The relationship between audit quality and audit fees.

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ABSTRACT: This study examines the relationship between audit fees and audit quality. This is done through looking at the direct relationship between audit fees and audit quality but also through looking at an indirect relation between the determinants of audit quality and audit fees. To measure audit quality discretionary accruals are estimated using the Modified Jones model. The sample consists of 3,160 observations of U.S. listed companies with available financial data of one or more of the fiscal years 2011 until 2013. In this research, the following results emerge. First, the results of this research show that audit quality and audit fees have a positive relationship. This implies that auditors ‘independence can be impaired by creating an economic bond with the client. Secondly, a relationship was found between audit firm size and audit fees and industry specialization and audit fees. However, no relation was found with audit quality, indicating that higher audit fees for audit firm size and industry specialization, primarily are derived from higher reputation for bigger audit firms and industry specialists.
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1. Introduction

A financial statement should give a true and fair view of the financial position of a firm. This is the primary goal of performing an audit. However due to big auditing scandals in the beginning of this century like Enron in 2001 and WorldCom 2002 a lot of financial statement users have lost their confidence in the credibility of financial statements and the need and quality of performing an audit.

This lead to an overload in scientific and political attention towards auditing around this period. The political society directly reacted by introducing new rules to increase the quality of the auditing profession (SOX). Researchers performed a lot of different studies towards understanding how different factor could influence audit quality. DeAngelo (1981) researched the relation between auditor size and audit quality; Ghosh and Moon (2005) studied the relation between audit tenure and audit quality; Ashbaugh et al. (2003) studied the relation between non-audit services and audit quality and a lot more research has been performed into this area of research (Francis, 2004; Deis & Giroux, 1992; Imhoff, 2003).

However, after introducing the new rules and increased knowledge in subjects surrounding auditing, still more auditing scandals came to light; Lehman Brothers hided over $50 billion in loans disguised as sales and Berns L. Madoff Investment Securities LLC tricked investors out of $64.8 billion with the help of his accountants. These scandals are examples that the new rules are not waterproof. To prevent future scandals it is important to know as much as possible about auditing and the subjects surrounding it to prevent and how high audit quality is achieved.

One of the most important determinants of audit quality is audit fees. Fees paid to auditors can affect audit quality in two ways: large fees paid to auditors may increase the effort exerted by auditors, hence, increasing audit quality (Hoitash et al., 2007). Alternatively, large fees paid to auditors, particularly those that are related to non-audit services, make auditors more economically dependent on their clients. Such financial reliance may induce a relationship whereby the auditor becomes
reluctant to make appropriate inquiries during the audit for fear of losing highly profitable.

The theory of economic bonding has been confirmed by multiple studies (Frankel et al, 200; Kinney et al, 2004, Sharma & Sidhu, 2001). Those studies researched if high audit fees in relationship to total revenue of audit firm could impair the independence of the auditor. They found when audit fees got higher absolute and in ratio with total revenue lead to higher earnings management and restatements and less going concern opinions. What indicates lower audit quality (DeAngelo, 1981; Francis, 2004).

However recent analysis shows that between the years the 2002-2011 the ratio of audit fees paid for every $1 million in revenue was declining steadily after 2008, with the lowest percentage in 2011 (Cheffers & Whalen, 2012). At the same time audit fees were decreasing an increase in restatements occurred (Cheffers et al., 2011). Blankey et al. (2012) also found negative relation between restatements and audit fees. They investigated this relationship between audit fees and subsequent financial statement restatements in the years following the Sarbanes-Oxley Act of 2002 (SOX). After controlling for internal control quality, he found that abnormal audit fees are negatively associated with the likelihood that financial statements are subsequently restated. Further Hoitash et al. (2005) found that after passage of the Sarbanes-Oxley Act (2002) that limited the types of non-auditing services auditors can provide to audit client, no association existed between discretionary accruals and audit fees, where he found an positive relation between total audit fees and discretionary accruals before passage of SOX.

The research question of this paper will examine if there exists a positive or negative relationship between audit fees and audit quality. Thus if higher audit fees creates economic bonding and therefore, impairs audit quality. The research question therefore, will be “What relationship does there exists between audit fees and audit quality. To examine this relationship this study will look at U.S. firms with assets over the one million in the year 2011, 2012 and 2013. Data was picked from 2010-2013, because 2010 is necessary to calculate discretionary accruals for 2011.
This research found by using discretionary accruals as proxy for audit quality that audit fees have a significant positive relationship with audit fees. This provides evidence on the already existing literature that economic bonding is an important factor in determining the quality of an audit. This study further found that industry specialization and audit firm size have a significant positive effect on audit fees, however do not significantly influence audit quality. Conforming research of Moizer (1997) that Big-4 and industry specialization have been successful in differentiating their products, without increasing the quality of their research.

This study contributes on the already existing literature in a couple of ways. Previous studies mostly focused on non-audit fees (Frankel et al, 2002; Kinney et al, 2004; Sharma & Sidhu, 2001) where this study only focus on audit fees and not non-audit fees. Further most research covering this topic already dates of the previous decennium and could be already outdated due to changes in auditing regulations and a changing economic environment. This study will therefore give a more current image of the relation of audit fees and audit quality. Further this research also investigates the most important determinants of both audit quality and audit fees to provide extra knowledge towards the relationship between audit quality and audit fees.

The following components will be addressed in this paper. First, a literature review section is provided; in this paragraph an overview is given of the important subjects for this research. Second, the development of the hypotheses are discussed. Third, the research methodology, regression formulas and sample are given. Fourth, the results are presented. Finally, the conclusion will be stated.
2. Literature Review

In the literature review already existing literature that is linked towards audit quality and audit fees will be discussed. This will be done in the respective order. First an explanation will be given of audit quality and it is most important determinants, the most important determinants of audit quality that will be described are: audit effort, audit firm size, industry specialization and auditor tenure. After that a section will be spent on audit fees and it is most important determinants. As last an review will be given about the existing literature on auditor independence.

2.1 Audit Quality

DeAngelo (1981) defined audit quality as the joint probability that an existing material error is detected and reported by an auditor. This means that audit quality is determined by two different factors; first the ability from the auditor to detect an existing material error and; secondly the probability that an auditor reports the existing material error. The purpose of an audit is to provide an objective independent examination of the financial statements, which increases the value and credibility of the financial statements produced by management, thus increase user confidence in the financial statement, reduce investor risk and consequently reduce the cost of capital of the preparer of the financial statements. The only way that these objectives can be accomplished is when the users of the financial statements believe in the qualities of the audit and auditor, thus that an auditor can increase the value and credibility of the financial statement with her or his services. Audit quality plays an important role in this process, because only by providing audits of high quality, people will entrust auditors in being able to perform services of high quality that increases the trust, credibility and correctness in/of the financial statements. Some studies have been performed that show the show the importance of audit quality for stakeholders.
Lennox and Pittman (2011) showed that choosing to be audited and also the reputation of the chosen auditor delivers value to the company, here in the form of lower credit ratings, because stakeholders assign value to high audit quality. Chaney & Philipich (2002) found that investors downgrade financial statements audited by an Arthur Anderson, when their reputation suffered an enormous loss. This lead to a decrease in share price. Both the study of Lennox and Pittman (2011) and Chaney & Philipich (2002) show that stakeholders of a company attach value to an audit, or more specifically to an audit of high quality. This is because there exists an information asymmetry between shareholders and managers and an audit is one of the most prominent ways to insure the quality of the financial statement and the information in it.

Francis (2004) reviewed empirical research about audit quality over the past 25 years, mainly from the United States, in order to find out what currently is known about audit quality with respect to publicly listed companies. Audit quality can range from very high to very low quality. At the lower end of audit quality stands audit failures. Audit quality and audit failures are inversely related: the higher the failure rate, the lower the quality of auditing. An audit failure occurs in two circumstances: when generally accepted accounting principles are not enforced by the auditor (GAAP failure) and when an auditor fails to issue a modified or qualified audit report in the appropriate circumstances (audit report failure). In both cases, the audited financial statements are potentially misleading to users. Outright audit failures are difficult to determine with certainty, but can inferred from several sources including auditor litigation, business failures and SEC sanctions for audit failures and earnings restatements filed with the SEC.

Francis found that overall the ex-posts evidence of audit failures from SEC sanctions, auditor litigation, business failures and earnings restatements only take place in very small occasions, much less than one percent annually. Evidence indicates that there exists a very low failure rate with material consequences. However, in evaluating audit quality it is important to assess both the benefits and costs of auditing, because when audit fees are relatively large and audit failures are
relatively low, it is possible that audit fees cost too much relative to the benefits of it. However, Francis found when firm size becomes larger, the expected average audit fees as percentage of the sales decrease and auditing is relatively inexpensive, costing less than 0.0001 of the aggregated client sales. Looking at the results of this research and that of Lennox and Pittman (2011) and Chaney & Philipich (2012) it can be concluded that audit fees are relatively low in relation to the benefits that an audit delivers.

The paper of Francis (2004) makes it clear that audit quality is an abstract concept and there is not a common variable, which shows the level of audit quality. Audit quality has to depend on a proxy that is inversely related to audit quality. The most used proxies are earnings management, restatements and going concern opinions (Frankel et al., 2002; DeAngelo, 1981; Becker, 1998; Kinney et al., 2004; Sharma and Sidhu, 2002; Defond, 2002).

Earnings management is a strategy used by the management of a company to deliberately manipulate the company's earnings so that the figures match a predetermined target. This practice is carried out for the purpose of income smoothing. Thus, rather than having years of exceptionally good or bad earnings, companies will try to keep the figures relatively stable by adding and removing cash from reserve accounts. Abusive earnings management is deemed by the Securities & Exchange Commission to be "a material and intentional misrepresentation of results". Earnings management is measured by discretionary accruals. Accrual accounting is matching revenues to expenses (the matching principle) at the time in which the transaction occurs rather than when payment is made (or received). This method allows the current cash inflows/outflows to be combined with future expected cash inflows/outflows to give a more accurate picture of a company's current financial condition. Discretionary accruals happen when the company uses its own discretion in deciding whether or not to make the accruals. This means that a company may or may not choose to recognize a future expense, by making an accrual for it even when GAAP does or does not require an accrual for it. By measuring discretionary
accruals, earnings management can be estimated and higher earnings management is related to audit quality.

Restatements are revisions and publication of one or more of a company's previous financial statements. A restatement is needed when it is determined that a previous statement contains a material inaccuracy. This can result from accounting errors, noncompliance with accounting rules fraud, misrepresentation or a simple clerical error. Thus, more restatements result in a lower audit quality, because the auditor did not do a good job in finding the misstatements or non-compliances in financial statements.

A going concern opinion is a particular type of audit opinion issued by auditors. A going concern opinion is an unqualified audit opinion with required explanatory language, where the explanatory language pertains to the entity’s ability to continue as a going concern. Auditors should issue a “going concern opinion” when the entity’s financial condition is such that there is doubt as to the firm’s ability to continue as a going concern. By looking at audit failures of wrongly issued going concern opinions or situations where a going concern opinion was not issued but was needed audit quality can be measured.

Earnings management, restatements or wrongly or not issued going concern opinions have a negative effect on the financial statement and decreasing information usefulness for the stakeholders. Auditors have a job to increase information usefulness and reliability of the information provided to the stakeholders, therefore if an auditor allows a high level earnings management or allows a financial statement to contain material inaccuracies or wrongly or not issues a going concern opinion, then there is prove of delivering a low job quality.

Furthermore, there also exists a difference in actual and perceived audit quality. Perceived audit quality can differ from actual audit quality, because persons are not always able to obtain all information and are not always objective. Perceived audit quality studies (Gosh & Moon, 2005; Teoh and Wong, 1993) primary look at how stakeholders react to certain news rather than looking at audit failures. Gosh & Moon use earnings response coefficients from returns-earnings regressions as a
proxy for investor perception of earnings quality (audit quality). Teoh and Wong (1993) examine whether the earnings response coefficient differs between Big Eight (B8) and non-Big Eight (NB8) audited firms. This tests if investors perceive Big Eight audit firm to perform audits of higher quality relative to non-Big Eight audit firms.

2.1.1 Audit Effort

The amount of time spend on a job is one of the most important factors determining the outcome and quality of an activity. If no time or almost no time is spend on an audit the quality of the audit would be probably be very low, because then an auditor cannot perform the needed tests and analyses to determine the correctness of the financial statement. It also matters how that time is spend, because you can spend allot time on something without increasing the quality. Furthermore, spending more time doesn’t has to have influence audit quality because audit quality is the joint probability that an existing material error is detected and reported by an auditor. Audit effort can only effects the probability that an existing material error is detected and not the probability that the existing material error is reported. Different studies researched the effect of spending more effort and hours in an audit and the effects on audit quality (Caramanis & Lennow, 2008; Lobo & Zhao; 2013). Those studies controlled for client company size and complexities, because the needed effort strongly depends on the characteristics of the client.

Caramanis & Lennow (2008) researched the impact of audit effort and earnings management by using a database of worked hours by auditors in Greece. Caramanis & Lennow found three relations by using their information on worked audit hours and measuring earnings management by estimating abnormal accruals using the model of Jones (1991). First, companies are more likely to report income-increasing abnormal accruals than income-decreasing abnormal accruals, when audit hours are lower. Second, the magnitude of income-increasing abnormal accruals is negatively related to audit hours. Third, companies are more likely to manage earnings upwards to just meet or beat the zero earnings benchmark, when auditors work fewer hours. These results are consistent with managers reporting aggressively
high earnings when audit effort is low. This means that earnings management is higher when the auditor relatively doesn’t spend much effort in the audit, allowing more room for inconsistencies. Thus, a negative correlation between audit efforts and audit quality can be found.

Lobo & Zhao (2013) used restatements to proxy for audit quality and examine the relation between audit effort and subsequent restatements. They documented that auditor risk adjustment, there is a positive relation between audit effort and quarterly restatements is caused by two upwards biases that conceal the predicted negative association between audit effort and annual restatements. This first source of bias arises, because an auditor responds to increases in misstatement risk by increasing audit effort. This creates a bias in the relation between audit effort and misstatements. The second source of bias arises because prior research fails to separate restatements of audited reports from restatements of unaudited reports when estimating the relation between audit effort and restatements. After controlling those two biases Lobo and Zhao (2013) found a negative relation between audit effort and restatements, concluding a higher audit quality when the audit effort is higher.

Both studies found that when audit effort is higher, measured through audit hours, it had an positive effect on audit quality, this is caused because spending more time on the audit will allow auditors to test the financial statement more extensive

2.1.2 Audit firm size

One of the most important determinants of audit quality is the size of the audit firm that performs an audit. DeAngelo (1981) performed one of the first studies that showed that there exists a relation between audit firm size and the quality of an audit. She stated that this relation exists because audit technology is characterized by significant start-up costs and so incumbent auditors earn client-specific quasi-rents. These quasi-rents, when subject to loss from discovery of a lower quality audit than promised, serve as collateral against such opportunistic behavior. This implies that, ceteris paribus, the larger the auditor as measured by the number of current clients
and the smaller the client as a fraction of the auditor's total quasi-rents, the less incentive the auditor has to behave opportunistically, and the higher the perceived quality of the audit.

The fact that bigger audit firms perform audits of higher quality is reflected in nowadays audit profession. The audit environment is divided between Big-4 audit firms and non-Big-4 audit firms. Big-4 audit firms because the number of big audit firms changed over time due mergers and collapses of audit firms. Most of the auditing market is dominated by the Big-Four accounting firms. Those four accounting firms have a combined revenue of 110 billion dollar in 2012, where the total fees of the audit profession earned in 2012 are 165.4 billion (Jones, 2013). This comes down to that Big-Four accountants firms have market share of roughly 67 percent of the total earnings in this sector. Studies of Turner and Senetti (2001) and Becker et al (1998) also found a relation between audit size and audit quality, by researching the difference between Big-X audit firms and non-Big-X audit firms. Turner and Sennetti (2001) examined the relation between auditor size and the likelihood of restatement. They found using a model that incorporates ex ante risk statement risk that Big-Six accountants firms are less likely to restate their financials statement to correct an existing material error. This show that bigger audit firms perform audits of higher quality relative to smaller audit firms.

Becker et al (1998) studied the difference between audit Big-Six auditors and non-Big-Six auditors and their relation with earnings management. Earnings management was captured by discretionary accruals that are estimated using a cross-sectional version of the Jones 1991 model. Specifically, clients of non-Big Six auditors reported discretionary accruals that were, on average, 1.5-2.1 percent of total assets higher than the discretionary accruals reported by clients of Big Six auditors. Also, consistent with earnings management is that the mean and median of the absolute value of discretionary accruals are greater for firms with non-Big Six auditors. This means that bigger auditor firms report lower discretionary accruals than smaller audit firms, concluding that bigger auditing firms perform audits of higher quality. They explain this by the fact that Big-Six audit firms have a larger client base, what
means that Big-Six auditors have more to lose in the event of a loss of reputation. This larger potential loss results in a relatively greater incentive to be independent compared to non-Big-Six firms that have a much smaller client base. The higher quality of Big Six auditors will tend to reduce the incidence of income-increasing earnings management.

Other reasons for relative higher quality by Big-X audit firm to non-Big-X audit firms is that Big-X auditors can draw on the expertise of their international network and smaller offices do not have that ability (Francis & Wang, 2008; Carson, 2009). This gives audit firms with an international network the ability to use their enormous employee’s base, with their enormous experience and knowledge they possess. Furthermore, research indicates that Big-Four auditors possess more reputational incentives than smaller auditors, because no single client is important enough to a large audit firm to impair their independence and the audit firm has a greater reputation to lose because of their brand name and therefore have incentives to protect their reputation by providing high quality services (Francis, 2004). Further it could be argued that Big 4 firms provide superior audit quality as their sheer size can support more robust training programs, standardized audit methodologies, and more options for appropriate second partner reviews. It is also argued by Caramanis & Lennox (2008) that Big-X audit firms spend more time on an audit then non-Big-X audit firms.

Blokdijk et al (2006) found that Big 5 and non-Big 5 auditors spend equal amounts of total audit effort at an audit. This result implies that quality differentiation across auditor types is not associated with greater input intensity. If a closer look is taken at the distribution of the audit effort. It is found that Big 5 firms spend relatively more time planning the audit and assessing internal controls, and relatively less time doing test of details and completion than non-Big 5 auditors. By exploring the determinants of effort and mix Blokdijk found that Big 5 and non-Big 5 auditors have a different response to client size, their implementation of the business risk approach to audits, and reliance on internal controls. The results conclude that
the documented quality difference between Big and non-Big auditors is due to how they audit, i.e., their audit technologies, rather than how much they audit.

2.1.3 Industry Specialization

Another characteristic that is argued to have an influence on the quality and fees of an audit is industry specialization. Industry specialization happens when an audit firm primary focus lies on clients of one industry. It is argued that industry specialists possess greater audit assurance, because they possess industry specialist’s knowledge and expertise and therefore perform audits of higher quality. Balsem et al. (2003) examined this by comparing the amount of discretionary accruals and earnings response coefficients of clients of industry specialists and non-industry specialists. They found, using six different ways to capture the different aspects of the auditor’s industry activities, a significant negative association between five of the six different ways to capture the different aspects of the auditor’s industry activities and the client’s absolute discretionary accruals. Further, evidence was found of nonlinearities in the effect of specialization on accruals; as market shares increase, absolute discretionary accruals increase initially, but decline thereafter at an increasing rate. There also exists a significant positive association between the six measures of auditor industry specialization and client earnings response coefficients. The negative association between auditor industry specialization and client absolute discretionary accruals that was observed, indicates that on average specialist auditors reduce earnings management by their clients. The positive association observed between auditor industry specialization and the earnings response coefficient indicates that on average, specialist auditors increase the markets perception about the quality of these earnings. The findings suggest that industry specialist auditors contribute positively to the earnings quality of their clients and to the perception of that quality in the financial markets, increasing the audit quality.

Further Velury (2003) researched if clients of industry-specialist auditors are less likely to manage earnings relative to clients of non-specialist auditors. Thus looking if industry-specialists auditors are more effective in constraining earnings
management relative to non-specialist auditors. Velury looked at two specific high risk contexts. Firstly he looked whether firms are highly leveraged and secondly whether the accrual generating ability of the firm is substantial auditors examines whether client-firms of industry specialist auditors are less. The author looked at those two specific situations, because it was documented that in those two situations the level of earnings management is relatively high. Discretionary accruals were used as a proxy for earnings management. This study found that there is less earnings management for specialist clients, consistent with industry-specialists constraining earnings management when the accrual generating ability of the firm is substantial. Such an association was not apparent for highly leveraged firms. The results of this paper indicate that quality of the audit is partly a function of auditor industry expertise as well. Such an association is, however, context-specific.

Kwon et al. (2007) looked at the role of auditor industry specialization in an international setting and examined if the impact of industry specialist on earnings quality is dependent of the legal environments. In countries with a weak audit profession environment, the role of an audit firm becomes more important in determining the audit quality (Michas, 2011). Kwon et al. found that clients of industry specialist auditors have lower discretionary current accruals and a higher earnings response coefficients than clients of non-specialist auditors. Also the impact of the auditor industry specialization on earnings quality increases as the legal environment weakens. The results confirm the competitive advantage that industry specialists have relative to non-industry specialists, because their higher industry expertise and knowledge.

Those studies found that industry specific experience can give industry-specialists knowledge and expertise in identifying industry-specific issues and discovering firm-specific problems and misstatements. What creates an advantage in terms of quality dealing with those clients with respect to non-industry specialized audit firms. This advantage of expertise and experience possessed by industry-specialists is likely to lead to higher quality audits and higher quality earnings relative to non-industry specialists.
2.1.4 Auditor Tenure

Another factor that could influence audit quality is audit tenure. Auditor tenure means the years that the same audit firm continuously performs the audit of a certain client. By performing an action, in this context an audit multiple times the person(s) performing that action could be better able to perform that action. Another view on auditor tenure is that it could impair auditor independence, because being long associated with a certain company, could increase the chance of developing a certain relationship with that company, what could cloud the mind of the auditor when making an important decision.

Johnson et al. (2002) investigated this phenomenon by researching whether audit-firm tenure is related to financial reporting quality. An audit can enhance the quality of the financial information reported by the management. However, either a learning curve, because of obtaining client-specific knowledge, or the incentive that stress retaining or profiting from new clients could diminish the audit’s contribution to the quality of financial reports. Similarly, a shift in incentives resulting from a sense of complacency or a learned confidence in the client could gradually lessen the audit’s contribution to the quality of financial reports. The authors divided audit tenure into three groups, clients that have been audited by the same firm for two to three (short tenure), four to eight (medium tenure), or nine or more (long tenure) years. The short, medium and long tenure were examined by looking at the number of reported accruals belonging to clients in relation with the tenure. Short relationships between an audit firm and a client are associated with higher absolute levels of unexpected accruals and accruals that are less persistent in subsequent earnings. Further no evidence is found of a statistically significant difference in the properties of the accruals reported by clients with medium or long relationships with their auditors.

Stanley and DeZoort (2007) also investigated the relation between audit firm tenure and audit quality, but uses financial restatements as proxy for audit quality. Their research is an extend of the existing audit tenure literature by assessing
restatement-bases reporting failures using dimensions of auditor expertise and independence previously assumed to underlie short and long audit tenure problems, what the side of Johnson et al. (2002) did not do. Matched samples of restatement and non-restatement companies were used to find a relation between audit firm tenure and audit quality. For short tenure engagements Stanley and DeZoort found that auditor industry specialization and audit fees are negatively related to the likelihood of a restatement. This result is consistent with concerns about reduced audit quality due to a lack of client-specific knowledge and low audit fees on new audit engagements. This and other studies (Geiger and Raghunandan, 2002; Myers et al., 2003) showed that longer audit tenure has a bad influence on audit quality and that short audit tenure is accompanied with financial reporting problems due to a lack of client-specific knowledge.

2.2 Audit Fees

In 2000 the Securities and Exchange Commission (SEC) adopted a new rule that requires companies to disclosure information about fees paid to auditors. Audit fees and in a more second position non-audit fees are the primary and sole activities that an audit firm performs. Meaning that the fees of performing those activities are the major part of the income that an audit firm creates. This causes that audit fees play an important role in the audit profession, both negatively and positively.

What determines the fee an auditor will receive for the delivered services? Every product or services has two components determining the price the company will set. The costs that the auditor makes, direct or indirect and a bid-up price. If a look is taken at the costs that an auditor has to make to perform an audit, found is that those costs are divided into direct and indirect costs. Indirect costs will primary exists out costs to use and maintain building where the employees work. Where direct costs will primary exist out costs associated with employee’s salary, because audit firms falls in the category selling man hours. Thus audit fees are influenced by the costs that an audit firm links towards the activities performed by an employee. Employees cost linked towards one specific job can be divided into hourly rate and
time worked or the effort put into the audit. An audit fee is a product of unit price and the quantity of audit services demanded by the management of the auditee. Therefore, differences in audit fees can show the effect of differences in quantity or in quality (Simunic, 1980).

The amount of labor resources used by an audit firm differentiates, the amount used depends on the characteristics of the client. An audit firm wants to provide an certain level of assurance (output), while the resources (input) measure the effort required to produce that certain level of assurance. O'Keefe et al (1994) examined the relation between client characteristics and the nature and mix of labor resources used by an international CPA (Certified Public Accountant) firm to obtain a desired level of assurance that clients' financial statements are free of material misstatements. They find that size, complexity and risk measures explains about 80 percentage of the cross-sectional variation in audit hours. Further evidence is found that, ceteris paribus, audit effort is a concave (from below) function of client size. This means that size, complexity and risk measures play an important role in determining the audit fees.

Chan et al. (1993) showed that client size is by far the most significant explanatory variable in determining audit fees. Client size, whether proxied by turnover or total assets, has a dominant effect on the level of audit fees. The client size variable on its own explained 77 per cent of variance in audit fees. Furthermore, auditors included elements of risk client's potential for financial distress, failure to detect client errors by the auditor, and quality of client's internal accounting systems in the price of the audit. Thus the auditor increases the audit fees if it is expected that audit risk is relatively high what would increase litigation risk or decrease the auditor’s reputation. Ghonthier-Besacier and Schatt (2007) also found that audit fees depend on the size of the client and the risk associated with performing an audit.

That client size is one of the most important determinants of audit fees is rather obvious, since auditors’ fees are paid according to the amount of time spent completing a given job. The bigger companies are the higher the number of transactions that take place is. This requires more hours for an auditor to inspect all
transactions. Consequently, a positive correlation between the size of the audited company and the fees paid to the auditors can be explained by the higher number of hours billed. The client’s financial situation, namely the risk of failure, presents a potentially significant element to be considered by auditors due to the legal proceedings that could eventually result in the case of bankruptcy and the considerable losses that this could produce. Anderson and Zeghal (1994) and Pong and Whittington (1994) argue that the risks associated with legal liability is greater when the audited company face high change of failure. This is caused by the fact that stakeholders from the audited company often blame and sue an auditor for not adequately performing their job in times of failure. An auditor also faces more risk that a client will not pay the predetermined audit fees, when the company faces high change of failure. Increased litigation risk and a decreased ability to pay the predetermined audit fees will increase the audit fees in form of “coverage”.

Further audit fees are affected by a technique called low-ballling. Low-ballling is a selling technique in which an items or service if offered at a lower price than is actually intended to be charged, after which the price is raised to increase profits. This technique is used to sell or acquire new clients. This technique is also used in the auditing environment.

Simon and Francis (1988) studied the presence and magnitude of audit fee price cutting on of firms that changed from auditor. They found a significant fee reduction in the initial engagement year that averaged 24 percent of normal fee levels for ongoing engagements, an average fee reduction of 15 percent for each of the next two years, but by the fourth year of the new auditor the fee had increased to normal levels for continuing engagements.

2.2.1 Audit firm size

Audit firm size has grown synonym with higher audit quality however as shown by previous studies this can caused by their ability to draw on their international expertise and the way they spend their audit effort (Francis & Wang, 2008; Carson,
2009; Blokdijk, 2005), this doesn’t directly lead to higher costs for the big international audit firms. However higher quality services are normally associated with higher prices.

Palmrose (1986) researched the relation between audit fees and auditor size and more specifically the distinction between Big-Eight audit firms and non-Big-Eight audit firms. To find the relation between audit fees and auditor size a pricing model was used with different variables to account for the different variables. The pricing model was used on a sample of 1200 companies from 39 industries, only U.S public and nonpublic companies were included in these data sources. Palmrose observed that Big Eight firms received higher audit fees, this is consistent with either higher quality services or monopoly pricing by the largest suppliers. To distinguish between these two competing explanations requires data on audit production and cost functions, which are generally unavailable. Palmrose used Simunic's (1980) approach to give some insight into this and obtained data about total hours worked on the audit engagement by audit firm personnel. After substituting audit hours for audit fees in the regression mode the results were similar to those obtained in the earlier tests. The similarity of results supports the argument that the Big Eight provides higher levels of assurance (higher quality) to clients.

Che-Ahmad and Houghton (1996) also performed a study to research the relation of audit fee (audit fee premiums) and audit size. This research specially looked at the market for medium-size U.K. clients, whereas most other studies in this research subject, primary focused on another section of the audit market, in particular the large client section. However this is also one of the limitations of this study, because the conclusions drawn cannot be generalized, towards large audit clients. Their H0 hypothesis is that in a given year, the audit fees paid by medium-size U.K. auditees to Big Eight audit firms are not significantly higher than to non-Big-Eight firms, all other things being equal. If this hypothesis is rejected, there is evidence consistent with a price or fee premium in the audit services market for Big Eight auditors. Given the theory noted above, this would support the perception that the Big Eight audit firms are quality- differentiated auditors for this important
section of the market, the so-called “medium-size” auditees. If the hypothesis is not rejected, there is evidence that a fee premium does not exist and that in the section of the market under investigation there is no discernible “quality” differentiation between Big Eight and Non Big Eight auditors. Che-Ahmad and Houghton found that their hypotheses was not significant, meaning that a price premium is paid within the medium-size U.K. clients market.

Most of the studies that researched the size of an audit firm and the relation that is has with audit fees, primary focused on the difference between small and the Big-X audit firm, however not much studies have been performed about pricing differences arising from product differentiation among small audit firms. Niemi (2004) extended the literature by examining the relation between auditor size and audit prices. This study provided evidence that an audit is not perceived as a standard product by the audit client even at the lower end of the audit market. On the contrary, the pricing differences among the small audit firms indicate that some of these firms have been able to establish a reputation higher that the generic reputation of the auditing profession. More specifically, using a sample of hourly billing rates of over 100 small Finnish audit firms, the study documented a positive association between audit pricing and auditor size. In addition to auditor size, technical capability also seems to increase auditor remuneration: auditor characteristics such as the level of education, the working experience and the certification type are found to be positively associated with hourly fee rates.

The relation between audit fees and auditor size, seems to be fully driven by the ability of big audit firms to perform audits of higher quality then smaller audit firms can perform. Moizer (1997) took another direction determining the reason of the existing difference of audit fees between larger and smaller audit firms. He looked at it as the ability of the largest international audit firms to create a reputational fee premium. The largest international audit firms have been successful in differentiating their products, which has enabled them to charge higher fees than other auditors. Our better said the presence of the biggest audit firms makes an economic difference, either directly in the form of higher audit fees or indirectly in
the form of more favorable market prices for their clients, when compared with smaller firms. This results to a Big Six audit fee premium between 16 and 37 percentage across the surveyed countries. One explanation given for the higher audit fees is the signaling theory. This theory does not require higher audit quality, it requires that market participants believe that large international audit firms are perceived to perform audits of high quality, probably because they cost more. This leads that the level of audit fees is seen as a measure of quality similar to the ‘prestige pricing’ of products such as perfume and champagne, where the price is taken as a measure of quality. So in a competitive market, audit prices can vary if the clients believe that the quality of audits varies.

2.2.2 Industry specialization

Looking at the differences between non- and industry specialists, industry specialization audit firms are able to spread industry-specific training costs over more clients producing economies of scale and provide audits of higher quality. Industry specialization is argued to be used as differentiation strategy the same way as audit firm size is used as differentiation strategy. Industry specialization is also believed to result in increased quality of the audit. Crashwell et al. (1995) posits that Big-8 premium exists out two separate components of audit pricing. Firstly a general brand name premium, representing positive returns to brand name development and maintenance. Secondly an industry-specific premium, representing positive returns to investment in industry specialization by subsets of Big-8 accounting firms, above and beyond general brand name investments. Crashwell et al. found hat for industries deemed to have specialists, specialist Big-8 auditors earn on average a 34 percentage premium over non-specialists Big-8 auditors. If clients voluntarily hire industry specialist’s auditors with higher audit fees over non-specialists that are also licensed to legally perform audits that is evidence of a successful product differentiation strategy. The successful product differentiation strategy is fueled by the higher perceived audit quality relative to non-industry specialists and the thereby arising reputation.
Defond et al. (2000) also examined if auditor industry specialization leads to higher audit fees. They researched this by looking at the audit fees of industry and non-industry specialists in the environment of Hong Kong. They hypothesized that industry specialization can be used to create a fee premium or to create a large market share that is used to achieve production economies leading to lower-priced audits. Defond et al. finds that Big 6 industry specialists earn a premium of 29 percent over Big 6 non-specialists. They further found that another large local audit firm Kwan Wong Tan & Fong did not earn a fee premium but used industry specialization to create a basis for production of economies.

This leads us to expect that indeed industry has a positive effect on audit fees. This is properly caused by that industry specialization is associated with higher audit quality (Velury, 2003; Balsem et al., 2003; Kwon et al., 2007). Because like auditor size, industry specialization also creates and brand reputation in industry where that firm is one of the market leaders.

2.3 Auditor Independence

However there does not only exists a positive relation between higher audit fees and audit quality. As stated before audit quality is defined as the joint probability that an existing material error is detected and reported by an auditor. Being able to detect an existing material error is not enough, to provide higher audit quality. As shown before higher audit fees are argued to provide higher audit quality (Caramanis & Lennow, 2008; Lobo & Zhao, 2013). But an auditor also has to report that existing material error. Reporting that existing material error dependence on the auditor independence. Auditor independence defined as a standard by the American Institute of Certified Public Accountants (AICPA) as follows:

\textit{This standard requires that the auditor be independent; aside from being in public practice (as distinct from being in private practice), he must be without bias with respect to the client since otherwise he would lack that impartiality necessary for the dependability of his findings, however excellent his technical proficiency may be} (AICPA, 1972)
Different studies have been performed to look if high fees, existing out audit fees and non-audit fees, influence the independence of the auditor, what leads towards overlooking and not reporting existing material errors that decreases the quality of the audit. Those studies found some different answers, researching if auditor independence is affected by high fees. Gul et al. 2003 examined DAs and audit fees, since the determination of DAs requires subjective estimates and DAs are, by nature, inherently more uncertain than other items in the financial statements and more difficult to audit. They are also more prone to manipulation. This leads to an upward revision of auditors’ inherent risk assessments in the course of the audit which will be associated with higher audit effort and thus higher audit fees.

Frankel et al. (2002) researched this phenomenon, by using earnings management as auditor independence. Frankel found that non-audit fees have a positive relation with the magnitude of absolute discretionary accruals, and the magnitudes of both income-increasing and income-decreasing discretionary accruals. But there exists a negative association between audit fees and earnings management indicators. Concluding that no association between total fees and earnings management exists.

A study of Chung & Kallapur (2003) also looked at auditor independence as the share of fees received from one client in relation to the total fees of the audit firm and examined if that had a relation with abnormal accruals and any of the client importance measures. No statistically significant association between abnormal accruals and any of the client importance measures were found. They suggested that auditor incentives to compromise independence should increase with the extent of client opportunities and incentives to manage earnings, and decrease with the strength of corporate governance and auditor expertise. Further no statistically significant association between abnormal accruals and client importance was found.

However DeAngelo (1981) stated that there exists a negative relation between audit fees and auditor independence. In her study about auditor size and audit quality she found that auditor size has a positive effect on audit quality. She explained this relation between auditor size and audit quality as a result of
decreasing auditor independence. She found the higher audit fees are in relation to the total earnings of an audit firm the lower audit independence and respectably audit quality is.

Choi et al. (2010) examined the relation between audit quality and abnormal high or low audit fees. Auditors’ incentives that comprise audit quality can differ systematically between two distinct situations, when audit fees are above an auditor’s expectation of the normal fee level and when they are below. If auditors receive more than the normal level of fees from their clients, their benefits from retaining these profitable, clients can outweigh the costs associated with allowing substandard reporting. Therefore abnormal audit fees are negatively or positively associated with audit quality (measured by discretionary accruals) for clients with positive abnormal audit fees. When audit fees are below the normal level, auditors may have few (or relatively weak) incentives to compromise audit quality. The fee-quality association is asymmetric and nonlinear, depending on whether auditors receive abnormally high or abnormally low audit fees.

Gul et al. (2003) found that discretionary accruals have a positive relation with audit fees. Indicating that economic bonding could impair auditor independence and therefore, lead to lower audit quality. This is also consistent with the research of Choi et al. (2010). Different studies have been performed to find an association between auditor independence and audit quality, where some studies found a positive relation and some a negative relation.

2.4 Summary

Audit quality is the joint probability that an existing material error is detected and reported by an auditor (DeAngelo, 1981). Different studies showed that there exists a relation between the probability that an existing material error is detected and audit fees. Higher audit fees are associated with putting more effort and time in the audit by the auditor and are also associated with a Big 4 audit firm and industry specialists (Francis & Wang, 2008; Palmrose, 1986; Crashwell et al., 1995). Higher audit effort, Big 4
audit firm, industry specialist and medium to long auditor tenure are all associated with higher audit quality. Audit effort increases the chance of detecting an existing material error, because of the ability to perform more tests (Caramanis & Lennow, 2008). Bigger audit firm can rely on the expertise of their international network (Michas, 2011). Industry specialists possess industry specialist’s knowledge and expertise and medium to longer audit tenure firms possess client specific knowledge (Balsem et al., 2003; Johnson et al., 2002).

However audit fees are also associated towards lower auditor independence due to economic bonding. Lower auditor independence decreases the chance that detected material errors will be reported by the auditor, thereby lowering the audit quality (Hoitash, 2007). Big 4 and industry specialists are argued to be less affected by economic bonding due to that no single client is important enough because of their size and those audit firms have a greater reputation to lose, because of their brand name and therefore have incentives to protect their reputation by providing high quality services (Francis, 2004).

With the previous stated literature, hypotheses can be formed concerning the direct and indirect relationship of audit fees and audit quality

3. Hypothesis Development

The literature review has shown different researches with different results concerning subjects surrounding audit quality and audit fees. Firstly a positive relation was found between audit effort and audit quality by Caramanis & Lennow, (2008) and Lobo & Zhao (2013) what would indicate a positive relationship between audit fees and audit quality. However, different studies found that the independence of the auditor will impair when audit fees are getting higher. This is caused because higher audit fees can create an economic bond between the auditor and the client. Therefore, the hypothesis will be:

**H1: Audit fees and audit quality have a negative relationship**
Next to a direct relation between audit fees and audit quality an indirect relationship between audit fees and audit quality is examined, by comparing the determinants of audit quality and audit fees. This will give extra information about the first hypothesis. Audit firm size and the effects on audit quality and audit fees has been researched by a lot of researchers. Studies of DeAngelo (1981), Becket et al (1998) and Turner and Sennetti (2001) found that audit quality and audit firm size is positively associated with each other. Where Palmrose (1986), Che-Achmad and Houghton (1996) and Niema (2004) found that audit fees are positively associated with audit firm size. This leads to the hypotheses:

**H2: Audit fees and audit quality have a positive association with audit firm size**

Further there have been multiple studies that researched the effects of industry specialization. Velury (2003), Balsem et al. (2003) and Kwon et al.(2007) found a positive association between industry specialization and audit quality, where Crashwell et al. (1995) and Defond et al. (2000) found a positive association with audit fees. This leads to the hypotheses:

**H3: Audit fees and audit quality have a positive association with industry specialization**
4. Methodology

This chapter will outline the research method used to examine the effect of audit fees on audit quality. The hypotheses stated in the prior section will be tested using a regression model. This will be done by using discretionary accruals as proxy for audit quality. Another section will be used to describe the Modified-Jones model that is used to estimate the total amount of discretionary accruals and to calculate the total amount of accruals that is needed for the Modified-Jones model. The regression model will contain a couple of control variables other than audit fees that could influence audit quality are audit fees. As last there will be a section dedicated to explain the data and sample collection.

4.1 Audit Quality

Audit quality is an abstract concept and there is not a common variable that shows the level of audit quality. Different studies have used different proxies for audit quality. Measures that are used to proxy for audit quality are audit firm size (DeAngelo, 1981; Knechel and Vanstraelen, 2007), restatements (Kinney et al., 2004; Blankey et al., 2002; going concern opinions (Knechel and Vanstraelen, 2007), earnings management (Becker et al., 1998; Choi et al., 2010; Frankel et al., 2002; Hoitash et al, 2007; Velury, 2003).

This study will use earnings management as proxy for audit quality, just like the studies of Hoitash et al. (2007) and Gul et al. (2003) who also examined the relationship between audit fees and audit quality. Earnings management is used, because by measuring discretionary accruals the degree of bias infused into the financial statements by the management and tolerated by the auditor will become known (Hoitash et al., 2007).

To estimate the degree of earnings management the Modified Jones model will be used as stated by Dechow et al. (1995). Dechow evaluated accrual-based models
that detect earnings management. Dechow examined different existing accruals models to find the model with the most power to detect earnings management. The model with the most power to detect was a slightly adjusted version of the Jones model (1991). The adjusted model also takes changes in receivables into account when looking at the change in revenues. The modified Jones model assumes that all of the changes in credit sales during the sample period are the result of earnings management. This assumption is based on the suggestion that earnings management is easier to exercise over recognition of revenue on credit sales than it is to exercise earnings management over the recognition of revenue from cash sales. They further found that the Modified Jones model exhibits the most power in detecting earnings management. This model is much used in studies that want to find the quality of earnings (Hoitash et al., 2007; Gul et al., 2003; Velury, 2003). But first the total amount of accruals needs to be calculated, before the Modified-Jones model can be used. Total accruals is calculated using income before extraordinary items and cash flows from operation form the cash flow statement

\[ TA_t = EXBI_t - CFO_t \]

Where:

\( TA_t = \text{Total Accruals (in year } t) \)

\( EXBI_t = \text{Income Before Extraordinary Items (in year } t) \)

\( CFO_t = \text{Cash Flows from Operations (in year } t) \)

Discretionary accruals can be estimated using the following equations. In the first equation the parameters are estimated. Then the parameters found in the first equation are used to find non-discretionary accruals and then in the last equation discretionary accruals is found by subtracting non-discretionary accruals from total accruals.

\[ TA_t = \beta_{1,t} \left[ \frac{1}{A_{t-1}} \right] + \beta_{2,t} \left[ \frac{\Delta REV_t}{A_{t-1}} \right] + \beta_{3,t} \left[ \frac{\Delta PPE_t}{A_{t-1}} \right] + \varepsilon \]

Where:

\( A_{t-1} = \text{Assets (in year } t - 1) \)
\[ \Delta \text{REV}_t = \text{Change in Revenue (year } t - 1 \text{ to year } t) \]

\[ \Delta \text{PPE}_t = \text{Change gross property, plant and equipment (year } t - 1 \text{ to year } t) \]

\[ \beta_t = \text{Parameters} \]

\[ \varepsilon = \text{Error of Estimate} \]

\[ NA_t = \beta_{1,t} \left( \frac{1}{A_{t-1}} \right) + \beta_{2,t} \left( \frac{\Delta \text{REV}_t}{A_{t-1}} \right) + \beta_{3,t} \left( \frac{\Delta \text{PPE}_t}{A_{t-1}} \right) + \varepsilon \]

Where:

\[ \Delta \text{REC}_t = \text{Change in Receivables (year } t - 1 \text{ to year } t) \]

\[ DA_t = TA_t - NA_t \]

Where:

\[ DA_t = \text{Discretionary Accruals (in year } t) \]

\[ NA_t = \text{Non discretionary Accruals (in year } t) \]

### 4.2 Model

This study wants to research the relation between audit fees and audit quality however there are several factors that could potentially influence the relationship between audit and audit quality. Therefore, several control variables are included in order to conclude if this relation is statistically significant or not. Furthermore, certain other determinants are tested to determine if audit quality and audit fees impact this hypothesized relationship. First, to make sure that audit fees is normally distributed the natural log of the audit fees (FEES) is taken. Further there is a need to control for the influence of audit firm size (BIG4) and industry specialization (INDUS) on the relation between audit quality and audit fees. As shown in the prior literature both audit firm size and industry specialization have a positive association with audit fees and quality (Balsem et al., 2003; DeAngelo, 1981; Palmrose, 1986; Crashwell et al., 1995). Most studies that research the impact of audit size and more
specifically Big 4 non-Big 4 audit firms create a dummy variable to measure the
differences between audit firm size (Turner and Sennetti, 2001; Becker et al., 1998).
Where the dummy will be 1 for Big 4 audit firms and 0 for non-Big 4 audit firms. To
measure industry specialization the method used by Velury (2003) and Palmrose
(1983) will be used. Palmrose and Velury use this formula to capture the market
share of an audit firm.

\[ MS_{ik} = \frac{\sum_{j=1}^{j_{ik}} R_{E\text{V}_{ijk}}}{\sum_{i=1}^{I} \sum_{j=1}^{j_{ik}} R_{E\text{V}_{ijk}}} \]

Where:

\( MS_{ik} = \text{Market share of industry } k \text{ audited by audit firm } i \)

\( \sum_{j=1}^{j_{ik}} R_{E\text{V}_{ijk}} = \text{Revenue of company } J_{ik} \text{ in industry } k \text{ audited by audit firm } i \)

\( \sum_{i=1}^{I} \sum_{j=1}^{j_{ik}} R_{E\text{V}_{ijk}} = \text{Revenue of } J_{ik} \text{ clients in industry } k \text{ summed over all } I \text{ public accounting firms with clients } J_{ik} \text{ in industry } k \)

Auditor industry market share is defined as the proportion of industry revenue
audited by an individual accounting firm relative to the total industry revenue for all
companies in that industry audited by all public accounting firms An company is
identified as an industry specialist if the market share of an audit firm in a certain
industry is greater than or equal to 20 percentage of total market share of its industry
specialists, consistent with Dunn et al. (2000) and Velury (2003).

Dummy variables of auditor tenure, litigation risk and loss are created to
control for the effect that auditor tenure could have on audit quality and litigation
risk and loss on audit fees. Haskins and Williams found (1988) found that the
complexity and size influence the audit fees, thus this effect should be controlled.
First, the natural log of the total assets of the client’s company (SIZE) is used to
control for the differences in size of the companies of clients, like in studies of Becker
et al. (1998) and Gul et al. (2003). Further current ratio, inventory to total assets,
receivables to total assets, return on assets and net cash flows from operations
divided by total assets are control variables for complexity (Gul et al., 2003). As last
non-audit fees are included in the formula to assist in determining if higher fees, independent of the form they have (audit or non-audit) will impact audit quality.

The first model will be to look at the impact of audit fees, audit firm size and industry specialization, auditor tenure and litigation risk on audit quality

\[
DAC = \alpha + \beta_1 FEES + \beta_2 NONFEES + \beta_3 BIG4 + \beta_4 INDUS + \beta_5 TENURE \\
+ \beta_6 LITRISK + \beta_7 SIZE + \beta_8 LEV + \beta_9 ROA + \beta_{10} CURR \\
+ \beta_{11} REC + \beta_{12} INV + \beta_{13} CFO + \beta_{14} LOSSD + \varepsilon
\]

Where:
DAC = Estimated discretionary accruals
FEES = natural logarithm of total audit fees
NONFEES = natural logarithm of total audit fees
BIG4 = dummy variable ‘one’ if audited by Big 4 audit firm, otherwise ‘zero’
INDUS = dummy variable ‘one’ if audited industry specialist, otherwise ‘zero’
TENURE = dummy variable ‘one’ if auditor tenure is shorter than 4 year, otherwise ‘zero’
LITRISK = dummy variable ‘one’ if client had to pay an settlement fee, otherwise ‘zero’
SIZE = natural logarithm of total assets
ROA = return on assets (net income divided by total assets)
LEV = total debt divided by total assets
CURR = current ratio; current assets divided by current liabilities
REC = receivables divided by total assets
INV = inventory divided by total assets
CFO = net cash flows from operations divided by total assets
LOSSD = dummy variable ‘one’ if net income is negative, otherwise ‘zero’

The Second model will look at the effect of audit quality, audit firm size and industry specialization on audit fees.

\[
FEES = \alpha + \beta_1 DAC + \beta_2 NONFEES + \beta_3 BIG4 + \beta_4 INDUS + \beta_5 TENURE \\
+ \beta_6 LITRISK + \beta_7 SIZE + \beta_8 LEV + \beta_9 ROA + \beta_{10} CURR \\
+ \beta_{11} REC + \beta_{12} INV + \beta_{13} CFO + \beta_{14} LOSSD + \varepsilon
\]

Where:
FEES = natural logarithm of total audit fees
DAC = Estimated discretionary accruals
NONFEES = natural logarithm of total audit fees
BIG4 = dummy variable ‘one’ if audited by Big 4 audit firm, otherwise ‘zero’
INDUS = dummy variable ‘one’ if audited industry specialist, otherwise ‘zero’
TENURE = dummy variable ‘one’ if auditor tenure is shorter than 4 year, otherwise ‘zero’
LITRISK = dummy variable ‘one’ if client had to pay an settlement fee, otherwise ‘zero’
SIZE = natural logarithm of total assets
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LEV = total debt divided by total assets
CURR = current ratio; current assets divided by current liabilities
REC = receivables divided by total assets
INV = inventory divided by total assets
CFO = net cash flows from operations divided by total assets
LOSSD = dummy variable ‘one’ if net income is negative, otherwise ‘zero’

4.3 Sample

The sample that will be used in this research will be based on archival data and needs to be chosen in such a way that the observations of the sample do not allow other factors to disrupt the relationship between audit fees and audit quality. Therefore, the sample can only consist of companies that have the same economic and political environment. For this reason this study will only include companies based in the U.S. Companies in the U.S. are all obligated to report under one similar accounting standard (U.S. GAAP). Further, the U.S. is one of the biggest industry and legislation regarding reporting of financial information is well developed. This study will only look at observations from 2011-2013 to look at the recent relationship between audit fees and audit quality. However to calculate discretionary accruals financial information of 2010 is also needed. The first dataset included over 20.000 observations. However, a large number of observations had missing variables. Therefore, all observations with one or more missing variable were deleted from the sample. Further, due to combining the COMPSTAT dataset, that contained all fundamental financial information, with the AuditAnalytics datasets, that contained all audit related information, a high number of observations where deleted, due missing variables. Further, all financial institutions were deleted, because their balance sheets are constructed differently from all other companies included in the
sample and this could influence the outcome of the tests. Financial institutions were found by looking at the SIC codes that where in range of 6000-6999, this reduced the sample with 105 observation. Further 66 observation are deleted due to incorrect variables. The final sample included 3,160 observations.

5. Results

For the examination two research models are used. In this paragraph an overview is given of the descriptive statistics. The underlying table shows an overview of all independent variables used of the two research models in this paper. The sample for the different variables is the same because observation with one missing variable were deleted from the sample.

The descriptive statistics in table one show the following results. The discretionary accruals (DAC) have a mean of 0.6522344 million, this is results from converting all negative discretionary accruals into positive. Further the log of audit fees and non-audit fees is a negative, because audit and non-audit fees are in millions and a log of a variable under the one will result in a negative value. This means that both audit and non-audit fees have a mean below the million dollar. The mean 0.6737342 of the BIG4-dummy shows that the sample contains more Big 4 audit firms than non-Big 4 audit firms. The industry specialists dummy contains approximately an equal number of non-industry specialists and industry specialists. This is caused due to that most of the Big-4 audit firms are also industry specialists. The litigation dummy shows that most firms did not have to pay a litigation fee. The tenure dummy shows with a mean of 0.7338608 that most auditors have a longer medium or long term audit tenure. The mean of the loss dummy shows that most firms have a positive net income, but that the sample also contains a lot of firms with a negative net income.
Further the ratio variables show that most firms have a leverage ratio of 0.5 and current ratio of over the 3.11 and has a high standard variation of 4.13. Further there is a small negative mean for ROA. INV, REC and CFO have a stable standard deviation and a theoretically justified mean. Overall, these data seem good enough the run the OLS regression. The only exception is current ratio, because of the high standard deviation.

Table 2 shows Pearson correlation matrices for the different variables. The significance values are derived from the correlation matrix, where the specific correlation coefficients are shown. The coefficient are significant if their p value is

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below 0.1. The significance is divided into three levels; 0.1, 0.05, 0.01. The coefficients in the matrix show the underlying relation between the variables used. Gujarati (1988) mentions that there could arises an issue with multicollinearity when the correlation coefficient between two independent variables is higher than 0.8. Multicollinearity is a statistical phenomenon in which two or more predictor variables in a multiple regression model are highly correlated, meaning that one can be linearly predicted from the others with a non-trivial degree of accuracy. Table 2 shows that two correlations have a correlation of over the 0.8; SIZE and FEES and ROA and CFO. To look if their exists multiple regression in the ordinary least square regression analysis a variance inflation factor (VIF) test will be performed on both the regression formulas.

The variable inflation factor (VIF) shows if the variable could be consider as a linear combination of other independent variables. This linear combination is highly probably if VIF is higher than 10. However in both the formulas none of the variables has a VIF higher than 10. This means that no issues are expected regarding multicollinearity. The correlation matrix shows that there exists a high correlation between the Big 4 and industry specialization dummy and also size of the client. Indicating that larger companies generally pay more audit fees and that Big 4 audit firms and industry specialists receive more audit fees then non-Big 4 and non-industry specialists. Non-audit fees also show a high correlation with the size of the company of the client.
Table 2
Pearson correlation matrix
N=1654

<table>
<thead>
<tr>
<th>Variable</th>
<th>DAC</th>
<th>FEES</th>
<th>NONFEES</th>
<th>BIG4</th>
<th>INDUS</th>
<th>LITRISK</th>
<th>TENURE</th>
<th>SIZE</th>
<th>LEVR</th>
<th>ROA</th>
<th>CUR</th>
<th>INV</th>
<th>REC</th>
<th>CFO</th>
<th>LOSSD</th>
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<td>DAC</td>
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<td>-0.1251***</td>
<td>-0.0484***</td>
<td>-0.1172***</td>
<td>0.0717***</td>
<td>-0.0099</td>
<td>-0.1123***</td>
<td>-0.1722***</td>
<td>0.0694***</td>
<td>-0.1466***</td>
<td>-0.0299*</td>
<td>0.0227</td>
<td>0.0774***</td>
<td>-0.1334***</td>
<td>0.1137***</td>
</tr>
<tr>
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<td>1.000</td>
<td>0.4138***</td>
<td>0.6610***</td>
<td>0.5285***</td>
<td>0.1960***</td>
<td>0.4312***</td>
<td>0.8828***</td>
<td>-0.0529***</td>
<td>0.2597***</td>
<td>0.2054***</td>
<td>-0.0770***</td>
<td>-0.0218</td>
<td>0.2984***</td>
<td>-0.3605***</td>
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<td>0.4272***</td>
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<td>0.1024***</td>
<td>-0.1325***</td>
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<td>0.2003***</td>
<td>-0.0694***</td>
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<td>-0.1115***</td>
<td>0.2156***</td>
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<td>-0.0402**</td>
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<td>-0.2021***</td>
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* Significant at p < 0.10;  
** Significant at p < 0.05;  
*** Significant at p < 0.01;
### Table 3
Multicollinearity test DAC formula

<table>
<thead>
<tr>
<th>Variable</th>
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</thead>
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### Table 4
Multicollinearity test FEES formula

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<td>Mean VIF</td>
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</table>

Further relatively high correlated variables are Big 4 and industry specialization with size, indicating that larger companies choose Big 4 audit firms and industry specialists over other audit firms. The tenure of Big 4 and industry specialists seems to be higher than for other firms. CFO and ROA have a very high correlation, but this is expected, because both indicate a kind of profit as ratio of total assets. CFO and ROA also have an intermediate correlation with the loss dummy, this is also expected due that income is the main element of this three variables. Further some of the ratio variables do not have a significant correlation with the other ratio variables. Discretionary accruals doesn’t seem to be highly correlated with any of the other variables, none of the correlations come over the 0.2, what indicates a very weak to negligible correlation.
In this section the results of table 5 are explained. Table 5 shows a regression analyses of the dependent variable discretionary accruals and the independent and control variables. The adjusted R-square of the model is only 4.56%. This indicates that the model only explains a very small part of the variability of the response data around its mean. Meaning that this model lacks explanatory power. Now a closer look is given towards the coefficients of the different variables in the model.

Table 5
Regression Analyses

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficients</th>
<th>T</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
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The coefficient needs to be significant (with p<0.1) to draw conclusions. The regression analyses shows that audit fees has small positive and significant association with discretionary accruals (0.1086551). This result confirms the hypotheses that audit quality has a negative relationship with audit quality (higher
audit quality = lower discretionary accruals). This contradicts the findings of Frankel et al. (2002), who found that higher audit fees were associated with lower discretionary accruals and the findings of CA The results positive significant relation between audit fees and discretionary accruals is consistent with the view of DeAngelo (1981) who suggests that audit fees are positively related to earnings management because of client importance to the auditor when fees become higher. However, DeAngelo (1981) found a negative significant relation between discretionary accruals and audit firm size, where only a negative insignificant relation is found.

Further no significant relation between discretionary accruals, industry specialization (p=0.144) and litigation risk (p=0.481) was found. As found by prior literature short auditor tenure has a significant negative relation with auditor tenure (p= 0.003). This rejects both hypothesis two and three and is inconsistent with most literature (DeAngelo, 1991; Becker et al, 1998; Velury; 2003; Balsem et al., 2003)

The second regression (table 6) has a very high adjusted r-square (0.8118) meaning that this model has a very high explanatory power. Next to the positive relation between audit fees and discretionary accruals a positive significant relation between audit firm size and audit fees exists. This is in line with prior research of Palmrose (1986) Che-Ahmad and Houghton (1996). Further an positive relation is found between audit fees and auditor tenure, this is evidence of the low-balling strategy that audit companies perform. Further as suspected a positive significant relation is found between litigation risk and audit fees, this conforms the literature on a form of coverage when litigation risk is high (Anderson and Zeghal, 1994; Pong and Whittington, 1994).
Table 6
Regression

\[ \text{FEES} = \alpha + \beta_1 \text{DAC} + \beta_2 \text{NONFEES} + \beta_3 \text{BIG4} + \beta_4 \text{INDUS} + \beta_5 \text{TENURE} + \beta_6 \text{LITRISK} + \beta_7 \text{SIZE} + \beta_8 \text{LEV} + \beta_9 \text{ROA} + \beta_{10} \text{CURR} + \beta_{11} \text{REC} + \beta_{12} \text{INV} + \beta_{13} \text{CFO} + \beta_{14} \text{LOSSD} + \epsilon \]

Adjusted R-squared = 0.8118

<table>
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<th>P-value</th>
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6. Robustness check

In this section the results will be tested on their robustness. Robust regression is an alternative to least squares regression. This test is performed when the data is contaminated with outliers or influential observations and it can also be used for the purpose of detecting influential observations. By performing a robustness check the results of the ordinary least square regression are tested on their robustness. Table 7 is a robustness check on the regression analyses of discretionary accruals. Table 7 shows that some p-values have changed. The most changes are found in the control variables for auditor complexity, leverage, CFO and inventory ratio became significant.
Table 7
Robustness test
DAC=α+β1 FEES+β2 NONFEES+ β3 BIG4+β4 INDUS +β5 TENURE+β6 LITRISK+β7 SIZE+β8 LEV+β9 ROA+ β10 CURR+β11 REC+ β12 INV+β13 CFO+β14 LOSSD + ε

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<td>0.009</td>
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<tr>
<td>BIG4</td>
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<td>0.174</td>
</tr>
<tr>
<td>INDUS</td>
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<td>-1.31</td>
<td>0.190</td>
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<td>LITRISK</td>
<td>-0.0016237</td>
<td>-0.18</td>
<td>0.861</td>
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<td>TENURE</td>
<td>-0.0065999</td>
<td>-0.77</td>
<td>0.441</td>
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<tr>
<td>SIZE</td>
<td>-0.0366599</td>
<td>-11.04</td>
<td>0.000</td>
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<tr>
<td>LEVR</td>
<td>0.0281217</td>
<td>6.92</td>
<td>0.000</td>
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<tr>
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<td>-13.31</td>
<td>0.000</td>
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<tr>
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<td>-0.60</td>
<td>0.551</td>
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<tr>
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<td>-4.23</td>
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<tr>
<td>REC</td>
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<td>1.39</td>
<td>0.165</td>
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<tr>
<td>CFO</td>
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<td>7.48</td>
<td>0.000</td>
</tr>
<tr>
<td>LOSSD</td>
<td>-0.0112678</td>
<td>-1.35</td>
<td>0.178</td>
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</table>

Where the current ratio, receivable ratio and loss dummy become insignificant. Leverage and loss dummy had a big change in their coefficient where leverage went from negative to positive and the loss dummy to negative from positive. Further in the robustness check it can been seen that auditor tenure now is insignificant where it first was significant. However this model has a very low explaining power and the most important variables stayed significant.

Table 8 shows the results of the robustness check of audit fees. Here all control variables become more significant except for leverage. Further industry specialization and audit fees had a p-value of 0.1 in the regression analyses meaning that that relation wasn’t significant with a p-value of 0.1, however the robustness
check found that there exists a positive relation between industry specialization and audit fees.

Table 8
Robustness test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>T</th>
<th>P-value</th>
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<tr>
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<td>.0059444</td>
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<td>TENURE</td>
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<tr>
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<td>LOSSD</td>
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</tbody>
</table>

6. Conclusions

This research has investigated the relationship between audit fees and audit quality in two different ways. First, by looking at the direct relation that exists between audit quality and audit fees and secondly by looking at the determinants of both audit fees and audit quality and looking if an indirect relationship exists. DeAngelo (1981) defines audit quality as the probability that an auditor will both discover a breach in the clients’ accounting systems, and disclose when such a breach exists.
Different studies found different relationships between audit quality and audit fees. Most of this research is divided into two segments, research that studies the probability that an auditor will discover a breach in the clients’ accounting systems and the probability that an auditor discloses such a breach when it exists. Caramanis & Lennow (2008) and Lobo & Zhao (2013) fall into the first segment and found a positive relation between audit fees and audit quality by showing putting more effort into an audit will also lead to higher audit quality. However Hoitash (2007), Gul et al (2003) and Chung and Kallupar (2003) who fall into the second segment found that audit quality has a negative relationship between audit quality and audit fees, because of decreasing auditor independence when audit fee is rising.

Further a lot of studies found that both audit quality and audit fees have a positive association with industry specialist and Big 4 audit firms. This is caused due to that Big-4 audit firms can draw on their international expertise and have more reputational incentives to perform audits of higher quality and this higher perceived or real audit quality creates an fee premium for Big 4 audit firms (DeAngelo, 1981; Becker et al., 1998; Balsem et al., 2003; Che-Ahmad and Houghton, 1996; Crashwell et al.,1995). This also is the case for industry specialist, however they draw on their industry expertise to perform audits of higher quality.

To investigate whether there is a negative relationship between audit quality and audit fees, audit quality is proxied by discretionary accruals estimated by the Modified Jones model. A multivariate audit fee and discretionary accruals model was used, those models includes respectively audit fees and discretionary accruals as independent variable. Further audit firm size, industry specialization, auditor tenure, litigation risk, non-audit fees and control variables for client company size, complexity and risk were included into the model. To test the hypotheses a regression analyses is performed. The final sample used to test the hypotheses consists out 3.160 observations of U.S listed firms over the period 2010 to 2013.

The first hypothesis, that audit quality and audit fees had a positive relation is conformed, because this study found that there exists a significant positive relation between audit fees and audit quality. Further both hypotheses about audit firm size
and industry specializations hypothesized a positive relation with both audit quality and audit fees. However both hypothesis were rejected due to that no significant relation was found between audit quality and industry specialization and audit firm size and audit quality, but both industry specialization and audit firm size showed an positive relation with audit fees. Further this study did not find an indirect relation between lower audit fees in the initial audit year and lower audit quality.

These results suggest that auditor independence is impaired when economic bonding exists due to high audit fees. This is similar to Hoitash (2007) and Gul et al. (2003) who also found that audit fees has a positive effect on discretionary accruals and therefore, impairing the independence of the auditor what lead to lower audit quality. Secondly, the results suggest that higher audit fees for industry specialists and Big 4 audit firms exist due to that Big 4 audit firms and industry specialist have a reputation of delivering higher audit quality and this creates a fee premium for those firms. This relationship is also found by Moizer (1997) who explained that it only requires that market participants believe that large international audit firms and industry specialists are perceived to perform audits of high audit quality rather than performing audits of high quality.

This research has various limitations. First, the regression analyses of discretionary accruals had a very low explanatory power, this significantly diminishes the value of this research. Adding other control variables or using another proxy for audit quality could significantly increase the power to the model. Further other models can be used to estimate discretionary accruals like the DeAngelo model or another model needs to be created due to the limitations of the existing models (Young, 2003). Secondly, this research only included observations of U.S. listed companies, what undermines the international expertise that Big 4 auditing firms possess. Michas (2011) found that Big 4 audit firms can draw on their international expertise and thereby perform audits of higher quality in countries with an undeveloped audit profession. By only performing audits in the U.S. that effect is not taken in consideration. Another limitation is the availability of both the financial information and the audit information. Initially both the dataset of financial
information and audit had over the 20,000 observations, however due to merging of the two datasets only 3,781 observations remained. This lead to a significant lower sample size what diminishes the findings of this study. As last, this research did not take audit effort into consideration, what could significant influence the outcome of this study.

Suggestions for future research are trying to overcome the limitations that are previous stated, by including more control variables or use another proxy. Further future researchers could use other databases then COMPSTAT and AuditAnalytics and focus more on including observations of different companies and include audit effort as a variable. As last future research could research the difference between perceived audit quality and real audit quality to provide more information about the main drivers behind audit fees.

7. Bibliography

AICPA. (1972). SA No. 1. U.S.


