**Scientific Annals of Economics and Business**
**69 (2), 2022, 217-251**
**DOI: 10.47743/saeb-2022-0017**

# The Influence of Critical Audit Matters in the US on the Informativeness of Investors

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**Abstract**

In 2017, the PCAOB announced its new audit standard, AS 3101. One requirement is reporting critical audit matters (CAMs), starting June 30, 2019, for large accelerated filers. Using US data of CAM, we investigate whether the reporting of CAMs is informative for investors using a difference-in-differences approach and we use as proxies for investors' informativeness, absolute abnormal returns and abnormal trading volume. Our motivation is to assess the relevance and the effectiveness of a new regulation aiming to improve audit quality. Overall, our findings provide some indications that the first-time implementation of CAMs might lead to investors avoiding those companies presumably because of uncertainty about the information being released. We also investigate the content of the CAM paragraph and do not find that the number, categories, or firm-specific/industry-common CAMs are value-relevant for investors. The results of this study provide insight into the new US auditor standard and the value-relevance of CAMs for investors. We suggest that standard setters should aim to improve the auditor report to make it more informational. Overall, our paper provides some evidence on the implementation and communicative value of the new CAM reporting, suggesting that CAMs are not informative for investors. We argue that this is the case potentially due to the additional information from CAMs which leads to complex information or information overload making investors less reluctant to invest on the companies with a significant number of CAMs reported.

**Keywords:** critical audit matters; investor Informativeness; audit standards.

**JEL classification:** G30; G38.

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## 1. INTRODUCTION

In the last two decades, a discussion has emerged regarding auditor reports in companies' annual reports. Companies became more complex while at the same time, the auditor reports still only mentioned a pass or a fail. These auditor reports were perceived not to be informative by investors and other stakeholders (Reid, Carcello, Li, & Neal, 2015). Therefore, the information contents in auditor reports began to change. Examples of this are the implementation of risk of material misstatements (RMMs) in the UK (Financial Reporting Council, 2013) and the implementation of key audit matters (KAMs) by the International Auditing and Assurance Standards Board (International Auditing and Assurance Standards Board, 2015). But more recently, in 2017, the Public Company Accounting Oversight Board (PCAOB) in the US announced their new auditor reporting standard, AS3101 (Public Company Accounting Oversight Board, 2017). The most significant change to the auditor report in this standard is the reporting of CAMs (CAMs). CAMs are: 'matters communicated or required to be communicated to the audit committee and that: '(1) relate to accounts or disclosures that are material to the financial statements; and (2) involved especially challenging, subjective, or complex auditor judgment;' (Public Company Accounting Oversight Board, 2017, p. 1).

The primary objective of the new auditor standard is that the reporting of CAMs leads to higher informativeness of investors (Public Company Accounting Oversight Board, 2017). Most prior research, however, has failed to detect a significant market reaction. So far, only Reid et al. (2015) in the UK and Goh, Li, and Wang (2019) in China have found archival results of a significant market reaction to extended auditor reports. Other archival research did not find significant results (Bédard, Gonthier-Besacier, & Schatt, 2019; Gutierrez, Minutti-Meza, Tatum, & Vulcheva, 2018; Liao, Minutti-Meza, Zhang, & Zou, 2019).

Experimental research, however, found some significant results (Christensen, Glover, & Wolfe, 2014; Dennis, Griffin, & Zehms, 2019; Kachelmeier, Rimkus, Schmidt, & Valentine, 2020). CAMs could lead to higher investor informativeness because they reduce the information gap between investors and auditors (Public Company Accounting Oversight Board, 2017). But CAMs could also fail to lead to higher informativeness because the reports can be rendered too complex for investors to understand, or could lead to information overload (Bédard et al., 2019). Because of these contradicting views, the research question of this paper is: do CAMs in the extended auditor reports in the US influence the informativeness of investors?

We will answer this research question using a difference-in-differences design looking at US large accelerated filers, who are required to disclose audit report CAMs for fiscal year-ends after June 30, 2019. Other US companies are only required to report auditor CAMs for fiscal year-ends after December 15, 2020. Our study looks at annual report data and stock data around the filing data from 2018 and 2019 annual statements. The proxies for investor informativeness are absolute abnormal returns and abnormal volume. In the cross-sectional analysis, the content of the auditor report is examined in more detail. This paper looks at the number of CAMs reported, the types of CAMs reported, and whether a CAM is standard for an industry or specific for a company. Our findings suggest that there are negative and significant effects for both abnormal returns and abnormal volume on the implementation of CAMs. These results might suggest that CAMs might lead to investors avoiding companies that disclose CAMs.

This research is relevant to the current literature because since it examines the influence of another new auditor report standard and whether this is value-relevant for investors. Looking at the value of the new auditor report is relevant for standard setters because it assesses how their new measure improves the informativeness of audit reports, which is the main benefit of extended auditor reports (Public Company Accounting Oversight Board, 2017). Additionally, this research looks at the unique setting of CAMs in the United States. In contrast, prior research mostly looked at RMMs in the UK, JOAs in France, and KAMs in other countries where the IAASB is active or in emerging markets (Boonyanet & Promsen, 2018; Feng, Wen, Ke, & He, 2021; Genç & Erdem, 2021) (Zeng, Zhang, Zhang, & Zhang, 2021; Zhi & Kang, 2021). The PCAOB mentioned that studies from different countries might not be generalizable to the US context because of differences in baseline conditions (Public Company Accounting Oversight Board, 2017). Besides reporting CAMs as a whole, it is interesting to know how investors in the US respond to more CAMs being reported, certain types of CAMs being disclosed, and whether investors are affected by the frequency of industry-common versus firm-specific CAMs. Our results become relevant and an extension of studies which have already been undertaken in the emerging markets context (Feng et al., 2021; Zhi & Kang, 2021).

The rest of this paper is structured as follows. Section 2 will discuss the background and hypothesis development. The 3rd Section will discuss the research methods, where we discuss the research design. In the 4th Section, we look at the sample, the descriptive statistics, and the findings of the analyses. The last section will discuss the results and conclude.

## 2. BACKGROUND AND HYPOTHESIS DEVELOPMENT

### 2.1 Institutional background

Information asymmetry between investors and managers as well as auditors is the result of the lack of access to reliable information on firm performance amongst them (Public Company Accounting Oversight Board, 2017). The auditor report can reduce this information asymmetry since it contains an independent opinion about the company statements. But while companies became more complex and the amount of professional auditor judgment necessary to form an opinion about the companies statements has become more subjective and complex, the auditor report did not change and was still just a pass or fail (Public Company Accounting Oversight Board, 2017; Reid et al., 2015). Since this was perceived to not be informative enough for investors (and other stakeholders), over the last two decades, the information content in audit reports began to change.

Since 2003, auditors in France must disclose Justification of Assessments (JOAs) in their auditor reports (Bédard et al., 2019). JOAs are matters that the auditor found important in interpreting the financial statements of a company. Since 2013, auditors are required to comply with ISA 700 in the UK and Ireland (Financial Reporting Council, 2013). ISA 700 required the following from auditors: First, the disclosure of risks of material misstatements (RMMs); second, auditors should disclose how they used materiality in the audit process; third, auditors should explain the reach of the audit process and how this influences materiality and RMMs. ISA 700 was required for companies with premium shares on the London Stock Exchange (Financial Reporting Council, 2013). More recently, in 2015, the IAASB introduced their new auditor reporting standard, ISA 701 (International Auditing and Assurance Standards Board, 2015). In this standard, auditors are required to communicate KAMs. Key audit matters are matters identified by the auditors that are most significant to the audit of the current period's annual statements (International Auditing and Assurance Standards Board, 2015).

In 2017, the PCAOB in the US announced its new auditor reporting standard, AS 3101 (Public Company Accounting Oversight Board, 2017). With this new standard, auditors are required to provide more information in the auditor reports. This extra information should make the audit reports more informative and relevant to investors and other stakeholders. Following this changes an auditor should firstly look at the following when deciding to disclose a critical audit matter (Public Company Accounting Oversight Board, 2017): First, whether the auditors encountered some potential risk of material misstatements; second, the degree of judgment that the auditor used on parts of the statements that required significant judgment or estimation by the company's management; third, unusual transactions were identified that needed effort and judgment to evaluate properly by the auditor; fourth, how much subjectivity auditors required in the process of conducting the audit; fifth, the effort that was necessary regarding the matter and lastly, what type of evidence is obtained in the audit regarding the matter. When a critical audit matter is identified, the auditor should describe the critical audit matter in the critical audit matter paragraph. Moreover, auditor tenure should be reported in the auditor report (Public Company Accounting Oversight Board, 2017). The reporting of auditor tenure means that the year in which the audit company started working consequently for that particular company should be reported. Lastly, other improvements are made to the auditor reports to make the report more readable and clarify the auditor's responsibilities, independence, and role. To implement these new requirements, the board used a phased approach (Public Company Accounting Oversight Board, 2017). Audits of companies that have fiscal years-ends on or later than December 15, 2017, are required to implement all changes in AS 3101 other than CAMs, so the auditor tenure and the other improvements to the auditor report. Large accelerated filers must disclose CAMs if their fiscal year ends on or after June 30, 2019. Large accelerated filers are companies with a public float of at least 700 million dollars (Public Company Accounting Oversight Board, 2017). CAMs should be disclosed for all other companies if their fiscal year ends on or later than December 15, 2020.

There are multiple potential benefits (and costs) to CAMs. In this research, we will look at one potential direct benefit of implementing CAMs: CAMs should increase the informativeness of the reports for investors (Public Company Accounting Oversight Board, 2017). When looking at prior research, we also look at the different types of extended auditor reports because these are similar to CAMs (Velte & Issa, 2019).

### 2.2 Empirical Background

Most prior empirical research has failed to detect a significant market reaction. Specifically, Reid et al. (2015) find that the information asymmetry between insiders and investors decreases significantly after the new disclosure requirements related to CAM are implemented. Moreover, they find that in weaker information environments the new disclosure regime is more effective in reducing the information asymmetry while they conclude that the additional required disclosures from audit committees and auditors (CAM) provide new and relevant information to market participants while they decrease information asymmetry. Goh et al. (2019) provide evidence for an emerging market that abnormal trading volume and earnings response coefficients are higher after the adoption of new regulatory requirements regarding CAMs. Other archival research did not find significant results (Bédard et al., 2019; Gutierrez et al., 2018; Liao et al., 2019). In particular, Bédard et al. (2019) focus on French audit reports from 2002 to 2011 assess the impact of expanded audit reports (following on the relevant new regulation starting from 2003). They find no significant market reaction to the disclosure of the expanded audit reports, where the market reaction is captured by abnormal returns and abnormal trading volume. Gutierrez et al. (2018) do not find any evidence that the regulatory change in the UK, which required expanded auditor's report, had any association with investor's reaction to the release of the report. Similar are the results of Liao et al. (2019) in Hong Kong where they do not find any evidence that extended audit reports provide incremental information to investors.

Experimental research, however, has also found some significant results (Christensen et al., 2014; Dennis et al., 2019; Kachelmeier et al., 2020) of the effect of CAM on investor valuation estimates. Specifically, Christensen et al. (2014) found that investors who receive a CAM paragraph are more likely to alter their investment strategy compared to investors who receive the standard audit report. Dennis et al. (2019) on the other hand argue that users of financial information find it difficult to weight fully the auditor report's narrative when they make economic decisions, however when visual cues are included, they facilitate their valuation judgments. In particular, Dennis et al. (2019) suggest that users take increased price protection when auditor reports also include visual cues. CAMs could lead to higher investor informativeness because they reduce the information gap between investors and auditors (Public Company Accounting Oversight Board, 2017). But CAMs could also fail to lead to higher informativeness because the reports can be considered as too complex for investors to understand, or could lead to information overload (Bédard et al., 2019).

Beyond the CAMs related literature prior research that looks at additional disclosure requirements usually finds that more disclosure leads to positive reactions by the market. These disclosures include those concerning the audited firm and its supplementary comments on its financial statements as well as the breadth of disclosures in different parts of the world. For instance, Leuz and Verrecchia (2000) look at companies in Germany, where the disclosure requirements at that time were perceived low. They find that when firms increase their disclosures, this leads to less information asymmetry, measured by a lower bid-ask spread and a higher share turnover. In addition, Hail and Leuz (2006) look at 40 different countries and found that the cost of debt is lower for companies in countries with stricter disclosure requirements. Similarly, Healy, Hutton, and Palepu (1999) find that higher disclosure ratings for companies lead to higher stock returns, analyst following, liquidity, and institutional ownership. More recently, Blankespoor, Miller, and White (2014) found that when companies voluntarily disclose information about press releases via Twitter, this leads to lower abnormal bid-ask spreads and a larger abnormal share debt. In addition to this, prior literature looked at the influence of additional disclosure in financial statements. For example, Botosan (1997) found that if firms have more disclosure, they have a lower cost of equity capital. However, this is only for firms with a low analyst following. Campbell, Chen, Dhaliwal, Lu, and Steele (2014) look at the requirement of the SEC to put a description of risks in the 10-K Form. They found that this extra information is useful for investors, as the results suggest that the information influences stock prices. Similarly, Kravet and Muslu (2013) found that increases in yearly textual risk disclosure lead to higher abnormal volume and stock return volatility.

We investigate further a line of research focused on additional disclosure in the auditor report. This information differentiates over CAMs in that CAMs as mentioned earlier involve critical information reported to the audit committee. One well-researched disclosure in auditor reports is that of a going concern audit report (GCAR). An auditor reports a GCAR when the auditor doubts whether the company can continue as a going concern in the future. The results from the literature regarding GCARs are mixed. Herbohn, Ragunathan, and Garsden (2007) find no short-term reaction after the first-time disclosure of a GCAR in Australia. Similarly, Blay and Geiger (2001) do not find that the abnormal returns surrounding the GCAR reporting date are significantly different from 0. On the other hand, Menon and Williams (2010) using a bigger sample than most prior studies report that GCARs are informative to investors. They measure this by using the excess return round the event date of the going concern report and find significantly negative excess returns. Likewise, Citron, Taffler, and Uang (2008) examine GCARs on the London stock exchange and find a significant reaction from investors, regardless of whether the GCAR is reported early (at the preliminary announcement stage) or later (at the filing date of the annual report). Similarly, Jones (1996) finds significant negative abnormal returns for firms with a GCAR. Next to this, the paper finds that abnormal returns are more negative when the GCAR is more unexpected. An experimental study by O'Reilly (2010) additionally finds strong support that investors find the GCARs relevant when valuing common stock, even when the market already expected this report. It is important to note that GCARs are different than CAMs. GCARs are rare events that do not occur frequently and therefore could have different effects than CAMs (Gutierrez et al., 2018). Given the prior disclosure literature, there are indications that additional disclosure in the auditor reports might lead to more value-relevant information that comes directly from the auditors. When looking at the current literature on CAMs, however, there are mixed results.

Overall prior experimental research has found results that extended auditor reports can influence investors. For instance, Dennis et al. (2019) find that auditor disclosure information about material measurement uncertainty is value-relevant for non-professional investors. Besides this, they find that these non-professional investors use this information differently on whether visual cues or standard disclosures are used. Likewise, Christensen et al. (2014) find that non-professional investors more often change their investment decision if they receive a critical audit matter about fair value than if they receive a standard auditing report or a footnote by the management containing the information. Furthermore, Kachelmeier et al. (2020) show that investors have less confidence in the parts of the financial statement that are identified as CAMs. Next to this, they show that investors feel that the auditor is less responsible when a restatement is later made on that particular critical audit matter. Lastly, Köhler, Ratzinger-Sakel, and Theis (2020) look at both professional and non-professional investors whereas, for a negative tendency, a small change in assumptions could change the economics of the business. Köhler et al. (2020) thus show a less clear result on the value-relevance of extended auditor reports for investors.

Moreover, there are interesting studies in various settings. In France, Bédard et al. (2019) looked at both the first-year implementation of JOAs and the influence of JOAs on further years. They did not find significant results that JOAs led to increased investor informativeness, measured by abnormal returns and abnormal trading volume. Next to this, the paper did not find that JOAs increased audit quality, audit report lag, and audit fees. In the UK, Reid et al. (2015) find that the amount of abnormal trading volume significantly increased after implementing ISA 700. Next to this, they find an increase in abnormal trading volume by using cross-sectional analysis for companies with weaker information coverage and more detailed auditor reports. Gutierrez et al. (2018) also look at the UK setting, using a difference-in-differences design. Since only premium companies listed on the London Stock Exchange must adhere to the new standard in the first year, the other companies can be used as controls. All these results together suggest that the extended auditor report in the UK is not value-relevant for investors. Next to this, Gutierrez et al. (2018) re-perform the tests based on the research design of Reid et al. (2015) by, for instance, using their control variables. These tests do not lead to the same findings as Reid et al. (2015) found in their research. Additionally, Lennox, Schmidt, and Thompson (2021) examine why RMMs in the UK are not value-relevant for investors. They suggest that RMMs provide no additional information to investors because they were already aware of financial reporting risk before disclosing RMMs. In China, Liao et al. (2019), using a difference-in-differences design, do not find that investors find KAMs incrementally informative. In cross-sectional analysis, they did not find that variation in the content of the auditor report influence the informativeness of investors. Opposite to Liao et al. (2019), Goh et al. (2019) find higher abnormal trading volume, higher earnings response coefficient, and lower price synchronicity in China. Furthermore, they find that these effects are more substantial for smaller firms, state-owned firms, and firms with less analyst following. Zeng et al. (2021) also focus on KAM reports and they study whether the KAM rules improve audit quality and how they are related to it. Their results suggests that KAM reporting does convey signals to the market while it improves the overall audit quality. Genç and Erdem (2021) focus on the impact of the inclusion of KAM separate section in the auditor’s report in an emerging markets context (Turkey). They detect firm level characteristics which have a significant impact on KAM disclosures.

A few studies also focus on CAMs information content for companies operating in emerging markets. Specifically, Feng et al. (2021) who focus on Chinese firms, demonstrate a positive relationship between stock pledges by controlling shareholders and the disclosure of CAMs. They further suggest that this positive impact is more pronounced when the auditor is a Big Four audit firm. Finally, Zhi and Kang (2021) focusing on Chinese firms also suggest that CAMs contain incremental information which drives the authors to form a positive conclusion regarding the new audit standard promoting the CAM report.

Concluding, experimental research overall found that CAMs can influence investors in both developed as well as emerging markets. However, looking at archival research, the literature shows mixed results in finding evidence for the relationship between CAMs and increased investors' informativeness.

### 2.3 Hypothesis development

#### *2.3.1 Investor informativeness*

The literature identified the following reasons for why CAMs would result in higher informativeness for investors. CAMs can decrease the information gap between investors and companies/auditors by providing information on matters that required highly challenging, subjective, or complex judgment from auditors in the audit process (Bédard et al., 2019; Public Company Accounting Oversight Board, 2017). With the CAMs, auditors explain how they addressed these matters in the audit, thereby showing more transparency about the audit process to the investors, which could help investors in decision making (Reid et al., 2015). The extra information that CAMs provide can help investors improve their assessment of the quality of the audit conducted, thereby being better able to detect audit quality (Kitiwong & Sarapaivanich, 2020). Another reason CAMs can influence investor informativeness is through the source credibility effect (Christensen et al., 2014). The source, the independent auditor, is more trustworthy than, for instance, a footnote by management. Therefore, investors value this information more. Other ways the CAMs could help investors' decision-making is by comparing CAMs between companies in an industry or by comparing the same company over time (Public Company Accounting Oversight Board, 2017). Besides information sharing, the Public Company Accounting Oversight Board (2017) further mentioned that CAMs could be used for framing and monitoring. With framing, CAMs could help investors to draw their focus on key issues in the statements without having to search for this type of information themselves. Monitoring means that investors and other stakeholders have more knowledge because of CAMs. This extra knowledge could be used to ask more precise questions on these matters to management.

But another part of the literature says that extended auditor reports might not increase the informativeness for investors. For instance, Bédard et al. (2019) mention three reasons why extended auditor reports or CAMs might not lead to additional informative value for investors. Firstly, these reports can be made too standardized. By only using boilerplate text, the information does not provide detailed, valuable information for investors. Consistent with this idea, a study by Brasel, Doxey, Grenier, and Reffett (2016) find that CAMs provide litigation protection to auditors in case of fraud that was not discovered in the audit, both when the matter mentioned was related or unrelated to the fraud item. Therefore, this gives auditors an incentive to disclose more and standardized CAMs, which could lead to CAMs not being informative for investors. Secondly, Bédard et al. (2019) mention that these reports could be made too complex to read. Auditors might use complex terms that are not easily understandable for investors, therefore not providing extra (understandable) information. This argument is in line with Lennox et al. (2021), who mentioned that investors might not be able to recognize the information as valuable, even when it is. Research furthermore found that more complex information in filings leads investors to stop processing the information (You & Zhang, 2009). Thirdly, these reports can lead to information overload (Bédard et al., 2019). The current amount of disclosures can be overwhelming to investors. Therefore investors will not be able to process these large amounts of information to see what information is valuable and what information is not (Peredes, 2013). In this regard, Lennox et al. (2021) furthermore mention that some of the information might simply not be relevant for investors. Another reason why CAMs might not influence investors is that investors already know this information. Investors already know the information if it is, for instance, disclosed in earlier announcements (Lennox et al., 2021). Lastly, Gutierrez et al. (2018) mention that the extended auditor report must contain incremental information. Otherwise, stock prices and volume will not be affected.

Thus, prior research finds contradicting arguments on whether extended auditor reports are value-relevant for investors. Next to this, there are some contradicting findings in the literature regarding this relationship. Additionally, the US context might differ from countries where current archival studies were conducted because of differences in baseline conditions (Public Company Accounting Oversight Board, 2017). Differences could be, for instance, different policy choices, the difference in the way the legal environment works, and differences in market efficiency. Likewise, Leuz, Nanda, and Wysocki (2003) divide countries into clusters based on institutional characteristics. The US was in the outsider cluster, characterized by *'large stock markets, low ownership concentration, extensive outsider rights, high disclosure, and strong legal enforcement'* (Leuz et al., 2003, p. 519).

Most other countries where research was conducted, except the UK, were in different clusters. Since prior research found both arguments in favor and against the value relevance of CAMs for investors, it is hard to make clear predictions based on these arguments alone. However, we argue that since the new regulation is expected to enhance investor economic decisions we form our hypothesis as follows:

*H1: The implementation of critical audit matters in the US is value-relevant for investors.*

To look further into the CAM paragraph, we look at the content of the CAMs in the auditor report. This study will look at the number of CAMs reported, the type of CAMs reported, and whether CAMs are common for an industry or specific for a company.

### *2.3.2 Number of CAMs*

Next to whether a CAM is relevant or not, this paper examines the influence of the number of CAMs reported. CAMs are based on financial statement items that the auditors find challenging or complex in the audit process and thus lead to uncertainty for auditors (Hollie, 2020). If auditors have multiple items they find challenging or complex, they can report more than one CAM. Kitiwong and Sarapaivanich (2020) mention that KAMs are the only unique thing in the auditor report and can function as a mechanism that signals heightened financial statement risk to the public. We find similar results in experimental research, which concluded that even though CAMs do not influence the overall opinion of the audit report, CAMs could indicate a heightened risk for investors (Kachelmeier et al., 2020). Therefore, if more CAMs are disclosed, this might lead to increased risk perceived by investors. Investors want an additional reward for increased risk (Nagy & Obenberger, 1994). Additionally, more risk-averse investors might stop investing in the company, which would lead to more changes in the market reaction of investors (Riley & Chow, 1992).

On the other hand, prior research found that more CAMs lead to lower auditor liability (Brasel et al., 2016; Kachelmeier et al., 2020; Sirois, Bédard, & Bera, 2018). If auditors just disclose CAMs because it lowers their liability risk, this could hurt the informative value of the disclosure (Brasel et al., 2016). Additionally, if the CAM paragraph as a whole is simply not value relevant for investors, like the studies from Gutierrez et al. (2018) and Lennox et al. (2021) showed, then more CAMs might also be uninformative. Next to this, prior research from other countries than the US did not find any relation between the amount of CAMs and a market reaction (Gutierrez et al., 2018; Lennox et al., 2021).

Therefore, we form the extension of our hypothesis as follows:

*H1a: The amount of critical audit matters does influence the value relevance for investors*

### *2.3.3 Critical audit matter categories*

Besides the number of CAMs disclosed, the type of CAM reported can influence the informativeness of investors. As we already mentioned, CAMs signal risk areas that might change the behavior of investors (Kachelmeier et al., 2020). Kitiwong and Sarapaivanich (2020) furthermore show that certain KAMs are more often mentioned than others. Using their 11 KAM categories, Kitiwong and Sarapaivanich (2020) found that impairments and revenue recognition are most often mentioned. Smith and Fulchino (2019) furthermore show that the most frequent CAM categories were goodwill and intangible assets (35%), revenue

(19%), and income taxes (15%). Hollie (2020) shows similar results, with most CAMs in revenues (24%), intangibles/goodwill/impairment (24%), and taxes (14%). These papers show that certain CAMs are more frequently disclosed than others.

The decision affect theory shows more unpredictable outcomes lead to stronger reactions (Li, 2020; Mellers, Schwartz, Ho, & Ritov, 1997; Shepperd & McNulty, 2002). Thus, unexpected outcomes have more impact than more expected outcomes. Similarly, Jones (1996) finds that less anticipated going concern opinions lead to the most substantial negative market responses. Therefore, if certain CAMs categories are more frequently disclosed, this would be easier to predict for investors. Therefore, more unknown, less frequently disclosed CAMs might lead to stronger responses from the market since they carry more unexpected information. Additionally, investors might find certain CAMs more valuable because they are more directly related to the core performance of the business. For instance, an investor might value a revenue CAM more than a CAM related to other liabilities.

On the other hand, the most mentioned CAMs could indicate that these CAMs were most important, most challenging, and required the most judgment from auditors (Public Company Accounting Oversight Board, 2017). If that is the case, investors will value this information more. Also, if investors do not appreciate the information in the CAM paragraph as a whole, they also might not value certain categories (Gutierrez et al., 2018; Lennox et al., 2021).

Overall, prior literature identified both reasons why or why not the CAM categories are relevant or not for investors. Thus we extent our hypothesis H1 as follows:

*H1b: Different CAM categories do influence the value relevance for investors*

#### *2.3.4 Industry-common and firm-specific critical audit matters*

Companies within an industry often have similar characteristics and business environments that can lead to similar risk factors, which auditors can report as CAMs (Li, 2020). Therefore, auditors might disclose certain types of critical audit matter more often in certain industries. The report by the Center for Audit Quality shows that there were certain trends in industries related to CAM reporting (Center for Audit Quality, 2020). For instance, the insurance industry generally reported insurance contract liability CAMs, while petroleum refiners had CAMs associated with the retirement of assets and environmental CAMs. When these CAMs were common for a particular industry, the informational value for investors of those CAMs would be lower (Li, 2020). Also, the decision affect theory would indicate that more unpredictable outcomes would lead to stronger responses (Li, 2020; Mellers et al., 1997; Shepperd & McNulty, 2002). Therefore, since CAMs in an industry are even easier to predict by investors, the effect could be even stronger than the effect of CAM categories in the overall business environment. Therefore, less frequent CAMs reported in an industry should lead to stronger market reactions than industry common CAMs.

On the other hand, the most frequently reported CAMs in an industry could indicate the riskiest areas for that industry and most challenging for auditors. Therefore these would be useful for investors. Next to this, Lennox et al. (2021), in their research, did not find a significant result of industry-common and firm-specific RMMs on investor value.

Because of both arguments in favor and against the informativeness of industry-common and firm-specific CAMs our extension for hypothesis H1 is as follows:

*H1c: Industry-common or firm-specific CAMs do influence the value relevance for investors.*

## 3. METHODOLOGY

### 3.1 Research design

To answer the research question, we use archival database research looking at pre and post-implementation data of CAMs in the US. The treatment sample will consist of US companies that are large accelerated filers (public float>700 million dollars) since these companies' 2019 annual reports should include the CAMs (Public Company Accounting Oversight Board, 2017). The rest of the sample will consist of other US companies, which will act as a control group.

We use data from around the filing dates and the content of the 2018 and 2019 annual reports, together with stock prices and volume around the filing dates of the 2018 and 2019 annual statements. Since the 2019 annual reports are made publicly available in 2020, data should be collected from 2018 till 2020.In this research, we look at the informativeness of investors and CAMs. We measure informativeness for investors using abnormal returns and abnormal trading volumes. We measure CAMs by whether a critical audit matter is reported, the number of reported matters reported, the type of CAMs disclosed, and whether a CAM is industry-common or firm-specific. In the next sections, we explain the different models we use to test the hypotheses.

### 3.2 Difference-in-differences model

To test the first hypothesis, whether the implementation of CAMs in the US is informative for investors, we use a difference-in-differences design looking at the pre and post-implementation data of CAMs. A difference-in-difference design is used to control for time trends in the US stock market because of political, economic, or other factors that could influence the stock market between pre and post-implementation. This paper benefits from the phased approach of the PCAOB, where only audit reports of large accelerated filers were required to include CAMs for fiscal years ending after June 30, 2019. Other US companies were not required, which gives us a setting where the other US companies can act as a control group. Control group companies that decide to disclose CAMs voluntarily will be removed from the sample. The difference between the treatment and control group shows the difference in audit report content for investors. Also, because of the phased approach of the PCAOB, there are no problems with multiple different changes to the auditor report simultaneously. Other changes to the auditor report were implemented earlier. Because of this, the following difference-in-differences design is used:

$$ABRET = a + b1POST + b2TREAT + b3POST*TREAT + \sum bjCONTROLS + IndustryFE + e \quad (1)$$

$$ABVOL = a + b1POST + b2TREAT + b3POST*TREAT + \sum bjCONTROLS + IndustryFE + e \quad (2)$$

ABRET and ABVOL are the proxies for the informativeness of investors. POST represents a periodic indicator variable that equals 1 if the companies' fiscal year ends after June 30, 2019, and 0 if the fiscal year ends earlier. Then, the variable TREAT is an indicator variable for the treatment and control group that equals 1 for large accelerated filers and 0 for non-large accelerated filers that are not required to disclose CAMs. POST*TREAT is an interaction variable that measures the difference-in-differences of the time and treatment.

The proxies used for informativeness for investors are absolute abnormal returns (ABRET) and abnormal trading volume (ABVOL). We use absolute abnormal returns because it shows the change of investors' beliefs in response to an event (Garfinkel & Sokobin, 2006). We use abnormal trading volume because it shows changes in the beliefs of individual investors. These two proxies are used together because returns help distinguish between 2 possible explanations of increased volume: whether investors find the extra information useful or whether investors disagree about the usefulness of the extra information (Bamber, Barron, & Stevens, 2011).

Both abnormal returns and abnormal volume can be calculated based on the data from CRSP. Abnormal returns will be calculated as the sum of absolute returns for every company for three days around the filing date of the annual reports. The three days will start from 1 day before the filing date to 1 day after the filing date. Company returns will be calculated as the day (t) closing price minus the previous day's (t-1) closing price divided by the previous day's (t-1) closing price. This return will be subtracted by the same-day returns of the total value-weighted portfolio of all firms on the NYSE, AMEX, and NASDAQ to get to abnormal returns. Abnormal trading volume will be calculated as the average volume around the filing date divided by the companies average estimation period volume. The average volume around the filing date will be measured by looking at three days' volume surrounding the filing date (-1,1). This volume is then scaled by shares outstanding. The companies average estimation period volume is calculated by looking at a period before the earnings announcement date. We look at an estimation window of 40 days, looking at 130 days to 90 days before the filing date of the annual report.

This research uses the following control variables, which are similar to Gutierrez et al. (2018): first, LOGMKT is used, which measures the total market value of a firm. Secondly, ROA is used, which measures the net income before extraordinary items divided by the firm's total assets. Thirdly, $LOSS_{i,t}$ is an indicator variable which is 1 if variable ROA is negative and 0 if ROA is positive. Then, MTB is the market to book ratio, which is the company's market value divided by the book value. LEV is the long-term debt divided by total assets. $SALESVOL_{i,t}$ is the standard deviation of sales divided by the companies' total assets from year t to t-6. $CHNI_{i,t}$ is measured as net income before extraordinary items in year t minus net income before extraordinary items in year t-1, divided by total assets. $LAG_{i,t}$ is the difference in days between the fiscal year-end date and the filing of the annual reports. $BIG_{i,t}$ is an indicator variable which is 1if a firm is audited by a Big 4 auditor and 0 otherwise. $BETA_{i,t,}$ which is a control variable for company risk, is a coefficient that is calculated by regressing the daily company stock by the daily total market portfolio over 230 days from the filing data. Calculating BETA should be a couple of weeks away from the filing date. Just as Gutierrez et al. (2018) we use the days between -250 and -21 days from the filing date.

Additionally, we include industry-fixed effects because of potential unobserved heterogeneity over different industries. All these variables can be extracted from a combination of Audit analytics, CRSP, and Compustat. For a complete list of variables with the sources, see Appendix A.

Besides the main model, including industry-fixed effects, we perform two extra analyses to check whether the results hold under those circumstances. The first analysis includes both industry-fixed effects as well as calculates standard errors using the bootstrap method. The bootstrap method is used because it helps when '*the theoretical distribution of the test statistic is unknown and the sample sizes are small'* (Gutierrez et al., 2018, p. 1553). The second analysis excludes the industry-fixed effects and bootstrap method but includes company-fixed effects. Including company-fixed effects helps remove influences of specific company characteristics that are not due to time, thus improving the strength of the overall design. All continuous variables are winsored at 2 and 98% to remove outliers, except for ABRET and ABVOL.

Following hypothesis 1, we expect the POST*TREAT coefficient (b3) to be significant for both abnormal returns in equation one and abnormal volume in equation two. In that case, we could accept hypothesis 1, that CAMs are not value-relevant for investors. If CAMs are value-relevant for investors, we expect the POST*TREAT coefficient to be positive and significant.

For the control variables, we predict the following for abnormal returns given prior research. Following the results from Gutierrez et al. (2018), we expect LOGMKT to be negatively related to abnormal returns, indicating that smaller firms have higher abnormal returns. Next to this, we expect LAG to be negatively related to abnormal returns, as longer waiting times make the information in the report less useful. We furthermore expect BETA to be positively related to abnormal returns, as risky firms generally have higher abnormal returns. For abnormal volume, we predict the following. First, we expect a negative relation between LAG and abnormal volume, as information that is later available is less informative (Landsman, Maydew, & Thornock, 2012; Reid et al., 2015). Second, we expect LOSS to be negatively related to abnormal volume, as a loss might lead investors to trade less on that firm (Reid et al., 2015).We do not predict a sign for the rest of the control variables because of no clear indications from prior research.

### 3.3 Cross-sectional Models

For the second, third, and fourth hypotheses, we perform cross-sectional analyses looking at just the implementation group disclosing CAMs (the large accelerated filers). These hypotheses dive more deeply into the content of the auditor report. Perhaps the new CAM paragraph influences investors because of some parts, even if the results do not show an apparent information effect in the difference-in-differences model. To look at hypothesis H1a, the number of CAMs disclosed, we use the following model:

$$ABRET= a+ b1NCAMS+\sum bjCONTROLS+IndustryFE+e \quad (1)$$

$$ABVOL= a+ b1NCAMS+\sum bjCONTROLS+IndustryFE+e \quad (2)$$

ABRET and ABVOL are again the proxies for informativeness for investors (abnormal volume and abnormal returns). Variable NCAMS would be the number of CAMs disclosed by a company. We include industry-fixed effects as well as the previously used control variables from the main model. Again, we add a model including fixed effect and the bootstrap method for calculating standard errors.

Following hypothesis H1a, we predict the coefficient of NCAMS (b1) to be significant for both ABRET in equation one and ABVOL in equation two. If the number of CAMs influences investors, we expect the b1 coefficient to be significant and positive.

For hypotheses H1b and H1c, we need to categorize the CAMs into different categories. An example of an categorization is the study by Kitiwong and Sarapaivanich (2020) who categorized KAMs into 11 categories: '*(1) property investment (PVI); (2) impairment (IMPA); (3) acquisition (ACQ); (4) investment valuation (INVES); (5) inventory valuation (INVEN); (6) accounts receivable (AR); (7) provision (PRO); (8) litigation and regulation (LITI); (9) revenue recognition (REV); (10) taxation (TAX); and (11) other (OTHER)'* (Kitiwong & Sarapaivanich, 2020, p. 1103). Hollie (2020) uses the following categories in her descriptive study about CAMs: *'(1) Revenues (2) Taxes – deferred tax assets/uncertain tax provisions (3) Intangibles/Goodwill/Impairment (4) Inventory (5) Valuation of contingencies/obligations (6) Related party transactions (7) Acquisition (8) Allowance for loan loss (9) Other'* (Hollie, 2020, p. 47). We use a similar categorization as Hollie (2020) but will add some additional categories. In AuditAnalytics, there are a lot of different CAM categories. To test hypothesis H1b, the following models are used:

$$ABRET= a+ b_1\text{-}b_{13}TYPECAM+\sum b_jCONTROLS+IndustryFE+e \quad (1)$$

$$ABVOL= a+ b_1\text{-}b_{13}TYPECAM+\sum b_jCONTROLS+IndustryFE+e \quad (2)$$

ABRET and ABVOL are again the proxies for informativeness for investors (abnormal volume and abnormal returns). TYPECAM would be the 13 different indicator variables for the 13 types of categorized CAMs. For instance, TYPECAM_REV would be 1 if a company reports a revenue CAM, 0 otherwise. We include industry-fixed effects as well as the previously used control variables. Next to this, we add a model calculating standard errors using the bootstrap method.

Following hypothesis H1c, we predict all TYPECAM coefficients (b1-b13) to be significant. If different CAM categories are value-relevant, we expect some TYPECAM coefficients to be significant while others are not. Looking at the industry-common and firm-specific categorization (H1c), we need different models without industry-fixed effects. These models are:

$$ABRET= a+ b1NINDUSTRYCAMS+ b2NCOMPANYCAMS+\sum bjCONTROLS +e \quad (1)$$

$$ABVOL= a+ b1\ NINDUSTRYCAMS + b2NCOMPANYCAMS +\sum bjCONTROLS +e \quad (2)$$

NINDUSTRYCAM looks at the number of CAMS mentioned by Company X that is also disclosed by 50% of companies in company X's industry. The variable is based on the classification by Lennox et al. (2021). Variable NCOMPANYCAM looks at the number of CAMs disclosed by Company X's that are disclosed by less than 50% of company X's industry. Again, we use the same control variables as the main model and add a model including the bootstrap method for estimating standard errors.

Following hypothesis H1c, we expect both coefficients for NINDUSTRCAMS and NCOMPANYCAMS to be significant for both equations one and equation two above. If only firm-specific CAMs are value-relevant while industry-common CAMs are not, we expect NINDUSTRYCAMS to be insignificant, while NCOMPANYCAMS is significant.

## 4. SAMPLE SELECTION AND RESULTS

### 4.1 Sample selection

As mentioned in the research method section, the sample will consist of US public companies between 2018 and 2020. Especially, the treatment group will consist of large accelerated filers, their 2018 and 2019 annual reports, and the data around the filing of those reports. The control group consists of other US companies that are not large accelerated filers.

From CRSP, we identified all stock information for companies listed on the NYSE, NASDAQ, and AMEX. From Compustat, we identify all annual financial information of US companies. Via Audit Analytics, we identify auditor information, CAMs reported, and whether companies are large accelerated filers. The sample consists of a balanced panel, meaning that only firms are used with both years of data available. A balanced panel helps reduce the risk of omitted variables relating to firm characteristics (Reid et al., 2015). After merging all the datasets, the sample consists of 1093 treatment firms and 677 control group firms. Table no. 1 shows the sample selection.

**Table no. 1 – Sample selection**

| | **Adopters** | **Non-adopters** | **DD** |
|---|---|---|---|
| Initial firms from Audit Analytics | 2390 | 5047 | |
| Removing companies with missing Compustat identifiers and missing data for (control) variables | (936) | (3767) | |
| Removing companies with missing stock data from CRSP | (280) | (460) | |
| Removing firms with less than two years of data | (81) | (131) | |
| Removing voluntary filers | 0 | (12) | |
| Companies with full data available | 1093 | 677 | |
| Firm-year observations | 2186 | 1354 | 3540 |

*Notes.* This table shows the sample selection for the analyses. The sample consists of US companies for two years around the implementation of critical audit matters (June 30, 2019). The adopter sample consists of large accelerated filers, while the non-adopter sample consists of other US companies.

### 4.2 Descriptive Statistics

Table no. 2, panel A shows the descriptive statistics of the dependent variables abnormal volume (ABVOL) and absolute abnormal returns (ABRET) and the other test variables in the main model, the difference-in-differences model. The descriptive statistics are separated based on the TREAT and POST variables, thus creating descriptive statistics for four groups. Next to this, panel A shows the percentiles and the differences in means from pre to post for both the treatment and non-treatment groups.

For both the treatment and non-treatment groups, the difference in means is significant for ABRET and ABVOL. For the non-treatment group, the difference in means is -0.087 ($p<0.01$) for ABRET and -0.408 ($p<0.01$) for ABVOL. For the treatment group, the difference in means is -0.016 ($p<0.01$) for ABRET and -0.130 ($p<0.01$) for ABVOL. The results thus show that the non-treatment group has a higher difference in means for abnormal volume and abnormal returns. Furthermore, the negative values for both groups and both dependent variables indicate that both abnormal returns and abnormal returns have increased from the pre to post-period.

**Table no. 2 – Descriptive statistics**

***Panel A: Descriptive statistics for variables in main market analysis***

| | POST=0 TREAT=1 | | | | | | | POST=1 TREAT=1 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VarName** | **Mean** | **SD** | **Median** | **P5** | **P25** | **P75** | **P95** | **Mean** | **SD** | **Median** | **P5** | **P25** | **P75** | **p95** | **Diff. in means.** |
| ABRET | 0.053 | 0.053 | 0.034 | 0.009 | 0.019 | 0.067 | 0.162 | 0.069 | 0.065 | 0.048 | 0.013 | 0.028 | 0.086 | 0.205 | -0.016 *** |
| ABVOL | 0.297 | 0.530 | 0.259 | -0.492 | -0.058 | 0.619 | 1.188 | 0.428 | 0.502 | 0.417 | -0.352 | 0.090 | 0.734 | 1.276 | -0.130 *** |
| LOGMKT | 8.336 | 1.343 | 8.093 | 6.547 | 7.315 | 9.213 | 11.086 | 8.521 | 1.352 | 8.285 | 6.694 | 7.499 | 9.426 | 11.272 | -0.186 ** |
| ROA | 0.032 | 0.103 | 0.037 | -0.101 | 0.012 | 0.076 | 0.159 | 0.026 | 0.094 | 0.031 | -0.109 | 0.011 | 0.066 | 0.142 | 0.006 |
| MTB | 3.239 | 5.248 | 2.127 | 0.442 | 1.226 | 3.937 | 12.774 | 3.523 | 5.396 | 2.364 | 0.306 | 1.373 | 4.403 | 14.337 | -0.284 |
| LEV | 0.275 | 0.197 | 0.262 | 0.011 | 0.122 | 0.387 | 0.653 | 0.297 | 0.197 | 0.290 | 0.019 | 0.146 | 0.410 | 0.661 | -0.022 ** |
| SALESVOL | 0.106 | 0.114 | 0.075 | 0.003 | 0.031 | 0.134 | 0.346 | 0.109 | 0.114 | 0.078 | 0.003 | 0.034 | 0.141 | 0.356 | -0.002 |
| CHNI | 0.008 | 0.060 | 0.006 | -0.075 | -0.008 | 0.031 | 0.096 | -0.004 | 0.056 | 0.001 | -0.083 | -0.015 | 0.010 | 0.055 | 0.012 *** |
| LAG | 54.283 | 7.609 | 57.000 | 39.000 | 51.000 | 59.000 | 60.000 | 53.994 | 7.546 | 56.000 | 38.000 | 50.000 | 59.000 | 62.000 | 0.289 |
| BETA | 1.041 | 0.386 | 1.000 | 0.361 | 0.807 | 1.270 | 1.727 | 1.202 | 0.468 | 1.210 | 0.352 | 0.906 | 1.493 | 2.048 | -0.161 *** |
| BIG4 | 0.899 | 0.301 | 1.000 | 0.000 | 1.000 | 1.000 | 1.000 | 0.898 | 0.303 | 1.000 | 0.000 | 1.000 | 1.000 | 1.000 | 0.002 |
| LOSS | 0.145 | 0.352 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 | 0.171 | 0.377 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 | -0.027 * |
| Obs. | 1093 | | | | | | | 1093 | | | | | | | 2186 |
| | POST=0 TREAT=0 | | | | | | | POST=1 TREAT=0 | | | | | | | |
| **VarName** | **Mean** | **SD** | **Median** | **P5** | **P25** | **P75** | **P95** | **Mean** | **SD** | **Median** | **P5** | **P25** | **P75** | **P95** | **Diff. in means** |
| ABRET | 0.102 | 0.107 | 0.071 | 0.015 | 0.035 | 0.129 | 0.323 | 0.189 | 0.170 | 0.149 | 0.037 | 0.084 | 0.240 | 0.453 | -0.087*** |
| ABVOL | 0.204 | 1.003 | 0.214 | -1.581 | -0.270 | 0.788 | 1.861 | 0.612 | 1.099 | 0.614 | -1.161 | 0.141 | 1.145 | 2.356 | -0.408*** |
| LOGMKT | 4.973 | 1.185 | 5.253 | 2.547 | 4.191 | 5.872 | 6.565 | 5.035 | 1.217 | 5.269 | 2.547 | 4.219 | 5.994 | 6.655 | -0.063 |
| ROA | -0.088 | 0.214 | 0.006 | -0.715 | -0.099 | 0.017 | 0.085 | -0.096 | 0.210 | -0.000 | -0.726 | -0.117 | 0.014 | 0.069 | 0.008 |
| MTB | 1.722 | 4.202 | 1.207 | -1.355 | 0.758 | 1.862 | 6.946 | 1.837 | 4.680 | 1.216 | -3.032 | 0.705 | 2.001 | 8.713 | -0.115 |
| LEV | 0.233 | 0.234 | 0.151 | 0.005 | 0.038 | 0.368 | 0.745 | 0.259 | 0.248 | 0.173 | 0.010 | 0.041 | 0.404 | 0.824 | -0.026** |
| SALESVOL | 0.140 | 0.157 | 0.088 | 0.002 | 0.009 | 0.201 | 0.506 | 0.142 | 0.154 | 0.100 | 0.002 | 0.012 | 0.205 | 0.496 | -0.002 |
| CHNI | -0.003 | 0.114 | 0.004 | -0.248 | -0.036 | 0.032 | 0.230 | -0.008 | 0.113 | 0.000 | -0.275 | -0.041 | 0.018 | 0.246 | 0.005 |
| LAG | 72.133 | 11.549 | 73.000 | 52.000 | 65.000 | 77.000 | 91.000 | 72.734 | 11.938 | 72.000 | 55.000 | 65.000 | 77.000 | 98.000 | -0.601 |
| BETA | 0.782 | 0.495 | 0.722 | 0.015 | 0.421 | 1.100 | 1.703 | 0.940 | 0.551 | 0.904 | 0.039 | 0.542 | 1.275 | 2.027 | -0.158*** |
| BIG4 | 0.365 | 0.482 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 | 0.360 | 0.480 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 | 0.004 |
| LOSS | 0.459 | 0.499 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 | 0.501 | 0.500 | 1.000 | 0.000 | 0.000 | 1.000 | 1.000 | -0.041 |
| Obs. | 677 | | | | | | | 677 | | | | | | | 1354 |

***Panel B: descriptive statistics of different CAM variables***

| VarName | Obs. | Mean | SD | Median | P5 | P25 | P75 | P95 |
|---|---|---|---|---|---|---|---|---|
| CAMS | 1093 | 1.593 | 0.784 | 1.000 | 1.000 | 1.000 | 2.000 | 3.000 |
| TYPECAM_REV | 1093 | 0.231 | 0.421 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| TYPECAM_TAX | 1093 | 0.147 | 0.355 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| TYPECAM_IMP | 1093 | 0.264 | 0.441 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| TYPECAM_INV | 1093 | 0.055 | 0.228 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| TYPECAM_CONT | 1093 | 0.166 | 0.372 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| TYPECAM_RPT | 1093 | 0.008 | 0.090 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| TYPECAM_ACQ | 1093 | 0.210 | 0.408 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| TYPECAM_ALLOW | 1093 | 0.156 | 0.363 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| TYPECAM_EXP | 1093 | 0.012 | 0.108 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| TYPECAM_ASSETS | 1093 | 0.167 | 0.374 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| TYPECAM_LEASE | 1093 | 0.013 | 0.113 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| TYPECAM_PENSION | 1093 | 0.024 | 0.152 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| TYPECAM_OTHER | 1093 | 0.056 | 0.230 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| NINDUSTRYCAMS | 1093 | 0.241 | 0.432 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| NCOMPANYCAMS | 1093 | 1.352 | 0.883 | 1.000 | 0.000 | 1.000 | 2.000 | 3.000 |

*Notes.* This table shows the descriptive statistics for the analyses. Table A shows the summary statistics of the variables in the main market model. Panel B shows the descriptive statistics for the different types of CAM variables used in this research. All continuous variables are winsorized at 2% and 98%, excluding the dependent variables ABRET and ABVOL. A list of variable definitions is available in Appendix A. ***, **, and * indicate statistical significance at 1%, 5%, and 10%, respectively.

Looking at the difference in means for the other variables, panel A shows the following. Firstly, LEV significantly increased for both the treatment and non-treatment groups. For the control group, the difference in means is -0.026 ($p<0.05$), and for the treatment group, the difference in means is -0.022 ($p<0.05$). This result indicates that, on average, the ratio between long-term debt to assets has increased from the pre to post-period. Secondly, the difference in means for BETA significantly increased for both groups. For the control group, the difference in means for BETA is -0.158 ($p<0.01$), and for the treatment group, the difference in means is -0.161($p<0.01$). These findings indicate that company risk increased from pre to post-period and about the same for both groups.

For the treatment group only, we furthermore find a significant negative difference in means of -0.186 ($p<0.05$) for LOGMKT, indicating that the market value of large accelerated filers has increased over time. Also, we see a significant difference in means for CHNI of 0.012 ($p<0.01$), indicating that the change in net income before extraordinary items to asset ratio has decreased. This increase might suggest that large accelerated filers are performing less well. The results show similar findings with a weakly significant difference in means of -0.027 ($p<0.10$) for LOSS, indicating that more companies reported a loss in the post-period than in the pre-period. For the non-treatment group, we furthermore do not identify any other significant differences in means.

Table 2, panel B shows the descriptive statistics for the different CAM variables. Overall, the average of CAMs reported is 1.59. An average of 1.59 CAMs is fairly low as the sample consists of large accelerated filers that are large and complex companies. Therefore, only reporting one or two CAMs seems fairly modest. Also, Lennox et al. (2021) in the UK find an average of 3.78 RMMs. Surprisingly, there is such a large difference between the US and the UK. Table no. 2, panel C shows that Public Administration (2.67), Construction

(1.75), and Mining(1.71) report on average the most CAMs, while Finance, Insurance, and Real Estate(1.50) and Wholesale Trade(1.45) on average report the lowest amount of CAMs.

Table no. 2, panel D shows the number of companies per industry that report certain CAM categories. The most-reported CAMs were intangibles/goodwill/impairment (26.4%), Revenues (23.0%) and, acquisitions (21.0%). These findings are similar to the results from Hollie (2020). Overall, the panel shows that different industries report different types of CAMs. For instance, manufacturing reports a high amount of CAMs related to intangibles/goodwill/impairment, while the Finance, Insurance, and Retail Estate industry reports many CAMs related to the allowance for loan loss. Similarly, the Mining industry reports a lot of CAMs related to long-term assets.

### 4.3 Results

#### *4.3.1 Market reaction*

Table no. 3 shows the results of the difference-in-differences design for hypothesis 1, testing if CAMs are value-relevant for inventors. Column 1 to 3 shows the findings regarding the difference-in-differences models, while columns 4 and 5 show the results using just the treatment sample to look at the pre-post effect on the treatment sample. Columns 1 and 4 show the results including industry-fixed effects. Columns 2 and 5 show the results including industry-fixed effects and the bootstrap method for calculating standard errors using 1000 replications. Finally, column 3 shows the findings using company-fixed effects only.

Panel A shows the models using absolute abnormal returns (ABRET) as the dependent variable. The interaction variable POST*TREAT is negative (-0.068) and significant ($p<0.01$). This finding is robust for the bootstrap model from column 2 and the company-fixed effects of column 3. This result suggests that abnormal returns are lower if CAMs are reported. If CAMs had been informative for investors, there would have been a significant positive interaction effect as there would have been stronger responses to the reporting of CAMs. Thus, the results do not clearly show that investors value the information. However, the results do show a reaction from the market, but in the opposite direction.

The POST variable in panel A is furthermore positive (0.082) and significant ($p<0.01$), indicating that the abnormal returns in the sample were higher in the period after June 30, 2019. These findings are robust, including the bootstrap model from column 2 and the company-fixed effects of column 3. The significant POST variable indicates the importance of the difference-in-differences design, as it suggests that in the sample, abnormal returns increase from pre to post-implementation. Columns 4 and 5 show a positive and significant POST variable. These results confirm the descriptive statistics have already shown, that abnormal returns for the treatment group have increased from 2018 to 2019.

Panel B shows the results of the regression with abnormal volume (ABVOL). In Panel B, the interaction variable POST*TREAT is negative (-0.272) and significant ($P<0.01$). These results are also robust with the models from columns 2 and 3. The negative interaction variable indicates that the reporting of CAMs leads to lower abnormal trading volume. These results suggest that investors trade less when CAMs are reported. If CAMs had been useful for investors, we would expect higher abnormal trading volume as investors would trade on the additional information CAMs provide. A possible explanation could be that the reporting of CAMs leads to uncertainty for investors. Maybe these CAMs are too complex (e.g., Bédard et al., 2019) to understand or lead to information overload (e.g., You & Zhang, 2009). Also, the POST variable in panel B is positive (0.403) and significant (p<0.01), indicating that the abnormal volume was higher for companies with fiscal year-ends after June 30, 2019.Columns 4 and 5 also show a positive and significant POST variable for the treatment group. These results confirm what the descriptive statistics showed, that the abnormal volume for the treatment group has increased.

Looking at the control variables, panel A shows the following. Firstly, LOGMKT is negative and significant for models 1 and 2, indicating that bigger firms have fewer abnormal returns. This finding is in line with that smaller firms are generally riskier. Secondly, ROA is negative and significant for models 1 and 2, indicating that firms with a higher return on assets have lower abnormal returns. Thirdly, LEV is positive and significant, suggesting that companies with a higher long-term debt to assets ratio have higher abnormal returns. Fourthly, CHNI is positive and weakly significant, suggesting that firms with higher net income before extraordinary items relative to assets have higher abnormal returns. Fifthly, LAG is positive and significant, indicating that firms with longer times between fiscal year-end and the filing date have higher abnormal returns. Sixthly, BETA is positive and significant, indicating riskier firms (firms with more volatility in their stock prices) have higher abnormal returns. Lastly, LOSS is positive and significant, suggesting that firms with losses have more abnormal returns. For the control variables in panel B, just as with ABRET, LOGMKT is negatively significant, and LEV is positively significant. Next to this, BIG4 is positive and significant, indicating that companies that are audited by big 4 firms have higher abnormal volumes.

Concluding, we find lower abnormal returns and volume after the reporting of CAMs. These results together do not indicate that investors find the reporting of CAMs incrementally informative and perhaps even suggest that investors are hesitant to trade when CAMs are reported. Overall, the findings are consistent with Bédard et al. (2019); Gutierrez et al. (2018) and Liao et al. (2019), and in contrast to Goh et al. (2019) and Reid et al. (2015).

**Table no. 3 – Analysis of the market reaction for the reporting of critical audit matters**

***Panel A: Abnormal returns as the dependent variable for H1***

| VARIABLES | (1) ABRET | (2) ABRET | (3) ABRET | (4) ABRET | (5) ABRET |
|---|---|---|---|---|---|
| POST | 0.082*** | 0.082*** | 0.083*** | 0.014*** | 0.014*** |
| | (11.22) | (11.75) | (11.27) | (6.489) | (6.706) |
| TREAT | 0.005 | 0.005 | | | |
| | (0.707) | (0.723) | | | |
| POST*TREAT | -0.068*** | -0.068*** | -0.067*** | | |
| | (-8.999) | (-9.270) | (-9.352) | | |
| LOGMKT | -0.012*** | -0.012*** | -0.019 | -0.009*** | -0.009*** |
| | (-8.382) | (-8.680) | (-1.541) | (-8.159) | (-8.085) |
| ROA | -0.062*** | -0.062*** | -0.071 | -0.077** | -0.077** |
| | (-2.599) | (-2.582) | (-0.715) | (-2.082) | (-2.098) |
| MTB | 0.000 | 0.000 | 0.002* | -0.000 | -0.000 |
| | (0.472) | (0.470) | (1.668) | (-0.242) | (-0.241) |
| LEV | 0.057*** | 0.057*** | 0.069* | 0.0410*** | 0.0410*** |
| | (5.538) | (5.578) | (1.733) | (5.052) | (5.061) |
| SALESVOL | 0.036** | 0.036** | 0.053 | 0.036*** | 0.036*** |
| | (2.207) | (2.204) | (0.647) | (2.808) | (2.869) |

| VARIABLES | (1)<br>ABRET | (2)<br>ABRET | (3)<br>ABRET | (4)<br>ABRET | (5)<br>ABRET |
|---|---|---|---|---|---|
| CHNI | 0.059* | 0.059* | 0.056 | 0.073* | 0.073* |
| | (1.652) | (1.662) | (0.780) | (1.890) | (1.884) |
| LAG | 0.001** | 0.001** | 0.002** | -0.000 | -0.000 |
| | (2.382) | (2.399) | (2.552) | (-0.0183) | (-0.0184) |
| BETA | 0.020*** | 0.020*** | 0.013 | 0.016*** | 0.016*** |
| | (4.684) | (4.776) | (1.337) | (4.649) | (4.776) |
| BIG4 | 0.006 | 0.006 | 0.028 | -0.008** | -0.008** |
| | (1.123) | (1.125) | (1.095) | (-2.058) | (-2.115) |
| LOSS | 0.023*** | 0.023*** | 0.013 | 0.020*** | 0.020*** |
| | (3.885) | (3.934) | (1.119) | (2.941) | (2.988) |
| Constant | 0.005 | 0.074*** | 0.035 | 0.100*** | 0.100*** |
| | (0.214) | (2.718) | (0.411) | (4.977) | (4.633) |
| Observations | 3,540 | 3,540 | 3,540 | 2,186 | 2,186 |
| R-squared | 0.320 | 0.320 | 0.180 | 0.243 | 0.243 |
| Industry FE | YES | YES | NO | YES | YES |
| Bootstrap S.E. | NO | YES | NO | NO | YES |
| Firm FE | NO | NO | YES | NO | NO |

***Panel B: Abnormal volume as the dependent variable for H1***

| VARIABLES | (1)<br>ABVOL | (2)<br>ABVOL | (3)<br>ABVOL | (4)<br>ABVOL | (5)<br>ABVOL |
|---|---|---|---|---|---|
| POST | 0.403*** | 0.403*** | 0.399*** | 0.143*** | 0.143*** |
| | (7.089) | (6.781) | (6.325) | (6.814) | (6.548) |
| TREAT | 0.149*** | 0.149*** | | | |
| | (2.678) | (2.588) | | | |
| POST*TREAT | -0.272*** | -0.272*** | -0.295*** | | |
| | (-4.612) | (-4.406) | (-5.068) | | |
| LOGMKT | -0.030*** | -0.030** | 0.109 | -0.048*** | -0.048*** |
| | (-2.585) | (-2.512) | (1.278) | (-4.783) | (-4.769) |
| ROA | -0.021 | -0.021 | 0.467 | -0.338* | -0.338 |
| | (-0.112) | (-0.109) | (0.726) | (-1.713) | (-1.638) |
| MTB | 0.000 | 0.000 | -0.001 | 0.002 | 0.002 |
| | (0.146) | (0.142) | (-0.212) | (0.775) | (0.750) |
| LEV | 0.166** | 0.166** | 0.388 | 0.227*** | 0.227*** |
| | (2.219) | (2.221) | (0.997) | (3.156) | (3.228) |
| SALESVOL | 0.008 | 0.008 | 0.285 | 0.065 | 0.065 |
| | (0.062) | (0.062) | (0.576) | (0.585) | (0.573) |
| CHNI | 0.007 | 0.007 | -0.472 | 0.608*** | 0.608*** |
| | (0.027) | (0.026) | (-1.150) | (2.823) | (2.898) |
| LAG | 0.002 | 0.002 | 0.001 | 0.002 | 0.002 |
| | (0.717) | (0.689) | (0.184) | (1.216) | (1.220) |
| BETA | 0.015 | 0.015 | -0.004 | -0.020 | -0.020 |
| | (0.414) | (0.413) | (-0.050) | (-0.675) | (-0.669) |
| BIG4 | 0.084** | 0.084** | 0.086 | 0.083** | 0.083** |
| | (2.103) | (2.046) | (0.425) | (2.013) | (1.980) |
| LOSS | -0.017 | -0.017 | -0.166* | 0.010 | 0.010 |
| | (-0.366) | (-0.370) | (-1.912) | (0.218) | (0.213) |
| Constant | 0.000 | 0.087 | -0.694 | 0.386** | 0.386** |
| | (0.001) | (0.395) | (-1.039) | (2.175) | (2.203) |

| VARIABLES | (1) ABVOL | (2) ABVOL | (3) ABVOL | (4) ABVOL | (5) ABVOL |
|---|---|---|---|---|---|
| Observations | 3,540 | 3,540 | 3,540 | 2,186 | 2,186 |
| R-squared | 0.049 | 0.049 | 0.074 | 0.077 | 0.077 |
| Industry FE | YES | YES | NO | YES | YES |
| Bootstrap S.E. | NO | YES | NO | NO | YES |
| Firm FE | NO | NO | YES | NO | NO |

*Notes.* This table shows the results for the analysis on the value relevance of CAMs for investors, using linear regressions. The dependent variable is absolute abnormal returns (ABRET) in panel A and abnormal volume (ABVOL) in panel B. The first three columns in panel A and panel B show the results for the difference-in-differences design, while columns 4 and 5 show the results using only the treatment sample of large accelerated filers. Columns 1 and 4 show the findings including industry-fixed effects. Columns 2 and 5 show the results including industry-fixed effects and the bootstrapping method for calculating standard errors (using 1000 replications). Column 3 shows the results using company-fixed effects. Robust t-statistics are clustered by company and displayed in parentheses. All numbers are rounded at the third decimal place. All continuous variables are winsorized at 2% and 98%, excluding the dependent variables ABRET and ABVOL. A list of variable definitions is available in Appendix A. ***, **, and * indicate statistical significance at 1%, 5%, and 10%, respectively.

#### *4.3.2 Number of critical audit matters*

Hypothesis 2 analyzes the value-relevance of the number of CAMs reported. Table no. 4 shows the results. The same control variables are used as in the difference-in-differences model. Industry-fixed effects are included in the models from columns 1 and 3 and industry-fixed effects and bootstrapping of standard errors in the models from columns 2 and 4.

Columns 1 and 2 show the findings regarding the dependent variable ABRET. The variable of interest, NCAMS, is positive (0.001) but insignificant (P>0.10). These findings are robust for including bootstrapping of standard errors from column 2. These results indicate that the number of CAMs does not influence abnormal returns.

Column 3 and 4 shows the findings related to the second dependent variable, ABVOL. Panel B shows similar results. The variable of interest, NCAMS, is positive (0.013) but insignificant (p>0.10). These findings are robust for including the bootstrapping method for standard errors. These results indicate that the number of CAMs does not influence abnormal volume.

Concluding, we do not find any results that the number of reported CAMs is informative to investors. These results are consistent with Lennox et al. (2021) and Gutierrez et al. (2018), who did not find a relation between the number of RMMs reported and value relevance for investors.

**Table no. 4 – Analysis of the number of critical audit matters**

| VARIABLES | (1) ABRET | (2) ABRET | (3) ABVOL | (4) ABVOL |
|---|---|---|---|---|
| NCAMS | 0.001 | 0.001 | 0.013 | 0.013 |
| | (0.276) | (0.281) | (0.664) | (0.638) |
| LOGMKT | -0.010*** | -0.010*** | -0.042*** | -0.042*** |
| | (-5.951) | (-6.018) | (-3.023) | (-3.008) |
| ROA | -0.070 | -0.070 | -0.107 | -0.107 |
| | (-1.400) | (-1.424) | (-0.414) | (-0.398) |
| MTB | 0.000 | 0.000 | 0.004 | 0.004 |
| | (0.088) | (0.088) | (1.275) | (1.242) |
| LEV | 0.057*** | 0.057*** | 0.129 | 0.129 |

| VARIABLES | (1) ABRET | (2) ABRET | (3) ABVOL | (4) ABVOL |
|---|---|---|---|---|
| | (4.872) | (5.028) | (1.460) | (1.463) |
| SALESVOL | 0.037* | 0.037* | -0.028 | -0.028 |
| | (1.952) | (1.917) | (-0.200) | (-0.196) |
| CHNI | 0.100* | 0.100* | 0.618** | 0.618** |
| | (1.680) | (1.702) | (2.045) | (2.034) |
| LAG | 0.001*** | 0.001*** | 0.014*** | 0.014*** |
| | (2.784) | (2.726) | (6.104) | (5.952) |
| BETA | 0.012*** | 0.012*** | -0.030 | -0.030 |
| | (2.818) | (2.788) | (-0.914) | (-0.889) |
| BIG4 | -0.007 | -0.007 | 0.063 | 0.063 |
| | (-1.299) | (-1.259) | (1.386) | (1.398) |
| LOSS | 0.030*** | 0.030*** | 0.042 | 0.042 |
| | (3.192) | (3.261) | (0.700) | (0.687) |
| Constant | 0.076*** | 0.060** | -0.050 | -0.220 |
| | (3.098) | (2.349) | (-0.220) | (-0.652) |
| Observations | 1,093 | 1,093 | 1,093 | 1,093 |
| R-squared | 0.268 | 0.268 | 0.102 | 0.102 |
| Industry FE | YES | YES | YES | YES |
| Bootstrap S.E. | NO | YES | NO | YES |
| Firm FE | NO | NO | NO | NO |

*Notes.* This table shows the results for the analysis on the value relevance of the number of CAMs reported for investors, using linear regressions. This analysis only uses the treatment sample of large accelerated filers. The dependent variable is absolute abnormal returns (ABRET) in columns 1 and 2 and abnormal volume (ABVOL) in columns 3 and 4. Column 1 and 3 shows the results including industry-fixed effects. Columns 2 and 4 show the results including industry-fixed effects and the bootstrapping method for calculating standard errors (using 1000 replications). Robust t-statistics are clustered by company and displayed in parentheses. All numbers are rounded at the third decimal place. All continuous variables are winsorized at 2% and 98%, excluding the dependent variables ABRET and ABVOL. A list of variable definitions is available in Appendix A. ***, **, and * indicate statistical significance at 1%, 5%, and 10%, respectively.

#### *4.3.3 Critical audit matter categories*

Hypothesis 3 examines the type of CAM categories reported. CAMs are categorized into 13 different categories. Table no. 5 shows the results of the regressions models. Industry-fixed effects are included in the models from columns 1 and 3 and industry-fixed effects and bootstrapping of standard errors in the models from columns 2 and 4.

Columns 1 and 2 show the results for the dependent variable absolute abnormal returns (ABRET). The variables of interest are all the TYPECAM_ variables. Columns 1 and 2 show that all CAM category variables are insignificant. Only TYPECAM_LEASE is negative (-0.019) and significant ($p<0.05$). These results are robust for including the bootstrap method for standard errors in model 2. This result shows that a CAM related to leases is related to lower abnormal returns. The rest of the findings show that CAM categories are not associated with abnormal returns.

Columns 3 and 4 show the result for the other dependent variable, ABVOL. Using abnormal volume, we find similar results. Again, most CAM category variables are insignificant. Only TYPECAM_ACQ is negative (-0.074) and significant ($p<0.05$). This finding indicates that a CAM related to acquisitions is related to lower abnormal trading volume. The results are robust for including the bootstrap method in column 2. Overall, the results suggest that the type of CAM category does not influence abnormal volume.

In conclusion, the results do not suggest a clear reaction from the market based on the CAM categories reported. Previous research has not examined the influence of CAM categories, but given the prior research on CAMs in general, these results are not surprising.

**Table no. 5 – Analyses of market reaction to different critical audit matter categories reported**

| **VARIABLES** | **(1) ABRET** | **(2) ABRET** | **(3) ABVOL** | **(4) ABVOL** |
|---|---|---|---|---|
| TYPECAM_REV | 0.001 | 0.001 | 0.050 | 0.050 |
| | (0.233) | (0.236) | (1.084) | (1.062) |
| TYPECAM_TAX | 0.002 | 0.002 | 0.067 | 0.067 |
| | (0.270) | (0.269) | (1.349) | (1.378) |
| TYPECAM_IMP | -0.004 | -0.004 | 0.031 | 0.031 |
| | (-0.682) | (-0.692) | (0.741) | (0.746) |
| TYPECAM_INV | -0.011 | -0.011 | -0.064 | -0.064 |
| | (-1.491) | (-1.459) | (-0.835) | (-0.813) |
| TYPECAM_CONT | 0.006 | 0.006 | 0.026 | 0.026 |
| | (1.332) | (1.308) | (0.562) | (0.586) |
| TYPECAM_RPT | -0.014 | -0.014 | -0.002 | -0.002 |
| | (-0.937) | (-0.897) | (-0.012) | (-0.012) |
| TYPECAM_ACQ | -0.004 | -0.004 | -0.074** | -0.074** |
| | (-0.858) | (-0.834) | (-2.120) | (-2.212) |
| TYPECAM_ALLOW | -0.003 | -0.003 | 0.043 | 0.043 |
| | (-0.514) | (-0.501) | (0.645) | (0.651) |
| TYPECAM_EXP | -0.005 | -0.005 | 0.099 | 0.099 |
| | (-0.301) | (-0.287) | (0.770) | (0.697) |
| TYPECAM_ASSETS | 0.005 | 0.005 | 0.050 | 0.050 |
| | (0.670) | (0.648) | (0.870) | (0.835) |
| TYPECAM_LEASE | -0.019** | -0.019** | -0.018 | -0.018 |
| | (-2.170) | (-1.995) | (-0.151) | (-0.143) |
| TYPECAM_PENSION | -0.001 | -0.001 | 0.032 | 0.032 |
| | (-0.065) | (-0.061) | (0.278) | (0.264) |
| TYPECAM_OTHER | -0.002 | -0.002 | 0.053 | 0.053 |
| | (-0.258) | (-0.271) | (0.845) | (0.807) |
| LOGMKT | -0.010*** | -0.010*** | -0.045*** | -0.045*** |
| | (-5.711) | (-5.936) | (-3.175) | (-3.236) |
| ROA | -0.072 | -0.072 | -0.043 | -0.043 |
| | (-1.372) | (-1.448) | (-0.157) | (-0.155) |
| MTB | -0.000 | -0.000 | 0.004 | 0.004 |
| | (-0.084) | (-0.083) | (1.248) | (1.207) |
| LEV | 0.056*** | 0.056*** | 0.126 | 0.126 |
| | (4.583) | (4.540) | (1.377) | (1.329) |
| SALESVOL | 0.035* | 0.035* | -0.031 | -0.031 |
| | (1.764) | (1.819) | (-0.215) | (-0.212) |
| CHNI | 0.102* | 0.102* | 0.569* | 0.569* |
| | (1.696) | (1.708) | (1.854) | (1.826) |
| LAG | 0.001*** | 0.001*** | 0.015*** | 0.015*** |
| | (3.011) | (3.071) | (6.283) | (6.223) |
| BETA | 0.013*** | 0.013*** | -0.036 | -0.036 |

| VARIABLES | (1) ABRET | (2) ABRET | (3) ABVOL | (4) ABVOL |
|---|---|---|---|---|
| | (2.893) | (3.012) | (-1.086) | (-1.111) |
| BIG4 | -0.008 | -0.008 | 0.063 | 0.063 |
| | (-1.486) | (-1.432) | (1.396) | (1.391) |
| LOSS | 0.029*** | 0.029*** | 0.045 | 0.045 |
| | (3.017) | (2.958) | (0.739) | (0.766) |
| Constant | 0.075*** | 0.056** | -0.064 | -0.320 |
| | (2.943) | (2.109) | (-0.265) | (-0.897) |
| Observations | 1,093 | 1,093 | 1,093 | 1,093 |
| R-squared | 0.274 | 0.274 | 0.112 | 0.112 |
| Industry FE | YES | YES | YES | YES |
| Bootstrap S.E. | NO | YES | NO | YES |
| Firm FE | NO | NO | NO | NO |

*Notes.* This table shows the results for the analysis on the value relevance of the categories of CAMs reported for investors, using linear regressions. This analysis only uses the treatment sample of large accelerated filers. The dependent variable is absolute abnormal returns (ABRET) in columns 1 and 2 and abnormal volume (ABVOL) in columns 3 and 4. Column 1 and 3 shows the results including industry-fixed effects. Columns 2 and 4 show the results including industry-fixed effects and the bootstrapping method for calculating standard errors (using 1000 replications). Robust t-statistics are clustered by company and displayed in parentheses. All numbers are rounded at the third decimal place. All continuous variables are winsorized at 2% and 98%, excluding the dependent variables ABRET and ABVOL. A list of variable definitions is available in Appendix A. ***, **, and * indicate statistical significance at 1%, 5%, and 10%, respectively.

#### *4.3.4 Industry-common and firm-specific critical audit matters*

Hypothesis 4 looks at the value relevance of the different CAM categories but focuses on whether CAMs are industry-common or firm-specific. Table no. 6 shows the results of the analysis. Industry-fixed effects are included in the models from columns 1 and 3 and industry-fixed effects and bootstrapping of standard errors in the models from columns 2 and 4.

Columns 1 and 2 shows the results between NINDUSTRYCAMS, NCOMPANYCAMS, and the dependent variable abnormal returns (ABRET). The first variable of interest, NINDUSTRYCAMS, is negative (-0.003) but insignificant (p>0.10).Column 1 shows similar results for NCOMPANYCAMS, which is positive (0.001) but insignificant (p>0.10). These findings are robust for including the bootstrap method and suggest that industry-common and firm-specific CAMs are not value-relevant for investors.

Columns 3 and 4 show the results between NINDUSTRYCAMS, NCOMPAYCAMS, and the other dependent variable abnormal volume (ABVOL). Similar to columns 1 and 2, NINDUSTRYCAMS is negative (-0.0108) but again insignificant (p>0.10). NCOMPANYCAMS is positive (0.0183) but insignificant (p>0.10). For both these models, the findings are robust with including the bootstrap method. The findings suggest that industry-common and firm-specific CAMs are not value-relevant for investors.

Concluding, the results do not show any evidence that industry-specific CAMs or company-specific CAMs influence the informativeness of investors. The results are in line with Lennox et al. (2021), who also did not find a significant reaction for the number of industry-common or firm-specific CAMs reported.

**Table no. 6 – Analysis of the market reaction to industry-common and firm-specific critical audit matters**

| VARIABLES | (1) ABRET | (2) ABRET | (3) ABVOL | (4) ABVOL |
|---|---|---|---|---|
| NINDUSTRYCAMS | -0.003 | -0.003 | -0.014 | -0.014 |
| | (-0.680) | (-0.695) | (-0.364) | (-0.381) |
| NCOMPANYCAMS | 0.001 | 0.001 | 0.017 | 0.017 |
| | (0.501) | (0.505) | (0.848) | (0.850) |
| LOGMKT | -0.010*** | -0.010*** | -0.043*** | -0.043*** |
| | (-5.911) | (-5.853) | (-3.166) | (-3.215) |
| ROA | -0.058 | -0.058 | -0.084 | -0.084 |
| | (-1.148) | (-1.175) | (-0.327) | (-0.339) |
| MTB | 0.000 | 0.000 | 0.005* | 0.005* |
| | (0.328) | (0.315) | (1.756) | (1.754) |
| LEV | 0.067*** | 0.067*** | 0.165** | 0.165** |
| | (5.972) | (6.035) | (2.009) | (1.967) |
| SALESVOL | 0.043** | 0.043** | -0.070 | -0.070 |
| | (2.470) | (2.507) | (-0.508) | (-0.516) |
| CHNI | 0.086 | 0.086 | 0.618** | 0.618** |
| | (1.449) | (1.505) | (2.037) | (2.051) |
| LAG | 0.001*** | 0.001*** | 0.015*** | 0.015*** |
| | (2.706) | (2.689) | (6.344) | (6.353) |
| BETA | 0.011*** | 0.011*** | -0.048 | -0.048 |
| | (2.881) | (2.767) | (-1.552) | (-1.586) |
| BIG4 | -0.005 | -0.005 | 0.069 | 0.069 |
| | (-0.892) | (-0.871) | (1.535) | (1.524) |
| LOSS | 0.035*** | 0.035*** | 0.053 | 0.053 |
| | (3.898) | (4.099) | (0.914) | (0.942) |
| Constant | 0.069*** | 0.069*** | -0.084 | -0.084 |
| | (2.943) | (2.950) | (-0.412) | (-0.412) |
| Observations | 1,093 | 1,093 | 1,093 | 1,093 |
| R-squared | 0.255 | 0.255 | 0.090 | 0.090 |
| Industry FE | YES | YES | YES | YES |
| Bootstrap S.E. | NO | YES | NO | YES |
| Firm FE | NO | NO | NO | NO |

*Notes.* This table shows the results for the analysis on the value-relevance of firm-specific and industry-common CAMs for investors, using linear regressions. This analysis only uses the treatment sample of large accelerated filers. The dependent variable is absolute abnormal returns (ABRET) in columns 1 and 2 and abnormal volume (ABVOL) in columns 3 and 4. Column 1 and 3 shows the results including industry-fixed effects. Columns 2 and 4 show the results including industry-fixed effects and the bootstrapping method for calculating standard errors (using 1000 replications). Robust t-statistics are clustered by company and displayed in parentheses. All numbers are rounded at the third decimal place. All continuous variables are winsorized at 2% and 98%, excluding the dependent variables ABRET and ABVOL. A list of variable definitions is available in Appendix A. ***, **, and * indicate statistical significance at 1%, 5%, and 10%, respectively.

## 5. ADDITIONAL ANALYSIS

### 5.1 Influence of Covid-19

In an additional analysis, the impact of the Covid-19 pandemic is assessed on the results of the difference-in-differences model. Due to the Covid-19 pandemic, the US stock market becomes a lot more volatile after the 2nd of March 2020, potentially leading to effects on the difference-in-differences model. To investigate the influence of this volatility on the results, we run the same model but exclude all companies with filing dates later than the 2nd of March 2020. After removing those companies, the sample consists of 177control group firms and 1077 treatment group firms.

Table no. 7 shows the results. Column 1 to 3 shows the findings regarding the difference-in-differences models. Column 1 shows the findings including industry-fixed effects. Column 2 shows the findings including industry-fixed effects and including the bootstrap method for calculating standard errors. Column 3 shows the findings using company-fixed effects only. Finally, columns 4 and 5 show the results using just the treatment sample to look at the pre-post effect on the treatment sample. Column 4 includes industry-fixed effects, and column 5 includes industry-fixed effects and the bootstrap method.

Table no. 7, panel A, shows the results for absolute abnormal returns (ABRET). The results show that the interaction coefficient is still negative (-0.004) but only in significant (p>0.10). This finding is robust looking at model 2 and model 3. Table no. 6, panel B shows the results for ABVOL. The results regarding the dependent variable abnormal volume (ABVOL) show a negative interaction coefficient (-0.157) that is insignificant (p>0.10) for models 1 and 2. However, model 3 does show a negative (-0.268) and significant (p<0.05) result. Looking at models 4 and 5, POST is positive and significant for ABRET and ABVOL, thus still indicating that abnormal returns and volume increased for large accelerated filers.

Concluding, the results found in the main model are partly mitigated if firms with reporting dates after the 2nd of March are excluded. Therefore, the results from the main difference-in-differences model should be interpreted with caution.

**Table no. 7 – Market reaction to the reporting of critical audit matters excluding filers after March 2nd 2020**

***Panel A: Abnormal returns as the dependent variable***

| VARIABLES | (1) ABRET | (2) ABRET | (3) ABRET | (4) ABRET | (5) ABRET |
|---|---|---|---|---|---|
| POST | 0.016 | 0.016 | 0.019* | 0.013*** | 0.013*** |
| | (1.464) | (1.471) | (1.712) | (5.954) | (6.086) |
| TREAT | -0.022*** | -0.022*** | | | |
| | (-2.712) | (-2.725) | | | |
| POST*TREAT | -0.004 | -0.004 | -0.007 | | |
| | (-0.373) | (-0.373) | (-0.632) | | |
| LOGMKT | -0.010*** | -0.010*** | -0.005 | -0.009*** | -0.009*** |
| | (-8.945) | (-8.741) | (-0.582) | (-8.477) | (-8.287) |
| ROA | -0.066*** | -0.066** | 0.041 | -0.083** | -0.083** |
| | (-2.597) | (-2.440) | (0.615) | (-2.238) | (-2.248) |
| MTB | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 |
| | (-0.115) | (-0.119) | (-0.287) | (-0.233) | (-0.231) |

| VARIABLES | (1) ABRET | (2) ABRET | (3) ABRET | (4) ABRET | (5) ABRET |
|---|---|---|---|---|---|
| LEV | 0.041*** | 0.041*** | 0.058* | 0.038*** | 0.038*** |
| | (5.224) | (5.267) | (1.739) | (4.810) | (4.743) |
| SALESVOL | 0.042*** | 0.042*** | -0.026 | 0.038*** | 0.038*** |
| | (3.051) | (3.016) | (-0.460) | (2.955) | (3.039) |
| CHNI | 0.065** | 0.065* | 0.006 | 0.084** | 0.084** |
| | (2.027) | (1.942) | (0.0910) | (2.192) | (2.138) |
| LAG | -0.000 | -0.000* | -0.000 | -0.000* | -0.000 |
| | (-1.634) | (-1.654) | (-0.782) | (-1.672) | (-1.631) |
| BETA | 0.020*** | 0.020*** | 0.015* | 0.016*** | 0.016*** |
| | (5.826) | (5.929) | (1.773) | (4.750) | (4.483) |
| BIG4 | -0.000 | -0.000 | -0.000 | -0.009** | -0.009** |
| | (-0.0842) | (-0.0845) | (-0.0135) | (-2.213) | (-2.238) |
| LOSS | 0.020*** | 0.020*** | 0.013 | 0.020*** | 0.020*** |
| | (3.512) | (3.461) | (1.522) | (2.916) | (2.819) |
| Constant | 0.134*** | 0.134*** | 0.091 | 0.119*** | 0.119*** |
| | (5.879) | (5.690) | (1.278) | (5.870) | (5.247) |
| Observations | 2,474 | 2,474 | 2,474 | 2,154 | 2,154 |
| R-squared | 0.304 | 0.304 | 0.058 | 0.249 | 0.249 |
| Industry FE | YES | YES | NO | YES | YES |
| Bootstrap S.E. | NO | YES | NO | NO | YES |
| Firm FE | NO | NO | YES | NO | NO |

***Panel B: Abnormal volume as the dependent variable***

| VARIABLES | (1) ABVOL | (2) ABVOL | (3) ABVOL | (4) ABVOL | (5) ABVOL |
|---|---|---|---|---|---|
| POST | 0.296** | 0.296** | 0.364*** | 0.142*** | 0.142*** |
| | (2.393) | (2.306) | (2.857) | (6.716) | (6.888) |
| TREAT | 0.255*** | 0.255*** | | | |
| | (3.195) | (3.203) | | | |
| POST*TREAT | -0.157 | -0.157 | -0.268** | | |
| | (-1.276) | (-1.227) | (-2.232) | | |
| LOGMKT | -0.040*** | -0.040*** | 0.277*** | -0.050*** | -0.050*** |
| | (-3.542) | (-3.494) | (2.592) | (-4.813) | (-4.791) |
| ROA | 0.037 | 0.037 | 0.072 | -0.333* | -0.333* |
| | (0.165) | (0.165) | (0.108) | (-1.672) | (-1.765) |
| MTB | 0.001 | 0.001 | -0.005 | 0.002 | 0.002 |
| | (0.441) | (0.432) | (-0.895) | (0.731) | (0.718) |
| LEV | 0.139* | 0.139* | -0.487 | 0.218*** | 0.218*** |
| | (1.822) | (1.907) | (-1.067) | (3.009) | (2.915) |
| SALESVOL | 0.044 | 0.044 | 0.633 | 0.050 | 0.050 |
| | (0.319) | (0.327) | (1.364) | (0.450) | (0.445) |
| CHNI | 0.583** | 0.583** | 0.306 | 0.630*** | 0.630*** |
| | (2.118) | (2.237) | (0.682) | (2.841) | (2.860) |
| LAG | 0.002 | 0.002 | -0.002 | 0.002 | 0.002 |
| | (0.623) | (0.619) | (-0.346) | (1.135) | (1.132) |
| BETA | -0.004 | -0.004 | -0.031 | -0.022 | -0.022 |
| | (-0.109) | (-0.107) | (-0.361) | (-0.737) | (-0.761) |
| BIG4 | 0.126*** | 0.126*** | 0.282 | 0.083** | 0.083* |
| | (2.838) | (2.848) | (1.173) | (1.994) | (1.959) |

| VARIABLES | (1) ABVOL | (2) ABVOL | (3) ABVOL | (4) ABVOL | (5) ABVOL |
|---|---|---|---|---|---|
| LOSS | 0.075 | 0.075 | -0.037 | 0.012 | 0.012 |
| | (1.452) | (1.453) | (-0.467) | (0.260) | (0.262) |
| Constant | 0.002 | 0.002 | -1.937** | 0.401** | 0.401** |
| | (0.008) | (0.007) | (-2.069) | (2.156) | (2.070) |
| Observations | 2,474 | 2,474 | 2,474 | 2,154 | 2,154 |
| R-squared | 0.054 | 0.054 | 0.064 | 0.076 | 0.076 |
| Industry FE | YES | YES | NO | YES | YES |
| Bootstrap S.E. | NO | YES | NO | NO | YES |
| Firm FE | NO | NO | YES | NO | NO |

*Notes.* This table shows results for the analysis on the value-relevance of CAMs for investors, excluding the influence of increased market volatility because of Covid-19. For these analyses, linear regressions are used, and companies with filing dates after the 2nd of March are excluded. The dependent variable is absolute abnormal returns (ABRET) in panel A and abnormal volume (ABVOL) in panel B. The first three columns in panel A and panel B show the results for the difference-in-differences design, while columns 4 and 5 show the results using only the treatment sample of large accelerated filers. Columns 1 and 4 show the findings including industry-fixed effects. Columns 2 and 5 show the results including industry-fixed effects and the bootstrapping method for calculating standard errors (using 1000 replications). Column 3 shows the results using company-fixed effects. Robust t-statistics are clustered by company and displayed in parentheses. All numbers are rounded at the third decimal place. All continuous variables are winsorized at 2% and 98%, excluding the dependent variables ABRET and ABVOL. A list of variable definitions is available in Appendix A. ***, **, and * indicate statistical significance at 1%, 5%, and 10%, respectively.

### 5.2 Using Cumulative Abnormal Returns as Dependent Variable

We perform a second additional analysis looking at cumulative abnormal returns because of the somewhat unexpected results in the main model for absolute abnormal returns. Unlike absolute abnormal returns, cumulative returns better show us the sign of abnormal returns.

Table no. 8 shows the results of the difference-in-differences design. Column 1 to 3 shows the findings regarding the difference-in-differences models, while columns 4 and 5 show the results using just the treatment sample to look at the pre-post effect on the treatment sample. Columns 1 and 4 show the results including industry-fixed effects. Columns 2 and 5 show the results including industry-fixed effects. Finally, column 3 shows the findings using company-fixed effects only.

Table no. 8 shows the results of this analysis using CUM_ABRET. The interaction variable, POST*TREAT, is negative (-0.014) but insignificant (p>0.10). These findings are robust for the models in columns 2 and 3. Thus, the results do not show significant results of a market reaction to the reporting of CAMs using cumulative abnormal returns. Furthermore, the POST variable is negative and significant for all three models, indicating that cumulative abnormal returns were lower than in the post-period.

In conclusion, we do not see a market reaction to reporting CAMs using cumulative abnormal returns. Therefore, the results from the main model should be interpreted with caution.

**Table no. 8 – Market reaction to reporting of critical audit matters using cumulative abnormal returns**

| VARIABLES | (1) CUM_ABRET | (2) CUM_ABRET | (3) CUM_ABRET | (4) CUM_ABRET | (5) CUMABRET |
|---|---|---|---|---|---|
| POST | 0.003 | 0.003 | 0.005 | -0.012*** | -0.012*** |
| | (0.213) | (0.210) | (0.457) | (-3.985) | (-4.055) |
| TREAT | -0.006 | -0.006 | | | |
| | (-0.588) | (-0.597) | | | |
| POST*TREAT | -0.014 | -0.014 | -0.007 | | |
| | (-1.108) | (-1.114) | (-0.596) | | |
| LOGMKT | 0.002* | 0.002* | -0.026** | 0.002** | 0.002** |
| | (1.718) | (1.769) | (-2.498) | (2.084) | (2.051) |
| ROA | -0.061 | -0.061 | -0.001 | -0.045 | -0.045 |
| | (-1.591) | (-1.607) | (-0.0111) | (-0.847) | (-0.856) |
| MTB | 0.000 | 0.000 | 0.000 | -0.000 | -0.000 |
| | (0.180) | (0.185) | (0.273) | (-0.267) | (-0.274) |
| LEV | -0.000 | -0.000 | -0.043 | 0.006 | 0.006 |
| | (-0.022) | (-0.021) | (-0.904) | (0.648) | (0.646) |
| SALESVOL | 0.000 | 0.000 | -0.037 | 0.010 | 0.010 |
| | (0.00740) | (0.00739) | (-0.513) | (0.662) | (0.650) |
| CHNI | 0.096** | 0.096** | 0.076 | 0.105** | 0.105** |
| | (2.366) | (2.403) | (1.085) | (2.163) | (2.215) |
| LAG | -0.001** | -0.001** | -0.000 | -0.001*** | -0.001*** |
| | (-2.576) | (-2.499) | (-0.166) | (-3.087) | (-2.977) |
| BETA | -0.010** | -0.010** | -0.028** | -0.008** | -0.008* |
| | (-2.452) | (-2.479) | (-2.391) | (-1.967) | (-1.947) |
| BIG4 | 0.004 | 0.004 | -0.023 | -0.003 | -0.003 |
| | (0.803) | (0.837) | (-1.477) | (-0.629) | (-0.615) |
| LOSS | -0.002 | -0.002 | -0.000 | 0.003 | 0.003 |
| | (-0.309) | (-0.311) | (-0.0321) | (0.391) | (0.405) |
| Constant | 0.051** | 0.051** | 0.278*** | 0.041** | 0.041* |
| | (2.105) | (1.994) | (2.837) | (1.997) | (1.871) |
| Observations | 2,474 | 2,474 | 2,474 | 2,154 | 2,154 |
| R-squared | 0.034 | 0.034 | 0.037 | 0.034 | 0.034 |
| Industry FE | YES | YES | NO | YES | YES |
| Bootstrap S.E. | NO | YES | NO | NO | YES |
| Firm FE | NO | NO | YES | NO | NO |

*Notes.* This table shows the results for the analysis on the value relevance of CAMs for investors using cumulative abnormal returns (CUM_ABRET) as the dependent variable, using linear regressions. The first three columns show the results for the difference-in-differences design, while columns 4 and 5 show the results using only the treatment sample of large accelerated filers. Columns 1 and 4 show the findings including industry-fixed effects. Columns 2 and 5 show the results including industry-fixed effects and the bootstrapping method for calculating standard errors (using 1000 replications). Finally, column 3 shows the results using company-fixed effects. Robust t-statistics are clustered by company and displayed in parentheses. All numbers are rounded at the third decimal place. All continuous variables are winsorized at 2% and 98%, excluding the dependent variables ABRET and ABVOL. A list of variable definitions is available in Appendix A. ***, **, and * indicate statistical significance at 1%, 5%, and 10%, respectively.

## 6. DISCUSSION AND CONCLUSION

From 2017 onward, the PCAOB implemented new rules, changing the content of the auditor report. The most notable change was the implementation of CAMs. CAMs are matters that, during the audit of the financial statements, are material to the financial statements and required highly challenging, complex, or subjective judgment from auditors (Public Company Accounting Oversight Board, 2017). Large accelerated filers with fiscal years after June 30, 2019, were required to implement CAMs. The goal of CAMs is to provide extra information that is useful for investors. The research question of this paper is whether these CAMs are informative for investors. This study benefits from the phased approach of the PCAOB, where only large accelerated filers were required to implement these changes for the first year. Because of this, a difference in differences model is used with other US companies as the control group.

We clearly differentiate over company disclosures and other than CAMs auditor related disclosures and investigated the overall informativeness of the CAMs. We also dove more deeply into the content of the CAM paragraph. The variables for investors' informativeness are absolute abnormal returns and abnormal volume. Besides the overall informativeness of the CAMs, this study also specifically looked at the number of CAMs reported, the type of categories reported, and whether CAMs were common for an industry or specific for a company.

We contribute to the ongoing debate about the effectiveness of the new regulation regarding the inclusion of CAMs in audit reports. The results overall suggest that CAMs are not informative for investors. We argue that if the reporting of CAMs had been informative for investors, we would have expected positive and significant results. Maybe the additional information from CAMs leads to information overload or is too complex, which in turn could lead investors to avoid companies where a significant number of CAMs is reported. This could potentially explain why the results show significantly lower abnormal volume and returns. In additional analyses, we look at the influence of Covid-19 (by excluding companies after the 2nd of March 2020) and the use of cumulative abnormal returns instead of absolute abnormal returns. For both these analyses, we do not find significant results that CAMs are informative for investors. Therefore, the results from the main analysis should be interpreted with caution. Furthermore, we assess more deeply the content of the CAMs, we do not find that the numbers of CAMs, the types of CAMs, or industry-common/firm-specific CAMs influence the informativeness of investors. Our finding provides evidence about the significance of the new regulation in US which offers such resolution in the audit report. We argue that investors might find difficult to interpret efficiently the extra information. Thus, it appears that the offer of the resolution of the critical audit matters does not aid investors. This finding suggests that regulators might have to consider providing some guidance on how information about CAMs should be reported in order to enhance understandability of the information among market participants. In this way, auditors will be able to convey and communicate the necessary signals in their audit reports, aiming for a more desired outcome.

This research has the following limitations. First, the treatment group consists only of large accelerated filers. These companies are big and have a rich information environment. Therefore, the auditor reports and especially CAMs might not show new information that is value-relevant for investors. Second, there is only one year of available data because of the recent implementation of CAMs. Therefore, this study investigates the short-term effect of CAMs on investors, even though CAMs could have long-term benefits. The long-term effects of CAMs could be investigated in future research. Thirdly, it is difficult to separate the impact of CAMs by themselves. The financial statements and other disclosures are disclosed together with CAMs. Fourthly, we compare large accelerated filers with a control group of other companies. There could be differences between these companies that are not examined in this research and therefore influence the results. Lastly, we only look at the informativeness of investors using abnormal returns and abnormal volume. Perhaps there are other (indirect) benefits of implementing CAMs. For instance, maybe CAMs affect management's reporting decisions. Future research could look at other effects CAMs might have on investors and companies.

Future research could look at the audit reports of smaller companies when they are required to disclose CAMs. Future research could also look at why the first-time implementation of CAMs might lead to investors avoiding those companies. Additional suggestions for future research include the following. First, future research could look at why such a low amount of CAMs per company were reported. These companies were large and complex, and studies from other countries showed higher amounts. Lastly, future research could compare the different disclosures from different countries and how this influences investors.

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## APPENDIX A

**Variable definitions**

***Dependent variables:***

| Variable | Definition | Source |
|---|---|---|
| ABRET | Absolute abnormal returns: sum of companies 3 days absolute returns around the filing date(-1,1). Companies returns are calculated as (closing price (t) - closing price (t-1))/closing price (t-1). This return is then subtracted by the total same-day value-weighted portfolio returns of all firms on the NYSE, AMEX, and NASDAQ. | CRSP |
| ABVOL | Abnormal trading volume: average volume for 3 days around the filing date/ average volume for estimation period. This outcome is then scaled by shares outstanding. The volume in the Estimation period is calculated as the average volume for 40 days, starting 130 days before the filing date. | CRSP |
| *CUM_ABRET* | cumulative abnormal returns: sum of companies 3 days returns around the filing date (-1,1). Companies returns are calculated as (closing price (t) - closing price (t-1))/closing price (t-1). This return is then subtracted by the total same-day value-weighted portfolio returns of all firms on the NYSE, AMEX, and NASDAQ. | CRSP |

***Independent variables:***

| Variable | Definition | Source |
|---|---|---|
| POST | Indicator variable that is 1 for fiscal years ending after June 30, 2019, 0 otherwise | AuditAnalytics |
| TREAT | Indicator variable that is 1 for large accelerated filers, 0 for other companies | AuditAnalytics |
| NCAMS | Number of CAMs disclosed | AuditAnalytics |
| TYPECAM_REV | Indicator variable that is 1 for a CAM related to revenue, 0 otherwise | AuditAnalytics |
| TYPECAM_TAX | Indicator variable that is 1 for a CAM related to taxes, 0 otherwise | AuditAnalytics |
| TYPECAM_IMP | Indicator variable that is 1 for a CAM related to intangibles/goodwill/impairments, 0 otherwise | AuditAnalytics |
| TYPECAM_INV | Indicator variable that is 1 for a CAM related to inventory, 0 otherwise | AuditAnalytics |
| TYPECAM_CONT | Indicator variable that is 1 for a CAM related to contingencies, 0 otherwise | AuditAnalytics |
| TYPECAM_RPT | Indicator variable that is 1 for a CAM related to related party transactions, 0 otherwise | AuditAnalytics |
| TYPECAM_ACQ | Indicator variable that is 1 for a CAM related to acquisitions, 0 otherwise | AuditAnalytics |
| TYPECAM_ALLOW | Indicator variable that is 1 for a CAM related to allowance, 0 otherwise | AuditAnalytics |
| TYPECAM_EXP | Indicator variable that is 1 for a CAM related to expenses, 0 otherwise | AuditAnalytics |
| TYPECAM_ASSETS | Indicator variable that is 1 for a CAM related to long term assets, 0 | AuditAnalytics |

| | | |
|---|---|---|
| | otherwise | |
| TYPECAM_LEASE | Indicator variable that is 1 for a CAM related to leases, 0 otherwise | AuditAnalytics |
| TYPECAM_PENSION | Indicator variable that is 1 for a CAM related to pensions, 0 otherwise | AuditAnalytics |
| TYPECAM_OTHER | Indicator variable that is 1 for CAMs that do not belong in other categories, 0 otherwise | AuditAnalytics |
| NINDYSTRYCAMS | Number of CAMs that are also disclosed by at least 50% of the industry of the company. | AuditAnalytics |
| NCOMPANYCAMS | Numbers of CAMs that are less often disclosed than 50% of the industry of the company. | AuditAnalytics |

***Controls:***

| Variable | Definition | Source |
|---|---|---|
| LOGMKT | Natural log of total market value | Compustat |
| ROA | Net income before extraordinary items/ total assets of the firm | Compustat |
| LOSS | Indicator variable which is 1 if ROA is negative, 0 otherwise | Compustat |
| MTB | Market to book ratio: market value/book value | Compustat |
| LEV | Leverage: long term debt/ total assets | Compustat |
| SALESVOL | The standard deviation of sales/total assets from year t to t-6 | Compustat |
| CHNI | (Net income before extraordinary items in year t - net income before extraordinary items in year t-1)/ total assets | Compustat |
| LAG | The time between the fiscal year-end (earnings release date) and filing date of the annual report | AuditAnalytics |
| BIG4 | Indicator variable which is 1 for a Big 4 auditor, 0 otherwise | AuditAnalytics |
| BETA | Company risk, measured by regressing the daily company stock to the total daily portfolio over 220 days | CRSP |

**List of Abbreviations**

CAMs: Critical audit matters
CRSP: Center for Research in Security Prices
FRC: Financial Reporting Council
GCAR: Going concern audit report
IAASB: International Auditing and Assurance Standards Board
IAS: International Accounting Standard
JOAs: Justification of Assessments
KAMs: Key audit matters
PCAOB: Public Company Accounting Oversight Board
RMMs: Risk of material misstatements

**To cite this article**: Spaargaren, E., Sikalidis, A., Georgakopoulos, G., Grose, C. (2022). The Influence of Critical Audit Matters in the US on the Informativeness of Investors. *Scientific Annals of Economics and Business*, 69(2), 217-251. https://doi.org/10.47743/saeb-2022-0016

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