ERASMUS UNIVERSITEIT ROTTERDAM
ERASMUS SCHOOL OF ECONOMICS

Thesis Title: INVESTORS' PERCEPTION OF FORM AP DISCLOSURES: THE USE OF COMPONENT AUDITORS

Erasmus School of Economics
Erasmus University Rotterdam
MSc Accounting, Auditing & Control
Student name: Fizza Pervaiz
Student number: 475966
Supervisor name: Rob van der Wal
Second assessor: Jihun Bae

Abstract

This thesis investigates whether the recently available component auditor disclosures provide any decision useful information for the investors. These disclosures have been made mandatory by the PCAOB for all public company audit reports issued on and after 30th June 2017 as part of the Form AP filing. The thesis uses data for fiscal quarters ranging from the period 2016 to 2018. It is expected that the Earnings Response Coefficient will be higher in the post disclosure period as this disclosure provides insights about audit quality and makes the auditing process more transparent for investors. However, this thesis finds no significant change in ERC from the pre to post disclosure period. I also investigate whether the use of component auditors actually effects the audit quality or not and find a positive relation between the level of discretionary accruals and the use of component auditors which indicates lower audit quality. In conclusion, investors do not get any useful insights from the disclosures but the firms with disclosures of component auditors have lower audit quality.

Keywords: component auditor, Form AP, earnings response coefficient, audit quality, discretionary accruals.

Table of Content

1. Introduction 3
2. Background & Literature review 6
   - 2.1 Introduction 6
   - 2.2 Theoretical Background 6
     - 2.2.1 Institutional & Regulatory framework 7
   - 2.3 Literature review 9
     - 2.3.1 Investor's perceptions and Decision usefulness 9
     - 2.3.2 Component auditors and Audit Quality 10
   - 2.4 Hypothesis Development 12
3. Research Design 14
   - 3.1 Methodology and Models 14
     - 3.1.1 Decision usefulness (ERC model) 14
     - 3.1.2 Audit quality and use of component auditors 16
   - 3.2 Predictive Validity Framework 18
4. Sample selection & Data preparation 20
5. Empirical results 22
   - 5.1 Descriptive analysis 22
   - 5.2 OLS Regression Assumptions 23
   - 5.3 Regression analysis for ERC model 24
   - 5.4 Regression analysis for Accruals model 26
6. Conclusion 28

References 30

Appendix 32
- Appendix A Predictive Validity Framework 32
- Appendix B Variable Definitions 34
- Appendix C Tables 36
- Appendix D Tests for OLS assumptions 42

1. Introduction

Auditors play a vital role in the accuracy and transparency of financial reporting. According to the lending credibility theory (Hayes et al., 2005), the auditor helps to add credibility to the financial statements by providing assurance that the financial statements give a true and fair view of a company's performance. Investors rely on the quality of audited financial statements and this has important implications for the capital allocation decisions made by investors.

However, in the aftermath of the accounting scandals at Enron and WorldCom, investor confidence in the auditing process was shattered. This led to the creation of the Public Companies Accounting Oversight Board (PCAOB). The main aim of the PCAOB is to defend the interests of the investors by improving the accuracy and reliability of the company disclosures.

The PCAOB has adopted a number of regulations (Reid and Youngman, 2017) to make auditing more transparent for the investor. It issues inspection reports on the process followed by audit firms (Abbott and Zhang, 2008) which are made publicly available. Recently PCAOB introduced Rule 3211, *Auditor Reporting of certain Audit participants* which requires accounting firms to file Form AP[1]. This rule has been implemented for audit reports issued on or after 31st January 2017. Initially it required the audit firm to disclose the name of the audit partner. After 30th June 2017, the firms were also required to disclose the use of component auditors[2]. Component auditors are commonly used in group audits where the corporate structures include several components like subsidiaries, and these are geographically scattered (Carson et al., 2016).

Given the widespread globalization, businesses have operations which are based in multiple geographical locations. For example, Amazon headquarters are based in Seattle, United States but the operations of the company also extend to Canada, Europe and Africa. Amazon as a group is audited by the Ernst & Young (EY) Seattle office but the subsidiary based in United Kingdom is audited by the EY office in London. The latter is the component auditor in this case. There can be differences in the audit quality of the two audit offices due to differences in education, training and expertise of the auditors. Another important reason could be the local regulations and the litigation risk. This indicates why the use of component auditors might be of interest to the investors.

[1] Form AP stands for Audit Participants
[2] Component auditors are referred to as outside audit participants in Form AP

The disclosures about the audit participants have been made available recently on the recommendation of the Advisory Committee on the Auditing Profession (ACAP) in United States. This aims at increasing investor protection by providing information which may indicate audit quality. Also, these disclosures aim to make the auditing process more transparent for the investor (ACAP, 2016).

This research examines if the Form AP disclosures about component auditors provide any useful information to the investors i.e. whether they provide any indication of audit and financial reporting quality. It mainly focuses on how these disclosures are perceived by investors. The research question which this paper aims to answer is:

Do Form AP disclosures about the use of component auditors provide decision useful information for the investors?

This thesis is motivated by the Form AP disclosures as this information has been made available recently. It is important to shed light on how this impacts the information environment; whether it provides decision useful information for investors or not. There has been less clarity on the use of component auditors before Form AP and this research focuses entirely on the decision relevance of this information for the investors. Previous research has not focused on the relevance of these disclosures.

The PCAOB aims to protect investors and enhance transparency for them, so this research has important implications for the board as well. The goal objectives for Rule 3211 will not be met if the investors find the disclosures futile. So, the PCAOB may need to focus on alternative courses of action.

In order to carry out this research, I use the event study methodology to see the impact of an event (i.e. Form AP disclosure) on the value of a company (Mackinlay, 1997). For this I examine the investor reaction in the period following the disclosure requirement i.e. after 30th June 2017. The investor perception is measured by the Earnings Response Coefficient (ERC). I choose this indicator as it helps to gauge investor responsiveness and investors respond to information which is decision useful. Hence, ERC is a good measure of information which has valuation implications for the investor (Dechow et al., 2010).

To examine the investor perception of component auditor disclosure, I compare the ERC of the listed US companies in the period before the disclosure (pre-disclosure) to the period after the disclosures (post-disclosure). The sample used for this analysis is the fiscal quarters in the time period 2016 to 2018. I use the cumulative abnormal returns and earnings

surprise regression model for this thesis. The main variable of interest is the interaction of the variable *POST*, which is equal to 1 for the period after the disclosure, and the *UE* variable (the earnings surprise variable). I expect this coefficient to be positive and higher in the post disclosure period. Based on the main analysis in the thesis I find that the coefficient is not significant which indicates that the investors do not perceive the disclosures as useful. It can be interpreted as the disclosures providing no useful insights about audit quality.

In addition to this, my research also focuses on investigating whether the use of component auditors impacts the audit quality. As a proxy for audit quality I use discretionary accruals. Both audit quality and financial reporting quality play an integral role for economic decisions of investors. One of the factors which can influence audit quality is the use of component auditors. Hence, it is important to examine this relationship.

For this I use the discretionary accruals model and examine the relation between audit quality and the use of component auditors. The variable of interest here is *DISCLOSURE* and this is expected to have a positive coefficient which implies higher level of accruals and lower audit quality. On the basis of the main analysis I find a positive and significant coefficient of *DISCLOSURE* which indicates that the use of component auditors lowers the audit quality. It can be the case that the existing level of audit quality is already low, and this is coinciding with the recent disclosures.

This paper extends the existing literature on auditing in a number of ways. Before Form AP disclosures, there was no clarity on the use of component auditors. Prior research has focused more on the disclosure rather than the actual use of component auditors as in the case of Dee and Zhang, 2015. This research focused on Form 2 disclosures which did not identify the component auditors if they also served as lead auditors resulting in either misclassification or no disclosure. Another proxy used for the identification of component auditors has been the presence of foreign subsidiaries of companies (Carson et al., 2016) and the cases where lead auditor accepts and divides responsibility (Mao, 2018).

Since Form AP marks a clear distinction in engagements where component auditors are used and also the extent of their use, investors can easily identify the group audits. The existing literature is limited as this information has been available only recently, post June 2017, so this offers opportunity for research. PCAOB implemented the ruling to protect investors and it is worth exploring whether this is the case or not. Through this research I aim to examine the investor perception of the recent disclosures. This information is useful for the investor if it provides insights about audit quality. There are some indications by PCAOB that significant

audit deficiencies have been associated with component auditor use (PCAOB, 2016; Doty, 2016).

Form AP allows investors to identify group audits easily and there are certain audit quality issues which are innate to group audits (Sunderland and Trompeter, 2017). This can negatively impact the audit quality as the lead and component auditors face coordination and communication challenges. Hence, it might be interesting to study if the use of component auditors gives any indication of audit quality or not.

The rest of this paper is organized in the following manner. Section 2 sheds light on the theoretical background of Rule 3211 and Form AP. It also gives an overview of previous research and literature which leads to the hypothesis development. Section 3 focuses on the research design which empirically tests those hypotheses. Section 4 describes the sample selection process and descriptive statistics. Section 5 gives an overview of the results and the implications of our findings and Section 6 gives an overall conclusion.

2. Background & Literature review

2.1 Introduction

This chapter discusses the theoretical background and the prior research related to this topic. This section starts with an overview of the importance of auditors and how they help improve the value relevance of accounting information. This is supported by relevant theories and concepts. Then it discusses the institutional and regulatory framework for group audits and the use of component auditors. This is followed by empirical evidence of how investors perceive the use of component auditors and its decision usefulness. In addition to this, it also discusses if the audit quality is impacted because of using the component auditor.

2.2 Theoretical background

Auditors provide a vital service to the public by providing assurance on the financial statements of public companies. The information presented in these statements is important for the investors who rely on it for their capital allocation decisions. Agency theory states that the shareholders (principal) delegate the tasks and responsibilities to the management (agent). The management has a clear information advantage as they know more about the firm's financial performance. Here the auditors play a crucial role by monitoring and providing assurance that the financial statements are relevant and faithfully represent the financial conditions of the company.

Auditors help to enhance the credibility of the financial information and investors' confidence in the reported numbers which is in line with the lending credibility theory (Hayes et al., 2005). The audit report issued is meant to increase the credibility of the accounting numbers as the auditors provide independent assurance on the financial statements.

The stock market reactions to earnings announcement show that investors find the accounting information credible (Kothari, 2001). This information is decision useful if it triggers a reaction like changes in stock prices or high volume of trading pattern. Investors react to information which has value relevance for them. The theory of value relevance explains the importance of accounting information which depends on its ability to predict firm value i.e. stock prices (Holthausen and Watts, 2001). Information is regarded as decision useful if it helps to predict the value of a firm and has valuation implications for the investors e.g. earnings is a value relevant number for the investor, and this is evident in the stock market reaction following the earnings announcement of any firm. Earnings number signals to the investor of growth potential hence, it has valuation implications. The concept of value relevance is integral for the investors as it forms the basis for decisions.

Useful accounting information possesses the traits of both relevance and reliability. These are the fundamental qualitative features of useful information as mentioned in the Conceptual Framework for Financial Reporting. Information is relevant if it makes a difference in the decisions and it is reliable if it is free from bias. There are other characteristics which enhance the usefulness of accounting information. These include comparability, timeliness, verifiability and understandability.

Financial statements which are audited by high quality auditors provide information which is more relevant (Behn et al., 2008). Higher audit quality can improve the value relevance of the financial information. Hence, the auditor can have an influence on the financial reporting quality and its relevance for the investors.

2.2.1 Institutional & Regulatory framework

The group auditor can use the component auditor to audit the subsidiary or a component of the group. This can be done in two different ways. The first one is a shared responsibility audit, where the group auditor makes it clear in the audit report that the responsibilities of the audit have been shared with the component auditor. This can be done in cases where the group auditor has time constraints and cannot extensively review the work done by component auditor. However, that does not give any protection to the group auditor against litigation. Acknowledging the sharing of responsibilities is aimed at disclosing to the public who is

involved in the audit. This can help to motivate the component auditor to put in more effort as they might not want to be associated with any weaknesses of the audit. The second one is where the group auditor does not refer to the use of component auditors in the report. This is usually done where the lead auditor has properly supervised and achieved reasonable assurance that the quality of work done by component auditor is satisfactory. Though the litigation risk of the group auditor is higher in this case.

The rule regarding the use of component auditors is issued by two regulatory bodies, the IAASB and PCAOB. The accounting scandals have garnered significant attention which resulted in the creation of the PCAOB, which serves as a regulatory body monitoring the accounting profession. The primary aim of the Board is to improve audit quality and restore public trust in the auditing profession. In order to do this, the Board has focused on reforms that help increase transparency of the auditing process. For this, the PCAOB implemented Rule 3211, *Auditor Reporting of Certain Audit Participants,* as a result of which audit firms need to file Form AP. This form includes disclosures about the audit partner initially, and after 30th June 2017 information about the use of component auditors was also included.

The main motivation of this ruling is to increase transparency for the investors so that they know about the involvement of outside participation in the audits. This ruling intends to provide new and decision useful information to investors. This information can be regarded as useful if it gives insights about the audit quality.

Increasing disclosures about the auditing process also helps to regain public trust in the profession which was shattered by the Enron and WorldCom accounting scandals. Providing the public with more information about who is involved in the process can make them more confident about the reporting quality and improve value relevance of the numbers. However, the effectiveness of this regulation has not been confirmed by research yet. Some research suggests that the investor trading pattern after these disclosures is not affected (Doxey et al., 2018). While some studies indicate that the market reacts negatively to the use of component auditors (Dee and Zhang, 2015). The nature of mixed evidence regarding the decision usefulness of the disclosures raises concern about achieving the intended goal and purpose of the regulation.

The other regulatory body governing the use of component auditors is the International Auditing and Assurance Standards Board (IAASB). IAASB introduced ISA 600 which directs how the group auditor is responsible for the audit and how he/she can monitor the audit quality where component auditors are used. The revision of this standard makes it clearer for the lead auditor to take full responsibility and obliges him/her to be involved to a larger extent in the

work performed by the component auditor. Carson et al. (2016) evaluate the effect of implementing ISA 600 in an Australian setting. They find an increase in audit effort by the group auditors as they need to supervise the work of component auditors. The researchers also find that this has been associated with a decrease in the use of component auditors as the costs of using them have increased due to ISA 600. But the audit quality increase is also present. However, it is difficult to pin down this improvement entirely to ISA 600 and so it is unclear how the audit quality is affected.

2.3 Literature review

2.3.1 Investor perceptions and decision usefulness

There has been limited prior research on the use of component auditors as this information was either not available or not properly disclosed. Dee and Zhang (2015) conducted similar research using Form 2 filings. Pre-Form AP period, one of the ways to identify the use of component auditors was Form 2. Form 2 only disclosed outside participants if they did not serve as lead auditors for any audit engagement. Dee and Zhang investigate the differences in audit quality for SEC issuers (experimental sample) which are disclosed as using component auditors compared to a sample of issuers (matching sample) which do not use component auditors. For audit quality they use two proxies- discretionary accruals and audit fees. In order to gauge the investor perceptions, they examine the market reaction following Form 2 disclosures along with the changes in ERC. They found that there was a negative market reaction to the disclosure of the use of component auditors along with a decline in perceived audit quality. This was supported by a decline in the ERC and higher level of discretionary accruals. However, there were limitations in Form 2 disclosures which resulted in incomplete identification of component auditors. It mainly included auditors of lower quality and less experience as auditors who served as both component and lead auditors were not included. The negative market reaction and a decline in perceived audit quality may be because the component auditors identified in Form 2 are not competent and the disclosures are already biased. Hence, the findings of this research are unreliable.

There is mixed evidence in similar research conducted more recently. Doxey et al. (2018) found no market response to the content of Form AP disclosure in terms of no abnormal trading pattern or volumes around the disclosure date. This casts some doubt on the relevance of these disclosures to the actual capital allocation decisions made by investors. This evidence regards the information event as insignificant as there are no changes to investor trading behavior following it. On the other hand, experimental research conducted by Hux (2018)

shows that non-professional investors invest less in companies where component auditors are used. However, since non- professional investors do not have specialized knowledge it is doubtful whether this decrease is linked to the use of component auditors or there could be other factors at play.

2.3.2 Component auditors and audit quality

In another research conducted by Burke and Hoitash (2018) the use of component auditor has been associated with a greater likelihood of disclosing material weaknesses in the financial statements. This sheds light on the competence of component auditor used which can reduce the chances of adverse audit outcomes. This also suggests that that the use of component auditors is not uniformly detrimental for audit quality. It is possible that the component auditor has more knowledge of local regulations which can lead to higher audit quality. The audit firm usually makes use of a component auditor in cases where the group auditor is unable to audit the subsidiary because of geographical dispersion of operations or the lack of resources by firm. In such situations using the component auditor can lead to higher audit quality and it may not be feasible for the group auditor to perform an audit (Sunderland and Trompeter, 2017).

There is more evidence suggesting that the use of component auditors will lead to higher audit quality for audits of subsidiaries. Carson et al. (2016) looks at the impact on audit quality after the implementation of ISA 600[3] specifically for Australian audit firms. Two different proxies are used for audit quality namely; discretionary accruals and the likelihood of auditor issuing a modified going concern report. For the first proxy i.e. discretionary accruals, they found that the use of component auditors results in higher audit quality (lower discretionary accruals) following the implementation of ISA 600. However, there was an overall reduction in the likelihood of auditor issuing a modified going concern opinion and this was true for audit firms which were not using component auditors. This indicates that ISA 600 overall has had no effect on audit quality.

Another research examined the differences in audit quality of consolidated entities and non-consolidated ones (Glover and Wood, 2004). This is relevant because consolidated entities are more likely to have a component auditor as part of the audit team for a certain subsidiary or component. According to the findings, the audit quality for consolidated entities is higher than that for non-consolidated entities which is mainly because of higher accountability of

[3] ISA 600 deals with Special considerations- Audits of Group financial statements.

component auditors. They need to report the work performed to the lead auditor and they face more accountability. Hence, they tend to be extra careful and vigilant about their audit approach which results in higher audit quality for the subsidiaries. The findings of these papers do raise questions about the PCAOB regulation introduced and whether these were deemed necessary since this research suggests that component auditors play a conservative role due to more accountability. This might be due to the stereotype associated with component auditors performing poor quality audits. So, they are likely to be more alert and cautious resulting in higher audit quality.

On the other hand, there are some issues which are inherent to the nature of international group audits (Downey and Bedard, 2018). There can be coordination and communication challenges which can negatively impact the audit quality. Managing these audits can be hard due to the geographical dispersion of operations and inability to directly supervise the component auditors. There can be differences in training, expertise and local knowledge. All these factors can harm audit effectiveness and efficiency leading to lower audit quality. Stewart and Kinney (2003) also suggest that group audits are complex because it is difficult to combine information about operations which are conducted in jurisdictions with different auditing and accounting regulations. This can be the case even in the same audit firms due to cross country differences in accounting rules and culture which leads to lack of uniformity in auditing practices.

Moreover, there can be conflicts of interest between the group and component auditor (Sunderland and Trompeter, 2017). The aim of the group auditor is to achieve an appropriate level of audit quality for the group as a whole but the focus of the component auditor maybe mainly on the audit quality of the subsidiary. If there is no requirement to publish the financial statements of the subsidiary, then the main litigation risk lies with the group auditor not the component auditor.

The litigation risk theory states that the audit firm is exposed to the risk of lawsuit if it does not achieve a certain level of audit quality. Research by Khurana and Raman (2004) suggests that in cases of higher litigation risk the audit quality increases. In the United States the litigation risk is higher, and Form AP are available for listed companies in United States only. Hence, the litigation risk is higher for the group auditor as compared to the component auditor as the subsidiaries are located outside the U.S. So, the group auditor is more likely to achieve higher audit quality to avoid litigation (Palmrose,1988). Therefore, there can be misalignment of incentives to avoid litigation resulting in lower audit quality for audits where component auditors are used. Since the principal or group auditor bears the primary risk of

litigation and reputation damage, it has the incentive to ensure the high audit quality (Simunic and Stein, 1987). Hence, investors may be aware of the strong incentives which hold for the group auditor and the use of component auditors may not alter their perceptions of audit quality. This can explain scenarios where the market does not react to this information disclosure and there is no effect on ERC.

In addition to this, there can be variation of culture and ethical standards between countries. Audit quality is likely to be lower if component auditors belong to a country with lower ethical values than the United States. It can also be higher in countries where stronger ethical values are present as compared to those in the United States. It may also be interesting to note that auditors might not be more or less ethical, but they are just complying to the regulatory system present in a country. For instance, in the United States there are strict financial claims and penalties which are imposed on auditors and this may account for the audit outcomes rather than their ethical values. Smith and Hume (2005) also discuss the differences in ethics. Individualistic societies promote values of standing by your principles and so auditors are more likely to follow rules. Also, there can be differences in how auditors respond to risks and accommodate their clients. Their risk appetite also varies according to their cultural values. Yamamura et al. (1996) examine the differences in how Japanese auditors respond to risks as compared to American ones.

Recent PCAOB oversight activities have also pointed out the audit deficiencies in teams which use component auditors (PCAOB; Doty, 2016). This indicates there are quality concerns. Inspection reports have attributed restatements to component auditors who did not perform procedures required by the lead auditor or the PCAOB standards. They also failed in communicating important issues to the lead auditor (PCAOB 2018; Harris 2016). The board has also focused its efforts to tighten the auditing standards which dictate the supervision of audits which involve component auditors. The need for any regulation is evidence of the fact that the audit quality might be impacted when component auditors are used.

2.4 Hypothesis Development

The evidence in prior literature is mixed about how investors perceive the use of component auditors. While Dee and Zhang, 2015 found a negative market reaction to the Form 2 disclosures, Doxey et al. (2018) found no pattern of abnormal trading around the Form AP disclosure date. This indicates that the latter found no usefulness of Form AP disclosures for the investors. On the contrary, Hux (2018) found that non-professional investors invest less in companies where component auditors are used. Hence, suggesting that the disclosure of Form

AP is useful for the investor. There is mixed evidence and this makes it difficult to predict the direction of the results.

In order to be informative, Form AP must provide decision useful information to the investors. Prior literature is very unclear about whether the use of component auditor is accounted for in the investment choices. This research proposes that the data in Form AP may be relevant to stock prices as the use of component auditors can have implications for the quality and reliability of financial reporting.

There is also some inconsistency in prior research about how the use of component auditors impacts the audit quality. Burke and Hoitash (2018) found that component auditors are more likely to disclose material weaknesses, and this reduces the chances of adverse audit outcomes. Hence, indicating higher audit quality. Similarly, the use of component auditors has been linked with consolidates entities. Glover and Wood (2004) have found that the audit quality for consolidated entities is higher as compared to non-consolidated entities. However, Downey and Bedard (2018) have found evidence indicating that there are issues inherent to group audit like differences in training, experience and geographical coordination that can negatively affect the audit quality. On similar grounds, differences in ethical values and litigation risk in countries can also affect audit quality.

The mixed evidence in prior literature leads to the following sets of hypotheses:

$H_{o:}$ Form AP disclosures about the component auditors do not provide decision useful information for the investors

$H_{1:}$ Form AP disclosures about the component auditors provide decision useful information for the investors

H_o: The use of component auditors does not impact the audit quality

$H_{2:}$ The use of component auditors negatively impacts the audit quality

3.Research Design

This section gives a detailed overview of the research design for the thesis. It first explains the external validity framework, which is followed by the methodology used (including the regression model and variables) for both the hypotheses.

3.1 Methodology and Models

There are two main hypotheses tested in this thesis. The methodology and variables are different for the two and discussed separately below.

3.1.1 Decision usefulness of Form AP disclosures- ERC model H1

In order to measure the decision usefulness of Form AP disclosures I choose the abnormal returns and earnings model. This model helps to measure the market reaction to the newly available Form AP disclosures. The stock market reacts to the earnings announcement of firms as this reveals new information. This is shown by the basic earnings-returns model below:

$$Ret_t = \alpha + \beta EarningsSurprise_t + \varepsilon \quad (1)$$

The new information revealed in an earnings announcement is an earnings surprise. It is defined as the difference between actual and expected earnings. For the unexpected earnings it is a standard practice to use analyst forecast according to prior research (Teoh and Wong, 1993; Francis and Ke, 2006). This is indicated by the following calculation:

$$Unexpected\ Earnings = Acutal\ EPS_{it} - Expected\ EPS_{it} \ (2)$$

Here *i* indicates the firm and *t* indicates the quarter. The actual earnings per share and expected ones i.e. the median analyst consensus forecast is compared, and this how the earnings surprise is calculated.

If decision useful information is provided by the earnings surprise, the investors react to the news and it is reflected in stock prices and returns. This is measured by the ERC which is the slope of the equation listed above. ERC is indicated by β in equation (1) and it is expected to be significant if investors find the disclosures in Form AP decision useful. The investor perception is measured by the ERC. I choose this indicator as it helps to gauge investor responsiveness and investors respond to information which is decision useful. Hence, ERC is a good measure of information which has valuation implications for the investor (Dechow et

al., 2010). ERC is also the most widely used measure for decision usefulness in prior research (Dee and Zhang, 2015; Francis and Ke, 2006; Teoh and Wong, 1993). It is used in the context of event studies where you want to examine how investors react to a particular event. This fits in with the hypothesis and requirements of this research. Hence, I opt for the ERC model. Another proxy for investor perceptions is abnormal trading volume (Doxey et al., 2018). However, abnormal trading volume might not be solely attributable to Form AP disclosures and there can be company specific events and news which can cause it. It is very difficult to isolate the impact of specific disclosures, so I do not use this proxy.

I use an event study method to examine how an event impacts the value of a company (Mackinlay, 1997). This centers on a three-day event window (-1, 0, +1) around the earnings announcement date. The event here is the filing of Form AP. Event studies help to capture how a certain event impacts the stock prices and market reaction and it is best suited to the research design of this thesis.

For this event study, the cumulative abnormal returns are defined as follows:

$$CAR = \sum_{-1}^{+1}[R_{it} - (\hat{\alpha} + \hat{\beta} R_{MKT})] \quad (3)$$

Abnormal return is defined as the difference between the company's actual return and the expected returns which are calculated using the market model. The expected returns are calculated for an estimation window of 120 days prior to the event date (Mackinlay, 1997). There is no overlap of the estimation and event window which helps to ensure no information leakage prior to the event.

After computing the cumulative returns and earnings surprise, I use the cumulative abnormal returns and earnings surprise regression model (Francis and Ke, 2006) to see how the ERC changes from the pre to post disclosure period. For this I use an indicator variable *POST*, which has a value of 1 for all earnings announcement after the disclosures are available and 0 otherwise. It takes a value of 1 after 30th June 2017 when the disclosures are available. The variable of interest here is the interaction of the terms *POST* and earnings surprise (*UE*). Hence, the coefficient of interest is *UE*POST* (β_3). I expect this coefficient to be higher in the post disclosure period as the disclosure might provide useful information to the investor i.e. indication of audit quality. The model is specified below and the variables are defined in Appendix B, Panel A.

$$CAR_3 = \alpha + \beta_1 UE_{iq} + \beta_2 POST + \beta_3 UE_{iq} * POST + \beta_n UE_{iq} * Control\ variables + \varepsilon_{iq} (4)$$

Following prior studies, I use a set of control variables which are applicable for the ERC model. These include the *MTB, LEVERAGE, LOSS, SIZE and BIG4. MTB* indicates the market to book ratio at the beginning of the quarter which shows the growth potential of the company and this has an impact on the investor responsiveness to earnings numbers (Teoh and Wong, 1993; Francis and Ke, 2006). Since growth opportunities can have an impact on the future earnings, investors are likely to respond more to high growth companies. Second, *LEVERAGE* shows the debt to equity ratio. This has an impact on ERC as the higher the leverage the less investors respond to earnings news. This is mainly because higher debt leads to less dividend payments. Third, *LOSS* is an indicator variable which equals 1 if quarterly EPS is negative. This is a proxy for earnings persistence as investors respond positively to persistent and stable earnings. Earnings persistence also signals to the investor that the firm has low risk (Francis and Ke, 2006). Fourth variable is *SIZE* which is the logarithm of total assets and ERC varies with size of the company, so it is important to control for it. Lastly *BIG4* is another indicator variable which is used for isolating the effect of having a Big 4 auditor as ERC is higher in cases this holds.

3.1.2 Use of component auditors and audit quality-Accruals model H2

Next, in order to study whether the use of component auditors actually effects the audit quality I use the discretionary accruals as a proxy for audit quality (Kothari, Leoena and Wasley, 2005). Discretionary accruals (DA) is that part of total accruals which the managers can easily manipulate by using their judgment. I use discretionary accruals as a proxy as it can measure both audit and financial reporting quality (Gaynor and Kelton, 2016). It is one of the widely used measures in prior research.

There are other indicators of audit quality which are used in prior research like number of restatements and the issuance of going concern reports. Restatements of financial statements is not a suitable proxy as these are usually detected and disclosed in future years, so it is highly unlikely that the measure is accurate, and it is underestimated. This can lead to a bias in the findings. On the other hand, issuing a going concern report does not indicate much about the audit quality due to the restricted nature of the report. It raises concerns about the sustainability of the business operations but gives little indication of the financial reporting quality. It is unlikely to have communicative value since there is an information gap between the auditors and the users. Hence, it is not a suitable indicator of audit quality.

For calculating the discretionary accruals, I basically use the Jones model (1991) with some modifications as proposed by Dechow et al. (1995). This involves excluding receivables from the determination of non-discretionary accruals (NDA), as these can be subject to management discretion as well. I also adjust for performance of the companies by adding the lagged return on assets (ROA) variable as done by Kothari et al. 2005. I do this by adding the ROA variable to the modified Jones model. This helps to control for the change in accruals which may be correlated with earnings performance especially for companies with unusual performance.

I choose the modified Jones model as it is intended to reduce the measurement error of accruals when discretion is used over sales. The modified Jones model is slightly more powerful than the other models in computing discretionary accruals. It also has lower standard errors (Dechow et al., 1995). I use the absolute value of discretionary accruals in order to look at the magnitude of the accruals rather than their direction. For measuring audit quality, the magnitude holds importance not increasing or decreasing accruals. It is important to know whether accruals are managed or not and this gives an indication of audit quality.

In order to compute the discretionary accruals first I use the modified Jones model (shown below) to get parameter estimates from regressing total accruals and measures of activity which drive working capital and long-term accruals. Then I use these estimates in the second equation to calculate NDA. NDA basically includes working capital accruals like changes in creditors and stock and long-term accruals like depreciation. Receivables are excluded here as these are part of DA. I also control here for firm performance by adding the lagged variable Return on Assets. The whole model is scaled by a lagged measure of total assets to control for firm size effects. Then I calculate DA by subtracting NDA from total accruals. I use the absolute value of accruals for the regression. The variables listed below are defined in Appendix B. Here T indicates the time and J indicates the company.

$$TACC = \frac{\beta_0}{TA_{JT-1}} + \frac{\beta_1(\Delta REV_{JT})}{TA_{JT-1}} + \frac{\beta_2\, PPE_{JT}}{TA_{JT-1}} + \beta_3\, ROA_{T-1} \quad (5)$$

$$NDA = \frac{\beta_0}{TA_{JT-1}} + \frac{\beta_1(\Delta REV_{JT} - \Delta REC_{JT})}{TA_{JT-1}} + \frac{\beta_2\, PPE_{JT}}{TA_{JT-1}} + \beta_3\, ROA_{T-1} \quad (6)$$

$$DACC = |TACC - NDA| \quad (7)$$

Second, I use the DACC computed above in the main regression model (8) to see how the use of component auditors impacts the audit quality. For this I use an indicator variable for component auditor use *DISCLOSURE* which equals 1 for engagements where component auditors are used and 0 otherwise. I use the Form AP disclosures to identify engagements where component auditors are used. I use the regression model specified by Francis and Yu, 2009. I expect a high value of discretionary accruals which indicates lower audit quality, and this is denoted by the coefficient of the dummy variable *DISCLOSURE*. So, the variable of interest is β_1. The variables are defined in Appendix B, Panel B.

$$DACC = \beta_0 + \beta_1 DISCLOSURE + \beta_2 CFO + \beta_3 GROWTH + \beta_4 SIZE + \beta_5 \frac{DEBT}{TA} \beta_6 CFVOL + \beta_7 SALESVOL + \beta_8 ICW + \beta_9 BIG4 * US + \beta_{10} BIG4 * FOREIGN \quad (8)$$

This model includes control variables like *CFO*, which is the cash flow from operations and is likely to have an impact on the discretionary accruals (Dechow, Sloan, and Sweeney 1995). It also includes sales growth denoted by *GROWTH* along with the *SIZE* of the company which is the logarithm of total assets (Menon and Williams, 2004). The debt to assets ratio is a proxy for bankruptcy risk which indicates lower audit quality. The cash flow (*CFVOL*) and sales volatility (*SALESVOL*) also need to be controlled as this impacts the discretionary accruals (Hribar and Nichols, 2007). The number of internal control weakness (*ICW*) is another variable which effects the discretionary accruals and audit quality and need to be included. The variable *BIG4* is also added as it has an impact on the level of accruals and the audit quality. This has been divided into *US* and *FOREIGN BIG4* firms since there can be differences in experience, training and education of Big 4 audit firms outside the US in addition to differences in regulation and litigation risk.

3.2 Predictive Validity Framework

The predictive validity framework of Libby et al. (2002) is shown in Appendix 1. This shows how the research model operationalizes the theoretical concepts and measures them. It is a depiction of the dependent and independent variables and it captures the hypothesized causal relation. Libby boxes also show how the conceptual research design is executed.

For this framework construct validity plays a crucial role. It refers to the extent to which a model actually measures what it claims to represent. This is shown by the operationalization of the concepts in the Libby boxes. For the first hypothesis (as shown in Appendix A), the

independent variable is operationalized by the dummy variable *POST*, which equals 1 for the time period after the Form AP disclosures are available and 0 otherwise. The dependent variable is measured by the cumulative abnormal returns (CAR). This measures the decision usefulness of the information while the *POST* variable indicates Form AP filings.

For the second hypothesis (as shown in Appendix A), the dependent variable audit quality is measured by the variable *DACC* which are discretionary accruals. The independent variable is the use of component auditors and is denoted by the dummy variable *DISCLOSURE*. The disclosure variable indicates the Form AP includes the information that a component auditor is used. Hence, both the models have high construct validity as the X and Y variables measure the relevant concepts in the model.

Internal validity is also an important consideration, it addresses the relation between independent and dependent variables. High internal validity means that the observed results are due to the effect of independent variables on dependent variable. For this to hold all other variables need to be controlled for. The models used in the thesis include some control variables. The first model includes relevant control variables which can affect ERC like the firm size, leverage, persistence of the earnings, type of auditor, and the market to book ratio of equity. This helps to look at the impact the disclosed information has on ERC. Similarly, the second model includes control variables which effect the level of accruals like the type of auditor, the volatility of cash flows and sales, operating cash flows, growth rate of sales, size of the firm and the number of internal control weaknesses. This helps to determine what happens to the level of accruals when a component auditor is used. Since both models use control variables there is reasonable certainty that the observed results are due to the effect of independent variable.

External validity represents the generalizability of the results to other time periods, samples and other measurement methods. Both the models use data for US companies only so that limits the generalizability of the results. In addition to that the data for Form AP is only available for the fiscal years 2016, 2017 and 2018 therefore it is difficult to generalize the results to other time periods.

The variables in the ERC model have multicollinearity issues due to which regression results are omitted. In order to deal with this, I used the demeaning method for the direct effect of the interaction variables. By centering these variables around the mean, I was able to reduce the multicollinearity issue and obtain results for all variables in the model. I also tested the variance inflation factors (VIF) for the variables in order to test for multicollinearity. The interaction variable between *UE* and *SIZE* exceeds the rule of thumb of 10 so this indicates that

multicollinearity exists. Hence, this variable is dropped from the main regression analysis to reduce standard errors and better fit the model to regression analysis. Multicollinearity does not exist in the Accruals model and this is shown by the variance inflation factors in Appendix D, Panel B.

4. Sample Selection & Data preparation

This section sheds light on how the sample is selected and how the data is prepared. All data collected is merged on STATA and then analyzed using regression analysis.

This research focuses on the sample of companies which are listed on NYSE, AMEX[4] and NASDAQ stock exchanges as the filing of Form AP is mandatory for the audit of all SEC issuers. This means that all companies which are listed on the stock exchange in the US are included. Companies are not restricted on the basis of Standard Industry Classification (SIC) since this effect the generalizability of the conclusions. However, duplicate filings are excluded along with filings between 31st January 2017 and 29th June 2017 as these include details about Audit Partners only. This thesis focuses on component auditor disclosures not audit partners. So, the disclosures relevant are the ones available post 30th June 2017.

For this thesis I obtain data from the Auditor Search database available on the PCAOB website in addition to CRSP, Compustat North America Fundamentals, I/B/E/S and Audit Analytics. These databases are available on the Wharton Research Data Services (WRDS).

The initial sample for this thesis is obtained from the PCAOB website. This data consists of Form AP filings for all SEC issuers after 1st February 2017. This includes a total of 34797 observations for fiscal years 2013-2018. I retain the observations for fiscal year ended 31 December 2016, 30th December 2017 & 30th December 2018 and exclude the ones for investment companies and employee benefit plans. In order to focus on the disclosures of component auditors audit reports issued after 1st May 2017 are considered. Since Central Index Key (CIK) is the key identifier in this dataset the missing values for CIK are dropped. For the first hypothesis only those Form AP are included which are filed after 30th June 2017. The initial sample for H1 is 5793 and 7705 for H2.

Second, the data for the financial variables for H1 is collected from Compustat Fundamental Quarterly for fiscal quarters from 2015-2018. This includes data for Total Assets, Debt, market value and book value of Equity. Data for fiscal quarters in 2015 is needed to

[4] NYSE is the New York Stock Exchange
AMEX is the American Stock Exchange

calculate the lagged value of control variables. I obtain CUSIP, CIK, Stock Exchange code, SIC for firms from Compustat. I retain data only for those companies which are listed on NASDAQ (EXCHG code 14), AMEX (EXCHG code 12) and NYSE (EXCHG code 11). Using CIK as the key variable I merge Dataset 1 with Compustat data resulting in a sample of 3924 firms.

Next, in order to calculate the dependent variable CAR_3 the daily returns are downloaded from CRSP security files along with the value weighted returns index. The data for earnings announcement dates and unexpected earnings is downloaded from I/B/E/S summary statistics for the fiscal quarters 2015-2018. The firm identifier in I/B/E/S is the 8-digit CUSIP. While the firm identifier NCUSIP in CRSP equals CUSIP in I/B/E/S. The CRSP dataset is merged with the I/B/E/S dataset. Using the earnings announcement date as event date the CAR is calculated based on an event window of (-1,0, +1). Unexpected earnings are also calculated in the same dataset, which is the difference of actual EPS and median analyst forecast.

Then this dataset is merged with Dataset 2 (Compustat & PCAOB data) on the basis of CUSIP, the common identifier for Compustat, I/B/E/S and CRSP. This gives the final dataset with a sample of 2418 firms and 13781 firm quarter observations.

For H2, the data collected for calculating the discretionary accruals is obtained from Compustat North America Fundamentals Annual from 2006-2018. This consists of data for Sales Revenue, Receivables, Net Income, Property, Plant & Equipment, Cash flow from Operations and Total Debt. The modified Jones model calculates accruals using data before the event period, i.e. Form AP filing date so this is done using data for previous 10 years. This data is merged with the Form AP data on the basis of CIK which results in a sample of 3258 firms. Lastly this data is merged with the *Audit Analytics* dataset (which includes data for internal control weaknesses) on the basis of CIK and this results in a sample of 3105 firms and 10454 firm yearly observations. The sample selection process is shown in Table 1 (Panel A) of Appendix C.

5. Empirical results

5.1 Descriptive analysis

Table 1 Panel B includes the tables for both the hypotheses showing the distribution of observations across the industries. The groupings of sectors are based on a 2 digit SIC code. Both the models use observations spread across various industries.

Table 2 Panel A reports the descriptive statistics for the first hypothesis. There are 13781 observations in total with the sample size for the pre-disclosure period (N=3830) being smaller as compared to the post disclosure period (N=9951) as more data is available post 2017. The data indicates that the pre-disclosure sample does not differ significantly for proxies of risk (*LEVERAGE*), earnings persistence (*LOSS*) and firm size (*SIZE*) from the post-disclosure sample.

The panel shows that the mean of the cumulative abnormal return centers around zero while the average of earnings surprise is higher in the post- disclosure period (0.02) as compared to the pre- disclosure period (-0.03). Similarly, the mean of the absolute value of the earnings surprise is higher in the post-disclosure period. The market – to- book ratio has a positive sign which indicates that firms are growing. The mean of Leverage which is the ratio of debt and equity indicates a decrease from 1.11 to 0.74 which means that in the post-disclosure period there is more equity financing.

Panel B shows the descriptive statistics for the second hypothesis. There are 10454 observations in total with sample division on the basis of use of component auditor. The sample includes 4887 observations without the use of component auditors and 5567 with the use of component auditors.

The level of discretionary accruals has risen on average post disclosure of component auditors from 0.19 to 0.21. This indicates that the use of component auditors has on average led to higher discretionary accruals and lower audit quality. The mean of cash flow from operations has also shown a significant increase from 779.1 to 980.6. On the other hand, the mean of sales volatility has decreased substantially from 795.6 to 613.9. The mean for the ratio of debt to total assets is less than 0.50 in both periods which indicates that debt finances less than 50% of the total assets.

Table 3 reports the Spearman correlation among the regression variables used in the main analyses. Panel A shows the variables for the first hypothesis, though all the correlations listed are below 0.6. There are some variables which are significantly correlated. SIZE has a

moderate significant correlation with *CAR3* (0.025), *UE* (0.040), *POST* (0.028) and *MTB* (-0.059) and a strong significant correlation with *BIG4* (0.354). UE also has a moderate significant correlation with all the variables.

Panel B shows the correlation of variables for the second hypothesis. There are significant correlations though all of them are below 0.6. *SIZE* has a moderate significant correlation with *DISCLOSURE* (0.046), *BIG4* (0.047), *GROWTH* (0.020), *DEBT/TA* (-0.113), *ICW* (-0.184) and a strong significant correlation with *DACC* (-0.304). *CFVOL* and *CFO* have a strong significant correlation with *SVOL* (0.537, 0.546) which seems logical as cash flows depend heavily on receipts from sales. The issue of multicollinearity is further verified using the variance inflation factors test.

5.2 OLS Regression Assumptions

In order to use the Ordinary Least Squares (OLS) regression analysis certain assumptions need to be met. First, there needs to be no linear relation between the independent variables i.e. no multicollinearity. Second, the variance of the error term needs to be constant which is known as homoskedasticity. Third the residuals need to have a normal distribution. In this thesis I conduct several tests to verify whether these assumptions hold. The variance inflation factors are used to test for multicollinearity, the Breusch-Pagan test is used to check for heteroskedasticity, and the histogram of the residuals is examined to check for normality of the distribution. The results for all these tests are shown in Appendix D.

Panel A shows the results for hypothesis 1. The VIF test for multicollinearity shows that the interaction of *UE*SIZE* has a VIF of 27.64 which exceeds the rule of thumb of 10. This indicates the existence of multicollinearity. Hence, eliminating this interaction from the regression analysis will reduce the standard errors and better fit the model. After eliminating this the VIF of the remaining variables comes to an acceptable except *UE* but it is the main variable of interest hence it cannot be dropped. The interaction of *UE* and *SIZE* is eliminated from the entire regression analysis. Panel B shows the VIF for the second hypothesis and none of them exceeds 10 which shows there is no issue of multicollinearity.

The Breusch Pagan test checks for heteroskedasticity. For both the hypotheses the chi square values are high (40, 94463.91) respectively, but the p-values are below 0.05 which indicates that the variance of error terms is not constant. This leads to bias in the standard errors, in order to avoid these robust standard errors are used for all regressions for both the hypotheses.

The tests for normality indicate that the residuals for the first model have an approximately normal distribution while those for the second hypothesis have a positively skewed distribution. This will not pose a problem for relying on the results of the regression as the sample size is large.

5.3 Regression Analysis for ERC Model

Table 4 reports the regression results for the first hypothesis. The first hypothesis tests whether the ERC is higher in the post disclosure period as compared to the pre disclosure period. The variable of interest is the coefficient of *UE*POST*, this should be positive and significant if the Form AP disclosures provide useful information to the investors. This is indicated by the ERC coefficient as investors respond to information which has value implications, and this is reflected in the relationship between returns and earnings surprise. The dummy variable POST is equal to 1 for observations which fall in the period after the Form AP disclosures and 0 otherwise.

I conduct different analyses for the first hypothesis. Table 4 Column 1 shows the results for the full sample for the period 2016-2018 using the observations for the fiscal quarters. This sample consists of 13781 observations. This is followed by sensitivity analyses in columns (2) and (3). This serves as a check for robustness since these analyses test whether the results in Column 1 hold for different set of samples. Column (2) shows the results for the same sample including the industry fixed effects. The fixed effect method has been used in prior research (Francis and Ke, 2006) as this helps to control for the omitted variable bias which is present in cross sectional analysis. Since ERC varies across industries, this thesis uses industry fixed effects which is based on the 2 digits SIC code. This helps to control for the wide range of industries in the sample which can act as a confounding variable. Lastly, Column (3) includes the results obtained by retaining two fiscal quarters before and after the disclosure date. The sample for this analysis includes 8359 observations. This analysis helps to identify the immediate impact on ERC of the disclosures. There is a multicollinearity issue as indicated by the VIF value of the variables. Hence, the interaction term of *UE*SIZE* has been excluded from all the regression analyses as the VIF value exceeds 10.

The F-statistics for the three analyses are significant as indicated by the p-values in Table 4. This shows the goodness of fit of the regression model and the validity of the model in fitting the data. Hence, the regression specification appears to be adequate. The R-squared value for columns (1) to (3) is not very high which indicates that the variable *UE*POST* does not explain the main variation in *CAR3*. For the full sample analysis R-squared is 0.76% while

the analysis which includes industry fixed effects has a higher R-squared of 4.2%. This indicates the higher explanatory power of the model when industry fixed effects are included. Columns (3) has a slightly lower R-squared value of around 3.7% this shows that using the full sample with industry fixed effects leads to a higher R-squared.

In Column (1) the main variable of interest, *UE*POST* has a positive sign (0.003) which indicates that the ERC is higher in the post disclosure period as compared to the pre disclosure period. However, this coefficient is not significant which leads to the acceptance of the null hypothesis. This means that the Form AP disclosures do not provide decision useful information for the investors as the t-statistics for the variable of interest is not significant. The same result holds for the analyses through columns (1) to (3) in Table 4. The interaction term *UE*POST* is always positive but not significant. Column (3) shows the highest value of the term (0.009) which shows that ERC is higher when you consider observations immediately before and after the disclosure. However, this does not provide evidence in support of the first hypothesis as the t-statistics continue to remain insignificant. Together with the sensitivity analysis, the results support the null hypothesis. This suggests that the Form AP disclosures do not provide any decision useful information to the investors and the use of component auditors has no value relevance for them. This conclusion is in line with prior research about investor trading patterns following Form AP disclosures (Doxey et al., 2018).

Table 4 also reports results for other variables used in the regression. Unexpected earnings are positively related to the 3-day cumulative abnormal returns for the analysis in column (1) and (2) though these coefficients are not significant. The results for ERC determinants also presented in Table 4. Most of the coefficient signs on the interactions between *UE* and the control variables are consistent with the predictions except the coefficients of *LOSS* and *MTB*. The interaction coefficient of *UE*LOSS* is positive in all three columns and also significant at the 1% level. This indicates that the ERC increases with the *LOSS* coefficient this can be the case where the loss component is transitory and does not impact the investor responsiveness. The interaction coefficient for *UE*MTB* has a negative sign which indicates that ERC decreases with the growth of companies. However, this coefficient is not statistically significant, so it suggests that ERC does not vary with growth level. The coefficient of *UE*UEabs* is always negative and significant at the 1% level. This indicates that the ERC is lower for larger magnitude of earnings surprise. The coefficient of *UE*LEVERAGE* is also negative as ERC is lower for companies with more debt financing than equity however this result is not significant. Lastly, the coefficient of *UE*BIG4* is positive and significant at the

5% level which indicates that the ERC is higher for firms audited by the Big 4 as compared to non- Big 4.

To sum up, the results support H_o, that the Form AP disclosures provide decision useful information for the investors. This suggests that the investors do not perceive audit quality as a result of the disclosures. It could be that the market perceives audit quality as already high due to audit partner accountability (Francis, 2004). Or it could be the high litigation risk and monitoring systems in US due to which these disclosures do not significantly impact investor perceptions as audit quality is already at a satisfactory level.

5.4 Regression Analysis for Accruals Model

Table 5 reports the regression results for testing the second hypothesis which predicts lower audit quality for firms where component auditors are used. The variable of interest is denoted by the coefficient of the dummy variable *DISCLOSURE* which indicates disclosures where component auditors are used. It should be positive and significant if the use of component auditors leads to lower audit quality. Audit quality is measured here by the level of discretionary accruals, *DACC*. These are estimated for every industry group with at least 20 companies in a given year and these groups are defined on the basis of the 2-digit SIC codes. The higher the level of discretionary accruals the lower the audit quality.

I conduct three different analyses for the second hypothesis. Table 5 Column (1) shows the results using the full sample. The full sample consists of 10454 observations and yearly data for the period 2016-2018. Column (2) shows a similar analysis but with adding industry fixed effects. Since the level of accruals can vary with the industry within which a company operates it is important to control for it. This analysis is followed by another sensitivity analysis in Column (3) which shows how the level of accruals is impacted by the extent of component auditor participation.

The F-statistics for the analyses in both the columns are significant as indicated by the p-values in Table 5. This indicates the goodness of fit of the regression model and the validity of the model in fitting the data. Hence, this signals that the regression specification is adequate. The R-squared for the analysis in Column (1) is around 15.3% which indicates that this model explains some variation in audit quality. This is slightly low relative to the analysis in Column (2) with industry fixed effects which is around 17.81%. This indicates that industry fixed effects are important for the model. The analysis in Column (3) has a R-squared of around 2.5%. This means that the extent of component auditor participation does not help explain a large part of variation in audit quality. This analysis is based on a sample size of 2043

observations only which shows that using a large sample with industry fixed effects is better and leads to a higher R-squared value.

In Column (1) the main variable of interest *DISCLOSURE* has a positive coefficient (0.036) and the t-statistics are significant at the 1% level. This means that the disclosure of the use of component auditors leads to higher discretionary accruals which indicates lower audit quality. This provides evidence in support of the alternative hypothesis (H_2). This conclusion is also supported by prior research by Dee and Zhang, (2015). Column (2) also reports a similar relation between the level of accruals and the use of component auditors. The coefficient of *DISCLOSURE* is around 0.036 and is still significant at 1% level. The result still holds with the industry fixed effects. Column (3) also reports a positive relation between the extent of component auditor participation and level of accruals. *QUINTILE 3* does not have a significant coefficient. But *QUINTILE 1 & 2* both show positive and significant coefficients of 0.028 and 0.018 respectively. This indicates that the extent of component auditor participation also has a positive impact on the level of accruals and subsequently translating to a lower audit quality.

Table 5 also reports the results for the other control variables. In Column (1) the variable *CFO* has a negative and significant coefficient though its value is 0.000 which may not impact the level of accruals substantially. This is in line with the prediction as cash flows and accruals are negatively related. *DEBT*TA* also has a positive and significant coefficient of 0.020 which means the more debt a company has the higher will be the accruals. Similarly, the variable *GROWTH* has a positive and significant coefficient of 0.000. This indicates the growth in sales over *t* and *t-1* which leads to higher level of accruals. The variable *SIZE* has a negative and significant coefficient which means that the more assets a company has the lower will be the level of accruals. The variable *CFVOL* has a positive and significant coefficient this indicates that the higher volatility in cash flows, the higher will be the accruals. *SALESVOL* does not explain the level of accruals and the coefficient is insignificant. *ICW* has a significant and positive coefficient which indicates that the higher the number of internal control weaknesses the more will be the accruals. Lastly, the *BIG4* variable which is split into US and FOREIGN audit firms has significant coefficients for both. Both the variables have a negative coefficient which shows that when a company is audited by Big4 whether US based or Foreign this will result in lower level of accruals.

To sum up the results offer evidence in support of H_2 that the use of component auditors negatively effects the audit quality. There are some concerns about the results since this thesis does not focus on the existing level of audit quality. It can be the case it is already at a low level. Also, component auditors play a very small role in the overall audit quality and audit

quality is a broad concept it is not possible to control for all possible factors which can impact it.

6. Conclusion

Form AP disclosure requirement has been adopted by the PCAOB on 31st January 2017. This form included the disclosures of component auditors for all SEC issuer's audit reports issued on and after 30th June 2017. There is less prior research on the Form AP disclosures since this information only became available recently. This thesis aims to answer the research question of whether the investors find these disclosures about component auditors useful or not. This is measured by the Earnings Response Coefficient which indicates investor's responsiveness to decision useful information. PCAOB introduced this requirement to increase the transparency of the auditing process and I expect investors to react positively to the disclosed information. This thesis also aims to explore whether the use of component auditors' effects audit quality negatively. For this I use the discretionary accruals analysis.

After conducting several analyses, it can be concluded that the investors do not perceive the Form AP disclosures as useful and they do not react to the information. The coefficient of ERC is not significant in any of the analyses hence, the first hypothesis can be accepted in null form. It can be inferred that the disclosure requirement does not provide any indication of audit quality to the investors. It is debatable whether investors pay attention to the group auditor rather than the component auditor to assess audit quality. However, this thesis does not shed light on the group auditor. Also, the general level of audit quality in US is satisfactory with very few audit failures (Francis, 2004). This may be due to the regulatory factors, litigation risk and internal performance reviews so disclosures might not provide new insights to investors.

Next, I examine whether the use of component auditors negatively impacts the audit quality. The evidence for this suggests that companies which have a disclosure of component auditors available have higher accruals than those which have no disclosures available. This indicates that the audit quality is lower where component auditors are used. The results are significant and hold for the extent of participation by component auditors as well. This offers evidence in support of the alternative hypothesis (H_2). However, it is debatable whether audit quality is entirely affected by component auditors. It is possible that the market perceives audit quality at a lower level already. Component auditors may play a very small role to account for the audit quality as a whole.

This thesis contributes to the limited literature and prior research about component auditors. Prior studies have focused more on audit partner disclosures and there has been mixed evidence

on the usefulness of Form AP disclosures. This thesis provides evidence that these disclosures are not regarded as useful by the investors. It should be of interest to PCAOB to look for other regulations and filings to increase audit transparency for the investors and restore their confidence in the auditing process. Moreover, this thesis finds evidence on how the audit quality of the issuers with disclosures differ. This may be due to differences in regulations, education and training of auditors.

However, there are some limitations of this research. First, the sample focuses on a narrow time period as the data has been made available from 2017 onwards so the results may not be very reliable. This is also indicated by the lower R-squared value for the first model though it is consistent with prior research. Second, the sample is US based only with companies listed on NYSE, AMEX and NASDAQ so it can be difficult to generalize the results to other settings. Third, there can be omitted correlated variables which can impact audit quality and ERC but are not accounted for in both the models.

Future research can focus on a broader sample with more observations to see the impact on ERC in post - disclosure period. It can also see the impact on audit quality as measured by proxies other than discretionary accruals to compare if the same results hold or not. It might be interesting to research if there are differences in market perception of group and component auditors.

References

Burke, Jenna and Hoitash, Rani and Hoitash, Udi 2018. The use and characteristics of component auditors: Implications from U.S. Form AP Filings. Working paper.
Available at SSRN: https://ssrn.com/abstract=3240212

Carson, E., R. Simnett, A. Vanstraelen, and G. Trompeter. 2016. *Assessing initiatives to improve the quality of audits of multinational groups.* Working paper, University of New South Wales, Maastricht University, and University of Central Florida.

Dechow, P.M., Ge, W., & Schrand, C. M. (2010). Understanding Earnings Quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, 50 (2-3), 344-401

Dechow, P., Sloan, R., & Sweeney, A. (1995). Detecting Earnings Management. The Accounting Review, 70(2), 193-225. Retrieved from: http://www.jstor.org/stable/248303

Dee, C. C., A. Lulseged, and T. Zhang. 2015. Who did the audit? Audit quality and disclosure of other audit participants in PCAOB filings. *The Accounting Review 90* (5): 1939-1967.

Downey, D. H., and J. C. Bedard. 2018. Coordination and communication challenges in global group audits. *Auditing: A Journal of Practice & Theory* (forthcoming).

Doty, J. R. (2016). Statement on proposed amendments relating to the supervision of audits involving other auditors and proposed auditing Standard—Dividing responsibility for the audit with another accounting firm. Retrieved from https://pcaobus.org/News/Speech/Pages/Doty-statement-other-auditors-4-12-16.aspx

Doxey, M. M., J. Lawson, T. Lopez, and Q. Swanquist. 2018. *Early evidence of the information content of Form AP*. Working paper: University of Alabama

Francis, Jere R. and Bin Ke. 2006. Disclosure of fees paid to auditors and the market valuation of earnings surprises. *Review of Accounting Study* 11: 495-523.

Francis, J. R. (2009). Big 4 Office Size and Audit Quality. *The Accounting Review: A journal of American Accounting Association*, 84(5).

Gaynor, Lisa Milici and Kelton (2016) Understanding the Relation between Financial Reporting Quality and Audit Quality. *Auditing: A Journal of Practice & Theory*, Forthcoming; Kelley School of Business Research paper No. 16-26.

Glover, S. M., & Wood, D. A. (2014). The effects of group audit oversight on subsidiary entity audits and reporting.

Hux, C. T. 2018. Nonprofessional investors' perceptions of audit quality: The effect of disclosure about use of component auditors and specialists. Working paper, Northern Illinois University.

Khurana, I. K., & Raman, K. (2004). Litigation risk and the financial reporting credibility of big 4 versus non-big 4 audits: Evidence from Anglo-American countries. *The Accounting Review, 79*(2), 473-495.

Kothari, S., A. J. Leone, and C. E. Wasley. 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics* 39 (1): 163–197.

Libby, R. (1981). *Accounting and human information processing: Theory and application*. Prentice Hall.

Mackinlay, A. Craig. 1997. Event studies in Economics and Finance. *Journal of Economic literature* 35(1) :13-39

Mao, Juan and Ettredge, Michael L. and Stone, Mary S., *Are Audit Fees and Audit Quality Affected When Lead Auditors Accept Responsibility for Work Performed by Other Auditors?* (March 1, 2018). Available at SSRN: https://ssrn.com/abstract=3149245

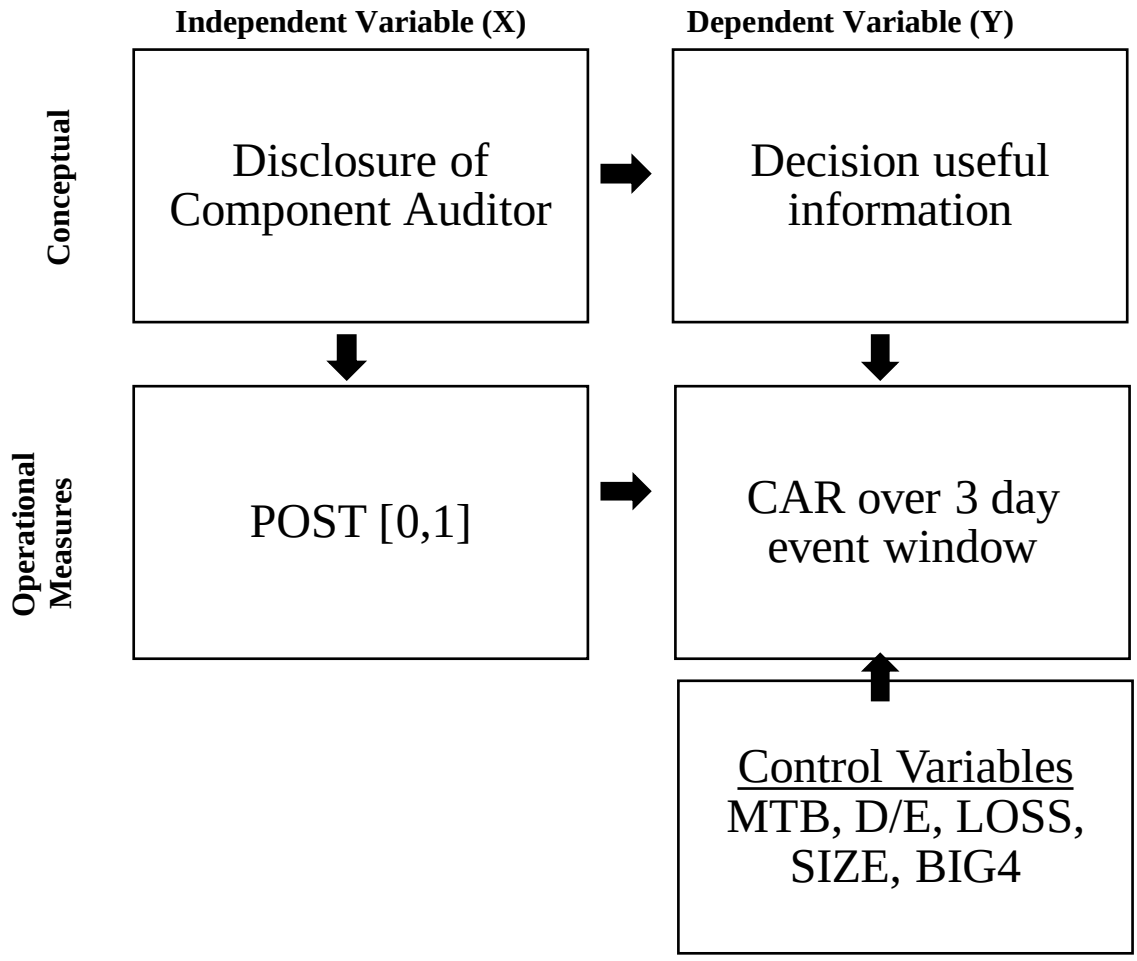
Smith, A., & Hume, E. C. (2005). Linking culture and ethics: A comparison of accountants' ethical belief systems in the individualism/collectivism and power distance contexts. *Journal of Business Ethics, 62*(3), 209-220.

Stewart, T.R., and W.R. Kinney. 2013. Component materiality: How much auditing is enough? *The Accounting Review* 88(2): 707-737

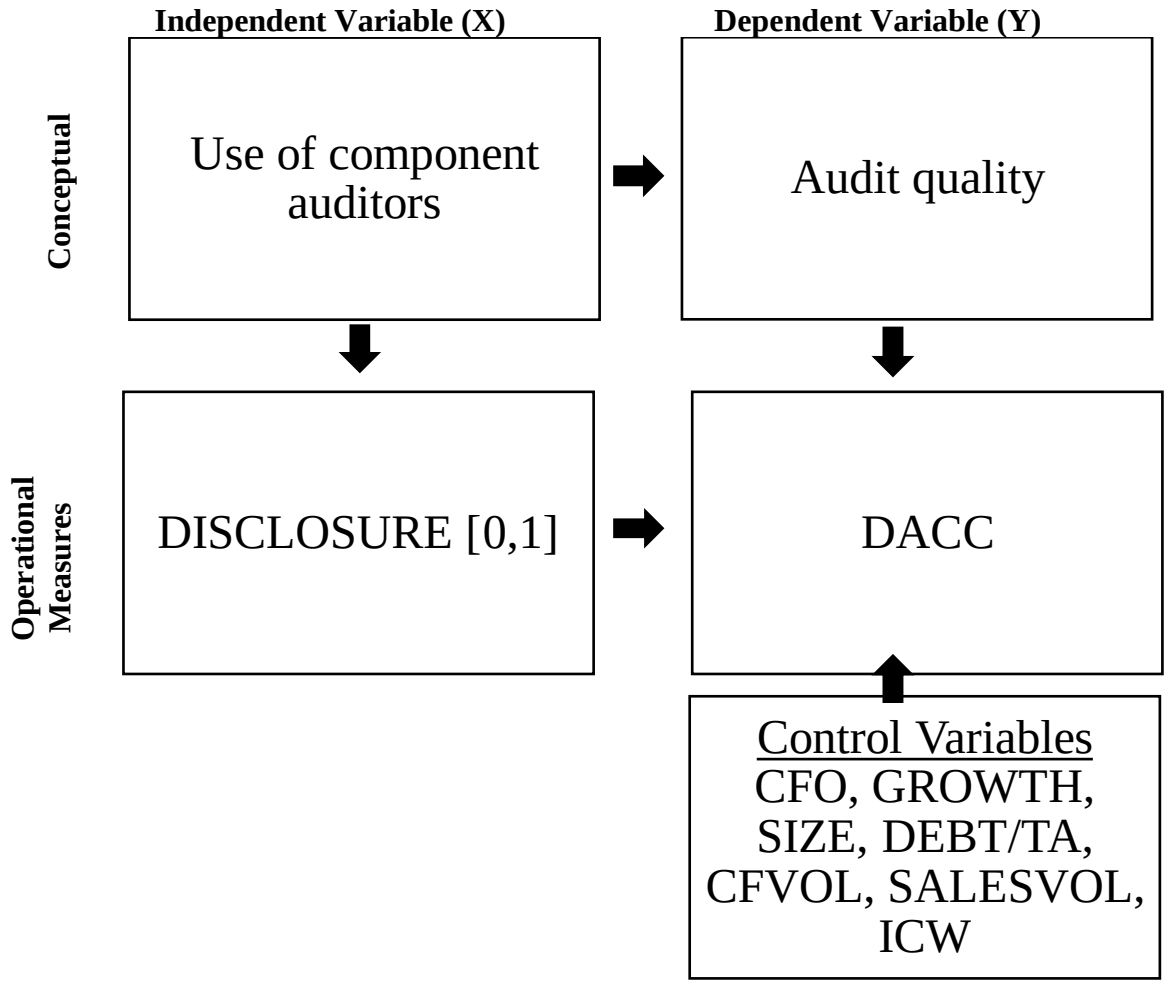
Sunderland, D., & Trompeter, G. M. (2017). Multinational group audits: Problems faced in practice and opportunities for research. *Auditing: A Journal of Practice & Theory, 36*(3), 159-183.

Teoh, S., & Wong, T. (1993). Perceived Auditor Quality and the Earnings Response Coefficient. *The Accounting Review,* 68(2), 346-366. Retrieved from: http://www.jstor.org/stable/248405

Appendix A Predictive Validity Framework- H1



Appendix A Predictive Validity Framework- H2



Appendix B Variable Definitions

Panel A- Earnings-Returns model

Variable	Definition	Source
CAR_3	Cumulative Abnormal Returns over a 3-day event window (-1, +1) centered on quarterly earnings announcement;	CRSP
UE_{iq}	Unexpected Earnings for a quarter t, measured as the difference between actual earnings and median analyst consensus earnings;	I/B/E/S
POST	Dummy variables =1 if earnings announcement date is after Form AP filing date and 0 otherwise;	PCAOB
$POST*UE_{iq}$	Interaction term of POST & UE;	
MTB	Ratio of market value of equity to book value at the beginning of the quarter;	COMPUSTAT
LEVERAGE	Ratio of debt to equity at the beginning of the quarter;	COMPUSTAT
LOSS	Dummy variable =1 when EPS is negative 0 otherwise;	I/B/E/S
SIZE	Logarithm of the total assets;	COMPUSTAT
BIG 4	Indicator variable =1 if one of the four Audit firms (PwC, Deloitte, EY and KPMG);	PCAOB

Panel B- Variable Definitions Accruals & Audit Quality Model

(i) Discretionary accruals estimation model

Variable	Definition	Source
TACC	Total accruals of the firm	COMPUSTAT
TA_{T-1}	Lagged Total Assets of the firm	COMPUSTAT
REV	Revenue of the firm	COMPUSTAT
PPE	Gross Property, Plant & Equipment of the firm	COMPUSTAT
NDA	Non- Discretionary Accruals	COMPUSTAT
REC	Receivables of the firm	COMPUSTAT
DACC	Absolute value of Discretionary Accruals	COMPUSTAT
ROA	Return on Assets	COMPUSTAT

(ii) Audit Quality & Component Auditor Model

Variables	Definition	Source
CA	Indicator variable =1 where component auditor is used 0 otherwise;	PCAOB
CFO	Cash flow from operations	COMPUSTAT
GROWTH	Sales growth rate	COMPUSTAT
SIZE	Logarithm of total assets	COMPUSTAT
DEBT/TA	Firm's Debt to total assets ratio	COMPUSTAT
CFVOL	Volatility in cash flows over the last 3 years	COMPUSTAT
SALESVOL	Volatility in sales revenue over the last 3 years	COMPUSTAT
ICW	Number of weaknesses in internal controls	AUDIT ANALYTICS

Appendix C: Tables

TABLE 1 Sample Selection and the Distribution of Observations by Industry

Panel A- Sample selection Procedure:

Description	Number of observations H1	Number of observations H2
Step 1: Initial sample selection		
Form AP Filings from PCAOB Website for the period 30th June 2017- 24th March 2019	34797	34797
Less employee benefit plan & investment company	-3544	-2332
Less firms non 31 Dec 2016, 31 Dec 2017 & 31 Dec 2018 fiscal year end	-14627	-14507
Less Form AP date filing before 30th June 2017	-7450	-
Less firms with missing CIK	-178	-78
Less firms with audit report issued before May 2017	-357	-
DATASET 1	5793	7705
Less Merging PCAOB data with Compustat	1869	4447
DATASET 2	3924	3258
Less Merging with I/B/E/S and CRSP	1506	-
Less Merging Audit Analytics data with Compustat	-	-153
Initial Sample of unique firms	2418	3105
Step 2: Final sample selection		
Firm quarterly/yearly observations	16512	10454
Less missing data for control variables in Compustat	2528	-
Less missing data for Actual & Median EPS forecast in I/B/E/S	203	-
Final sample of firm-quarterly /yearly observations	13781	10454

Panel B- Distributions of Observations by Industry (H1 & H2)

Table B1 - Observations for ERC model & Accruals Model by Industry

		First hypothesis		Second hypothesis	
Industry Description	SIC code	N	%	N	%
Mining & Construction	10-19	1032	7.49%	1374	13.14
Manufacturing	20-29	2858	20.74%	2152	20.6
Durable Manufacturing	30-39	2300	16.69%	2520	24.11
Transportation, Communication & Utilities	40-49	1447	10.50%	1715	16.41
Wholesale & Retail Trade	50-59	4098	29.74%	2143	20.50
Finance, Insurance, Real Estate	60-67	2026	14.70%	550	5.26
Other Service	70-89	20	0.15%		
Total		13781	100%	10454	100%

The table shows the sample selection process for both the hypotheses (Panel A) and the distribution of observations according to the industries based on a 2 digit SIC code (Panel B).

TABLE 2 Descriptive Statistics

Panel A: Regression Variables for First Hypothesis

	Full sample					Before disclosure			After disclosure		
Variables	Mean	Median	SD	Max	Min	Mean	SD	Median	Mean	Median	SD
CAR3	-0.00	0.00	0.15	0.98	-0.991	-0.00	0.14	0.00	-0.00	0.00	0.15
UE	0.00	0.01	0.54	10.25	-23.62	-0.03	0.38	0	0.02	0.01	0.59
POST	0.72	1	0.45	1	0	-	-	-	-	-	-
UEabs	0.17	0.07	23.59	23.61	0	0.14	0.35	0.06	0.18	0.07	0.56
MTB	6.74	2.13	805.72	33665	-81212	1.65	1460	2.22	8.69	2.10	280.65
SIZE	7.51	7.58	2.12	12.44	2.63	7.42	2.16	7.46	7.547	7.61	2.11
BIG4	0.74	1	0.44	1	0	0.75	0.43	1	0.74	1	0.44
LEVERAGE	0.86	0.59	19.54	816.96	-1294.6	1.11	27.59	0.63	0.74	0.59	15.36
LOSS	0.261	0	0.44	1	0	0.29	0.45	0	0.248	0	0.43

Panel B: Variables for Second Hypothesis

	Full sample					Before disclosure			After disclosure		
Variables	Mean	SD	Median	Max.	Min.	Mean	SD	Median	Mean	SD	Median
DACC	0.2	0.55	0.10	14.4	0.000	0.19	0.48	0.10	0.21	0.61	0.11
DISCLOSURE	0.53	0.49	1	1	0	-	-	-	-	-	-
CFO	887.2	3208.3	107.5	56353	-52280	779.1	2710.4	98.9	980.59	3585	114.57
ICW	1.24	0.986	1	18	1	1.21	0.87	1	1.26	1.08	1
CFVOL	224	957.7	38.1	28112.7	0.001	223.5	958.5	34.9	224.46	957.1	40.91
SALESVOL	698.8	3703.5	84.6	100438	0	795.6	4760.7	79.25	613.86	2418.35	89.36
SIZE	7.07	2.47	7.28	13.83	-6.21	6.95	2.46	7.17	7.17	2.47	7.40
DEBT_TA	0.49	5.61	0.29	379.6	0	0.49	5.67	0.28	0.48	5.54	0.29
GROWTH	-251.62	15767	5.41	100	-113630	-45	1604.5	2.22	-432.9	21553	7.33
BIG4	0.21	0.41	0	1	0	0.21	0.41	0	0.21	0.41	0

This table provides the descriptive statistics for the variables in the main analysis. Panel A includes variables used in testing H1. The pre disclosure sample includes observations for firms before Form AP disclosures were available i.e. before 30June 2017. The post disclosure sample includes the firm quarter observations for earnings announcement made after Form AP was filed. Panel B shows the observations with and without the use of component auditors.

TABLE 3 Spearman correlation matrix for the main regression analysis

Panel A: Correlations for the first hypothesis

Variables	*CAR3*	*UE*	*POST*	*BIG4*	*MTB*	*SIZE*	*UEabs*	*LEVERAGE*	*LOSS*
CAR3	1.000								
UE	0.054*	1.000							
POST	0.007	0.037*	1.000						
BIG4	0.028*	0.041*	-0.017*	1.000					
MTB	-0.002	-0.002	0.004	-0.013	1.000				
SIZE	0.025*	0.040*	0.028*	0.355*	-0.087*	1.000			
UEabs	-0.021*	0.077*	0.038*	0.052*	0.002	0.044*	1.000		
LEVERAGE	-0.011	-0.005	-0.009	0.006	0.176*	0.017*	0.005	1.000	
LOSS	-0.072*	-0.146	-0.042*	-0.105*	0.016	-0.544*	0.091*	-0.005	1.000

* Shows significance at the 5% level; See Appendix B for definitions of variables.

Panel B: Correlations for second hypothesis

Variables	*ADA*	*DISC*	*BIG4*	*ICW*	*GROWTH*	*DEBT/TA*	*SIZE*	*SVOL*	*CFVOL*	*CFO*
ADA	1.000									
DISCLOSURE	0.022	1.000								
BIG4	-0.045*	-0.003	1.000							
ICW	0.148*	0.022*	-0.002	1.000						
GROWTH	-0.005	-0.012	0.008	-0.039*	1.000					
DEBT_TA	0.240*	-0.001	0.001	0.053*	0.000	1.000				
SIZE	-0.304*	0.046*	0.047*	-0.184*	0.020*	-0.113*	1.000			
SALESVOL	-0.030*	-0.025*	-0.032*	-0.027*	0.003	-0.007	0.283*	1.000		
CFVOL	-0.033*	0.001	-0.001	-0.042*	0.004	-0.008	0.349*	0.537*	1.000	
CFO	-0.047*	0.031*	-0.020*	-0.045*	0.005	-0.009	0.421*	0.546*	0.439*	1.000

* Shows significance at the 5% level; See Appendix B for definitions of variables.

TABLE 4 Main regression results for the ERC Model

Dependent variable = CAR3

		(Full sample)	(Industry fixed effects)	(two Q's before & after disclosure)
	Predicted sign	Coef. t-value (1)	Coef. t-value (2)	Coef. t-value (3)
UE		0.012	0.003	-0.004
		(1.37)	(0.42)	(-0.46)
POST		0.002	-0.000	-0.000
		(0.59)	(-0.07)	(-0.09)
*POST*UE*	+	0.003	0.007	0.009
		(0.45)	(1.26)	(1.29)
*UE*LOSS*	-	0.016	0.02	0.020
		(2.63) ***	(3.43) ***	(2.83) ***
*UE*UEabs*	-	-0.003	-0.003	-0.003
		(-2.95) ***	(-3.15) ***	(-3.50) ***
*UE*LEVERAGE*	-	-0.000	-0.000	0.000
		(-0.39)	(-0.56)	(0.19)
*UE*MTB*	+	-0.000	-0.000	-0.000
		(-1.08)	(-1.38)	(-1.40)
*UE*BIG4*	+	0.018	0.018	0.023
		(2.09) **	(2.18) **	(2.18) **
Constant		-0.004	-0.16	-0.063
		(-1.68) *	(-1.84) *	(-13.97) ***
Industry FE		No	Yes	Yes
Year FE		No	Yes	No
N		13781	13781	8359
F-test		9.32	85.78	50.61
Prob>F		0.000	0.000	0.000
R-squared		0.0076	0.042	0.037

This table shows the results of testing the first hypothesis using the following regression:
$CAR3 = \alpha + \beta 1 UEiq + \beta 2 POST + \beta 3 UEiq * POST + \beta n UEiq * Control\ variables + \varepsilon iq$
Variables are defined in Appendix B. The interaction terms are denoted with *. Variables with a VIF exceeding 10 are not included in the regression (*SIZE, BIG4*).
All significance tests are two-tailed. *, ** and *** are significant at 10%, 5% and 1% respectively.

TABLE 5 Main regression results for the second hypothesis

Dependent variable= DACC

		(Full sample)	(Fixed effects)	(CA % use)
DACC	Predicted sign	Coef. (t-value) (1)	Coef. (t-value) (2)	Coef. (t-value) (3)
DISCLOSURE	+	0.036 (3.58) ***	0.036 (3.56) ***	-
QUINTILE 1	+	-	-	0.028 (2.98) ***
QUINTILE 2	+	-	-	0.018 (1.98) **
QUINTILE 3	+	-	-	0.014 (1.11)
CFO	-	-0.000 (7.39) ***	0.000 (6.25) ***	0.000 (1.43)
DEBT_TA	+	0.020 (2.01) **	0.020 (2.01) **	-0.010 (-0.62)
GROWTH	+	0.000 (3.35) ***	0.000 (5.19) ***	0.000 (3.87) ***
SIZE	-	-0.070 (-12.00) ***	-0.066 (-10.11) ***	-0.11 (-4.93) ***
CFVOL	+	0.000 (6.40) ***	0.000 (6.28) ***	0.000 (1.68) *
SALESVOL	-	-0.000 (-0.65)	0.000 (0.57)	-0.000 (-0.39)
ICW	+	0.057 (4.58) ***	0.050 (4.86) ***	-0.002 (-0.81)
BIG4_US	-	-0.036 (-3.90) ***	-0.026 (-2.62) ***	0.000 (0.04)
BIG4_FOREIGN	-	-0.061 (-3.10) **	-0.011 (-0.51)	-0.015 (-1.12)
Constant		0.602 (15.92) ***	0.315 (5.93) ***	0.234 (12.48) ***
N		10454	10454	2043
Industry Fixed effects		No	Yes	No
F-test		188.58	31.04	3.68
Prob>F		0.000	0.000	0.000
R-square		0.153	0.178	0.017

Participation range in Form AP is based on extent of involvement of component auditors. These are represented by Quintiles which are defined as follows:
Q1- 5% to < 10% participation
Q2- 10% to <20% participation
Q3- >20% participation
(The analysis does not include <5% participation)
All significance tests are two-tailed. *, ** and *** are significant at 10%, 5% and 1% respectively

Appendix D: Tests for OLS assumptions

Testing the Regression assumptions

Panel A: Tests for the first hypothesis

(i) Testing multicollinearity for the full sample regression model using variance inflation factor

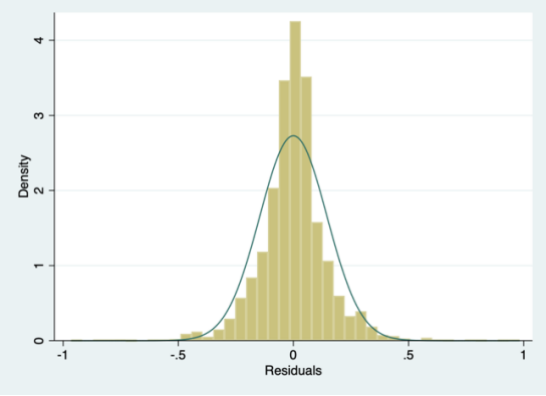
	Before the removal		After the removal	
Variable	VIF	1/VIF	VIF	1/VIF
UE	36.45	0.02	14.12	0.07
*UE*SIZE*	27.62	0.03		
*UE*BIG4*	9.83	0.10	9.73	0.10
*POST*UE*	8.29	0.12	8.19	0.12
*UE*UEabs*	3.98	0.25	3.15	0.32
*UE*LOSS*	3.18	0.31	3.02	0.33
*UE*LEVERAGE*	1.11	0.89	1.11	0.90
*UE*MTB*	1.08	0.93	1.07	0.93
POST	1.01	0.99	1.01	0.99
Mean VIF	10.28		5.18	

(ii) Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance (homoscedasticity)

Chi2	= 40.00
Prob > chi2	= 0.0000

Breusch-Pagan test for heteroskedasticity, where the p-value shows if the null hypothesis is rejected. The result of the test suggests that there is heteroscedasticity in the variance of the residuals. To deal with this issue, robust standard errors are used in the regression.

(iii) Tests for normality
As the histogram shows, the distribution for the regression residuals is approximately normal.



Testing the Regression assumptions

Panel B: Tests for the second hypothesis

(i) Testing multicollinearity using Variance Inflation Factor

Variable	VIF	1/VIF
SALESVOL	1.69	0.59
CFO	1.64	0.61
CFVOL	1.54	0.65
SIZE	1.34	0.75
ICW	1.04	0.96
*BIG4*FOREIGN*	1.02	0.97
DEBT/TA	1.02	0.98
*BIG4*US*	1.01	0.98
DISCLOSURE	1.01	0.99
GROWTH	1.00	0.99
Mean VIF	1.23	

(ii) Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance (homoskedasticity)

Chi2 = 94463.91
Prob > chi2 = 0.0000

Breusch-Pagan test for heteroskedasticity, where the p-value shows if the null hypothesis is rejected. The result of the test suggests that there is heteroscedasticity in the variance of the residuals. To deal with this issue, robust standard errors are used in the regression.

(iii)Tests for normality

As the histogram shows, the distribution for the regression residuals is narrow and skewed.