Master Thesis Accounting, Auditing and Control

"*The Link Between Audit Partner Characteristics and Audit Quality*"

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Abstract

This thesis investigates the possible effects of disclosure and audit partner characteristics on audit quality. Due to the implementation of Rule 3211 of the PCAOB in the United States, the identities and thus the characteristics of audit partners are public information. This provides an opportunity to analyze the effect of audit partner characteristics on audit quality. This research finds, after using an OLS linear regression model, that disclosure has a significant positive effect on audit quality. Furthermore, an increasing amount of clients per audit partner in a year will decrease the average audit quality of the partner. Lastly, this research finds no significant difference in the genders of audit partners on the audit quality. Additional analyses are conducted to investigate the differences in above mentioned effects between Big-4 and non-Big-4 firms, as well as between December or non-December fiscal-year-ends. There is no evidence for a significant difference between either of the groups. These results can have a big implication for regulation setters. Given the fact disclosure increases and busyness decreases audit quality, it is possible for regulators to adjust new regulations to further improve overall audit quality.

Key words: audit, audit partner, audit quality, busyness, characteristics, disclosure, gender, Rule 3211.

Contents

1 Introduction

In January 2017 the Public Company Accounting Oversight Board (PCAOB) initiated Rule 3211. This rule states that registered public audit firms have to file a Form Audit Partner (Form AP), containing the name of the audit partner of every listed company where the audit report is published after January 31, 2017. As of that moment the engagement audit partners identity is disclosed to the public, where before only the company name was disclosed (Burke, Hoitash, & Hoitash, 2018). The PCAOB initiated this regulation, following many other countries, in an attempt to improve audit quality and transparency in the audit market (PCAOB, 2015). The regulation should improve audit quality by exposing the responsible partner for each audit engagement. The intuition behind this effect is found in litigation and reputation risk. When an individual audit partner would show lower audit quality, it would reflect badly on themselves and not only on the audit firm anymore. This would give enough incentive to increase the audit quality (Berglund, Eshleman, & Guo, 2018; Burke et al., 2018). Besides the measurability of the effect of disclosure, other effects can be measured with the disclosed names provided by the Form AP. For instance, the effects of audit partner characteristics, such as gender and busyness, on the audit quality. This study will focus on the correlation of audit partner characteristics and disclosure on the level of audit quality. The following research question is researched in this paper:

Which effects do audit partner characteristics and disclosure have on the audit quality for American public companies, after the initiation of Rule 3211 by the PCAOB?

As mentioned above, the PCAOB was not the first regulator to implement this kind of regulation. Other countries, such as the United Kingdom and The Netherlands, already have comparable rules and regulations, requiring the audit firms to disclose the name of the audit partner involved. Several papers are written on the effects on audit quality, due to these regulations, in different countries (Blay, Notbohm, Schelleman, & Valencia, 2014; Carcello & Li, 2013). These researchers have found a wide ranch of results, as will be discussed later in this paper. Also, the regulation instated in the United States has been researched before (Burke et al., 2018). However, this research only looks at a short time window, namely six months. This means that this regulation and the effects it has caused has not been researched over a longer period of time.

Furthermore, the regulation from the PCAOB caused resistance from the practitioners in the U.S. They argued the unique characteristics of the audit market already ensured the most optimal fees and audit quality. The PCAOB, however, states they expect the disclosure to have a positive effect on audit quality, despite the view of the practitioners (PCAOB, 2015). They base their expectations on the results of the implementation of comparable regulations in Europe. The importance of audit quality is given by the U.S. Securities and Exchange Commission (SEC). Their goal is to ensure a protected environment from inaccurate information in the financial statements for all investors. A higher audit quality will lead to more fair and orderly information provision for investors, as is the goal of the SEC (U.S. Securities and Exchange Commission, 2018).

To give inside in what side of this discussion, the practitioners or the PCAOB, was right this research will investigate what the effects of the disclosure was. Also, to add to the researches done in the past on audit quality and partner characteristics in Europe, this research also looks at the effects of certain audit partner characteristics on audit quality.

To find an answer to the research question, data is gathered from three different databases for the years 2015 up to and including 2018. These databases are the PCAOB database, COMPUSTAT and Audit Analytics. These databases merged together give a total sample of over four thousand observations. Different models are used as proxies for the audit quality: discretionary accruals, unexpected audit fees and the accuracy of issuing a going concern opinion. The main regression uses the different proxies as a dependent variable, each separate from each other, giving three different regression models. In these models the independent variables are the same. The variables of interest, used to answer the hypotheses and main research question, are a dummy variable for disclosure and gender, an interaction effect between those two and the amount of clients per audit partner. Furthermore, a wide range of control variables are added, to limit the omitted variable bias. These are discussed and shown in the methodology section of this paper.

This research finds a significant increasing effect of disclosure on audit quality, which is not different between Big-4 and non-Big-4 firms or between December and non-December fiscal year-ends. Furthermore, there is no significant effect found for the gender of audit quality, which contradicts the psychological literature and expectations. The interaction effect between gender and disclosure shows no significant effect either. Lastly, the busyness of an audit partner has a significant decreasing effect on audit quality.

These results can have implications for regulation setters. The results for disclosure and busyness can be taken into account when new regulations are formulated on these subjects. It is possible that disclosure and less audit clients provide more audit quality, which is the goal of most audit regulations.

In the course of this paper, there will first be a discussion of literature on the subject. This literature review will start with discussing the definition and measurement of audit quality and continue to literature on disclosure and specific audit partner characteristics. Thereafter there will be a chapter on the hypothesis build-up. The hypotheses will be operationalized in the methodology section, showing which models will be used. The data used and the selection process of this data is discussed in the data section, following the methodology. The results will be discussed next and lastly a conclusion and discussion of the implications and limitations will be given.

2 Literature review

2.1 The audit quality

Auditors play an important role in solving agency problem between managers and stakeholders, especially shareholders (Habib, Bhuiyan, & Sun, 2019). The agency problem arises when managers, who make the financial statements, do not own (the whole) company. The (other) shareholders only receive information that the managers provide in the form of for instance a financial statement, which causes information asymmetry. Shareholders don't know for sure if the information, provided by managers, is complete and accurate. An auditor is hired by the managers to provide credibility to the financial statements and assurance for shareholders, which lowers the information asymmetry (Hayes, Wallage, & Görtemaker, 2014). Research shows that audits were preformed long before they were mandatory in the U.K. (Watts & Zimmerman, 1983). This can be interpreted as if the audit is a part of the efficient market. Nowadays, the audit is mandatory for U.S. listed firms but still provides the same kind of credibility and assurance to shareholders (Hayes et al., 2014).

When performing an audit, the auditor needs to keep the audit risk model (ARM) in mind. This dictates the risk the auditor will not find the misstatements and will give a wrong unmodified opinion. The ARM consists of three risk factors: inherent risk, control risk and detection risk. Inherent risk refers to the risk of misstatements in case there are no internal controls in place. A low inherent risk would mean that the assertion is of low risk on its own. The control risk

shows the risk that a misstatement is not or cannot be detected by the internal control system in place. Lastly, the detection risk is controlled by the audit firm itself. This measures the possibility of the auditor not detecting the misstatements during the audit. The risks multiply each other in order to retrieve the overall audit risk. A sufficiently low inherent risk will allow for a higher detection risk, keeping the overall audit risk stable. This risk model is often used as a planning tool for audit engagements. In the planning this tool is used to evaluate the tests and the sample sizes needed to perform the audit. The audit risk can also be defined as the probability an auditor will not find a material misstatement in the financial statements of a client (Peecher, Schwartz, & Solomon, 2007).

Quality of audit services is defined to be the market-assessed joint probability that a given auditor will both discover a breach in the accounting systems and report the breach (DeAngelo, 1981). The probability that an auditor will discover the breach can also be seen as one minus the audit risk, as discussed above. In literature it is found that audit quality is hard to observe ex ante by clients (audited companies and their managers). Clients base their believe of audit quality on other, easier to observe, measures. Some examples of these measures are audit firm size (DeAngelo, 1981), in-house expertise (Francis & Yu, 2009), audit partner pre-client and client-specific experience (Chi, Myers, Omer, & Xie, 2017), and self-participation in the audit process (Herda, Petersen, & Fontaine, 2014).

However, audit quality is more than the perception of audit quality by clients and third parties. Audit quality is a much researched topic and many researchers have discussed the measure of audit quality. Audit quality itself is not measurable, since it has no exact or numerical definition. Three types of proxies are widely used in literature: implied earnings management, the unexpected audit fees and the accuracy of issuing a going concern opinion (Francis & Yu, 2009; Hribar, Kravet, & Wilson, 2014; Jackson, Moldrich, & Roebuck, 2008). Reasoning behind these proxies is a qualitative audit should recognize aggressive earnings management. A higher quality audit should be able to recognize the earnings management and should report this. Where after it should be erased form the financial statements. This is why a higher quality audit goes hand in hand with lower earnings management. Furthermore, a qualitative audit should also be more able to correctly predict if a company is a going concern and thus issues an accurate going concern opinion. In this case it is also important that the auditor is independent and will not hold back from issuing a going concern opinion, which indirectly provides more quality (Francis & Yu, 2009). To estimate if a going concern opinion should be given, the Z-Score can be used (Altman, 1968). This model estimates the degree of financial distress a

company undergoes and has recently proved to be over 75% accurate (Altman, Iwanicz-Drozdowska, Laitinen, & Suvas, 2017). If a going concern opinion is (not) given and the Z-Score shows (no) financial distress, the audit quality is good. However, if the auditor does (not) issue a going concern opinion and the financial destress is (high) low, the audit quality is low. The unexpected fee model is derived from a neoclassical view on the audit market. Audit fees should be based on audit hours spend and the risk of misstatements after the audit. Both are dependent on the accounting quality and its risks. Excessive fees can only come from higher audit quality, otherwise audit firms will price themselves out the market, assuming the audit market works efficiently (Hribar et al., 2014). Apart from these three, there are multiple possible input and output based measures for audit quality (Bedard, Johnstone, & Smith, 2010; Blankley, Hurtt, & MacGregor, 2012). However, these models are very indirect and only slightly correlated with actual audit quality. Therefore, in this research there will be three measures for audit quality: discretionary accruals, unexpected audit fees and the accuracy of a going concern opinion.

There are many variables that can influence the audit quality, outside of independent variables set in this research. For instance, size, leverage and foreign practice are mentioned as possible factors in many researches (Blankley et al., 2012; Burke et al., 2018). Furthermore, the composition and skills of the audit team can greatly influence the audit quality of the team. This is mainly due to different competencies and perspectives of the single individuals. Not only are individuals on their own of importance for quality, also the specific combinations of individuals seem to have a big impact (Cameran, Ditillo, & Pettinicchio, 2018). However it is hard to observe the exact characteristics of an audit team, since the identities of team member are not publicly available. Also, auditor tenure has a great influence on audit quality. Client-specific knowledge creates precision in decreasing audit risk and increasing audit quality (Beck & Wu, 2007). There is also support in the literature for increasing audit quality due to performing non-audit services. When these services are performed by the audit firm and specifically the auditors themselves, audit quality increases (Beck & Wu, 2007; Lim & Tan, 2008). In contradiction, other papers find a decreasing effect of offering non-audit services (Lennox, 1999). Providing some of these services for the same client is prohibited by the SEC. The variables used in this research are further discussed in the methodology section (chapter 4).

2.2 Disclosure and characteristics of the audit partner

After major accounting scandals at the beginning of this century (i.e. Enron and WorldCom) and the financial crisis of 2008, many regulators around the world are still trying to restore trust of investors in the current markets (Zerni, 2012). One of these new regulations is the requirement for audit partners to sign the audit reports for public companies and state their names on a separate Form Audit Participants (Form AP) (Lennox & Wu, 2018). The main reason behind this regulation is to create more transparency in capital markets. By exposing the identity of audit partners, the PCAOB wants to hold individual partners accountable for their audits and motivate them to increase their audit quality to avoid reputation damage.

The disclosure increases the accountability pressure for audit partners, because they are now visible for the public (Dezoort, Harrison, & Taylor, 2006). Due to the increase in accountability for partners, it can be expected that they will try to minimize the chance of audit failure (Burke et al., 2018). Furthermore, it is possible an auditor will respond to this disclosure due to litigation and reputation risks (Berglund et al., 2018). The fact that the identity of the partner is disclosed could lead to an increase in potential litigation and reputation risk if the audit quality is not sufficient. The U.S. are known for their high litigation risk in general and in the audit market especially (Knechel & Vanstraelen, 2007). This would increase the incentive for partners to increase audit quality. However, due to the partner structure of most audit firms, the litigation risk is limited even in the U.S. (Berglund et al., 2018). Next to litigation risk, reputation risk could still be a concern for audit partners and this can be explained by psychological theory. Psychological literature also shows a reputational side of disclosure. Psychological researchers argue disclosure is used as a social strategy tool, to optimize their reputation (Omarzu, 2000). The mandatory disclosure will motivate partners to increase the quality of their results to eventually increase their reputation, assuming they are able to manage the results and aware of the possible effects on their reputation. Furthermore, auditing research also has shown that reputation matters (Weber, Willenborg, & Zhang, 2008). They find that a decrease in audit quality can have serious consequences for the audit company and the audit partner.

Before discussing the audit partner characteristics it is important to determine the definition of an audit partner. A partner of an audit firm is not only working for the firm but in most cases they own (part of) the firm also. These partners are responsible for planning and execution of the audit, evaluation of the results and determination of the audit opinion. Next to this they

maintain contact with the client and answer questions about the audit report. Partners have a great responsibility for and influence on the whole audit process (Hayes et al., 2014).

Now we have established the definition of audit partner and quality it is important to answer the following question before proceeding: Is there a relationship between the audit partner and the audit quality? In other words: do audit partners have influence on the audit quality at all? The auditor plays a vital role in providing credible financial statements and mitigating the agency problem between management and the investors (Habib et al., 2019), as is discussed earlier. It could be possible to say that the audit quality is firm-wide controlled, which means there is no difference between the audit partners within one firm (Zerni, 2012). However, the allocation of the resources and the actual audit is done by the partner and the team working on this client (Habib et al., 2019). It thus seems unlikely that the audit quality is controlled on the firm level, since many partners and different teams work within an audit firm. Furthermore, research has shown that the audit quality is heterogeneous across individual auditors (Goodwin & Wu, 2016). By disclosing the audit partners, the PCAOB implicitly identifies the audit partner as the key player in the quality of the audit report (Zerni, 2012). They play a central role in planning and implementing the audit and in the end decide what kind of audit report is to be issued to the client. This means the audit partner has a direct influence on the audit quality by deciding the execution plan of the audit.

There are many characteristics of a partner that can influence their capabilities as an auditor. For instance, the partner specialization has been subject for research in the past (Nagy, 2014; Zerni, 2012). In those researches it is found that specialization of an auditing partner has a positive effect on the audit quality and fee. Also, the audit partner tenure has something to do with the audit quality (Chen, Lin, & Lin, 2008). Since several years it is mandatory for audit firms to rotate every several years. This regulation has incentivized many researchers to investigate this relationship. On the one hand, the audit quality could decrease when the tenure increases because of decreasing independence and objectiveness. However, opponents of the regulation argue that the quality would increase because the audit partner would gain more experience and could better evaluate the overall audit risk. Furthermore, the education and social connectiveness could be linked to the audit quality (Burke et al., 2018). Especially in the U.S., where the differences between universities is big, the university where the partner graduated matters. This research will only focus on two characteristics of audit partners to keep a narrow scope of research: gender and busyness, which will be discussed below.

The differences between male and female has been researched many times in the last few decades, mostly within the psychological research field but lately in the (behavioral) economic field as well (Palvia, Vähämaa, & Vähämaa, 2014). Most research shows that women are less risk seeking than men (Charness & Gneezy, 2012). Also, female managers are especially more risk averse when it comes to litigation risk, compared to male managers (Francis, Hasan, Park, & Wu, 2015). Furthermore, women differ in their management style from men (Appelbaum, Audet, & Miller, 2003). The management styles don't only differ but they also prove to be more effective in team-based companies, such as audit firms. When looking at performance in competitive circumstances, women perform less than men (Gneezy, Niederle, & Rustichini, 2003). Lastly, female managers in general are more conservative, better in rule-following behavior and are more precise in their work compared to their male colleagues (Palvia et al., 2014).

There are many different theories about the effect of busyness of an audit partner on the audit quality. However it is important to first determine the definition of the busyness. It is difficult to measure the exact busyness of an audit partner, since it is not really measurable with public data. A common measurement of busyness is the amount of public clients the partner has in its portfolio a given year (Goodwin & Wu, 2016; Habib et al., 2019). This measure is now, after disclosing the audit partner signature, easily observable in public databases. Other measures could be the fees the clients of a partner pay for audit and non-audit services in a year. Furthermore, the busyness can be measured as a squared count of clients. Literature however shows that the accuracy of this measure is less than the amount of public clients. This is why the busyness will be measured as the exact amount of clients. Francis and Yu (2009) state that the busyness of an office could be correlated with the busyness of a partner within the office. However, this research will be focusing on partner-level and the amount of clients will thus be measured per audit partner.

When considering the effect of the busyness of the audit partner, it can lead to less attention per audit client. If the workload is higher, it can be difficult to pay enough attention to an average client, which can lead to a decrease in overall audit quality. However, if the audit partner has a larger portfolio he or she could also have more to lose from audit failure. This would give the partner the incentive to supply higher quality audits (Lennox & Wu, 2018). These potential losses would originate from losing the quasi-rents if the audit quality is less than promised and the client will change auditor (DeAngelo, 1981). Also, busier partners might be specialized in serving several clients at the same time (Goodwin & Wu, 2016). From a behavioral perspective,

it is unlikely a partner can devote enough time to every client, when its client base grows. People can only pay attention to one task at a time and spending more time on one task will inevitably lead to a decrease in attention for another task.

3 Hypothesis development

3.1 Disclosure of the audit partner

This type of regulation, as set by the PCOAB in the U.S., is not new and several countries have implemented it in the past, for instance the United Kingdom (U.K.) and The Netherlands (Blay et al., 2014; Carcello & Li, 2013). There is a lot of research conducted already on the effects of implementing this regulation on many output factors, as well as the effect on audit quality. For instance, in the United Kingdom a significant decline in the discretionary accruals was found after implementing the regulation, indicating an improvement in audit quality (Carcello & Li, 2013). However, in a combined sample of Dutch and British companies, there was no significant effect found in the year after implementation in these two nations (Blay et al., 2014). This shows the evidence of the effect on disclosing the audit partner name is mixed.

The likelihood of the results of this research being different from above mentioned results is high. This is, first of all, because of the regulation in the U.S. is set up differently (Burke et al., 2018). In the U.S. the names of the audit partners will be included in to a separate Form AP, which is not the case in the U.K. and The Netherlands. In the latter two countries, the identity is only found in the signature of the audit report. This makes it differently accessible for the public. Furthermore, the researches in the U.K. and the Netherlands are over a period between 2005 and 2009. It can be argued that since then the audit market has changed significantly because of the financial crisis of 2008. Lastly, there are some significant differences between the General Accepted Accounting Standards (GAAP) in the U.S. and Europe. U.S. GAAP is mostly categorized as rule-based, where IFRS is more principle-based. The mandatory implementation of IFRS in Europe made the financial statements of companies in Europe more comparable with American companies, compared to when the European companies reported following their local GAAP. However, there are still significant differences in the reporting of (net) income and shareholders' equity (Henry, Lin, & Yang, 2009). Another difference between the U.S. and European setting is the average type of ownership. Most large U.S. companies have a wide spread of shareholders, most of the shareholders have few shares and say in the company. These companies have powerful and controlling managers. In Europe most large companies are owned by a small number of influential shareholders, mostly families or

individuals. This will lead to differences in corporate governance. Dominant shareholders, as the ones in Europe, will have a big incentive and possibility to keep the managers in check. However, at the same time these dominant shareholders might overlook the interests of the minority shareholders. Another difference in corporate governance comes from the strict regulations for self-dealing in the U.S., compared to Europe. Self-dealing is the act of transferring value from firms where the controlling shareholders has limited cash-flow rights to firms where the owner has more cash-flow rights (Enriques & Volpin, 2007).

Furthermore, when the regulation came to the U.S., practitioners argued that the unique features of the audit market already led to accountability for individual partners. The introduction of this regulation would not have any effect on the audit quality and only inflate the audit fees. However, the PCAOB kept a strong believe in the power of this disclosure of auditors (PCAOB, 2015).

Because of the mixed empirical evidence in the European setting and the uncertainty about the generalization to the U.S., the mixed expectations of the PCAOB and U.S. practitioners, the first hypothesis will be stated in the null-form. Empirical research finds opposite signs for the effect, furthermore it is unclear which effect will manifest in the U.S. setting. The practitioners argue there will be no effect due to this new regulation. Therefore I expect no significant change in the audit quality after the disclosure requirement was instated, compared to before.

Hypothesis 1: There is no effect of disclosing the audit partner name on audit quality.

3.2 The characteristics

3.2.1 Gender differences

As shown in the literature review, men and women have some different characteristics. The main difference is the risk aversity, which is bigger for women than for men (Charness & Gneezy, 2012). For this research, it is important to link these differences to specific output: audit quality. There is little financial or accounting research on why female partners could increase audit quality (Ittonen & Peni, 2012). However, due to their lower risk tolerance, and higher conservatism, it can be reasoned that female audit partners may increase audit quality, compared to male audit partners (Ittonen, Vähämaa, & Vähämaa, 2013). They also find that audited companies in Sweden, by female audit partners have lower discretionary accruals, which is an indicator of higher audit quality. Other research focuses on the effect of gender on the likelihood of issuing an going concern opinion (GCO), another proxy for audit quality (Hardies, Breesch, & Branson, 2016). They find that female audit partners in Belgium are more

likely to issue a GCO than male partners. This likelihood increases when the client is high-risk, which links to the risk aversity of women. This evidence shows that female audit partners do increase audit quality. Also, the gender of the partner has an influence on the fee charged to the audited company (Ittonen & Peni, 2012). Female partners significantly charge higher fees, which can be linked to the risk averseness but possibly also to higher audit quality.

As discussed before, it is unclear how these effects extrapolate to the U.S. setting. However, the results of different researches all point to the positive correlation between audit quality and female audit partners. Furthermore, there is no evidence for a difference in the gender differences between Europe and the U.S. (Charness & Gneezy, 2012). This is why I expect to find a similar relation between audit quality and the gender of the audit partner involved:

Hypothesis 2: The audit quality of an audit will be higher if the audit partner is female.

Furthermore, it is shown that female partners are indeed more risk averse and are more conservative than their male colleagues (Charness & Gneezy, 2012). Disclosure brings several types of extra risks to the audit partners (Berglund et al., 2018). Therefore it can be reasoned that female partners will react differently to the disclosure than male partners. I expect that female partners will have a bigger reaction to the disclosure of their identity than men, as can be tested with an interaction effect. The following hypothesis will be tested:

Hypothesis 3: Female auditor partners have a bigger change in audit quality after their identity is disclosed than male auditor partners.

To test this hypothesis, one major assumption needs to be made: the audit partner in the year after the disclosure requirement (2016) is the same as the year before (2015), because the financial statements of 2015 don't include the identity of the audit partner yet. When looking at literature on the audit partner tenure and the length of the client-partner relationship it shows that the partner on average stays with the client for several years (Knechel & Vanstraelen, 2007). Another research shows that more than half (56%) of the client-partner relations last more than 2 years and even 15% are more than seven years (Carey & Simnett, 2013). This research however is not executed in the U.S., because the mandatory auditor rotation doesn't allow the client-firm relation to last longer than seven years. Furthermore in a Taiwanese setting it is found that the client-firm relation lasts up to 5 years (Chi, Huang, Liao, & Xie, 2009). The writers argue in this research that the mandatory rotation regulation is highly comparable to the U.S. regulation. Based on this previous literature about the average duration of the client-partner

relation it is reasonable to assume the same audit partner was involved in the audit of 2016, as it is in 2017.

3.2.2 Busyness

A lot of research has been done on the effect the busyness of an audit partner would have on multiple outcome variables. The results of these researches are widely spread. Some researchers argue the busyness has a negative effect on the audit quality (Habib et al., 2019; Sundgren & Svanström, 2014), while other researchers find positive effects (Chen et al., 2008; Craswell, Francis, & Taylor, 1995; DeAngelo, 1981) and a third group find no effect at all (Goodwin & Wu, 2016).

The reasoning behind the negative relationship is mostly based on the dispersion of the attention of the audit partner. An increased busyness of the audit partner might lead to a decrease in accuracy of the work and could reduce the professional skepticism (Habib et al., 2019). They find a negative effect between the busyness and the audit quality in their research. This is also supported by previous research (Sundgren & Svanström, 2014).

It could also be, as mentioned in the literature review, that the partners have a fear of losing their clients and thus keep the quality as high as possible (DeAngelo, 1981). Also, it is found that expert auditors generally have more clients (Craswell et al., 1995), which could mean that there is an opposite relationship: better auditors attract more clients. Another research argues that a close client-partner relationship could lead to a decrease in audit quality (Chen et al., 2008). They reason that the close relationship will lead to less objectivity and lower quality. The fewer clients a partner has, the better the relationship can get. This would mean a bigger portfolio could increase the audit quality. Zerni (2012) finds an increasing effect of the busyness as well and reasons that this is because of the expertise, which will lead to better audit quality.

It is also possible that, if the busyness of an audit partner is efficiently chosen, in equilibrium there is no causal effect between audit partner busyness and the audit quality (Goodwin & Wu, 2016). In their research they indeed find no significant effect of busyness of the audit quality. Lennox and Wu (2018) find mixed results within different countries. In Sweden and Malaysia they find a negative correlation between the number of engagements and the audit quality. While in Australia there is a positive effect. This could point to country specific difference which cause these spread in results, such as culture or regulation.

As shown above, there are a lot of different results and reasonings as to what the exact relationship between audit partner busyness and the audit quality is. The more recent literature

shows either negative or inconclusive relationships. This is why I will state the fourth hypothesis in a negative way and I will expect a negative relationship between the busyness and the audit quality.

Hypothesis 4: The busyness of an audit partner will decrease the audit quality.

4 Methodology

To investigate the four hypotheses mentioned above, this research will perform the following OLS regression analyses (Burke et al., 2018):

$$Audit\ Quality_{i,t} = \beta_0 + \beta_1 * DISCLOSE_{i,t} + \beta_2 * FEMALE_{i,t} + \beta_3 * DISCLOSE * FEMALE_{i,t} + \beta_4 * BUSYNESS_{i,t} + \beta_5 * ASSETS_{i,t} + \beta_6 * BUSSEG_{i,t} + \beta_7 * GEOSEG_{i,t} + \beta_8 * INVREC_{i,t} + \beta_9 * FOREIGN_{i,t} + \beta_{10} * LOSS_{i,t} + \beta_{11} * CASHFLOW_{i,t} + \beta_{12} * MB_{i,t} + \beta_{13} * LEVERAGE_{i,t} + \beta_{14} * SALESGROWTH_{i,t} + \beta_{15} * GC_{i,t} + \beta_{16} * MW_{i,t} + \beta_{17} * RESTATE_{i,t} + \beta_{18} * BIG4_{i,t} + \beta_{19} * TOTALACC_{i,t} + \beta_{20} * ACQUISITION_{i,t} + \beta_{21} * ACCELERATED_{i,t} + \beta_{22} * FYEDEC_{i,t} + \varepsilon_{i,t}$$

The variable descriptions are given in Table 1, panels A, B and C in the appendix (chapter 9.2.1). For hypothesis 1, the variable of interest will be *DISCLOSE*, which is a dummy variable taking the value one in the years after the disclosure of the audit partner signature was instated and zero in the years before. The corresponding coefficient (β_1) is expected to be zero, as explained in the hypothesis development. For the second hypothesis the β_2 is expected to be positive, since the dummy variable FEMALE will take one if the audit partner is female and zero otherwise. The interaction effect between DISCLOSE and FEMALE will be captured in β_3 for hypothesis three. This coefficient is also expected to be positive. Lastly, the final variable of interest is BUSYNESS. The coefficient β_4 is expected to be negative as dictated in hypothesis four.

The control variables included are based on previous literature looking at correlations between audit quality and different variables (Burke et al., 2018; DeAngelo, 1981; Francis & Yu, 2009). In the appendix (chapter 9.2.1) the variable descriptions are given for the control variables in Table 1, panel C. As an extra control the fixed effects for the two-digit SIC will be added.

4.1 Measuring audit quality

The dependent variable in both models will be the audit quality for company *i* in year *t*. Audit quality will be measured with the help of the proxy discretionary accruals of a company, the going concern opinion and the unexplained audit fees. These ways of measuring audit quality are discussed in the theoretical framework above. Three proxies will be used, to check the robustness of the results. The proxies will be estimated cross sectionally over the fiscal years 2015 until 2018.

4.1.1 Discretionary accruals

The proxy discretionary accruals (*DISACC*) will be used to measure the level of earnings management, as it has been used my multiple other recent papers. The discretionary accruals will be calculated with the use of the adjusted Jones model (Dechow, Sloan, & Sweeney, 2015). First, total accruals will be regressed using the following model:

$$\frac{TA_{t-j}}{A_{t-j-1}} = \alpha_1 * \frac{1}{A_{t-j-1}} + \alpha_2 * \frac{\Delta REV_{t-j}}{A_{t-j-1}} + \alpha_3 * \frac{PPE_{t-j}}{A_{t-j-1}} + \varepsilon_{t-j} \; for \; j = 1, \dots, k$$

This regression will be run for every two-digit SIC-year pair, so every company is grouped to the same industry per year. After establishing this model and stating $\alpha_{1,2,3}$ the following prediction will be made for the non-discretionary accruals. These are essentially the expected accruals, based on the expectation from the given industry.

$$\widehat{NDA_t} = \widehat{\alpha_1} * \frac{1}{A_{t-1}} + \widehat{\alpha_2} * \frac{(\Delta REV_t - \Delta REC_t)}{A_{(t-1)}} + \widehat{\alpha_3} \frac{PPE_t}{A_{t-1}}$$

Now, we continue to calculate the discretionary accruals (*DISACC*), by subtracting the *NDA* from the total accruals of a certain year.

The variable descriptions can be found in the appendix (chapter 9.2.1) in Table 2, panel A.

4.1.2 Unexpected audit fees

Audit fees are dependent on many variables and the predictiveness of the audit fee is a much researched subject. Thanks to the available literature, the following model to estimate the audit fee will be used in this research (Blankley et al., 2012):

$$FEE_{i,t} = \gamma_0 + \gamma_1 * ASSETS_{i,t} + \gamma_2 * CR_{i,t} + \gamma_3 * CATA_{i,t} + \gamma_4 * ARINV_{i,t} + \gamma_5 * ROA_{i,t} + \gamma_6 * LOSS_{i,t} + \gamma_7 * FOREIGN_{i,t} + \gamma_8 * ACQUISITION_{i,t} + \gamma_9 * FYEDEC_{i,t} + \gamma_{10} * LEVERAGE_{i,t} + \gamma_{11} * INTANG_{i,t} + \gamma_{12} * BUSSEG_{i,t} + \gamma_{13} * GC_{i,t} + \gamma_{14} * MW_{i,t} + \gamma_{15} * BIG4_{i,t} + \gamma_{16} * SIC2_{i,t} + \varepsilon_{i,t}$$

This model estimates the expected audit fees of a certain audit engagement in a year. This estimation will be deducted from the actual audit fee in the same year for the same engagement to determine the excess of audit fees charged. The higher the audit fee, the higher the audit quality, is assumed. The reasoning behind this is discussed in the literature review.

The variable descriptions can be found in the appendix (chapter 9.2.1) in Table 2, panel B.

4.1.3 Going concern opinion

To determine if the audit firm has issued a correct going concern opinion, the Altman Z-Score is established. The Z-Score is calculate as follows (Altman, 1968):

$$Z - Score = 1.2 * \frac{Working\ Captial}{Total\ Assets} + 1.4 * \frac{Retained\ Earnings}{Total\ Assets} + 3.3 * \frac{Earnings\ before\ Interest\ and\ Tax}{Total\ Assets} + 0.6 * \frac{Market\ Value\ of\ Equity}{Total\ Liabilities} + 0.9 * \frac{Sales}{Total\ Assets}$$

The Z-Score is a measure for the degree of financial distress of a certain company. When the Z-Score is below 1.81 it is very likely that the company will head towards bankruptcy. A Z-Score higher than 3 indicates a company not likely to file for bankruptcy. This Z-Score will be calculated for every observation in the dataset. The proxy variable is also a dummy variable, which takes the value 1 if the company has a high probability of going bankrupt (Z-Score lower than 1.81) and a going concern opinion is given. It also takes one if the Z-Score is higher than 1.81 and no going concern opinion is given. Together the proxy variable is an indicator for correctly given opinions, concerning a going concern.

The variable descriptions can be found in the appendix (chapter 9.2.1) in Table 2, panel C.

5 Data collection and description

5.1 Data collection

To collect data, three main databases are being used: the PCAOB, Audit Analytics and COMPUSTAT databases. The PCAOB has a database with the names of all public audit partners auditing public companies in the USA. COMPUSTAT contains almost all financial information of public companies, such as leverage, sales growth, book-to-market value, etc. Form the Audit Analytics database information about the audits can be gathered, such as the going concern filings.

From these databases the necessary variables were derived to compute the variables as mentioned in the methodology section. Most variables were computed from variables from

COMPUSTAT. In the appendix the variables are described and there is mentioned where the variables can be found. The observations are from U.S. based companies between fiscal years 2015 until 2018.The observations of companies with SIC within 6000 – 6999 are dropped. These companies are within the financial sector and are thus subject to specific regulations. These observations could alter the outcomes significantly and so are left out of this sample. To compute the whole dataset, merging the data sources is necessary. Due to this process, several observations were lost because of incomplete information. In the Table 3 I will discuss the amount of observations in the different stages. In the merge with the PCAOB database, all observations were preserved. This leads to missing observations for the variables FEMALE and BUSYNESS, mostly in the fiscal years 2014 and 2015. The missing observations for FEMALE and BUSYNESS are dropped when DISCLOSE is equal to one. This is after the implementation date of the regulation by the PCAOB, namely 31 January 2017. These observations are dropped because after this date this information should be available. Before this time the information was not yet available, however, in light of hypothesis 3 I assume that the auditor is the same person as after the disclosure. For this assumption I will check the tenure of the audit firm. If the tenure is less than 2 in 2016, the observation is dropped because it is highly unlikely that the same audit partner worked for this client because the client switched audit firm that year. There is one exemption to this statement: if the fiscal year 2016 is not yet disclosed, than I will look at the tenure of the audit firm in 2017 because this is than the first fiscal year of disclosure. The missing observations in 2015 or 2016 for FEMALE will be replaced with the value of FEMALE of the year thereafter (respectively 2016 or 2017). If there are still observations missing for FEMALE, these observations will be dropped because these companies have no observations in the disclosed fiscal years. Furthermore, several observations have a negative outcome for the DISACC measure. Logically this is not possible and so the negative outcomes will be dropped. Not all observations have the necessary variables to compute the audit quality determinants. I allow the observations to be incomplete for the determinations of audit quality. The main regression will be run multiple times, with the different determinants. These different regression models will have a different observations count. This will be displayed in the corresponding tables. However, the observations for which none of the measures for audit quality can be determined will be deleted because these can't be used in the analyses. This gives a total sample of 13,066 observations. The continuous variables are winsorized at the 1% and 99% level to exclude outliers from

5.2 Data description

To get a better understanding of what the database looks like, Table 4 is computed with the descriptive statistics of the variables used in the various regression analyses. In this part, the variables of interest will be shortly discussed: FEMALE, DISCLOSE and BUSYNESS.

In total almost 18% of the observations is a female audit partner. Of these female audit partners about 70% works at a Big 4-firm. The percentage of female audit partners is steady over the years in this dataset. Of all observations about 47% are of disclosed fiscal years. The amount of public clients per partner (BUSYNESS) has a wide range. The smallest amount is one and the biggest amount is 27 clients. The average amount of clients is 3.1, with a median of 2. The amount of observations for the depended variables defer. The accuracy of a going concern opinion has the most observations, namely 12,436 and the unexpected audit fee has 9,713 observations. The discretionary accruals have only 7,570 observations. The average company in the sample is financially healthy, according to the Z-Score with an average of 3.586. Furthermore, the likelihood of accurately giving, or not giving, a going concern opinion in this sample is 68% in this sample. A remark needs to be made concerning de DISACC mean, which

Table 3: sample selection and size

Sample size	
Initial sample retrieved from COMPUSTAT	56,981
After duplicates drop	35,993
After dropping SIC 6000 – 6999	26,584
After merging with the COMPUSTAT segment file	21,279
After merging with Audit Analytics	18,056
After merging with the PCAOB database	18,056
Less: observations where FEMALE and/or BUSYNESS is missing and DISCLOSE = 1	-1,276
Less: observations where TENURE = 1 in the fiscal year 2016 and DISCLOSE = 1	-158
Less: observations where TENURE = 1 in fiscal year 2017 and DISCLOSE = 0 in fiscal year 2016	-28
Less: missing observations for FEMALE after the assumption	-2,736
Less: observations with no determinant of audit quality	-713
Sample total	13,145

Table 4: descriptive statistics

Variables	Obs.	Mean	St.Dev	Min	Median	Max
DISACC	7,570	.294	.711	.001	.114	5.438
AQGCO	12,436	.683	.465	0	1	1
UNEXPFEE	9,713	0	.61	-7.985	.035	3.47
DISCLOSE	13,145	.474	.499	0	0	1
FEMALE	13,145	.176	.381	0	0	1
FEMALE*DISCLOSE	13,145	.083	.275	0	0	1
BUSYNESS	13,145	3.125	3.717	1	2	27
ASSETS	13,145	5.936	2.737	0	6.148	13.462
BUSSEG	13,145	4.162	3.482	1	3	28
GEOSEG	13,145	1.254	.832	0	2	2
INVREC	12,959	.21	.187	0	.167	1
FOREIGN	13,145	.313	.464	0	0	1
LOSS	13,145	.44	.496	0	0	1
CASHFLOW	13,011	-.982	27.203	-2204	.065	20.567
MB	12,747	19.867	1,559.238	-58,580	2.253	114,000
LEVERAGE	13,121	4.461	72.07	.001	.55	3,993
SALESGROWTH	12,073	1.721	87.904	-1	.043	9,326.5
GC	13,145	.125	.33	0	0	1
MW	10,027	.11	.313	0	0	1
RESTATE	13,145	.078	.268	0	0	1
BIG4	13,145	.615	.487	0	1	1
TOTALACC	13,009	.456	1.861	.001	.075	14.25
ACQUISITION	13,145	.296	.456	0	0	1
ACCELERATED	13,145	.681	.466	0	1	1
FYEDEC	13,145	.722	.448	0	1	1
FEE	13,145	13.556	1.652	8.006	13.79	16.789
CR	13,084	3.183	6.191	0	1.863	305.706
CATA	13,069	.494	.286	0	.473	1
ARINV	12,959	.21	.187	0	.167	1
ROA	13,130	-2.176	52.323	-4595	.042	1.002
INTANG	12,986	.191	.222	0	.101	1
SIC2	13,145	43.377	20.542	1	37	99
Working Capital / Total Assets	13,069	-3.289	68.56	-3993	.18	1
Retained Earnings / Total Assets	12,834	-76.546	2,224.613	-211,679	-.047	5.736
EBIT / Total Assets	13,130	-2.176	52.323	-4595	.042	1.002
Market Value of Equity / Total Liabilities	12,753	16.164	409.18	0	2.491	39,261.04
Sales / Total Assets	13,130	.941	1.527	0	.688	71
Z-Score	12,436	3.586	10.744	-10.229	2.515	68.677
TA	7,570	-.361	1.592	-13.334	-.068	.399
1 / A	7,570	.356	2.113	0	.002	19.231
ΔREV	7,570	.06	.314	-.963	.021	1.649
PPE	7,570	.518	.527	0	.341	2.965

Note: the observations, mean, standard deviation, minimum, median and maximum of all variables used in the analyses.

is 0.294. Normally the mean of discretionary accruals should be around zero, however in this sample the value stays relatively high.

Next, the Pearson/Spearman correlation matrix will be shown in Table 5. From this table it is shown that DISCLOSE and BUSYNESS have significant correlation with two of the three audit quality proxies. According to this correlation matrix, the disclosure requirement increases audit quality looking at the unexpected fee proxy but decreases quality when looking at the going.

Table 5: Pearson/Spearman correlation matrix

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
DISACC (1)	1.000							
AQGCO (2)	0.073*	1.000						
UNEXPFEE (3)	-0.031*	-0.045*	1.000					
DISCLOSE (4)	0.007	-0.031*	0.057*	1.000				
FEMALE (5)	0.010	0.018*	0.006	-0.004	1.000			
FEMALE DISCLOSE (6)*	0.012	-0.006	0.029*	0.316*	0.650*	1.000		
BUSYNESS (7)	0.329*	-0.001	-0.125*	0.001	-0.018*	-0.008	1.000	
ASSETS (8)	-0.414*	-0.040*	-0.000	0.032*	0.020*	0.017	-0.396*	1.000
BUSSEG (9)	-0.188*	0.029*	-0.000	-0.055*	-0.005	-0.024*	-0.193*	0.479*
GEOSEG (10)	-0.280*	0.070*	0.063*	-0.019*	0.009	-0.002	-0.248*	0.444*
INVREC (11)	-0.098*	0.210*	-0.000	-0.041*	-0.012	-0.026*	-0.061*	-0.058*
FOREIGN (12)	-0.078*	0.037*	0.000	-0.009	-0.009	-0.008	-0.090*	0.200*
LOSS (13)	0.229*	-0.221*	-0.000	0.067*	-0.007	0.017*	0.218*	-0.512*
CASHFLOW (14)	-0.052*	-0.015	0.024*	0.003	0.013	0.008	-0.072*	0.074*
MB (15)	0.009	-0.003	0.004	0.003	-0.005	-0.003	-0.008	-0.015
LEVERAGE (16)	0.135*	0.036*	0.000	0.022*	-0.016	-0.010	0.096*	-0.116*
SALESGROWTH (17)	0.035*	0.008	-0.010	-0.009	-0.006	-0.003	0.018*	-0.018*
GC (18)	0.493*	0.117*	-0.000	0.026*	0.001	0.008	0.391*	-0.559*
MW (19)	0.191*	-0.001	-0.000	0.008	0.008	0.004	0.205*	-0.288*
RESTATE (20)	0.002	-0.009	0.037*	0.108*	-0.005	0.036*	0.029*	-0.029*
BIG4 (21)	-0.273*	0.019*	-0.000	0.007	0.056*	0.043*	-0.315*	0.684*
TOTALACC (22)	0.726*	0.067*	-0.042*	-0.006	-0.011	-0.009	0.294*	-0.374*
ACQUISITION (23)	-0.143*	0.008	-0.000	0.032*	-0.009	0.002	-0.143*	0.314*
ACCELERATED (24)	-0.295*	0.097*	0.053*	-0.006	0.016	0.008	-0.339*	0.663*
FYEDEC (25)	-0.017	-0.144*	-0.000	0.146*	-0.013	0.049*	-0.024*	0.044*
FEE (26)	-0.393*	-0.030*	0.369*	0.053*	0.028*	0.035*	-0.422*	0.896*
CR (27)	-0.037*	0.082*	-0.000	-0.029*	-0.008	-0.015	-0.016	-0.110*
CATA (28)	0.174*	0.185*	-0.000	-0.040*	0.002	-0.003	0.118*	-0.510*
ARINV (29)	-0.098*	0.210*	-0.000	-0.041*	-0.012	-0.026*	-0.061*	-0.058*
ROA (30)	-0.094*	-0.021*	-0.000	0.004	0.012	0.007	-0.080*	0.090*
INTANG (31)	-0.091*	0.001	-0.000	0.020*	0.004	0.002	-0.092*	0.224*
SIC2 (32)	0.056*	0.016	-0.000	-0.005	-0.012	-0.012	0.024*	-0.002
Working Capital / Total Assets(33)	-0.131*	-0.034*	0.001	-0.019*	0.015	0.009	-0.101*	0.110*
Retained Earnings / Total Assets (34)	-0.081*	-0.017	0.015	-0.010	0.012	0.008	-0.041*	0.073*
EBIT / Total Assets (35)	-0.094*	-0.021*	-0.000	0.004	0.012	0.007	-0.080*	0.090*
Market Value of Equity / Total Liabilities (36)	0.072*	0.009	0.003	0.012	-0.010	-0.007	0.022*	-0.049*
Sales / Total Assets (37)	0.038*	0.137*	0.049*	-0.030*	-0.008	-0.012	0.008	-0.079*
Z-Score (38)	-0.087*	-0.018*	0.015	-0.010	0.012	0.008	-0.045*	0.076*
TA (39)	-0.686*	-0.067*	0.017	0.003	0.002	0.005	-0.295*	0.344*
1 / A (40)	0.593*	0.069*	-0.075*	0.004	-0.018	-0.014	0.311*	-0.340*
ΔREV (41)	0.045*	0.058*	-0.063*	0.042*	-0.002	0.018	0.033*	-0.043*
PPE (42)	0.004	-0.146*	0.022	0.028*	-0.002	0.009	-0.014	0.130*

Continued

Table 5: continued

	(9)	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*	*(15)*	*(16)*
BUSSEG (9)	1.000							
GEOSEG (10)	0.579*	1.000						
INVREC (11)	0.169*	0.243*	1.000					
FOREIGN (12)	0.379*	0.407*	0.124*	1.000				
LOSS (13)	-0.293*	-0.281*	-0.147*	-0.101*	1.000			
CASHFLOW (14)	0.035*	0.054*	0.017	0.020*	-0.043*	1.000		
MB (15)	-0.010	-0.015	0.002	-0.012	0.002	-0.002	1.000	
LEVERAGE (16)	-0.047*	-0.073*	-0.045*	-0.014	0.055*	-0.025*	-0.001	1.000
SALESGROWTH (17)	-0.014	-0.010	-0.002	-0.004	0.022*	-0.011	0.001	-0.001
GC (18)	-0.273*	-0.354*	-0.109*	-0.124*	0.365*	-0.094*	0.023*	0.143*
MW (19)	-0.134*	-0.147*	0.005	-0.027*	0.195*	-0.048*	0.031*	0.080*
RESTATE (20)	-0.021*	-0.019*	0.007	-0.011	0.021*	0.005	-0.003	-0.007
BIG4 (21)	0.300*	0.296*	-0.093*	0.153*	-0.309*	0.047*	-0.013	-0.068*
TOTALACC (22)	-0.175*	-0.252*	-0.096*	-0.074*	0.212*	-0.234*	0.009	0.242*
ACQUISITION (23)	0.246*	0.241*	0.024*	0.139*	-0.164*	0.025*	-0.007	-0.035*
ACCELERATED (24)	0.336*	0.336*	-0.044*	0.202*	-0.363*	0.050*	-0.016	-0.079*
FYEDEC (25)	-0.045*	-0.055*	-0.176*	-0.033*	0.109*	0.015	-0.020*	-0.016
FEE (26)	0.518*	0.492*	0.001	0.268*	-0.409*	0.073*	-0.015	-0.102*
CR (27)	-0.103*	-0.092*	-0.114*	-0.046*	0.096*	0.009	-0.003	-0.029*
CATA (28)	-0.199*	-0.127*	0.328*	0.018*	0.302*	-0.049*	0.007	0.075*
ARINV (29)	0.169*	0.243*	1.000*	0.124*	-0.147*	0.017	0.002	-0.045*
ROA (30)	0.038*	0.060*	0.039*	0.015	-0.046*	0.027*	0.000	-0.621*
INTANG (31)	0.173*	0.186*	-0.091*	0.103*	-0.140*	0.023*	-0.014	-0.043*
SIC2 (32)	-0.046*	0.018*	-0.007	-0.023*	-0.071*	0.008	-0.019*	-0.005
Working Capital / Total Assets(33)	0.044*	0.069*	0.044*	0.019*	-0.053*	0.025*	0.001	-0.966*
Retained Earnings / Total Assets (34)	0.031*	0.049*	0.034*	0.016	-0.032*	0.020*	0.000	-0.616*
EBIT / Total Assets (35)	0.038*	0.060*	0.039*	0.015	-0.046*	0.027*	0.000	-0.621*
Market Value of Equity / Total Liabilities (36)	-0.027*	-0.038*	-0.028*	-0.016	0.027*	-0.003	0.025*	-0.001
Sales / Total Assets (37)	0.012	0.043*	0.365*	-0.011	-0.079*	0.015	-0.003	0.016
Z-Score (38)	0.032*	0.050*	0.035*	0.016	-0.032*	0.021*	0.002	-0.651*
TA (39)	0.159*	0.240*	0.100*	0.060*	-0.196*	0.210*	-0.007	-0.206*
1 / A (40)	1.000	-0.231*	-0.093*	-0.080*	0.166*	-0.243*	0.003	0.273*
ΔREV (41)	0.579*	-0.029*	0.091*	-0.017	0.022	-0.037*	0.006	-0.018
PPE (42)	0.169*	-0.037*	-0.109*	-0.099*	-0.063*	-0.045*	0.012	0.010

Continued

concern proxy. The amount of clients per audit partner implies a negative relation with audit quality. More clients seems to generate lower audit quality. The gender of the audit partner has a significant positive effect on the going concern proxy only and would increase audit quality according to this proxy. The interaction effect between gender and disclosure shows a significant correlation with the unexpected fees proxy. According to this correlation the female audit partners add more audit quality after disclosure than their male counterparts.

Table 5: continued

	(17)	*(18)*	*(19)*	*(20)*	*(21)*	*(22)*	*(23)*	*(24)*
SALESGROWTH (17)	1.000							
GC (18)	0.044*	1.000						
MW (19)	0.007	0.289*	1.000					
RESTATE (20)	-0.001	0.016	0.020*	1.000				
BIG4 (21)	-0.016	-0.392*	-0.237*	-0.043*	1.000			
TOTALACC (22)	0.024*	0.463*	0.235*	-0.005	-0.239*	1.000		
ACQUISITION (23)	-0.006	-0.196*	-0.084*	0.001	0.219*	-0.125*	1.000	
ACCELERATED (24)	-0.019*	-0.457*	-0.228*	-0.014	0.582*	-0.267*	0.270*	1.000
FYEDEC (25)	0.009	-0.002	-0.036*	0.010	0.073*	-0.041*	0.011	0.021*
FEE (26)	-0.019*	-0.508*	-0.256*	-0.017	0.714*	-0.351*	0.339*	0.656*
CR (27)	-0.003	-0.054*	-0.006	-0.010	-0.043*	-0.041*	-0.084*	-0.022*
CATA (28)	0.000	0.159*	0.100*	-0.002	-0.238*	0.171*	-0.221*	-0.216*
ARINV (29)	-0.002	-0.109*	0.005	0.007	-0.093*	-0.096*	0.024*	-0.044*
ROA (30)	0.000	-0.102*	-0.071*	0.006	0.053*	-0.140*	0.027*	0.060*
INTANG (31)	0.019*	-0.081*	-0.020*	-0.002	0.134*	-0.090*	0.393*	0.179*
SIC2 (32)	-0.020*	-0.027*	0.014	0.002	0.013	0.011	0.087*	-0.006
Working Capital / Total Assets(33)	0.001	-0.136*	-0.080*	0.006	0.065*	-0.235*	0.033*	0.075*
Retained Earnings / Total Assets (34)	0.001	-0.081*	-0.018	0.006	0.041*	-0.157*	0.022*	0.050*
EBIT / Total Assets (35)	0.000	-0.102*	-0.071*	0.006	0.053*	-0.140*	0.027*	0.060*
Market Value of Equity / Total Liabilities (36)	-0.000	0.011	0.007	-0.005	-0.006	0.042*	-0.019*	-0.006
Sales / Total Assets (37)	-0.002	0.012	0.031*	0.002	-0.057*	0.018*	-0.015	-0.046*
Z-Score (38)	0.001	-0.086*	-0.023*	0.006	0.044*	-0.162*	0.023*	0.055*
TA (39)	-0.147*	-0.441*	-0.192*	0.003	0.216*	-0.944*	0.116*	0.241*
1 / A (40)	0.162*	0.404*	0.140*	-0.010	-0.206*	0.728*	-0.108*	-0.235*
ΔREV (41)	0.095*	0.021	0.027*	0.034*	-0.049*	0.022	0.037*	0.015
PPE (42)	-0.007	-0.015	-0.045*	0.008	0.022	0.062*	-0.134*	-0.036*

	(25)	*(26)*	*(27)*	*(28)*	*(29)*	*(30)*	*(31)*	*(32)*
FYEDEC (25)	1.000							
FEE (26)	0.058*	1.000						
CR (27)	0.025*	-0.122*	1.000					
CATA (28)	-0.093*	-0.365*	0.293*	1.000				
ARINV (29)	-0.176*	0.001	-0.114*	0.328*	1.000			
ROA (30)	0.003	0.079*	0.020*	-0.054*	0.039*	1.000		
INTANG (31)	0.002	0.242*	-0.152*	-0.427*	-0.091*	0.030*	1.000	
SIC2 (32)	-0.040*	0.004	-0.130*	-0.051*	-0.007	-0.001	0.224*	1.000
Working Capital / Total Assets(33)	0.012	0.097*	0.028*	-0.068*	0.044*	0.640*	0.040*	0.001
Retained Earnings / Total Assets (34)	0.014	0.069*	0.017	-0.052*	0.034*	0.306*	0.028*	-0.011
EBIT / Total Assets (35)	0.003	0.079*	0.020*	-0.054*	0.039*	1.000*	0.030*	-0.001
Market Value of Equity / Total Liabilities (36)	0.005	-0.044*	0.072*	0.044*	-0.028*	-0.000	-0.023*	0.000
Sales / Total Assets (37)	-0.090*	-0.042*	-0.105*	0.118*	0.365*	-0.005	-0.048*	0.106*
Z-Score (38)	0.014	0.071*	0.024*	-0.052*	0.035*	0.365*	0.029*	-0.010
TA (39)	0.048*	0.320*	0.035*	-0.146*	0.100*	0.119*	0.078*	-0.022
1 / A (40)	-0.066*	-0.349*	-0.033*	0.169*	-0.093*	-0.128*	-0.084*	0.093*
ΔREV (41)	-0.017	-0.052*	-0.034*	0.053*	0.091*	0.011	0.066*	0.071*
PPE (42)	0.056*	0.034*	-0.124*	-0.424*	-0.109*	0.010	-0.296*	-0.180*

Continued

Table 5: continued

	(33)	*(34)*	*(35)*	*(36)*	*(37)*	*(38)*	*(39)*	*(40)*	*(41)*	*(42)*
Working Capital / Total Assets(33)	1.000									
Retained Earnings / Total Assets (34)	0.637*	1.000								
EBIT / Total Assets (35)	0.640*	0.306*	1.000							
Market Value of Equity / Total Liabilities (36)	0.001	-0.010	-0.000	1.000						
Sales / Total Assets (37)	-0.011	0.002	-0.005	-0.015	1.000					
Z-Score (38)	0.674*	0.995*	0.365*	0.066*	0.001	1.000				
TA (39)	0.203*	0.089*	0.119*	-0.058*	0.017	0.098*	1.000			
1 / A (40)	-0.269*	-0.229*	-0.128*	0.147*	0.023*	-0.234*	-0.669*	1.000		
ΔREV (41)	0.018	0.010	0.011	-0.010	0.089*	0.011	-0.027*	-0.005	1.000	
PPE (42)	-0.010	-0.059*	0.010	-0.067*	0.020	-0.059*	-0.062*	0.033*	-0.046*	1.000

Note: The Pearson/Spearman correlations between all variables. The definitions of the variables are given in Table 1 and 2. Bold correlations are significant at a 0.05 significance level, two tailed.

6 Results

6.1 Audit quality models

As discussed in the methodology section, there are three different proxies for audit quality. These proxies are determined by running three separate regression models and predicting the outcomes of the proxies for every observation. The DISACC model is run several times, for every unique SIC2 code. This results in 88 different regression model outputs, of which the individual results are not tabulated. However, one regression model including an industry fixed effect is included in shown in Table 6, in the appendix (chapter 9.2.2), together with the audit fee regression model (Table 7). The AQGCO is not based on a regression model and will thus not be tabulated. The descriptive statistics of this proxy can be found in Table 4.

6.2 Univariate results

First, to test they hypotheses several univariate tests will be conducted, starting with a t-test on the differences in means. For the first two hypotheses, the variables of interest are dummy variables, so the sample will be divided in two categories, with outcome 0 and 1. The third hypothesis is a difference-in-difference design and thus the four different means will be compared. The fourth hypothesis is different in the sense that the variable of interest (BUSYNESS) is a continuous variable. Here the sample is split on the median value of BUSYNESS, namely 2. So one group has two or fewer clients and the other group has three of more.

The disclosure gives a mixed result, as can be seen in Table 8. When considering UNEXPFEE proxy for audit quality, significant on a 1% level, disclosure increases audit quality. However, the AQGCO (significant on a 1% level) proxy provides the opposite conclusion. DISACC is not significant. This means this test for the first hypothesis gives mixed results and no conclusions can be drawn yet.

For the second hypothesis the focus lies on the gender of the audit partner. In Table 8 it shows that FEMALE only gives a significant result for AQGCO (10% significance level). According

Table 8: univariate t-tests for hypotheses 1, 2 and 4

		Mean if DISCLOSE=0	Mean if DISCLOSE=1	Difference
DISCLOSE	DISACC	0.389	0.417	-0.028
		(3,135)	(4,473)	
	AQGCO	0.701	0.673	0.028
		(6,675)	(5,818)	***
	UNEXPFEE	-0.043	0.028	-0.072
		(3,836)	(5,878)	***
		Mean if FEMALE=0	Mean if FEMALE=1	Difference
FEMALE	DISACC	0.399	0.432	-0.032
		(6,338)	(1,270)	
	AQGCO	0.685	0.705	-0.020
		(10,303)	(2,190)	*
	UNEXPFEE	-0.002	0.008	-0.010
		(8,017)	(1,697)	
		Mean if BUSYNESS<=2	Mean if BUSYNESS>2	Difference
BUSYNESS	DISACC	0.294	0.570	-0.277
		(4,541)	(23,067)	***
	AQGCO	0.706	0.660	0.046
		(7,637)	(4,856)	***
	UNEXPFEE	0.039	-0.059	0.098
		(5,892)	(3,822)	***

Note: All significance tests are two tailed and '', '**' and '***' represent significance levels of 0.10, 0.05 and 0.01 respectively. The number of observations are shown between brackets.*

Table 9: difference-in-difference test

	DISCLOSE = 0	DISCLOSE = 1	Difference-in-difference:
FEMALE = 0	0.386 (2,611) 0.696 (5,499) -0.041 (3,154)	0.409 (3,727) 0.672 (4,804) 0.023 (4,863)	
FEMALE = 1	0.402 (524) 0.727 (1,176) -0.056 (682)	0.453 (746) 0.679 (1,014) 0.052 (1.015)	
Difference FEMALE	-0.016 ** 0.031 -0.016	0.044 0.008 0.028	0.027 -0.024 0.044

Note: for every cell the first number is the mean of DISACC, the second of AQGCO and the third of UNEXPFEE. The number of observations are shown between brackets. All significance tests are two tailed and '', '**' and '***' represent significance levels of 0.10, 0.05 and 0.01 respectively.*

to this t-test, female audit partners provide higher audit quality than male audit partners. This is in agreeance with the second hypothesis. The third hypothesis is tested in Table 9, where a difference-in-difference test is tabulated. The difference-in-difference testing shows no significant results and cannot be interpreted. No conclusion can be drawn about the third hypothesis based on the univariate tests.

Lastly, the fourth hypothesis test is again tabulated in Table 8. BUSYNESS has a significant effect on all three audit quality proxies, all on a one percent level. Furthermore, all proxies show a negative effect of the amount of clients per audit partner on audit quality. This is in accordance with the fourth hypothesis.

6.3 Multivariate results

To control for other variables influencing the audit quality, multivariate tests are conducted. The multivariate results are displayed in Table 10. Tabulated is the main regression model, as discussed in the methodology section. The Models 1, 2 and 3 in Table 10 show the regression model with the three different outcome variables, including industry fixed effects. Models 4, 5 and 6 show the same regression models, without fixed effects. As can be seen in Table 10, the adjusted or pseudo R-squared decreases slightly when the fixed effects are not taken into account, so the models predict the variance in the outcome variables better when the industry fixed effect is taken into account.

When looking at the first hypothesis, it is clear that it is possible to reject this hypothesis. The coefficients for DISCLOSE in Models 2, 3, 5 and 6 are significant on a one or ten percent level and show an increase in audit quality, if the disclosure is instated. The coefficients in Models 1

and 4 are not significant. Furthermore, FEMALE has no significant, so no conclusion can be drawn relating to the sign of the effect. The interaction effect between FEMALE and DISCLOSE also shows no significant effect in any of the models. It seems that there is no bigger effect of disclosure for female audit partners in comparison to their male counterparts. Lastly, the coefficient of BUSYNESS is significant in Models 3 and 6, at an one percent significance level. Both models indicate a decrease in audit quality, when the number clients per audit partner increases.

The results for hypothesis one show an overall significant increasing effect of audit quality, due to the disclosure of audit partner names. In the univariate tests the AQGCO proxy gave an opposite relation and in the multivariate test no significant effect. However, in both univariate and multivariate tests, the other two proxies show a significant positive effect. This gives enough evidence to reject the first hypothesis. There is an effect of disclosure, however, the sign of this effect is inconsistent in these tests. Most evidence in these test point to an increasing effect. This disagrees with the U.S. practitioners that objected the regulation, who stated the disclosure would have no effect. The possible effect can come from the risk averseness of audit partners, as was explained in the literature review and hypothesis development. This would explain the increase in audit quality, since they now have an extra incentive to increase their audit quality. The negative effect in the AQGCO could come from the same reasoning. The disclosure influences the risk averseness and will give an incentive to issue a going concern opinion earlier, which will lead to more incorrect opinions decreasing the AQGCO proxy.

The second hypothesis concerns the gender of the audit partner. In the univariate results it shows that female auditors produce better audit quality, when AQGCO is considered. The other univariate and multivariate results are not significant and can't be interpreted. This gives too little evidence to reject or accept the hypothesis, given that the singular significant effect is only on a ten percent level and not supported by any other results. This could have several reasons. For instance, the differences between male and female could be smaller in the audit market in general, which causes no difference in audit quality. Furthermore, the female audit partner could have to little influence on the audit quality for her gender to have a significant effect on it. Lastly, the female audit partners are underrepresented in this sample, only 17,7% is female. This could mean the real effect is overshadowed by the overrepresentation of male audit partners.

Table 10: results main linear regression analysis

	(1) DISACC	(2) AQGCO	(3) UNEXP FEE	(4) DISACC	(5) AQGCO	(6) UNEXP FEE
DISCLOSE	0.006	0.062*	0.058***	0.015	0.065*	0.058***
	(0.58)	(1.67)	(4.02)	(1.27)	(1.80)	(4.01)
FEMALE	-0.010	0.004	-0.004	0.005	0.057	-0.004
	(-0.49)	(0.06)	(-0.14)	(0.24)	(0.86)	(-0.16)
FEMALE*DISCLOSE	0.026	-0.022	0.032	0.039	-0.031	0.030
	(1.01)	(-0.25)	(0.96)	(1.39)	(-0.37)	(0.89)
BUSYNESS	0.001	-0.004	-0.023***	0.002	-0.007	-0.022***
	(0.33)	(-0.64)	(-10.55)	(1.05)	(-1.33)	(-10.21)
ASSETS	0.005	-0.098***	-0.027***	-0.013***	-0.149***	-0.020***
	(1.25)	(-7.72)	(-5.63)	(-3.76)	(-13.08)	(-4.65)
BUSSEG	0.006***	-0.010	-0.006**	0.007***	-0.016***	-0.006***
	(3.21)	(-1.63)	(-2.50)	(3.48)	(-2.81)	(-2.65)
GEOSEG	-0.014*	0.132***	0.076***	-0.019**	0.160***	0.067***
	(-1.81)	(4.98)	(7.18)	(-2.34)	(6.40)	(6.59)
INVREC	0.116***	1.083***	-0.074*	-0.020	1.741***	-0.097***
	(3.44)	(9.11)	(-1.66)	(-0.65)	(17.36)	(-2.60)
FOREIGN	-0.005	-0.117***	-0.026*	0.025**	-0.044	-0.030**
	(-0.47)	(-2.96)	(-1.70)	(2.03)	(-1.17)	(-2.02)
LOSS	-0.047***	-0.943***	0.006	-0.009	-0.952***	0.002
	(-4.01)	(-24.22)	(0.39)	(-0.75)	(-25.92)	(0.12)
CASHFLOW	0.018***	0.001	-0.002	0.018***	-0.000	-0.002
	(15.44)	(0.16)	(-1.43)	(14.16)	(-0.02)	(-1.38)
LEVERAGE	0.000	0.005	0.000	0.000	0.003	0.000*
	(0.01)	(1.06)	(1.28)	(0.88)	(1.00)	(1.76)
SALESGROWTH	0.000	0.001	-0.000	0.000*	0.002	-0.000
	(1.28)	(1.19)	(-0.67)	(1.66)	(1.25)	(-0.68)
GC	0.094***	1.655***	0.130***	0.094***	1.632***	0.134***
	(4.46)	(21.68)	(4.66)	(4.17)	(21.71)	(4.84)
MW	0.010	-0.151***	0.056**	0.011	-0.135**	0.057**
	(0.56)	(-2.73)	(2.52)	(0.59)	(-2.47)	(2.57)
RESTATE	0.003	0.028	0.074***	0.011	0.008	0.078***
	(0.19)	(0.52)	(3.59)	(0.63)	(0.16)	(3.78)
BIG4	-0.040***	0.051	-0.036*	-0.021	0.178***	-0.036*
	(-2.78)	(1.05)	(-1.90)	(-1.39)	(3.82)	(-1.96)
TOTALACC	0.446***	0.006	-0.016**	0.447***	0.004	-0.014**
	(91.59)	(0.32)	(-2.55)	(85.96)	(0.25)	(-2.33)
ACQUISITION	-0.031***	-0.067*	-0.013	-0.004	-0.011	-0.020
	(-2.84)	(-1.80)	(-0.88)	(-0.38)	(-0.30)	(-1.41)
ACCELERATED	-0.046***	0.912***	0.162***	-0.014	0.970***	0.138***
	(-3.12)	(16.49)	(8.19)	(-0.90)	(18.14)	(7.30)
FYEDEC	0.029**	-0.302***	-0.029*	0.034***	-0.377***	-0.023
	(2.51)	(-7.48)	(-1.90)	(2.79)	(-10.00)	(-1.62)
Constant	0.040	0.378	-0.028	0.249***	0.647***	0.053
	(0.10)	(1.21)	(-0.08)	(9.24)	(7.88)	(1.61)
Observations	6,999	8,338	8,947	6,999	8,450	8,947
Adjusted R-squared	0.667		0.031	0.616		0.030
Pseudo R-squared		0.248			0.204	
Industry FE	YES	YES	YES	NO	NO	NO

Note: All significance tests are two tailed and '', '**' and '***' represent significance levels of 0.10, 0.05 and 0.01 respectively.*

Next, the third hypothesis suggests a positive interaction effect between the gender of an audit partner and the disclosure requirement. In both the univariate and multivariate results of the interaction effect no significant results. This means the third hypothesis needs to be rejected, since there is no effect to be seen. The expectation that female auditors are more risk averse and will react stronger to disclosure than male auditors seems not to be true. The possible explanation, again, can be sought in the lack of differences between male and female in the audit industry, the lack of direct influence by the audit partner, or the underrepresentation of female audit partners in the sample.

Finally, the last hypothesis discusses the effect of busyness on audit quality and expects a negative relation. The univariate results in Table 8 show a significant negative relation between the amount of audit clients per partner and the audit quality. The multivariate tests also show, when significant, a decreasing effect. This means the fourth hypothesis can't be rejected. This can be explained by theory already discussed in the literature review and hypothesis development. The division of attention from the audit partner can decrease the audit quality per client. A slightly different explanation lies in the possibility of dividing expertise between different clients. If the audit partner can focus on one (type of) client, the expertise is higher and the audit quality could as well.

7 Additional tests

After conducting the tests for the four main hypothesis, next some additional tests will be conducted to ensure the results, mentioned above, are robust. More specifically, the sample will be divided based two variables: BIG4 and FYEDEC. Both are dummy variables, and so the sample will be divided in two, twice.

7.1 Big-4 firms

As mentioned before in the literature review, bigger firms and more inhouse expertise are assumed to be connected with audit quality (DeAngelo, 1981; Francis & Yu, 2009). The biggest firms in the industry are categorized as the Big-4 and take up 65% of the sample in this research. They are known for the size and are assumed to have better inhouse expertise, compared to smaller firms, which is in its turn associated with higher audit quality (DeAngelo, 1981). This raises the question if the results from hypothesis 1 to 4 are different, when the sample is divided in Big-4 and non-Big-4 firms. This effect will be tested by using the main regression model on

a sample divided on Big-4 or non-Big-4 firms. After which, the coefficients from the regression models will be tested on their differences. The results are shown in Table 11 and 12.

As can be seen from Table 11, the results do not defer as much from the results in Table 10. Especially the results for DISCLOSE, BUSYNESS and the interaction effect are comparable to before. Interestingly, the effect of gender of an auditor is significant on a five percent level in Model 8 and 11. In Table 12 the differences between the coefficients for Big-4 and non-Big-4 firms. Since not all coefficients are significant, not all differences can be interpreted. Only the difference between two significant coefficients give useful information. The first significant difference is for FEMALE within the UNEXPFEE proxy. This difference implicates, with a one percent significance level, the audit quality to increase more for female audit partners in Big-4 firms, compared to female audit partners in non-Big-4 firms, with the control groups being the male audit partners in both groups. Furthermore the interaction effect has a significant difference for the DISACC proxy. It states that female audit partners in Big-4 firms increase the audit quality more after disclosure, compared to female audit partners in non-Big-4 firms. Again, with the control group being male audit partners in both groups. The other differences are not between significant coefficients or not significant themselves, so they can't be interpreted.

There is few evidence to state a clear difference between Big-4 and non-Big-4 firms. The significant differences that are found are only significant for one audit quality proxy and thus show too little robustness. The lack of evidence can be reasoned by the fact that both Big-4 and non-Big-4 are faced with the same disclosure and quality requirements and have little room to deviate at all.

7.2 Fiscal year-end

Next, the sample is divided on FYEDEC. Most firms have a fiscal year-end in December, as is also shown in this data sample where almost 73% has a December fiscal year-end. Worldwide research shows a preference for this fiscal year-end as well (Kamp, 2002). This makes the period after December extremely busy for auditors and a lot of manpower is needed to finish all necessary work. It raises the question if the results from earlier tests are different for December year-ends or non-December year-ends. The same methodology as in section 7.1 will be used, only this time the sample will be divided on fiscal-year-end in December or not in December. The results of the regression analyses are tabulated in Table 13. Furthermore, the difference test on the coefficients is tabulated in Table 14.

Table 11: results linear regression analysis with sample divided on BIG4

	Big-4 firms			Non-Big-4 firms		
	(7) DISACC	(8) UNEXPFEE	(9) AQGCO	(10) DISACC	(11) UNEXPFEE	(12) AQGCO
DISCLOSE	0.017**	0.036**	0.115**	-0.012	0.086***	-0.010
	(2.05)	(2.29)	(2.23)	(-0.47)	(3.14)	(-0.18)
FEMALE	0.016	0.058**	0.039	-0.053	-0.135**	-0.102
	(1.14)	(2.10)	(0.42)	(-1.08)	(-2.52)	(-0.88)
FEMALEDISCLOSE	-0.030*	-0.012	-0.027	0.134**	0.123*	0.043
	(-1.66)	(-0.33)	(-0.23)	(2.06)	(1.77)	(0.28)
BUSYNESS	0.001	-0.023***	-0.011	-0.001	-0.021***	-0.001
	(0.57)	(-5.11)	(-0.75)	(-0.50)	(-7.27)	(-0.18)
ASSETS	0.006**	-0.026***	-0.090***	-0.007	-0.027**	-0.020
	(2.13)	(-5.00)	(-5.22)	(-0.71)	(-2.52)	(-0.82)
BUSSEG	0.004***	-0.011***	-0.002	0.012**	0.001	-0.031**
	(3.11)	(-4.54)	(-0.26)	(2.12)	(0.21)	(-2.28)
GEOSEG	-0.011*	0.111***	0.100**	-0.022	0.029	0.147***
	(-1.81)	(8.97)	(2.55)	(-1.22)	(1.50)	(3.53)
INVREC	0.109***	0.201***	2.340***	0.153**	-0.267***	0.651***
	(3.43)	(3.23)	(10.70)	(2.38)	(-3.85)	(4.20)
FOREIGN	0.003	-0.059***	-0.115**	-0.022	0.009	-0.154**
	(0.37)	(-3.67)	(-2.23)	(-0.72)	(0.27)	(-2.20)
LOSS	-0.015*	-0.039**	-0.845***	-0.085***	0.010	-0.958***
	(-1.65)	(-2.12)	(-15.03)	(-3.15)	(0.36)	(-15.53)
CASHFLOW	0.035**	-0.179***	0.675***	0.019***	-0.002	-0.000
	(2.15)	(-5.40)	(6.81)	(10.81)	(-1.02)	(-0.08)
LEVERAGE	0.020**	0.251***	-1.340***	-0.000	0.000	0.032***
	(1.96)	(12.06)	(-19.78)	(-0.21)	(1.03)	(2.58)
SALESGROWTH	-0.000	-0.000	0.003*	0.001	-0.000	0.001
	(-0.83)	(-0.62)	(1.71)	(1.38)	(-0.62)	(0.50)
GC	0.012	0.133**	2.740***	0.108***	0.071*	1.645***
	(0.39)	(2.28)	(14.44)	(2.99)	(1.85)	(18.29)
MW	0.004	0.177***	-0.141	0.005	-0.032	-0.148**
	(0.23)	(5.62)	(-1.42)	(0.15)	(-0.97)	(-2.09)
RESTATE	0.026**	0.029	0.096	-0.027	0.088**	-0.043
	(2.17)	(1.22)	(1.25)	(-0.78)	(2.37)	(-0.54)
TOTALACC	0.230***	0.061	-0.220	0.446***	-0.014*	-0.003
	(6.46)	(0.83)	(-1.03)	(61.26)	(-1.86)	(-0.16)
ACQUISITION	-0.025***	-0.022	-0.131***	-0.034	-0.000	-0.119*
	(-3.34)	(-1.47)	(-2.76)	(-1.10)	(-0.01)	(-1.70)
ACCELERATED	-0.016	0.215***	1.007***	-0.056*	0.116***	0.662***
	(-1.21)	(8.01)	(9.33)	(-1.71)	(3.33)	(8.65)
FYEDEC	0.022**	-0.052***	-0.306***	0.044*	-0.010	-0.259***
	(2.42)	(-2.99)	(-5.19)	(1.71)	(-0.35)	(-4.27)
Constant	0.286*	-0.152	0.627	0.115	0.151	0.081
	(1.74)	(-0.51)	(1.45)	(0.20)	(0.31)	(0.17)
Observations	4,370	5,710	5,177	2,629	3,237	3,098
Adjusted R-squared	0.275	0.085		0.698	0.053	
Pseudo R-Squared			0.344			0.243
Industry FE	YES	YES	YES	YES	YES	YES

Note: All significance tests are two tailed and '', '**' and '***' represent significance levels of 0.10, 0.05 and 0.01 respectively.*

Table 12: results from difference test on coefficients from models 7 until 12

Variable	DISCLOSE	FEMALE	FEMALE * DISCLOSE	BUSYNESS
Coefficient if BIG4 = 1 (Models 7, 8 and 9)	0.017** 0.036** 0.115**	0.016 0.058** 0.039	-0.030* -0.012 -0.027	0.001 -0.023*** -0.027
Coefficient if BIG4 = 0 (Models 10, 11 and 12)	-0.012 0.086*** -0.010	-0.053 -0.135** -0.102	0.134** 0.123* 0.043	-0.001 -0.021*** -0.001
Difference	0.029 -0.050 0.125**	0.069 0.193*** 0.141***	-0.164** -0.135* -0.070	0.002 -0.002 -0.026

Note: for every column the first number is the mean of DISACC, the second of UNEXPFEE and the third of AQGCO. The number of observations are shown between brackets. All significance tests are two tailed and '', '**' and '***' represent significance levels of 0.10, 0.05 and 0.01 respectively.*

The significant effects almost don't defer from the results tabulated in Table 10. Also, the results for fiscal year-end December and non-December are comparable. As can also be seen in Table 14 with a lack significant differences between significant coefficients. Only the difference for BUSYNESS for the proxy UNEXPFEE is a significant difference. This difference implicates the audit quality will decrease even more when the audit partner has more clients and the client has a fiscal-year-end in December. This seems to be a logical relationship, because the months after December are more busy than other periods. When the audit partner has less time for a client, it can lead to less audit quality.

This shows that the difference in fiscal year-end period makes few to no significant difference for the effects of disclosure, gender, the interaction effect and the busyness of the audit partner on audit quality. This can be explained with the reasoning of planning. Audit firms are aware of the extra workload in the period after December and might hire extra staff to do the work. This means the audit partner has even less influence on the audit work done per client, so his or her identity and characteristics has less influence on the audit quality.

Table 13: results linear regression analysis with sample divided on FYEDEC

	Fiscal year-end December			Fiscal year-end non-December		
	(13) DISACC	(14) UNEXPFEE	(15) AQGCO	(16) DISACC	(17) UNEXPFEE	(18) AQGCO
DISCLOSE	0.016	0.045***	0.050	-0.016	0.081***	0.073
	(1.37)	(2.62)	(1.13)	(-0.69)	(3.06)	(0.97)
FEMALE	0.012	0.000	0.034	-0.024	-0.012	-0.064
	(0.49)	(0.01)	(0.38)	(-0.66)	(-0.28)	(-0.56)
FEMALEDISCLOSE	0.019	0.026	-0.068	-0.016	0.052	0.060
	(0.66)	(0.64)	(-0.63)	(-0.28)	(0.84)	(0.34)
BUSYNESS	-0.001	-0.028***	-0.002	0.004	-0.013***	-0.006
	(-0.45)	(-10.63)	(-0.31)	(1.01)	(-3.10)	(-0.54)
ASSETS	0.008**	-0.043***	-0.093***	0.003	0.023**	-0.110***
	(2.05)	(-7.62)	(-6.24)	(0.41)	(2.36)	(-4.06)
BUSSEG	0.006***	-0.006**	-0.009	0.003	-0.010*	-0.020
	(3.14)	(-2.14)	(-1.21)	(0.61)	(-1.93)	(-1.48)
GEOSEG	-0.015*	0.075***	0.100***	-0.008	0.070***	0.257***
	(-1.84)	(6.13)	(3.27)	(-0.41)	(3.30)	(4.48)
INVREC	0.163***	0.003	1.153***	0.014	-0.172**	1.084***
	(4.41)	(0.05)	(7.98)	(0.20)	(-2.13)	(4.80)
FOREIGN	-0.004	-0.025	-0.104**	-0.013	-0.032	-0.203**
	(-0.29)	(-1.34)	(-2.24)	(-0.52)	(-1.12)	(-2.53)
LOSS	-0.039***	-0.011	-0.910***	-0.055**	0.020	-1.110***
	(-3.05)	(-0.58)	(-19.63)	(-2.10)	(0.65)	(-13.85)
CASHFLOW	0.023***	-0.001	-0.000	0.006*	-0.009**	0.133***
	(19.23)	(-0.50)	(-0.04)	(1.79)	(-2.08)	(2.64)
LEVERAGE	-0.000	-0.000	0.004	-0.000	0.000	0.013
	(-0.01)	(-0.40)	(0.78)	(-1.24)	(1.60)	(0.79)
SALESGROWTH	0.000	-0.000	0.001	0.001	-0.004	0.006
	(0.28)	(-0.50)	(1.09)	(0.47)	(-1.57)	(0.79)
GC	0.079***	0.122***	1.747***	0.106*	0.140**	1.355***
	(3.67)	(3.93)	(20.18)	(1.91)	(2.18)	(7.43)
MW	0.026	0.084***	-0.088	-0.011	0.002	-0.272**
	(1.38)	(3.16)	(-1.32)	(-0.31)	(0.04)	(-2.51)
RESTATE	-0.016	0.080***	0.004	0.055	0.045	0.092
	(-0.95)	(3.35)	(0.07)	(1.50)	(1.09)	(0.77)
TOTALACC	0.502***	-0.012*	0.013	0.326***	-0.023**	0.089*
	(94.28)	(-1.68)	(0.55)	(31.00)	(-1.97)	(1.86)
ACQUISITION	-0.033***	-0.005	-0.049	-0.028	-0.044	-0.069
	(-2.77)	(-0.31)	(-1.14)	(-1.16)	(-1.56)	(-0.87)
ACCELERATED	-0.046***	0.186***	0.947***	-0.065*	0.084**	0.837***
	(-2.97)	(8.13)	(14.48)	(-1.85)	(2.07)	(7.50)
BIG4	-0.036**	-0.019	0.037	-0.050	-0.113***	0.106
	(-2.39)	(-0.86)	(0.65)	(-1.52)	(-3.11)	(1.01)
Constant	0.034	-0.033	0.765	-0.676**	-0.600*	-0.479
	(0.09)	(-0.10)	(1.61)	(-2.55)	(-1.72)	(-0.76)
Observations	5,117	6,388	5,882	1,882	2,559	2,336
Adjusted R-squared	0.732	0.043		0.539	0.040	
Pseudo R-squared			0.249			0.247
Industry FE	YES	YES	YES	YES	YES	YES

Note: All significance tests are two tailed and '', '**' and '***' represent significance levels of 0.10, 0.05 and 0.01 respectively.*

Table 14: results from difference test on coefficients from models 13 until 118

Variable	DISCLOSE	FEMALE	FEMALE * DISCLOSE	BUSYNESS
Coefficient if FYEDEC = 1 (Models 13, 14 and 15)	0.016 0.045*** 0.050	0.012 0.000 0.034	0.019 0.026 -0.068	-0.001 -0.028*** -0.002
Coefficient if FYEDEC = 0 (Models 16, 17 and 18)	-0.016 0.081*** 0.073	-0.024 -0.012 -0.064	-0.016 0.052 0.060	0.004 -0.013*** -0.006
Difference	0.032 -0.036 -0.023	0.036 0.012 0.098	0.035 -0.026 -0.128	-0.005 -0.015*** 0.004

Note: for every column the first number is the mean of DISACC, the second of UNEXPFEE and the third of AQGCO. The number of observations are shown between brackets. All significance tests are two tailed and '', '**' and '***' represent significance levels of 0.10, 0.05 and 0.01 respectively.*

8 Conclusion and discussion

As of January 31st the names of U.S. audit partners are disclosed, as a consequence of Rule 3211 instated by the PCAOB in the United States. The PCAOB followed the example of many other countries, that already instated similar regulations before. This regulation was instated with the goal to increase both transparency and audit quality. Practitioners opposed this view and predicted there would be no effect of disclosure. This research aims to gain inside on which side of the discussion is right, by testing the effect of the disclosure on audit quality.

Based on literature, three different proxies for audit quality are used: discretionary accruals, unexpected audit fees and issuing a correct going concern opinion. By using all three in the analyses, the robustness of the results is visible.

According to the conducted analyses, there is a significant increasing effect of disclosure on audit quality. This effect remains when the sample is divided on Big-4 firms and later on fiscal year-end. There is not sufficient evidence for a difference between Big-4 and non-Big-4 firms or December and non-December fiscal year-ends. Furthermore, the effect of gender and the interaction effect are not significant, so no effect is visible in this research. Lastly, the busyness of the audit partner has a negative effect on audit quality. Again, there is no evidence for a difference between Big-4 and non-Big-4 firms or December and non-December fiscal year-ends.

This paper contributes to existing literature by investigating the effect of disclosure two years after the regulation is instated in the United States. Previous literature focused on the short term

(six months after the regulation) or other countries (The Netherlands and United Kingdom). Also, it adds to the literature on the differences between male and female audit partners. This research shows no effect of gender, which goes against the expectations based on psychological literature. Lastly, the additional analyses give insight in the differences in effect between Big-4 and non-Big-4 and between December and non-December fiscal year-end. These differences have not been researched yet, in combination with the disclosure effect and thus contribute to existing literature. Furthermore, it contributes to the ongoing discussion between practitioners and the PCAOB on the effect of the disclosure requirement. Given the results of this thesis, the PCAOB has succeeded in their goal to provide more audit quality. Another possible implication of these results is for other governments. There are several countries where this disclosure requirement is not yet instated. These governments might consider the results of this thesis in their considerations for this kind of requirement in the future. The decreasing effect of the amount of clients per audit partner can have a big implication for regulation setters. However, further research needs to be conducted on what amount of clients is optimal.

There are, of course, alternative explanations for the results found in this thesis. The sample is taken over a period of five fiscal years. In this time, audit firms have spend a big amount of resources on increasing audit quality. The increase in audit quality over time is possibly related to these investments. Furthermore, audit quality is not an exact measure. There are many different proxies discussed in literature and some proxies have proved to be good in predicting audit quality. Three different proxies are taken into account in this thesis, to provide as much robustness as possible. However, it is still possible these proxies don't provide a precise approximation of audit quality, which could lead to an incorrect interpretation of the results. Due to the unusual high value of the discretionary accruals mean, the model could paint an inaccurate picture. This should be taken into account when interpreting the results of this research. Also, the effect of disclosure could be an initial shock, due to the regulation. It is possible that this effect fades away when the years go by. Next, the assumption for the third hypothesis forms a limitation. When a different audit partner audited the company before the disclosure requirement, the results of the third hypothesis are useless. Lastly, this research only takes the characteristics of the audit partner into account, while the actual audit is conducted by a whole team of different people. The identities of these teams are not disclosed, so it is not possible to account for this factor. It is very likely that the composition of a team will influence the audit quality. Different teams, under the same audit partner, can possibly deliver very different results in audit quality.

The last limitation also raises the most interesting follow-up question: how do team compositions influence the audit quality? Multiple factors could be taken into account: seniority, gender, non-audit experience, etcetera. This would also give inside in the question if disclosing the partner name only is effective enough. Next to that, the effect of busyness per audit partner is also dependent on the audit team. The decreasing effect could disappear when the characteristics of the teams are taken into account. Furthermore, the effect of disclosure should be measured over multiple years. This can only be done in several years, when the data is available for the United States. It is possible that the effect will fade away over time and thus an analyses on the long-term would provide more information.

9 Appendix

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9.2 Tables

9.2.1 Variable descriptions

Table 1: Description of the variables used in the main regression model

A	**Dependent variables**
Variable name	*Description*
DISACC	The amount of discretionary accruals of the client, as estimated by the modified Jones model (Dechow et al., 2015).
AQGCO	The accuracy of issuing a going concern opinion by the auditor, as determined by the comparison between actual going concern opinion given and the Z-Score (Altman, 1968).
UNEXPFEE	The unexpected audit fee, based on the prediction by the fee model (Blankley et al., 2012).
B	**Variables of interest**
Variable name	*Description*
DISCLOSE	Dummy variable, which will take 1 if the audit report was issued after the implementation of the disclosure regulation, 0 otherwise (PCAOB).
FEMALE	Dummy variable, which will take 1 if the audit partner is female, 0 otherwise (PCAOB).
DISCLOSE * FEMALE	Interaction effect between DISCLOSE and FEMALE to capture the effect of disclosure on female/male audit partners (PCAOB).
BUSYNESS	The absolute number of public clients per audit partner (PCAOB).

Continued

Table 1: continued

C	**Control variables**
Variable name	*Description*
ASSETS	Natural logarithm of total assets of the company (COMPUSTAT).
BUSSEG	Sum of the reported business segments per company (COMPUSTAT segments file).
GEOSEG	Sum of reported geographic segments per company (COMPUSTAT segments file).
INVREC	The sum of inventory and accounts receivable divided by total assets (COMPUSTAT).
FOREIGN	Dummy variable, which takes 1 if there are non-zero currency translations and 0 otherwise (COMPUSTAT).
LOSS	Dummy variable, which takes 1 if there is loss in the prior year and 0 otherwise (COMPUSTAT).
CASHFLOW	Cash from operating activities divided by the lagged value of total assets (COMPUSTAT).
MB	The market value of equity (COMPUSTAT).
LEVERAGE	The total liabilities divided by the total assets (COMPUSTAT).
SALESGROWTH	Year-over-year sales growth (COMPUSTAT).
GC	Dummy variable, which takes 1 if a going concern opinion has been issued last period and 0 otherwise (Audit Analytics).
MW	Dummy variable, which takes 1 if the company disclosed a material weakness in last year and 0 otherwise (Audit Analytics).
RESTATE	Dummy variable, which takes 1 if the company announced a restatement of the previous financial statement during the current fiscal year and 0 otherwise (Audit Analytics).
BIG4	Dummy variable, which takes 1 if the company is audited by a Big-4 audit firm and 0 otherwise (Audit Analytics).
TOTALACC	Net cash flow from operating activities subtracted from income before extraordinary items. This divided by the lagged assets (COMPUSTAT).
ACQUISITION	Dummy variable, which takes 1 if the company has acquired or merged with another company in this or the last fiscal year and 0 otherwise (COMPUSTAT).
ACCELERATED	Dummy variable, which takes 1 if the company is a accelerated filer and 0 otherwise (Audit analytics).
FYEDEC	Dummy variable, which takes 1 if the company has a fiscal year ending in December and 0 otherwise (COMPUSTAT).

Note: all variables of the main regression model and how they are computed.

Table 2: Variable description audit quality models

A	**Modified Jones model**
Variable name	*Description*
TA	Total accruals (COMPUSTAT).
A	Total assets (COMPUSTAT).
ΔREV	The change in revenue between t-1 and t (COMPUSTAT).
ΔREC	The change in accounts receivable (COMPUSTAT).
PPE	The gross value of property, plant and equipment (COMPUSTAT).
NDA	Non-discretionary accruals.
B	**Audit fee Model**
Variable name	*Description*
FEE	The natural logarithm of audit fees per company (Audit Analytics).
CR	Current assets divided by the current liabilities (COMPUSTAT).
CATA	Current assets divided by total assets (COMPUSTAT).
ARINV	Sum of accounts receivable and inventory divided by total assets (COMPUSTAT).
ROA	Earnings before interest and taxes divided by total assets (COMPUSTAT).
INTANG	The ratio of intangible assets to total assets (COMPUSTAT).
SIC2	Industry fixed effect, based on a two-digit SIC (COMPUSTAT).
C	**Z-Score model**
Variable name	*Description*
Z-Score	An indication variable for the degree of financial distress the company is in. A Z-Score below 1.81 indicates a company in serious financial distress, with a high likelihood of going bankrupt. A score above 3 indicates a financially healthy company.
Working Capital	The working capital of a company, as defined according to the General Accepted Accounting Principles of the United States (COMPUSTAT).
Retained Earnings	The retained earnings of a company, as defined according to the General Accepted Accounting Principles of the United States (COMPUSTAT).
Earnings before Interest and Tax	The earnings before interest and tax of a company, as defined according to the General Accepted Accounting Principles of the United States (COMPUSTAT).
Market Value of Equity	The market value of equity of a company (COMPUSTAT).
Sales	The sales of a company, as defined according the General Accepted Accounting Principles of the United States (COMPUSTAT).
Total Assets	The total assets of a company, as defined according the General Accepted Accounting Principles of the United States (COMPUSTAT).
Total Liabilities	The total liabilities of a company, as defined according the General Accepted Accounting Principles of the United States (COMPUSTAT)

Note: all variables of determination models and how they are computed, except for variables mentioned in earlier tables

9.2.2 Output audit quality models

Table 6: outcome discretionary accruals audit quality regression model

	TA
1 / A	-0.117***
	(-61.16)
ΔREV	-0.184***
	(-2.96)
PPE	-0.325***
	(-7.45)
Constant	-0.991
	(-0.59)
Observations	7,608
Adjusted R-squared	0.351
Industry FE	YES

Table 7:outcome unexpected fees audit quality regression model

	FEE
ASSETS	0.495***
	(104.86)
CR	-0.011***
	(-10.80)
CATA	0.437***
	(11.00)
ARINV	0.202***
	(4.41)
ROA	0.000
	(0.52)
LOSS	0.197***
	(12.52)
FOREIGN	0.099***
	(6.52)
ACQUISITION	0.093***
	(5.98)
FYEDEC	0.086***
	(5.81)
LEVERAGE	0.000
	(0.85)
INTANG	0.202***
	(5.12)
BUSSEG	0.039***
	(16.71)
Going concern	0.069***
	(2.83)
Material weakness	0.025
	(1.18)
BIG4	0.536***
	(29.09)
Constant	9.257***
	(26.11)
Observations	9,717
Adjusted R-squared	0.863
Industry FE	YES

Note: All significance tests are two tailed and '', '**' and '***' represent significance levels of 0.10, 0.05 and 0.01 respectively*

9.3 Libby boxes