbeck (2002) false conclusions can be reduced by testing the significance of the mediated effect.

The literature proposes several tests for the significance of the mediated effect. Related to these tests the mediated effect can be determined by the following equality relationship which exists among the parameters of the regression models 1-3 (see e.g. MacKinnon, Warsi & Dwyer 1995; Muller et al. 2005):

$$\beta_{11} - \beta_{32} = \beta_{21} * \beta_{32}$$

Thus, tests for the significance of the mediated effect involve testing whether the parameter difference on the left side of the above equality departs from zero or whether the product on the right side does so. Following Holmbeck (2002) this study employs the Sobel Test to examine the significance of the mediated effect and thus, the focus is on the latter.

More specifically the Sobel Test involves calculating the coefficient for the mediated effect (i.e. indirect effect)[20]. This is achieved by multiplying coefficients $\beta_{21}\beta_{32}$. The coefficient of the mediated effect is further divided by its standard error $se_{\beta 21 \beta 32}$. This test value is compared to the standard normal distribution. Thus, in terms of equations the Sobel Test can be presented as follows (Sobel 1982; Baron et al. 1986):

$$z_{\beta_{21}\beta_{32}} = \frac{\beta_{21} \cdot \beta_{32}}{se_{\beta_{21}\beta_{32}}} \tag{4}$$

$$se_{\beta_{21}\beta_{32}} = \sqrt{\left(\beta_{21}{}^2 \cdot se\beta_{32}{}^2\right) + \left(\beta_{32}{}^2 \cdot se\beta_{21}{}^2\right)} \tag{5}$$

[20] Refer to regression models 2 and 3 for the notations.

The variables are defined as follows:

β_{32}= Unstandardized regression coefficient for the association between the mediator and the dependent variable.

β_{21}= Unstandardized regression coefficient for the association between the independent variable and the mediator.

$se_{\beta 32}$ = Standard error of the mediator β_{32}.

$se_{\beta 21}$= Standard error of the independent variable β_{21}.

As a summary, the mediated effect is tested as follows. *Firstly*, the Causal Steps Method is employed to test the necessary relations for the mediated effect. If the variables in a tested mediation model fulfill all four conditions of the Causal Steps Method the results are considered to support the mediation effect. In this study both full and partial mediation effects are considered to be an acceptable result. *Secondly*, if the Causal Steps Method supports the mediation model Sobel Test is applied to test the significance of the mediated effect. If Sobel Test statistics are greater than 1.96 the mediated effect is considered to be statistically significant at the 5% level.

5.2 Operational measures

This study develops a model in which audit quality mediates the relationship between audit committee effectiveness and financial reporting quality. Analysis of the model involves testing four hypotheses which are analogous to the conditions of the Causal Steps Method and must be reached in order for the mediation effect to occur. The hypotheses establish the predicted signs of the relationships. Thus, the following hypotheses are tested:

H_1: Audit committee effectiveness improves financial reporting quality.

H_2: Audit committee effectiveness increases the demand for audit quality.

H_3: Audit quality improves financial reporting quality.

H_4: Audit quality mediated the relationship between audit committee effectiveness and financial reporting quality.

Initially the model developed focuses on five variables. *Firstly*, there are three independent variables which serve as measures of audit committee effectiveness, namely audit committee size, audit committee expertise ratio and audit committee meeting frequency. *Secondly*, there is the dependent variable, which is a measure of financial reporting quality. In this study discretionary accruals are suggested to represent financial reporting quality in general and earnings quality in particular. *Finally*, there is a potential mediating variable which is a measure of audit quality. In this study audit quality is measured by audit fees paid to the external auditor. Further rationalization for these variables is presented in Sections 5.2.1-5.2.3. The hypotheses discussed above can be restated as follows in terms of operational measures:

H_1: There is a negative relationship between audit committee size (audit committee expertise ratio and audit committee meeting frequency respectively) and discretionary accruals.

H_2: There is a positive relationship between audit committee size (audit committee expertise ratio and audit committee meeting frequency respectively) and audit fees.

H_3: There is a negative relationship between audit fees and discretionary accruals.

H_4: Audit fees mediate the relationship between audit committee size (audit committee expertise ratio and audit committee meeting frequency respectively) and discretionary accruals.

Figure 11 summarizes the operational measures of the developed model as well as hypothesized relationships between variables. As can be seen from the top of the figure, variables measuring audit committee effectiveness (audit committee size, audit committee expertise ratio and audit committee meeting frequency) are expected to have a negative effect on discretionary accruals. This is because more effective audit committees are expected to decrease management discretion over accounting issues and thus lead to a lower level of discretionary accruals than less effective audit committees. These relationships are addressed by Hypothesis 1. In addition, as can be seen from the bottom of the figure, measures of audit committee effectiveness are expected to have a positive effect on audit fees. The notion behind this relationship is that audit committee effectiveness is expected to increase the demand for external audit effort, which leads to an increase in audit fees. In turn, increase in external audit effort is expected to be positively related to audit quality. This relationship is consistent with Hypothesis 2. The bottom of the

figure also indicates that audit fees have a negative effect on discretionary accruals. This is because greater audit effort and better audit quality are expected to constrict earnings management, and thus to be related to better financial reporting quality. This is the notion underlying Hypothesis 3. Finally, measures of audit committee effectiveness, audit quality and financial reporting quality are connected to form a model in which the effect of audit committee effectiveness on financial reporting quality goes through audit quality. The bottom of Figure 11 illustrates this effect. The mediation effect is addressed by Hypothesis 4.

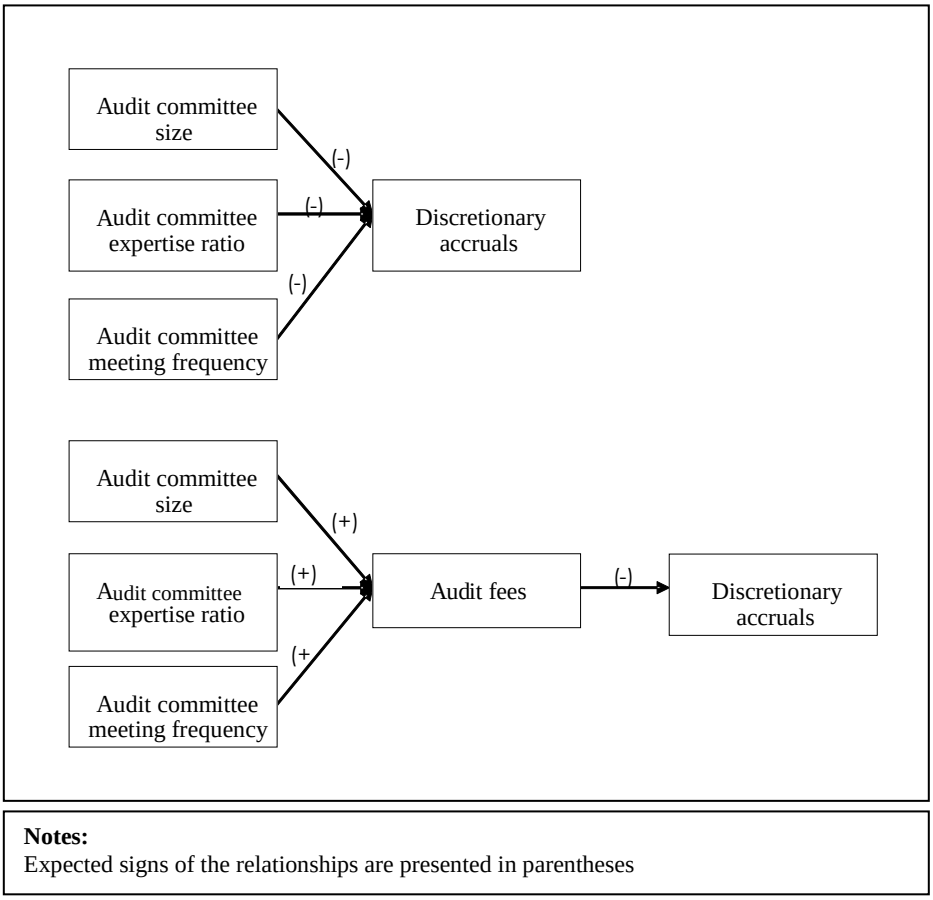


Figure 11. Hypothesized relationships between measures of audit committee effectiveness, audit quality and financial reporting quality.

As discussed previously, the hypotheses of the study are analogous with the four conditions of the Causal Steps Method. Thus, in the subsequent sections the term condition refers to both conditions of the Causal Steps Method and these hypotheses. If the condition is fulfilled the related hypothesis is also supported.

The following sections will introduce the operational measures of audit committee effectiveness, audit quality and financial reporting quality in more

detail. In addition to the variables of interest, this study employs control variables for both discretionary accruals and audit fees. These variables are also introduced in the coming sections. Appendix 3 provides a summary of the measures used in the empirical analyses.

5.2.1 Measurement of audit committee effectiveness

The operational measures for audit committee effectiveness are drawn from empirical research and from current US regulations concerning corporate governance and audit committees. In general the literature suggests that audit committee effectiveness is dependent on its composition as well as its activity level (e.g. DeZoort et al. 2002; SOX 2002; Beasley et al. 2000). Accordingly a set of three audit committee characteristics is suggested to have an effect on audit committee effectiveness namely, audit committee size, audit committee expertise ratio, and audit committee meeting frequency.[21] The first two measures are related to audit committee composition and the last one is related to audit committee activity level.

A substantial amount of research has provided evidence that these audit committee effectiveness measures are associated with financial reporting quality (e.g. Xie et al. 2003; Bédard et al. 2004). In addition prior studies provide evidence consistent with the notion that these audit committee effectiveness measures enhance the demand for external audit quality (Abbott et al. 2003a, Lee et al. 2005, Goodwin-Stewart et al. 2006; Vafeas et al. 2007). More specifically, audit committee size (ACSIZE) is measured as the number of directors serving on the audit committee. Audit committee expertise ratio (ACEXP) is the ratio of financial experts on the audit committee. Audit committee meeting frequency (ACMEET) is measured as the number of audit committee meetings held during the fiscal year. Following the literature these measures are expected to have a negative effect on discretionary accruals and positive effect on audit fees.

[21] Although the literature regards audit committee independence as an important determinant of audit committee effectiveness it is not included in the scope of this study. This is because current US regulations (e.g. SOX 2002) require that all audit committee members must be independent of the company. Therefore all sample companies are expected to have independent audit committees and this variable would not have variance to conduct statistical analysis.

5.2.2 Measurement of audit quality

The audit research has suggested several measures for audit quality including audit firm size, audit firm industry specialization, audit tenure and audit fees. However, this study is situated in a highly regulated as well as concentrated audit environment. Thus, most US listed companies are expected to employ Big Four audit firms as well as industry specialist audit firms. In addition the SOX (2002) restricts audit partner tenure to five years. Therefore, audit firm size, industry specialization and tenure are expected to have a limited ability to reflect audit quality. However, it is suggested that companies may still require quality differentiated audits and audit fees are expected to provide a sufficient indicator of audit quality. Following the literature it is suggested that audit fees reflect audit effort, which further benefits auditor's decision-making and thus improves the quality of services provided by the external auditor (e.g. Carcello et al. 2002; Frankel et al. 2002; Abbott et al. 2003a; Larcker et al. 2004; Srinidhi et al. 2007; Caramanis et al. 2008). In addition it is expected that certain drivers of audit quality, such as audit committee effectiveness, are associated with variations in the level of audit fees. This is because these drivers may affect audit effort during the planning of an audit as well as during the course of the audit (Simunic 1980; Hay et al. 2004; Watkins et al. 2004).

The above arguments are supported by several lines of empirical research linking audit fees with knowledge spillovers (e.g. Firth 1997; Firth 2002), free premiums (e.g. Simon et al. 1988; Ferguson et al. 2002), demand for audit quality (e.g. Abbott et al. 2003a) and financial reporting quality (e.g. Srinidhi et al. 2007). In general, these studies suggest that audit fees can be associated with audit quality through either greater audit competence or more audit work (Francis 2004). Thus, according to the literature audit quality is measured by the natural logarithm of audit fees (AUDITFEE) paid to the incumbent auditor. It is suggested that audit fees are related to an improvement in financial reporting quality, and thus have a negative effect on discretionary accruals.

5.2.3 Measurement of financial reporting quality

As discussed in Section 3.3 financial reporting quality has not been unambiguously defined by either regulators or prior research. Due to the vagueness of the definition, prior research has employed a number of measures for financial reporting quality. In general studies have concentrated on situations where financial reporting quality may be impaired. These situations can be divided into misstatements outside GAAP and misstatements within GAAP.

This study focuses on US listed companies and it is expected that these companies rarely issue financial reports which do not meet minimum GAAP requirements. Therefore this study focuses on financial reporting within GAAP. More specifically, discretionary accruals are used as a measure of financial reporting quality in general and earnings quality in particular. The basic premise is that discretionary accruals capture earnings management and therefore provide an inverse measure of earnings quality. The low level of discretionary accruals is expected to indicate good earnings quality (e.g. Healy 1985; DeAngelo 1986; Jones 1991; Dechow, Sloan & Sweeney 1995).

Several methods have been proposed for estimating discretionary accruals. Early studies use the change in total accruals as a measure of discretionary accruals (Healy 1985; DeAngelo 1986) whereas more recent research uses linear discretionary accruals models to decompose accruals into discretionary and nondiscretionary components (Jones 1991; Dechow et al. 1995, Dechow et al. 2002). However, it has been argued that the conventional accruals models fail to recognize the nonlinear nature of the accounting accruals process (Ball & Shivakumar 2005). To address this issue, a modified Dechow et al. (2002) model employed by Srinidhi et al. (2007) and Francis, LaFond, Olsson and Schipper (2005) is adopted in this study. In the original Dechow et al. (2002) model current accruals are the dependent variable and cash flows in previous, current and subsequent years are independent variables. Following McNichols (2002), Francis et al. (2005) and Srinidhi et al. (2007) the change in sales revenues (ΔRev_t) and gross property, plant and equipment (PPE_t) are included in the model as additional control variables. Thus, the model used to estimate discretionary accruals (ACC) is as follows:

$$TCA_t = \beta_1 + \beta_2 OCF_{t-1} + \beta_3 OCF_t + \beta_4 OCF_{t+1} + \beta_5 \Delta Rev_t + \beta_6 PPE_t + \varepsilon_t \quad (6)$$

The variables are defined as follows:

TCA= ΔCA-ΔCash-(ΔCL-ΔSTDeb)

ΔCA= Change in current assets

ΔCash= Change in cash balance

ΔCL= Change in current liabilities

ΔSTDebt= Change in short term debt included in current liabilities

OCF=Operating cash flow from the cash flow statement

ΔRev= Change in revenues

PPE= Gross property, plant and equipment

In line with Srinidhi et al. (2007) and Francis et al. (2005) all variables depicted above are scaled by average total assets in t and t-1. In addition, all changes presented above are between period t and t-1. The model is estimated separately for each industry (two-digit SIC code)[22] with a minimum of 20 observations. Discretionary accruals (ACC) are then calculated as the residuals from the above regression model. The interpretation of the residual is as follows: a higher value of the residual is expected to indicate a greater level of earnings management and lower earnings quality.

5.2.4 Control variables

As discussed previously, the Causal Steps Method involves a phased analysis technique in which mediator variable (AUDITFEE) is a dependent variable in one regression and becomes an independent variable in another. In addition the mediation model involves independent variables (ACSIZE, ACEXP and ACMEET) and a dependent variable (ACC). Due to the analytic technique, statistical analyses employ two sets of control variables. The first set involves control variables related to discretionary accruals (ACC). The second set of variables involves control variables related to audit fees (AUDITFEE). These control variables are discussed separately in the following sections.

5.2.4.1 Control variables related to discretionary accruals

Following prior research, the analysis involves selected firm characteristics which are expected to have an impact on earnings management. These firm characteristics proxy for company size, uncertainty of operations, systematic risk and growth opportunities (see e.g. Becker et al. 1998; Reynolds & Francis 2000; Dechow et al. 2002; Cheng & Warfield 2005; Wang 2006; Srinidhi et al. 2007). The logarithm of total assets (TA) is a proxy for *company size*. Following prior

[22] Industries with less than twenty observations were excluded from the sample (see e.g. Francis et al. 2005).

research, large companies are expected to have systematically lower discretionary accruals due to operating characteristics such as greater stability and diversification of portfolio of activities (Becker et al. 1998; Dechow et al. 2002; Srinidhi et al. 2007). Thus, a negative relationship between TA and ACC is expected. *Uncertainty of operations* is measured by operating cycle (OPCYCLE) which is calculated as follows (see e.g. Srinidhi et al. 2007):

$$OPCYCLE = \frac{360}{\frac{Sales}{Average\ account\ receivables}} + \frac{360}{\frac{Cost\ of\ goods\ sold}{Average\ inventory}} \quad (7)$$

For companies with no inventories OPCYCLE is calculated as follows:

$$OPCYCLE = \frac{360}{\frac{Sales}{Average\ account\ receivables}} \quad (8)$$

Dechow et al. (2002) and Srinidhi et al. (2007) argue that longer operating cycle is associated with more uncertainty and more estimation, thus leading to lower earnings quality. Therefore OPCYCLE is expected to have a positive effect on ACC. Growth rate in net sales (SALESG) is used to capture the effect of *growth opportunities* on discretionary accruals. High growth firms have high equity incentives and thus have greater incentives to manage earnings than low growth companies (Antle et al. 2006). Therefore, SALESG is expected to be positively associated with ACC. Occurrence of loss (LOSS) serves as a proxy for *systematic risk*. LOSS is an indicator variable which takes a value of 1 if the net income of the fiscal year is negative and otherwise 0. The literature suggests that riskier firms which are financially distressed may be more prone to use accruals to manage earnings upwards (Dechow et al. 2002; Antle et al. 2006 Srinidhi et al. 2007). Thus, LOSS is expected to have a positive effect on ACC.

5.2.4.2 Control variables related to audit fees

According to Hay, Knechel and Wong (2006) variables related to audit fees involve both “supply” variables and “demand” variables. Supply variables refer to company characteristics which may have an effect on auditor’s planning decisions regarding the level of audit effort. On the other hand, demand variables refer to

company characteristics which may influence the demand for greater audit effort and audit quality.

Supply variables related to audit fees serve as proxies for company size, complexity, inherent risk, profitability and leverage. *Company size* is measured as the natural logarithm of total assets (TA). The research has shown that company size has a very high power to explain audit fees (e.g. Carcello et al. 2002; Abbott et al. 2003a; Abbott et al. 2003b; Lee et al. 2005; Goodwin-Stewart et al. 2006; Knechel et al. 2006; Mitra et al. 2007). Company size controls for several attributes such as risk, earnings persistence, profitability, regulatory costs, accounting practices and information environment (see e.g. Hay et al. 2006). Given that larger companies have more complex systems and a wider range of activities, auditors are prone to devote more audit hours to large companies than to small companies (Palmrose 1986a; Palmrose 1986b; Barkess et al. 1994). Thus, TA is expected to have a positive effect on AUDITFEE. Inventory and receivables (INVREC) are used as proxies for *inherent risk*. INVREC is calculated as a sum of total inventories and total receivables scaled by total assets. Given that inventories and receivables require greater audit effort, INVREC is expected to be positively associated with AUDITFEE (Carcello et al. 2002; Lee et al. 2005; Mitra et al. 2007). *Complexity* is measured as a ratio of foreign sales to total sales (FOROPR). Companies with foreign operations are expected to require greater audit effort due to more heterogeneous information and business complexity and therefore a positive association between FOROPR and AUDITFEE is expected (Lee et al. 2005; Mitra et al. 2007). Quick ratio (QR) serves as a measure of leverage. QR is calculated as a ratio of current assets less inventory to current liabilities. Firms with high leverage are expected to be more risky and require more audit effort (Antle et al. 2006). Thus, quick ratio (QR) is expected to have a negative effect on AUDITFEE. Finally, *profitability* is measured by the loss variable (LOSS), which is an indicator variable taking the value of 1 if the net income of the fiscal year is negative and otherwise 0. In addition to profitability, LOSS is also a measure of audit risk because it reflects the possibility of the auditor being exposed to loss in the event that a client is not financially viable (Simunic 1980; Hay et al. 2006). Thus, LOSS is expected to be positively associated with AUDITFEE (Carcello et al. 2002; Goodwin-Stewart et al. 2006; Mitra et al. 2007; Vafeas et al. 2007).

In addition to the supply variables, the analysis involves three demand variables related to board effectiveness, namely board size, board independence and board diligence. Board size (BSIZE) is measured as the number of directors serving on

the board. Board independence[23] (BIND) is measured as the percentage of independent outsiders on the board. Board diligence (BMEET) is measured as the number of meetings held during fiscal year. These variables are expected to increase board effectiveness and therefore increase the demand for audit quality. Measures of board effectiveness are included in the analysis as control variables because it is expected that the audit committee does not absolve the whole board from its responsibilities concerning financial reporting. The board may have interests in the quality of external audits because audited accounting figures are used in various decision making-situations. These include management compensation, reviews of operating issues and investment decisions (Peasnell et al. 2005). In addition, board members may strive to protect their reputations and demand greater assurance of financial reporting quality from external auditors. Therefore the measures of board effectiveness, BSIZE, BIND and BMEET, are expected to have a positive effect on AUDITFEE.

5.3 Description of the analytic techniques

The relationships hypothesized in the model developed are tested statistically in two stages. *Firstly*, the Causal Steps Method is used to test for the occurrence of the mediated effect. The three regression models required to test the conditions of the Causal Steps Method will be estimated separately for the three measures of audit committee effectiveness (ACSIZE, ACEXP and ACMEET). Thus, this part of the analysis involves the estimation of a total of nine regression models. *Secondly*, the significance of the potential mediated effect(s) is tested using the Sobel Test. This part of the analysis is conditional upon the results of the Causal Steps Method. That is the Sobel Test statistic is calculated only for models which fulfill all conditions of the Causal Steps Method. The Sobel Test is used in order to provide further support regarding the significance of the potential mediated effect.

The adaptation of the above methods will be explained in more detail in the following subsections. In addition to the main analysis, several additional analyses are carried out in order to provide further evidence of the accuracy of the model and consistency of the results. The methods used in these analyses will be explained together with the results.

[23] The data provided by Institutional Shareholder Services classifies each director on the board as an 1) insider, 2) affiliated, or 3) independent outsider.

5.3.1 Adaptation of the Causal Steps Method

According to Holmbeck (1997) there are two main statistical approaches to testing the mediation effect, namely the regression approach and the SEM approach. Although the SEM approach has some advantages compared to the regression approach[24], its use in the present study would have resulted in a highly complex structural model whose results could have been difficult to interpret. This is because the present study's statistical analyses involve five variables of main interest as well as two sets of control variables. Because the regression approach provides a well-established procedure for the treatment of control variables it is regarded as more appropriate than the SEM approach for the purposes of this study. Moreover, the regression approach provides the same information regarding the individual relationships as the SEM approach.

The analysis regarding the occurrence of the mediated effect is conducted separately for each independent variable serving as a measure for audit committee effectiveness. More specifically following models are examined:

1) ACSIZE→AUDITFEE→ACC,

2) ACEXP→AUDITFEE→ACC, and

3) ACMEET→AUDITFEE→ACC.

The analysis of the above models involves examination of the four conditions of the Causal Steps Method discussed in Chapter 5.1.1. If the variables in a particular model are found to satisfy all four conditions of the Causal Steps Method, the mediation effect is supported. This analysis is also analogous with the study's hypotheses and thus, in such a situation Hypotheses 1-4 are supported.

In addition to the variables of interest, the regression models include control variables for the dependent variable ACC and the mediator AUDITFEE. The regression models related to conditions 1 and 3 include four control variables for ACC: Company size (TA), operating cycle (OPCYCLE), growth opportunities (SALESG) and profitability (LOSS). TA is expected to decrease earnings management and therefore have a negative effect on discretionary accruals, whereas OPCYCLE, SALESG and LOSS are expected to increase earnings

[24] For example the SEM approach allows a range of relationships to be included in a single analysis. In addition it provides indices which provide information as to how well the structural model fits the data (Kline 1998; Baines et al. 2003; Jokipii 2006).

management, thus resulting in a positive relation. In addition, the regression model related to condition 2 includes control variables for AUDITFEE. Following prior research audit fees are expected to be positively associated with the log of total assets (TA), total inventories and total receivables to total assets (INVREC), foreign sales to total sales (FOROPR), and whether the company has incurred a loss during the fiscal year (LOSS). Quick ratio (QR) is expected to have a negative effect on audit fees. In addition, BSIZE, BIND and BMEET are expected to be positively related to audit fees. The variables used in the analyses are summarized in Appendix 3. The regression models employed to test the conditions of the Causal Steps Method are presented in Tables 2-4[25] below.

Table 2. Regression models estimated to test model ACSIZE→AUDITFEE →ACC.

Condition	Equation no
Condition 1:	
$ACC=\beta_0+\beta_1 TA+\beta_2 OPCYCLE+\beta_3 SALEG+\beta_4 LOSS+ \boldsymbol{\beta_5 ACSIZE}+\varepsilon$	(9)
Condition 2:	
$AUDITFEE=\beta_0+\beta_1 TA+\beta_2 INVREC+\beta_3 FOROPR+\beta_4 QR+\beta_5 LOSS+\beta_6 BSIZE+\beta_7 BIND+ \beta_8 BMEET+\boldsymbol{\beta_9 ACSIZE}+\varepsilon$	(10)
Conditions 3 and 4:	
$ACC= \beta_0+\beta_1 TA+\beta_2 OPCYCLE+\beta_3 SALEG+\beta_4 LOSS+\boldsymbol{\beta_5 ACSIZE}+ \boldsymbol{\beta_6 AUDITFEE} +\varepsilon$	(11)

The variables are defined as follows:
ACC= Discretionary accruals (Residual from the regression model 6 scaled by 100)
ACSIZE= Number of audit committee members
AUDITFEE= Natural logarithm of audit fees
TA= Natural logarithm of total assets
OPCYCLE= Operating cycle (Calculated as presented in Equations 7-8)
SALEG= Growth rate in net sales
LOSS= Indicator variable, 1 if the net income of the fiscal year is negative, otherwise 0
INVREC= Total inventories and total receivables to total assets
FOROPR= Foreign sales to total sales
QR= Quick ratio
BSIZE= Number of board members
BIND= Board independence %
BMEET= Number of board meetings during fiscal year

[25] The variables of main interest are marked in bold in the equations.

Table 3. Regression models estimated to test model ACEXP→AUDITFEE →ACC.

Condition	Equation no
Condition 1:	
$ACC= \beta_0+\beta_1 TA+\beta_2 OPCYCLE+\beta_3 SALEG+\beta_4 LOSS+ \boldsymbol{\beta_5 ACEXP}+\varepsilon$	(12)
Condition 2:	
$AUDITFEE=\beta_0+\beta_1 TA+\beta_2 INVREC+\beta_3 FOROPR+\beta_4 QR+\beta_5 LOSS+\beta_6 BSIZE+\beta_7 BIND+ \beta_8 BMEET+\boldsymbol{\beta_9 ACEXP}+\varepsilon$	(13)
Conditions 3 and 4:	
$ACC= \beta_0+\beta_1 TA+\beta_2 OPCYCLE+\beta_3 SALEG+\beta_4 LOSS+\boldsymbol{\beta_5 ACEXP}+ \boldsymbol{\beta_6 AUDITFEE}+\varepsilon$	(14)

The variables are defined as follows:
ACC= Discretionary accruals (Residual from the regression model 6 scaled by 100)
ACEXP= Ratio of financial experts on the audit committee
AUDITFEE= Natural logarithm of audit fees
TA= Natural logarithm of total assets
OPCYCLE= Operating cycle (Calculated as presented in Equations 7-8)
SALEG= Growth rate in net sales
LOSS= Indicator variable, 1 if the net income of the fiscal year is negative, otherwise 0
INVREC= Total inventories and total receivables to total assets
FOROPR= Foreign sales to total sales
QR= Quick ratio
BSIZE= Number of board members
BIND= Board independence %
BMEET= Number of board meetings during fiscal year

Table 4. Regression models estimated to test model ACMEET→AUDITFEE →ACC.

Condition	Equation no
Condition 1:	
$ACC= \beta_0+\beta_1 TA+\beta_2 OPCYCLE+\beta_3 SALEG+\beta_4 LOSS+\boldsymbol{\beta_5 ACMEET}+\varepsilon$	(15)
Condition 2:	
$AUDITFEE=\beta_0+\beta_1 TA+\beta_2 INVREC+\beta_3 FOROPR+\beta_4 QR+\beta_5 LOSS+\beta_6 BSIZE+\beta_7 BIND+ \beta_8 BMEET+\boldsymbol{\beta_9 ACMEET}+\varepsilon$	(16)
Conditions 3 and 4:	
$ACC= \beta_0+\beta_1 TA+\beta_2 OPCYCLE+\beta_3 SALEG+\beta_4 LOSS+\boldsymbol{\beta_5 ACMEET}+ \boldsymbol{\beta_6 AUDITFEE} +\varepsilon$	(17)

The variables are defined as follows:
ACC= Discretionary accruals (Residual from the regression model 6 scaled by 100)
ACMEET= Number of audit committee meetings during fiscal year
AUDITFEE= Natural logarithm of audit fees
TA= Natural logarithm of total assets
OPCYCLE= Operating cycle (Calculated as presented in Equations 7-8)
SALEG= Growth rate in net sales
LOSS= Indicator variable, 1 if the net income of the fiscal year is negative, otherwise 0
INVREC= Total inventories and total receivables to total assets
FOROPR= Foreign sales to total sales
QR= Quick ratio
BSIZE= Number of board members
BIND= Board independence %
BMEET= Number of board meetings during fiscal year

5.3.2 Adaptation of the Sobel Test

The Sobel Test is employed to complement and further verify the results of the Causal Steps Method. The Sobel Test statistics are calculated in order to rule out false-negative and false-positive conclusions, which are possible if only the Causal Steps Method is used to test the occurrence of the mediated effect (see Holmbeck et al. 2002). This part of the analysis is conditional upon the results of the Causal Steps Method. That is, the Sobel Test statistics are calculated only for those models (i.e. ACSIZE→AUDITFEE→ACC, ACEXP→AUDITFEE→ACC, or ACMEET→AUDITFEE→ACC) which fulfil the four conditions of the Causal Steps Method. In other words, if the Causal Steps Method indicates that the mediated effect occurs, the significance of the mediated effect is examined further with the Sobel Test. Regression models 9-17 provide the necessary information to calculate the Sobel Test statistics. The following equations present the calculation of the Sobel Test statistics for the potential mediation models:

Calculation of Sobel Test statistics for model ACSIZE→AUDITFEE→ACC[26]

$$z_{\beta_{9\,ACSIZE}\beta_{6\,AUDITFEE}} = \frac{\beta_{9\,ACSIZE} \cdot \beta_{6\,AUDITFEE}}{se_{\beta_{9\,ACSIZE}\beta_{6\,AUDITFEE}}} \qquad (18)$$

$$se_{\beta_{9\,ACSIZE}\beta_{6\,AUDITFEE}} = \sqrt{\left(\beta_{9\,ACSIZE}{}^{2} \cdot se\beta_{6\,AUDITFEE}{}^{2}\right) + \left(\beta_{6\,AUDITFEE}{}^{2} \cdot se\beta_{9\,ACSIZE}{}^{2}\right)} \qquad (19)$$

The variables are defined as follows:

$\beta_{6AUDITFEE}$= Unstandardized regression coefficient for the association between AUDITFEE and ACC.

$\beta_{9ACSIZE}$= Unstandardized regression coefficients for the association between ACSIZE and AUDITFEE.

$se_{\beta 6AUDITFEE}$ = Standard error of the mediator $\beta_{6AUDITFEE}$.

$se_{\beta 9ACSIZE}$= Standard error of the independent variable $\beta_{9ACSIZE}$.

[26] Refer to regression models 9-11 for the notations.

Calculation of Sobel Test statistics for model ACEXP→AUDITFEE→ACC[27]

$$z_{\beta_{9\,ACEXP}\beta_{6\,AUDITFEE}} = \frac{\beta_{9\,ACEXP} \cdot \beta_{6\,AUDITFEE}}{se_{\beta_{9\,ACEXP}\beta_{6\,AUDITFEE}}} \quad (20)$$

$$se_{\beta_{9\,ACEXP}\beta_{6\,AUDITFEE}} = \sqrt{\left(\beta_{9\,ACEXP}{}^{2} \cdot se\beta_{6\,AUDITFEE}{}^{2}\right) + \left(\beta_{6\,AUDITFEE}{}^{2} \cdot se\beta_{9\,ACEXP}{}^{2}\right)} \quad (21)$$

The variables are defined as follows:

$\beta_{6AUDITFEE}$= Unstandardized regression coefficient for the association between AUDITFEE and ACC.

β_{9ACEXP}= Unstandardized regression coefficients for the association between ACEXP and AUDITFEE.

$se_{\beta 6AUDITFEE}$ = Standard error of the mediator $\beta_{6AUDITFEE}$.

$se_{\beta 9ACEXP}$= Standard error of the independent variable β_{9ACEXP}.

Calculation of Sobel Test statistics for model ACMEET→AUDITFEE→ ACC[28]

$$z_{\beta_{9\,ACMEET}\beta_{6\,AUDITFEE}} = \frac{\beta_{9\,ACMEET} \cdot \beta_{6\,AUDITFEE}}{se_{\beta_{9\,ACMEET}\beta_{6\,AUDITFEE}}} \quad (22)$$

$$se_{\beta_{9\,ACMEET}\beta_{6\,AUDITFEE}} = \sqrt{\left(\beta_{9\,ACMEET}{}^{2} \cdot se\beta_{6\,AUDITFEE}{}^{2}\right) + \left(\beta_{6\,AUDITFEE}{}^{2} \cdot se\beta_{9\,ACMEET}{}^{2}\right)} \quad (23)$$

The variables are defined as follows:

$\beta_{6AUDITFEE}$= Unstandardized regression coefficient for the association between AUDITFEE and ACC.

[27] Refer to regression models 12-14 for the notations.
[28] Refer to regression models 15-17 for the notations.

$\beta_{9ACMEET}$= Unstandardized regression coefficients for the association between ACMEET and AUDITFEE.

$se_{\beta 6AUDITFEE}$ = Standard error of the mediator $\beta_{6AUDITFEE}$.

$se_{\beta 9ACMEET}$= Standard error of the independent variable $\beta_{9ACMEET}$.

5.4 Sample selection and descriptive statistics

The data for this study are obtained from three sources. *Firstly*, data concerning audit fees are obtained from the Audit Analytics Database. *Secondly*, data related to audit committees are obtained from Institutional Shareholder Services (ISS). *Finally*, financial data is obtained from the Thomson Financial Database. Appendix 4 provides the selection criteria for the sample. The initial sample consists of S&P 1500 firms which had fiscal years ending any time during the calendar year 2006. Following prior research financial institutions, (SIC codes 6000-6999) are excluded from the sample due to their special regulatory environment. Firms in industries with insufficient data to estimate discretionary accruals (i.e. industries with less than 20 observations) are also excluded. These sample selection criteria yield a final sample of 1000 firms. All remaining missing observations in the data are replaced by variable mean in the analyses.

Table 1 of Appendix 5 presents descriptive statistics for variables employed in the main analysis. Statistics show that ACSIZE varies from a minimum of 2 members to maximum of 8 members. ACEXP varies from minimum of 0 to a maximum of 1. ACMEET has a wide range in the data distribution with a minimum of 0 meetings and maximum of 31 meetings. The descriptive statistics regarding measures of audit committee effectiveness indicate that not all sample companies comply with the SOX's (2002) or the stock exchanges' rules related to audit committee composition and activities[29]. *Firstly*, NYSE (2003), AMEX (2003) or NASDAQ (2003) require that audit committees should have at least three members. Some sample companies have smaller audit committees than required: the smallest audit committee in the sample has 2 members. However, the mean audit committee size (3.74) complies with the requirements. *Secondly*, the SOX (2002) and all stock exchanges require that audit committees should have at least one member who can be considered to have expertise in accounting and related matters. However, some companies in the sample have not specified whether they

[29] An alternative explanation for these outliers is that some companies have not reported matters regarding audit committee composition and activities sufficiently in their SEC filings.

have an expert in the audit committee with an expertise ratio of 0. However, the mean (0.49) expertise ratio indicates that many companies have set up audit committees which exceed the minimum requirements. *Thirdly*, for example NYSE (2003) and AMEX (2003) require that audit committees should meet on a quarterly basis. Some companies in the sample do not meet this requirement, having no audit committee meetings. Again the mean audit committee meeting frequency (9.02) exceeds the minimum requirements. In addition, the AUDITFEE variable has a wide range in the data. The variable ranges from 12.00 to 18.27 which in monetary terms means that audit fees range from a minimum of $162,750 to maximum of $85,800,000. The dependent variable ACC ranges from -49.04 to 48.68.

Descriptive statistics regarding the initial variables imply that the data may contain outliers which could have an effect on the results of the analyses. The potential effect of outliers is addressed by winsorizing the data at 2.5 % level from both tails. Table 2 of Appendix 5 presents descriptive statistics for winsorized variables. After winsorizing the data ACSIZE ranges from a minimum of 3 to a maximum of 6. ACEXP ranges from 0.17 to 1.00. ACMEET ranges from a minimum of 4 to a maximum of 17. AUDITFEE ranges from 12.93 to 16.74 which, in monetary terms, equals approximately $376,000 to $18,600,000. ACC varies from -21.31 to 26.39. After winsorization of the data all audit committees effectiveness measures in the sample fulfil SOX (2002) and stock exchanges requirements regarding audit committee composition and activities. In addition, the range of AUDITFEE and ACC in the data set is reduced considerably after winsorization. To ensure that the initial results are not driven by outliers in the data the main analysis is repeated using winsorized data. The results of this analysis are reported in the additional analysis section of the study.

Appendix 6 presents a correlation matrix for the variables used in the empirical tests. The correlations show that ACMEET and AUDITFEE are negatively and significantly correlated with ACC. ACSIZE is also negatively correlated with ACC but this correlation is not statistically significant. In addition, all measures of audit committee effectiveness, ACSIZE, ACMEET and ACEXP, are positively and significantly correlated with AUDITFEE. These correlations provide some initial support for the hypothesized relationships between measures of audit committee effectiveness, audit quality and financial reporting quality. The correlations also reveal that all variables of main interest (ACSIZE, ACEXP, ACMEET, AUDITFEE and ACC) are significantly related to company size (TA) ACSIZE, ACEXP, ACMEET, AUDITFEE having a positive relation and ACC having a negative relation. This indicates that larger companies have more effective audit committees as well as higher quality external auditors. Larger

companies also seem to have better financial reporting quality. These correlations highlight the fact that company size is an important control variable which has an effect on the company's control environment. In addition to the hypothesized relationships the review of the correlations shows significant relations between measures of audit committee effectiveness. More specifically ACEXP is strongly correlated with both ACSIZE and ACMEET, which indicates that multicollinearity may have an impact on the results if the three measures of audit committee effectiveness are introduced simultaneously into a regression model. This indicates that the separate analysis of the audit committee effectiveness measures is warranted.

In addition to the correlation matrix, the main relationships of interest are presented as scatterplots in Appendix 7. The scatterplots are consistent with findings reported in the correlation matrix. The graphs related to relationships between measures of audit committee effectiveness (ACSIZE, ACEXP and ACMEET) and financial reporting quality (ACC) show that ACSIZE and ACEXP do not have a strong linear relationship with ACC. On the other hand, the graphs show a negative relation between ACMEET and ACC. The weak relationship between ACSIZE (ACEXP respectively) and ACC may be due to the fact that sample companies have fairly homogeneous audit committees in terms of their composition. This is likely to be a consequence of the strict US regulatory environment related to corporate governance within the company. Due to the regulatory environment of the study, audit committee meetings might be the only measure of audit committee effectiveness with sufficient variance in the data. In addition according to the graphs AUDITFEE has a negative association with ACC as hypothesized. Finally, the graphs related to relationships between ACSIZE (ACEXP and ACMEET respectively) and AUDITFEE show a positive association between variables. That is, the demand for audit coverage and audit quality seems to increase as audit committees become more effective.

Appendix 8 presents sample companies grouped by industry. Business services (SIC 73) is the leading industry with 140 companies in the sample. Electronic and other electrical equipment and components, except computer equipment (SIC 36) is the second largest industry represented in the sample with 114 companies. Printing, publishing and allied industries (SIC 27) and Wholesale trade non-durable goods (SIC 51) industries are least represented in the sample with 21 companies.

6 RESULTS

This section will introduce the results regarding the model developed using the methodology introduced in the previous section. This section is organized as follows. *Firstly*, the main results related to models ACSIZE→AUDITFEE→ ACC, ACEXP→AUDITFEE→ACC and ACMEET→AUDITFEE→ACC are presented. Analysis of a single model involves estimation of three regression models required by the Causal Steps Method to examine the occurrence of the mediated effect.[30] The results of the regression models are summarized in Figures 12-14 and presented in more detail in Appendices 8-10. In addition, the results reported in the Appendices provide the Sobel Test statistics for models which fulfill the conditions of the Causal Steps Method. *Secondly*, the implications of the main results are discussed. *Finally*, additional analyses are conducted in order to test the robustness of the main results.

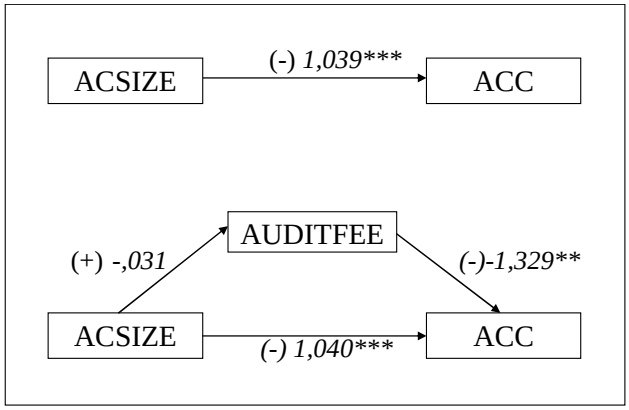
6.1 Results related to model ACSIZE→AUDITFEE→ ACC

Model ACSIZE-AUDITFEE-ACC is based on the underlying notion that audit committee effectiveness increases as the size of the audit committee increases. In addition, audit quality is expected to increase as audit fees increase. Thus the hypothesized relationships for the model are as follows: 1) ACSIZE has a negative effect on ACC, 2) ACSIZE has a positive effect on AUDITFEE, 3) AUDITFEE has a negative effect on ACC and 4) AUDITFEE mediates the relationship between ACSIZE and ACC. The regression models estimated to test the above relationships are presented in Table 2.

Figure 12 summarizes and Appendix 9 provides detailed results for the model ACSIZE→AUDITFEE→ACC. With regard to the first condition ACSIZE is regressed on ACC along with control variables. Contrary to the hypothesis, ACSIZE has a significant positive effect on ACC. In this regression control variables TA, OPCYCLE, SALESG and LOSS are all statistically significant and TA and OPCYCLE have expected signs. To test for the second condition ACSIZE is regressed on AUDITFEE with a set of control variables. The results show that the effect of ACSIZE on AUDITFEE is not statistically significant. All

[30] As mentioned previously, the conditions of the Causal Steps Method are analogous with the hypotheses of the study. Thus, in the subsequent sections the term condition refers to both these hypotheses and the conditions of the Causal Steps Method.

control variables TA, INVREC, FOROPR, QR, LOSS, BSIZE, BIND and BMEET are statistically significant with expected signs. To test for the third and fourth conditions ACSIZE, AUDITFEE and a set of control variables are regressed on ACC. The results reveal that AUDITFEE has a significant negative effect on ACC as hypothesized. ACSIZE has a significant positive effect on ACC which is inconsistent with the hypothesis.



Notes:
***, **, * denote significance at 1%, 5% and 10% level respectively
Expected signs of the relationships are presented in parentheses
Reported numbers are coefficients
The variables are defined as follows:
ACSIZE= Number of audit committee members
AUDITFEE= Natural logarithm of audit fees
ACC= Discretionary accruals (Residual from the regression model 6 scaled by 100)

Figure 12. Summarized results for model ACSIZE→AUDITFEE→ACC.

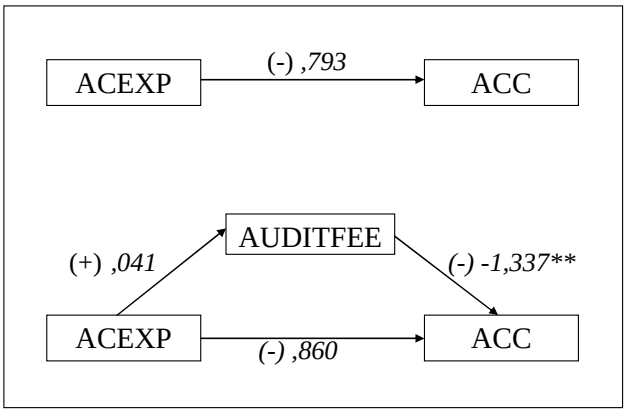
To conclude the model ACSIZE→AUDITFEE→ACC does not fulfill conditions of the Causal Steps Method. This is because audit committee size does not have the hypothesized effect on either discretionary accruals or audit fees. On the contrary, the results show a positive association between audit committee size and discretionary accruals. This indicates that audit committees become less effective in ensuring financial reporting quality as their size increases. This result may be due to multicollinearity among the explanatory variables in the regression model. This is evidenced when audit committee size is regressed on discretionary accruals excluding control variables. In this case the effect is negative as hypothesized but statistically insignificant. Alternatively audit committee size may have a nonlinear effect on audit committee effectiveness. That is, audit committee effectiveness increases along with its size to a certain extent but starts

to decrease if the audit committee becomes too large. In addition audit committee size is found to have a positive but not statistically significant effect on audit fees. With regard to the third condition, audit fees are found to have a negative effect on discretionary accruals. To conclude, since only the third condition of the Causal Steps Method was verified by model ACSIZE→AUDITFEE→ACC the mediated effect from audit committee size to discretionary accruals through audit fees is not supported.

6.2 Results related to model ACEXP→AUDITFEE→ ACC

The underlying notion for model ACEXP→AUDITFEE→ACC is that audit committee effectiveness increases as the proportion of expert members in the audit committee increases. Audit quality is also expected to increase as audit fees increase. Therefore the following relationships are proposed: 1) ACEXP has a negative effect on ACC, 2) ACEXP has a positive effect on AUDITFEE, 3) AUDITFEE has a negative effect on ACC and 4) AUDITFEE mediates the relationship between ACEXP and ACC. Table 3 presents the regression models estimated to test the above relationships.

The results for model ACEXP→AUDITFEE→ACC are summarized in Figure 13 and presented comprehensively in Appendix 10. To test for the first condition ACEXP as well as a set of control variables are regressed on ACC. It is found that ACEXP has a positive effect on ACC. However, this effect is not statistically significant. Thus, the first condition is not supported. Control variables TA, OPCYCLE, SALESG and LOSS are significant and TA and OPCYCLE have expected signs. In order to test for the second condition ACEXP is regressed on AUDITFEE along with a set of control variables. In this regression specification ACEXP is found to have a positive but insignificant effect on AUDITFEE. Thus, the results fail to support the second condition. The control variables in this regression are all significant and they have predicted signs. Finally, to test the third and fourth conditions AUDITFEE and ACEXP are regressed on ACC with a set of control variables. The results show that AUDITFEE has a negative effect on ACC as expected. Thus condition three is fulfilled. In this regression specification ACEXP has a negative and insignificant effect on ACC. Control variables TA, OPCYCLE, SALESG and LOSS are all significant and TA as well as OPCYCLE have expected signs. However, the fourth condition cannot be assessed because ACEXP did not initially have a statistically significant effect on ACC.



Notes:
***, **, * denote significance at 1%, 5% and 10% level respectively
Expected signs of the relationships are presented in parentheses
Reported numbers are coefficients
The variables are defined as follows:
ACEXP= Ratio of financial experts on the audit committee
AUDITFEE= Natural logarithm of audit fees
ACC= Discretionary accruals **(**Residual from the regression model 6 scaled by 100)

Figure 13. Summarized results for model ACEXP→AUDITFEE→ACC.

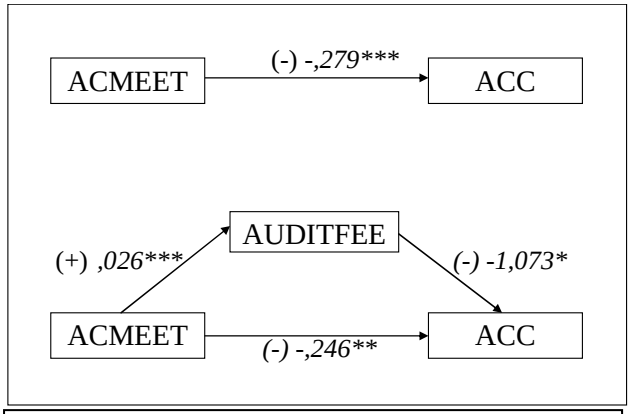
In summary, model ACEXP→AUDITFEE→ACC does not fulfill all the conditions of the Causal Steps Method. This is because the audit committee expertise ratio does not have a statistically significant effect on either discretionary accruals or audit fees, albeit the directions of these effects are as hypothesized. Thus, conditions 1 and 2 are not fulfilled. With regard to the third condition audit fees are found to have a negative effect on discretionary accruals and therefore condition 3 is fulfilled. To conclude, since the model AXECP→AUDITFEE→ACC fulfills only condition 3, the mediated effect of audit committee expertise ratio through audit fees on discretionary accruals is not supported by the results.

6.3 Results related to model ACMEET→ AUDITFEE→ACC

Model ACMEET→AUDITFEE→ACC is based on the assumption that audit committee effectiveness increases along with audit committee meeting frequency. Moreover, audit quality is expected to increase along with audit fees. Thus, the

following relationships are proposed: 1) ACMEET has a negative effect on ACC, 2) ACMEET has a positive effect on AUDITFEE, 3) AUDITFEE has a negative effect on ACC and 4) AUDITFEE mediates the relationship between ACMEET and ACC. The regression models estimated to test the above relationships are shown in Table 4.

Figure 14 summarizes and Appendix 11 presents the detailed results related to model ACMEET→AUDITFEE→ACC. In order to test the first condition ACMEET is regressed on ACC with a set of control variables. It is found that ACMEET has a significant negative effect on ACC, thus the first condition is fulfilled. In this regression all control variables are statistically significant and TA and OPCYCLE have the expected signs. To test for the second condition ACMEET and a set of control variables are regressed on AUDITFEE. The results show that ACMEET has a significant positive effect on AUDITFEE. Therefore the second condition is fulfilled. In this regression all control variables are statistically significant and they have expected signs. In order to test the third and fourth conditions both ACMEET and AUDITFEE as well as control variables are regressed on ACC. It is found that AUDITFEE has a significant negative effect on ACC and thus the third condition is fulfilled. The fourth condition is addressed by assessing whether AUDITFEE decreases the effect of ACMEET on ACC. It is found that the effect of ACMEET on ACC is smaller in the third regression than the first one (-.246**<-.279***). Thus, condition 4 is also met. The control variables are found to be statistically significant and TA as well as OPCYCLE have the expected signs. In addition to the results of Causal Steps Method the Sobel Test statistics (-1.784*) indicates that the mediated effect is statistically significant at the 10% level.



Notes:
***, **, * denote significance at 1%, 5% and 10% level respectively
Expected signs of the relationships are presented in parentheses
Reported numbers are coefficients
The variables are defined as follows:
ACMEET= Number of audit committee meetings during fiscal year
AUDITFEE= Natural logarithm of audit fees
ACC=Discretionary accruals **(**Residual from the regression model 6 scaled by 100)

Figure 14. Summarized results for model ACMEET→AUDITFEE→ACC.

As a summary, the results indicate that model ACMEET→AUDITFEE→ACC fulfils all four conditions of the Causal Steps Method. That is, audit committee meeting frequency is found to have a negative effect on discretionary accruals and a positive effect on audit fees. In addition, audit fees are found to have a negative effect on discretionary accruals. Finally, the results show that audit fees decrease the effect of audit committee meeting frequency on discretionary accruals. Thus, the results appear to support the hypothesis that audit fees mediate the relationship between audit committee meeting frequency and discretionary accruals. The mediated effect is only partial since audit fees do not reduce the effect of audit committee meeting frequency on discretionary accruals to non-significance. This result may indicate that the effect of audit committee meeting frequency on discretionary accruals may also be mediated by other control mechanisms, such as internal auditing, which are currently out of the scope of the model.

6.4 Discussion of the main results

The main analysis involves examination of three separate models, namely ACSIZE→AUDITFEE→ACC, ACEXP→AUDITFEE→ACC and ACMEET→ AUDITFEE→ACC. The underlying notion in these models is that more effective audit committees will increase financial reporting quality and also demand better audit quality. In addition, audit quality is expected to contribute to financial reporting quality. When these effects are combined, audit quality is modeled as a mediator in the relationship between audit committee effectiveness and financial reporting quality. The main analytic technique employed to test the models is the Causal Steps Method, which is accompanied by the Sobel Test when applicable. Table 5 provides a summary of the main results.

The results regarding models ACSIZE→AUDITFEE→ACC, and ACEXP→AUDITFEE→ACC do not meet the conditions of the Causal Steps Method and therefore the mediation hypothesis is not supported. This is because neither audit committee size nor audit committee expertise ratio has the hypothesized effect on discretionary accruals or audit fees. These results imply that the audit committee composition depicted by audit committee size or expertise ratio may not be sufficient indicators as to how effective audit committees will be in discharging their responsibilities. This may be due to the fact that audit committee composition is strictly regulated in the USA and there is not enough variation in these variables. Due to these results further discussion will be focused on model ACMEET→AUDITFEE→ACC.

The results for the model ACMEET→AUDITFEE→ACC indicate that audit fees mediate the relationship between audit committee meeting frequency and discretionary accruals as hypothesized. Both the findings of the Causal Steps Method and Sobel Test support this result. In relation to the Causal Steps Method the following significant relationships are found: 1) a negative relationship between audit committee meeting frequency and discretionary accruals, 2) a positive relationship between audit committee meeting frequency and audit fees, and 3) a negative relationship between audit fees and discretionary accruals. In addition, the results show that audit fees reduce the effect of audit committee meeting frequency on discretionary accruals, which is consistent with the mediation hypothesis. However, since the effect of audit committee meeting frequency on discretionary accruals is not reduced to non-significance, only partial mediation is supported. Furthermore, the Sobel Test statistic (-1.784*) indicates that the mediated effect of audit committee meetings on discretionary accruals through audit fees is statistically significant at the 10% level. Thus these

results in total are indicative of a partial mediated effect.

The results regarding model ACMEET→AUDITFEE→ACC have several implications. In general the results for the model are consistent with the predictions of agency theory. This is because both audit committee meeting frequency and audit fees are found to have a negative effect on discretionary accruals, which suggests that both audit committee effectiveness and external audit quality contribute to a company's financial reporting quality. The results are also consistent with the notion that audit committees and external auditors complement each other. That is, audit committee meetings are found to increase audit fees, which are further found to decrease discretionary accruals. In addition, the individual relationships constituting the model have the following implications.

Firstly, the negative relationship between audit committee meeting frequency and discretionary accruals suggests that more active audit committees are better able to restrict management discretion over accounting issues. This may be because more active audit committees are better informed about the state of affairs in the company and thus are better able to monitor its accounting practices. For example, regular meetings between audit committees and external auditors or audit committees and internal auditors may enhance information flow between these parties and therefore result in better decision making by audit committees. Active audit committees may also be staffed by individuals who are motivated to devote their time to the functioning of the audit committee and such individuals may exercise closer monitoring over management thereby restricting earnings management more effectively.

Secondly, the positive relationship between audit committee meeting frequency and audit fees has several plausible explanations. The positive relationship between audit committee meetings and audit fees may exist because preparation and attendance at meetings requires additional work by auditors, causing higher audit fees (see Stewart et al. 2007). On the other hand more active audit committees may be more concerned about audit quality and therefore demand greater quantity of audit effort, which is again reflected in an increase in audit fees. Since these explanations are not mutually exclusive both of them might apply to the present findings.

Thirdly, a negative effect between audit fees and discretionary accruals is found. This result implies that greater audit effort reflected in higher audit fees leads to closer monitoring of a company's accounting issues, and thus decreases management discretion over accounting choices. These results may also be

related to auditor independence discussion. These results imply that higher audit fees do not compromise auditor independence, which would result in less rigorous monitoring by auditors. On the contrary, the results suggest that higher audit fees may indicate that sufficient audit effort and audit hours have been allocated to the client. The results moreover suggest that protection of reputation may lead to auditor reporting conservatism: auditors who are paid more allow their clients less discretion over discretionary accruals than auditors who are paid less.

Finally, audit fees are found to function as a mediator in the relationship between audit committee meeting frequency and discretionary accruals. The mediation model consists of the relationships discussed above. The mediation model maintains that although audit committee meetings contribute to financial reporting in their own right, part of this effect goes through external auditing. The model is consistent with prior literature stating that audit committees are responsible for both ensuring a company's financial reporting quality and ensuring external audit quality. Thus, some of the monitoring activities are bound to be transmitted from audit committees to external auditors. Since the results do not imply full mediation, it is likely that other monitoring mechanisms of the company, such as internal auditing and internal controls, may also function as mediators between audit committee effectiveness and financial reporting quality. These control mechanisms, however, are beyond the scope of the present study.

Table 5. Summary of the main results.

	Condition 1		**Condition 2**		**Condition 3**		**Condition 4**	**Sobel Test**
Model	Predicted sign	Coefficient	Predicted sign	Coefficient	Predicted sign	Coefficient		
ACSIZE→AUDITFEE →ACC	-	1.039***	+	-.031	-	**-1.329****	not assessed	not calculated
ACEXP→AUDITFEE →ACC	-	.793	+	.041	-	**-1.337****	not assessed	not calculated
ACMEET→AUDITFEE →ACC	-	**-.279*****	+	**.026*****	-	**-1.073***	**| .246 | < | .279 |**	**-1.784***

Notes:
***, **, * denote significance at 1%, 5% and 10% level respectively
The variables are defined as follows:
ACSIZE= Number of audit committee members
ACEXP= Ratio of financial experts on the audit committee
ACMEET= Number of audit committee meetings during fiscal year
AUDITFEE= Natural logarithm of audit fees
ACC=Discretionary accruals (Residual from the regression model 6 scaled by 100)

6.5 Robustness of the main results

This section aims at testing the robustness of the results provided by the main analysis. Since the main results only supported model ACMEET→AUDITFEE→ ACC the additional analyses are mainly focused on this model. The additional analyses are organized as follows. *Firstly*, the main analysis regarding model ACMEET→AUDITFEE→ACC is repeated using winsorized data. *Secondly*, the robustness of the main results is tested by employing two additional model specifications. *Thirdly*, an additional model specification in which the mediating variable AUDITFEE is replaced by industry adjusted audit fees (INDFEE) is tested. Thus the following model ACMEET→INDFEE→ACC is examined. *Fourthly*, a model specification including a composite measure for audit committee effectiveness is tested using path analysis employing AMOS statistical package. *Fifthly*, the effect of unexpected fees on discretionary accruals is tested. *Finally*, a competing effect type, moderation effect, is examined.

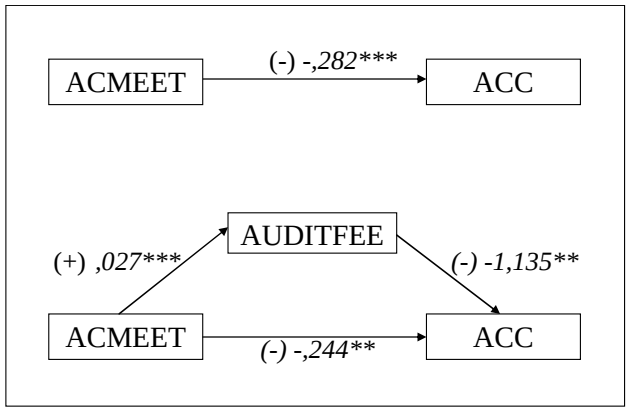
6.5.1 Results for model ACMEET→AUDITFEE→ACC using winsorized data

This part of the analysis examines whether the main results related to model ACMEET→AUDITFEE→ACC are affected by outliers in the initial data. This is achieved by repeating the analysis related to the Causal Steps Method using winsorized data[31]. The descriptive statistics for the winsorized variables were presented in Section 5.4. The regression models employed are consistent with models 15-17. In addition, Sobel Test statistics are calculated as presented in Equations 22-23.

The results for the winsorized data are summarized in Figure 15 and presented in full in Appendix 12. The findings of the analysis are consistent with the results reported in the main analysis. Thus the results reveal that ACMEET has a significant negative effect on ACC and thus the first condition is fulfilled. The results also show that ACMEET has a significant positive effect on AUDITFEE thereby fulfilling the second condition. AUDITFEE is also found to have a significant negative effect on ACC, which meets the requirements of the third condition. In addition, it is found that AUDITFEE reduces the effect of ACMEET on ACC. This result fulfils the fourth condition. These results therefore imply that AUDITFEE mediates the relationship between ACMEET and ACC. This result is further supported by the Sobel Test statistic (-2.01**) which shows that the mediated effect is significant at the 5% level. Based on these findings it can be

[31] Data is winsorized by 2.5% from both tails.

concluded that the results of the main analysis are not driven by outliers in the initial data.



Notes:
***, **, * denote significance at 1%, 5% and 10% level respectively
Expected signs of the relationships are presented in parentheses
Reported numbers are coefficients
The variables are defined as follows:
ACMEET= Number of audit committee meetings during fiscal year
AUDITFEE= Natural logarithm of audit fees
ACC= Discretionary accruals **(**Residual from the regression model 6 scaled by 100)

Figure 15. Summarized results for model ACMEET→AUDITFEE→ACC using winsorized data.

6.5.2 Results for additional model specifications

The objective of this part of the analysis is to test the robustness of the main results by employing two additional model specifications. In the first model specification the conditions of the Causal Steps Method are tested simultaneously for all three measures of audit committee effectiveness including control variables. This regression specification reveals whether the main results can be achieved by including all measures of audit committee effectiveness simultaneously into the analysis or whether multicollinearity between the measures has an impact on the results. The regression models required for the analysis are presented in Table 6.

Table 6. Regression models estimated to test measures of audit committee effectiveness simultaneously.

Condition	Equation no
Condition 1: $ACC= \beta_0+\beta_1 TA+\beta_2 OPCYCLE+\beta_3 SALEG+\beta_4 LOSS+\boldsymbol{\beta_5 ACSIZE+\beta_6 ACEXP+\beta_7 ACMEET}+\varepsilon$	(24)
Condition 2: $AUDITFEE=\beta_0+\beta_1 TA+\beta_2 INVREC+\beta_3 FOROPR+\beta_4 QR+\beta_5 LOSS+\beta_6 BSIZE+\beta_7 BIND+\beta_8 BMEET+\boldsymbol{\beta_9 ACSIZE+\beta_{10} ACEXP+\beta_{11} ACMEET}+\varepsilon$	(25)
Conditions 3 and 4: $ACC= \beta_0+\beta_1 TA+\beta_2 OPCYCLE+\beta_3 SALEG+\beta_4 LOSS+\boldsymbol{\beta_5 ACSIZE+\beta_6 ACEXP+\beta_7 ACMEET+\beta_8 AUDITFEE}+\varepsilon$	(26)
The variables are defined as follows: ACC= Discretionary accruals (Residual from the regression model 6 scaled by 100) ACSIZE= Number of audit committee members ACEXP= Ratio of financial experts on the audit committee ACMEET= Number of audit committee meetings during fiscal year AUDITFEE= Natural logarithm of audit fees TA= Natural logarithm of total assets OPCYCLE= Operating cycle (Calculated as presented in Equations 7-8) SALEG= Growth rate in net sales LOSS= Indicator variable, 1 if the net income of the fiscal year is negative, otherwise 0 INVREC= Total inventories and total receivables to total assets FOROPR= Foreign sales to total sales QR= Quick ratio BSIZE= Number of board members BIND= Board independence % BMEET= Number of board meetings during fiscal year	

The findings of the analysis are presented in Appendix 13. The results of these regression model specifications are consistent with the results obtained from the main analysis. It is found that the first condition is fulfilled by ACMEET, which has a significant negative effect on ACC. Consistent with the results of the main analysis, ACSIZE and ACEXP do not have the hypothesized effect on ACC and therefore the first condition is not met by these variables. In this regression all control variables are significant and TA as well as OPCYCLE have expected signs. The results also reveal that the second condition is met by ACMEET but not by ACSIZE and ACEXP. That is ACMEET has a positive effect on AUDITFEE whereas ACSIZE and ACEXP are not statistically significantly related to AUDITFEE. In this regression all control variables except BMEET are significant and the direction of their effect is as hypothesized. The results further show that the third condition is fulfilled since AUDITFEE has a significant negative effect on ACC. Due to the above results the fourth condition can be addressed only with regard to ACMEET. It is found that adding AUDITFEE to the model decreases the coefficient of ACMEET slightly, thus supporting the mediation hypothesis. The Sobel Test statistic (-1.818*) provides further evidence

that the mediated effect from ACMEET to ACC through AUDITFEE is also statistically significant in these regression specifications. Based on the results it can be concluded that multicollinearity between measures of audit committee effectiveness does not have an effect on the results.

In the second model specification the conditions of the Causal Steps Method are tested simultaneously for all three measures of audit committee effectiveness excluding control variables. This regression specification is tested in order examine whether the results are affected by multicollinearity between measures of audit committee effectiveness and control variables. The estimated regression models are presented in Table 7.

Table 7. Regression models estimated to test measures of audit committee effectiveness excluding control variables.

Condition	Equation no
Condition 1:	
$ACC=\beta_0+\boldsymbol{\beta_1 ACSIZE+\beta_2 ACEXP+\beta_3 ACMEET}+\varepsilon$	(27)
Condition 2:	
$AUDITFEE=\beta_0+\boldsymbol{\beta_1 ACSIZE+\beta_2 ACEXP+\beta_3 ACMEET}+\varepsilon$	(28)
Conditions 3 and 4:	
$ACC=\beta_0+\boldsymbol{\beta_1 ACSIZE+\beta_2 ACEXP+\beta_3 ACMEET+\beta_4 AUDITFEE}+\varepsilon$	(29)
The variables are defined as follows: ACC= Discretionary accruals (Residual from the regression model 6 scaled by 100) ACSIZE= Number of audit committee members ACEXP= Ratio of financial experts on the audit committee ACMEET= Number of audit committee meetings during fiscal year AUDITFEE= Natural logarithm of audit fees	

The findings of the above models are presented in Appendix 14. The results of these model specifications are largely consistent with the results provided by the previous analyses. Testing of the first condition reveals that ACMEET has a statistically significant negative effect on ACC. ACSIZE and ACEXP are also negatively related to ACC, albeit these relations are not statistically significant. Thus, only ACMEET fulfils the first condition. Testing for the second condition shows that all ACSIZE, ACEXP and ACMEET variables have a statistically significant and positive effect on AUDITFEE. Therefore all measures of audit committee effectiveness fulfil the second condition in this model specification. The third condition is also met since AUDITFEE is found to have a significant negative effect on ACC. Due to the results for conditions 1-3 only ACMEET can be taken into consideration when the fourth condition is addressed. The results reveal that including AUDITFEE in the model reduces the effect of ACMEET on

ACC. Thus, the mediated effect of ACMEET on ACC through AUDITFEE is supported. The Sobel Test statistic (-4.694***) also indicates that AUDITFEE significantly mediates the relationship between ACMEET and ACC. These results imply that multicollinearity between measures of audit committee effectiveness, particularly ACSIZE and ACEXP, and control variables may have had some influence on the main results. This is because the second condition is met by these variables when control variables are excluded from the regression models.

6.5.3 Results for industry adjusted audit fees

This part of the analyses involves an alternative mediating variable, namely industry adjusted audit fees (INDFEE). Thus the model ACMEET→INDFEE→ ACC is examined. The mediating variable INDFEE is calculated as a ratio of a company's audit fees relative to the mean audit fees of the industry. Mean audit fees for the industry are calculated based on two digit SIC codes. This analysis is conducted in order to test whether companies with more frequent audit committee meetings demand better audit quality than other companies in the same industry on average and thus pay higher industry adjusted audit fees. In addition, this analysis shows whether higher industry adjusted audit fees result in better financial reporting quality. The regression models estimated to test model ACMEET→INDFEE→ACC are presented in Table 8.

The results for the model are reported in Appendix 15. The results are consistent with the main analysis. *Firstly*, the results show that ACMEET has a negative effect on ACC, which fulfils the first condition. *Secondly*, the results reveal that ACMEET has a positive effect on INDFEE, which is consistent with the second condition. *Thirdly*, INDFEE is found to have a negative effect on ACC, which satisfies the third condition. *Finally*, INDFEE is found to mediate the relationship between ACMEET and ACC. That is, the effect of ACMEET on ACC is reduced after INDFEE is included in the regression. The Sobel Test statistic (-1.877*) also indicates that the mediated effect is significant at the 10% level. These results imply that companies with active audit committees demand better audit quality than other companies in the same industry and therefore pay relatively higher audit fees. The results also show that industry adjusted audit fees may reflect audit quality: auditors who are paid more than other auditors in the same industry on average seem to decrease management discretion over accruals more effectively than auditors who are paid less.

Table 8. Regression models estimated to test model ACMEET→INDFEE→ ACC.

Condition	Equation no
Condition 1:	
$ACC= \beta_0+\beta_1 TA+\beta_2 OPCYCLE+\beta_3 SALEG+\beta_4 LOSS+\boldsymbol{\beta_5 ACMEET}+\varepsilon$	(30)
Condition 2:	
$INDFEE=\beta_0+\beta_1 TA+\beta_2 INVREC+\beta_3 FOROPR+\beta_4 QR+\beta_5 LOSS+\beta_6 BSIZE+\beta_7 BIND+ \beta_8 BMEET+\boldsymbol{\beta_9 ACMEET}+\varepsilon$	(31)
Conditions 3 and 4:	
$ACC= \beta_0+\beta_1 TA+\beta_2 OPCYCLE+\beta_3 SALEG+\beta_4 LOSS+ \boldsymbol{\beta_5 ACMEET + \beta_6 INDFEE}+\varepsilon$	(32)

The variables are defined as follows:
ACC= Discretionary accruals (Residual from the regression model 6 scaled by 100)
ACMEET= Number of audit committee meetings during fiscal year
INDFEE = Ratio of audit fees relative to the industry mean
TA= Natural logarithm of total assets
OPCYCLE= Operating cycle (Calculated as presented in Equations 7-8)
SALEG= Growth rate in net sales
LOSS= Indicator variable, 1 if the net income of the fiscal year is negative, otherwise 0
INVREC= Total inventories and total receivables to total assets
FOROPR= Foreign sales to total sales
QR= Quick ratio
BSIZE= Number of board members
BIND= Board independence %
BMEET= Number of board meetings during fiscal year

6.5.4 Results for path analysis

This analysis tests a variation of the model developed using path analysis. This analysis is conducted using AMOS statistical package (see Holmbeck 2002). There are several advantages in this approach. *Firstly*, path analysis provides an opportunity to test multiple relationships simultaneously. *Secondly*, this approach provides measures for the overall goodness-of-fit statistics of the proposed model. This study uses the Chi-square test (χ_2) to assess the goodness-of-fit of the model. Chi-square test statistics are interpreted as follows: a non-significant ($P>0.05$) value indicates that the model fits the data satisfactorily. *Finally*, path analysis provides information regarding the significance of the relationship between the variables (Kline 1998; Baines & Langfield-Smith 2003).

The path model is formed as follows. In the path model, a composite measure of audit committee effectiveness (ACSUM) is modeled to have a path leading to AUDITFEE, which is further modeled to have a path leading to ACC. ACSUM is formed by calculating standardized values of ACSIZE, ACEXP and ACMEET. Calculated standardized values are then summed to form a variable ACSUM. It should be noted that this part of the analysis relaxes the first condition of the

Causal Steps Method. That is the direct effect of audit committee effectiveness on financial reporting quality is not tested. Therefore, the path analysis tests whether ACSUM has *an indirect effect* on ACC through AUDITFEE rather than testing for the mediated effect. This interpretation is consistent with Holmbeck's (1997) definition of mediating and intervening effects.

The model is presented in Appendix 16. The goodness-of-fit statistics [$\chi^2(1)$= .204 (P=.652)] indicate that the model fits the data satisfactorily. In addition it is found that ACSUM has a positive and significant effect on AUDITFEE, which is further found to have a significant negative effect on ACC. The results of this model also indicate that audit quality may function as an intervening variable in the relationship between audit committee effectiveness and financial reporting quality. This issue should be examined more thoroughly in future studies.

6.5.5 Results for unexpected fees

This analysis employs an optional approach to test the developed model by examining unexpected audit fees. Prior audit studies have suggested that audit quality may be influenced by the amount of audit fees relative to their expected amount rather than their realized amounts (Craswell et al. 1995; Gul et al. 1998; Tsui, Jaggi & Gul 2001; Srinidhi et al. 2007). The underlying notion behind this argument is that audit quality is associated with unexpectedly high or low audit fees: unexpectedly high audit fees indicating a more thorough audit performance and thus superior audit quality.

Examining unexpected audit fees involves the following two-step procedure. *Firstly*, two alternative regression specifications are used to estimate unexpected audit fees (UNEXPFEE_1 and UNEXPFEE_2). These regression specifications include measures of audit committee effectiveness as well as other variables found in earlier studies to have an effect on audit fees. The difference between the models is as follows. The first model includes all three measures of audit committee effectiveness as well as a set of control variables found by prior studies to have an effect on audit fees whereas the second model includes only a measure of audit committee meeting frequency and a set of control variables. The latter model is estimated because the main analysis indicated that audit committee meeting frequency is the most important audit committee related explanatory variable for audit fees. More specifically, unexpected audit fees are estimated as residuals from the following alternative regression models:

$$AUDITFEE=\beta_0+\beta_1 TA+\beta_2 INVREC+\beta_3 FOROPR+\beta_4 QR+\beta_5 LOSS+\beta_6 BSIZE+\beta_7 BIND+\beta_8 BMEET+\beta_9 ACSIZE+\beta_{10} ACEXP+\beta_{11} ACMEET+\varepsilon \quad (33)$$

$$AUDITFEE=\beta_0+\beta_1 TA+\beta_2 INVREC+\beta_3 FOROPR+\beta_4 QR+\beta_5 LOSS+\beta_6 BSIZE+\beta_7 BIND+\beta_8 BMEET+\beta_9 ACMEET+\varepsilon \quad (34)$$

The variables are defined as follows:

AUDITFEE= Natural logarithm of audit fees

TA= Natural logarithm of total assets

INVREC= Total inventories and total receivables to total assets

FOROPR= Foreign sales to total sales

QR= Quick ratio

LOSS= Indicator variable, 1 if the net income of the fiscal year is negative, otherwise 0

BSIZE= Number of board members

BIND= Board independence %

BMEET= Number of board meetings during fiscal year

ACSIZE= Number of audit committee members

ACEXP= Ratio of financial experts on the audit committee

ACMEET= Number of audit committee meetings during fiscal year

Secondly, in order to test whether UNEXPFEE_1 or UNEXPFEE_2 are related to accrual quality they are regressed on ACC. If higher unexpected audit fees indicate higher engagement effort and thus higher audit quality, a negative association between UNEXPFEE_1 or UNEXPFEE_2 and ACC should be observed. The results of the analysis are presented in Appendix 17. The results show that both UNEXPFEE_1 and UNEXPFEE_2 have a significant negative

effect on ACC. The results provide further support for the model proposed. This is because the results indicate that measures of audit committee effectiveness can be used to predict unexpected audit fees. In addition, unexpected audit fees are found to function as determinants of accrual quality. That is higher level of unexpected audit fees seems to result in better accrual quality and more generally better financial reporting quality.

6.5.6 Results for the moderation effect

As discussed in Chapter 4, one of the core issues of this study is the selection of an effect type which sufficiently describes the relationships between variables of interest. After considering the theory related to the variables as well as effect types it was concluded that audit quality is likely to function as a mediator in the relationship between audit committee effectiveness and financial reporting quality. The main results provide support for this effect type for model ACMEET→AUDITFEE→ACC. Although the mediation hypothesis was derived from the literature the possibility of the alternative effect type, moderation, cannot be entirely ruled out without testing it empirically.

This part of the analysis therefore tests whether AUDITFEE moderates the relationship between ACMEET and ACC. Following Holmbeck (1997) the moderation effect is tested using multiple regression analysis by entering the main effects of AUDIFEE and ACMEET into the ACC model along with control variables first, following the interaction term AUDITFEE*ACMEET of ACMEET and AUDITFEE. A significant effect of the interaction term means that the moderated effect is supported. Since mediation and moderation effects cannot appear simultaneously (see Section 4.4.) it is expected that the interaction term will not be statistically significant. Thus the following regression is employed to test the potential moderation effect of AUDITFEE on the relationship between ACMEET and ACC:

$$ACC = \beta_0+\beta_1 TA+\beta_2 OPCYCLE+\beta_3 SALEG+\beta_4 LOSS+\beta_5 ACMEET+\beta_6 AUDITFEE+ \beta_7 AUDITFEE*ACMEET+\varepsilon \quad (35)$$

The variables are defined as follows:

ACC= Discretionary accruals (Residual from the regression model 6 scaled by 100)

TA= Natural logarithm of total assets

OPCYCLE= Operating cycle (Calculated as presented in Equations 7-8)

SALEG= Growth rate in net sales

LOSS= Indicator variable, 1 if the net income of the fiscal year is negative, otherwise 0

ACMEET= Number of audit committee meetings during fiscal year

AUDITFEE= Natural logarithm of audit fees

AUDITFEE*ACMEET= Interaction term of ACMEET and AUDITFEE

The results of the above analysis are presented in Appendix 18. The results show that the interaction term AUDITFEE*ACMEET does not have a statistically significant effect on ACC, which is consistent with the expectations. In this regression specification neither ACMEET nor AUDITFEE has a statistically significant effect on ACC. This result indicates that moderated effect type does not describe the relationship of ACMEET and AUDITFEE on ACC sufficiently. Specifically, the results imply that AUDITFEE does not alter the strength or direction of the effect of ACMEET on ACC. This may be due to the fact that ACMEET has a significant effect on ACC whereas moderation effect is traditionally suggested for relationships which are unexpectedly weak (see Baron et al. 1986). Thus, it can be concluded that the results related to moderation effect provide indirect support for the mediation model analyzed in this research.

7 CONCLUSIONS

This study focuses on two important corporate governance actors whose purpose is to ensure a company's financial reporting quality, namely audit committees and external auditors. This study developed a model suggesting that audit quality functions as a mediator in the relationship between audit committee effectiveness and financial reporting quality. The purpose of this section is to summarize the study and to discuss its limitations and possibilities for future research. The section is organized as follows. *Firstly*, the underlying premises, contributions as well as main results of the developed model are discussed. *Secondly*, limitations of the study are reviewed. *Finally*, suggestions for future research are proposed.

7.1 Discussion

This study develops a model which suggests that audit quality mediates the relationship between audit committee effectiveness and financial reporting quality. The theoretical foundation of the model developed is based on agency theory, which states that monitoring mechanisms such as audit committees and external auditors contribute to corporate control and thus have an effect on a company's financial reporting quality (e.g. Jensen et al. 1976). In addition, the developed model can be related to prior frameworks focusing on corporate governance, audit committee effectiveness and audit quality. *Firstly*, Cohen's et al. (2004) corporate governance mosaic highlights interrelationships between various corporate governance actors. This study contributes both theoretically as well as empirically to the framework by Cohen et al. (2004) by focusing on the interrelationship between two crucial corporate governance actors, namely audit committees and external auditors. *Secondly*, DeZoort et al. (2002) discusses the determinants of audit committee effectiveness and states that it is conditional upon audit committee composition, authority, resources and diligence. The operational measures for audit committee effectiveness employed in this study are consistent with DeZoort's et al. (2002) framework: audit committee size and expertise ratio relating to audit committee composition and audit committee meeting frequency relating to audit committee diligence. *Finally*, the framework by Watkins et al. (2004) presents the determinants of audit quality including drivers, components as well as products of audit quality. This study adds to this framework by proposing that audit committee effectiveness is an important demand side driver of audit quality. This demand is expected to be reflected in

real audit quality (i.e. auditor monitoring strength) and further in financial reporting quality, which is a product of audit quality.

In addition to the theoretical literature, current US regulations (e.g. SOX 2002) regarding audit committees and external audits provide a regulatory framework which determines the minimum requirements for audit committee effectiveness and audit quality. This study focuses on companies which exceed the minimal regulatory requirements regarding audit committee effectiveness or audit quality. The regulatory framework also guides the choices of operational measures of the variables of interest. More particularly, the current US regulations include requirements regarding audit committee composition as well as its responsibilities. In addition, particularly the SOX (2002) objective is to ensure external audit quality and requirement to disclose audit fees provides a measure for audit quality.

The elements of the model developed are derived from prior empirical studies focusing on the relationships between audit committee effectiveness, audit quality and financial reporting quality. The research model has an underlying notion that more effective audit committees provide better monitoring over accounting choices of the company (e.g. Beasley et al. 2000; Abbott et al. 2004; Bédard et al. 2004) and also have an interest in investing more on external auditing (e.g. Abbott et al. 2001; Abbott et al. 2003a; Vafeas et al. 2007). In addition, external audit is expected to contribute to a company's financial reporting quality (e.g. Carcello et al. 2002; Frankel et al. 2002; Nelson et al. 2002; Abbott et al. 2003a; Krishnan 2005; Larcker et al. 2004; Srinidhi et al. 2007). This study extends the work of the above studies both theoretically and empirically. The theoretical contribution arises when the separate relationships are combined into a comprehensive model: audit quality is modeled as a mediator in the relationship between audit committee effectiveness and financial reporting quality. This effect type has not been addressed by prior research focusing on audit committees or external audits. The empirical contribution arises from two sources. *Firstly*, the examination of the proposed effect type involves methodology which has not been addressed by prior studies. *Secondly*, the present study examines the relationships using a single set of US data. This examination reveals whether the results reported in prior studies hold in the present US regulatory environment.

The mediation model is tested using two complementary methods. *Firstly*, the Causal Steps Method was used to test the individual relationships in the model and examine the occurrence of the mediated effect. The regression analyses required by the method were employed separately for the three measures of audit

committee effectiveness and thus the following models were examined: ACSIZE→AUDITFEE→ACC, ACEXP→AUDITFEE→ACC, and ACMEET→ AUDITFEE→ACC. *Secondly*, the Sobel Test statistics were calculated for models supported by the Causal Steps Method in order to verify the significance of a potential mediation effect.

The main results of this study support model ACMEET→AUDITFEE→ACC. However, the results regarding other two models, ACSIZE→AUDITFEE→ACC and ACEXP→AUDITFEE→ACC, are inconclusive. The latter result is due to the fact that that neither audit committee size nor audit committee expertise ratio have the hypothesized effect on discretionary accruals or audit fees. These results are inconsistent with prior studies, which have linked audit committee size and audit committee expertise with outcomes of audit committee effectiveness (e.g. Archambeault et al. 2001; Bédard et al. 2004; Vafeas et al. 2007). The inconsistency of the results can be explained by the difference in the regulatory environment. The present study was conducted in a highly regulated environment which requires companies to maintain homogeneous audit committees in terms of their composition. It is likely that prior studies have been conducted in less regulated environments in which companies' audit committees have been less homogeneous[32].

With regard to model ACMEET→AUDITFEE→ACC the results are consistent with those of prior studies. More specifically, audit committee meeting frequency is found to have a negative effect on discretionary accruals (e.g. Xie et al. 2003; Vafeas 2005) and a positive effect on audit fees (e.g. Goodwin-Stewart et al. 2006). Consistent with prior studies audit fees are also found to have a negative effect on discretionary accruals (e.g. Frankel et al. 2002; Larcker et al. 2004; Srinidhi et al. 2007). In addition, audit fees are found to decrease the effect of audit committee meeting frequency on discretionary accruals, and the mediation hypothesis is therefore supported. The Sobel Test statistics verify this relationship by showing that the mediated effect is significant at the 10 % level. In addition to the main analysis several additional analyses provide further support for model ACMEET→AUDITFEE→ACC.

The results for model ACMEET→AUDITFEE→ACC have several implications. *Firstly*, the results indicate that more active audit committees are better able to restrict earnings management, and thus contribute to a company's financial reporting quality. This may be due to the fact that active audit committees are better informed about the state of affairs of the company or that active audit

[32] See Hay et al. (2008) for a discussion on this issue.

committees are staffed with individuals who are dedicated in investing their time and efforts into the functioning of the audit committee which results in closer monitoring of company's reporting decisions by the audit committee.

Secondly, the results show that more frequent audit committee meetings lead to an increase in audit fees. This result has several plausible explanations. The positive relation may be due to the fact that external auditor's preparation and attendance at audit committee meetings leads to increase in audit fees. Alternatively, more active audit committees may require greater assurance by external auditors. In turn greater assurance requires more audit effort, which leads to increase in audit fees.

Thirdly, a negative relationship between audit fees and discretionary accruals is reported. This result implies that audit effort reflected in audit fees leads to closer monitoring by auditors, thereby decreasing management's opportunities to use discretionary accruals to manage earnings. The results also show that audit fees do not compromise auditor independence, which would decrease auditor's willingness to oppose management attempts to manage earnings. On the contrary, the results imply that auditors' reputation protection leads to auditor reporting conservatism and thus audit clients are left with less discretion with respect to discretionary accrual when audit fees are high.

Finally, the results show that there is a sequence from audit committee meeting frequency to audit fees to discretionary accruals. Thus, the results support the research model developed which states that audit quality mediates the relationship between audit committee effectiveness and financial reporting quality. This result is satisfying for both audit committees as well as external auditors, since they indicate that both of these control mechanisms fulfil their role as assurers of a company's financial reporting quality. The results also imply that the cooperation between audit committee members and external auditors is beneficial and leads to better financial reporting quality. In other words the results provide support for the notion that audit committees and external auditors are *complementary* contributors to financial reporting quality.

In addition to the academic implications, the results of this study have important practical significance for preparers, users as well as auditors of the financial statements. From the preparer point of view the results of this study imply that companies can signal their financial reporting quality to outsiders by setting up audit committees which are in compliance with the regulations and by encouraging their audit committees to be active. Companies can moreover invest in external auditing by demanding a greater scope of external audit work. On the

other hand, the results of this study imply that users of financial statements can, to certain extent, use audit committee meeting frequency and audit fees as proxies for audit committee effectiveness and external audit quality as they attempt to assess financial reporting quality. The results of this study also have implications for auditors. The results of the study imply that higher audit fees are associated with better financial reporting quality: higher audit fees ensure that proper resources have been invested in the audit and audit quality is therefore enhanced. Thus, the results encourage auditors to resist possible budget pressures from clients.

7.2 Limitations

This study is concerned with aggregate and average. That is, it seeks to examine what type of generalized model can be established to describe the relationships between audit committee effectiveness, audit quality and financial reporting quality[33]. This approach involves using measures for audit committee effectiveness, audit quality and financial reporting quality which can be derived from publicly available sources using cross-sectional data.

The research method applied has inherent limitations, which should be taken into consideration when making interpretations of the results. It can be argued that publicly available sources provide only crude proxies for audit committee effectiveness, audit quality and financial reporting quality: the measures employed may not capture all aspects of the variables of interest. More importantly, their ability to explain the interrelationships and communication between audit committee members and external auditors in determining financial reporting quality is limited. It should also be noted that the methodology and data used does not allow demonstrating cause-effect relationships between variables. Therefore it is difficult to distinguish between alternative explanations of the results, thus the inferences of the results must be cautious. Furthermore, as discussed by Francis (2004) it is possible that "good companies" with high financial reporting quality may also have strong incentives to invest in audit committee effectiveness and audit quality. Although the present study attempts to control for company differences and test the endogeneity of the variables, this rationale cannot be ruled out entirely as an alternative explanation for the results.

[33] See Turley et al. (2007) for a critique of this approach.

7.3 Future research

This study opens up several alternative avenues for future research. *Firstly*, this study employs a cross-sectional data from a single country and, as discussed above, this creates limitations for the analysis of the model. Future research could examine the model developed using different types or sets of data. More specifically, future studies could seek to employ longitudinal data or data from different countries to test the model. The advantage of longitudinal data is that it would provide more power for the statistical analyses. In addition, studies using longitudinal data could examine how companies' audit committees and external audits adapt to changes in regulatory and other environmental requirements. Future research could also examine the model developed using data from different countries. As discussed previously, the results did not support all the hypothesized relationships between variables of interest. This may be because the present study was conducted in a highly regulated environment which restricts companies' choices regarding audit committees, external auditors as well as financial reporting quality. Therefore, future studies could test the model with data derived from a less-regulated environment in order to examine whether the hypothesized relationships are present in such an environment. It is also possible that the relationship between audit committees and external auditors is affected by cultural differences and therefore it would be important to test the model using data from different countries and different cultural settings.

Secondly, in the present study the operational measures for audit committee effectiveness, audit quality and financial reporting quality were obtained from publicly available sources. It is reasonable to acknowledge that the measures employed may not capture all aspects of audit committee effectiveness, audit quality and financial reporting quality sufficiently. Thus future research could aim to develop and establish alternative measures for audit committee effectiveness, audit quality as well as financial reporting quality. This could be achieved by using, for example, a questionnaire. This approach would enable measures to be derived which are non-regulated and not publicly available. Such measures would enable a more thorough understanding of the relationships between the variables of interest.

Thirdly, audit committees and external auditors are only some of the many potential monitoring mechanisms operating to ensure a company's financial reporting quality. Some of these mechanisms, such as a company's full board of directors and internal control mechanisms are within the company and specifically designed for this purpose. Some control mechanisms are external to

the company and exercise monitoring in order to safeguard their own interests. These parties include, for example, shareholders[34] and debt holders. Thus it is evident that examining the relationship between audit committee effectiveness and audit quality in isolation provides an incomplete description of the determinants of financial reporting quality. It is therefore suggested that future research could include the various parties in the model examined in this study and so develop a broader understanding of the interaction between these parties[35].

Finally, due to the fact that audit committees and external auditors operate in a highly complex environment it can be argued that quantitative research methods may not be able to capture all aspects of the relationships between audit committees and external auditors. Thus, as suggested by Turley and Zaman (2004), Turley and Zaman (2007) and Stewart et al. (2007) there is a need for more qualitative research regarding the functioning of audit committees as well as external audits. Therefore, it is suggested that a case study methodology and interviews could provide a complementary means to examine the model developed. The main advantage of this approach is that it would enable a more thorough analysis of the model proposed and its underlying dynamics.

[34] In general the literature suggests that institutional shareholders have sufficient power to monitor the company and its financial reporting process whereas individual shareholders' ability to execute such monitoring is regarded as limited.

[35] See e.g. Hay et al. (2008) for a discussion regarding the relationship between internal controls and external auditing.

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APPENDIX 1. Summary of corporate governance standards[36].

Rule / Regulator	SOX (2002)	NYSE (2003)	AMEX (2003)	NASDAQ (2003)
Audit committee size	n/a	Minimum of three members	At least three members	At least three members
Audit committee independence	Audit committee member may not accept, other than in his or her capacity as a member of the audit committee, the board of directors or any other board committee, any consulting, advisory or other compensatory fee from the issuer or be an affiliated person of the issuer or any subsidiary thereof.	To be independent, an audit committee member must have no material relationship with the listed company either directly or as a partner, shareholder, or officer of an organization that has a relationship with the company.	Audit committee member may not other than in his or her capacity as a member of the audit committee, the board of directors, or any other board committee:1) accept directly or indirectly any consulting, advisory, or other compensatory fee from the issuer or any subsidiary thereof, or 2) be an affiliated person of the issuer or any subsidiary thereof.	Consistent with SOX (2002) audit committee members are prohibited from receiving any payment other than payment for board or committee service. Affiliated persons of the company or its subsidiaries may not be audit committee members. In addition, audit committee members may not own or control 20 percent or more of the issuer's voting securities, or such lower number as established by the SEC.
Audit commitee members' experience	Issuer must disclose whether its audit committee includes at least one "financial expert," and if not, why not. To qualify as a financial expert, audit committee member must have: 1) an understanding of GAAP and financial statements, 2) experience applying GAAP in connection with and in preparing or auditing financial statements and	All audit committee members must be financially literate, and at least one must have accounting or financial management expertise.	All audit committee members must be able to read and understand fundamental financial statements, including a company's balance sheet, income statement, and cash flow statement. At least one member of the audit committee must be financially sophisticated, in that he or she has past employment experience in finance or accounting, requisite	All audit committee members must be able to read and understand fundamental financial statements, including a company's balance sheet, income statement, and cash flow statement. Additionally, each issuer must certify that it has, and will continue to have, at least one member of the audit committee who has past employment experience in finance or

[36] The above table summarizes the SOX (2002) requirements as well as the stock exchanges' standards regarding corporate governance. Therefore it does not inclusively offset all the corporate governance requirements in these regulations.

Continued

Rule / Regulator	SOX (2002)	NYSE (2003)	AMEX (2003)	NASDAQ (2003)
	applying accounting principles in connection with accounting for estimates, accruals, and reserves used in the company's financial statements,3) experience with internal accounting controls and procedures, and 4) an understanding of audit committee functions.		professional certification in accounting, or any other comparable experience or background which results in the individual's financial sophistication, including but not limited to being or having been a chief executive officer, chief financial officer, other senior officer with financial oversight responsibilities.	accounting, requisite professional certification in accounting, or any other comparable experience or background which results in the individual's financial sophistication, including being or having been a chief executive officer, chief financial officer or other senior officer with financial oversight responsibilities.
Audit committee responsibilities	Oversee the accounting and financial reporting process of the company and the audits of the financial statements of the company.	Assist board oversight of: 1) the integrity of the company's financial statements, 2) the company's compliance with legal and regulatory requirements, 3) the independent auditor's qualifications and independence, 4) the performance of the company's internal and external audit function and 5) preparation of the audit committee report for the company's proxy statement.	The audit committee of each issuer must have necessary procedures relating to: (a) registered public accounting firms, (b) complaints relating to accounting, internal accounting controls or auditing matters, (c) authority to engage advisors, and (d) funding as determined by the audit committee.	Oversee the company's accounting and financial reporting processes and the audits of its financial statements, responsible to ensure the external auditor's independence and review and approve all related-party transactions. In addition external auditor's accountability to the Committee.
Audit committee meetings	n/a	Separate, periodic meetings with management, internal auditors and external auditors.	The audit committee of each issuer must meet at least on a quarterly basis.	n/a

APPENDIX 2. Summary of studies related to the development of the research model.

Audit committee effectiveness and financial reporting quality			
Author(s)	**Sample**	**Method**	**Key findings**
Klein (2002a)	All firm years listed on the S&P 500 as of March 31, 1992 and 1993.	Archival	Negative relation between audit committee independence and discretionary accruals.
Xie, Davidson & DaDalt (2003)	282 firm-year observations of S&P 500 firms for the years 1992, 1994, and 1996.	Archival	Audit committee activity and its members' financial sophistication are associated with reduced levels of discretionary current accruals.
Bédard, Chtourou & Courteau (2004)	Sample based on complete set of firms on Compustat with a December 31, 1996 yearend.	Archival	Measures of audit committee effectiveness, expertise, independence and responsibilities, are negatively associated with aggressive earnings management.
Peasnell, Pope & Young (2005)	UK listed firms with fiscal year ends between June 30, 1993 and May 31, 1996.	Archival	No evidence that presence/absence of audit committee affects the extent of income-increasing earnings manipulation.
Bradbury, Mak & Tan (2006)	271 Singaporean and 279 Malaysian firms listed on either on the Singapore or the Kuala Lumpur Stock Exchange. The data-sampling period is year 2000.	Archival	Audit committee independence is related to lower abnormal working capital accruals.
Jaggi & Leung (2007)	523 firm-year observations of Hong Kong listed companies during 1999-2000.	Archival	Comparatively lower earnings management for the firms with audit committees compared to the firms without audit committees.
Piot & Janin (2007)	Main companies on the French stock market, specifically the SBF 120 Index companies. Three financial years: 1999, 2000 and 2001.	Archival	The presence of an audit committee curbs upward earnings management.

Audit committee effectiveness and audit quality

Author(s)	Sample	Method	Key findings
Collier & Gregory (1996)	UK companies which were members of the Financial Times All Share Index (FTASI) in December 1991.	Archival	Positive relationship between size-related audit fees and the presence of an audit committee.
Abbott, Parker, Peters & Raghunandan (2003a)	A sample of 492 nonregulated, Big 5-audited companies that filed proxy statements with the SEC in 2001.	Archival	Audit committee independence and financial expertise are positively associated with audit fees. Meeting frequency was not associated with audit fees.
Lee & Mande (2005)	792 US companies (S&P 1500 firms or other large firms).	Archival	Audit committee independence, activity level and expertise are positively associated with audit fees.
Goodwin-Stewart & Kent (2006)	401 Australian publicly listed companies.	Archival	Existence of an audit committee and more frequent audit committee meetings are associated with higher audit fees.
Knechel & Willekens (2006)	Sample of listed companies in Belgium.	Archival	A positive relationship between presence of an audit committee and audit fees.
Mitra, Hossain & Deis (2007)	358 firms listed on NYSE with fiscal year-end December 31, 2000.	Archival	A positive association between audit committee independence and audit fees.
Vafeas & Waegelein (2007)	Fortune 500 firms in 2001.	Archival	Audit committee size, audit committee member expertise, and audit committee member independence are positively associated with audit fee levels.
Hay, Knechel & Ling (2008)	130 companies listed on the New Zealand Stock Exchange in 1995 and 2005.	Archival	Existence of an audit committee is positively associated with audit fees.

Audit quality and financial reporting quality

Author(s)	Sample	Method	Key findings
Becker, DeFond, Jiambalvo & Subramanyam (1998)	10397 firm year observations audited by Big Six auditors and 2179 firm year observations audited by non-Big Six auditors.	Archival	Clients of non-Big Six auditors report discretionary accruals that are higher than the discretionary accruals reported by clients of Big Six auditors.
Francis, Maydew & Sparks (1999)	A sample of NASDAQ companies	Archival	Big Six audited companies have lower level of estimated discretionary accruals than non-Big Six audited companies.
Frankel, Johnson & Nelson (2002)	3074 companies which issued proxy statements with the SEC in 2001.	Archival	Audit fees are negatively associated with small earnings surprises and the magnitude of discretionary accruals.
Balsam, Krishnan & Yang (2003)	A sample of US companies audited by Big Six (Five) auditors from 1991 to 1999.	Archival	Clients of industry specialist auditors have lower discretionary accruals and higher earnings response coefficients than firms not audited by industry specialist auditors.
Myers, Myers & Omer (2003)	A sample of companies on the 2001 Compustat annual industrial and research files.	Archival	Results suggest higher earnings quality with longer auditor tenure.
Krishnan (2005)	20646 firm year observations representing 3550 US companies.	Archival	The earnings of clients of specialist auditors are more timely in reflecting bad news than earnings of clients of non-specialist auditors
Larckel & Richardson (2004)	US companies which reported data on audit and non-.audit services fees for fiscal years 2000 and 2001.	Archival	Higher fees paid to auditors are associated with smaller accruals.
Piot & Janin (2007)	Main companies on the French stock market (the SBF 120 Index companies).	Archival	Weak evidence that longer auditor tenure increases the quality of reported earnings.
Srinidhi & Gul (2007)	Companies listed on NYSE, AMEX or NASDAQ. 6284 firm-year observations from years 2000 and 2001.	Archival	Audit fees result in higher accrual quality.

APPENDIX 3. Definitions for variables used in the analyses.

Variable name	Description of the variable
Audit committee effectiveness	
ACSIZE	Number of audit committee members
ACEXP	Ratio of financial experts on the audit committee
ACMEET	Number of audit committee meetings during fiscal year
Audit quality	
AUDITFEE	Natural logarithm of audit fees paid to the incumbent auditor
Financial reporting quality	
ACC	Discretionary accruals (Residual from the regression model 6 scaled by 100)
Control variables for financial reporting quality	
TA	Natural logarithm of total assets
OPCYCLE	Operating cycle (Calculated as presented in Equations 7-8)
SALEG	Growth rate in net sales
LOSS	Indicator variable, 1 if the net income of the fiscal year is negative, otherwise 0
Control variables for audit quality	
TA	Natural logarithm of total assets
INVREC	Total inventories and total receivables to total assets
FOROPR	Foreign sales to total sales
QR	Quick ratio
LOSS	Indicator variable, 1 if the net income of the fiscal year is negative, otherwise 0
BSIZE	Number of board members
BIND	Board independence %
BMEET	Number of board meetings during fiscal year

APPENDIX 4. Sample selection criteria.

	N
Initial sample	
S&P 1500 firms (comprises of S&P 500, S&P MidCap 400 and S&P SmallCap 600 firms)	1500
Less	
Financial institutions (SIC codes 6000-6999)	240
Firms in industries with insufficient data for estimating accruals (less than 20 observation)	260
Final sample	1000

APPENDIX 5. Descriptive statistics of variables used in statistical analyses.

Table 1. Descriptive statistics for variables used in main analysis.

	Minimum	Maximum	Mean	Std.Dev.	Skewness	Kurtosis
ACSIZE	2	8	3.74	.928	1.051	1.428
ACEXP	0	1.00	.4871	.28409	.737	-.757
ACMEET	0	31	9.02	3.616	1.328	4.756
AUDITFEE	12.00	18.27	14.6051	.97259	.416	.164
ACC	-49.04	48.68	.000	11.39802	.142	2.020
TA	17.55	27.27	21.4201	1.50657	.416	-.005
OPCYCLE	4.58	664.33	120.7825	75.64084	2.107	7.296
SALESG	-.87	6.47	.1405	.27582	12.487	281.326
LOSS	0	1	.1004	.30069	2.663	5.103
INVREC	0	.89	.2483	.15784	.903	.671
FOROPR	0	1.02	.2972	.26144	.510	-.727
QR	.077	24.470	1.74010	2.022967	4.730	35.100
BSIZE	4	17	9.11	2.119	.357	.031
BIND	0	100.000	72.91053	13.753116	-.810	.906
BMEET	2	31	7.80	3.184	1.866	7.006

Notes:
The variables are as defined in Appendix 3

Table 2. Descriptive statistics of winsorized variables.

	Minimum	Maximum	Mean	Std.Dev.	Skewness	Kurtosis
ACSIZE	3	6	3.74	.852	.905	-.038
ACEXP	.17	1.00	.4903	.27950	.812	-.787
ACMEET	4	17	8.93	3.178	.478	-.144
AUDITFEE	12.93	16.74	14.6043	.92984	.372	-.435
ACC	-21.31	26.39	.0603	10.30859	.267	.128
TA	18.80	24.50	21.4099	1.44328	.298	-.617
OPCYCLE	22.37	327.43	118.5289	65.76321	1.209	1.536
SALESG	-.19	.62	.1356	.16311	.942	1.253
LOSS	.00	1.00	.1004	.30069	2.663	5.103
INVREC	.04	.64	.2468	.15237	.728	-.090
FOROPR	.00	.82	.2945	.25536	.412	-1.007
QR	.257	7.309	1.65395	1.513498	2.168	4.637
BSIZE	5	13	9.07	2.024	.140	-.656
BIND	42.857	90.909	73.10669	13.020966	-.487	-.607
BMEET	4	15	7.70	2.775	.834	.197

Notes:
The variables are as defined in Appendix 3

APPENDIX 6. Correlation matrix.

	ACSIZE	ACEXP	ACMEET	AUDITFEE	ACC	TA	OPCYCLE	SALESG
ACSIZE	1							
ACEXP		-.100***	-.031	.279***	-.015	.363***	-.078***	-.056*
ACMEET		1	.083***	.117***	.013	.124***	.064*	-.033
AUDITFEE			1	.214***	-.111***	.111***	.032	-.054
ACC				1	-.211***	.792***	.038	-.104***
TA					1	-.223***	.273***	-.060*
OPCYCLE						1	-.037	-.025
SALESG							1	-.067**
LOSS								1
INVREC								
FOROPR								
QR								
BSIZE								
BIND								
BMEET								

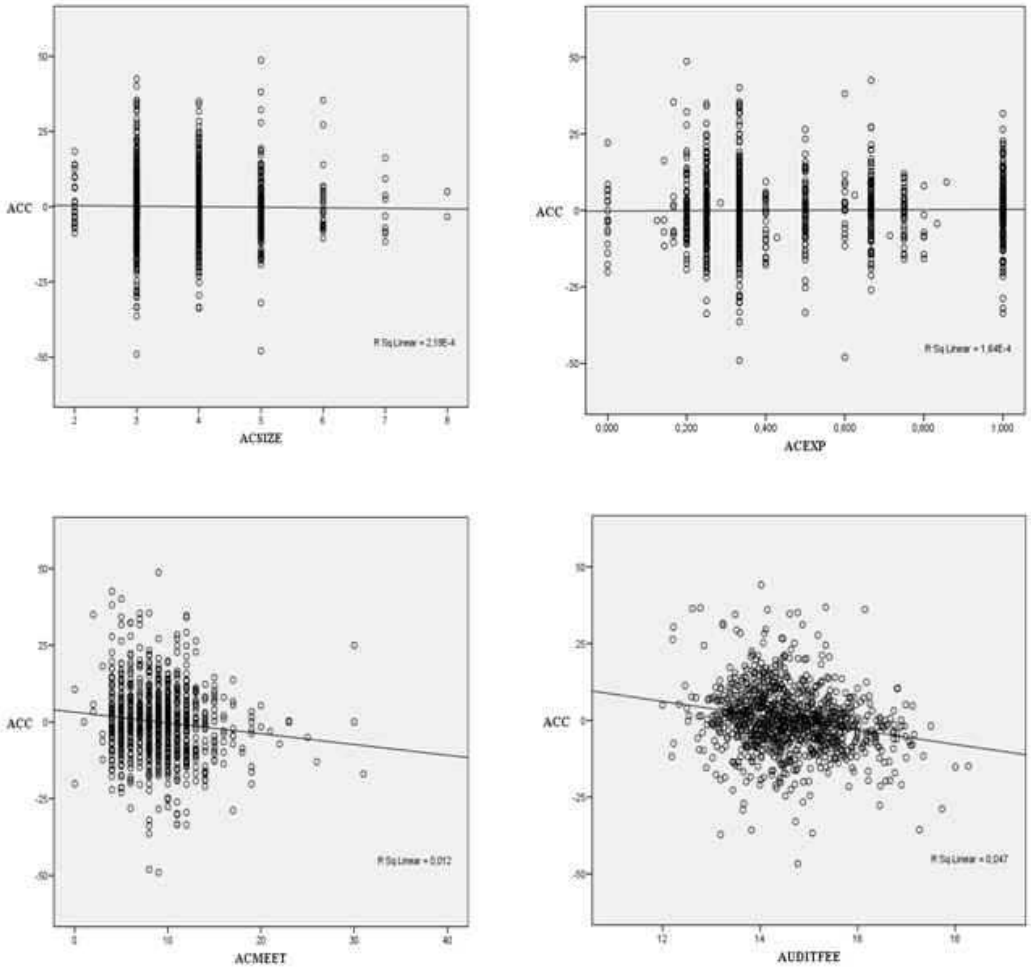
Notes:
***, **, *denote significance at 1%, 5% and 10% level respectively
The variables are as defined in Appendix 3

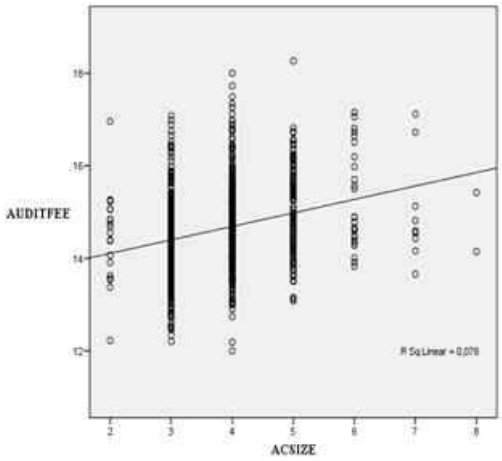
(Continued)

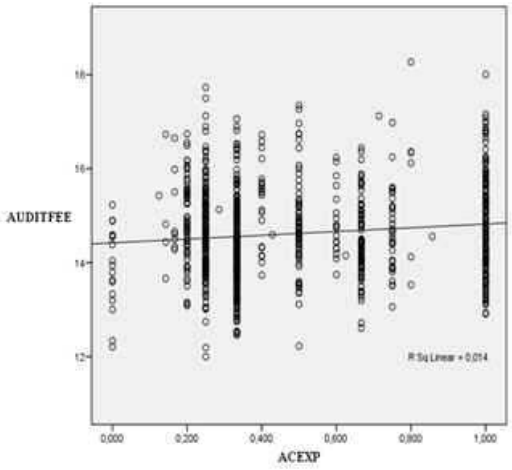
	LOSS	INVREC	FOROPR	QR	BSIZE	BIND	BMEET
ACSIZE	-.076**	.020	-.047	-.211***	.437***	.225***	.049
ACEXP	-.010	-.017	.038	-.041	.059*	.032	.024
ACMEET	.065*	.008	.055	-.067**	.057*	.079**	.261***
AUDITFEE	.003	.022	.331***	-.314***	.500***	.189***	.125***
ACC	-.103***	.492***	-.080**	.063**	-.121***	-.077**	-.140***
TA	-.107***	-.186***	.084**	-.337***	.592***	.158***	.117***
OPCYCLE	.165***	.194***	.234***	.187***	-.051	-.011	.057*
SALESG	-.088**	-.010	.002	.044	-.078**	-.045	-.056*
LOSS	1	-.025	.075**	.074**	-.019	-.030	.127***
INVREC		1	.138***	-.140***	-.038	-.035	-.156***
FOROPR			1	.097***	-.012	.067*	-.010
QR				1	-.281***	-.063*	.052
BSIZE					1	.099***	.042
BIND						1	.103***
BMEET							1

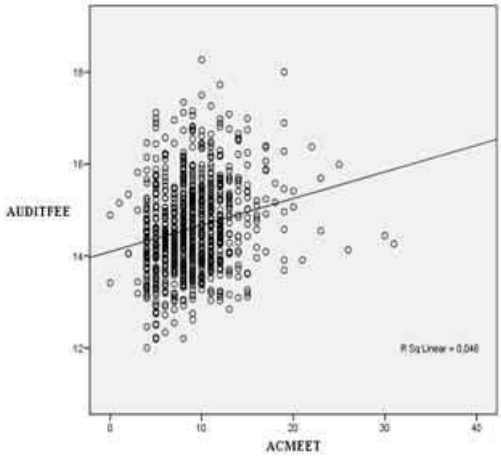
Notes:
***, **, *denote significance at 1%, 5% and 10% level respectively
The variables are as defined in Appendix 3

APPENDIX 7. Main relationships as scatterplots.




AUDITFEE
ACSIZE
R Sq Linear = 0,078


AUDITFEE
ACEXP
R Sq Linear = 0,014


AUDITFEE
ACMEET
R Sq Linear = 0,046

APPENDIX 8. Companies grouped by industries.

Two digit SIC code	Number of firms	Description of the industry	% in tthe sample
13	44	Oil and gas extraction	4.4
20	37	Food and kindred products	3.7
27	21	Printing, publishing and allied industries	2.1
28	95	Chemicals and allied products	9.5
33	23	Primary metal industries	2.3
34	23	Fabricated metal products, except machinery and transportation equipment	2.3
35	71	Industrial and commercial machinery and computer equipment	7.1
36	114	Electronic and other electrical equipment and components, except computer	11.4
37	33	Transportation equipment	3.3
38	95	Measuring, analyzing and controlling instruments	9.5
48	31	Communications	3.1
49	86	Electric, gas and sanitary services	8.6
50	37	Wholesale trade-durable goods	3.7
51	21	Wholesale trade-non-durable goods	2.1
56	28	Apparel and accessory stores	2.8
58	28	Eating and drinking places	2.8
59	22	Miscellaneous retail	2.2
73	140	Business services	14.0
80	29	Health services	2.9
87	22	Engineering, Accounting, Research, Management and related services	2.2
Total	1000		100.0

APPENDIX 9. Results for model ACSIZE→AUDITFEE→ACC.

Variable	**Condition 1** ACC	***Variable***	**Condition 2** AUDITFEE	***Variable***	**Conditions 3 and 4** ACC
Intercept	34.307***	***Intercept***	3.619***	***Intercept***	39.347***
t	7.046	t	12.111	t	7.431
se	4.869	se	.299	se	5.295
TA	-1.987***	TA	.468***	TA	-1.321***
t	-8.358	t	31.263	t	-3.613
se	.238	se	.015	se	.366
OPCYCLE	.045***	INVREC	.812***	OPCYCLE	.045***
t	9.822	t	7.016	t	10.007
se	.005	se	.116	se	.005
SALESG	-2.423**	FOROPR	.914***	SALESG	-2.611**
t	-1.987	t	12.728	t	-2.142
se	1.219	se	.072	se	1.219
LOSS	-6.766***	QR	-.029***	LOSS	-6.447***
t	-5.949	t	-3.143	t	-5.643
se	1.137	se	.009	se	1.142
Audit committee effectiveness		LOSS	.217***	***Audit committee effectiveness***	
		t	3.775		
		se	.058		
ACSIZE	1.039***			ACSIZE	1.040***
t	2.609	BSIZE	.028***	t	2.617
se	.398	t	2.634	se	.397
		se	.011		
				Audit quality	
		BIND	.004***		
		t	2.883	AUDITFEE	**-1.329****
		se	.001	t	**-2.392**
				se	**.556**
		BMEET	.014**		
		t	2.519		
		se	.006		
		Audit committee effectiveness			
		ACSIZE	-.031		
		t	-1.423		
		se	.022		
R^2	.157		.695		.162
Sobel Test	-				

Notes:
***, **, *denote significance at 1%, 5% and 10% level respectively
The variables are as defined in Appendix 3

APPENDIX 10. Results for model ACEXP→AUDITFEE→ACC.

Variable	**Condition 1** ACC	***Variable***	**Condition 2** AUDITFEE	***Variable***	**Conditions 3 and 4** ACC
Intercept	33.805***	***Intercept***	3.623***	***Intercept***	38.874***
t	6.926	t	12.112	t	7.323
se	4.881	se	.299	se	5.308
TA	-1.793***	TA	.464***	TA	-1.125***
t	-7.939	t	31.088	t	-3.139
se	.226	se	.015	se	.358
OPCYCLE	.044***	INVREC	.801***	OPCYCLE	.045***
t	9.584	t	6.926	t	9.767
se	.005	se	.116	se	.005
SALESG	-2.582**	FOROPR	.920***	SALESG	-2.770**
t	-2.113	t	12.821	t	-2.268
se	1.222	se	.072	se	1.221
LOSS	-6.858***	QR	-.029***	LOSS	-6.537***
t	-6.014	t	-3.080	t	-5.707
se	1.140	se	.009	se	1.146
Audit committee effectiveness		LOSS	.221***	***Audit committee effectiveness***	
		t	3.845		
		se	.058		
ACEXP	.793			ACEXP	.860
t	.645	BSIZE	.023**	t	.701
se	1.230	t	2.314	se	1.228
		se	.010		
				Audit quality	
		BIND	.003***		
		t	2.649	AUDITFEE	**-1.337****
		se	.001	t	**-2.398**
				se	**.558**
		BMEET	.014**		
		t	2.480		
		se	.006		
		Audit committee effectiveness			
		ACEXP	.041		
		t	.655		
		se	.062		
R^2	.151		.694		.156
Sobel Test	-				

Notes:
***, **, *denote significance at 1%, 5% and 10% level respectively
The variables are as defined in Appendix 3

APPENDIX 11. Results for model ACMEET→AUDITFEE→ACC.

Variable	**Condition 1** ACC	***Variable***	**Condition 2** AUDITFEE	***Variable***	**Conditions 3 and 4** ACC
Intercept	34.758***	***Intercept***	3.557***	***Intercept***	38.711***
t	7.133	t	12.043	t	7.314
se	4.873	se	.295	se	5.293
TA	-1.705***	TA	.461***	TA	-1.176***
t	-7.584	t	31.382	t	-3.286
se	.225	se	.015	se	.358
OPCYCLE	.044**	INVREC	.774***	OPCYCLE	.045***
t	9.741	t	6.776	t	9.872
se	.005	se	.114	se	.005
SALESG	-2.746***	FOROPR	.906***	SALESG	-2.880**
t	-2.255	t	12.801	t	-2.365
se	1.217	se	.071	se	1.218
LOSS	-6.650***	QR	-.026***	LOSS	-6.419***
t	-5.843	t	-2.867	t	-5.615
se	1.138	se	.009	se	1.143
Audit committee effectiveness		LOSS	.209***	***Audit committee effectiveness***	
		t	3.680		
		se	.057		
ACMEET	**-.279*** **			ACMEET	**-.246** **
t	**-2.901**	BSIZE	.023**	t	**-2.517**
se	**.096**	t	2.363	se	**.098**
		se	.010		
				Audit quality	
		BIND	.003**		
		t	2.474	AUDITFEE	**-1.073***
		se	.001	t	**-1.899**
				se	**.565**
		BMEET	.007		
		t	1.143		
		se	.006		
		Audit committee effectiveness			
		ACMEET	**.026*** **		
		t	**5.208**		
		se	**.005**		
R^2	.158		.702		.161
Sobel Test	**-1.784***				

Notes:
***, **, *denote significance at 1%, 5% and 10% level respectively
The variables are as defined in Appendix 3

APPENDIX 12. Results for model ACMEET→AUDITFEE→ACC (winsorized data).

Variable	**Condition 1** ACC	***Variable***	**Condition 2** AUDITFEE	***Variable***	**Conditions 3 and 4** ACC
Intercept	36.085***	***Intercept***	3.718***	***Intercept***	40.304***
t	7.788	t	12.070	t	8.028
se	4.633	se	.308	se	5.021
TA	-1.755***	TA	.454***	TA	-1.201***
t	-8.271	t	30.224	t	-3.608
se	.212	se	.015	se	.333
OPCYCLE	.047***	INVREC	.779***	OPCYCLE	.048***
t	10.065	t	6.821	t	10.261
se	.005	se	.114	se	.005
SALESG	-6.262***	FOROPR	.947***	SALESG	-6.354***
t	-3.367	t	13.499	t	-3.422
se	1.859	se	.070	se	1.857
LOSS	-6.420***	QR	-.033***	LOSS	-6.229***
t	-6.282	t	-2.649	t	-6.083
se	1.022	se	.012	se	1.024
Audit committee effectiveness		LOSS	.162***	***Audit committee effectiveness***	
		t	2.973		
		se	.054		
ACMEET	**-.282*** **			ACMEET	**-.244** **
t	**-2.865**	BSIZE	.022**	t	**-2.445**
se	**.098**	t	2.210	se	**.100**
		se	.010		
				Audit quality	
		BIND	.003**		
		t	2.372	AUDITFEE	**-1.135** **
		se	.001	t	**-2.160**
				se	**.525**
		BMEET	.008		
		t	1.293		
		se	.006		
		Audit committee effectiveness			
		ACMEET	**.027*** **		
		t	**4.999**		
		se	**.005**		
R^2	.175		.702		.179
Sobel Test	**-2.01** **				

Notes:
Data is winsorized by 2.5% from both tails.
***, **, *denote significance at 1%, 5% and 10% level respectively
The variables are as defined in Appendix 3

APPENDIX 13. All measures for audit committee effectiveness included.

Variable	**Condition 1** ACC	***Variable***	**Condition 2** AUDITFEE	***Variable***	**Conditions 3 and 4** ACC
Intercept	35.225***	***Intercept***	3.557***	***Intercept***	39.288***
t	7.244	t	12.033	t	7.437
se	4.863	se	.296	se	5.282
TA	-1.949***	TA	.463***	TA	-1.410***
t	-8.065	t	31.080	t	-3.843
se	.242	se	.015	se	.367
OPCYCLE	.045***	INVREC	.782***	OPCYCLE	.045***
t	9.817	t	6.821	t	9.954
se	.005	se	.115	se	.005
SALESG	-2.525**	FOROPR	.902***	SALESG	-2.660**
t	-2.075	t	12.708	t	-2.186
se	1.217	se	.071	se	1.217
LOSS	-6.545***	QR	-.027***	LOSS	-6.306***
t	-5.762	t	-2.906	t	-5.528
se	1.136	se	.009	se	1.141
Audit committee effectiveness		LOSS	.207***	***Audit committee effectiveness***	
		t	3.634		
		se	.057		
ACSIZE	1.033***			ACSIZE	1.046***
t	2.570	BSIZE	.026**	t	2.604
se	.402	t	2.528	se	.402
		se	.010		
ACEXP	1.507			ACEXP	1.538
t	1.217	BIND	.003***	t	1.244
se	1.238	t	2.601	se	1.237
		se	.001		
ACMEET	**-.270*** **			ACMEET	**-.236** **
t	**-2.798**	BMEET	.007	t	**-2.407**
se	**.096**	t	1.183	se	**.098**
		se	.006		
				Audit quality	
		Audit committee effectiveness		AUDITFEE	**-1.101***
				t	**-1.953**
		ACSIZE	-.020	se	**.564**
		t	-.907		
		se	.022		
		ACEXP	.010		
		t	.156		
		se	.062		
		ACMEET	**.025*** **		
		t	**5.074**		
		se	**.005**		
R^2	.164		.702		.168
Sobel Test ACMEET→AUDITFEE→ACC		**-1,818***			

Notes:
***, **, *denote significance at 1%, 5% and 10% level respectively
The variables are as defined in Appendix 3

APPENDIX 14. All measures for audit committee effectiveness included and control variables excluded.

Variable	**Condition 1** ACC	***Variable***	**Condition 2** AUDITFEE	***Variable***	**Conditions 3 and 4** ACC
Intercept	3.574*	***Intercept***	12.772***	***Intercept***	35.912***
t	1.819	t	82.487	t	6.661
se	1.965	se	.155	se	5.391
Audit committee effectiveness		***Audit committee effectiveness***		***Audit committee effectiveness***	
ACSIZE	-.201	ACSIZE	**.303*** **	ACSIZE	.567
t	-.496	t	**9.516**	t	1.370
se	.404	se	**.032**	se	.414
ACEXP	.826	ACEXP	**.426*** **	ACEXP	1.905
t	.624	t	**4.083**	t	1.455
se	1.325	se	**.104**	se	1.310
ACMEET	**-.358*** **	ACMEET	**.055*** **	ACMEET	**-.219** **
t	**-3.454**	t	**6.692**	t	**-2.114**
se	**.104**	se	**.008**	se	**.104**
				Audit quality	
				AUDITFEE	**-2.532*** **
				t	**-6.422**
				se	**.394**
R^2	.012		.128		.051
Sobel Test ACMEET→AUDITFEE→ACC		**-4.694*** **			

Notes:
***, **, *denote significance at 1%, 5% and 10% level respectively
The variables are as defined in Appendix 3

APPENDIX 15. Results for model ACMEET→INDFEE→ACC.

Variable	**Condition 1** ACC	***Variable***	**Condition 2** INDFEE	***Variable***	**Conditions 3 and 4** ACC
Intercept	34.758***	***Intercept***	-11.005***	***Intercept***	27.394***
t	7.133	t	-21.130	t	4.539
se	4.873	se	.521	se	6.036
TA	-1.705***	TA	.496***	TA	-1.342***
t	-7.584	t	19.152	t	-4.706
se	.225	se	.026	se	.285
OPCYCLE	.044***	INVREC	.863***	OPCYCLE	.044***
t	9.741	t	4.285	t	9.760
se	.005	se	.201	se	.005
SALESG	-2.746**	FOROPR	.643***	SALESG	-2.834**
t	-2.255	t	5.147	t	-2.330
se	1.217	se	.125	se	1.216
LOSS	-6.650***	QR	.020	LOSS	-6.409***
t	-5.843	t	1.243	t	-5.611
se	1.138	se	.016	se	1.142
Audit committee effectiveness		LOSS	.303***	***Audit committee effectiveness***	
		t	3.023		
		se	.100		
ACMEET	**-.279*** **			ACMEET	**-.246** **
t	**-2.901**	BSIZE	.025	t	**-2.521**
se	**.096**	t	1.406	se	**.097**
		se	.018		
				Audit quality	
		BIND	.003		
		t	1.306	INDFEE	**-.721** **
		se	.002	t	**-2.061**
				se	**.350**
		BMEET	.011		
		t	1.121		
		se	.010		
		Audit committee effectiveness			
		ACMEET	**.041*** **		
		t	**4.715**		
		se	**.009**		
R^2	.158		.440		.162
Sobel Test	**-1.877***				

Notes:
***, **, *denote significance at 1%, 5% and 10% level respectively
The variables are defined as follows:
INDFEE = Ratio of audit fees relative to the industry mean
Other variables are as defined in Appendix 3

APPENDIX 16. Results for path analysis.

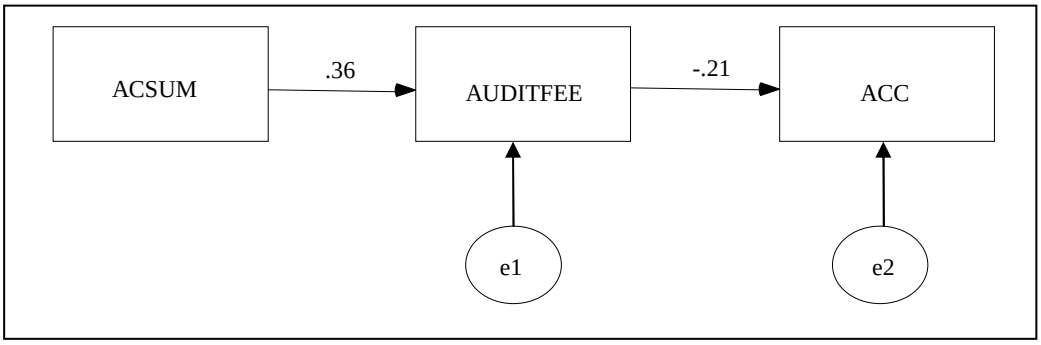


Figure 1. AMOS results $\chi^2(1)= 0.204$ (P=.652)

Paths			**Standardized estimates**	**Unstandardized estimates**	**Standard error**	**Sig.**
ACSUM	→	AUDITFEE	.365	.208	.018	***
AUDITFEE	→	ACC	-.209	-2.450	.367	***

Notes:
***, **, *denote significance at 1%, 5% and 10% level respectively
The variables are defined as follows:
ACSUM=Composite measure of audit committee effectiveness
Other variables are as defined in Appendix 3

APPENDIX 17. Results for unexpected fees.

Variable	**Model 1** ACC	***Variable***	**Model 2** ACC
Intercept	33.938***	***Intercept***	33.942***
t	7.001	t	7.001
Control variables		***Control variables***	
TA	-1.778***	TA	-1.778***
t	-7.983	t	-7.982
OPCYCLE	.043***	OPCYCLE	.043***
t	9.620	t	9.612
SALESG	-2.873**	SALESG	-2.874**
t	-2.364	t	-2.365
LOSS	-6.872***	LOSS	-6.871***
t	-6.068	t	-6.066
Audit quality		***Audit quality***	
UNEXPFEE_1	**-2.392*** **	UNEXPFEE_2	**-2.367*** **
t	**-3.767**	t	**-3.724**
R^2	.163		.163

Notes:
***, **, * denote significance at 1%, 5% and 10% level respectively
The variables are defined as follows:
UNEXPFEE_1=Unexpected audit fees (Residual from regression model 33)
UNEXPFEE_2=Unexpected audit fees (Residual from regression model 34)
Other variables are as defined in Appendix 3

APPENDIX 18. Results for moderation effect.

Variable	ACC
Intercept	35.485***
t	5.601
Control variables	
TA	-1.178***
t	-3.293
OPCYCLE	.045***
t	9.886
SALESG	-2.834**
t	-2.325
LOSS	-6.385***
t	-5.582
Audit committee effectiveness	
ACMEET	.113
t	.283
Audit quality	
AUDITFEE	-.839
t	-1.355
Interaction term	
AUDITFEE*ACMEET	-.026
t	-.927
R^2	.162

Notes:
***, **, * denote significance at 1%, 5% and 10% level respectively
The variables are defined as follows:
AUDITFEE*ACMEET= Interaction term of ACMEET and AUDITFEE
Other variables are as defined in Appendix 3