

The Effects of Weak Internal Controls and Their Remediation under SOX 404 on Audit Fees

The implementation of SOX 404 was expected to result in higher audit fees for all firms as it requires more effort from auditors. According to the audit risk model, companies with weak internal controls require more audit procedures to achieve reasonable assurance that the financial statements are free from material misstatements. This study examined financial statements of U.S. firms between 2004-2014 and the results show that companies with a material weakness in internal controls pay higher audit fees compared to firms with effective internal controls. In addition, the results in this study show that companies with effective internal controls that disclosed a material weakness in the past pay higher audit fees compared to companies that never disclosed any material weakness. The discrepancy in audit fees within companies with effective internal controls (with and without a material weakness in the past) still exists even eight years after remediation of the material weakness, which suggests that auditors charge a so called risk-premium that is not related to actual audit hours in the years following a disclosure of a material weakness in internal controls.

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CHAPTER 1: INTRODUCTION

This thesis aims to examine the association between the quality of internal controls and audit fees after the implementation of the Sarbanes-Oxley Act. More specifically, the thesis will look into the effect of material weaknesses in companies' internal control systems on audit fees even after the material weakness no longer exists.

The Committee of Sponsoring Organizations of the Treadway Commission (COSO) has established a common internal control framework against which companies and organizations can assess their internal control systems. According to that framework, internal control is "broadly defined as a process, effected by an entity's board of directors, management and other personnel, designed to provide reasonable assurance regarding the achievement of objectives". Objectives are divided into three categories: (1) effectiveness and efficiency of operations, (2) reliability of financial reporting and (3) compliance with applicable laws and regulations (COSO, 2013).

A company's internal control system is an important tool for efficient financial reporting quality (Kinney et al., 1990). In case the auditor concludes that the client's internal control system is not sufficient, additional audit procedures are required in order for the auditor to obtain reasonable assurance that the financial statements are free from material misstatements, whether due to fraud or error (AICPA, 1996). The audit risk model is a framework that translates this thought (AICPA, 1983). The auditor will in all cases attempt to maintain the overall audit risk at an acceptable level in order to prevent material misstatements in the financial statements.

The Sarbanes-Oxley Act of 2002 (from now on also referred to as 'SOX' in this thesis) is a United States federal law concerning the management and financial reporting of publicly traded companies. SOX was enacted in response to corporate mismanagement and major accounting scandals, most notoriously the collapse of Enron in 2001 which exposed an allegedly corrupt financial governance mechanism (Zhang, 2007). Section 404 of the Sarbanes-Oxley Act is seen as a major change in financial reporting as it requires more effort from auditors (Zhang, 2007). Prior to SOX 404, firms' management were only obliged to disclose internal control deficiencies that are material weaknesses. SOX 404 requires management to document and assess the effectiveness of internal controls and procedures for financial reporting, and to report its findings. Subsequently, the auditor is now required to attest and report on management's assessment of the effectiveness of internal control over financial reporting.

Studies conducted before the implementation of SOX focused on whether auditors increase audit procedures in case client risks are found. Those studies provide evidence that is conflicting with the audit risk model by implying that risks related to weak internal control systems do not cause extended audit procedures and ultimately, higher audit fees (O’Keefe et al., 1994; Mock and Wright, 1999).

The required internal control disclosures under the Sarbanes-Oxley Act provide a new and broad data sample of clients with internal control deficiencies or material weaknesses. Therefore, it allowed researchers to examine the relation between audit fees and control risk (Hogan and Wilkins, 2008). The studies conducted after the implementation of SOX find that in general audit fees are higher after SOX 404 as Section 404 requires more effort from auditors (Raghunandan and Rama, 2006; Ghosh and Pawlewicz, 2009; Keane et al., 2012). Another finding is that companies with weak internal control systems pay higher audit fees after the implementation of SOX 404 compared to companies with effective internal controls (Hoitash et al., 2008; Ashbaugh-Skaife et al., 2009). Hogan and Wilkins (2008) argue that the new requirements under SOX increased the auditor’s sensitivity to control risk. They show that audit fees are increasing with the severity of internal control problems.

Keane et al. (2012) argue that audit procedures performed on clients with effective internal controls with a material weakness in the past should not be significantly different than audit procedures performed on clients that never disclosed any material weakness. That means that audit fees charged for clients that disclosed weak internal controls should decrease after remediating¹ a material weakness (Keane et al., 2012). However, Keane et al. (2012) find a significant difference in the level of audit fees up to three years after remediation within companies with effective internal controls with - and without a material weakness in the past.

This study extends the study conducted by Keane et al. (2012) by broadening the sample period in order to find out how many years it takes until audit fees charged for clients with effective internal controls with a material weakness in the past do not significantly differ with audit fees charged for clients with effective internal controls that never disclosed any material weakness. The

¹ Remediating means that material weaknesses in internal controls are corrected and the firm now has effective internal controls.

study is conducted on a sample of U.S. firms between 2004-2014. The sample is obtained from various databases in the Wharton Research Data Services system. Multiple regression analyses are performed on time-series and cross-sectional data where the relation between audit fees and two variables of interest are estimated after including control variables that were included in prior studies. Two proxies are used for measuring audit fees: the natural logarithm of audit fees (in simple – and multiple regression analysis) and the scaled audit fees ratio² (in simple regression analysis). The variables of interests are *ICW* and *REMEDYR*. *ICW* is a dummy variable that equals 1 if an auditor finds a material weakness in their clients' internal controls, and 0 otherwise. The sign and significance level of the coefficient of *ICW* is an indication whether there is a significant difference in audit fees between firms with effective internal controls and firms with weak internal controls. *REMEDYR* is also a dummy variable, it equals 1 for firms with effective internal controls that disclosed a material weakness in the past (considering a lagged time-span of eight years). The sign and significance level of the coefficient of *REMEDYR* is an indication whether there is a significant difference within companies with effective internal controls with - and without a material weakness in the past.

The results in this study first suggest that after controlling for various variables that affect audit fees, material weaknesses in internal controls are positively related to audit fees. There is a significant and positive relation between material weaknesses in internal controls and audit fees which is in line with prior literature. On average, companies with effective internal controls pay audit fees that is 0.22% of their total assets, whereas companies with a material weakness in internal controls pay audit fees that is 0.47% of their total assets. Throughout the whole sample period, companies with a material weakness in internal controls consistently have a higher average scaled audit fees ratio compared to companies with effective internal controls. Second, companies with effective internal controls that disclosed a material weakness in the past pay higher audit fees compared to companies with effective internal controls that never disclosed any material weakness. The average scaled audit fees ratio for firms with effective internal controls that never disclosed a material weakness in the past (considering a lagged time-span of eight years) is 0.14% whereas the average scaled audit fees ratio for firms with effective internal controls that disclosed a material weakness in the past ranges between 0.20% and 0.39%, with the latter being scaled audit fees ratio

² Scaled audit fees ratio = Audit fees/Total assets

in the first year after remediating a material weakness and the former being scaled audit fees ratio eight years after remediating a material weakness.

The main purpose of this study was to find out how many years it takes until audit fees for firms with effective internal controls that disclosed a material weakness in the past do not significantly differ with audit fees for firms with effective internal controls that never disclosed any material weaknesses. Prior studies often focused on the difference in the level of audit fees between firms with effective internal controls and firms with weak internal controls. This study considers the difference within firms with effective internal controls that disclosed a material weakness in the past and firms with effective internal controls that never disclosed any material weaknesses. Considering a lagged time-span of eight years, the results show that the significant difference in audit fees still exists even eight years after disclosing a material weakness in internal controls. Audit fees for firms with effective internal controls that disclosed and corrected a material weakness in the past remain higher even eight years after correcting the material weakness.

The findings in this study are important in light of recent research suggesting that firms with a material weakness in internal controls pay higher audit fees in subsequent years even after a material weakness no longer exists, as the tests in this study show that almost a decade after remediation audit fees still remain high which supports the statement in Keane et al. (2012) that a portion of the high audit fees is due to a risk premium that resulted from disclosure of a material weakness. This study suggests that companies will benefit from implementing and maintaining effective internal controls as it results in lower audit fees. And besides, companies with effective internal controls will most likely benefit from avoiding paying a risk premium in the years following a disclosure of weak internal controls, which can be seen as an additional motivation to systematically maintain effective internal controls. Additional analysis in this study also shows that the proportion of companies with a material weakness in internal controls dropped substantially after the implementation of SOX, which is a positive sign for regulators pursuing an efficient corporate governance mechanism.

The remainder of the paper is structured as follows. In the next section I discuss background information related to the Sarbanes-Oxley Act, internal control – and audit fees literature. Thereafter, I further elaborate on the audit risk model. I then detail the research design and sample selection procedure. In the remaining sections I present the empirical results and discuss my conclusions.

CHAPTER 2: RELATED LITERATURE

This chapter contains institutional information regarding the Sarbanes-Oxley Act of 2002. Furthermore, the literature related to internal control and audit fees will be discussed.

2.1: SARBANES-OXLEY ACT OF 2002

Institutional Background

The Sarbanes-Oxley Act of 2002 is a United States federal law concerning the management and financial reporting of publicly traded companies.³ The bill contained a new set of rules and expanded requirements that applies to all public company boards, management and public accounting firms. Some sections of SOX also apply to private firms.

The late 90's and early 2000's saw several corporate mismanagement and major accounting scandals, most notoriously the collapse of Enron (a global energy, commodities, and services company) in 2001 which exposed an allegedly corrupt financial governance mechanism (Zhang, 2007). Enron over-estimated its annual revenue in 2000 with creative accounting techniques while the company was in fact accumulating great debt. While doing so, Enron's audit firm (Arthur Enderson) assisted in the fraud by providing an unqualified audit opinion on Enron's financial statements of 2000. Both Enron and Arthur Enderson went bankrupt after the scandal erupted.

SOX was enacted to restore public confidence in accounting which had been affected negatively after the scandals. The bill contains eleven sections that cover responsibilities of boards of directors, management and public accounting firms and penalties for misconduct. With the implementation of SOX, the Securities and Exchange Commission (SEC) was required to create regulations for public firms on how to comply with SOX. After the accounting scandals, there was a perception that stricter financial reporting laws were needed. Therefore, many other countries subsequently adopted new regulations that were similar to SOX.

The first section of the Sarbanes-Oxley Act established a new regulator for the accounting industry: the Public Company Accounting Oversight Board (PCAOB). The new regulator ensures independent oversight of auditors. The main provisions in SOX addressed some conflicts of

³ "US and foreign companies registered and reporting with the SEC" (Arping and Sautner, 2012).

interests between auditors and their clients. Auditors were for example prohibited from providing some non-audit services contemporaneously with audit services and firms were obliged to establish an independent audit committee. The restriction of non-audit services arose from concerns that non-audit services impair auditor independence by creating an economic bond between the auditor and the client (Zhang, 2007). According to DeAngelo (1981), the quality of an audit depends on the ability of the auditor to discover errors or breaches in the accounting system and the willingness of the auditor to disclose such errors or breaches through withstanding pressure from clients to not disclose 'bad news'. An economic bond between an auditor and client might therefore impair audit quality by reducing the willingness of the auditor to disclose bad news. Greater auditor independence improves audit quality as it leads to greater incentives for the auditor to tell the truth (DeAngelo, 1981).

SOX 302 and SOX 404: Internal Controls

Under section 302 of the Sarbanes-Oxley Act, management (signing officers) of firms registered with the SEC are responsible for the evaluation of internal control over financial reporting and are obliged to report their findings. In case management finds any deficiency in internal controls, they must disclose the material weakness. A material weakness in internal control is defined as “a significant deficiency, or combination of significant deficiencies, that results in more than a remote likelihood that a material misstatement of the annual or interim financial statements will not be prevented or detected” (PCAOB, 2004). Additionally, management must disclose substantial changes to the internal controls, including any corrections of significant deficiencies and material weaknesses. Furthermore, any suspicion of fraud concerning an employee who is involved in internal control activities or any other factor that could have a negative impact on internal controls must be disclosed in the financial reports as well.

Section 404 of the Sarbanes-Oxley Act is seen as a major change in financial reporting (Zhang, 2007). Prior to SOX 404, firms' management were only obliged to disclose internal control deficiencies that were material weaknesses. According to Ashbaugh-Skaife et al. (2007), executives had incentives concerning a trade-off between the discovery of internal control deficiencies and the costs of disclosing such deficiencies that were not material weaknesses. SOX 404 was intended to mitigate this trade-off problem as it requires management to document and assess the effectiveness of internal controls and procedures for financial reporting, and to report its findings. Under SOX 404, internal controls over financial reporting can only be classified as

‘effective’ if there are no material weaknesses. Subsequently, the auditor is required to attest and report on management’s assessment of the effectiveness of internal control over financial reporting. On a sampling basis, first the firm and then its auditor perform a walk-through on each class of transactions when evaluating the internal control system.

SOX aftermath

The new requirements under SOX 404 drew much controversy because section 404 is the most costly section of the Sarbanes-Oxley Act for companies to implement, as it requires more effort from both the firm and its auditor during the assessment of internal controls (Zhang, 2007). A survey in 2005 estimated that, excluding external audit costs, Fortune 1000 firms spent an average of \$5.9 million to comply with the internal control reporting requirements in their first year of compliance with SOX 404 (Charles River Associates, 2005).

The Sarbanes-Oxley Act was in general expected to increase the quality of audit reporting for financially distressed companies. According to Rama and Read (2006), audit firms have become more conservative with client retention and client acceptance after SOX as audit risks increased after the implementation of SOX. Ryu et al. (2009) mention for example the shift from oversight of audit firms from the private-sector American Institute of Certified Public Accountants (AICPA) to the quasi-governmental Public Company Accounting Oversight Board (PCAOB) as one of the determinants of increased audit risks. However, even though auditors face increased risks related to auditing and are expected to be more conservative in determining their audit opinions (specifically going-concern issuance) post-SOX, Ryu et al. (2009) find no significant difference in auditors’ audit accuracy pre-SOX and post-SOX for financially distressed companies. Auditors still fail to issue going-concern opinions to almost half of bankrupt firms one year prior to bankruptcy (Ryu et al., 2009).

With the scrutiny of independent auditors, SOX 404 was also expected to increase the probability of existing internal control weaknesses to be detected and disclosed. However, Rice and Weber (2012) show that the majority of companies with a material weakness in internal controls fail to report on the weaknesses. They have examined financial statements restatements with internal control deficiencies as the underlying cause between 2004-2009 and found that only 32% of the firms reported the existence of a material weakness during the misstatement period.

The majority of the firms reported the material weakness(es) in internal controls after the restatement was announced (Rice and Weber, 2012).

The implementation of Section 404 was also intended to induce strict internal controls to reduce opportunistic behavior. Disclosing weak internal control over financial reporting is associated with liability risks for companies, which according to Coates (2007) improved incentives for firms to remediate weaknesses in internal controls and to spend more resources on establishing and maintaining an adequate internal control system.

2.2: INTERNAL CONTROL LITERATURE

The Committee of Sponsoring Organizations of the Treadway Commission (COSO) has established a common internal control framework against which companies and organizations can assess their internal control systems. According to that framework, internal control is “broadly defined as a process, effected by an entity's board of directors, management and other personnel, designed to provide reasonable assurance regarding the achievement of objectives”. Objectives are divided into three categories: (1) effectiveness and efficiency of operations, (2) reliability of financial reporting and (3) compliance with applicable laws and regulations (COSO, 2013).

According to Kinney et al. (1990), a company's internal control system is an important tool for efficient financial reporting quality and can only be adequate if it provides management reasonable assurance that a significant departure from certain established criteria could not occur and go undetected. However, there was not a broad internal control standard in the U.S. prior to the implementation of the Sarbanes-Oxley Act of 2002. The only regulation for companies registered with the SEC regarding internal controls was the Foreign Corrupt Practices Act (FCPA) of 1977 which required accounting transparency in order to prevent bribery of government officials to assist companies during investments. Prior to SOX, firms were only required to disclose significant deficiencies in internal controls in case of a change in auditor (SEC, 1988). A ‘significant deficiency’ and ‘material weakness’ are per definition both deficiencies in internal controls (either in the design or operation). The difference is that a ‘significant deficiency’ is less severe and is not required to be publicly disclosed under SOX 302/SOX 404 (SEC 2004). Within the banking industry there is a regulation since 1991 that is similar to SOX. The Federal Deposit Insurance Corporation Improvement Act (FDICIA) of 1991 requires banks operating in the U.S. to

report management's assessment on the effectiveness of internal controls. Subsequently, their independent auditor is required to ascertain and report on management's assertions (Doyle et al., 2007).

Risks of Weak Internal Controls

According to a report of the Association of Certified Fraud Examiners (ACFE) in 2004, U.S. firms lose on average an estimated 6% of their annual revenues to fraud when there is material weaknesses or significant deficiencies in internal control over financial reporting. Most factors that contribute to fraud can be neutralized with a strong internal control environment that contains clear guidelines where authorizations are tracked and enforced, a management culture that shows ethical tone at the top (leading by example) and segregation of conflicting duties (ACFE, 2004).

Reporting on internal control systems should provide early signs of warnings to users of financial statements about potential problems that could result from weak internal controls (PCAOB, 2004). Investors are an important group of users of financial statements. A significant decline in stock prices after disclosure of weak internal controls would suggest that investors reevaluate their perceptions about the company's financial reporting quality and consequently revise their expectations about the company's future profitability (Hammersley and Myers, 2008). Hammersley and Meyers (2008) provide evidence that disclosure of weak internal controls under SOX 302 resulted on average in negative stock returns on a 3-day window event after controlling for other material news. The market reaction varies with the severity of the internal control weakness. Overall, the results in Hammersley and Meyers (2008) suggest that investors revise their expectations about firm value after disclosure of weak internal controls.

Another important group of users of financial statements are lenders. According to Watts and Zimmerman (1986), financial statement information is particularly important for contracting purposes. Lenders rely on information provided in financial statements when setting debt covenants. Costello and Wittenberg-Moerman (2010) found that lenders decrease their use of financial statement information in setting debt covenants when firms disclose a material weakness in internal controls. Financial covenants are in that case substituted with alternatives such as price and security protections. The reaction from lenders to material weaknesses in internal controls (changing design of debt contracts) differs from their reaction to restatements. Lenders impose

strict monitoring on management but still continue to use financial statement information when setting debt covenants after restatements (Costello and Wittenberg-Moerman, 2010).

Firm Characteristics and Internal Control Quality

The regulatory changes under the Sarbanes-Oxley Act demonstrate the importance of internal control quality. There is limited empirical evidence on the determinants of internal control quality before implementation of SOX, which according to Doyle et al. (2007) is due to a lack of internal control data. Companies were required to maintain adequate internal controls before SOX as well, however, there was no excessive disclosure requirements regarding internal controls prior to SOX (Doyle et al., 2007). Therefore, prior literature often attempted to provide indirect evidence on determinants of internal control quality.

Kinney and McDaniel (1989) use restatements as a proxy for internal control quality. They argue that a restatement implies a deficiency in a firm's internal control system. Their study focuses on firm characteristics that are related to internal control quality. Their results show a negative association between restatements and firm size and firm profitability, which implies that in general firms that correct previously reported earnings are relatively smaller and less profitable compared to firms that don't correct previous financial statements.

DeFond and Jiambalvo (1991) use firm size as a proxy for internal control quality. According to Kinney and McDaniel (1989), large firms in general have higher internal control quality as they are more likely to have an internal audit section that can reduce occurrence of errors in financial reports. Therefore, large firms are assumed to have stronger internal control over financial reporting. DeFond and Jiambalvo (1991) find a negative relation between firm size and restatements. However, this association is statistically not significant in their multivariate regression analysis.

McMullen et al. (1996) use SEC enforcement actions and restatements as proxies for internal control quality. They examine the likelihood of voluntary management reporting on internal control in case a firm's internal control quality is weak by comparing a sample that either was subject to SEC enforcement action or corrected previous reported earnings to companies that were not subject to either proxy. Their study shows that small firms with weak internal controls are less likely to voluntarily report on internal control compared to small firms with no deficiencies in internal controls.

Out of the the empirical evidence on internal control quality prior to implementation of SOX, the most direct evidence on internal control quality is provided by Krishnan (2005). Her study examines audit committee quality and internal control deficiencies reported by firms that changed auditors in the period 1994-2000. As stated earlier, prior to SOX, firms were only required to disclose deficiencies in internal controls in case a change in auditor occurred. Krishnan (2005) measures audit committee quality on three factors: (1) size, (2) independence and (3) expertise. The results in Krishnan (2005) show a significant and positive association between audit committee quality and internal control quality. Firms with independent audit committees and audit committees with financial expertise are less likely to endure internal control deficiencies (Krishnan, 2005). However, Krishnan (2005) is also limited as it only examines internal control deficiencies in firms with change in auditors.

Doyle et al. (2007) provide a much broader study on determinants of internal control quality. They examine companies disclosing material weaknesses in internal controls under SOX 302 and SOX 404 using a sample period of 2002-2005. The purpose of their study is to provide empirical evidence on factors that influence the quality of internal control over financial reporting. The following firm-specific characteristics are examined in Doyle et al. (2007): (1) firm size, (2) firm age, (3) financial health, (4) financial reporting complexity, (5) rapid growth, (6) restructuring charges, and (7) corporate governance. Their results show that it is more likely for firms to disclose material weaknesses when firms are ‘‘smaller, younger, financially weaker, more complex, growing rapidly, and/or undergoing restructuring.’’ They argue that these firm characteristics are creating problems for firms in maintaining effective internal controls (Doyle et al., 2007).

2.3: AUDIT FEES LITERATURE

Audit fee is the price for the quantity of the product ‘audit services’ that is demanded from audited companies. Differences in audit fees between audited companies can either be explained by quantity differences in audit hours or quality differences in prices charged by audit firms (Simunic, 1980). According to Simunic (1980), certain drivers cause the auditor to perform more audit procedures and therefore demand higher audit fees, as those drivers are susceptible to more loss exposure for the auditor because the auditor is responsible for detecting material misstatements in their clients’ financial statements. When the auditor fails to do so, he is exposed to possible losses

in terms of litigation or reputational damage. Simunic (1980) conducted a survey in order to find out which drivers are causing variations in the level of audit fees. In order to assess the competitiveness of the industry, he first developed a model that describes the determinants of audit fees. His study is seen as the first one that examined the drivers of the variation in audit fees.

According to Simunic (1980), firm size is a factor that influences audit fees because the auditing process is performed on a sampling basis. In case total assets increase, the amount of audit procedures that need to be performed on the individual items (which comprise the total assets) increases as well in order to achieve a certain level of assurance (Simunic, 1980).

The complexity of the audited firms' operations also affects the auditing process. According to Simunic (1980), auditor's loss exposure increases when the audited firms' operations are more diverse and when greater decentralization is in place. In addition, some line items on the balance sheet require specific audit procedures in order to verify the numbers. Simunic (1980) names 'Receivables' and 'Inventories' as one of those risky balance sheet items. The valuation of those items can be a complex task that potentially expose the auditor to greater loss exposure (Simunic, 1980).

Lastly, Simunic (1980) mentions the industry in which the audited firms operates as a factor that influences loss exposure. However, he provides no theoretical basis that explains this relation.

Many studies that were conducted after Simunic (1980) have also shown that audit fees are related to client size, client risk and client complexity. Client size/- risk/- complexity are proxies for attributes of the auditing process and the amount of effort conducted by the auditor (Hay et al., 2006). These factors can be seen as supply variables. Hay et al. (2006) conducted a meta-analysis where they summarize the extent of prior research on audit fees. They examined a set of papers (all published in high quality accounting journals) from more than 20 countries that used audit fees as a dependent variable over a time span of 27 years (1977-2003). The purpose of the meta-analysis was to assess the overall effect of the independent variables in prior literature, because individual studies can have different outcomes as it is subject to variations in sample size, sample period and setting (Hay et al., 2006). Hay et al. (2006) divide the determinants of audit fees in three categories: (1) Client attributes, (2) Auditor attributes and (3) Engagement attributes. They discuss the proxies used in prior literature and the outcome of the meta-analysis for all the categories.

‘Client attributes’

The meta-analysis shows that client size is the most dominant factor in the determination of audit fees across all existing studies. As Simunic (1980) stated, client size is expected to have a positive association with audit fees. Larger clients (firms with more assets) generally require more audit hours. The results of the meta-analysis confirm the positive association between client size and audit fees as audit fees are higher for larger firms. In any audit fees model, client size is an extremely important explanatory variable (Hay et al., 2006).

The complexity of the clients’ operations is also a factor that researchers of prior studies have expected to be associated with audit fees. Complexity is typically measured with proxies such as the number of subsidiaries, the number of business segments and the number of audit locations. The more complex the client is, the more effort is required from the auditor during an audit (Simunic, 1980). Hay et al. (2006) confirm these expectations. Overall, the empirical studies examined in the meta-analysis strongly suggest a positive and significant relation between client complexity and audit fees (Hay et al., 2006).

Some researchers have argued that inherent risk is also related to audit fees. Inherent risk is the overall assessment of the auditor on the likelihood of a material misstatement in the client’s financial statements before taking the effectiveness of internal controls into consideration. Certain parts of the audit engagement may contain a higher risk of error and require specific audit procedures (Simunic, 1980). Inventory and Receivables are the two line items on the balance sheet that are cited as the most difficult to audit. Inherent risk is usually measured with proxies that combine inventory and receivables divided by total assets. All studies taken together, the results in Hay et al. (2006) show that inherent risk is an important driver in the variation in the level of audit fees.

The performance of a client is also a factor that influences audit fees. Profitability reflects the extent to which an auditor is exposed to an eventual loss in case the client is not financially profitable (Simunic 1980). Profitability is often measured as net income scaled by total assets. The results for the profitability proxies in the meta-analysis conducted by Hay et al. (2006) show a negative relation between profitability and audit fees. The existence of a loss has become an important driver of audit fees in the most recent studies. Firms that perform ‘bad’ (e.g. negative net income) are expected to pay higher audit fees (Hay et al., 2006).

Leverage is another risk that exposes the auditor to a possible loss. A high leverage ratio means that a firm has financed their assets with significantly more debt than equity. Therefore, a high leverage ratio is generally expected to increase audit fees as it's a sign that the client is not performing well (Gist, 1994b). Debt to total assets is the most commonly used proxy for measuring leverage. The combined meta-results in Hay et al. (2006) support the expected positive relation between audit fees and leverage. However, there are significant differences in results between individual studies in different time settings and countries (Hay et al., 2006).

Form of ownership is also seen as determinants of audit fees. The form of ownership of a client can affect the risk of agency costs or risks in the organization in general. A company is owned by shareholders (the principals) who usually hire managers (agents) for directing the company. Agency costs occur when management (agents) do not always act for the benefit of the company. A firm that is owned by a major shareholder can indicate stronger controls, thus leading to less loss exposure for the auditor. Some forms of ownership are expected to increase the auditor's loss exposure, consequently increasing audit fees (Hay et al., 2006). When managerial ownership declines, agency costs rises as management is expected to not fully act for the benefit of the company. Form of ownership is measured with proxies such as a dummy variables for public versus private firms and the existence of a major shareholder. Although with mixed results, the overall results of the meta-analysis in Hay et al. (2006) show that the existence of a major shareholder has a negative relation with audit fees as it reduces audit fees.

The client's industry is also a determinant of audit fees. Some clients operate in industries that are more difficult to audit. Financial institutions are in general easier to audit than firms with excessive inventory or receivables, again referring to the consensus that those two line items are cited as the most difficult to audit. In general, audit fees seem to be related to the client's industry. When a dummy variable is used for financial institutions, audit fees are significantly lower for that industry (Hay et al., 2006).

The last two client attributes that are examined in Hay et al. (2006) are internal audit and corporate governance. The audit process, and therefore level of audit fees, differs across firms partly because of differences in control environment (Knechel, 2001). Firms with a strong control environment usually require less audit hours because auditors can more likely rely on the client's own internal control documents. Not many studies before the Sarbanes-Oxley Act have had access to internal control data. A few studies have examined the relation between a client's internal audit

department and audit fees. An example of a proxy used for measuring internal audit is the number of internal auditors. Hay et al. (2006) found an overall negative relation between internal audit proxies and audit fees, thus suggesting that the more a client invests in their own internal audit, the less audit fees they are charged. However, the overall results in Hay et al. (2006) are mostly not significant.

Corporate governance is another element that affects the client's control environment, subsequently influencing the audit process. A strong control environment is likely to be related to lower audit fees. Existence of an audit committee, separation of duties and the number of outside directors are all proxies for a strong control environment. Although based on limited studies, Hay et al. (2006) found an overall negative and significant association between corporate governance proxies and audit fees. A strong control environment seems to lower audit fees.

'Auditor attributes'

Auditor quality is an important determinant of audit fees that falls into the category of auditor attributes. It is expected that high quality auditors charge higher audit fees. The most commonly used proxy for auditor quality in prior literature is a dummy variable for the largest four audit firms (previously Big 8/6/5). Currently, the following companies are 'members' of the Big Four: PricewaterhouseCoopers (PwC), Deloitte, Ernst & Young (EY) and KPMG. It's generally accepted that auditors from Big Four companies are more skilled. The meta-analysis in Hay et al. (2006) confirm these expectations as auditor quality is strongly associated with higher audit fees. Companies audited by Big-Four firms generally pay higher audit fees.

Firms usually switch auditors in order to pay lower audit fees to their new auditor. Prior literature provide two explanations for this event. Audit firms tend to offer lower audit fees in order to win new clients, which is called low-balling where the audit firm expects receiving higher fees in subsequent years. The second explanation is that the new auditor can offer audit services more efficiently than the previous ones, which leads to a reduction in audit fees (Hay et al., 2006). An auditor switch is measured with a dummy variable indicating that the auditor tenure is less than a specified period of time (mostly less than a year). The results in the Hay et al. (2006) meta-analysis show that auditor tenure is indeed related to audit fees. Audit fees are generally lower when the audit engagement is relatively new.

An interesting determinant of audit fees that is examined is the auditor's location. According to Hay et al. (2006), a few studies have examined the differences in audit fees regarding location. Those studies show that audit fees tend to be higher when the audit firm is located in a metropolitan center area, where costs are higher than the rest of the country (Hay et al., 2006).

'Engagement attributes'

The time between the end of the fiscal year and the end of the audit field work (called the audit report lag) is according to Knechel and Payne (2001) an indication of the efficiency of the audit engagement. Their study shows that audit report lag increases when audit hours are higher compared to typical audit engagements. A personnel mix that is more heavily weighted towards participation from managers and partners reduces audit report lag suggesting that more experienced auditors work more efficiently (Knechel and Payne, 2001). Therefore, audit report lag is expected to increase audit fees as it is related to higher audit hours. The results in Hay et al. (2006) confirm this expectation by showing a positive association between audit fees and audit report lag. The longer the report lag is, the higher audit fees are.

Auditors typically have a 'busy season', a period when most of the companies have their fiscal year-end. It's usually a hectic time for auditors where they have work overtime more than once. Therefore, it might be the case that audit firms charge higher fees during this 'busy season'. On the other hand, audit firms might offer reduced audit fees for engagements outside the 'busy season' in order to stimulate an even distribution of resources during the year (Hay et al., 2006). The meta-analysis in Hay et al. (2006) shows mixed results regarding the association between 'busy seasons' and audit fees. The relation differs across countries and time samples. Overall, they find no significant results.

When there are problems during the audit engagement, the quantity of audit work together with the loss exposure for the auditor increases (Simunic, 1980). An audit opinion other than an unqualified one is usually an indication of audit problems and is expected to cause higher audit fees. According to the meta-analysis in Hay et al. (2006), audit problems (measured as a dummy variable for audit opinions other than an unqualified one) are positively related to audit fees for studies conducted before 1990, after 1990 the results are positive as well but not significant. Hay et al. (2006) ascribe the difference in results to the change in reporting on going-concern issues around that time period. In 1988, the Auditing Standards Board issued SAS. No.59 that required a

proactive approach from auditors in evaluating the going-concern ability of their clients and to report their evaluation. A going-concern issuance must be disclosed if the auditor has any doubts about the continued existence of the client. Prior to that, auditors were only required to report on going-concern issues when other audit information implied that the client might have troubles in continued existence (a more passive approach). Therefore, a client could get a qualified audit opinion and at the same time not receive a going-concern issuance which most likely put more emphasis on going-concern issuances as an indication of more severe audit problems. According to a study conducted by Geiger and Rama (2003), there is a positive and significant relation between the amount of audit fees and going concern modified audit opinions for financially distressed companies.

The provision of non-audit services is a subject that has been the focus of many studies. Some argue that the provision of non-audit services can lead to reduced audit fees as it can cause synergies between audit and non-audit work. Others argue that non-audit services are related to higher audit fees as it requires additional effort from audit firms (Hay et al., 2006). The results in Hay et al. (2006) show a strong and significant positive association between provision of non-audit services and audit fees. Audit fees are higher when the audit firm provides non audit services to the audited client.

The audit engagement can also be influenced by the complexity in reporting that a client is required to satisfy. More complex reporting requirements increase the audit work and risk for auditors for not detecting material misstatements in the financial statements (Hay et al., 2006). A common proxy for complexity in reporting is the number of audit reports to be issued. Although based on a limited amount of studies, Hay et al. (2006) show an overall positive and significant relation between the client's reporting complexity and audit fees.

CHAPTER 3: THEORY AND HYPOTHESES DEVELOPMENT

This chapter will discuss the theory that combines the concepts discussed in the previous section. Based on the theory, two hypothesis will be formulated as well.

The auditor examines the client before setting up an audit plan. An important part of the examination is the client's internal control system and inherent risk. In case the auditor concludes that the client's internal control system is not sufficient, the auditor will decide that additional audit procedures are required (AICPA, 1996). The audit risk model, stated as follows, is a framework that translates this thought (AICPA, 1983):

$$\text{Audit Risk} = \text{Inherent Risk} \times \text{Control Risk} \times \text{Detection Risk}.$$

The auditor will in all cases attempt to maintain the overall audit risk at an acceptable level in order to prevent or detect material misstatements in the financial statements. Inherent risk and control risk are related to the client. Inherent risk is the overall assessment of the auditor on the likelihood of a material misstatement before taking the effectiveness of internal controls into consideration. In a way, inherent risk can be seen as a 'fixed' risk that neither the client nor the auditor can influence. Control risk is the risk that the client's control environment (internal controls) will not detect or prevent material misstatements in the financial statements. Detection risk is the risk that the auditor will not detect a material misstatement in the financial statements during an audit. When the client's internal control over financial reporting is assumed to be weak, control risk is high. So, in order to maintain an acceptable level of audit risk, the auditor must increase audit procedures to keep the detection risk low. (Hogan and Wilkins, 2008).

Studies before implementation of the Sarbanes-Oxley Act that focused on whether auditors increase audit procedures in case client risks are found provide evidence that is conflicting with the audit risk model. For example, Mock and Wright (1999) examine the initial audit risk assessment and subsequent audit procedures performed for manufacturing clients. The study focuses on the initial assessment and procedures performed on one specific line item: Accounts Receivable. Their study shows an association between certain client risks (mainly inherent risk) and the nature of audit programs rather than the extent of audit programs. In other words, auditors do not

significantly increase audit procedures after client risks are detected, they rather change the way the procedures are performed. In addition, audit procedures do not differ substantially across time after various tests. Overall, Mock and Wright (1999) conclude that there is not a strong relation between client risks and the extent of audit programs.

O'Keefe et al. (1994) examine the relation between client characteristics and auditors' effort in order to maintain an acceptable level of audit risk. They examine data from one specific audit firm. Their results show that the client's size, complexity and risk characteristics influence auditor's effort. However, they don't find evidence on the relation between auditors' effort and reliance on clients' internal control systems. Similar to Mock and Wright (1999), their results suggest that audit programs vary with changes in client's inherent risk rather than control risk (O'Keefe et al., 1994). The studies before SOX imply that risks related to weak internal control systems do not cause extended audit procedures and ultimately, higher audit fees. However, Keane et al. (2012) argue that this is due to the fact that auditors faced other incentives before SOX 404 when an audit of internal control over financial reporting was not needed (Keane et al., 2012).

The mandatory internal control disclosures under the Sarbanes-Oxley Act provide a broad data sample of clients with internal control deficiencies or material weaknesses. Therefore, it allows researchers to examine the relation between audit fees and control risk (Hogan and Wilkins, 2008). Raghunandan and Rama (2006) examine the relation between audit fees and internal control disclosures under SOX 404. They examine a large number of manufacturing firms that report under Section 404. First, as expected they find that the average audit fees for the whole sample is significantly higher after the implementation of SOX 404 as Section 404 requires more effort from auditors. Moreover, they find a significant difference in the level of audit fees between clients disclosing material weaknesses under SOX 404 and clients that do not disclose internal control weaknesses. Manufacturing firms with material weaknesses in their internal control over financial reporting pay significantly higher audit fees (Raghunandan and Rama , 2006).

Hogan and Wilkins (2008) argue that the new requirements under SOX increased the auditor's sensitivity to control risk. They compare audit fees for firms that disclosed internal control deficiencies under SOX 302 with firms that did not disclose any deficiency. Hogan and Wilkins (2008) differs from Raghunandan and Rama (2006) because they attempt to capture the increase in audit fees that is a response to increased control risk rather than increase in audit fees resulting from additional testing requirements under SOX 404 (Hogan and Wilkins, 2008). The results in

Hogan and Wilkins (2008) show that audit fees in the preceding year (year T-1) of internal control disclosures are significantly higher for firms that disclosed internal control deficiencies in the subsequent year (year T). They show that audit fees are increasing with the severity of internal control problems. The results suggest that audit effort is increased in case internal control deficiencies exist. However, they cannot rule out the alternative explanation that the increase in audit fees is due to a risk premium that auditors charge in case a firm's internal control system is not sufficient. In addition, auditor responses to internal control deficiencies vary across firms that differ in auditor type and tenure (Hogan and Wilkins, 2008).

Keane et al. (2012) argue that when a firm's internal control system is determined to be effective, an auditor should be able to decrease the amount of testing required (audit hours) during an audit. However, they also state that an auditor cannot reduce audit hours when a firm's internal control system is not effective. Therefore, a weak internal control system leads to higher audit hours and audit fees. Prior literature shows results that support this claim. Ghosh and Pawlewicz (2009) show that the requirements under SOX 404 result in more effort and responsibility from auditors, which leads to higher audit fees. According to their results, audit fees increased with more than 70 percent after the implementation of SOX. Raghunandan and Rama (2006), Hoitash et al. (2008) and Ashbaugh-Skaife et al. (2009) find that companies with weak internal control systems pay higher audit fees compared to companies with effective internal controls after the implementation of SOX 404. More severe problems are associated with more audit tests and/or higher risk premia. Therefore, the increase in audit fees pre-SOX and post-SOX is more significant for companies with a material weakness in internal controls compared to companies with significant deficiencies in internal controls (Hoitash et al., 2008).

Combined, these theoretical arguments lead to the following hypothesis:

H1: Material weaknesses in internal controls under SOX 404 are positively related to audit fees.

According to Keane et al. (2012), after remediation of material weaknesses in internal controls (meaning that material weaknesses no longer exist), in the following year the auditor will still perform additional procedures to assess the effective controls that mitigate the past material weaknesses. However, two years after correcting material weaknesses, these additional audit

procedures should not be needed in case remediation occurred (Keane et al., 2012). Keane et al. (2012) argue that two years after a client disclosed material weaknesses, audit procedures performed on these clients should not be significantly different than audit procedures performed on firms that never disclosed any material weakness if the client currently has effective internal controls. Which means that audit fees charged for clients that disclosed weak internal controls should decrease two years after remediation (Keane et al., 2012). Otherwise, if audit fees still remain high after two years, Keane et al. (2012) argue that a portion of the higher audit fees is due to a risk premium that resulted from disclosure of a material weakness.

Hoitash et al. (2008) show that firms that disclosed internal control deficiencies under SOX 302 still pay higher audit fees in the subsequent years even when those firms do not disclose any material weakness under SOX 404. Economic theory suggests that prices are 'sticky' when information asymmetry exists in a market (Bhaduri and Falkinger, 1990; Ferguson et al., 2005). This would imply that audit fees remain high after remediation of a material weakness because it is likely that auditors still have some doubts about the effectiveness of internal controls even after remediation.

Combined, these theoretical arguments lead to the following hypothesis:

H2: After remediation of material weaknesses in internal controls under SOX 404, audit fees still remain high in subsequent years.

CHAPTER 4: RESEARCH DESIGN

In this chapter I will discuss the research method for testing both hypotheses and the sample selection procedure.

In order to empirically test the hypotheses, I use the statistical software STATA and perform clustered robust regressions to examine the relation between material weaknesses in internal controls (and their remediation) and audit fees. A standard OLS regression assumes that residuals are independent but it is possible that outcomes within each firm may not be independent, meaning that audit fees for firm X at year T can be related to audit fees for firm X at year $T+1$, $T+2$ and etc. This could lead to residuals that are not independent within firms. Therefore, the cluster option indicates that observations are clustered into firms based on firms' specific company codes and that the observations may be correlated within firms, but would be independent between firms (UCLA: Statistical Consulting Group, 2016). I will estimate the relation between audit fees and internal controls based on a modified version of the model that is used in Keane et al. (2012):

$$\begin{aligned} AUDITFEES_{it} = & \beta_0 + \beta_1 ICW_{it} + \beta_2 REMEDYR1_{it-1} + \beta_3 REMEDYR2_{it-2} \\ & + \beta_4 REMEDYR3_{it-3} + \beta_5 REMEDYR4_{it-4} + \beta_6 REMEDYR5_{it-5} \\ & + \beta_7 REMEDYR6_{it-6} + \beta_8 REMEDYR7_{it-7} + \beta_9 REMEDYR8_{it-8} + \beta_{10} SIZE_{it} \\ & + \beta_{11} RESTATEMENT_{it-1} + \beta_{12} ROA_{it} + \beta_{13} LEVERAGE_{it} + \beta_{14} BIG4_{it} \\ & + \beta_{15} GCMAO_{it} + \beta_{16} NAS_{it} \end{aligned}$$

Dependent variable

AUDITFEES is the dependent variable in the regression and it is measured as the natural logarithm of audit fees in the multiple regression analysis. Simple regression analysis will be performed as well where the dependent variable will also be measured as audit fees scaled by total assets. When the dependent variable in a regression model is a percentage, the model can predict values that aren't possible. Therefore, I do not use scaled audit fees as a proxy for the dependent variable in the multiple regression analysis. I do not expect the same problem in the simple regression analysis.

Variables of interest

Material weaknesses in internal controls will be measured by using a dummy variable *ICW* that equals 1 when an auditor determined a material weakness in internal controls, and 0 otherwise. Hypothesis 1 predicts a positive relation between *ICW* and *AUDITFEES*, which means the expectation is $\beta_1 > 0$. *REMEDYR* is also a dummy variable that equals 1 if a firm has effective internal controls at year *T* after disclosing a material weakness in the past. For example, *REMEDYR1* equals 1 if a firm has effective internal controls at year *T* after disclosing a material weakness at *T-1*. *REMEDYR2* equals 1 if a firm has effective internal controls at year *T* after disclosing a material weakness at *T-2* etc. Hypothesis 2 predicts a positive relation between *REMEDYR* and *AUDITFEES*, which means the expectation is $\beta_{2-9} > 0$.

Keane et al. (2012) examined the effects of disclosure of weak internal controls on audit fees up to the third year after remediation. I will investigate the impact on audit fees up to the eight year after remediation in order to provide an answer on how long it takes for a company with effective internal controls that disclosed a material weakness in the past, until that company's audit fees are not significantly higher compared to companies that never disclosed material weaknesses.

Control variables

I include control variables that prior literature has shown as determinants for audit fees. First, I include variables that are classified as 'client attributes' in Hay et al. (2006). *SIZE* is measured as the natural logarithm of the client's total assets. In any audit fees related study, firm size is a major determinant in the level of audit fees. Larger firms pay in general higher audit fees, therefore, *SIZE* is expected to be positive ($\beta_{10} > 0$). *RESTATEMENT* measures financial reporting quality. It is a proxy for inherent risk and is a dummy variable that equals 1 if the client restated its prior year's financial statements, and 0 otherwise. Inherent risk is an important driver in the variation of audit fees. Audits of clients that restated their prior fiscal year's financial statements contain more inherent risk so *RESTATEMENT* is expected to be positive ($\beta_{11} > 0$). *ROA* is a proxy for client's performance and is defined as return on assets (net income/total assets at t-1). Companies that are less profitable are more likely related to a loss exposure for the auditor so *ROA* is expected to be negative ($\beta_{12} < 0$). *LEVERAGE* is measured as the client's debt-to-assets ratio ((debt in current liabilities + long-term debt)/total assets). Prior literature found mixed evidence on the effect of high

leverage on audit fees. A high leverage ratio is likely to be related to higher loss exposure for the auditor, therefore, *LEVERAGE* is expected to be positive ($\beta_{13} > 0$).

Second, I include a variable that is classified as ‘auditor attributes’ in Hay et al. (2006). *BIG4* is a dummy variable that equals 1 if a firm is audited by a Big-Four audit firm, 0 otherwise. As stated earlier, the Big-Four are the four biggest audit firms: PricewaterhouseCoopers (PwC), Deloitte, Ernst & Young (EY) and KPMG. Auditors from Big-Four audit firms are generally higher educated and more experienced which most likely results in higher audit fees, therefore, *BIG4* is expected to be positive ($\beta_{14} > 0$).

And third, I include variables that are classified as ‘engagement attributes’ in Hay et al. (2006). *GCMAO* equals 1 if an auditor provides a going concern - and modified audit opinion, and 0 otherwise. Audit problems generally lead to more audit work and higher loss exposure, therefore, *GCMAO* is expected to be positive ($\beta_{15} > 0$). *NAS* is a proxy for the provision of non-audit services and is measured as non-audit fees/total audit fees. Prior literature provides mixed evidence on the relation between the provision of non-audit services and audit fees. Non-audit services can cause synergies and therefore reduce audit fees, however, some argue that it leads to more audit work and higher audit fees. Therefore, there is no prediction on the sign of *NAS*.

Sample Selection

In order to conduct this research, I use data from Wharton Research Data Services system which contains several databases that are needed in this study. The dependent variable audit fees is obtained from Audit Analytics. The independent variable internal control weakness (*ICW*) is also obtained from Audit Analytics. The control variables that are audit related are also obtained from Audit Analytics. The control variables that contain financial data are obtained from Compustat Fundamentals Annual Database, where extensive financial information is provided.

The thesis is based on a sample that contains U.S. firms. The sample period is from 2004-2014, because 2004 was the first fiscal year when SOX 404 required auditors’ opinion on the effectiveness of internal controls. Firm-year observations that do not provide the necessary information are removed from the sample. That is when data is missing from (1) Audit Analytics, (2) Compustat or (3) after merging both databases. The data selection procedure is as follows:

First, all duplicates in the Audit Analytics and Compustat databases are dropped from the sample before merging. In particular, the dataset from Audit Analytics contained a large set of

duplicates, which would cause double count and give too much weight to duplicate observations (Veenman, 2013).

The datasets are combined based on two identifiers: company code and fiscal year end. Audit Analytics provides ‘Company key’ and ‘Fiscal year ended’, whereas Compustat provides ‘CIK number’ and ‘Datadate’. However, apart from the fact that they are named differently, the two identifiers contain the exact same information in both datasets. The Central Index Key (CIK) is a unique number attached to corporations who have filed disclosure with the SEC. After merging both datasets, only the firm-year observations that were present in both datasets are kept in the sample.

In order to refine the dataset, some observations were dropped from the sample because information was missing that was needed for measuring the variables in the research model. The following table shows the conditional statements performed on a subset of observations:

TABLE 1
Conditional statements merged dataset

Beginning Sample			63,897 observations
Observation dropped if	Equals zero	Missing value	# of Observations dropped
Duplicates			10,213
Total Assets	✓	✓	433
Audit Fees	✓	✓	16,699
Debt in Current Liabilities		✓	299
Long-term Debt		✓	132
Net Income		✓	3850
Final Sample			32,271 observations

Notes:

Data obtained from Audit Analytics and Compustat and merged afterwards.

Sample period = January 1st 2004 – December 31st 2014.

The research model in this study contains several lagged variables. In order to measure them, the panel structure of data is used by STATA. This is possible because the dataset is a so-called panel data which means that the sample is a combination of both cross-sectional (multiple firms) and time-series data (multiple years per firm) (Veenman, 2013).

The continuous variables in the sample contain several extreme values that might influence the results in this study. In order to reduce that effect, the observations from the most extreme 1 percentiles of the data are winsorized (for each continuous variable). The data are winsorized at the 1st and 99th percentiles of their distributions. That is, the extreme small and large observations are set equal to the values of less extreme small and large observations, respectively (Veenman, 2013). Altogether, the final sample contains 32,271 firm-year observations.

CHAPTER 5: RESULTS

This chapter contains the results from the research method discussed in the previous section. Based on the results, the hypotheses will be addressed.

Out of the total sample, roughly seven percent of all firm-year observations contained a material weakness in internal controls (table 2). Figure 1 shows the proportion of companies with effective – and weak internal controls for every fiscal year. Figure 2 shows that throughout the whole sample period, companies with weak internal controls consistently pay a higher ratio of audit fees scaled by total assets compared to firms with effective internal controls. It is interesting to note that in the first fiscal year of filing with SOX 404, almost one out of five companies disclosed a material weakness in internal controls. Afterwards, the proportion of firms with weak internal controls drops significantly. This can be explained by the fact that before SOX 404, the auditor was not required to assess their clients' internal controls. The quality of internal control over financial reporting did not (directly) affect the audit report, which most likely resulted in firms neglecting the quality of their internal controls. With the implementation of SOX 404, firms most likely faced incentives to increase the quality of their internal controls because if the auditor would find any material weakness it would be disclosed in the audit report, which would signal a negative sign to stakeholders and possibly lead to future losses (e.g. losing investors' trust, SEC scrutiny, decrease in firm value etc.).

TABLE 2
Frequency material weakness in internal controls

Group	Frequency	Percent
Effective internal controls (1)	30,070	93.18
Weak internal controls (2)	2,201	6.82
Total	32,271	100.00

Notes:

Frequency table based on dataset that contains 32,271 firm-year observations.

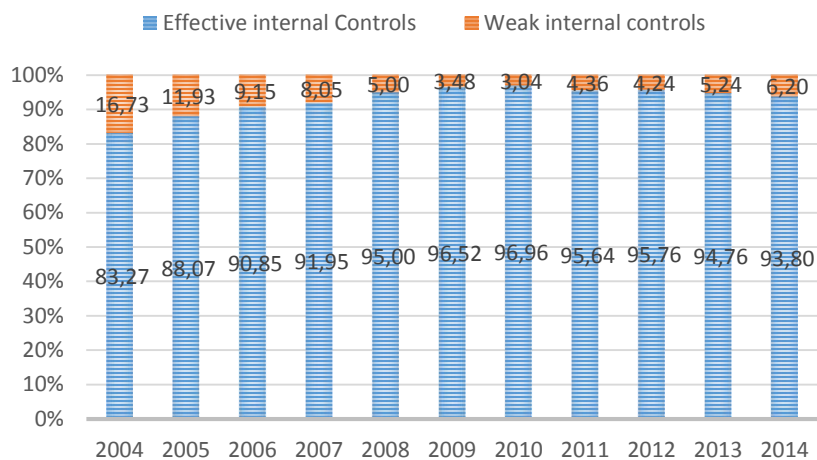
Sample period = 2004-2014

Effective internal controls = Auditor did not find a material weakness in internal controls.

Weak internal controls = Auditor found one or more material weakness(es) in internal controls.

FIGURE 1

Proportion companies in each fiscal year



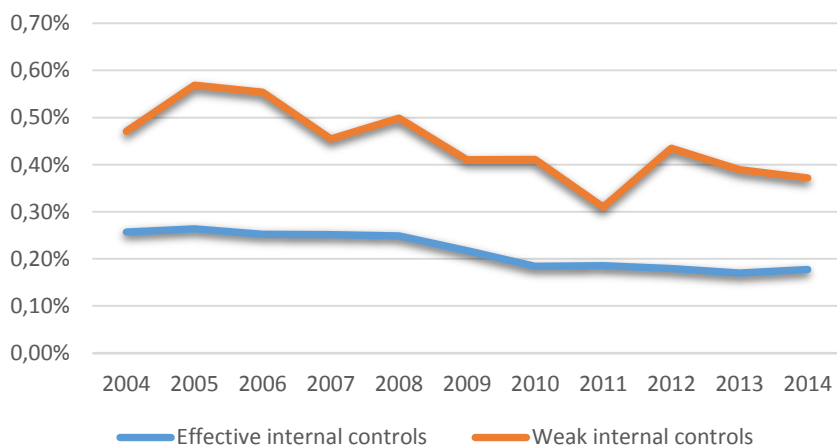
Notes:

Effective internal controls = Auditor did not find a material weakness in internal controls.

Weak internal controls = Auditor found one or more material weakness(es) in internal controls.

FIGURE 2

Scaled audit fees



Notes:

An illustrative figure showing the average scaled audit fees ratio for both groups.

Scaled audit fees = Audit fees/Total assets

Effective internal controls = Auditor did not find a material weakness in internal controls.

Weak internal controls = Auditor found one or more material weakness(es) in internal controls.

In order to test hypothesis 1, first, a t-test (mean comparison test) is performed. The sample is divided in two groups: observations with and without a material weakness in internal controls. Comparing the means in the natural logarithm of audit fees of both groups shows that there is a difference in the mean. Table 3 shows that the mean in audit fees is higher for the group with a material weakness in internal controls. The associated p-value (two-tailed) for the hypothesis that suggests that the means for both groups differ is 0.1659, which is not close to a significance level of five percent.

TABLE 3

Two-sample t-test with equal variances (Natural logarithm audit fees model)

Group	Mean	Std. Err.
Effective internal controls (1)	14.053	0.007
Weak internal controls (2)	14.089	0.026
Combined	14.056	0.007
Difference	-0.036	0.026

Notes:

Difference = mean(1) - mean(2)

Ho: diff = 0

Ha: diff < 0

Ha: diff ≠ 0

Ha: diff > 0

P(T < t) = 0.0830

P(|T| > |t|) = 0.1659

P(T > t) = 0.9170

To have a better understanding of the differences in means, a second t-test (mean comparison test) is performed, this time using scaled audit fees (audit fees/total assets) as the dependent variable. Table 4 shows that the mean in the audit fees ratio is higher for the group with a material weakness in internal controls. The associated p-value (two-tailed) for the hypothesis that suggests that the means for both groups differ is 0.0000, which is significant. The mean comparison test suggests that on average companies with a material weakness in internal controls pay more than the double amount of audit fees (when scaled to total assets) compared to companies with effective internal controls.

TABLE 4

Two-sample t test with equal variances (Scaled audit fees)

Group	Mean	Std. Err.
Effective internal controls (1)	0.002	.000
Weak internal controls (2)	0.005	.000
Combined	0.002	.000
Difference	-0.003	.000

Notes:

Difference = mean(0) - mean(1)

Ho: diff = 0

Ha: diff < 0

Ha: diff ≠ 0

Ha: diff > 0

P(T < t) = 0.0000

P(|T| > |t|) = 0.0000

P(T > t) = 1.0000

Simple Regression analysis

The clustered robust linear regression results in table 5 for both audit fees measurements show that a material weakness in internal controls is positively related to audit fees. However, there is a difference in the significance level. The coefficients in the first model imply that based on the sample, on average companies with effective internal controls pay \$1,268,581 (calculated as $e^{14.05341}$) in audit fees, whereas companies with a material weakness in internal controls pay \$1,314,703 (calculated as $e^{14.0891214}$) in audit fees, which is an increase of 3.6%. The p-value (two-tailed) of the independent variable in the model that measures the natural logarithm of audit fees (model 1) is 0.341, which is not close to a significance level of five percent. Therefore, I am not able to draw any conclusions out of it.

The p-value (two-tailed) of the independent variable in the model that measures the scaled audit fees (model 2) is 0.000, which is statistically significant. The simple regression results in the second model suggest that the relation between audit fees and material weaknesses in internal controls is positive. The coefficients in the second model imply that based on the sample, on average companies with effective internal controls pay audit fees that is 0.22% of their total assets, whereas companies with a material weakness in internal controls pay audit fees that is 0.47% of their total assets.

The results of both simple regression models seem to be aligned with results in previous literature. A material weakness in internal controls is generally seen as a determinant that has a positive effect on audit fees. However, only the second model that includes the scaled audit fees confirms previous results in a statistical and significant manner.

TABLE 5
Linear regression – cluster adjusted

Audit Fees	Coefficient		Robust Std. Err.		P> t	
	(1)	(2)	(1)	(2)	(1)	(2)
INTERCEPT	14.053	0.002	0.018	0.000	0.000	0.000
ICW	0.036	0.003	0.038	0.000	0.341	0.000
R^2	<i>0.0001</i>	<i>0.0355</i>				

Notes:

(1) = Natural logarithm audit fees as dependent variable.

(2) = Scaled audit fees as dependent variable.

ICW = Dummy variable that equals 1 if the auditor found one or more material weakness(es) in internal controls.

Number of observations = 32,271

Standard error adjusted for 6,139 clusters based on company code (CIK number)

Considering both the t-test (mean comparison test) and the simple regression analysis, the results in this study suggest that material weaknesses in internal controls are positively related to audit fees. However, there is a difference in the level of significance when audit fees are measured differently. The scaled audit fees model is showing a statistically significant relation between audit fees and materially weak internal controls, which is in line with previous studies. The natural logarithm of audit fees implies a positive but not significant association between audit fees and internal control material weaknesses. This is likely due the fact that the natural logarithm of audit fees does not fully take the size of a company into consideration. Additional mean analysis shows that out of the total sample in this study larger firms pay higher audit fees and are less likely to have a material weakness in internal controls, which can cause inconsistent results in a simple regression analysis. The R-squared in model two is also higher than the R-squared in model one. The proportion of the variance in the dependent variable that is predictable from the independent

variable is higher when audit fees is scaled by total assets. However, further study is needed to evaluate which measure is more accurate in capturing the relation between both concepts in a simple regression analysis.

Multiple Regression Analysis

The simple regression analysis only includes the independent variable in the model. However, to isolate the effect of other determinants of audit fees, control variables are added into the model. In order to test hypothesis 1, a clustered robust linear regression is performed with the natural logarithm of audit fees as the dependent variable. The results in table 6 show that a material weakness in internal controls is positively related to audit fees when other control variables are kept constant. The coefficient of *ICW* is positive (0.45354) and significant at a 1 percent level which implies that companies with weak internal controls pay higher audit fees compared to companies with effective internal controls. Therefore, I can accept the first hypothesis that material weaknesses in internal controls are positively related to audit fees. The results of the control variables will be discussed in the next section where hypothesis 2 is tested.

TABLE 6
Clustered Robust Linear Regression

LN (Audit Fees)	Coefficient	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
INTERCEPT	4.202	0.123	34.07	0.000	3.960	4.443
ICW	0.454	0.029	15.51	0.000	0.396	0.511
SIZE	0.455	0.006	70.50	0.000	0.443	0.468
LAG RESTATEMENT	0.063	0.016	3.91	0.000	0.031	0.095
ROA	-0.285	0.040	-7.15	0.000	-0.363	-0.207
LEVERAGE	-0.273	0.043	-6.28	0.000	-0.358	-0.188
BIG 4	0.559	0.028	19.83	0.000	0.504	0.614
GCMAO	0.184	0.039	4.67	0.000	0.107	0.261
NAS	-0.206	0.034	-6.10	0.000	-0.272	-0.139
R^2	0.6645					

Notes:

Clustered robust linear regression with the natural logarithm of audit fees as the dependent variable.

Variable of interest *ICW* = Dummy variable that equals 1 if the auditor found one or more material weakness(es) in internal controls.

Number of observations = 24,338

Standard error adjusted for 4,669 clusters based on company code (CIK number).

For a comprehensive list of all the variables and their explanations, see the appendix.

In order to test hypothesis 2, nine different clustered robust linear regressions are performed with the natural logarithm of audit fees as the dependent variable (see table 7). Each regression includes a new remediation dummy variable (*REMEDYR*) in addition to the independent and control variables. That way I can assess the consistency of the coefficients in terms of value, sign and significance when new variables are added. The remediation dummy variables equal 1 if a company has effective internal controls at year *T* after disclosing a material weakness in the past. For example: *REMEDYR1* equals 1 if a firm has effective internal controls at year *T* after disclosing a material weakness at *T-1*. *REMEDYR2* equals 1 if a firm has effective internal controls after disclosing a material weakness at *T-2* etc.

ICW in table 7 is consistently positive and significant across all regressions. Earlier in the simple regression analysis, material weaknesses in internal controls did not have a significant effect on audit fees when audit fees were measured as the natural logarithm. However, after including control variables in the regression, it is clear that there is a significant and positive relation between material weaknesses in internal controls and audit fees which is in line with prior literature.

As expected, the client's size is one of the most important determinants in the level of audit fees. *SIZE* is consistently positive and significant across all regressions, which means that larger firms pay higher audit fees. Another important driver is the client's performance. *ROA* is consistently negative and significant across all regressions. Companies that are less profitable (low return on assets) pay higher audit fees compared to companies with high return on assets, confirming that existence of a loss has become an important driver in audit fees. *LAG RESTATEMENT* is consistently positive but not always significant across all regressions. Even though there is not always a significant relation between prior year's restatement and audit fees, the coefficient is always positive so it is likely that companies that restated their prior fiscal year's financial statements, pay higher audit fees. *LEVERAGE* is consistently negative and significant across all regressions. Companies with a higher debt-to-assets ratio pay lower audit fees. This result is not in line with the majority of prior literature. Hay et al. 2006 had shown that leverage is positively related to audit fees, however they also found significant differences in results with studies across different time-spans and regions which might be an explanation to the different results in this study.

Audit fees is also determined by 'auditor attributes'. *BIG4* is consistently positive and significant across all regressions. The auditor type is in the same way as the client's size a large contributor to the level of audit fees. Companies that are audited by a Big-Four audit firm pay higher audit fees.

From the 'engagement attributes', *GCMAO* is consistently positive but not always significant across all regressions. The positive coefficient implies that when auditors provide a modified audit opinion and question the going concern ability of the client, higher audit fees are charged. *NAS* is the only variable where the sign of the coefficient is not consistent across all regressions. The more variables are added, the more positive the coefficient becomes. The provision of non-audit services seems to cause synergies between audit and non-audit work, thus

reducing audit fees. However, the results are not sufficient to draw any precise conclusion out of it.

As explained earlier, in order to test hypothesis 2 each regression in table 7 contains an additional remediation variable. All *REMEDYR* variables are consistently positive and the coefficients are for the most part statistically significant across all regressions. The results imply that companies that disclosed any material weakness in internal controls pay higher audit fees even in subsequent years after correcting material weaknesses. Keane et al. (2012) assessed the subsequent three years after remediation of material weaknesses in internal controls. This study takes five additional years into consideration. The results in this study confirm and broaden the study of Keane et al. (2012). *REMEDYR1-REMEDYR8* are all positive which means that audit fees for firms with effective internal controls that disclosed a material weakness in the past are higher (compared to firms that never disclosed any material weakness) even eight years after disclosing the material weakness. Additional analysis for all firm-year observations shows that the average scaled audit fees ratio for firms with effective internal controls that never disclosed a material weakness in the past (considering a lagged time-span of eight years) is 0.14%. The average scaled audit fees ratio for firms with effective internal controls that disclosed a material weakness in the past (considering a lagged time-span of eight years) ranges between 0.20% and 0.39%, with the latter being scaled audit fees ratio in the first year after remediating a material weakness and the former being scaled audit fees ratio eight years after remediating a material weakness. Therefore, I can accept the second hypothesis that audit fees still remain high after remediation of material weaknesses in internal controls.

Summary results

According to regression analysis based on the audit fees model (discussed in chapter four), material weaknesses in internal controls are positively related to audit fees. Companies with weak internal controls pay higher audit fees compared to companies with effective internal controls. In addition, companies with effective internal controls that disclosed a material weakness in the past pay higher audit fees compared to companies with effective internal controls that never disclosed any weakness.

TABLE 7

Clustered Robust Linear Regression - including remediation variables

LN (AUDIT FEES)	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
INTERCEPT	4.202	4.120	3.833	3.668	3.541	3.426	3.362	3.354	3.365
ICW	0.454***	0.475***	0.432***	0.399***	0.350***	0.362***	0.356***	0.377***	0.436***
SIZE	0.455***	0.458***	0.476***	0.486***	0.493***	0.500***	0.504***	0.505***	0.504***
LAG RESTATEMENT	0.063***	0.052***	0.054***	0.047**	0.028	0.015	0.026	0.027	0.014
ROA	-0.285***	-0.281***	-0.351***	-0.402***	-0.428***	-0.395***	-0.419***	-0.452***	-0.483***
LEVERAGE	-0.273***	-0.280***	-0.337***	-0.367***	-0.397***	-0.418***	-0.433***	-0.430***	-0.426***
BIG 4	0.559***	0.569***	0.492***	0.449***	0.406***	0.372***	0.358***	0.354***	0.371***
GCM AO	0.184***	0.175***	0.160***	0.124**	0.123*	0.055	0.081	0.101	0.087
NAS	-0.206***	-0.203***	-0.162***	-0.107***	-0.065	-0.033	-0.015	0.009	0.028
REMEDYR1 (<i>T-1</i>)		0.360***	0.271***	0.211***	0.219***	0.156***	0.211***	0.181***	0.230***
REMEDYR2 (<i>T-2</i>)			0.311***	0.237***	0.200***	0.204***	0.150***	0.197***	0.129**
REMEDYR3 (<i>T-3</i>)				0.240***	0.166***	0.140***	0.159***	0.075	0.150**
REMEDYR4 (<i>T-4</i>)					0.204***	0.143***	0.127***	0.170***	0.072
REMEDYR5 (<i>T-5</i>)						0.164***	0.113***	0.130***	0.141***
REMEDYR6 (<i>T-6</i>)							0.139***	0.082**	0.102***
REMEDYR7 (<i>T-7</i>)								0.146***	0.110***
REMEDYR8 (<i>T-8</i>)									0.162***
R^2	0.6645	0.6684	0.6891	0.7032	0.7116	0.7191	0.7219	0.7249	0.7255

Notes:

Each regression contains a new remediation variable of interest, a dummy variable that equals 1 if a firm has effective internal controls at year T after disclosing a material weakness at year $T-n$. ***, ** and * mean that the coefficient is statistically significant at a 1 percent, 5 percent and 10 percent level respectively. For a comprehensive list of all the variables and their explanations, see the appendix.

CHAPTER 6: CONCLUSION

There is a general consensus in accounting research after implementation of the Sarbanes-Oxley Act of 2002 that a material weakness in internal control over financial reporting cause higher audit fees. According to the audit risk model, when the client's internal control over financial reporting is assumed to be weak, control risk is high. So, in order to maintain an acceptable level of audit risk, the auditor must increase audit procedures to keep detection risk low (Hogan and Wilkins, 2008). Auditors are required to perform additional procedures in case a weakness exists, which ultimately leads to higher audit fees. The theoretical arguments lead to the first hypothesis in this thesis:

H1: Material weaknesses in internal controls under SOX 404 are positively related to audit fees.

The results in this study show that companies with a material weakness in internal controls pay higher audit fees compared to companies with effective internal controls. Clustered robust regression analysis shows that the coefficient of *ICW*, a dummy variable that equals 1 for firms with a material weakness in internal controls, is positive and significant. On average, companies with effective internal controls pay audit fees that is 0.22% of their total assets, whereas companies with a material weakness in internal controls pay audit fees that is 0.47% of their total assets. Therefore, I can accept the first hypothesis.

Keane et al. (2012) argue that in case a client disclosed a material weakness in internal controls in the past, and currently has effective internal controls, audit procedures performed on those clients should not be significantly different than audit procedures performed on clients that never disclosed any material weakness. That means that audit fees charged for clients that disclosed weak internal controls should decrease in the following years after remediating a material weakness (Keane et al., 2012). The theoretical arguments lead to the second hypothesis:

H2: After remediation of material weaknesses in internal controls under SOX 404, audit fees still remain high in subsequent years.

The results in this study show that companies with effective internal controls that disclosed a material weakness in the past pay higher audit fees compared to firms that never disclosed any

weakness. Clustered robust regression analysis shows that the coefficient of *REMEDYR*, a dummy variable that equals 1 for firms with effective internal controls that disclosed a material weakness in the past, is positive and significant for all of the eight remediation variables. Additional analysis shows that the average scaled audit fees (audit fees divided by total assets) ratio for firms with effective internal controls that never disclosed a material weakness in the past (considering a lagged time-span of eight years) is 0.14%. The average scaled audit fees ratio for firms with effective internal controls that disclosed a material weakness in the past (considering a lagged time-span of eight years) ranges between 0.20% and 0.39%, with the latter being scaled audit fees ratio in the first year after remediating a material weakness and the former being scaled audit fees ratio eight years after remediating a material weakness. That means that the discrepancy in audit fees within firms with effective internal controls (with and without a material weakness in the past) still exists even eight years after remediation of the material weakness. Therefore, I can accept the second hypothesis.

An explanation for the discrepancy in audit fees within firms with effective internal controls (with and without a material weakness in the past) is that auditors charge a so-called ‘risk premium’ that is not related to additional audit hours when a client had previously disclosed a material weakness (Keane et al., 2012). This study shows that establishing and maintaining effective internal controls will benefit firms directly in terms of lower audit fees and avoidance of an additional ‘risk premium’ in subsequent years. It contributes to existing audit fees and internal control literature by showing that once a company discloses a material weakness in internal controls, they are charged higher audit fees in the following eight years compared to firms that never disclosed a material weakness, even when the material weakness no longer exists.

This study is obviously limited by the fact that the actual audit hours is not included in the research model. It is likely that an audit of clients’ with effective internal controls that disclosed a material weakness in the past still require additional audit procedures. Also, it might be the case that these firms have complex operations that require more effort from auditors. If results in regression analysis after including actual audit hours and proxies for firm complexity, such as number of segments, would still show a significant difference in audit fees within firms with effective internal controls (with and without a material weakness in the past), an extensive survey in future research would give more insight into the motives of auditors charging higher audit fees for clients with effective internal controls that disclosed a material weakness in the past. Another

option for justifying the 'risk-premium' explanation could be an experiment with two groups of auditors who will work on an artificial audit plan of the exact same client and determine an approximated audit fee with the only difference being that one group is told that the client has disclosed a material weakness in the past, and the other being told that the client never disclosed a weakness in internal controls. Differences in approximated audit fees between both groups would give more insight into the determination of audit fees from an auditor's perspective.

BIBLIOGRAPHY

- American Institute of Certified Public Accountants. (1983). *Statement on Auditing Standards No. 47: Audit risk and materiality in conducting an audit*. New York: AICPA.
- American Institute of Certified Public Accountants. (1996). *Statement on Auditing Standards No. 78: Consideration of internal control in a financial statement audit: An amendment to SAS-55*. New York: AICPA.
- Arping, S., & Sautner, Z. (2012). Did SOX Section 404 Make Firms Less Opaque? Evidence from Cross-Listed Firms. *Contemporary Accounting Research*(30), 1133-1165.
- Ashbaugh-Skaife, H., Collins, D. W., & Kinney Jr., W. R. (2007). The discovery and reporting of internal control deficiencies prior to SOX-mandated audits. *Journal of Accounting and Economics* , 166-192.
- Ashbaugh-Skaife, H., Collins, D. W., Kinney Jr., W. R., & LaFond, R. (2009). The Effect of SOX Internal Control Deficiencies on Firm Risk and Cost of Equity. *Journal of Accounting Research*, 1-43.
- Association of Certified Fraud Examiners. (2004). *REPORT TO THE NATION ON OCCUPATIONAL FRAUD AND ABUSE*.
- Black, F. (1993). Choosing accounting rules. *Accounting Horizons*.
- Charles River Associates. (2005). *Sarbanes Oxley Section 404 costs and remediation of deficiencies: Estimates from a sample of Fortune 1000 companies*.
- Coates, J. (2007). The goals and promise of the Sarbanes–Oxley Act. *Journal of Economic Perspectives*, 91-116.
- Committee of Sponsoring Organizations of the Tread. (2013). *Internal Control - Integrated Framework Executive Summary*.

- Costello, A. M., & Wittenberg-Moerman, R. (2010). The Impact of Financial Reporting Quality on Debt Contracting: Evidence from Internal Control Weakness Reports. *Journal of Accounting Research*, 97-136.
- DeAngelo, L. E. (1981). Auditor independence, 'low balling', and disclosure regulation. *Journal of Accounting and Economics*, pp. 113-127.
- DeFond, M., & Jiambalvo, J. (1991). Incidence and circumstances of accounting errors. *The Accounting Review*, 643-655.
- Doyle, J., Ge, W., & McVay, S. (2007). Determinants of weaknesses in internal control over financial reporting. *Journal of Accounting and Economics*, 193-223.
- Ferguson, A., Lennox, C., & Taylor, S. (2005). *Audit fee rigidities in the presence of market frictions: evidence and explanations*. Hong Kong University of Science and Technology and University of New South Wales, Kowloon and Paddington.
- Geiger, M. A., & Rama, D. V. (2003). Audit Fees, Nonaudit Fees, and Auditor Reporting on Stressed Companies. *AUDITING: A Journal of Practice & Theory*, 53-69.
- Ghosh, A., & Pawlewicz, R. (2009). The impact of regulation on auditor fees: evidence from the Sarbanes-Oxley Act. *Auditing: A Journal of Practice & Theory*, 171-197.
- Gist, W. E. (1994b). Explaining variability in external audit fees. *Auditing: A Journal of Practice & Theory*, 25-40.
- Hammersley, J. S., & Myers, L. A. (2008). Market reactions to the disclosure of internal control weaknesses and to the characteristics of those weaknesses under section 302 of the Sarbanes Oxley Act of 2002. *Review of Accounting Studies*, 141-165.
- Hay, D. C., Knechel, W. R., & Wong, N. (2006). Audit Fees: A Meta-analysis of the Effect of Supply and Demand Attributes. *Contemporary Accounting Research*, 141-191.
- Hogan, C. E., & Wilkins, M. S. (2008). Evidence on the Audit Risk Model: Do Auditors Increase Audit Fees in the Presence of Internal Control Deficiencies? *Contemporary Accounting Research*, 219-242.

- Hoitash, R., Hoitash, U., & Bedard, J. (2008). Internal control quality and audit pricing under the Sarbanes-Oxley Act. *Auditing: A Journal of Practice & Theory*, 105-126.
- Keane, J. M., Elder, R. J., & Albring, S. M. (2012). The effect of the type and number of internal control weaknesses and their remediation on audit fees. *Review of Accounting and Finance*, 377-399.
- Kinney, W., & McDaniel, L. (1989). Characteristics of firms correcting previously reported quarterly earnings. *Journal of Accounting and Economics*, 71-93.
- Kinney, W., Maher, M., & Wright, D. (1990). Assertions-based standards for integrated internal control. *Accounting Horizons*, 1-8.
- Knechel, W. R. (2001). *Auditing: Assurance and risk*. Cincinnati, OH: South-Western.
- Knechel, W. R., & Payne, J. L. (2001). Additional Evidence on Audit Report Lag. *Auditing: A Journal of Practice & Theory*, 137-146.
- Krishnan, J. (2005). Audit committee quality and internal control: an empirical analysis. *The Accounting Review*, 649-675.
- McMullen, D., Raghunandan, K., & Rama, D. V. (1996). Internal control reports and financial reporting problems. *Accounting Horizons*, 67-75.
- Mock, T. J., & Wright, A. M. (1999). Are audit programs risk-adjusted? *Auditing: A Journal of Practice & Theory*, 55-74.
- O'Keefe, T. B., Simunic, D. A., & Stein, M. T. (1994). The Production of Audit Services: Evidence from a Major Public Accounting Firm. *Journal of Accounting Research*, 241-261.
- Public Company Accounting Oversight Board (PCAOB). (2004). *Auditing Standard No. 2—An Audit of Internal Control over Financial Reporting Performed in Conjunction with an Audit of Financial Statements*.
- Raghunandan, K., & Rama, D. V. (2006). SOX Section 404 Material Weakness Disclosures and Audit Fees. *AUDITING: A Journal of Practice & Theory*, 99-114.

- Rama, D., & Read, W. J. (2006). Resignations by the Big 4 and the market for audit services. *Accounting Horizons*, pp. 97-109.
- Rice, S. C., & Weber, D. P. (2012). How Effective Is Internal Control Reporting under SOX 404? Determinants of the (Non-)Disclosure of Existing Material Weaknesses. *Journal of Accounting Research*, 811-843.
- Ryu, T. G., Uliss, B., & Roh, C.-Y. (2009). The Effect of the Sarbanes-Oxley Act on Auditors' Audit Performance. *Journal of Finance and Accountancy* , pp. 1-7.
- SEC. (1988). *Disclosure Amendments to Regulation S-K, form 8-K and Schedule 14A Regarding Changes in Accountants and Potential Opinion Shopping Situations, Financial Reporting Release No. 31*. Washington, DC: SEC Docket.
- SEC. (2004). *Management's Reports on Internal Control Over Financial Reporting and Certification of Disclosure in Exchange Act Periodic Reports*. Washington, D.C.
- Simunic, D. A. (1980). The Pricing of Audit Services: Theory and Evidence . *Journal of Accounting Research*, 161-190.
- UCLA: Statistical Consulting Group. (2016, June 21). *Regression with STATA*. Retrieved from UCLA Institute for Digital Research and Education:
<http://www.ats.ucla.edu/stat/stata/webbooks/reg/chapter4/statareg4.htm>
- Veenman, D. (2013). *Introductory Guide to Using Stata in Empirical Financial Accounting Research* . Erasmus University Rotterdam .
- Watts, R. L., & Zimmerman, J. L. (1986). *Positive Accounting Theory*. Englewood Cliffs , NJ: Prentice-Hall.
- Zhang, I. X. (2007). Economic consequences of the Sarbanes–Oxley Act of 2002. *Journal of Accounting and Economics*, 74-115.

APPENDIX

Variable	Description
AUDIT FEES	Natural logarithm of audit fees
ICW	Dummy variable that equals 1 if a material weakness in internal controls exists, 0 otherwise
SIZE	Natural logarithm of total assets
LAG RESTATEMENT	Dummy variable that equals 1 if a firm's previous year's financial statements are restated, 0 otherwise
ROA	Return on assets calculated as: (net income/total assets at $T-1$)
LEVERAGE	Debt-to-assets ratio calculated as: ([debt in current liabilities + long-term debt]/total assets)
BIG 4	Dummy variable that equals 1 if firm is audited by a 'Big-Four' audit firm, 0 otherwise
GCMAO	Dummy variable that equals 1 if an auditor provides a going concern - and modified audit opinion, and 0 otherwise
NAS	Proxy for the provision of non-audit services, calculated as: (non-audit fees/total audit fees)
REMEDYR	Dummy variable that equals 1 if a firm has effective internal controls at year T after disclosing a material weakness in the previous years. For example: <i>REMEDYR1</i> equals 1 if a firm has effective internal controls at year T after disclosing a material weakness at $T-1$.

