The impact of critical audit matters on market behaviour:

Analysing reactions from corporate managers, short-sellers, and social media

Ahmed Mohamed Aymen Salama Ahmed

Submitted in accordance with the requirements for the degree of Doctor of Philosophy in

Accounting and Finance

The University of Leeds

Leeds University Business School

Accounting and Finance Division

Centre of Advanced Studies in Finance

(CASIF)

February, 2025

Intellectual Property Statement

I confirm that the work submitted is my own. I confirm that appropriate credit has been given within the thesis where reference has been made to the work of others.

This copy has been supplied on the understanding that it is copyright material and that no quotation from the thesis may be published without proper acknowledgement.

Acknowledgements

I would like to express my sincere gratitude and appreciation to my PhD supervisors, Dr. Alan Duboisée de Ricquebourg and Dr. Chloe Wu for their guidance, advice, and support during my studies. I would also like to thank Mrs. Michelle Dickson, Dr. Nabi Omidvar and Mr. Ruben Belchior for their support.

A massive thank you to my parents and my sister for their support and encouragement during my studies ... I hope I made you proud. I would also like to thank my friends, especially Ms. May Geelani and Ms. Krishni Halai for their moral support.

Finally, I am grateful for the financial support of the Accounting and Finance Division of Leeds University Business School to carry out this research.

Abstract

Motivated by the recent changes in auditing regulations and the addition of Critical Audit Matters (CAMs) in the audit report, this thesis aims to investigate the impact of CAM disclosure on three groups of users during the first year of the new audit report mandates. Specifically, the thesis examines the reaction of corporate managers as internal users and short-sellers as sophisticated investors through utilising a difference-in-difference research design, and the Twitter investment community as the wider public by focusing on the relevance of CAMs to Twitter users through both textual and regression analyses.

The three user groups have been chosen based on a careful examination of the standard-setter's communication as well existing literature to identify gaps in existing knowledge, and to contribute to our understanding of the new auditing CAM regulations. In addition to examining the effect of changes in auditing regulations on the three user groups, the thesis also investigates whether the type, topic and number of CAMs are associated with a significant reaction by the users. To begin with, the Public Company Accounting Oversight Board (PCAOB) acknowledges that the changes in auditing regulations are expected to result in changes to management disclosure behaviour as well even though the new disclosures in the audit report are targeted mainly at investors. Recent literature investigating the reaction of management by studying disclosure behaviour suggests that CAMs are associated with significant changes to both financial and non-financial disclosures. Moreover, recent archival literature suggests that CAMs do not offer much in the way of incremental information, as evidenced by insignificant market reactions. Alternatively, experimental research offers a different inference, where it shows that investors with different levels of sophistication, resources and experience react differently to CAM disclosures. This is consistent with literature suggesting that different investors interpret information in the market differently.

Taking this into account, the thesis presents an overview of the institutional background of the development of the auditing regulations for the three standard setters in Chapter Two, namely the FRC in the U.K., the IAASB and the PCAOB. The Chapter shows the similarities in the approaches taken by the three standard setters, and also shows the differences in the implementation of the relevant standards. The thesis also provides a critical review of the relevant literature in Chapter Three to highlight the rationales behind the mixed results, particularly when investigating the reactions of

equity investors, and to underscore the strands of literature the empirical studies will be expanding upon.

The thesis contributes to the debate on the usefulness of CAMs by investigating the reaction of (i) corporate managers in Chapter Five, (ii) short-sellers in Chapter Six, and (iii) Twitter users in Chapter Seven. Drawing from the accounting theory of disclosure, as well as recent relevant literature, the first empirical study investigates how CAM disclosures impact the textual properties, such as length, complexity and tone of item 7 of the 10-K report, the Management Discussion & Analysis (MD&A). The overall results show that while there are significant changes to the textual properties of the MD&A sections of the first group of CAM adopters after implementing the new auditing regulations, these changes cannot be attributable to CAMs. The results are persistent for alternative measures of the textual properties. The results of additional tests provide evidence that the type, topic and number of CAMs are associated with changes in the MD&A textual properties, which is consistent with prior literature that suggests that auditors influence the textual properties of the MD&A text (De Franco et al., 2020).

The second empirical Chapter uses a sample of 3,698 firm-year observations and employs a difference-in-differences research design to investigate if short-sellers, arguably the most sophisticated group of investors in terms of obtaining, processing and reacting to information, react to CAM disclosures. The theoretical rationale of this study is based on the line of literature arguing that investors with different levels of experience, knowledge and education react differently if provided with the same information. Consistent with prior literature, the results show no significant relationship between short-seller interest and CAMs. These results are robust for alternative measures of short-interest. Additional tests do not find evidence that suggests that short-sellers react to the type of CAMs, or the number of CAMs disclosed. There is, however, evidence to suggest that short-sellers may be interested in firms that receive specific CAM topics.

Finally, and following the rationale that users with different levels of sophistication interpret information differently, the third empirical Chapter investigates the discourse on CAMs within the online investing community by using Twitter as a novel research setting due to its popularity within the investing community. Through the Twitter API, 824,916 Tweets discussing 1,870 public U.S. firms within a one-month window before and after the release of their 10-K filings are mined and scraped. Textual analysis methods are used to identify tweets that discuss the same topics as the CAMs received by the firms they mention. The results show that only 1,905 tweets, representing 442 firms, are relevant

to the CAM topic of the firms they mention. Overall, the results find little evidence to support the notion that CAMs are new information, implying that what auditors consider "critical" may not always be of interest to Twitter users. Overall, the results of the empirical studies should be informative for auditors and auditing standard setters.

Table of Contents

Intellectual Property Statement ..... **i**
Acknowledgements ..... **i**
Abstract ..... **i**
Table of Contents ..... **iv**
List of Tables ..... **vii**
List of Figures ..... **ix**
List of Abbreviations and Acronyms ..... **x**
Chapter 1: Introduction **1**
Chapter 2: Institutional Background **6**
2.1 Introduction 6
2.2 Traditional audit reports and calls for expanded audit reports 7
2.3 Standard setters' response 13
2.3.1 Financial Reporting Council 13
2.3.2 International Auditing and Assurance Standards Board 15
2.3.3 Public Company Accounting Oversight Board 18
2.3.4 Comparing ISA 701 and AS 3101 19
2.4 Conclusion 22
Chapter 3: Literature Review **24**
3.1 Introduction 24
3.2 Types of CAMs 26
3.3 Determinants of CAMs 27
3.4 Litigation risk and jury perception 30
3.5 Audit quality and audit fees 33
3.6 Management reaction 36
3.7 Investor reaction 38
3.8 Conclusion 43
Chapter 4: Data Collection and CAM descriptive statistics **45**
4.1 Introduction 45
4.2 Data Collection Process from Audit Analytics 46
4.3 CAM descriptive statistics 48
4.3.1 Descriptive statistics by industry 49
4.3.2 Descriptive statistics by auditor 50

4.3.3 CAM topics 52
4.4 Conclusion 53
Chapter 5: Do Critical Audit Matters impact Management Discussion & Analysis? 55
5.1 Introduction 56
5.2 Literature Review 61
5.2.1 What is MD&A? 61
5.2.2 Can CAMs lead to changes in the MD&A section? 63
5.3 Methodology and variables 69
5.4 Identification strategy and sample selection 75
5.5 Descriptive Statistics 79
5.6 Empirical tests and results 89
5.6.1 Do managers respond to CAMs through changes in MD&A sections? 89
5.6.2 Do Managers respond to the type of CAMs? 94
5.6.3 Do Managers respond to CAM topics? 96
5.6.4 Do Managers respond to the number of CAMs? 98
5.6.5 Alternative measures 98
5.7 Conclusion, contributions and limitations 101
Chapter 6: "Short" of informative: Do Short-sellers react to Critical Audit Matters? 103
Abstract 103
6.1 Introduction 104
6.2 Literature Review 108
6.2.1 Investor perception of CAMs 108
6.2.2 Short-sellers 110
6.2.3 Do short-sellers react to CAMs? 113
6.3 Methodology and variables 114
6.4 Identification strategy and sample composition 117
6.5 Descriptive Statistics 118
6.6 Empirical tests and results 124
6.6.1 Do short-sellers react to CAMs 124
6.6.2 Do short-sellers react to the type of CAMs? 128
6.6.3 Do short-sellers respond to CAM topics? 130
6.6.4 Do short-sellers react to the number CAM disclosures? 132
6.6.5 Robustness tests 133
6.7 Conclusion, contribution, and limitations 135
Chapter 7: #CAMS: Twitter reaction to Critical Audit Matter disclosures 138

7.1 Introduction 139
7.2 Background and motivation 141
7.3 Methodology and variables 144
7.4 Identification strategy and sample selection 145
7.5 Descriptive statistics 151
7.5.1 Which topics do Twitter users discuss? 151
7.5.2 Comparative statistics of companies with and without relevant tweets 153
7.5.3 Distribution of observations with and without relevant tweets 156
7.5.4 Descriptive statistics for relevant tweets 159
7.5.5 Timing of the relevant tweets 161
7.6 Regression analysis 162
7.7 Discussion and conclusion 164
Chapter 8: Conclusion 166
Appendix Examples of types of CAMs 202

List of Tables

Table 3.1 - Types of CAMs 27
Table 4.1- Identical data cleaning steps taken in Chapters Five and Seven 48
Table 4.2 - Descriptive statistics for CAMs 49
Table 4.3 - Mean number of CAMs distributed by industry 51
Table 4.4 - Mean number of CAMs distributed by auditor 51
Table 4.5 - CAM topic classifications 53
Table 5.1 - Dependent variables, their definitions, calculations and expected sign 70
Table 5.2 - Variable definition and sources 74
Table 5.3 - Sample Selection and Identification Strategy 77
Table 5.4 - Descriptive Statistics for full sample and matched sample 81
Table 5.5 - Difference in means 83
Table 5.6 - Mean dependent variables by industry 86
Table 5.7 - Correlation matrix 87
Table 5.8 - Difference-in-differences and pre-post analyses of textual properties of MD&A sections for the full sample 92
Table 5.9 - Difference-in-differences and pre-post analyses of textual properties of MD&A sections for the matched sample 93
Table 5.10 - Linear regression results for textual changes in the MD&A considering types of CAMs 95
Table 5.11 - Linear regression results for textual changes in the MD&A including CAM topics 97
Table 5.12 - Linear regression results for textual changes in the MD&A considering the number of CAMs 98
Table 5.13 - Difference-in-differences and pre-post analyses of textual properties of MD&A sections using alternative measures 100
Table 6.1 - Variable definition and sources 116
Table 6.2 - Sample construction 118
Table 6.3 - Descriptive Statistics for the full sample 119
Table 6.4 - Difference in means 120
Table 6.5 - Distribution across industries 123
Table 6.6 - Correlation Matrix 123
Table 6.7 - Difference-in-differences and pre-post analyses of short-interest for full sample 125

Table 6.8 - Difference-in-differences and pre-post analyses of short-interest for matched sample 127
Table 6.9 - Linear regression results for short-interest considering types of CAMs 130
Table 6.10 - Linear regression results for short-interest including CAM topics 132
Table 6.11 - Linear regression results for short-interest including the number of CAMs 133
Table 6.12 - Ordered logistic regression of short-interest decile ranks 134
Table 6.13 - Difference-in-differences and pre-post analyses of change in short-interest 135
Table 7.1 - Variable definition and sources 146
Table 7.2 - Sample selection process and identification strategy 147
Table 7.3 - CAM topics and their associated keywords for the Bag-of-words 149
Table 7.4 - Top 10 firms with relevant tweets 150
Table 7.5 - List of stop words eliminated before creating a word cloud 152
Table 7.6 - Descriptive statistics 155
Table 7.7 - Distribution of observations with relevant tweets 156
Table 7.8 - Distribution of relevant tweets by CAM topic classification 159
Table 7.9 - Descriptive statistics of the relevant tweets 160
Table 7.10 - Timings of sending relevant tweets compared to form 10-K release 161
Table 7.11 - Probit regression results estimating the likelihood of receiving a relevant tweet 163

List of Figures

Figure 2.1 - Audit expectations gap....10

Figure 2.2 - Timeline of the development of the new standards....20

Figure 5.1 - Example of changes in the MD&A that are more likely attributable to economic changes than CAMs....68

Figure 5.2- Relationship between CAM disclosure and expected changes to the MD&A....69

Figure 7.1 - Example of relevant tweet discussing warranty liabilities for Tesla.... 150

Figure 7.2 - Word cloud showing the 200 most frequently used words in the final sample of tweets.... 153

Figure 7.3 - Example of Tweet mentioning "audit matters".... 153

Figure 7.4 - Column chart of difference between tweet date and 10-K date.... 161

List of Abbreviations and Acronyms

American Institute of Certified Public Accountants	AICPA
Critical Audit Matter	CAM
Financial Reporting Council	FRC
International Auditing and Assurance Standards Board	IAASB
Invitation to Comment	ITC
Key Audit Matter	KAM
Public Company Accounting Oversight Board	PCAOB
Risk of Material Misstatement	RMM
Securities and Exchange Commission	SEC

Chapter 1: Introduction

This thesis investigates the impact of the newly mandated Critical Audit Matters (CAMs) on market behaviour. Specifically, the empirical studies investigate how management, sophisticated investors and the online investment community react to the CAMs section in audit reports in the U.S., under Auditing Standard (AS) 3101. Historically, the traditional format of audit reports has been expected to be a reliable source of information for participants in the financial markets hoping to gain a high level of assurance as to the reliability of firms' financial reporting and economic conditions. Yet the traditional format of the audit report has been criticised due to its limited informativeness and standardised wording. For instance, the report has a pass/fail nature and offers little company-specific information (Cordoş et al., 2020; DiMaggio & Powell, 1983; Meyer & Rowan, 1977).

To address this criticism, auditing standard setters and regulators around the world have implemented an expansion to the audit report (FRC, 2013c; IAASB, 2015a; PCAOB, 2017). The expanded audit report includes the disclosure of additional information, such as how materiality was identified and the start of the auditor's tenure with the firm. Additionally, and most importantly, the new format of the audit report required auditors to disclose CAMs, which the Public Company Accounting Oversight Board (PCAOB) defines as matters that:

> *"(1) Relate to accounts or disclosures that are material to the financial statements; and (2) involved especially challenging, subjective, or complex auditor judgement."* (PCAOB, 2017, p.1)

The process of developing and introducing AS 3101 started in 2011, with the effective date of the standard being June 30th, 2019. During that time, the standard setter and regulator in the U.K., the Financial Reporting Council, developed a similar requirement, which was initially referred to as Risk of Material Misstatements (RMMs) (FRC, 2013a). RMMs were later renamed Key Audit Matters (KAMs)[1] (FRC, 2016b). A similar task was undertaken by the International Auditing and Assurance Standards Board (IAASB, 2011, 2015b). Over that period of time, the PCAOB has had discussions with internal and external stakeholders in an attempt to gather feedback throughout the process of developing the standard (PCAOB, 2011, 2013). Specifically, while the PCAOB identified investors as the "*beneficiaries of the audit and the auditor's report*" (PCAOB, 2017, p. 1), they also identified a particular

[1] While this thesis refers to CAMs within the U.S. context and KAMs in the European and U.K. context, due to the largely similar nature between CAMs and KAMs, they will be used interchangeably in this thesis

spillover effect that pertains to internal users where changes in the audit report may lead to changes in management disclosures. The standard setter explains that the disclosure of CAMs could also "*heighten management's attention to the relevant areas of financial statements and related disclosures*" (PCAOB, 2017, p.83). This expectation is consistent with the accounting theory of disclosure (Verrecchia, 2001), whereby disclosing certain information in CAMs, auditors, in their capacity as an unbiased third party, are highlighting certain financial statement areas that they perceive as problematic, thus putting pressure on management to become more forthcoming. Additionally, a number of experimental (Bentley et al., 2021; Gold et al., 2020) and archival (Burke et al., 2023; Jahan & Karim, 2024; Reid et al., 2019) studies provide evidence that CAM disclosure is associated with changes in management disclosure behaviour.

Therefore, using a balanced sample of 5,320 firm-year observations, the first empirical study exploits the exogenous shock of the new auditing standard in the U.S. to investigate if and how CAM disclosures impact the textual properties of item 7 of the 10-K report, the Management Discussion & Analysis (MD&A) section of the 10-K report, namely length, complexity, specificity, uncertainty and tone. The results of the difference-in-differences analysis for both the full sample and a matched sample of firms which were note required to disclose CAMs show that while there are significant changes to the textual properties, of the MD&A sections of the first group of CAM adopters (large accelerated filers) under the new auditing regulations, these changes cannot be attributable to changes in auditing standards. The results are persistent for alternative measures of the textual properties. This implies that while there were changes to the MD&A sections during the sample period for the firms in the sample, most changes cannot be attributed to the introduction of CAMs. Moreover, the results of additional tests provide evidence that the type, topic and number of CAMs are associated with changes in the MD&A textual properties, which is consistent with prior literature that suggests that auditors influence the textual properties of the MD&A text (De Franco et al., 2020).

Next, the thesis examines whether sophisticated investors in the market react to CAM disclosures in the second empirical chapter. The majority of studies reported finding no evidence that CAMs offer any incremental information to investors, and that CAMs do not elicit a reaction in the stock market (Bédard et al., 2019; Burke et al., 2023; Gutierrez et al., 2018; Lennox et al., 2022). However, examining cross-sections of investors using experimental research designs showed different results. For instance, experimental results show a different reaction towards CAM disclosures between professional and non-professional investors (Christensen et al., 2014; Köhler et al., 2020; Moroney et al., 2021).

The notion that investors with different degrees of knowledge and experience have different reactions towards CAM disclosures is in line with prior literature, which argues that news is interpreted differently by readers based on their experience and resources (Kandel & Pearson, 1995; Miller, 1977; Rubenstein, 1993). While the distinction between professional and non-professional investors has been made in experimental studies, archival studies failed to consider this difference. Following that logic, this thesis attempts to investigate the reaction of a group of highly sophisticated investors, namely short-sellers.

Choosing short-sellers as a group of sophisticated investors is supported by prior literature that highlighted their ability to process information proficiently (Boehmer et al., 2008; Chen, 2016; Diether et al., 2009; Drake et al., 2011; Engelberg et al., 2012; Hosseinniakani et al., 2024). The argument that short-sellers are likely to respond to CAMs is based on two strands of literature. Firstly, prior literature has shown that short-sellers use reliable information that predicts negative returns (Christophe et al., 2004; Christophe et al., 2010; Dechow et al., 2001; Diamond & Verrecchia, 1987). Secondly, previous studies have shown that short-sellers use auditors and audit reports as sources of information (Blau et al., 2013). Since CAMs are areas of concern that are highlighted by auditors, it could be expected that short-sellers may react to CAMs, to the extent to which CAMs can be perceived as bad news.

Thus, the second empirical Chapter uses a balanced sample of 3,698 firm-year observations and also employs a difference-in-differences research design for a full sample and a matched sample to investigate if short-sellers react to CAM disclosures. The results show no significant relationship between short-seller interest and CAMs. These results are robust for alternative measures of short-interest, namely as change in short-interest and short-seller decile ranking. The result is consistent with prior literature investigating the reaction of equity investors to CAMs (e.g. Burke et al., 2023; Gutierrez et al., 2018), as well as short-sellers reaction to CAMs (Rezaee & Homayoun, 2024). The results of additional tests do not find evidence that suggests that short-sellers react to the type of CAMs, or the number of CAMs disclosed. There is, however, evidence to suggest that short-sellers may be interested in firms that receive CAMs related to operating expenses and CAMs related to systems, policies and governance, and that short-interest is negatively associated with firms that receive CAMs related to financial assets. This is in line with prior literature that implies that short-sellers are interested in certain accounts (Drake et al., 2011; Liu et al., 2012).

The third empirical Chapter follows the same logic as the second chapter, where users with different levels of sophistication react differently to the same information. Specifically, the study uses

Twitter as a novel research setting due to its high adoption rate among both investors (Bartov et al., 2018) as well as firms (Ayman et al., 2018; Jung et al., 2017) to investigate the discourse around CAMs by the online investing community. Investigating if and how Twitter users discuss CAM topics helps us obtain a more holistic view of how users perceive CAMs in a way that traditional research methods may have failed to capture. Through the Twitter API, 824,916 Tweets discussing 1,870 public U.S. firms within a one-month window before and after the release of their 10-K filings containing the first CAMs reported under the new PCAOB requirements are mined and scraped. Textual analysis methods are used to identify tweets that discuss the same topics as the CAMs received by the firms they mention. The results of the analysis show that only 1,905 tweets, representing 442 firms, are relevant to the CAMs of the firms they mention. The results also show a particular interest of Twitter users in revenue-related CAMs, which is different from the CAMs of interest of short-sellers, as sophisticated investors, mentioned above. Overall, the results find little evidence to support the notion that CAMs are providing the market with relevant information worthy of discussion, implying that what auditors consider "critical" may not always be of interest to Twitter users.

In addition to exploring the informational value of CAMs and the market reaction for the three groups of users highlighted above, the thesis responds to the calls for more practically relevant research in accounting (Inanga & Schneider, 2005; Lukka & Becker, 2023; Malmi & Granlund, 2009), which should aid standard setters in future revisions to the relevant auditing standards. Furthermore, as the thesis attempts to investigate the reaction of market participants to CAMs, the thesis borrows elements from the positive accounting theory. Specifically, by investigating the reaction of managers to CAMs, the thesis explains and predicts how management adjusts their disclosure behaviour for their own economic self-interest. Additionally, by investigating how external users perceive and react to CAMs, the thesis attempts to explain how short-sellers and the online investment community may be reacting to the economic decisions made by managers as communicated in CAMs, whose purpose is to reduce information asymmetry.

Individually, the empirical Chapters contribute to existing theoretical and empirical literature in a number of ways. To begin with, the first empirical Chapter addresses one of the spillover effects of CAM disclosures. The study also takes advantage of advancements in technology to mine, scrape and analyse textual data from the 10-K report. By doing so, the study contributes to literature in two main ways. First, the study responds to the call for more research investigating the factors influencing management disclosure in the MD&A section (Cole & Jones, 2005). The uniqueness of the MD&A

section is exemplified in the fact that it is unaudited and that it provides qualitative information on financial statement items, making it an ideal setting for studying textual properties of management disclosures (Davis & Tama-Sweet, 2012; Dutta et al., 2019). Secondly, the study expands current literature on the spillover effects of audit regulations (e.g. Cheng et al., 2019; Duguay et al., 2019; Gordon et al., 2006), and, more specifically, CAM disclosures (e.g. Gold et al., 2020). This allows us to obtain a more rounded view of the consequences of the new auditing requirements.

Moreover, the second empirical study offers two main contributions. First, it contributes to our understanding of how short-sellers interpret public information, and how they act as information intermediaries (e.g. Drake et al., 2011). Second, it adds to the strand of literature that documents the link between auditors and short-sellers, and how they use each other as sources of information (e.g. Blau et al., 2013; Cassell et al., 2011; Hope et al., 2017).

Finally, the third empirical Chapter contributes to CAM literature by providing the first account of the discourse on CAMs on social media. Specifically, the Chapter takes advantage of advancements in textual analysis, data mining and data scraping to expand our understanding of how users react to CAMs using a unique setting. By doing so, the study provides an overview of which topics are discussed on Twitter compared to the matters identified as critical by the auditors. Furthermore, the study contributes to the growing body of research examining the intersection between technology and financial markets (Kumar & Ravi, 2016), and specifically how the investor community on social media responds to financial and economic news (e.g. Bradley et al., 2023; Cookson et al., 2023; Neu et al., 2019).

The remainder of the thesis is as follows: Chapter Two presents the institutional background for the development of CAM-related regulations globally. Chapter Three presents a critical review of relevant literature. Chapter Four presents the sources of data used in the thesis, as well as the sample selection process and the procedures followed in managing the data. Chapter Five is the first empirical study, which examines the reaction of management to CAM disclosures, followed by Chapter Six, the second empirical study, which investigates the reaction of short-sellers to CAMs. Chapter Six, the third empirical study examines the relevance of CAMs to the Twitter investment community. Finally, Chapter Seven offers concluding remarks.

Chapter 2: Institutional Background

2.1 Introduction

The purpose of this Chapter is to introduce the institutional background of Critical Audit Matters. The institutional background Chapter highlights concerns that the traditional audit report did not provide high levels of disclosure to the users, discusses calls to improve the transparency and informativeness of the audit report, as well as presents the steps taken by the relevant standard-setting organisation to address these calls. The standard audit report is largely known as the outcome of the obligatory annual financial statement audit that is performed by a qualified, competent auditor. The aim of the audit report is to provide reasonable assurance to users that the financial statements issued by the firm are free of material misstatements, were prepared in accordance with the relevant accounting standards, and that the financial information presented by management is presented fairly. Trust in the audit profession contributes to stability and confidence in the financial markets. However, over the past two decades, calls for expanding the traditional audit report have been on the rise all over the world. Users claim that the standard audit report no longer provides significant information about noteworthy matters, and, in its original format, only barely addresses the information asymmetry between users and auditors.

While the standardised format of the traditional audit report offers legitimacy and enhances comparability, it offers little in the way of performance (Cordoş et al., 2020; DiMaggio & Powell, 1983; Meyer & Rowan, 1977). Gray et al. (2011) highlights that users do not find the message of the audit report to be clear, nor do they find the level of assurance provided by the auditor to be clear either. This is explained by the expectations gap, or the gap between what the users believe the auditor does, or should do, and what the role of the auditor is as dictated by relevant standards. In addition, the increasingly risky business environment in which firms now operate has compelled users to ask for explanation and assurance as to what the auditor does during the audit process, and how the auditor assesses risk, identifies materiality thresholds, and allocates resources during the audit. Financial crises in the United States and Europe helped elevate this viewpoint substantially.

In response, major standard-setters across the globe have reacted by gathering information from various types of users as to what elements, when included in the audit report, would provide incremental, useful information to help users make informed decisions. This has been done through invitations to comment, issuing exposure drafts of new auditing standards, and other means by which

they could gather users' feedback. Finally, standard-setting bodies have opted to add new sections to the audit report. These additional disclosures apply for all types of audit reports (unqualified, qualified, disclaimer and adverse reports), which highlights the commitment and dedication of standard setters to have key and crucial matters that arose during the audit communicated to the public. Among the key changes to the audit report was the introduction of Key Audit Matters (KAMs) as they are known in Europe, the United Kingdom and China, or Critical Audit Matters (CAMs) in the United States.

This Chapter describes the efforts by the Financial Reporting Council (FRC) in the United Kingdom, which was the first standard setting body to call for input from users as to how the audit report can be expanded, and implement new and revised standards to increase disclosures in the audit report. The Chapter also presents the efforts of the International Auditing and Assurance Standards Board (IAASB), who issue the international auditing standards (ISAs) that are followed by 67 jurisdictions around the world including the European Union, as well as the Public Companies Accounting Oversight Board (PCAOB), which was created by the Sarbanes-Oxley act in 2002 to issue auditing standards and oversee the audits of publicly traded companies in the United States. The efforts of each organization will be discussed in a separate Section in order to provide a clear timeline of the development and implementation of the expanded audit report, followed by a Section that provides a combined timeline to help examine the issue from a more comprehensive outlook. The Chapter will also show that even though the three major standard setters have been attempting to expand the audit report within the same time period, the environment in which they operate, the authority they have and the relationship they have with one another influenced the pace in which their final versions of the standard that addresses the audit report was released.

Therefore, the Chapter is divided as follows: First, Section 2.2 presents an overview of the traditional audit report is presented as well as the reasons behind the calls for significant changes done to the audit report in recent years, including the audit expectations gap. Section 2.3 provides the standard setters' response, where Section 2.3.1 discusses the response of the FRC, Section 2.3.2 discusses the efforts of the IAASB, and Section 2.3.3 describes the process done by the PACOB. Finally, concluding remarks are presented in Section 2.4.

2.2 Traditional audit reports and calls for expanded audit reports

The audit report, which is the outcome of the financial statement audit, traditionally serves to communicate to various users and stakeholders whether the financial statements of the firm in question are fairly presented with reasonable accuracy (Lennox et al., 2022). The beginnings of audits

of financial statements in the U.K. is often associated with the need for increased transparency and accountability that developed around the middle of the 19th century (Pearson, 2020). Similarly, the earliest known audit report in the U.S. that focused on the accuracy of accounts was issued in the 1800s (Pandit & Baker, 2021). Since then, incremental changes to the auditing standards around the world led to the formation of the different kinds of audit report opinions and components that are now common, such as the unqualified opinion, the qualified opinion, the disclaimer, the adverse opinion as well as explanatory paragraphs (Minutti-Meza, 2021; Stettler, 1994). DiMaggio and Powell (1983) identify three factors that could have contributed to the homogeneity, or "*isomorphism*" of the audit report, namely external users' demands and expectations of more information regarding the client, perceived uncertainty by auditors, who aim to emulate other auditors, and the tendency of auditors to collectively adopt and share new ideas in spite of being in different jurisdictions (Cordoş et al., 2020). Maroun and Duboisée de Ricquebourg (2024) complement this view by exploring how auditors' experience, professional judgement and dynamic operating environments counter these isomorphic forces, and that, given the opportunity, audits are able to exercise professional judgement to add on to the customary audit report format.

Yet at the heart of it, the audit report generally offers only two main outcomes: pass, known as an unqualified opinion, or fail (DeFond & Zhang, 2014). As such, it has been claimed by both scholars (e.g. Church et al., 2008; Porter et al., 2012a) and professional organisations (e.g. ACCA, 2010) that the unqualified auditor's report fails to communicate some potentially valuable information to users. The majority of the issues identified by users revolve around the view that the auditor report is of symbolic significance, but lacks communicative significance (Church et al., 2008; IAASB, 2011; Vanstraelen et al., 2012). Specifically, users recognise that very little information about the firm, such as managerial estimates and going concern application, and the audit process, including materiality, level of assurance provided and audit procedures, are being disclosed (IAASB, 2011; Mock et al., 2013).

The calls for enhanced disclosure, however, are not new. Calls for change emerged as far back as 1978, when an independent commission established by the American Institute of Certified Public Accountants (AICPA) issued a report on auditor responsibilities (known as the Cohen report after the chairman of the commission) where they called for improvements in the way auditors communicate information to users in the audit report, and recommended disclosures regarding uncertainties in the firm to be written in a way that is understandable by users (Cohen Report, 1978). In recent years,

however, calls for change have reached a high point (Mock et al., 2013; Porter et al., 2012a; Simnett & Huggins, 2014), especially by institutional investors and analysts (IAASB, 2012). According to the IAASB, users:

> *"believe that the type of change necessary to appropriately respond to the information needs of users and narrow the expectations and information gaps would be more holistic and cannot be achieved by changes to the auditor's report alone."* (IAASB, 2012, p.5)

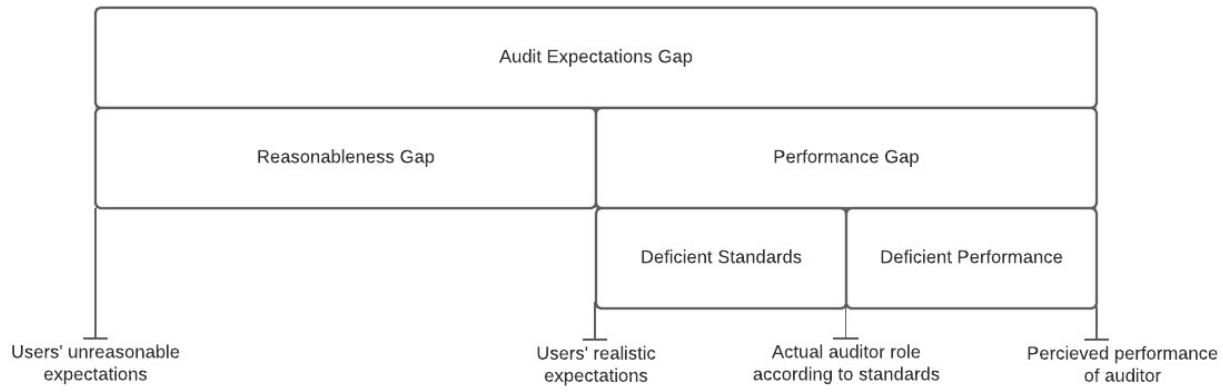
Both academics and professional organisations have identified several reasons why users have called for changes in the audit report. For instance, the economic crisis of 2008-2009, and the debt crisis in Europe, in addition to previous high-profile corporate scandals, have pushed users towards criticising the value of audits and the informativeness of audit reports, and led to concerns regarding the credibility of the auditing profession (IAASB, 2012; Minutti-Meza, 2021; Ruhnke & Schmidt, 2014). Since the profession of auditing thrives on sustained legitimacy (Power, 2003; Ruhnke & Schmidt, 2014), it was logical to expect regulatory intervention in favour of users in the foreseeable future, similar to the Sarbanes-Oxley Act in form but not in substance (DeFond & Zhang, 2014).

Chief among the reasons why calls for change have reached a tipping point is the existence, and growth, of a gap between what users expect, and the role and responsibilities of the auditor based on current auditing standards and the level of assurance the auditor provides, known as the expectations gap. The majority of research on the expectations gap is based on surveys (Quick, 2020), where studies have been done across different countries such as the U.K. and New Zealand (Porter et al., 2012a), the Netherlands (Litjens et al., 2015), Germany (Ruhnke & Schmidt, 2014) as well as emerging economies (Siddiqui et al., 2009). The expectations gap seems to be particularly obvious in users' expectations of fraud detection by the auditor, which is in line with research that suggests users are not aware of the level of assurance the auditor provides (e.g. Backof et al., 2019), and the wide field of literature that discusses litigation risk for auditors (e.g. Brasel et al., 2016; Kachelmeier et al., 2020).

Porter et al. (2012a) define the expectations gap by dividing it into two elements: The gap between users' unreasonable expectations regarding the role of the auditor, and users' reasonable expectations regarding the role of the auditor (reasonableness gap); and the gap between what users' reasonable expectations regarding what the role of the auditor is, and what auditors are perceived to achieve during the course of the audit (performance gap). Porter et al. (2012a) subdivide the performance gap into two more elements: the first is the gap between users' reasonable expectations regarding the role of the auditor, and the auditor's role as dictated by standards (deficient standards); while the second

part is the gap between the auditor's role as dictated by standards, and what the auditor is perceived to achieve during the course of the audit (deficient performance). **Figure 2.1** shows the divisions and subdivisions of the expectations gap[2].

Figure 2.1 - Audit expectations gap



In literature, the terms expectation gap, information gap and communication gap are often used interchangeably, but for the sake of this research, they will be separated. While the expectation gap was defined above, the information gap is the difference between the information the users are keen to know, and what is communicated to them through financial statements and the audit report. Lastly, the term communication gap refers to the difference between the information communicated by the auditor, and what the users understand and process (IAASB, 2011; Mock et al., 2013).

Literature examining the expectations gap has attributed its existence to three main reasons. First, there is a strand of literature that points out the unrealistic expectations of the users, which stems from their limited understanding of auditing standards (Cohen Report, 1978; Ruhnke & Schmidt, 2014). Gray et al. (2011) highlight that users do not find the message of the audit report to be clear, nor do they find the level of assurance provided by the auditor to be clear either. This supports earlier findings by Humphrey et al. (1993), who contend that one of the main reasons why the expectations gap exists is because users are not educated as to the precise function of the audit.

[2] Diagram based on works of Porter et al. (2012b) and Quick (2020). Porter's classification of components of the audit expectations gap is widely accepted and used in auditing literature (e.g. Fisher & Naylor, 2016).

Second, Kumari and Ajward (2022), using a sample of relevant stakeholders such as auditors and regulators, point out that a major reason for the existence of the gap is due to deficiencies of the standards, where they report in their study that more than half of the gap is attributable to deficiencies in the auditing standards. For instance, the public recognises that very little information about the firm, such as managerial estimates and going concern application, and the audit process, including materiality, level of assurance provided and audit procedures, are being disclosed (IAASB, 2011; Mock et al., 2013). Furthermore, the failure of standard-setting bodies to communicate the role of auditors and the level of assurance they provide is a key contributor, particularly since the profession involves significant estimations and uncertainties (Ruhnke & Schmidt, 2014).

Third, some researchers contend that the untimely responsiveness of standard setters to the changes and dynamism of the business environment could be viewed as a contributor to widening the expectations gap (Fisher & Naylor, 2016; Lymer & Debreceny, 2003). In other words, while the public expects auditors to undertake new responsibilities to accommodate any changes in the business environment, in reality, auditors may respond to changes in the business environment only when the auditing standards permit them to (Porter et al., 2012b).

To address the audit expectations gap, two solutions have been proposed in audit literature. Firstly, some within the auditing professional community proposed to educate the public about what is sensibly expected of auditors as mandated by the standards, yet prior literature argues that educating millions of users is an impossible task (McEnroe & Martens, 2001; Quick, 2020). The other proposed solution is to communicate the responsibilities of the auditor as dictated by the standards through the audit report, and provide more transparency in the audit report (Fulop et al., 2019; Quick, 2020; Siddiqui et al., 2009), an approach which is in line with recent efforts to enhance audit disclosure and expand the audit report and elaborate on the level of assurance provided by auditors through updating auditing standards.

Both academics and professional organizations have identified other motivations to justify calls for expanding the audit report. For instance, the economic crisis of 2008-2009, and the debt crisis in Europe, in addition to previous high-profile corporate scandals, have pushed users towards criticising the value of audits and the informativeness of audit reports, and led to concerns regarding the credibility of the auditing profession (IAASB, 2012; Minutti-Meza, 2021; Ruhnke & Schmidt, 2014). Since the profession of auditing thrives on sustained legitimacy, which the expectation gap can damage (Power, 2003; Ruhnke & Schmidt, 2014), it is logical to expect regulatory intervention in favour of

users is likely to be frequent in the foreseeable future, similar to the Sarbanes-Oxley act in form but not in substance (DeFond & Zhang, 2014).

The reasons above present an overview as to why changes in the audit report were not only imperative, but long overdue. Standard-setting bodies all over the world realised the need to expand the audit report to incorporate more disclosures based on what users need (Minutti-Meza, 2021). As a result, in 2011, standard setters internationally publicly announced they were working on improving the audit report and its communicative value to users. Various groups of users were invited to contribute their ideas on the type of information that is needed to decrease the expectations and communication gaps. Understanding what users are looking for in the audit report is particularly relevant to standard setters, which shows that expanding the audit report is not the standard scenario of "*the more information, the better*" (Vanstraelen et al., 2012, p.207). Responses to these calls have been communicated by standard setters, and further examined by researchers. For instance, investors' comments to the FRC have been directed towards trying to further their understanding of the audit report through, for instance, requiring further clarification about the scope of the auditor, the level of assurance provided, the logic for using certain materiality benchmarks, and a clearer explanation of how materiality impacts the audit procedures (FRC, 2016a).

Moreover, Simnett and Huggins (2014) revealed that more disclosures about going concern, and auditor commentary about key issues in the financial statement or the audit process seemed to be strongly required by various groups of users. Recent research also supports the notion that many investors are not familiar with some of the terms frequently used in the auditor's report or auditing standards (Backof et al., 2019; Church et al., 2008; Ruhnke & Schmidt, 2014). Research also shows that investors were interested in information related to accounting policies and firms' approach to risk (Mock et al., 2013).

As a result of the undertaking of standard setters, the updated audit report will come to be known as the expanded audit report. This expanded audit report would contain disclosures that would help decrease the expectation gap by providing useful information to the users, clarifying the difference between the roles of auditors and those charged with governance, explaining the concept and application of materiality and clarifying terms that may be unfamiliar to certain users, such as "reasonable assurance". The expanded audit report would also include disclosures that have not been traditionally a part of the audit report, such as CAMs/KAMs (IAASB, 2012). The next Section, **Section 2.3**, will illustrate the steps taken by the standard setters to expand the auditor's report.

2.3 Standard setters' response

2.3.1 Financial Reporting Council

One of the earliest responders to the call to enhance transparency and provide more information to the users in the audit report was the FRC. The FRC issued a discussion paper suggesting certain changes to the format of the audit report in January 2011. Then, based on the feedback from the discussion paper, a consultation paper with the planned revisions to the standards was released in April 2012. Another consultation paper was issued in February 2013 discussing the revision of ISA (U.K. and Ireland) 700, which deals with the format and content of the auditor report, with the feedback to this consultation paper released to the public in June of the same year (FRC, 2013a).

The majority of the respondents to the FRC's proposals agreed in principle with the changes, with some opposing moving ahead of the IAASB on the revisions. This was refuted by the FRC, who claimed that the IAASB's time frame was vague. The feedback paper also discouraged suggestions that the new disclosures should be done by the audit committee, stating that these disclosures are within the scope of work of the external auditor (FRC, 2013a).

The revised ISA standard (U.K. and Ireland) 700 was issued in June 2013, indicating a sense of urgency by the FRC (FRC, 2013c). The standard discusses the independent auditor's report on financial statements revised standard, and requires auditors to abide by the new requirements for the auditor's report for audits for fiscal periods starting on or after October 1, 2012, and applies to the audit of all firms who obligatory follow the U.K. Corporate Governance Code, which are essentially firms with a premium listing of equity shares in the main market of the London Stock Exchange, in addition to firms who voluntarily chose to adopt the code (FRC, 2013c). The revised standard would require auditors to disclose:

1 - a description of the assessed risks of material misstatements (RMMs) that were observed by the auditor which had the greatest impact on the audit strategy, the allocation of resources during the audit, and the effort and direction of the audit team

2 - An explanation of how the notion of materiality was applied and the materiality threshold

3 - A summary of the scope of the audit, containing how the scope was a suitable response to the assessed risks of material misstatements identified above as well as the concept of materiality.

While ISA (U.K. and Ireland) 700 requires the auditor to disclose RMMs in the audit report, the process of identifying and assessing RMMs themselves for audit purposes is explained thoroughly in

ISA (U.K. and Ireland) 315, which relates to "*Identifying and assessing the risks of material misstatement through understanding the entity and its environment*" (FRC, 2013b). The standard outlines the procedures to assess risks, such as inquiries of management, analytical procedures and observation and inspection. These procedures should serve as a basis to identify and assess RMMs at the financial statement level and at the assertion level for classes of transactions, account balances and disclosures. After identifying the risks, the auditor should assess and evaluate how these risks might affect the financial statements or management assertions. Finally, the auditor considers the probability of a material misstatement occurring, or the probability of multiple immaterial misstatements, the accumulation of which will result in a material misstatement, either due to error or intentional fraud (FRC, 2013b). ISA (U.K. and Ireland) 315 has been revised by the FRC in July 2020 to reflect the current challenges auditors are facing, mainly with regard to the IT environment (FRC, 2020).

In September 2014, further revisions were made to ISA (U.K. and Ireland) 700 to further align the FRC's standard to that of the IAASB, so as to allow auditors to assert their compliance with both sets of standards (FRC, 2014). This move contradicts the FRC's direction earlier of insisting on being ahead of the IAASB. A third revision to the standards was published in June 2016 (FRC, 2016b; FRC, 2016c). The revised ISA (U.K. and Ireland) 700 included clauses to ensure that the auditor report is to be written in a clearer language, and to clarify that the responsibility to prepare financial statements lies with those charged with governance. These changes reflect users' concerns in the earlier feedback in 2013, where they requested a clearer description of the scopes of management and auditors. The most notable modification was separating the requirement and guidance to communicating key audit matters (KAMs) into ISA (U.K. and Ireland) 701, thus usurping the previous requirement of reporting RMMs in ISA (U.K. and Ireland) 700.

Key audit matters are matters that were of the highest significance in the financial statement audit during the current fiscal period, including the most substantial RMMs that had the biggest effect on the audit strategy, the allocation of resources and the effort of the audit team (FRC, 2016c). KAM disclosures would serve to provide additional information to users, and would assist them in identifying issues that, according to the auditor's judgement, were of high significance during the audit (Minutti-Meza, 2021). For instance, the FRC claims that goodwill estimation and impairment are among the issues that users claim are most complex and require further elaboration (FRC, 2016a). Kend and Nguyen (2020) empirically support this notion by suggesting that impairment of intangible

assets and goodwill, asset valuation, revenue recognition and acquisitions are among the most common KAM disclosures in their sample.

Although KAMs are significantly similar to the RMMs that auditors have been required to disclose since 2013, the newly revised standards provided a much more improved framework and guidance for auditors (Minutti-Meza, 2021). To begin with, KAM disclosures do not only include RMMs identified by the auditor in accordance with the approach illustrated in ISA (U.K. and Ireland) 315, but also include all other matters that were considered in the audit, and how they were addressed over the course of the audit. Moreover, coupled with other disclosures required in the expanded audit report, KAM disclosures enable users to understand the significance of the matters discussed in the report in the context of the financial statement audit as a whole, rather than as separate elements within the financial statements (FRC, 2016c). Although the elements of significance and relevance were included in the revised ISA (U.K. and Ireland) 700 in 2013 that discussed RMMs, it was still emphasized by the FRC in ISA (U.K. and Ireland) 701, which underscores the importance of disclosing relevant matters to the users.

The revisions to ISA (U.K. and Ireland) 700 and 701 became effective for audits of financial statements for fiscal years starting on or after June 17, 2017 for all firms listed on the London Stock Exchange (FRC, 2016b; FRC, 2016c). Over the course of the last decade, several related standards were also revised, such as ISA (U.K. and Ireland) 260, 320 and 706, which discuss communication with those charged with governance, materiality in planning and performing an audit, emphasis of matter paragraphs and other matter paragraphs in the independent auditor's report, respectively. The latest versions of ISA (U.K. and Ireland) 700 and 701 were updated in May 2022 to include a reference for the auditor to incorporate the most significant assessed risks of material misstatements as identified by the auditor. The update specifies that the audit report should include a description of those risks, a summary of how the auditor responded to them, and other pertinent key information with respect to those risks. Additionally, the new revisions also include further guidance on communicating KAM and other audit planning with those charged with governance (FRC, 2022).

2.3.2 International Auditing and Assurance Standards Board

Concurrently, the IAASB was undertaking similar changes to their standards. In May 2011, the IAASB released a consultation paper aiming to "*obtain views on enhancing the quality, relevance and value of auditor reporting on an international basis*" (IAASB, 2011, p.18) and accepted comments for four months.

The consultation paper underlined the need for changes in the audit report, and the issues identified for change based on public consultations as well as research. The most notable potential modification discussed in this document was the addition of Audit Commentary, which refers to "*Matters significant to users' understanding of the audited financial statements*" (IAASB, 2011, p.12).

One year later, and based on the consultation paper, the IAASB issued an invitation to comment on an improved auditor's report. The invitation to comment (ITC) could be regarded as a preliminary starting point for researchers in the subject matter due to its detailed description of the process initiated by the IAASB to modify the traditional audit report (IAASB, 2012). The ITC explains that the momentum for calls to reform the auditor report has been on the rise, as evidenced by a study on user perception of the auditor report commissioned in part by the IAASB in 2006 (IAASB, 2015), and that for the standard auditor report to remain in its then-current form was no longer an option. The ITC also points out that other standard setters have been involved in similar movements. Lastly, it illustrates the timeline for implementing changes in the auditor report, which originally should have been concluded in June 2014.

Moreover, the IAASB was keen on showing that the input of various groups of stakeholders is being considered, such as those charged with governance, investors and audit regulators, while maintaining a clear distinction between the responsibilities of the auditor and the responsibilities of the management in the revised auditor report. In addition, the IAASB acknowledged the fact that the revised standard was to be implemented in different jurisdictions with different environments. Accordingly, the IAASB used an approach that they referred to as a "*building blocks approach*", where the common key elements were to be identified to serve as cornerstones, while providing enough flexibility for the different national standard setters and regulators to tailor the rest of the audit report according to their environments and needs. The building blocks were defined as the mandatory components of the auditor report, such as the title of the report, addressee, sections for the opinion, basis for opinion and going concern. An example of a tailored phrase is whether the national standards conform to the international standards in the mandatory "Basis for opinion" section. The IAASB also provided illustrations for examples of KAM disclosures that only needed to be modified to match the matter in question (IAASB, 2017). The proposed improvements, or "considerations" were presented in the ITC as a set of 18 questions divided into sections. The sections were titled Overall Considerations, Auditor Commentary, Going Concern/Other Information, clarifications and Transparency, and Form and Structure. (IAASB, 2012).

In 2013, an exposure draft was issued based on the feedback received from the ITC that contained a set of proposed revised standards; ISA 700 (Forming an opinion and reporting on financial statements), ISA 260 (Communication with those charged with governance), ISA 570 (Going concern), ISA 705 (Modifications to the opinion in the independent auditor's report) and ISA 706 (Emphasis of Matter Paragraphs and Other Matter Paragraphs in the Independent Auditor's Report). Moreover, it included a proposal for a new standard, ISA 701, which dealt with communicating key audit matters (KAMs) in the independent auditor's report, which replaced what was referred to in the ITC as "auditor commentary" (IAASB, 2013; Simnett & Huggins, 2014). The IAASB define KAMs as

> "*Those matters that, in the auditor's professional judgment, were of most significance in the audit of the financial statements of the current period. Key audit matters are selected from matters communicated with those charged with governance*" (IAASB, 2015b, p.47).

Determining KAMs is a process that involves determining the areas of high risk of material misstatements, areas that require a high level of professional judgement, and events of significance that occurred during the period in question, aiming to enhance the audit report for a diverse audience of users.

Based on the feedback of the previously discussed documents, the IAASB issued revised standards ISA 700 (Forming an opinion and reporting on financial statements), 705 (Modifications to the opinion in the independent auditor's report), 706 (Emphasis of matter paragraphs and other matter paragraphs in the independent auditor's report, 570 (Going concern) and 560 (Subsequent events), in addition to the new ISA 701 (Communicating key audit matters in the independent auditor's report) (IAASB, 2015b). The new and revised standards came into effect for financial statement audits for the fiscal periods ending on or after December 15, 2016 (IAASB, 2015b). As of December 2019, 67 jurisdictions around the world have confirmed using the revised and new standards published by the IAASB, such as the European Union, Australia, Hong Kong and China, with 13 other jurisdictions declaring they are planning to implement these standards within 2 years (IAASB, 2020; Kend & Nguyen, 2020; Minutti-Meza, 2021).

2.3.3 Public Company Accounting Oversight Board

Similar to its international and British counterparts, the PCAOB, which is the organisation responsible for overseeing the audits of public companies in the United States, started the process of regulatory changes in 2011, when they issued a concept release on possible revisions to certain auditing standards (PCAOB, 2011). The concept release mainly revolved around the objectives of providing increased commentary by the auditor, obligatory and enhanced use of the emphasis paragraph, auditor disclosure of information that is not included in the financial statements, and clarification of auditing terminology that may not be understandable to some users (PCAOB, 2011; Simnett & Huggins, 2014). The proposed changes to the audit report were initially met with resistance by auditors as well as audit clients, claiming that firm-specific information should not be disclosed in the audit report, but rather by those charged with governance (Katz, 2013). Pelzer (2021) adds that specifically Big-4 firms were sceptical of the ability of CAMs to provide meaningful information to users, even though they appeared to support the expansion of the audit report to the public.

Based on the feedback it received, in 2013 the PCAOB issued a proposal for two new auditing standards: the auditor's report on an audit of financial statements when the auditor expresses an unqualified opinion (or the "*proposed auditor reporting standard*") and the auditor's responsibilities regarding other information in certain documents containing audited financial statements and the related auditor's report (or the "*proposed other information standard*") (PCAOB, 2013). The proposed auditor reporting standard required auditors to disclose critical audit matters or assert that there were none to communicate and to disclose new elements that are related to the auditor's independence and tenure. At that point, the PCAOB defined critical audit matters (CAMs) as:

> *"matters the auditor addressed during the audit of the financial statements that involved the most difficult, subjective, or complex auditor judgments or posed the most difficulty to the auditor in obtaining sufficient appropriate audit evidence or forming an opinion on the financial statements."* (PCAOB, 2013, p.6)

A revised version of AS 3101 was released in 2016, which discusses "*the auditor's report on an audit of financial statements when the auditor expresses an unqualified opinion*" and was again met with negative feedback. This was in line with the expectations set by Simnett and Huggins (2014), who point out that users in North America are less likely to support changes to the audit report, compared to their European, African and South American counterparts. The authors suggest that the increased resistance by users in North America is potentially due to the increased litigation risk that is to be expected by the proposed changes. The negative feedback received by the PCAOB and the results by

Simnett and Huggins (2014) are in line with prior literature that highlights the unique litigious environment of the U.S. (Simnett et al., 2016; Simunic et al., 2017). The unique litigious environment in the U.S. makes understanding the reactions of users to changes in the auditing regulations a matter of extreme importance to auditors, and provides an additional motivation as to why using the U.S. as a research setting is crucial to obtaining a holistic view of the consequences of the changes in auditing regulations. The opposition against the new auditing regulations in the U.S. consisted mainly of auditing professionals, who argued that this new format will lead to an increase in litigation risk and will force the auditors to disclose confidential information about their clients that not available in other disclosures prepared by the client's management (Minutti-Meza, 2021).

A final revised version of standard AS 3101 was issued in June 2017 (PCAOB, 2017), which was approved and adopted by the SEC in October 2017 (SEC, 2017). The new standard mandated the disclosure of CAMs for audits of large accelerated filers, or firms with a public float of $700 million or more, in the fiscal year ending on or after June 30, 2019, and for all other listed firms in the U.S. in the fiscal year ending on or after December 15, 2020 (SEC, 2017). The standard has recently been updated to include the disclosure of any and all efforts required to address the critical matter, including any specialised skill or knowledge needed by the engagement team outside the engagement team through the use of consultations (PCAOB, 2022).

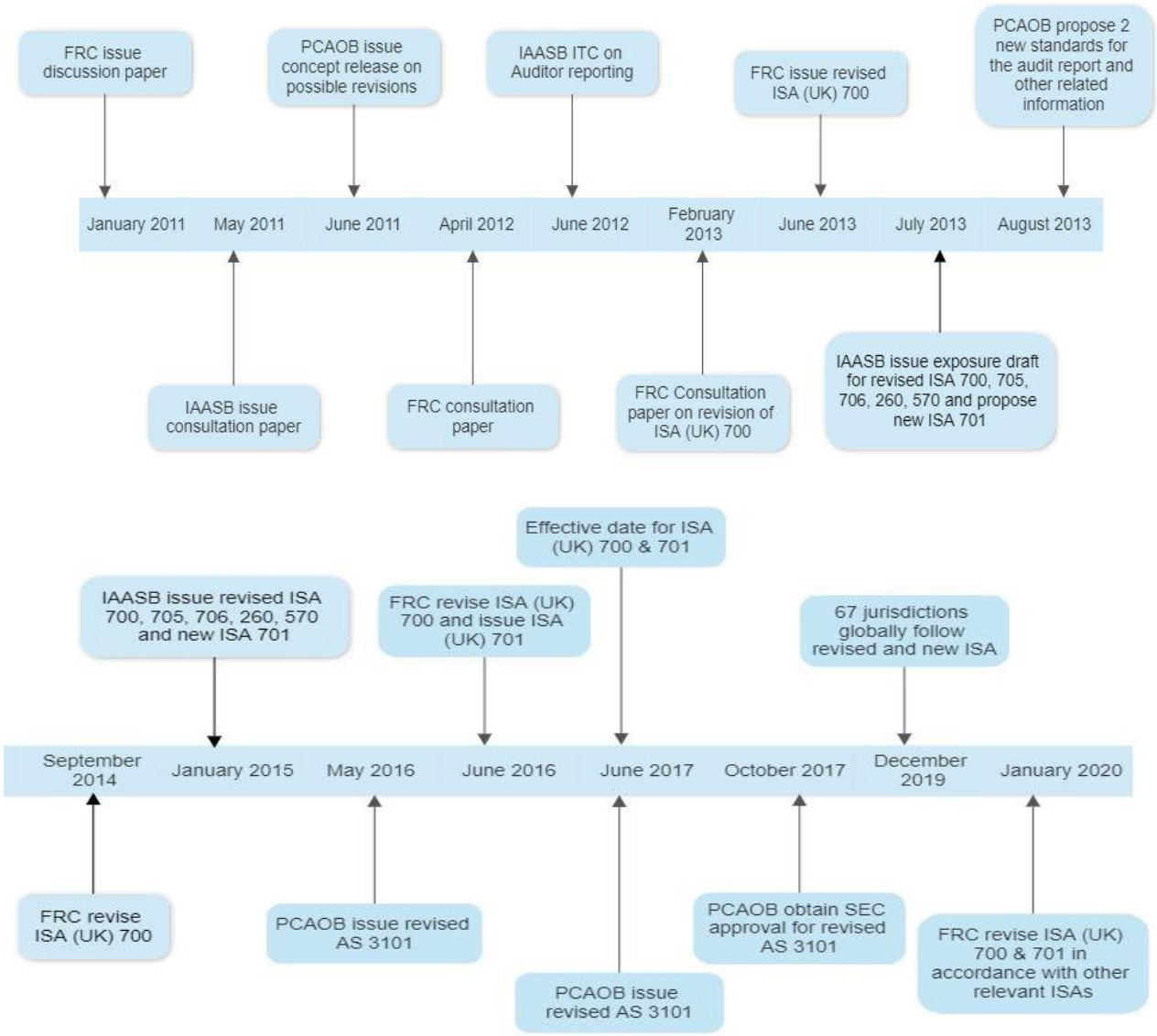
2.3.4 Comparing ISA 701 and AS 3101

It is clear that the revised and new standards of the FRC, PCAOB and IAASB overlap, and followed similar timelines during the formative stages (Simnett & Huggins, 2014). **Figure 2.2** shows the timeline of the development of the processes for the three organizations. The figure shows that even though the UK's FRC was the first standard setting organization to take steps towards expanding the audit report, they eventually had to resort to following the IAASB's steps. This could be attributed to the fact that the ISA (U.K. and Ireland) are largely based on the International Standards on Auditing (ISA) (Cordoş et al., 2020). Moreover, some of the PCAOB's delays were caused by the fact that they require the SEC's approval when establishing auditing standards (SEC, 2013). It also shows that the IAASB missed their intended cut-off date by around six months.

What is clear also is that the three bodies were not only interested in enhancing the audit report in terms on increasing transparency and disclosure, but also in terms of using terms that are understandable by the average user or reader of the report. This can be particularly useful in narrowing down the expectations gap particularly in terms of what level of assurance the auditor provides, and

what is the role and scope of the auditor. Moreover, standard setters were keen on involving different groups of users in the process through discussion papers, consultation papers and feedback to ensure protection for as many stakeholders as possible.

Figure 2.2 - Timeline of the development of the new standards



In addition to the similarities between the ISAs published by the FRC in the UK and the ISAs published by the IAASB (Cordoş et al., 2020), the frameworks provided by the IAASB and the

PCAOB are similar in terms of definitions and identifying and determining KAMs and CAMs. Both standards require that the auditor includes CAMs/KAMs that are pertinent to the fiscal period being audited, yet it could also be pertinent to refer to matters from prior periods, and both require a written assertion by the auditor in the report in case no CAM/KAM disclosure was required. Moreover, the two standards prohibit CAM/KAM disclosure in case the auditor offers a disclaimer on the financial statements (IAASB, 2017).

However, some differences can be observed between ISA 701 and AS 3101. For instance, auditing professionals view that U.K. extended reports offer more additional information than U.S. ones (Wilson, 2021). Specifically, users in the U.K. are offered a detailed description of how auditors arrived at the materiality threshold and what the various approaches to materialities are, while U.S. users do not. Furthermore, ISA 701 requires the disclosure of KAM even if the auditor issues an adverse opinion, while AS 3101 prohibits CAM disclosure for this type of report. Moreover, the PCAOB require disclosing auditor tenure, while the IAASB does not (IAASB, 2017). Third, it is common for auditors in the U.K. to disclosure industry-related CAMs, while this kind of CAMs is not common in the U.S. Another key difference between both iterations is that CAMs cannot include matters that are outside of the scope of the financial statements and the annual report, such as unreported changes in the external environment of the client, unlike KAMs where auditors are allowed to include such matters (CFA Society, 2021).

Furthermore, it is claimed that AS 3101 is more detailed than ISA 701 due to the nature of the more litigious environment in which AS 3101 operates (Simnett et al., 2016; Simunic et al., 2017). For instance, materiality seems to have a higher role in AS 3101 in determining whether the significant matter at hand qualifies as a CAM or not (Minutti-Meza, 2021). This could be regarded as a response to concerns that if mandatory CAM disclosure was left fully to the auditor's judgement, auditors might disclose immaterial information that management did not intend to disclose, yet may have an impact on users' decisions. In addition, the PCAOB requires the inclusion of "*the principal considerations that led the auditor to determine that the matter is a critical audit matter*" and the referral to "*relevant financial statement accounts and disclosures that relate to the critical audit matter*", in addition to how the CAM was addressed by the engagement team. The IAASB standard's phrasing uses much simpler terms; the KAM description should include a "*reference to related disclosures*", why the matter is significant to the audit and thus classified as a KAM, and how it was addressed by the engagement team.

The more detailed approach by the PCAOB to identify CAMs based on materiality could be regarded as double edged weapon, where auditors may disregard immaterial matters that users would have wanted to be disclosed (Jermakowicz et al., 2018). This could lead to increased litigation risk and negligence verdicts to the auditors who failed to communicate such maters due to claims that they seemed immaterial at the time of the audit.

Meanwhile, ISA 701 considers whether the matter in question is a KAM or not is mainly determined by the auditor's judgement. The standard includes a "*judgement based decision-making framework*" to help auditors assess whether the matter at hand is a KAM or not, which essentially focuses the auditor's attention on the area of the financial statements that is related to the matter. This should be done while considering the risk assessment procedures as per ISA 315, and determining that the matter is significant with regard to the financial statements as a whole (IAASB, 2017; Jermakowicz et al., 2018). As can be inferred, the standard puts more emphasis on auditor professional judgement rather than materiality.

Another difference between ISA 701 and AS 3101 is the documentation required by the auditor. On the one hand, ISA 701 depends heavily on the auditor's professional judgement, the standard requires documentation only of the matters that were significant during the audit and the logic behind whether they were deemed KAMs or not. On the other hand, the PCAOB requires documentation regarding all material matters arising from the audit that were discussed with those charged with governance, and whether, and why, they were classified as KAMs (IAASB, 2017).

2.4 Conclusion

This Chapter aims to provide an overview of the calls for expanded audit reports and increased disclosure in the audit report. Primarily, the expectations gap and the outdatedness of the pass-or-fail model used in the traditional audit report within the context of a vibrant and risky business environment were among the reasons why the push for increased disclosure gained momentum over the last two decades. Moreover, the Chapter illustrates the efforts performed by the three major auditing standard setters in the world towards providing an expanded audit report, while attempting to highlight the key differences between them. While the IAASB and the U.K.'s FRC use essentially the same standards and audit reports, the PCAOB uses slightly different standards that are in line with the nature of the environment in which it operates.

Ideally, the increased disclosures should provide the opportunity for auditors to communicate sufficient details about their audit, especially matters that are often related to complex accounting issues that require subjectivity or professional judgment (Minutti-Meza, 2021). For instance, the FRC declared that users believe issues involving estimation are the most complex and worthy of further expansion (FRC, 2016a). This is in line with empirical evidence (Kend & Nguyen, 2020). In light of this, it is crucial to understand that the additional disclosures in the expanded audit report do not deem the financial statements as unfairly represented, but merely point out significant matters to the eyes of the users according to the auditor's judgement.

One of the most significant changes to the audit reports is the inclusion of CAMs, which is the focus of this thesis. The primary aim of CAMs is to provide more transparency and incremental information to users. Therefore, the key question that needs to be addressed is how CAMs will be perceived by users? Specifically, will users of financial statements find them informative? Prior literature points out that increased disclosure should lead to less information asymmetry (Beyer et al., 2010; DeFond & Zhang, 2014; Jensen & Meckling, 1976; Leuz & Verrecchia, 2000).

Furthermore, a regulatory change of this magnitude is highly likely to have an effect on several aspects of the audit and financial reporting, such as audit quality and audit fees, as well as the impact on reporting quality, among other things. Therefore, the spillover effect of CAMs should also be investigated. For instance, the PCAOB specifically identifies management as a party that is highly likely to be affected by the new disclosures (PCAOB, 2017). Obtaining answers to these questions will enable us to evaluate CAMs on the basis of their net benefit. Therefore, the next Chapter will provide a critical overview of the relevant literature about CAMs.

Chapter 3: Literature Review

3.1 Introduction

This Chapter presents relevant literature on CAMs, and provides a critical review of CAM research. Since the introduction of CAMs, researchers have taken an interest in helping standard setters, auditors and audit report users uncover the determinants of CAMs, determining the incremental informational value offered by CAMs, and understanding the consequences of the new auditing regulations, such as how CAMs may affect aspects that are closely related to the engagement, such as audit quality and audit fees (Mashayekhi et al., 2024). This puts scholars in a distinctive position to influence and shape new auditing regulations.

Despite its relative recency, CAM research has explored a wide array of consequential phenomena using different experimental, qualitative and archival research settings, and has covered many jurisdictions, such as the U.K., the U.S., Europe, China, South Africa, Australia and New Zealand. The earlier CAM studies predominantly used experimental research designs, due to the lack of sufficient archival data, and focused mainly on user perception of the new disclosures. Experimental research is practical in identifying evidence of causal relationships between variables. It is particularly useful as it allows the researcher a high degree of control over the setting of the experiment, a relatively high degree of control over extraneous variables, and a relatively high degree of internal validity of results. Experimental research is also useful in addressing concerns about endogeneity by creating a setting where the dependent variable is not correlated with other unmeasured variables (Podsakoff & Podsakoff, 2019). Yet, the experimental research design is not without its inherent drawbacks. For instance, the extent to which experiments simulate a real-life setting is sometimes questionable (Asbahr & Ruhnke, 2019), therefore, the generalisability of the results of experimental research is often disputed (Podsakoff & Podsakoff, 2019). Moreover, participants' awareness of their participation and the experimental setting, although a main pillar of ethical standards in scientific research (Economic and Social Research Council, 2020), may result in biased answers. Furthermore, researchers using this type of research have to deal with non-response bias (Guiral-Contreras et al., 2007). Lastly, the use of proxies for different users, such as jurors, investors, and debtors, in experimental studies is often an issue of concern.

As standard setters and oversight bodies implemented the regulatory changes, historical data became more available and accessible. Therefore, more archival research examining both the

consequences and determinants of CAMs starting to emerge. Within the context of this thesis, archival research can be defined as the type of research that discusses auditing-related themes using mainly economic-related methodologies of research on auditing data (DeFond & Zhang, 2014). This kind of research also enables researchers to assess the positive and negative implications of various policies, which is especially useful for practitioners and standard setters (Simnett et al., 2016).

The scholarly interest in CAMs has led to a deeper understanding of the determinants (e.g. Duboisée de Ricquebourg & Maroun, 2024; Federsel & Hörner, 2023; Sierra-García et al., 2019). Furthermore, as a consequence of the new auditing regulations, several audit-related elements were investigated. For instance, a number of studies investigated how CAM disclosure will affect litigation risk and jury perception (e.g. Brasel et al., 2016; Gimbar et al., 2016; Kachelmeier et al., 2020), audit fees and audit quality (e.g. Asbahr & Ruhnke, 2019; Gutierrez et al., 2018; Zeng et al., 2020; Zhang & Shailer, 2020). Moreover, the PCAOB specifically mentioned two factions of users that are the most likely to be affected by the new auditing regulations, namely investors and management, who represent the main focus of this thesis. Moreover, in an attempt to understand how different types of CAMs affect users, a number of studies distinguish between the types of CAMs reported by auditors (Lennox et al., 2022; Sierra-García et al., 2019).

This Chapter makes six important observations, the last two of which are the focus of this thesis. First, while most earlier studies of CAMs use the U.K. as a research setting to examine determinants and consequences of the new auditing regulations due to its early implementation of the new auditing regulations, most early studies investigating litigation risk and jury perception use the U.S. as a setting. This is mainly due to the concern of users in the U.S. due to its highly litigious nature (Simnett et al., 2016; Simunic et al., 2017). Secondly, auditor-level characteristics, such as the audit firm, audit fees, audit partners and materiality, and firm-level characteristics, such as financial performance and industry, are significantly associated with the number of CAMs disclosed. Additionally, Country-level differences exist in KAMs, which may be a result of the "*building blocks approach*" by the IAASB. Third, literature investigating the effect of CAMs on litigation risk and auditor culpability suggests that disclosing few CAMs, with a particular focus on measurement-related CAMs, is associated with a lower likelihood of negative verdicts for auditors. Fourth, most studies in the U.S., U.K. and Europe do not find an association between CAMs and audit quality or audit fees, while evidence from China suggests a significant association, which might be attributable to country-level characteristics. Fifth, while prior literature provides evidence of the ability of CAMs to operate as a monitoring mechanism

for management, as internal users, to improve disclosure quality, most studies examine audited information, and do not address narrative disclosures that represent management's true opinion. Sixth, while most archival literature does not find a significant market reaction from equity investors, experimental research points out that professional and non-professional investors react differently to CAMs, thus meriting further research as to how investors with varying degrees of professionalism react to CAMs using archival data.

Therefore, this Chapter is organised as follows: Section 3.2 presents an overview of the types of CAMs referred to in prior literature that will be discussed in the literature review and empirical studies in this thesis. Section 3.3 presents literature on the determinants of CAMs. Next, the Chapter presents the literature investigating the consequences of CAMs, whereas Section 3.4 reviews the literature investigating litigation risk and jury perception as the primary source of concern for scholars and practitioners at the earlier stages of introducing the new auditing regulations. Section 3.5 discusses literature investigating the effect of CAMs on audit quality and audit fees. Finally, the chapter reviews the literature on both management, as internal users, to understand the consequences of CAM disclosures on the firm-level first, and investors, as the external users targeted by the change in regulations. Section 3.6 reviews the literature that examines management reaction and Section 3.7 examines the literature that investigates investor reaction as the two most relevant stakeholders affected by CAM disclosures according to the PCAOB (PCAOB, 2017) and as the focus of this thesis. A summary and concluding remarks are presented in Section 3.8.

3.2 Types of CAMs

Distinguishing between types of CAMs is crucial since decision makers have different responses to different types of information. Furthermore, it is important for users to understand the propensity of auditors to disclose certain kinds of CAMs so that they may be able to call upon management to mitigate the risks identified in CAMs (Sierra-García et al., 2019). Prior literature has classified CAMs into two sets of pairs (**Table 3.1**), namely account-related CAMs and entity-related CAMs, and measurement-related CAMs and classification-related CAMs. The pairs are exclusive, in the sense that a single CAM cannot be account-related and entity-related simultaneously. Similarly, a CAM cannot be measurement-related and classification-related at the same time. For illustration, a CAM that discusses a lease liability is account-related, and could either be measurement-related, if it discusses the valuation, or classification-related if discusses the category of the lease liability based on the contractual setting, but it cannot be both. Alternatively, a CAM that discusses internal control is entity-

related, thus it cannot be simultaneously considered account-related (Brasel et al., 2016; Kachelmeier et al., 2020; Lennox et al., 2022; Sierra-García et al., 2019). To differentiate between different types of CAMs, Lennox et al. (2022) use the list of words developed by Loughran and McDonald (2011) to identify RMMs that express uncertainty. Sierra-García et al. (2019) follow the same reasoning to differentiate between entity-level and account-level matters. Similarly, this study uses the list of words provided by Loughran and McDonald (2011) to identify "uncertain" CAMs as measurement-related CAMs[3]. Using an established financial lexicon offers a transparent and replicable approach that is not only more accurate than standard dictionaries, but also offers results that are comparable to complex machine learning algorithms (Renault, 2017). The **Appendix** provides examples of the different types of CAMs presented in **Table 3.1**.

Table 3.1 - Types of CAMs

Type of CAM	Definition	Source
Account-related CAM (*acam*)	CAMs related to specific items in the financial statements (e.g. internal control)	(Bepari et al., 2022; Lennox et al., 2022; Sierra-García et al., 2019)
Entity-related CAM (*ecam*)	CAMs related to firm risk as a whole (e.g. Goodwill)	
Measurement-related CAM (*mcam*)	CAM involving measurement uncertainty (e.g. lease valuation)	(Brasel et al., 2016; Kachelmeier et al., 2020)
Classification/categorical-related CAM (*ccam*)	CAM involving a classification of a transaction/account (e.g. lease classification)	

Notes: The table shows the types of CAMs referred to in the study, their definitions, and their sources from prior literature.

3.3 Determinants of CAMs

Prior literature investigating the determinants of CAMs has mainly utilised two lenses: firm-level, or client-level, determinants and auditor-level determinants. With regard to auditor-level determinants, Sierra-García et al. (2019) report that Deloitte, EY and KPMG report fewer KAMs than PWC for their clients in the U.K. Furthermore, the authors find that audit fees are associated with an increase

[3] The list of words that imply uncertainty are available here: https://afajof.org/wp-content/uploads/files/supplements/Word_lists_for_22When_Is_a.xlsx

in the number of entity-related KAMs, and a decrease in account-related CAMs. These results are consistent with Bepari et al. (2022), who find that PWC report more KAMs than other Big 4 firms, and that audit fees are positively associated with the number of KAMs in Australia. Sierra-García et al. (2019) also find that a higher ratio of materiality to total assets is associated with a decrease in the number of KAMs. Meanwhile, in a study based in China, Rahaman and Karim (2023) report that Big-4 auditors report fewer KAMs.

A number of researchers examined how changes in audit partners and audit firms affect CAM disclosures. For instance, Rousseau and Zehms (2024) find that clients sharing the same audit partner receive KAMs that are 10% more textually similar than clients with different partners within the same firm, while firms sharing the same audit firm receive KAMs that are 2% more textually similar than clients with different audit firms in the U.K. This highlights the unique role of audit partners in making KAM reporting judgements. Moreover, Duboisée de Ricquebourg and Maroun (2024) find evidence that changing audit firms has a significant impact on KAMs being added or removed in the audit report in South Africa. Similar results were obtained by (Federsel, 2024), who find that audit firm rotation is associated with considerable changes in KAMs in Europe. This highlights the role of standardisation within audit firms.

Abdelfattah et al. (2020) investigate how auditor partner gender can influence KAM disclosure in the U.K. Their results suggest that female audit partners are more likely to disclose more KAMs than their male counterparts. Additionally, female audit partners are more likely to have more detailed KAMs, a less optimistic tone, and provide less readable audit reports. Similar results were obtained by Bepari et al. (2022) who find that female audit partners are associated with a higher number of KAMs. They also observe a negative association between audit partner experience, education and speciality with the number of KAMs reported. Female audit partners are also less likely to add new KAMs or drop old KAMs (Bepari & Mollik, 2023).

When it comes to firm/client-level determinants, Sierra-García et al. (2019) find that leverage, complexity and intangibles ratio are associated with a decrease in the number of KAMs, while loss, revenues, PPE and goodwill are associated with an increase in the number of KAMs. This is partially in line with Bepari et al. (2022), who find a negative association between leverage and KAMs in Australian firms, but note a positive association between size, complexity, intangibles ratio and goodwill with the number of KAMs. Bepari et al. (2022) also observe a significant association between

the life cycle of the firm and the number of KAMs, where younger firms are associated with fewer KAMs than older firms.

Sierra-García et al. (2019) also find that leverage and complexity are associated with a decrease in the number of entity-level KAMs, which is counterintuitive as leverage and complexity are traditionally considered sources of risk for firms. Additionally, they find that size, profitability and liquidity are positively associated with the number of entity-related CAMs. Moreover, they find that revenues and inventories are positively associated with the number of account-related KAMs, which seems intuitive due to the complexity of both accounts. Similarly, Bepari et al. (2022) find a positive association between size and both entity-related and account-related KAMs, as well as a positive association between complexity, intangibles, and goodwill on account-related KAMs.

Furthermore, Sierra-García et al. (2019) find that the industry in which the firm operates has a significant association with the number of KAMs. This is in line with earlier literature that implies that the industry in which a firm operates dictates certain unique risks. Iskandar (1996) stipulates that the sector is an important contextual factor in determining the level of materiality, thus it could be assumed that it is also a determinant of what qualifies as a CAM. Studies show that while most of the disclosed CAMs are firm-specific (Zeng et al., 2020), Cordoş and Fülöp (2015) report in their survey-based study that 21% of their sample expect the firm's industry will play a key role in determining its CAMs. For instance, Kend and Nguyen (2020) illustrate that banks have attracted more KAM/CAM disclosures in Australia than in any other sector.

Rahaman and Karim (2023) add that board features, such as chair gender, the presence of women directors and audit committee size are significantly associated with KAM disclosures in China. They also note that a politically connected family CEO is positively associated with KAMs. Furthermore, the number of audit committee members with a background in accounting or who are qualified accountants are negatively associated with account-related, or accounting-level as Aboud et al. (2024) brand it, KAM disclosures in the U.K. Aboud et al. (2024) also find that the number of audit committee members who have an accounting background and prior supervisory experience, the negative association with the number of KAMs extends to include entity-related KAMs.

Federsel and Hörner (2023) offer a different perspective by attributing country-level factors to the differences in KAM disclosures in their European-based sample. They provide evidence that economic, regulatory, market and sociological factors can explain the differences in KAM disclosures in European countries. Specifically, they show that countries with higher economic wealth and lower

financial market development lead to a lower number of disclosed KAMs. Similarly, firms in countries with higher social trust and liberty are more likely to disclose fewer KAMs. The country-level differences could be attributable to the "*building blocks*" approach the IAASB used in their implementation of the new auditing regulations. It is logical to expect that jurisdictions with different sociological, regulatory and business environments will implement the new regulations differently, which could explain some of the differences in the results noted in this Section.

3.4 Litigation risk and jury perception

One of the most relevant themes in CAM-related research is litigation risk, specifically how CAM disclosure affects auditor negligence verdicts, auditor culpability and jury perception. Most studies in this domain have mainly utilised experimental research designs where proxies are used in place of jurors. Historically, litigation has been an important aspect of auditing research. For instance, DeFond and Zhang (2014) note that lower litigation risk is associated with a decrease in audit quality. Previous literature has established that litigation risk can be affected by auditor characteristics (Casterella et al., 2010), client characteristics (Stice, 1991) and audit engagement characteristics (Yim, 2009). Furthermore, lack of user knowledge might depict an inaccurate image of the auditor doing insufficient work (Segal, 2019). Studies have also shown that jurors often unjustly side against auditors (Donelson et al., 2014).

The issue of litigation risk was particularly popular in the U.S., a country known for its highly litigious environment (Simnett et al., 2016), where practitioners expected that the increased disclosure in the form of CAMs would act as an open call for more lawsuits (Brasel et al., 2016; Ernst & Young LLP, 2013; Gaetano, 2014; Gimbar et al., 2016). Moreover, DeFond and Zhang (2014) add that litigation risk is directly affected by any regulatory changes, such as the Private Securities Litigation Reform Act of 1995, or the Sarbanes-Oxley Act of 2002. Litigation leads to damaging the auditor's reputation, and impairing their ability to retain and attract clients (DeFond & Zhang, 2014), even if the final ruling did not incriminate the auditor (Greenhouse, 2005).

A major concern of litigation risk for auditors was the consequences of a material misstatement coming to light after the auditor disclosed a CAM in the audit report. On the one hand, if the misstatement is relevant to the disclosed CAM, then the auditor would be regarded as either incompetent or not independent by not doing enough to resolve the misstatement. If the misstatement

and the disclosed CAM are unrelated, the auditor would be deemed even more complacent for having not detected the misstatement in the first place (Gimbar et al., 2016; Katz, 2014).

On the other hand, some researchers argue that concerns regarding litigation risk arising from CAM and other increased disclosures are inflated, as CAM disclosures, by nature, act as a red flag for users, which could be interpreted by jurors as a warning for future possible misstatements (Brasel et al., 2016; Kachelmeier et al., 2020). This supported by Brown et al. (2020) who find evidence, using an experimental research design, that CAM disclosures decreased audit firm culpability. Brasel et al. (2016) provide evidence using an experimental research design that disclosing CAMs decreases negligence verdicts by jurors if a material misstatement is measurement-related and comes to light, even if the disclosed CAM is not related to the misstatement in question. The rationale behind this result is that CAMs serve to decrease jurors' perception of both fraud detectability and auditor acquiescence (Brown et al., 2020).

In contrast, if the auditor chooses not to disclose any CAMs, which in itself may indicate a compromise in competence, then negligence verdicts are more likely to increase against the auditor (Brasel et al., 2016). This is consistent with the notion that auditors engage in defensive auditing practices that might negatively affect the audit quality to avoid litigation risk (Brown et al., 2020; Kang et al., 2015; Peecher et al., 2013), which implies a high likelihood that auditors will disclose "boilerplate" CAMs to avoid or decrease litigation risk.

Kachelmeier et al. (2020) provides further support to this notion by stating that CAMs serve as a warning for users for areas in the financial statement with high measurement uncertainty. Moreover, their results show that CAM disclosures both lower confidence in the area of the financial statement disclosed in the CAM prior to the detection of the misstatement, and lower the assessment of auditor responsibility after the misstatement is detected if the CAM is related to the misstatement. Inversely, if the misstatement is account-related, this increases the assessment of auditor responsibility. The finding of Kachelmeier et al. (2020) is crucial to understanding the bigger picture in terms of how jurors view CAM disclosure. If the results of Brasel et al. (2016) were to be considered independently, it would seem that auditors will be encouraged to disclose CAMs for the sole purpose of mitigating litigation risk if a material misstatement becomes public in the future. Kachelmeier et al. (2020)'s results refute that notion by proving that disclosing the wrong type of CAMs might lead to negative, negligent perceptions by jurors.

Furthermore, Gimbar et al. (2016) show evidence that in matters that are related to accounting standards of high precision, CAM disclosures, whether related or unrelated to the misstatement, lead to a higher probability of a verdict against the auditor as jurors view precise standards as a mechanism that suppresses the auditor's use of his professional judgement and his control over the client's financial reporting. The newfound ability of auditors to disclose CAMs disclosure eliminates this suppression, thus allowing the auditor to utilise his professional judgement, and putting more responsibility on the auditor to perform an exemplary audit. This would imply that by not disclosing CAMs, auditors are able to blame precise standards as the reason why a misstatement went undetected.

Initially, the results of Brasel et al. (2016) and Kachelmeier et al. (2020) seem to contradict that of Gimbar et al. (2016). To understand the underlying reasons for this contradiction, it is essential to understand the design of the experiments in question. Firstly, while all experiments were conducted in the U.S., the three studies utilised different juror proxies. The two key differences, however, that led to conflicting results are the focus of the two studies and the hypothetical situations employed. While Brasel et al. (2016) and Kachelmeier et al. (2020) obtained similar results when examining measurement-related misstatements, the additional tests of Kachelmeier et al. (2020) and the study of Gimbar et al. (2016) used categorical/classification-related misstatements, and show results similar to each other. Moreover, the purpose of Gimbar et al.'s (2016) study was focused on the precision of the standards governing the financial statements and, by extension, the auditor, while the other two involved no reference to the precision of the standards, but merely focused on the impact of CAM disclosure on verdicts against the auditor.

Furthermore, Vinson et al. (2018) add that removing a complex CAM that has been reported previously from the audit report leads to a higher perception of auditor negligence in case fraud is discovered. The results in the same experiment when using a CAM of low complexity do not yield the same results. They add that the longer the CAM has been reported, the higher the perception of negligence. Sulcaj (2023) adds that there is a positive association between litigation risk and the number of CAMs disclosed. This could be attributable to the perception that more CAMs imply more unresolved matters by the auditor.

Since the setting of experimental studies is highly manipulatable by the researchers, small changes can lead to different results. The above results show that manipulating the type and complexity of the CAM can lead to different juror perceptions. Overall, the results of studies examining the effect of CAMs litigation risk show that disclosing a low number of CAMs, particularly measurement-related

CAMs, can lead to lower litigation risk and negligence verdicts against auditors. This could explain why, on average, the number of CAMs disclosed in the U.S. is lower than the number of CAMs disclosed in other jurisdictions (Burke et al., 2023; Lennox et al., 2022) which is further discussed in Section 4.3.

3.5 Audit quality and audit fees

A major research question for scholars and concern for standard setters was whether the expanded report would affect audit quality. A generally accepted definition of audit quality is that it is "*the market-assessed joint probability that a given auditor will both detect a breach in the client's accounting system, and report the breach*" (DeFond & Zhang, 2014, p. 280). Generally, literature has shown that there are a number of factors that constitute incentives for an auditor to perform a high-quality audit, such as litigation risk and reputation risk (DeFond & Zhang, 2014). In order for the expanded audit report to have a significant impact on audit quality, two very closely related variables have to be considered as well, namely audit fees and audit effort (Minutti-Meza, 2021), as audit fees is used as the predominant proxy for both quality and effort (DeFond & Zhang, 2014; Zhang & Shailer, 2020).

Intuitively, increased disclosures in the form of mandatory CAM disclosure will lead auditors to exert more effort during the audit, which will lead to higher audit fees. The notion that higher audit effort will result in higher audit fees is well documented in the literature (DeFond & Zhang, 2014; Morgan & Stocken, 1998; Simunic, 1980). Another argument supporting this notion is that if auditors successfully identify and disclose a particular CAM, this means that the quality of the information presented in the audit report is higher, compared to an audit report with no CAMs, which speaks to the quality of the audit itself. This argument is supported by Wu et al. (2019), who find evidence that firms with CAMs related to asset impairment are associated with worsened economic status, compared to firms without asset impairment-related CAMs.

Surprisingly, both archival research (e.g. Gutierrez et al., 2018; Reid et al., 2019) and experimental (e.g. Asbahr & Ruhnke, 2019) show otherwise. In a study that uses a difference-in-differences research design, Gutierrez et al. (2018) find that the regulatory changes in the U.K. do not have a significant effect on audit fees or audit quality. Similar results were obtained by Liao et al. (2024) who used the same research design for a sample of listed firms in Hong Kong and China in their working paper, and Burke et al. (2023) on their sample using U.S. data. Similar results were yielded by Bédard et al. (2019) in France when examining the often overlooked justifications of assessments (JOAs), which

have been in effect since 2003, and are very similar in use and function to CAMs. Al-mulla and Bradbury (2022) found no significant relation between KAM disclosure and audit report delay or audit quality in New Zealand. Moreover, they debate that while the audit fees do not seem to be affected by KAMs in the first year of disclosure, their results showed that audit fees increase the year preceding the first KAM disclosure. This was attributed to a premium estimated by the auditor for the risk associated with increased disclosure.

Similar results were obtained by studies using experimental research designs. Asbahr and Ruhnke (2019), using an experimental research design, claim that reporting CAMs does not lead to more audit effort, since the information disclosed in CAMs is usually obtained during the normal course of the audit. They also find that the amount proposed adjustment amounts is significantly lower when the accounting estimate is reported as a CAM. Nguyen and Kend (2021) provide evidence that while CAMs might have an impact on the planning phase of the audit engagement and help in improving audit documentation, they offer little change regarding the audit process itself. This implies a modest increase in audit effort at best.

Rautiainen et al. (2021) survey CPAs in Finland to understand how professionals perceive CAMs. Their evidence suggests that auditors in their sample were critical about CAM reporting, and that they do not consider that CAMs improve audit quality or provide additional information to investors. Additionally, they did not perceive that CAMs, as additional disclosures, increase the workload of the auditors significantly. However, they believe CAMs helped make the audit process more fluent. Specifically, the use of CAMs facilitated the cooperation between auditors and managers, and facilitated finding inefficiencies in internal controls. While this result may not be directly reflected in audit quality, it may be indicative of improvements in the effectiveness of the audit process itself. Yet more recent research by Axelton et al. (2024) reveal that the extensiveness of disclosed audit procedures performed over CAMs increases with the risk of material misstatement, and is positively associated with audit quality. More recent studies may be producing different results due to auditors gaining familiarity with CAMs over time.

Recent evidence from Asia provides mixed results, but mainly points to a positive association between CAMs and audit quality. For instance, Liao et al. (2024) and Zeng et al. (2020) use data from mainland China and Hong Kong, which historically have close economic ties, yet obtain different results. Liao et al. (2024) found no evidence that CAM disclosures affect audit quality or audit fees. Their main sample was firms listed in Hong Kong and their control sample was firms listed in China.

Meanwhile, Zeng et al. (2020) find an increase in audit quality using a sample of firms cross-listed in both China and Hong Kong. To ensure the robustness of the results of their pre-post regression analysis, Zeng et al. (2020) performed a difference-in-differences test with a propensity score model to match the treatment group (firms required to disclose CAMs) to their closest counterpart in the control group (firms not required to disclose CAMs). Furthermore, Ma et al. (2024) argue that reduced boilerplate KAMs reflect higher audit effort, and that auditors respond to more negative media coverage by reducing boilerplate KAMs, which implies reacting by increasing audit effort. It could also be claimed that audit quality in China is disputed, and the legal environment is relatively weak (Bandyopadhyay et al., 2014; Chen et al., 2010; Firth et al., 2012; Huang et al., 2016), which is why regulatory changes in the country show significant improvements in the post-implementation cross-section. This result could also be taken into consideration together with the results of Chen et al. (2019), who asserted that auditors are incentivised to increase the quality of the audit if the underlying financial reporting quality is low, and that the fact that China adopted International Auditing Standards does not automatically lead to a higher audit quality (Simunic et al., 2017).

A point of debate for the work of Zeng et al. (2020) is that while the results survived several robustness checks, their choice of proxies for audit quality is controversial. Although widely used as measures of audit quality (DeFond & Zhang, 2014), three of their five proxies, discretionary accruals, small positive earnings surprise, and the adoption of non-core earnings, are generally associated with the quality of the client's financial reporting, not the quality of the audit. The choice of proxy was also questioned by Al-mulla and Bradbury (2022). Moreover, their fourth proxy, types of audit opinions, is generally considered to be a measure of auditor independence. Furthermore, there is a strong argument for the notion that their last proxy, audit fees, should not reflect more audit effort when CAM is disclosed, as the extra disclosures would have been obtained during the normal course of the audit (Asbahr & Ruhnke, 2019).

Inversely, Zhang and Shailer (2020) propose that due to the complexity of the audit report, and due to the fact that auditors are obliged to gain an understanding of the client's RMMs, more audit effort is expected to be exerted. Specifically, the addition of a new RMM in the audit report implies that the auditor has exerted more effort in the year when this RMM was disclosed, which requires higher audit fees, but the increase in fees is usually offset by the removal of another RMM that was disclosed in a previous year, which is why audit fee studies were unable to capture the increases. These results were obtained using post-implementation data, as opposed to the difference-in-differences

research designs used previously. Furthermore, Kitiwong and Sarapaivanich (2020) use the occurrence of financial restatements as a measure of audit quality, and find weak evidence that CAM disclosure improved audit quality in Thailand. The rationale they provide is that CAMs force auditors to put more effort into the audits. Moreover, Suttipun (2021) provide evidence that CAMs' word count is positively associated with audit quality.

To conclude, while most of the research examining the impact of CAM disclosure on audit quality shows no significant relation, a number of studies show a statistically significant association. The contradicting results can be attributed to differences in the country setting sample choice, research design and choice of proxies (Minutti-Meza, 2021).

3.6 Management reaction

Although the standards requiring auditors to disclose CAMs did not directly require management to increase their level of disclosure, it could be expected that higher disclosure by auditors will bring forth higher scrutiny for management. Thus, it is logical to assume that the standards relating to expanded audit reports will affect internal users indirectly, and lead to increased disclosure and a higher financial reporting quality by management. This is supported by the PCAOB, who articulate that:

> *"The communication of critical audit matters could also heighten management's attention to the relevant areas of financial statements and related disclosures. Several commenters stated that the reporting of critical audit matters would lead management to improve the quality of their disclosures or adopt more widely accepted financial reporting approaches in these areas."* (PCAOB, 2017, p. 81)

In an attempt to understand how managers react to CAMs through changes in disclosure behaviour through the lens of positive accounting, a number of studies attempted to investigate the response of management to increased disclosures by a third party in the form of CAMs. For instance, experimental research shows that KAM disclosures increase financial reporting quality and decrease aggressive financial reporting decisions (Gold et al., 2020). This could be attributed to the fact that KAM disclosures bring forth higher transparency and, thus higher managerial accountability. Furthermore, in an experimental study, Bentley et al. (2021) find that CAM disclosures change management's attitude towards risk due to the increased disclosure costs of taking a riskier decision. Kang (2019) extends this notion by adding that even audit committee members react to the increased oversight induced by CAMs by asking more challenging questions due to them perceiving greater oversight duty, especially if a large portion of the shareholders are non-professional investors.

Archival research shows results that are in line with experimental studies. For instance, Reid et al. (2019) used absolute abnormal accruals and the propensity to meet or beat analysts' forecasts as proxies for financial reporting quality, and observed decreases in both measures, indicating an increase in financial reporting quality in the U.K. Moreover, Burke et al. (2023) use textual analysis to provide evidence of changes in the financial statements footnotes that are referenced by CAM disclosure in the U.S. This implies that management disclosures change according to the areas that are expected to be scrutinized following CAM disclosure. Al-mulla and Bradbury (2022) also stated that firms that received an inventory-related KAM disclosed more information about their inventory than firms that did not receive an inventory-related KAM using a sample based in New Zealand. Moreover, Drake et al. (2024) found evidence that tax-related CAMs in their U.S. sample of large accelerated filers are associated with the firm being less likely to use tax expense as an earnings management instrument, which is an indicator of higher financial reporting quality, and increases in unrecognized tax benefits reserves. This indicates that firms that receive a tax-related CAM improve their financial reporting quality when it comes to tax-related issues and accounts.

In line with the notion that discussions and negotiations are a regular occurrence between auditors and management (Beattie et al., 2000), it is expected that CAM disclosures will lead to more discussions and negotiations between management and auditors (Wilson, 2021). This is supported by Elmarzouky et al. (2022), who provide evidence that narrative risk disclosure in the U.K. is positively associated with the inclusion of KAM disclosures in the audit report. Furthermore, Dwyer et al. (2023) report a high similarity rate between auditor-identified risks and audit committee-identified risks in their U.K. based sample. This is consistent with the results obtained by Jahan and Karim (2024), who find that auditors' engagement with management leads to an improvement in management's information sets. They also find that goodwill-related CAMs increase the length and use of uncertain words in the relevant financial statement footnotes. Moreover, Fuller et al. (2021) report that more detailed CAMs, paired with a highly effective audit committee, are associated with managers being more forthcoming about the risk of underlying complex estimates. In line with examining the content of CAM disclosures, researchers found that firms with a worse level of KAM readability, a negative tone, and a greater level of detail (Huang et al., 2024), and firms that receive less boilerplate KAMs (i.e more dissimilar KAMs) (Ma et al., 2023) had a higher likelihood of a restatement in China. This serves as an indicator of the quality of management disclosures for investors. These results have two implications. Firstly, it is clear that auditors and management are in alignment regarding the information they both disclose. Secondly, the results provide an example of the leverage that auditors

have on management, and give support to the notion that management is likely to change their behaviour after the disclosure of CAMs.

Unlike investor reaction, management reaction to CAM disclosures is supported by both experimental and anecdotal research. While CAM disclosures are intended to be done by auditors, it is crucial to understand the consequences of CAMs to extend our current knowledge of the implications of the new auditing regulations. Yet most prior research investigates changes in audited disclosures, such as financial statements and their footnotes (Burke et al., 2023; Jahan & Karim, 2024; Reid et al., 2019). Therefore, building on prior literature, the third empirical Chapter of this thesis examines changes to a section of the annual report that provides a unique mix of mandatory disclosures and voluntary unaudited disclosures, namely the Management Discussion and Analysis (MD&A) section of the 10-K report. Choosing the MD&A section is motivated by prior literature that shows the importance of the MD&A section as a source of information (Li, 2010b; Li, 2019; Muslu et al., 2015). Moreover, by providing a mixture of mandatory and unaudited voluntary disclosures, the unique nature of the MD&A section distinguishes it from other narrative disclosures in the 10-K report, and makes it a representation of solely management's way to communicate their opinion with users regarding the firm's economic conditions and events. Thus, the research question for the first empirical Chapter is as follows:

RQ1: How do managers react to CAM disclosures through modifying the MD&A section?

3.7 Investor reaction

Since auditing standard setters globally announced their intentions to expand the audit report with increased disclosures such as CAMs, researchers have taken an interest in determining whether the changes will add to the informative value of the audit report to investors. Specifically, Minutti-Meza (2021) contends that research questions have revolved around three main ideas: first, does the expanded report provide incremental information? Second, is the additional information relevant to the user or able to change his perception? Third, do the additional disclosures provide information about an internal or external threat that may have not been communicated using other means of communication? By attempting to answer these three questions, researchers are trying to investigate whether CAMs serve their main intended purpose of providing informational value to investors. Understanding the reaction of investors to CAM disclosures, which themselves are a reflection of

accounting disclosures made by management, is in line with the positive accounting theory as investors take decisions based on the perceived incentives of management. Prior literature investigating the impact of additional disclosures in the audit report, such as explanatory paragraphs, shows that they provide relevant information to users (Carson et al., 2013; Czerney et al., 2014). With regards to CAMs, however, the different research settings and methodologies led to mixed results as to the informativeness of CAMs.

To begin with, most CAM experimental studies indicated that investors tend to react to the new disclosures. For instance, Elliott et al. (2020) show evidence that investors respond positively to increased disclosure in the expanded auditor's report in a laboratory setting. Specifically, increased disclosure by auditors indicating that a firm has a high financial reporting quality increases investors' willingness to pay more for the firm's shares. This shows that investors perceive the auditor's report as a reliable method of communication and react to information disclosed in the expanded audit report. Moreover, using a quasi-experimental setting, Zhai et al. (2021) provide evidence that KAMs in China provide firm-specific information, which helps decrease the cost of acquiring information, thus contributing to decreasing information asymmetry in the market. Their results also suggest that KAM disclosures in China reduce price synchronicity. The effect of KAMs is more evident in firms with fewer institutional shareholders.

Additionally, several authors attempted to observe the differences between professional and non-professional investors in an experimental research setting. The experimental study of Köhler et al. (2020) distinguishes between the two and provides evidence that non-professional investors find KAM disclosure not to be informative. Additionally, they find that professional investors are likely to assess the economic conditions of the firm more significantly better if the firm received a severe KAM, compared to the firm receiving a less severe KAM. The authors attribute this to the opinion that a less severe KAM is perceived as appeasement, which implies low levels of openness and fairness by the auditor, as opposed to severe CAMs, which draw professional investors' attention to important issues. Inversely, Christensen et al. (2014) claim that non-professional investors who are presented with an audit report with a CAM that involves an uncertain value estimate are more likely to change their investment decision, compared to investors who receive a report without a CAM, or one with the same information as in management's footnotes. Similar results were obtained by Rapley et al. (2021), who found that disclosing one CAM, as compared to no CAMs, reduces investment intentions by non-professional investors. Additionally, Moroney et al. (2021) find that non-professional investors

perceive audits done by non-Big 4 firms to be more valuable and auditors to be more credible when KAMs are disclosed using an experimental research design. The perception of higher quality does not extend to Big 4 firms, who investors perceive as credible and providing a valuable audit even without KAM disclosure (DeFond & Zhang, 2014). The authors also report that non-professional investors are more likely to direct their attention to, and thus get distracted by, KAM disclosures. They are also less likely to recall other core messages disclosed in the report, including the opinion of the auditor. This implies that non-professional and professional investors derive different informational value from CAMs, and that professional investors are able to derive valuable information from CAMs that are more complex and involve assumptions. Godewatta et al. (2024) distinguish between investors with high vs. low IT knowledge, and find investors with a high level of IT knowledge are more likely to invest in a company if the cybersecurity risk disclosure by management have a neutral tone and the audit report include a CAM related to cybersecurity. They also find that management disclosures about cybersecurity with a positive tone result in lower perceived management credibility, thus resulting in a lower inclination to invest if the audit report includes a CAM related to cybersecurity. In contrast, investors with low IT knowledge are more likely to invest if management disclosures about cybersecurity have a positive tone and there is no CAM related to cybersecurity. This highlights the different reactions of market participants with different knowledge and experience not only in equity markets, but in other aspects of business operations.

Archival research indicates that CAMs do not provide incremental information to investors. For instance, Lennox et al. (2022) concluded that disclosing the risk of material misstatements (RMMs), the predecessor to the KAMs in the U.K., has no significant effect on abnormal returns or abnormal trading volume, both frequently used as measures of investor reaction in short-window market reaction studies (e.g. Czerney et al., 2019). This implies that investors rarely find these additional disclosures informative. This was mainly attributed to the fact that investors have been communicated these risks through other means, such as earnings announcements or analyst conference calls, and have already been reflected in the stock price before the RMM was disclosed in the audit report.

Gutierrez et al. (2018) obtained similar results based on their study conducted in the U.K. Their study also involved a sample of firms whose audits were mandated to follow the 2013 version of ISA (UK) 700, which required auditors to disclose RMMs. When examining a sample of relatively younger, smaller firms with a weaker information environment in the U.K., namely the Alternative Investment Market (AIM), the researchers reached a similar conclusion (Gutierrez et al., 2024) and China (Liao et

al., 2024). They also find that riskier firms in AIM do not report longer KAMs than firms in the main market do. This implies that the length of KAMs is not a straightforward measure of the riskiness of the firm, nor that they provide sufficient details to the users with respect to the riskiness of the firm. Furthermore, Bédard et al. (2019) show evidence that Justifications of Assessments (or JOAs which are equivalent to CAMs and KAMs in France and have been included in the audit report since 2002) have no significant effect on abnormal returns or abnormal trading volume. Similar results were obtained by Burke et al. (2023) in their study based on U.S. data. These results are consistent with the notion that KAMs/CAMs are boilerplate disclosures that operate as "tick-box" reports.

Inversely, when examining a specific cross-section of firms in the U.S., namely large accelerated filers, Klevak et al. (2023) find that firms with more extensive CAM disclosures are associated with, on average, more volatile stock prices. The authors attribute the volatility to the view that investors perceive CAM disclosures as a risk. The authors also utilise textual measures of CAMs, such as the number of words and characters, to determine the extensiveness of the CAM, which highlights the importance of considering the textual attributes of CAMs towards understanding how users react to them. Similar results were obtained by Li and Luo (2023), who also used a sample of large accelerated filers, and found that reporting one CAM, compared to no CAMs, provides incremental information to investors. Furthermore, Elsayed et al. (2023) found evidence that information communicated in the expanded audit report in the U.K. impacts bid-ask spread, trading volume and market return volatility. Deneuve et al. (2024) examine the wording of KAMs in the U.K., and find that KAM risk descriptions for KAMs with the same topic but significantly different wording compared to the previous year and industry peers offer incremental information to investors.

Moreover, evidence from China suggests that abnormal trading volume and earnings response coefficient have changed following the adoption of the new auditing standards (Goh et al., 2023). The authors also claim that expanded audit reports are more useful for private sector firms than for state-owned ones and for firms with high information asymmetry.

There are a number of reasons as to why archival studies offer mixed results. To begin with, despite the U.K. and the U.S. being developed economies with well-established financial markets, the results obtained in one market should not be taken for granted in the other due to the different economic, regulatory and litigatory environment (Lennox et al., 2022; Simnett et al., 2016; Simnett & Huggins, 2014). Secondly, as pointed out in Elsayed et al. (2023), it is important not to limit RMM/KAM/CAM variables to the number of risks disclosed, but rather consider the type and content of the risks.

Examining the reaction of users to the type and content of CAM allows us to understand how users react to particular accounts being highlighted in CAMs by auditors, as well as how users react to the type of issue faced by the auditor. This is particularly important when examining the reaction of cross-sections of users, such as short-sellers, who are well-known for their ability to process information more efficiently than an average investor, and the online investment community. Additionally, most studies do not consider the differences between firms, such as the information environment of the firms, and instead pool all firms into one sample. In particular, large accelerated filers in the U.S. are more likely to have a different information environment than a non-accelerated filer. This is highlighted by Li and Luo (2023), who find that large accelerated filers that disclose one CAM provide incremental information to investors, compared to large accelerated filers that do not disclose CAMs. Understanding how investors react to CAMs of both kinds of firms is crucial to obtaining a holistic view of the true consequences of CAMs. Similarly, a key point in the studies presented above is that, unlike experimental studies, archival studies have not been able to distinguish between professional and non-professional investors. It is plausible to assume that investors with different degrees of experience and resources will react differently to the same piece of information (Kandel & Pearson, 1995; Miller, 1977; Rubenstein, 1993).

Therefore, this thesis attempts to take these two points into consideration. This is done by utilising the sample selection strategy from prior literature, when possible, that provided evidence of the informativeness of CAMs to users, namely large accelerated filers (Klevak et al., 2023; Li & Luo, 2023), and capture the reaction of professional investors. Specifically, similar to Blau et al. (2015), the first empirical Chapter uses short-sellers as sophisticated investors due to the complexity of the strategies they follow and their ability to process information efficiently and effectively (Boehmer et al., 2008; Chen et al., 2016; Diether et al., 2009; Drake et al., 2011; Engelberg et al., 2012). Furthermore, building on the notion that short-sellers are sophisticated investors who are able to process information efficiently, the Chapter takes into consideration the type of CAM disclosed, rather than just the number of CAMs. Furthermore, the second Chapter utilises the social media platform Twitter as a research setting to understand the discourse about CAMs in the online investing community. Specifically, the Chapter aims to investigate if Twitter users discuss the same topics as the auditor discloses in CAMs. Lastly, and as will be explained in the following Section, the thesis also investigates the reaction of internal users, namely managers, to CAMs, and how CAMs can influence the disclosure behaviour of management. Therefore, the main research questions of the second and third empirical Chapters can be phrased as follows:

RQ 2: How do short-sellers react to CAM disclosures?

RQ 3: Are CAMs relevant to Twitter's investor community?

3.8 Conclusion

Since the announcement of the changes in auditing standards, the expectation of significant changes to the audit report has ignited a boom in CAM research. Researchers were particularly interested in the determinants of the new disclosures, as well as the consequences of implementing such a substantial change to the audit report either directly, such as investor reaction, or indirectly, such as management reaction. Reviewing the literature in this domain of research allows us to not only obtain a more comprehensive view of the implications of the changes to the auditing standards, but also to deliberate on more empirical questions that may help further our understanding of CAM-related phenomenon and aid standard setters in improving the effectiveness of the new regulations.

This Chapter provides a review of relevant literature for CAMs. Specifically, the Chapter presents the four types of CAMs as presented in prior literature and as will be used in this thesis, where prior literature sorts CAMs into either measurement-related vs. classification-related, and account-related vs. entity-related. Next, the Chapter presents an overview of the literature investigating the significant determinants of CAMs from both the auditor/audit, such as audit firm and audit partner, and the client characteristics, such as size, complexity, intangibles ratio, goodwill, industry and the firm's position in its life cycle.

Then the Chapter discusses the literature on the effects of CAMs by focusing on four main consequences, namely litigation risk and jury perception, audit quality and audit fees, management reaction and investor reaction. An increase in litigation risk has been a primary concern for practitioners since the early stages of discussions about CAMs. Studies investigating the reaction of jurors to CAMs suggest that including few CAMs, with a particular focus on measurement-related CAMs is likely to lead to favourable juror perception of auditors. Furthermore, literature investigating the effect of CAMs on audit quality and audit fees suggests that while there is no observable effect on audit quality and fees after CAM implementation in the U.S., U.K. and Europe, compared to before CAM implementation, CAMs have helped make the audit process more fluent.

Additionally, the Chapter provides a review of the literature concerned with two groups of users and how they react to CAM disclosures, namely management and investors. The two groups have been picked specifically as the PCAOB points them out as the two groups that are most likely affected

by the changes in the auditing regulations, where management are expected to be impacted indirectly through the increased disclosure by the auditor, and investors are expected to be impacted directly since the changes to the audit report were directed at them. Prior literature supports the notion that CAMs affect managerial disclosure behaviour as a consequence. While previous studies have shown how CAMs are associated with an improvement in financial reporting quality, changes in managerial risk attitude and changes in the textual properties of the footnotes to the financial statements, it still remains to be seen if changes in management disclosure behaviour extend to other sections of the annual report. Therefore, the first empirical Chapter examines if and how managers respond to CAM disclosures through changes in the textual properties of the MD&A section of the annual report.

Finally, this Chapter provides an overview of prior literature that has provided mixed results as to the reaction of investors to CAMs, thus leaving the debate on the informativeness of CAM to equity investors unfinished. While a number of studies examined the reaction of investors with no regard to the differences in firm or investor characteristics, few studies examined a specific cross-section of firms, and none, within archival research at least, considered differences in investor sophistication. Therefore, and building on prior research, the current thesis aims to distinguish between sophisticated and non-sophisticated investors in the form of short-sellers and Twitter users, respectively.

Chapter 4: Data Collection and CAM descriptive statistics

4.1 Introduction

The purpose of this Chapter is to present the data collection using the main source of CAM-related data used in the empirical Chapters of this thesis, Audit Analytics. The main aim of the thesis is to investigate the reaction of Critical Audit Matter (CAM) disclosures on two groups of users that are specifically mentioned by the Public Company Accounting Oversight Board (PCAOB) in the documentation of Auditing Standard (AS) 3101 as the ones most likely to be affected by the new disclosures, namely equity investors and management. Specifically, the thesis considers the high variance in the equity investors and attempts to isolate two groups of investors; highly sophisticated investors in the form of short-sellers, and investors who obtain their information and investing advice from social media platforms in the form of the Twitter investment community.

Thus, the first empirical study (Chapter Five) of this thesis investigates the reaction of internal users through exploring if and how management change their disclosure behaviour in response to CAM disclosures. The second empirical study (Chapter Six) examines the reaction of short-sellers to CAMs, and the Third Empirical Chapter (Chapter Seven) investigates if the online investment community on Twitter finds CAMs relevant. Therefore, this Chapter will present the data collection, identification strategy and data cleaning steps taken in Chapters Five and Six due to the similarities of the process taken in both Chapters. The process undertaken in Chapter Seven will be presented in Section 7.4 due to its unique nature.

Moreover, the Chapter also presents insights into CAM-related data by presenting the descriptive statistics for CAMs and the CAM types presented in Section 3.2. This serves to expand on the notions presented in Chapter Three, where prior literature shows an association between industries and auditors, and CAMs. Lastly, the Chapter presents the CAM topic classifications that will be used in this thesis.

The remainder of the Chapter is organised as follows: Section 4.2 will describe the sample selection process for the first and second empirical Chapters, discussing management and short-sellers, respectively, by showing the initial sample obtained from Audit Analytics and the identical steps taken through the data cleaning process for both Chapters. Section 4.3 will present the descriptive statistics

for CAMs and types of CAMs, where Section 4.3.1 shows descriptive statistics by industry, Section 4.3.2 shows the descriptive statistics by auditor, and Section 4.3.3 presents the CAM topic classifications. Finally, Section 4.4 offers concluding remarks.

4.2 Data Collection Process from Audit Analytics

The starting point for the data collection process for all three Chapters is Audit Analytics. This database provides audit-related information, such as auditor name, going concern opinions, filer status (large accelerated filer or non-large accelerated filer) and, most importantly, CAM-related information. Since Chapter Seven (Empirical Chapter Three) has a unique nature, its identification strategy and data collection process will be explained in Section 7.4. Chapters Five and Six (Empirical Chapters One and Two) involve implementing a difference-in-differences research design, the starting date of the sample period is one year before the effective date of AS 3101 for large accelerated filers (30th of June, 2018), and the ending date is one year after the effective date (30th of June, 2020). This helps in generating the binary variable *post*, which receives the value of 1 if the firm/observation has a fiscal year ending on or after the effective date of AS 3101 (30th of June, 2019) (SEC, 2017). Large accelerated filers, which accounted for around 30% of domestic filers in the U.S. in 2019 (SEC, 2020b), are defined as firms with a public float of $700 million or more as of the last business day of the firm's most recent second fiscal quarter (SEC, 2020a), making all other firms with a public float less than $700 million non-large accelerated filers.

The objective of the identification strategy for Empirical Chapters Five and Six are different from Chapter Seven; Empirical Chapters Five and Six involve obtaining a balanced sample where the set of large accelerated filers (treatment group) is the same in the pre and post periods, and the set of non-large accelerated filers (control group) is the same in the pre and post periods.

The query for publicly audited firms for that sample period returns 48,068 observations with 14,218 unique firms. An issue with Audit Analytics is that if a firm has more than one auditor, the observation is repeated with identical information except for auditor-related variables. To address this, duplicates were removed based on the firm name, Central Index Key (CIK) number (the unique identifier for Audit Analytics) and year end date. This resulted in dropping 21,934 observations with no changes in the number of firms in the samples for both Chapters.

While both Chapters have different scopes, and therefore different data cleaning procedures, four identical steps were taken in both Chapters. First, a query was submitted in Compustat, which is the

database used as the main source of firm-level and stock-level data, to acquire two main variables to be used as filters, namely the issue type (TPCI), following Audi et al. (2016) and the Standard Industry Classification code (SIC), for the same duration as the sample period. This was done in order to eliminate firms whose TPCI variable was not equal to zero (common or ordinary shares), and which operating in the Finance, Insurance and Real Estate sectors (SIC starts with 6). Since Audit Analytics uses the CIK number as its unique identifier, while Compustat uses an internally developed identifier called gvkey, a number of firms in Compustat do not have a CIK variable, which resulted in a dropping 11,316 observations (6,572 firms). Furthermore, keeping observations with TPCI = 0 resulted in dropping resulting in dropping 3,281 observations (1,751 firms). Moreover, 2,333 observations (1,197 firms) were dropped due to their SIC starting with 6, due to their different nature and regulations governing them. Furthermore, to ensure comparability, non-large accelerated filers that have voluntarily chosen to disclose CAMs were dropped, resulting in the removal of 78 observations were removed. Lastly, six large accelerated filers post the AS 3101 effective date reported no CAMs were removed[4]. This resulted in a sample consisting of 9,120 observations and 4,698 unique firms that will be subjected to the unique data cleaning steps for the Fifth Chapter (presented in Section 5.4) and Sixth Chapter (presented in Section 6.4), which were taken in accordance with prior literature, as well as to obtain a balanced sample with no missing values.

This sample comprises 3,155 large accelerated filers (1,577 observations pre AS 3101 and 1,578 observations post AS 3101), and 5,965 non-large accelerated filers (3,016 observations pre AS 3101 and 2,949 observations post AS 3101). **Table 4.1** shows the identification strategy and sample composition, where **Panel A** shows identical steps taken in Chapters Five and Six with regards to the number of observations and firms dropped, and **Panel B** shows the sample composition.

[4] Their audit report has been manually checked to ensure this is not an error in the database used (Audit Analytics), and that their audit reported had a statement by the auditor indicating there are CAMs to disclose.

Table 4.1- Identical data cleaning steps taken in Chapters Five and Seven

Panel A - Identification Strategy for identical steps taken in Chapters Five and Seven

Sample selection steps	**Number of observations**	**Number of firms**
Initial sample from Audit Analytics	48,068	14,214
Less duplicate observations	(21,934)	(0)
Less observations dropped in merging process	(11,316)	(6,572)
Less observations with tpci ≠ 0	(3,281)	(1,751)
Less firms operating in Finance, Insurance and Real Estate	(2,333)	(1,197)
Less non-large accelerated filers with CAMs	(78)	(0)
Less large accelerated filers who reported no CAMs	(6)	(0)
Sample subjected to unique data cleaning steps	**9,120**	**4,698**

Panel B - Sample composition

	Pre AS 3101 effective date		**Post AS 3101 effective date**	
Sample composition	**Large accelerated filers**	**Non-large accelerated filers**	**Large accelerated filers**	**Non-large accelerated filers**
Full Sample	1,577	3,016	1,578	2,949

Notes: The table shows the identification strategy and the sample composition, where **Panel A** shows the initial sample obtained from Audit Analytics, and the identical steps taken in the data cleaning process, including the number of observations and firms dropped in every step, and **Panel B** shows the sample composition.

4.3 CAM descriptive statistics

The previous Section shows that the sample includes 1,578 large accelerated filers after the effective date of AS 3101 that reported CAMs. **Table 4.2** presents the descriptive statistics for the large accelerated filers that disclosed CAMs post the effective date of AS 3101. Following prior literature, and as discussed in Section 3.2, the table also shows descriptive statistics for the types of CAMs used in this thesis, where *acam* refers to account-related CAMs, *ecam* refers to entity-related CAMs, *mcam* refers to measurement-related CAMs and *ccam* refers to classification-related CAMs.

The table shows that the total number of CAMs in the sample is 2,565 CAMs, with a minimum of one CAM and a maximum of five CAMs. Moreover, the table reports an average of 1.625 CAMs for every firm, which is similar to the statistics presented by Burke et al. (2023), who report an average of 1.688 CAMs. The mean number of CAMs in the U.S. is less than that in the U.K. (Lennox et al., 2022; Reid et al., 2019), China and Hong Kong (Liao et al., 2022) and Bangladesh (Bepari et al., 2023). This could be attributable to the legal environment in the U.S. Furthermore, the table shows that measurement-related CAMs are the most frequently disclosed type of CAM (mean of 1.605 CAMs). This is an agreement with Pinto et al. (2020), who report that accounting standards that require high levels of professional judgment are the most common in their sample of European firms. Segal (2019) adds that areas in which audit clients use their own professional judgment, such as valuations, is an

area where the auditor is also expected to use his or her own professional judgment, which makes it a critical matter. The results of Kachelmeier et al. (2020) and Brasel et al. (2016) also imply that matters with high measurement uncertainty are of higher complexity, which would explain why they are more frequently disclosed by auditors. Moreover, similar to the statistics below, Sierra-García et al. (2019) and Lennox et al. (2022) find that account-related KAMs (mean = 1.233) are disclosed more frequently than entity-related CAMs (mean = 0.392) in their U.K.-based samples.

Table 4.2 - Descriptive statistics for CAMs

	Number of CAMs disclosed	Mean	Median	Std. Dev.	Min	Max
cams	2,565	1.625	1	0.743	1	5
acam	1,946	1.233	1	0.666	0	4
ecam	619	0.392	0	0.569	0	3
mcam	2,534	1.605	1	0.750	0	5
ccam	31	0.020	0	0.152	0	2

Notes: N = 1,578. The table shows the descriptive statistics for CAMs and the types of CAMs discussed in prior literature and this thesis, including the mean, median, standard deviation, minimum and maximum values for the cross-section of large accelerated filers after the effective date for AS 3101.

4.3.1 Descriptive statistics by industry

Furthermore, and as discussed in Section 3.3, different industries represent different types of risks and therefore the firm's industry plays an important role in the auditor's decision-making. **Table 4.3** presents the mean number of CAMs distributed by industries. The industries in the table, and this thesis, have been classified based on the Standard Industry Classification code (SIC). The table shows that manufacturing is the most represented industry in the sample, with 757 observations, while the Agriculture, Forestry & Fishing sector is the least represented industry with three observations. Furthermore, on average, Conglomerates receive the most number of CAMs (mean = 2.143), which could be a reflection of their nature as firms that operate in several industries simultaneously. On the other hand, on average, firms operating in the Agriculture, Forestry & Fishing sector receive the least number of CAMs (mean =1.333), account-related CAMs (mean = 1.000), and measurement-related CAMs (mean = 1.333). It is also interesting to see that firms operating in the Services industry have the second highest mean CAMs (mean = 1.673) and the second highest measurement-related CAMs (mean = 1.642). This may be attributable to the new revenue recognition standard, which had an effective date of December 15, 2019 (FASB, 2014), and involves specific guidelines on revenue recognition for services provided, which could have proved challenging to accountants and auditors at the time. A more detailed overview of CAM topics is presented in Section 4.3.3.

4.3.2 Descriptive statistics by auditor

Moreover, and as discussed in Section 3.3, prior literature has shown an association between auditors and the number of CAMs disclosed. Therefore, **Table 4.4** shows the mean number of CAMs distributed by auditors. Specifically, the table shows the mean number of CAMs for the Big 4 firms separately and non-Big 4 firms collectively[5].

[5] The sample includes 15 non Big-4 auditors.

Table 4.3 - Mean number of CAMs distributed by industry

Industry	N	Mean CAMs	Mean ACAM	Mean ECAM	Mean MCAM	Mean CCAM
Agriculture, Forestry & Fishing	3	1.333	1.000	0.333	1.333	0.000
Mining	73	1.589	1.205	0.384	1.589	0.000
Construction	27	1.593	1.444	0.148	1.593	0.000
Manufacturing	757	1.594	1.221	0.374	1.581	0.013
Transportation, Communications & Utilities	198	1.641	1.278	0.364	1.621	0.020
Wholesale Trade	64	1.672	1.188	0.484	1.594	0.078
Retail Trade	100	1.640	1.120	0.520	1.630	0.010
Services	349	1.673	1.261	0.413	1.642	0.032
Non-classifiable/ Conglomerate	7	2.143	1.571	0.571	2.143	0.000
Total	**1,578**	**1.625**	**1.233**	**0.392**	**1.606**	**0.020**

Notes: the table shows the mean CAMs and types of CAMs distributed by industry. Industries have been classified based on the Standard Industry Classification code (SIC).

Table 4.4 - Mean number of CAMs distributed by auditor

Auditor	N	Mean CAMs	Mean ACAM	Mean ECAM	Mean MCAM	Mean CCAM
Deloitte	320	1.497	1.163	0.334	1.481	0.016
EY	467	1.814	1.355	0.458	1.799	0.015
KPMG	286	1.594	1.217	0.378	1.545	0.049
PWC	118	1.532	1.181	0.351	1.527	0.005
Other	387	1.61	1.153	0.458	1.585	0.025
Total	**1,578**	**1.625**	**1.233**	**0.392**	**1.606**	**0.020**

Notes: the table shows the mean CAMs and types of CAMs distributed by Big 4 and non-Big 4 auditors, whereas Other auditors include 15 non-Big 4 audit firms.

The table shows that EY is the most represented audit firm in the sample (N = 467), while PWC is the least represented audit firm of the Big-4 (N = 118). Unlike Sierra-García et al. (2019) and Bepari et al. (2022), the table shows that EY, on average, reports the most CAMs. Additionally, EY reports the highest mean of account-related CAMs, entity-related CAMs, and measurement-related CAMs, while KPMG reports the highest mean of classification-related CAMs. The difference between the statistics reported in **Table 4.4** and prior studies could be due to the different country setting. It is worth noting that non-Big 4 auditors report the same mean number of entity-related CAMs as EY, while reporting the smallest mean number of account-related CAMs, which could be a reflection of the riskiness of their choice of clientele, of the riskiness of the industry of their clients. Lastly, Deloitte reports the lowest mean number of CAMs, entity-related CAMs and measurement-related CAMs.

4.3.3 CAM topics

Table 4.2 reports that the sample of large accelerated firms reported 2,565 CAMs. These CAMs are distributed over 51 topics. Following Burke et al. (2023) and Duboisée de Ricquebourg and Maroun (2024), this thesis classifies the 51 topics into ten classifications. **Table 4.5** provides an overview regarding the classifications of the CAMs in the sample, their frequency, percentage and cumulative percentage.

The table shows that Non-financial assets, Revenue and Sales matters, Business Combinations and Taxes are the most reported CAMs in the sample, with 32.904%, 18.558%, 14.893% and 11.189%, respectively. The top four classifications correspond to those of Burke et al. (2023), who also use the U.S. as a research setting, but use only seven classifications. These statistics also correspond to the most common KAM types in other jurisdictions (e.g. Ecim et al., 2023) Additionally, Mahoney (2019), Klevak et al. (2021) and Whalen et al. (2020) all reported that goodwill and revenues are among the highest discussed matters. The high frequency of CAMs concerning Revenue and Sales related matters could be due to new revenue recognition standards in the form of ASC 606 coming into effect for periods beginning after 15 December 2017 (FASB, 2014). Concerns have already been raised that delays in the implementation of the revenue recognition standards in the U.S. could result in significant challenges for firms and their auditors (Hollie, 2020). The implementation of any new accounting standard is challenging for both accountants and auditors. The lack of both guidance and expertise for a newly published standard could be perceived as imprecise (Ozlanski, 2019). Furthermore, implementing a newly published standard is known to be challenging, as firms need to modify their

existing accounting software, related internal policies, and contracts with existing customers if necessary, and the delays in implementation of the revenue recognition standards in the U.S. were considered an indicator that practitioners will face difficulties with the standards (Hollie, 2020). Burke et al. (2023) also reported that matters involving high degrees of professional judgment are frequently reported as CAMs, which explains the frequency of CAMs relating to business combinations. These statistics are also consistent with the findings of Cordoş et al. (2020) in the U.K. and Lau (2021) in China, who reported matters that require high levels of professional judgment as frequently reported in Chinese audit reports.

Table 4.5 - CAM topic classifications

CAM topic classification	Frequency	Percent	Cumulative
Non-financial assets	844	32.904%	32.904%
Revenue and Sales related matters	476	18.558%	51.462%
Business Combinations	382	14.893%	66.355%
Taxes	287	11.189%	77.544%
Liabilities and Provisions	242	9.435%	86.979%
Systems, Policies & governance	214	8.343%	95.322%
Complex Estimates	66	2.573%	97.895%
Operating Expenses	34	1.326%	99.220%
Financial Assets	18	0.702%	99.922%
Fresh Start Accounting & Going Concern	2	0.078%	100%
Total	**2,565**	**100%**	

Notes: The table presents the ten CAM topic classifications used in this thesis, along with the frequency of their occurrence, percentage and cumulative percentage.

4.4 Conclusion

The aim of this Chapter is to present the data collection and data cleaning steps utilised in Empirical Chapters One and Two of this thesis. The Chapters empirically investigate the reaction of management and short-sellers to CAM disclosures, which is now a requirement for listed firms in the U.S. under Auditing Standard 3101. Therefore, the primary source of audit and CAM-related data was Audit Analytics. Firm-level filters were obtained from Compustat. The Chapter also shows the final sample of firms used in both Chapters before applying any unique filters pertaining to the individual studies.

Moreover, the Chapter also presents descriptive statistics for CAMs and the CAM types presented in Chapter Three, and deliberates on the notions presented in the literature review regarding the association between industries and auditors, and CAMs. The statistics show that while weakly

presented, conglomerates report, on average, the highest number of CAMs, account-related CAMs, entity-related CAMs and measurement-related CAMs, followed by firms operating in the services industry, who report the highest number of CAMs and measurement-related CAMs, on average. This could be attributable to the nature of the industry, or the introduction of new accounting standards that require time to be familiar with.

Furthermore, the statistics show that EY, on average, reports the highest number of CAMs, account-related CAMs, entity-related CAMs, and measurement-related CAMs, while Deloitte, on average, reports the lowest number of CAMs, entity-related CAMs and measurement-related CAMs. Moreover, non-Big 4 firms, on average, report a higher number of entity-related CAMs than Big-4 firms. This could be due to the nature of their clients.

Lastly, the Chapter presents the CAM topic classifications that will be used in this thesis. The statistics in this Chapter report that CAM topics related to non-financial assets, revenue recognition, business combinations and taxes are the top four reported topics in the sample, which is in line with the expectations set earlier in the literature, and similar to studies using the U.S. as a research setting. This Chapter, along with the literature review in the previous Chapter, serves as a basis upon which the empirical work done in the next three Chapters will be presented.

Chapter 5: Do Critical Audit Matters impact Management Discussion & Analysis?

Abstract

Motivated by empirical, anecdotal and theoretical evidence that suggests that Critical Audit Matter (CAM) disclosures are associated with management reporting behaviour, this study aims to investigate if and how CAMs affect narrative disclosures by management. Using a balanced sample of 5,320 observations, the study investigates if CAMs are associated with changes in the textual properties of Item 7 of the 10-K report, the Management Discussion and Analysis (MD&A) section. The findings show that while there are significant changes to the MD&A sections for large accelerated filers after the addition of CAMs to the audit report, most of the changes in the MD&A cannot be attributed to the changes in auditing regulations. The results are persistent for alternative measures of the textual properties. Moreover, following prior literature that suggests that auditors influence the textual properties of the MD&A text, the results of additional tests provide evidence that the type, topic and number of CAMs are associated with changes in the MD&A textual properties. Overall, the study adds to the literature on the spillover effects of CAMs, which enhances our understanding of the consequences of the new auditing regulations.

5.1 Introduction

The aim of this Chapter is to investigate if and how management responds to Critical Audit Matter disclosures (CAMs) through changes in the textual properties of the Management Discussion and Analysis section (MD&A) in the annual report. In response to demands for more transparency and disclosures in the audit report, the Public Company Accounting Oversight Board (PCAOB) introduced considerable changes to expand audit reports. The most noteworthy of these changes came courtesy of the new Auditing Standard AS 3101, which is concerned with the Auditor's Report on an Audit of Financial Statements When the Auditor Expresses an Unqualified Opinion (PCAOB, 2017). AS 3101 now requires auditors of U.S. listed firms to disclose CAMs as a means of reducing information asymmetry between financial statement users and auditors. CAMs are defined as matters that have been deemed to be particularly challenging or complex, or matters that require complex auditor judgement. The standard also dictates that auditors explain how they addressed the matter to obtain reasonable assurance (PCAOB, 2017).

While advocates of the new regulation argued that CAMs will allow external users to assess key areas that auditors identified as areas of concern, auditors and firm management highlighted some of the consequences of the new auditing regulation (PCAOB, 2017). For instance, some users communicated that the reporting of CAMs may lead to management increasing their attention to the relevant financial statement area, thus improving the quality of their disclosure (PCAOB, 2017). The reasoning behind this is consistent with the accounting theory of disclosure, where management tends to disclose information only if the benefit of disclosure is higher than the cost. Specifically, if management's objective is to maximize their firms' market capitalisation, and there are costs associated with the disclosure of information, then management will tend to disclose information that has a favourable outcome, and withhold information that has an unfavourable outcome (Verrecchia, 2001). Yet, by disclosing certain information in CAMs, auditors, in their capacity as an unbiased third party, are highlighting certain financial statement areas. This will lead to higher benefits for disclosure and higher costs for withholding for management; on one hand, by repeating the critical matters discussed by auditors in the narrative disclosures, management may be able to mitigate the risk associated with auditors disclosing CAMs, which is line with the notion that managers use repetitive disclosures to highlight firm-specific events (Li, 2019). On the other hand, withholding information that is already disclosed by auditors may lead to possible litigation risk or detection risk, thus putting pressure on management to become more forthcoming.

This is supplemented by empirical evidence that shows that CAM disclosures may have a significant impact on management behaviour. For instance, Reid et al. (2019) provide evidence that KAM disclosures in the United Kingdom are associated with improvements in financial reporting quality. This is consistent with the notion of "threat of disclosure", where disclosures by an auditor may push management to adopt better accounting practices due to their concern that the public might find out a matter of concern through channels other than the management themselves. Similarly, Burke et al. (2023) and Jahan and Karim (2024) find significant changes to the financial statements' footnotes referenced by CAMs. The authors attribute the result to the perception that conflicting or misaligned disclosures may expose both auditors and management to unnecessary avoidable litigation. Moreover, Elmarzouky et al. (2022) find a significant positive association between the areas disclosed in KAMs by auditors and the risk information disclosed by managers in the U.K. Similarly, Hosseinniakani et al. (2024) find that KAMs and management disclosures are correlated in their sample of Swedish listed firms. Furthermore, when investigating how CAM reporting affects management behaviour, Bentley et al. (2021) uses an experimental setting to provide evidence that CAM disclosures influence the risk attitude of managers. This is consistent with Gold et al. (2020), who use a similar research setting, and show that managers' tendency to make aggressive reporting decisions is reduced post-KAM implementation in a European context.

Furthermore, from a practitioner's perspective, dialogue between management and auditors often involves discussions and negotiations that result in changes to the financial statements (Beattie et al., 2000). Since this dialogue now includes discussing CAM disclosures (Wilson, 2021), it is expected that auditors now hold more leverage in the discussion, which may drive management to be more forthcoming in their disclosures (Burke et al., 2023). This provides merit to the notion that a major consequence of CAM disclosures is changes to management behaviour through their disclosure. Additionally, the PCAOB articulate that:

> *"The communication of critical audit matters could also heighten management's attention to the relevant areas of financial statements and related disclosures. Several commenters stated that the reporting of critical audit matters would lead management to improve the quality of their disclosures or adopt more widely accepted financial reporting approaches in these areas."* (PCAOB, 2017, p.81)

Alternatively, it is reasonable to assume that since new auditing standards pertain to auditing disclosures, it may not affect management behaviour or disclosure, particularly since the information

disclosed in CAMs cannot be outside the boundaries of what management has previously disclosed (PCAOB, 2017). Secondly, a number of practitioners and academics raised concerns regarding the effect of disclosing CAMs on the relationship between auditors and management; by losing a certain degree of control over the information that is publicly disclosed, management may be less likely to forthcoming in their disclosures with the public under the new CAM regulations, compared to pre-CAM regulations (Cade & Hodge, 2014; Clayton, 2017; Gold & Heilmann, 2019; Katz, 2013). Additionally, recent literature indicates that CAMs may be a signal of poor accruals quality in the U.S. (Li et al., 2024). Therefore, the debate on the extent of the influence of CAMs on managerial disclosure behaviour is far from settled.

Thus, in an attempt to contribute to the literature investigating the consequences of CAMs on managerial disclosure behaviour, this study exploits the exogenous shock of the new auditing standard in the U.S. to investigate if and how CAM disclosures impact the textual properties of the MD&A section of the 10-K report. This is done through scraping and mining the MD&A section for 6,316 firm-year observations in the U.S. by using a Python code that enables the user to extract data directly from the EDGAR database. The identification strategy takes advantage of the staggered implementation of AS 3101 to establish a difference-in-differences research design, where large accelerated filers in the U.S. were mandated to disclose CAMs for the fiscal year ending June 30, 2019, and all other firms in the fiscal year ending on or after December 15, 2020 (SEC, 2017).

By focusing on the MD&A section for U.S. firms, the study avoids a number of caveats in prior research. First, the limited research investigating the effect of expanded audit reports on managerial disclosure behaviour has been experimental (e.g. Bentley et al., 2021; Gold et al., 2020), while this study attempts to build on this existing literature using archival evidence and utilising a difference-in-differences approach by using AS 3101 as an exogenous shock. By examining management disclosure behaviour empirically, this study helps "*narrow the gap*" between archival and experimental/behavioural research in accounting (Kachelmeier, 2010). Additionally, using archival research that builds on behavioural research helps in understanding and predicting the decision-making processes of firms (Hanlon et al., 2021). Furthermore, archival studies overcome some of the inherent drawbacks of experimental research, such as external validity (Asbahr & Ruhnke, 2019; Podsakoff & Podsakoff, 2019) and non-response bias (Guiral-Contreras et al., 2007), due to its capacity to analyse real-life data that is related to decisions that arise from firms' operations (Maines & Wahlen, 2006). Second, previous relevant studies have used the U.K. (Elmarzouky et al., 2022; Reid et al., 2019) as their setting.

The present research's setting, the U.S., offers an ideal backdrop to extend this line of research as due to the structured, standardised formats of U.S. data that facilitate data scraping and mining (Burke et al., 2023; Lee, 2020). Furthermore, the U.S. offers a different setting where the mean number of reported CAMs is lower (Burke et al., 2023; Lennox et al., 2022), CAMs offer less informative value (Wilson, 2021), and the business environment is significantly more litigious (Simnett et al., 2016). This implies a different decision-making process by auditors when choosing which CAMs to disclose due to the perceived high litigation risk. Therefore, investigating a jurisdiction with these characteristics helps in understanding the true influence of the new regulations, and enriches our comprehension of how country-related differences lead to differences in CAMs (Federsel & Hörner, 2023). Thirdly, Burke et al. (2023) provide evidence of the impact of CAM disclosures on changes in the financial statements footnotes in the U.S., which, by nature of being part of the audited financial statements in item 8 of Form 10-K, are audited as part of the conventional financial statements audit. Meanwhile, the MD&A, or item 7 in 10-K reports, provides an unaudited view to management's insight as to the economic events and conditions of the company, while still subject to Item 303 of Regulation S-K of the Securities and Exchange Commission (SEC, 1989). This offers a unique mix of mandatory and voluntary unaudited disclosures that provides

> *"investors with an opportunity to look at the company through the eyes of management by providing both a short- and long-term analysis of the business of the company"* (SEC, 1989).

Choosing the MD&A section as the subject of this study is also motivated by prior literature that shows its importance to external users. As one of the most widely read disclosures in annual reports (Li, 2010a; Li, 2019), the MD&A section has been of great interest to researchers for more than a quarter of a century as it represents a key narrative disclosure requirement by the SEC. Narrative disclosures, such as MD&A offer significant information about economic and industry-related matters that management deems important, and give insight into present and future action (Smith & Taffler, 1995). Moreover, Prior literature has shown the relevance of the MD&A section to analysts (Clarkson et al., 1999; Tarca et al., 2011) as well as investors (Brown & Tucker, 2011). Additionally, prior studies have shown the influence of MD&A, and narrative disclosures in general, on future financial performance (Cole & Jones, 2004; Li, 2010a), sales growth (Curtis et al., 2014), bankruptcy (Smith & Taffler, 2000), investing decisions (Lawrence, 2013), and earnings management (Li, 2010a). Furthermore, Muslu et al. (2015) provide evidence that information in the MD&A, to some extent, mitigates poor information environments for firms. Additionally, prior literature has shown the

importance of the MD&A section in communicating certain firm-specific information to investors (Li, 2019). This indicates that the MD&A is an effective tool for management to communicate with investors should they choose to respond to the increased benefit of disclosure, or heightened cost of withholding information.

By exploring the changes in management disclosure behaviour in the MD&A as a consequence of CAM disclosures, this study contributes to the literature in two main ways. First, the study responds to the call for more research investigating the factors influencing management disclosure in the MD&A section (Cole & Jones, 2005). The MD&A section is unique in the sense that it provides qualitative information on financial statement items, making it an ideal setting for studying textual properties of management disclosures (Dutta et al., 2019). The type of information in the MD&A section as well as its unaudited nature makes it unique compared to other forms of narrative disclosures, such as financial statement footnotes or press releases (Burke et al., 2023; Davis & Tama-Sweet, 2012). Moreover, despite the importance of the MD&A section, this line of research has been restricted by the high cost of collecting and analysing huge amounts of textual data. Yet recent advances in technology facilitate overcoming that restriction, and allow us to further our understanding of the changes to management disclosure behaviours.

Secondly, the study expands current literature on the spillover effects of audit regulations (e.g. Cheng et al., 2019; Duguay et al., 2019; Gordon et al., 2006), and, more specifically, CAM disclosures. While most recent studies investigate the effect of expanded audit reports on market reactions (Bédard et al., 2019; Burke et al., 2023; Christensen et al., 2014; Gutierrez et al., 2018, 2024; Lennox et al., 2022; Li & Luo, 2023; Liao et al., 2023; Sirois et al., 2018), audit quality and audit fees (Asbahr & Ruhnke, 2019; Li et al., 2019; Reid et al., 2019), and auditor liability (Brasel et al., 2016; Gimbar et al., 2016; Kachelmeier et al., 2020), only a limited number of studies examine the consequences of CAM disclosures. By focusing on management reporting behaviour in the MD&A, we are able to understand how managers react to the new auditing regulations in the way they modify narrative disclosures. This allows us to obtain a more holistic view of the consequences of the new auditing requirements, and extend current knowledge about the consequences of CAM disclosures using empirical data on the section of the annual report that represents the truest insight into managerial reporting.

The study uses a balanced sample of 1,175 adopters and 1,485 non-adopters listed in the U.S. stock market for the period starting June 2018 and ending 2020, which is one year before and after the effective date of AS 3101, making the sample a balanced sample for the post and pre-effective date of

the standard. The study simultaneously uses a matched sample of 592 observations where non-adopters are matched based on a propensity score. The results of the regression for the full sample show changes in the textual properties of the MD&A section for the treatment group (adopters/ large accelerated filers) after the introduction of CAMs to the audit report, however, the results of the more robust difference-in-differences analysis for the matched sample show insignificant coefficients for all measures of textual properties except complexity. The results are persistent for alternative measures of the textual properties. This implies that while there were changes to the MD&A sections during the sample period for the firms in the sample, most changes cannot be attributed to the introduction of CAMs. Moreover, following prior literature that suggests that auditors influence the textual properties of the MD&A text (De Franco et al., 2020), the results of additional tests provide evidence that the type, topic and number of CAMs are associated with changes in the MD&A textual properties.

The remainder of this Chapter is organized as follows. Section 5.2 reviews prior relevant literature, where Section 5.2.1 presents literature with regards to the MD&A section and Section 5.2.2 presents literature on how CAM disclosures may lead to changes in narrative disclosures. Section 5.3 presents the methodology and variables used in the regression model. Section 5.4 shows the process of data collection and the sample identification strategy. Section 5.5 presents the descriptive statistics. Results are presented in Section 5.6. Finally, Section 5.7 presents the conclusion, limitations and areas for future study.

5.2 Literature Review

5.2.1 What is MD&A?

The MD&A section of the 10-K was introduced in 1980 by the SEC as a means for investors to assess a firm's liquidity, capital resources and operations in a simple way using text (Li, 2010a). It is also management's chance to provide investors with its views on trends and risks that have influenced the firm in the past, or are reasonably likely to have a material impact on the firm in the future. The MD&A section is included as a section in Forms 10-K and 10-Q, which should be filed within 60-90 and 40-45 days from the end of the fiscal quarter, respectively. Yet the scope of this study focuses on the MD&A section in the annual Form 10-K as CAMs are disclosed annually. As a mandatory item in Form 10-K, namely item 7, the preparation of the MD&A is a highly structured process that is consistent with the formality and repetitive nature of the preparation of financial statements (Tarca et al., 2011).

According to Item 303 of regulation S-K, the SEC requires the disclosure of five components for the full fiscal year (SEC, 2020b). Specifically, it requires the disclosure of matters relating to liquidity, capital resources, results of operations, off-balance sheet arrangements, contractual obligations (Cole & Jones, 2005)[6]. Additionally, regulations also require the disclosure of critical estimates and policies, transactions and events that have had a material effect on the firm, as well as significant components or revenues and expenses that are material to the results of operations (SEC, 2008). Furthermore, the requirement allows discretionary disclosures by management which cover certain topics that pertain to the economic situation and events of the firm. In other words, management is required to discuss the firm's historical performance, current financial conditions and future prospects while having the discretion to decide the extent of the information disclosed in these topics (Brown & Tucker, 2011; Li, 2019; Tarca et al., 2011). Minutti-Meza (2021) notes on the similarities between the language used for critical accounting policies and estimates in MD&A by the SEC and CAMs by the PCAOB, where there is a clear focus on "*subjective, or complex*" (PCAOB, 2012; 2017) judgement by the preparer of the disclosure. This provides a unique mix of mandatory and voluntary, unaudited disclosures that provide a unique insight into management's representation of the firm's economic conditions, give investors the opportunity to look at the firm through the eyes of the management, and allow the reader to assess the economic situation of the firm.

Moreover, the requirements of the MD&A section distinguish it from other narrative disclosures in the 10-K. Specifically, the MD&A section discusses matters that pertain to the firm's operations, in contrast to item 1A, which discusses risk factors, and item 7B, which discusses quantitative and qualitative disclosures about market risk (SEC, 2021). Additionally, the frequent changes in the MD&A section provide a more accurate and more timely representation of the operations of the firm (Brown & Tucker, 2011). Furthermore, the MD&A provides an unaudited view of management's insight into the economic events and conditions of the company. This is contrary to the notes to the financial statements, which, by nature of being part of the audited financial statements in item 8 of Form 10-K, do not fall within the "*safe harbour*" (SEC, 2008) of being able to provide forward-looking information. Therefore, the requirements and nature of the MD&A disclosures provide a unique opportunity to investigate changes in narrative management disclosures after CAMs are disclosed (SEC, 2008). While the MD&A section is not audited by external auditors, Tarca et al. (2011) argue that the MD&A section is a key component of the accountability mechanisms built into the

[6] Cole & Jones (2005) provides a more detailed summary of major MD&A requirements.

institutional environment of public firms. In other words, the public holds management accountable for what is disclosed in the section even though there is no formal audit taking place.

Since managers have some degree of flexibility to elect what information is disclosed (Tarca et al., 2011), it is expected that management will react to the inclusion of CAMs by changes in the narrative disclosures, as CAMs point out certain matters in the financial statements and provide additional information regarding them. Therefore, the uniqueness of the MD&A section allows for a comparison of the information disclosed in both sections. The next Section will present evidence from prior literature as to why a change in auditing regulations is likely to result in a change in the MD&A section, and why are CAMs specifically likely to result in a change in the textual properties of the narrative disclosure.

5.2.2 Can CAMs lead to changes in the MD&A section?

The proposition that disclosing CAMs may lead to changes in management disclosure behaviour through changes in the textual properties of the MD&A section is based on anecdotal, theoretical and empirical evidence. In the earlier stage of the development of AS 3101, the PCAOB has iterated its expectation that the communication of CAMs could lead to management giving more attention to the relevant areas of the annual report due to the fact that auditors are now emphasizing certain parts of the financial statements (PCAOB, 2017). Additionally, prior research shows that a change in reporting requirements can have a spillover effect. Gordon et al. (2006) provide evidence that the Sarbanes-Oxley Act (SOX) of 2002 has led to changes in the voluntary disclosure of information security activities by management. This is based on the rationale that SOX led to more monitoring and scrutiny of the information disclosed by firms. Additionally, Bruce Webb, chairman of the American Institute of Certified Public Accountants' (AICPA) auditing standards board at the time, proclaims that CAMs will lead to management reconsidering the quality and efficiency of their reporting processes and controls (Katz, 2014). This is also supported by Wilson (2021), who offers another practitioner's perspective. He contends that since auditors are now reporting the key matters that were addressed during the year to the audit committee, management now has access to richer, more detailed information that would supplement their disclosures.

The anecdotal evidence above is consistent with the accounting theory of disclosure (Verrecchia, 2001). In general terms, the disclosure theory suggests that disclosures will be more forthcoming if

the cost of the disclosure and the incentive to withhold information is less than the benefit obtained from the disclosure (Verrecchia, 2001). Disclosure costs usually include potential legal liability, risk of detection, reduced consumer demand and any other consequences that pertain to altering the evaluation and compensation of management (Dye, 1985; Peters & Romi, 2013). These costs create incentives for management to withhold information. Yet the disclosure of CAMs is a unique phenomenon where the information is disclosed by a third party about management's estimates and accounting policies (Bentley et al., 2021). Therefore, the disclosure of CAMs may lead to an increase in the salience of certain areas of concern in the financial statements, which raises the likelihood of litigation and detection, thus changing the behaviour of management into one that is more transparent. In other words, by disclosing CAMs, management's cost of withholding information increases. Additionally, if management respond to the auditors' disclosure of CAMs in the MD&A by deliberating on the matter highlighted by the auditor, they may be able to mitigate the risks associated with CAM disclosures, thus increasing the benefits of disclosure. This is consistent with Li (2019), who points out that managers often use disclosures in the MD&A to highlight certain firm-specific events.

Therefore, in an attempt to understand the consequences of expanded audit reports, a number of studies investigated the impact on managerial disclosure behaviour. For instance, Gold et al. (2020) use experimental research with Germany-based participants to provide evidence that managers' tendency to make aggressive reporting decisions is reduced in the presence of KAMs, compared to when KAMs are absent. Specifically, the authors find that KAMs serve as a mechanism that pushes management to reconsider the level of detail in their disclosures. In their experimental study, they note that managers tend to disclose more information about a particular matter if the auditor discloses a KAM for the same matter. They also note that the level of detail in the KAM has no significant impact on the tendency of managers to disclose more information. The theoretical foundation of their study is rooted in the accountability theory, where the expectation that one might be accountable by justifying one's decision leads to more complex information processing, and affects judgement and decision quality, thus leading to a higher degree of effort in one's judgement and decision making (Tetlock, 1983, 1985). This suggests that managers expect to be accountable for their judgements, or disclosures, and thus expect to have these disclosures scrutinized more heavily in the presence of KAMs, as compared to pre-KAM reports. Similarly, Bentley et al. (2021) find that due to CAM disclosures, managers are incentivised to make less risk-increasing activities.

Furthermore, Reid et al. (2019) find that KAM disclosures in the U.K. are associated with an improvement in financial reporting quality. They attributed this association to the "threat of disclosure", where management is more likely to change their disclosures if they are concerned that the auditor may identify the relevant financial statement area as an area of concern. Their results imply that CAMs may be operating as a monitoring mechanism for management, which could ultimately lead to an improvement in reporting behaviour by management in other disclosures as well. Similarly, managers may be modifying their disclosures after the implementation of CAM disclosures due to the risk of detection. Prior literature has shown that a higher risk of detection reduces the likelihood of financial misconduct (Cassell et al., 2015; Lee et al., 2006). Therefore, since the new disclosures in the audit report lead to a higher transparency, which would increase the likelihood of detection of any financial misdoing, thus, management is more likely to revise or modify their disclosures in a more complete and accurate manner.

Additionally, Fuller et al. (2021) finds that a detailed CAM disclosure, coupled with strong audit committee oversight, leads to increased management disclosure in an experimental research setting. Burke et al. (2023) find that footnotes to the financial statement that are referenced by CAM are, on average, longer, contain more uncertain words (i.e., use a more cautionary language), and have more differences than the footnotes of the prior year (i.e., stickiness). A possible explanation for these changes is that dissonance between auditor and management disclosures may lead to avoidable litigation (Burke et al., 2023), which is why management may be incentivized to expand on their own disclosures about a given matter if auditors make any reference to it. Al-mulla and Bradbury (2022) also found that firms that received an inventory-related KAM disclosed more information about their inventory than firms that did not receive an inventory-related KAM using a sample based in New Zealand. Similarly, Drake et al. (2024) found evidence that tax-related CAMs are associated with the firm being less likely to use tax expense as an earnings management instrument, which is an indicator of higher financial reporting quality, in their U.S. based sample. Similar results were obtained by Jahan and Karim (2024), who find that auditors' engagement with management leads to an improvement in management's information sets. They also find that goodwill-related CAMs increase the length and use of uncertain words in the relevant financial statement footnotes. This provides an example of the leverage that auditors have on management, and gives support to the notion that management is likely to change their behaviour after the disclosure of CAMs. The results are consistent with Beattie et al. (2000), who contend that discussions and negotiations between firms and auditors are a regular occurrence, and that these negotiations result in changes to the disclosures by management. Similarly,

Elmarzouky et al. (2022) find that narrative risk disclosure in the U.K. is positively associated with the inclusion of CAM disclosures in the audit report. Dwyer et al. (2023) also report a high similarity rate between auditor-identified risks and audit committee-identified risks in their U.K. based sample. Similar results were obtained by Hosseinniakani et al. (2024), who found a significant relationship between auditor and management disclosure quality.

Alternatively, a number of academics and professionals have point out that the changes in management disclosures due to CAMs may be negative rather than positive. For instance, former SEC chairman Jay Clayton stated that a deterioration in the relationship between auditors and firms is to be expected due to the introduction of CAMs (Clayton, 2017). This is supported by Carol Tomé, CFO of Home Depot, who contended that auditors are "*not well suited to independently report information about the company beyond what is required to be disclosed by management under GAAP and [Securities and Exchange Commission] regulations*" (Katz, 2013). This might imply that increased disclosure in the form of CAMs may lead to tension between auditors and the audit committee. Indeed, Cade and Hodge (2014) find evidence that managers are less likely to share accounting information regarding key accounting estimates under the new CAM regulations, compared to pre-CAM regulations. The authors attribute this behaviour to management losing a certain degree of control over public disclosure. This implies that CAMs may have led to a decrease in the overall quality of communication from management, which is a potential serious adverse consequence of CAM disclosures (Gold & Heilmann, 2019). Additionally, recent literature indicates that recurring CAMs in the U.S. are associated with poorer accruals quality, particularly for firms with a weaker information environment. (Li et al., 2024).

Yet the disclosure theory implies that management avoids disclosures that have high disclosure-related costs, or proprietary costs, such as disclosures that will consume significant time and effort to prepare, audit and interpret, or disclosures that will lead to an adverse market reaction, or disclosures that will highlight managers' self-interest (Fischer & Verrecchia, 2000; Li et al., 2018; Peters & Romi, 2013; Robinson et al., 2011; Verrecchia, 1983, 2001). Therefore, if the CAMs disclosed by the auditor discuss an area of the financial statements that has already been sufficiently deliberated in the audit report, management will have no incentive to change their disclosure behaviour.

Thus, with most anecdotal, empirical and theoretical evidence implying that CAMs may lead to changes in the MD&A section, it is important to understand that the MD&A section is also expected to change from one year to the next due to changes in the firm's economic conditions and events, which would allow the reader to formulate a more accurate assessment (Brown & Tucker, 2011). This

creates a possible bias where it is hard to distinguish changes in the MD&A that are caused by economic changes and changes that are directly attributed to CAMs, if any. For instance, in 2019 Microsoft received a CAM discussing uncertain income tax provisions. While the MD&A section in 2019 discusses the same topic, management provided these disclosures to discuss the steps taken as a response to the Tax Cuts and Jobs Act for the years 2018 and 2019. **Figure 5.1** shows an excerpt of the MD&A for both years. Therefore, while it is possible to investigate changes in the MD&A by observing the direct changes in the text and topics of the MD&A pre and post-CAM disclosures through Bag-of-Words methods, it is difficult to establish causality, or even argue for a strong correlation, between the introduction of CAMs and the words used in the MD&A.

Therefore, and in line with prior research, the study investigates the changes in managerial disclosure behaviour by observing the indirect effects of introducing CAM disclosures on the textual properties of MD&A sections. **Figure 5.2** summarises the proposed relationships between CAMs and the MD&A section presented in the literature, where the figure shows direct and indirect changes in MD&A sections, as well as the possibility of no changes, where the aim of this study is to investigate the indirect changes to the MD&A section.

The preparation of the MD&A section involves both routine and ad hoc disclosures. Therefore, the section is seen by many as a reflection of the attitude of the firm; the more compliance or routine disclosures the text has, the more compliance-oriented the section is, thus the resulting MD&A is seen as a historical account of the events of the fiscal year. Additionally, the MD&A could be an honest assessment of the economic condition and events of the company through the eyes of the management (Tarca et al., 2011). By considering that auditors will disclose their own prioritised information in the form of CAMs, and given that prior literature shows that managers will be inclined to change their disclosures to match auditors' disclosures, to avoid possible costs of detection, it is expected that managers will be more inclined to change their disclosure behaviour in the MD&A section post-CAMs, as compared to pre-CAM reports. Yet, some empirical evidence and practitioners' accounts offer a counterpoint, and imply that management is less likely to modify their disclosures as a result of CAM disclosures in the audit report. Accordingly, the research questions is formulated as follows:

RQ 5.1: How do managers react to CAM disclosures by modifying the MD&A section?

RQ 5.2: How do managers react to the different types of CAM disclosures?

RQ 5.3: How do managers react to the different topics of CAM disclosures?

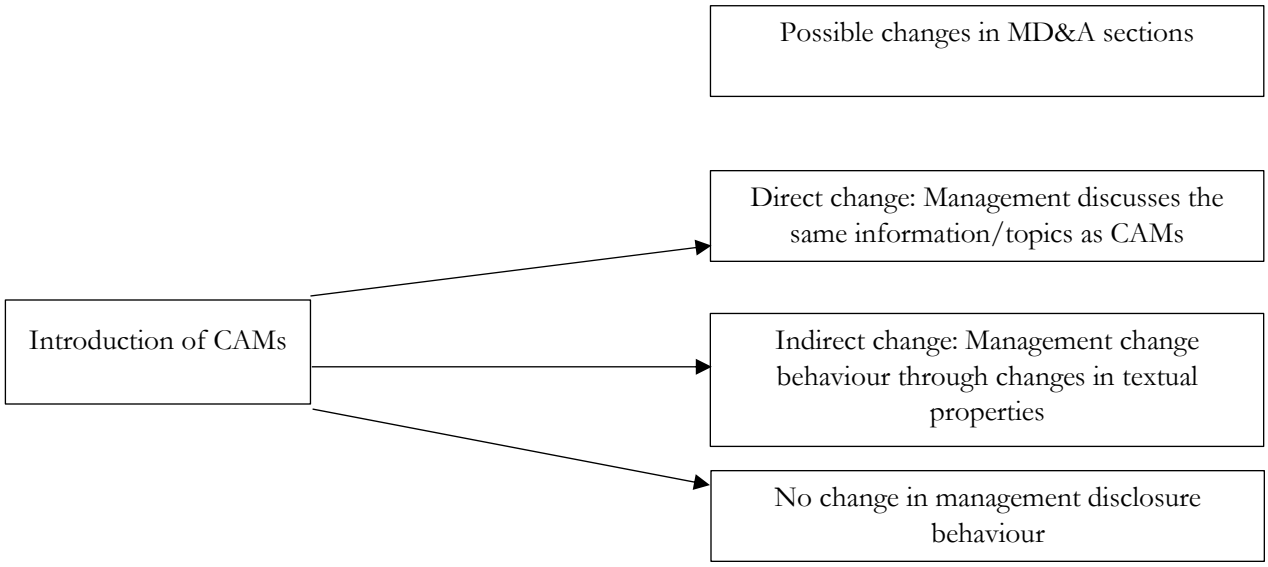
RQ 5.4: How do managers react to the number of CAM disclosures?

Figure 5.1 - Example of changes in the MD&A that are more likely attributable to economic changes than CAMs

Excerpt of Microsoft's 2019 MD&A	**Excerpt of Microsoft's 2018 MD&A**
"On December 22, 2017, the Tax Cuts and Jobs Act ("TCJA") was enacted into law, which significantly changed existing U.S. tax law and included numerous provisions that affect our business. We recorded a provisional net charge related to the enactment of the TCJA of $13.7 billion in fiscal year 2018, and adjusted our provisional net charge by recording additional tax expense of $157 million in the second quarter of fiscal year 2019. In the fourth quarter of fiscal year 2019, in response to the TCJA and recently issued regulations, we transferred certain intangible properties held by our foreign subsidiaries to the U.S. and Ireland, which resulted in a $2.6 billion net income tax benefit. Refer to Note 12 - Income Taxes of the Notes to Financial Statements (Part II, Item 8 of this Form 10-K) for further discussion."	"On December 22, 2017, the Tax Cuts and Jobs Act ("TCJA") was enacted into law, which significantly changes existing U.S. tax law and includes numerous provisions that affect our business. During fiscal year 2018, we recorded a net charge of $13.7 billion related to the TCJA. Refer to Note 13 - Income Taxes of the Notes to Financial Statements (Part II, Item 8 of this Form 10-K) for further discussion."

Notes: The figure shows excerpts of the 10-K report for Microsoft's MD&A section where management discuss the steps taken as a response to the Tax Cuts and Jobs Act for the years 2018 and 2019

Figure 5.2- Relationship between CAM disclosure and expected changes to the MD&A



Notes: The figure shows the proposed relationship between the introduction of CAM disclosure and expected changes to the MD&A sections, where the change being investigated in the study is the indirect change.

It is expected that large accelerated filers that disclose CAMs will have longer and more specific MD&A sections as a reaction to management being inclined to include more information. The increased length of the MD&A would also be in line with the accountability theory (Gold et al., 2020; Tetlock, 1983). Additionally, part of the analysis focuses on the complexity, uncertainty and tone of the MD&A disclosure. These measures are used to capture underlying meanings due to their ability to overcome the fact that firms use different terms and definitions that often refer to the same idea or issue (Cole & Jones, 2005; Durnev & Mangen, 2020). Due to the freedom given to management in this section, the MD&A is the most likely section to reveal information through the tone they use (Loughran & McDonald, 2011). It is expected that MD&A texts with CAMs will be more complex, with more uncertainty and more negative words ratio to compensate for the expected consequences due to the disclosure of CAMs.

5.3 Methodology and variables

The main test in the study involves investigating the differences in the textual properties after CAMs are introduced by using a regression analysis in a difference in differences setting to obtain inferences with regards to the effect of CAM disclosures on MD&A disclosures. Similar to Brown and Tucker (2011) and Dyer et al. (2017), the study uses multiple dependent variables to investigate

the changes in the MD&A sections, if any, from a holistic point of view. A list of dependent variables that measure the textual properties/indirect changes in the MD&A, their sources and how they are calculated as well as their expected sign can be found in **Table 5.1**. To examine whether managers react to the disclosure requirement, **Equation 5.1** below closely follows prior literature examining textual properties of the 10-K report (Brown & Tucker, 2011; Dyer et al., 2017; Lang & Stice-Lawrence, 2015), and is used for both the matched and unmatched propensity score-matched (PSM) control group of non-adopters.

Table 5.1 - Dependent variables, their definitions, calculations and expected sign

Variable	Definition	Calculation	Expected sign
mda_length	Length of text	Number of words in the text (Burke et al., 2023; Dyer et al., 2017).	+
mda_complex	Complexity	Calculated as 0.4*(the average number of words per sentence + percentage of complex words), where complex words are words in excess of two syllables (Dyer et al., 2017; Lundholm et al., 2014).	+
mda_spec	Specificity	Number of entities (locations, people, organisations, dollar amounts, percentages, dates or names) as identified by the Stanford Named Entity Recognizer (NER) tool, scaled by the total number of words (Hope et al., 2016).	+
mda_uncert	Uncertainty	Number of uncertain words divided by the total number of words (Burke et al., 2023; Loughran & McDonald, 2011).	+
mda_tone	Tone	Number of negative words divided by the total number of words (Davis & Tama-Sweet, 2012; Durnev & Mangen, 2020; Loughran & McDonald, 2011).	+

Notes: The table shows the dependent variables used in the study to measure the textual properties of MD&A sections, as well as their definitions and calculations.

$$mda\_text_{i,t} = \beta_{0_{i,t}} + \beta_1 post_{i,t} + \beta_2 adopt_{i,t} + \beta_3 post * adopt_{i,t} + \beta_4 size_{i,t} + \beta_5 intang_{i,t} + \beta_6 btm_{i,t} + \beta_7 \log\_age_{i,t} + \beta_8 risk_{i,t} + \beta_9 inst_{i,t} + \beta_{10} analyst_{i,t} + \beta_{11} litig_{i,t} + \beta_{12} ca_{i,t} + \beta_{13} debtdue_{i,t} + \beta_{14} lev_{i,t} + \beta_{15} roa_{i,t} + \beta_{16} loss_{i,t} + \beta_{17} fcf_{i,t} + \beta_{18} acquire_{i,t} + \beta_{19} downsize_{i,t} + \beta_{20} busseg_{i,t} + \beta_{21} forseg_{i,t} + \beta_{22} ey_{i,t} + \beta_{23} deloitte_{i,t} + \beta_{24} kpmg_{i,t} + \beta_{25} pwc_{i,t} + \beta_{26} mcw_{i,t} + \beta_{27} gc_{i,t} + \beta_{28} rest_{i,t} + INDFE + FYFE + \varepsilon_{i,t}$$

(Equation 5.1)

Prior literature implies that CAM disclosures lead to increased disclosures by management (Burke et al., 2023; Fuller et al., 2021). Therefore, it is expected that for firms that disclosed CAMs, *mda_length* will be positively associated. Dyer et al. (2017) imply that the higher the level of compliance for a section in the 10-K, the higher the complexity and the specificity of the text. Additionally, CAMs often discuss specific events or highly complex transactions, such as mergers and acquisitions. If management react to CAM disclosures by offering more information about the specific topics discussed in CAMs, then it is expected that complexity and specificity will be positively associated with CAM disclosure. Furthermore, Burke et al. (2023) find that uncertain sentiment increases following the introduction of CAMs. This implies an increased use of cautionary language in areas that are expected to be scrutinized or perceived increased litigation risk. Therefore, since CAM disclosures highlight certain areas in the firm that may attract litigation, it is expected that firms with CAM disclosures will have, on average, a more uncertain tone. Thus, it is expected that uncertainty will be higher for firms with CAM disclosures. Lastly, Davis and Tama-Sweet (2012) argue that managers may tend to use a more pessimistic language in the MD&A due to litigation risk, regulatory requirements and incentives to provide credible information to external users. Therefore, it is expected that CAMs will be associated with an increase in the ratio of negative words used in MD&A sections.

The variable *post* is an indicator variable which takes the value of 1 for firms with fiscal years ending on or after the 30th of June, 2019, which is the effective date for AS 3101 for large accelerated filers. The variable *adopt* is an indicator variable that is equal to one for large accelerated filers and zero for non-large accelerated filers. The variable *Post*adopt* is the interaction term of the treatment and time indicator variables that capture the difference-in-differences effect.

The model controls for firm level-variables and auditor-level variables, in addition to variables that have been identified by prior literature as determinants of corporate disclosure, in addition to being elements that are required to be discussed by management in the MD&A section (Cole & Jones, 2005). *size* is the log-transformed value of the firm's total assets, and is historically positively associated with higher modifications as larger firms are under more pressure to disclose less opaque and boilerplate information (Brown & Tucker, 2011; Dyer et al., 2017; Hosseinniakani et al., 2024; Li, 2008). *intang* represents the percentage of intangible assets to total assets, and is expected to be positively associated with the dependent variables (Dyer et al., 2017). *BTM* is calculated as the book value of common equity divided by the market value of common equity at the end of the fiscal year, and is expected to be positively associated with length, and negatively associated with complexity (Hosseinniakani et al.,

2024; Lang & Stice-Lawrence, 2015). l*og_age* represents the natural logarithm of the number of years, rounded to the nearest year, since the first year the firm's IPO, and is expected to have a negative association with length and complexity, and a positive association with specificity (Dyer et al., 2017). *risk* is calculated as the standard deviation of the daily returns during the fiscal year, and is expected to have a positive association with length, specificity and complexity (Dyer et al., 2017). *inst* is a binary variable that receives the value of 1 if the firm is in the highest institutional ownership quartile, otherwise 0. *analyst* refers to the number of financial analysts whose earnings estimates for year t+1 are included in the most recent consensus prior to the firm's 10-K filing. Both variables are significantly negatively associated with changes in the MD&A section (Brown & Tucker, 2011). Additionally, the model accounts for the fact that some firms operate in a more litigious environment and may be prone to more litigation, therefore they would be more likely to modify the MD&A section from year to year (Brown & Tucker, 2011). Therefore, following prior studies (Ali & Kallapur, 2001; Francis et al., 1994; Matsumoto, 2002), the binary variable *litig* receives the value of 1 if the firm's industry classification is considered highly litigious, namely pharmaceutical and biological products (SIC codes 2833-2836), computers and computer services (SIC codes 3570-3577 and 7370-7374), electronics (SIC codes 3600-3674), and retailing (SIC codes 5200-5961).

ca, *debtdue*, and *lev* represent elements of liquidity, which is a requirement for MD&A disclosures (Cole & Jones, 2005). *ca* refers to the firm's current ratio, which is calculated by dividing the firm's current assets by current liabilities. *debtdue* represents the amount of debt due in the current fiscal year. *lev* is calculated by scaling total liabilities by total equity. All three variables are expected to have a positive coefficient (Brown & Tucker, 2011; Dyer et al., 2017; Hosseinniakani et al., 2024; Lang & Stice-Lawrence, 2015).

roa and *loss* refer to another element of the MD&A, which is the results of operations (Cole & Jones, 2005). *roa* is calculated by scaling net income by total assets and is expected to be positively associated with the length of the text and negatively associated with specificity. *loss* is a dummy variable that binary variable allocated the value of 1/(0) if a company reported a loss, and is expected to have a positive association with length and complexity, and a negative association with specificity (Dyer et al., 2017; Lang & Stice-Lawrence, 2015).

fcf is used to capture the sources of cash for capital needs (Brown & Tucker, 2011), and is calculated as operating cash flow minus capital expenditures. *acquire* and *downsize* are binary variables that capture significant changes in total assets as a proxy for changes in business components where *acquire*/*downsize*

receives the value of 1 if the total assets increased/decreased by at least one-third (Brown & Tucker, 2011). All three variables are expected to be positively associated with changes in the MD&A. *busseg* and *forseg* represent the number of business segments and foreign segments, respectively, and is given a value of 0 if missing. Both variables are expected to have a positive coefficient for length and specificity (Dyer et al., 2017).

Finally, De Franco et al. (2020) provide evidence of the auditor's effect on the textual properties of MD&A texts[7]. with regard to audit controls, *ey*, *deloitte*, *kpmg* and *pwc* are dummy variables that represent the audit firm and receive the value of 1 depending on the firm's auditor, 0 otherwise[8] (Brown & Tucker, 2011; Dyer et al., 2017; Lang & Stice-Lawrence, 2015). Firms auditing by Big 4 firms are expected to have longer, less specific and more complex texts. The model also includes the binary variable *mcw* that receives the value of 1/(0) if the firm has no/(has) material control weaknesses reported by the auditor, *gc* to denote whether the firm received/(did not receive) a going concern opinion, and *rest* for firms that have/(do not have) at least one restatement for the fiscal year. All three variables are expected to be positively associated with the dependent variables. Industry and year-fixed effects are considered in the model. All continuous variables are winsorized at 1% and 99%. All the independent variables, their definitions and sources are presented in **Table 5.2**.

[7] While auditors are not required to audit the MD&A, they are required to review it and ensure its consistency with other financial information as per Auditing Standard 2710 (Other Information in Documents Containing Auditing Financial Statements) (De Franco et al., 2020; Mayew et al., 2014).
[8] "*Other auditors*" are excluded, which forms the reference group.

Table 5.2 - Variable definition and sources

Variable	Definition	Source
size	Log transformed value of the firm's total assets.	Compustat
intang	Percentage of intangible assets to total assets.	Compustat
btm	Book value of common equity divided by the market value of common equity at the end of the fiscal year.	Compustat
log_age	The natural logarithm of the number of years, rounded to nearest year, since the first year the firm's IPO.	Compustat
risk	Standard deviation of the daily returns during the fiscal year.	Compustat
inst	Binary variable that receives the value of 1 if the firm is in the highest institutional ownership quartile, otherwise 0.	Thomson/Refinitiv
analyst	Number of financial analysts whose earnings estimates for year t+1 are included in the most recent consensus prior to the firm's 10-K filing, 0 if unavailable.	IBES
litig	Binary variable that receives the value of 1 if the firm operates in a highly litigious industry, 0 otherwise.	Compustat
ca	Current ratio calculated by scaling current assets by current liabilities.	Compustat
debtdue	Log transformed amount of long term debt due in the current fiscal year.	Compustat
lev	Total liabilities divided by total stockholder equity.	Compustat
roa	Calculated as net income divided by total assets.	Compustat
loss	Binary variable that receives the value of 1 if the firm reported a loss, 0 otherwise.	Compustat
fcf	Operating cash flow less capital expenditures.	Bloomberg
acquire	Binary variable that receives the value of 1 if the firm's total assets increased by at least one third, compared to the prior year, otherwise 0.	Compustat
downsize	Binary variable that receives the value of 1 if the firm's total assets decreased by at least one third, compared to the prior year, otherwise 0.	Compustat
busseg	Number of business segments, 0 if missing.	Compustat
forseg	Number of foreign segments, 0 if missing.	Compustat
ey	Dummy variable that receives the value of 1 if the firm's auditor is EY, 0 otherwise.	Compustat
deloitte	Dummy variable that receives the value of 1 if the firm's auditor is Deloitte, 0 otherwise.	Compustat
kpmg	Dummy variable that receives the value of 1 if the firm's auditor is KPMG, 0 otherwise.	Compustat
pwc	Dummy variable that receives the value of 1 if the firm's auditor is PWC, 0 otherwise.	Compustat
mcw	Binary variable that receives the value of 1 if the firm has a material control weakness, 0 otherwise.	Audit Analytics
gc	Binary variable that receives the value of 1 if the firm received a going concern opinion, 0 otherwise.	Audit Analytics
rest	Binary variable that receives the value of 1 if the firm has at least one restatement for the fiscal year, 0 otherwise.	Audit Analytics

Notes: The table shows the independent variables used in the study, as well as their definitions and sources.

5.4 Identification strategy and sample selection

The study aims at investigating whether the introduction of CAM disclosures led to changes in the textual properties of the MD&A disclosures by using AS 3101 as an exogenous shock. Specifically, the study uses the staggered implementation of AS 3101, where the auditors of large accelerated filers only were required to disclose CAMs in the fiscal year ending on or after June 30, 2019, and all other firms in the fiscal year ending on or after June 30, 2020 (SEC, 2017). This allows for the utilization of a difference-in-differences research design that compares two groups of companies with different auditor's report requirements, with large accelerated filers operating as a treatment group, and non-large accelerated filers, acting as a control group. Following Burke et al. (2023) and Duboisée de Ricquebourg and Maroun (2024), the study uses two control groups, namely an unmatched control group of non-large accelerated filers/ non-adopters, and a matched control group (PSM) of non-large accelerated filers/ non-adopters[9]. Thus, addressing the possible endogeneity issue where MD&A sections are expected to change annually to reflect the economic changes of the firm (Brown & Tucker, 2011).

Therefore, the identification strategy explained in this Section supplements the steps explained in **Section 4.2**, where the unique data cleaning steps for this study will start with a sample of 9,120 observations representing 4,968 firms. First, the sample has been limited to firms that publish a 10-K, 10-KT, or 10-K/A, as opposed to forms 6-K or 20-F, which are submitted to the SEC by foreign issuers, for instance. This ensures that all reports in the sample are required to disclose both an MD&A and CAMs[10] and ensure consistency across disclosure requirements[11](Liu et al., 2023; Lundholm et al., 2014). This resulted in eliminating 2,261 observations (856 firms). Second, 435 observations (421 firms) have been eliminated due to missing firm-level data. Furthermore, 107 observations (55 firms) were removed due to the inability to extract the MD&A section[12]. Additionally, three observations have been removed due to the inability to process their text or due to the text being less than 100 words. Finally, to ensure that the sample is balanced, all observations for the third year of data for

[9] The identification process of the matched sample is explained in detail in section 5.6.1.1.
[10] While Form 10-Q includes an MD&A section, it does not include CAM disclosures.
[11] For instance, while foreign firms listed in the U.S are required to submit a similar form 20-K, the two forms have a number of differences, such as the filing deadline, the accounting standards allowed, disclosure requirements and readability (Liu et al., 2023; Lundholm et al., 2014)
[12] Following Loughran & McDonald (2011), only MD&A sections identified in the body of the primary document are retained. This means reports where the MD&A section is incorporated by reference are dropped. When the MD&A section is incorporated by reference in Form 10-K, it does not appear in its allocated part in the document, making the method used to scrape the section using a specified beginning and ending point hard to accurately obtain.

firms with three fiscal year ends in the sample period are removed (134 observations), all firms with data for only one year available are eliminated (552 observations/firms), firms with two observations in the either before or after the effective date are eliminated (38 observations/ 19 firms) and firms with different filer status for the two periods have been eliminated (270 observations and 135 firms).

Table 5.3 shows the sample selection process and the identification strategy, where **Panel A** shows the sample selection steps and the final balanced sample of 5,320 observations for 2,660 firms. **Panel B** shows the sample composition, where the full sample includes 1,175 large accelerated filers and 1,485 non-large accelerated filers, and the matched sample includes 592 observations.

Text for the MD&A was obtained primarily through accessing the SEC's EDGAR API by using Python[13]. Specifically, the Python library "requests" was used to send a query to EDGAR, where the base URL is https://www.sec.gov/cgi-bin/browse-edgar. The parameters of the query included a unique identifier for each firm, which is the CIK number, and the type of report requested, which is identified as "10-K". The query also allows the user to input a "date before" parameter to limit the output to 10-K reports before a certain date. Moreover, and based on recent changes by the SEC to the API, users must declare a "User-Agent" by including their name and e-mail in the request header. Additionally, the Python library "BeautifulSoup" was used to parse the text, which is commonly used to extract text from HTML or XML documents. The output of the query was then designed to give output that consisted of the filing type (which was indicated by the user as 10-K), the filing date, filing number (which is unique to each document on EDGAR), a link to the document that is readable through web browsers, a link in HTML format, and a link in TXT format. **Figure 5.3** shows an example of the output.

[13] The python codes used to obtain the MD&A section is based on https://github.com/areed1192/sigma_coding_youtube/blob/master/python/python-finance/sec-web-scraping/Web%20Scraping%20SEC%20-%20EDGAR%20Queries.ipynb, https://gist.github.com/anshoomehra/ead8925ea291e233a5aa2dcaa2dc61b2.

Table 5.3 - Sample Selection and Identification Strategy

Panel A - Sample selection

Sample selection steps	**Number of observations**	**Number of firms**
Sample subjected to unique data cleaning steps from Section 4.2	9,120	4,698
Less firms with no 10-K, 10-KT or 10-K/A	(2261)	(856)
Less observations with missing firm-level data	(435)	(421)
Less observations eliminated due to inability to extract MD&A section	(107)	(55)
Less text that cannot be processed	(3)	0
Less third year observations for firms with three fiscal year ends during the sample period	(134)	0
Less firms with only one year of data available	(552)	(552)
Less firms with two observations with the same post binary variable	(38)	(19)
Less firms with different filer status for the two years	(270)	(135)
Final Sample	**5,320**	**2,660**

Panel B - Sample composition

Sample composition	**Large accelerated filers pre-CAM**	**Large accelerated filers post-CAM**	**Non-large accelerated filers pre-CAM**	**Non-large accelerated filers post-CAM**	**Total**
Full Sample	1,175	1,175	1,485	1,485	**5,320**
Matched	148	148	148	148	**592**

Notes: the table shows the identification strategy followed in the study. The table shows the initial number of firms and CAMs available on the Audit Analytics database, the number of eliminated observations that occurred during the process of data cleaning, and the final sample of firms and CAMs.

Figure 5.3 - Python output for requests made to EDGAR

```
----------------------------------------------------------------------------------------------------
Filing Type: 10-K
Filing Date: 2019-04-01
Filing Number: 001-3838019721428
Document Link: https://www.sec.gov/Archives/edgar/data/1720201/000121390019005518/0001213900-19-005518-index.htm
txt Link: https://www.sec.gov/Archives/edgar/data/1720201/000121390019005518/0001213900-19-005518.txt
Filing Number Link: https://www.sec.gov/cgi-bin/browse-edgar?action=getcompany&filenum=001-38380&owner=exclude&count=100
```

Notes: The figure shows the Python output for the requests made to Edgar to access the 10-K reports

Next, another request is made using the link for the TXT document shown in **Figure 5.3** to identify the headers of the document. The headers identify the section headers/titles for each section. The code then identifies the beginning and the end of each section of the 10-K by identifying the header at the beginning of the section and the header at the beginning of the following section. For instance, identifying item 7 (MD&A) is done by extracting the text between the header item 7 and the subsequent item 7A. The text is then saved in a text file on the hard drive. In cases where the 10-K did not include item 7A, or in cases where the header for item 7 was not defined as a header on Edgar,

the MD&A section was manually accessed through the document link shown in **Figure 5.3** and the MD&A section was copied and pasted manually. Each MD&A section was saved in a separate text file named after the firm's CIK and the fiscal year.

With regards to preprocessing the text, the objective is to have a consistent structure for the text (Loughran & McDonald, 2016). The scraping process outlined above automatically eliminates any pictures, diagrams, or tables from being saved in the text file. Additionally, following standard practice, all white spaces, numbers and ASCII symbols have been removed using the Python library "Regular expressions", or "re", which is a library designed to handle strings of text, or the line.strip() function. Additionally, lines with fewer than 20 characters have been deleted, which removes lines of just numbers and section headings (Dyer et al., 2017). The processed text was then saved in new text files to ensure that a backup of the original text files always existed.

Lastly, with regards to constructing the textual variables, five variables were constructed based on the MD&A texts, namely text length, complexity, specificity, uncertainty and tone, as identified in **Table 5.1**. With regards to additional tools and libraries used to construct the dependent variables, complexity was measured using the fog index, which is calculated by a Python library called "Textatistic". Specificity was calculated based on the number of locations, people and organizations mentioned in the text divided by the total number of words. Locations, people and organizations are identified by the Stanford Named Entity Recognizer (NER) tool[14], which is stored on the hard drive and accessed through Python. The NER tool works by dividing the words in the text as "Tokens" using the NLTK library, which is commonly used to preprocess textual data, and comparing the tokens in the text to the tokens in the tool and reporting the occurrence of every location, person or organization that occurs in the text in a Pandas dataframe. Another line of code is added to show the number of rows of the dataframe, with each row containing one word, therefore showing the number of entities picked up by the NER tool. The number of entities is then divided by the total number of words (Hope et al., 2016). Finally, to measure uncertainty and tone, the Loughran and McDonald (2011) dictionary for uncertain and negative words is used. Unlike other dictionaries used in textual analysis, this dictionary is specifically designed for textual analysis in accounting and finance. For instance, words such as "tax" and "liability" are classified as negative words in one of the most commonly used dictionaries, namely the Harvard-IV-4 TagNeg (H4N) file, although they merely refer to words that occur regularly in the 10-K. The Loughran and McDonald dictionaries overcome this

[14] The tool can be downloaded from this website: https://nlp.stanford.edu/software/CRF-NER.shtml

issue as it is specifically curated for accounting and finance research. Uncertainty is calculated as the number of uncertain words present in the text based on the Loughran and McDonald list of uncertain words. This is done by inputting the list of uncertain words. The code is designed to check the occurrence of these uncertain words in the text and report the number of uncertain words. Similarly, tone is measured by inputting a list of negative words, positive words and negation words. The code then checks the occurrence of negative words in the text, while considering that the combination of a negation word and a positive word may also result in a "negative" word. Negation is considered if a negation word occurs within three words preceding a positive word. The output is the number of occurrences of negative words.

5.5 Descriptive Statistics

Table 5.4 shows the descriptive statistics for the variables used in the study for both the full sample and the matched sample. The table shows that the mean number of words in the sample of MD&A texts for the full sample is 8,399.559 words, with a standard deviation of 5,024.908 words. Similarly, the mean length for the matched sample is 9,181.311 words and the standard deviation is 3,764.126. This implies that the variation in the length of MD&A texts used in the sample varies greatly, with the smallest MD&A containing 257 words, and the largest containing 134,828 words[15] for the full sample, and the smallest MD&A containing 1,995 words, and the largest containing 29,990 words for the matched sample. This implies a substantial variance in the length of the text for the full sample. The variable *mda_complex* represents the gunning fog complexity score, and has a mean of 16.283 for the full sample, and 15.856 for the matched sample, which is equivalent to the reading ability of a college senior.

Moreover, *mda_spec* refers to the ratio of specific names to the total number of words in the text. Prior literature implies that readers are more able to assess the firm's economic conditions when narrative disclosures are more specific in the 10-K report (Hope et al., 2016). On average, 0.9% and 0.8% of the MD&A text refers to specific entities, persons or locations for the full sample and the matched sample, respectively, which implies very similar specificity. The MD&A with the most specific words amounts to 2.5% of its total text, while the least specific text refers to specific words

[15] The MD&A section with the most number of words in the sample is part of the 10-K report for Southern Company, which can be found here: https://d18rn0p25nwr6d.cloudfront.net/CIK-0000092122/5a130524-afbe-4cc0-9af2-62900083e57d.pdf. This figure has been double checked to ensure its correctness.

in only 0.3% of the total text. Furthermore, *mda_uncert* and *mda_tone* are calculated as the percentage of uncertain words and negative words to the total number of words in the MD&A text, respectively. On average, the percentage of uncertain words and negative words in the text are 1.4% and 1.2%, respectively for the full sample, and 1.3% and 1.2%, respectively, for the matched sample. The MD&A with the highest level of uncertainty is 2.6% of the full text, while the text with the most negative words is 2.5% of the full text. Based on the design of this research, and the high standard deviation, particularly for *mda_length*, examining the difference in means of the cross-sections of the sample may provide a better understanding of the sample.

Table 5.4 - Descriptive Statistics for full sample and matched sample

	Full Sample (N = 5,320)					Matched Sample (N = 592)				
	Mean	**Median**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Median**	**Std. Dev.**	**Min**	**Max**
mda_length	8,399.559	7,613	5,042.908	257	134,828	9,181.311	8,493	3,764.126	1,995	29,990
mda_complex	16.315	16.283	1.938	12.033	21.057	15.965	15.856	1.892	12.033	21.057
mda_spec	0.009	0.008	0.004	0.003	0.025	0.008	0.007	0.003	0.003	0.025
mda_uncert	0.014	0.013	0.004	0.006	0.026	0.013	0.012	0.003	0.006	0.026
mda_tone	0.012	0.012	0.004	0.004	0.025	0.012	0.011	0.004	0.004	0.025
size	5.53	5.662	1.26	1.763	7.92	5.846	5.794	0.454	3.603	7.625
intang	0.205	0.113	0.23	0	0.845	0.201	0.119	0.219	0	0.845
btm	0.307	0.336	1.411	-10.018	4.363	0.402	0.367	1.065	-10.018	4.363
log age	2.687	2.833	0.953	0	4.248	2.582	2.708	0.887	0	4.234
risk	0.048	0.031	0.051	0.009	0.309	0.033	0.029	0.019	0.01	0.29
inst	0.252	0	0.434	0	1	0.361	0	0.481	0	1
analyst	5.992	3	7.28	0	46	5.086	5	3.856	0	28
litig	0.392	0	0.488	0	1	0.409	0	0.492	0	1
ca	3.082	1.792	4.143	0.01	28.086	3.719	2.237	4.409	0.091	28.086
debtdue	1.526	0.79	2.494	-3.863	7.875	1.532	1.332	1.914	-3.863	7.875
lev	1.151	0.891	4.726	-21.977	25.608	1.008	0.811	4.878	-21.977	25.608
roa	-0.564	0.003	2.498	-20.787	0.378	-0.097	0.012	0.885	-20.787	0.378
loss	0.489	0	0.5	0	1	0.456	0	0.498	0	1
fcf	82.391	0.921	286.36	-300	1881.4	8.179	6.795	70.187	-300	630
acquire	0.187	0	0.39	0	1	0.201	0	0.401	0	1
downsize	0.058	0	0.234	0	1	0.015	0	0.122	0	1
busseg	5.358	3	4.457	0	32	5.128	3	3.743	0	18
forseg	6.311	3.5	7.437	0	81	6.753	3	8.186	0	81
ey	0.193	0	0.394	0	1	0.28	0	0.45	0	1
deloitte	0.133	0	0.34	0	1	0.204	0	0.404	0	1
kpmg	0.118	0	0.323	0	1	0.149	0	0.356	0	1
pwc	0.142	0	0.349	0	1	0.177	0	0.382	0	1
mcw	0.048	0	0.213	0	1	0.071	0	0.257	0	1
gc	0.158	0	0.364	0	1	0.015	0	0.122	0	1
rest	0.06	0	0.237	0	1	0.054	0	0.226	0	1

Notes: The table reports the mean, median, standard deviation, minimum, and maximum values for the variables used in the study. Dependent variables are defined in **Table 5.1** and control variables are defined in **Table 5.2**. All continuous variables are winsorized at 1% and 99%.

Table 5.5 provides the results of the differences in means for the textual variables. **Panel A** shows the differences between adopters and non-adopters (*adopt* = 1 and *adopt* = 0) for the full sample, while **Panel B** shows the differences for large accelerated filers (*adopt* = 1) before and after adoption (*post* = 1 and *post* = 0). Finally, **Panel C** shows the difference for non-large accelerated filers (*adopt* = 0) before and after adoption (*post* = 1 and *post* = 0). **Panel A** shows a statistically significant difference for the mean length (diff = 4,117.776, $p<0.01$), complexity (diff = 0.353, $p<0.01$), specificity (diff = -0.002, $p<0.01$) and uncertainty (diff = -0.001, $p<0.01$) between large accelerated filers and non-large accelerated filers. This is to be expected considering that large accelerated filers are larger firms, thus disclosing longer and more complex MD&A texts.

Moreover, **Panel B** shows a statistically significant difference for the mean length (diff = -1,256.965, $p<0.01$), complexity (diff = 0.322, $p<0.01$), specificity (diff = 0.001, $p<0.01$), uncertainty (diff = 0.001, $p<0.01$) and tone (diff = 0.001, $p<0.01$) for large accelerated filers before and after the effective date of AS 3101, where MD&A sections, on average, became shorter and more complex in addition to containing more uncertain and negative words ratio and less specific words ratio. Additionally, **Panel C** shows a statistically significant difference for non-large accelerated filers before and after the new auditing regulations. On average, MD&A sections became shorter (diff = -229.605, $p<0.10$), and contained less uncertainty (diff = 0.001, $p<0.01$) and more negativity (diff = 0.001, $p<0.01$). On the other hand, there is no significant difference between the mean complexity and specificity ratios in non-large accelerated filers before and after adoption. The table indicates changes in the disclosure behaviour of management, yet it contradicts the prediction made above, where it was expected that managers would be more forthcoming through longer texts. Furthermore, the fact that nonadopters also have significant differences before and after the effective date implies that other factors might have contributed to the changes in the textual properties, which further supports the need to use a matched sample in the regression analysis below.

Table 5.5 - Difference in means

Panel A - difference in means for the full sample

	Large accelerated filers (N = 2,350)					Non-large accelerated filers (N = 2,970)					
	Mean	**Median**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Median**	**Std. Dev.**	**Min**	**Max**	**Diff**
mda_length	10,698.392	9,755.500	5,601.010	1,267	134,828	6,580.616	6,054	3,639.653	257	47,617	4,117.776***
mda_complex	16.512	16.539	2.034	12.033	21.057	16.159	16.145	1.844	12.033	21.057	0.353***
mda_spec	0.008	0.008	0.003	0.003	0.025	0.01	0.009	0.004	0.003	0.025	-0.002***
mda_uncert	0.013	0.013	0.003	0.006	0.026	0.014	0.013	0.004	0.006	0.026	-0.001***
mda_tone	0.012	0.012	0.004	0.004	0.025	0.012	0.012	0.004	0.004	0.025	0.000

Panel B - Difference in means for adopters before and after CAM adoption

	adopt = 1 post = 1 (N = 1,175)					***adopt = 1 post = 0 (N = 1,175)***					
	Mean	**Median**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Median**	**Std. Dev.**	**Min**	**Max**	**Diff**
mda_length	10,069.91	9,280	4,848.37	1,267	64,068	11,326.88	10,366	6,202.58	1,991	134,828	-1256.965***
mda_complex	16.673	16.667	2.015	12.033	21.057	16.351	16.341	2.041	12.033	21.057	0.322***
mda_spec	0.008	0.008	0.003	0.003	0.025	0.008	0.007	0.003	0.003	0.025	0.001***
mda_uncert	0.014	0.014	0.003	0.006	0.026	0.013	0.013	0.003	0.006	0.026	0.001***
mda_tone	0.013	0.012	0.004	0.004	0.025	0.012	0.011	0.004	0.004	0.025	0.001***

Panel C - Difference in means for non-adopters before and after CAM adoption

	adopt = 1 post = 1 (N = 1,485)					***adopt = 1 post = 0 (N = 1,485)***					
	Mean	**Median**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Median**	**Std. Dev.**	**Min**	**Max**	**Diff**
mda_length	6,465.81	5,948	3,604.855	257	47,617	6,695.419	6,150	3,671.746	341	2,6495	-229.605*
mda_complex	16.214	16.229	1.82	12.033	21.057	16.105	16.105	1.867	12.033	21.057	0.109
mda_spec	0.010	0.009	0.004	0.003	0.025	0.010	0.009	0.004	0.003	0.025	0.000
mda_uncert	0.014	0.013	0.004	0.006	0.026	0.014	0.013	0.004	0.006	0.026	0.001***
mda_tone	0.013	0.012	0.004	0.004	0.025	0.012	0.012	0.004	0.004	0.025	0.001***

Notes: The table shows the mean, median, standard deviation and difference in means for the dependent and independent variables used in the study. **Panel A** shows the differences between large accelerated filer and non-large accelerated filers (*adopt* = 1 and *adopt* = 0), while **Panel B** shows the differences for large accelerated filers (*adopt* = 1) before and after adoption (*post* = 1 and *post* = 0). Finally, **Panel C** shows the difference for non-large accelerated filers (*adopt* = 0) before and after adoption (*post* = 1 and *post* = 0). The difference in means between the firms is shown in the final column (* p < 0.1, ** p < 0.05, *** p < 0.01.). All dependent variables are defined in **Table 5.1**.

Prior research implies that the industry in which the firm operates has an influence on the textual properties of the MD&A. For instance, Tarca et al. (2011) explains that in the interest of comparability, firms incorporate certain industry-relevant items, factors and metrics that are used by analysts and investors. They report that some interviewees discussed the practice of monitoring their competitors' disclosures and a tendency to make MD&A disclosures within an industry standardised. **Table 5.6** reports the mean dependent variables distributed by industry for large accelerated filers and non-large accelerated filers, where **Panel A** shows the means of the variables, and **Panel B** shows the difference between the means of the adopter and non-adopters as well as the significance of the difference. The table shows that the Manufacturing sector is the most represented sector in the full sample (N=2,902) as well as adopters and non-adopters (N = 1,176 and 1,726 respectively), while the agriculture, forestry and fishing sector is the least represented in the full sample (N = 24, N for adopters = 2 and N for non-adopters = 22). It is worth mentioning that for the cross-section of adopters, the agriculture, forestry and fishing sector has the longest mean length, while firms classified as non-classifiable/conglomerates, represented by two firms, have the shortest mean length. Firms classified as non-classifiable/conglomerates also have the shortest mean length for non-adopters. In fact, Firms classified as non-classifiable/conglomerates have the highest mean complexity, specificity and uncertainty for both cross-sections (except specificity for large accelerated filers).

Additionally, **Panel B** shows significant differences between the means of the dependent variables for all industries with regard to the length of the text, and for most industries with regard to the complexity and specificity of the text. This indicates that the industry in which the firm operates plays a significant role in the changes to the MD&A text for adopters, as compared to non-adopters.

Table 5.7[16] presents the correlation matrix between the variables in the study. The table shows that the dependent variables are significantly correlated with each other, with the exception of complexity and specificity, and tone and specificity. With regards to *mda_length*, all control variables are statistically significant except *rest*. Furthermore, *mda_complex* is significantly correlated with all independent variables except for *inst*, *ca deloitte* and *kpmg*. *mda_spec* is correlated significantly with all control variables except *ca*, *mcw* and *rest*. *mda_uncert* is significantly correlated with all control variables except for *log_age*,

[16] The variance inflation factor (VIF) test was used to test for multicollinearity. Following the rule of thumb where an independent variable whose VIF value is more than 10 implies severe multicollinearity. Similarly, some practitioners observe the tolerance level, which is calculated as 1/VIF. (O'brien, 2007). Another approach to interpret the results of the VIF test is to assess the severity of multicollinearity by the mean VIF, where severe multicollinearity is implied if the mean VIF is "considerably larger than 1" (Kennedy, P., 2008, p. 183). No multicollinearity was found in any of the regression equations used in the study based on both measures.

lev, acquire, *forseg*, *pwc*, and *rest*. Finally, *mda_tone* is significantly correlated with all control variables except for *size*, *btm*, *inst*, *lev*, and *deloitte*.

Moreover, the significant correlation between most of the audit-related controls and the dependent variables is consistent with prior literature (De Franco et al., 2020; Mayew et al., 2014). The univariate association will be tested further in the regression analysis in **Section 5.6**, but could also be a basis to further explore the effect of the types of CAMs and the CAM topics on the textual properties of the MD&A.

Table 5.6 - Mean dependent variables by industry

Panel A - Average means of dependent variables by industry

		Large accelerated filers						Non-large accelerated filers				
Industry	**(N)**	**Mean mda_length**	**Mean mda_complex**	**Mean mda_spec**	**Mean mda_uncert**	**Mean mda_tone**	**(N)**	**Mean mda_length**	**Mean mda_complex**	**Mean mda_spec**	**Mean mda_uncert**	**Mean mda_tone**
Agriculture, Forestry & Fishing	2	13,983.000	15.459	0.009	0.010	0.013	22	8,199.727	15.510	0.011	0.010	0.011
Mining	134	11,652.330	16.925	0.009	0.014	0.014	218	6,708.028	16.285	0.011	0.013	0.014
Construction	26	11,298.540	16.162	0.007	0.014	0.014	28	8,779.464	15.179	0.008	0.013	0.014
Manufacturing	1,176	10,041.170	16.348	0.008	0.014	0.013	1,726	6,237.242	16.253	0.010	0.014	0.012
Transportation, Communications & Utilities	316	13,471.510	16.805	0.009	0.012	0.012	164	8,954.835	15.354	0.010	0.012	0.012
Wholesale Trade	98	9,799.020	16.210	0.008	0.014	0.013	108	6,515.046	15.588	0.010	0.013	0.012
Retail Trade	110	10,023.450	16.215	0.007	0.012	0.012	102	7,325.814	15.259	0.009	0.013	0.013
Services	486	10,524.620	16.742	0.007	0.013	0.011	566	6,838.244	16.283	0.009	0.014	0.012
Non-classifiable/ Conglomerate	2	7,411.500	20.193	0.008	0.019	0.015	36	2,791.278	18.076	0.015	0.015	0.014
Total	**2,350**	**10,698.390**	**16.512**	**0.008**	**0.013**	**0.012**	**2970**	**6,580.616**	**16.159**	**0.010**	**0.014**	**0.012**

Panel B - Difference between means of dependent variables by industry for adopters and non-adopters

Industry	**Mean mda_length**	**Mean mda_complex**	**Mean mda_spec**	**Mean mda_uncert**	**Mean mda_tone**
Agriculture, Forestry and Fishing	5,783.273*	-0.051	-0.002	0.001	0.002
Mining	49,44.302***	0.640***	-0.002***	0.001**	0.000
Construction	2,519.076**	0.983**	-0.001**	0.001	0.000
Manufacturing	3,803.928***	0.095	-0.002***	0.000***	0.001***
Transportation, Communications	4,516.675***	1.451***	-0.001***	0.000	0.000
Wholesale Trade	3,283.974***	0.622**	-0.002***	0.001	0.001
Retail Trade	2,697.636***	0.956***	-0.002***	-0.001	-0.001**
Services	3,686.376***	0.459***	-0.002***	-0.001***	-0.001***
Non-classifiable/ Conglomerate	4,620.222***	2.117*	-0.007	0.004	0.001

Notes: The table presents the distribution of the sample across industries, as well as the mean dependent variables for adopters and nonadopters. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. All dependent variables are defined in **Table 5.1**.

Table 5.7 - Correlation matrix

	Variables	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
1	*mda_length*	1														
2	*mda_complex*	0.076‡	1													
3	*mda_spec*	-0.300‡	-0.002	1												
4	*mda_uncert*	-0.130‡	0.227‡	-0.036‡	1											
5	*mda_tone*	0.096‡	0.103‡	0.021	0.236‡	1										
6	*size*	0.554‡	0.045‡	-0.327‡	-0.113‡	0.021	1									
7	*intang*	0.187‡	0.031†	-0.127‡	0.042‡	0.093‡	0.309‡	1								
8	*btm*	0.063‡	-0.066‡	-0.046‡	-0.027*	-0.014	0.234‡	0.007	1							
9	*log_age*	0.177‡	-0.123‡	-0.038‡	-0.008	0.148‡	0.390‡	0.109‡	0.071‡	1						
10	*risk*	-0.276‡	0.070‡	0.246‡	0.088‡	0.089‡	-0.600‡	-0.120‡	-0.288‡	-0.281‡	1					
11	*inst*	0.191‡	0.004	-0.204‡	-0.028†	0.017	0.388‡	0.218‡	0.060‡	0.112‡	-0.245‡	1				
12	*analyst*	0.346‡	0.152‡	-0.231‡	-0.025*	-0.045‡	0.657‡	0.180‡	0.046‡	0.222‡	-0.344‡	0.320‡	1			
13	*litig*	-0.140‡	0.103‡	-0.065‡	0.076‡	-0.194‡	-0.202‡	-0.023*	-0.067‡	-0.249‡	0.112‡	-0.059‡	0.003	1		
14	*ca*	-0.162‡	0.003	0.003	0.063‡	-0.155‡	-0.116‡	-0.242‡	0.105‡	-0.163‡	-0.039‡	-0.063‡	-0.093‡	0.208‡	1	
15	*debtdue*	0.435‡	0.099‡	-0.152‡	-0.067‡	0.113‡	0.688‡	0.250‡	0.041‡	0.305‡	-0.322‡	0.229‡	0.507‡	-0.189‡	-0.274‡	1
16	*lev*	0.096‡	0.051‡	-0.034†	-0.019	0.008	0.156‡	0.053‡	0.145‡	0.061‡	-0.084‡	0.040‡	0.103‡	-0.057‡	-0.066‡	0.132‡
17	*loss*	-0.220‡	0.097‡	0.140‡	0.064‡	0.106‡	-0.521‡	-0.182‡	-0.100‡	-0.397‡	0.426‡	-0.236‡	-0.332‡	0.253‡	0.133‡	-0.352‡
18	*fcf*	0.192‡	0.124‡	-0.069‡	0.024*	0.056‡	0.416‡	0.204‡	0.000	0.238‡	-0.171‡	0.029**	0.495‡	-0.040‡	-0.102‡	0.413‡
19	*roa*	0.187‡	-0.100‡	-0.179‡	-0.059‡	-0.075‡	0.497‡	0.135‡	0.290‡	0.177‡	-0.398‡	0.128‡	0.177‡	-0.090‡	0.104‡	0.165‡
20	*acquire*	-0.113‡	0.029†	0.037‡	0.021	-0.160‡	-0.152‡	-0.070‡	-0.040‡	-0.271‡	0.116‡	-0.066‡	-0.052‡	0.146‡	0.182‡	-0.138‡
21	*downsize*	-0.134‡	0.079‡	0.109‡	0.028†	0.096‡	-0.331‡	-0.085‡	-0.144‡	-0.119‡	0.268‡	-0.118‡	-0.155‡	0.107‡	-0.048‡	-0.141‡
22	*busseg*	0.242‡	-0.057‡	-0.060‡	-0.064‡	0.076‡	0.324‡	0.194‡	0.094‡	0.308‡	-0.221‡	0.112‡	0.168‡	-0.206‡	-0.130‡	0.246‡
23	*forseg*	0.190‡	-0.050‡	-0.129‡	-0.021	0.122‡	0.351‡	0.171‡	0.070‡	0.289‡	-0.232‡	0.194‡	0.223‡	-0.116‡	-0.098‡	0.238‡
24	*ey*	0.125‡	0.038‡	-0.127‡	-0.036‡	-0.059‡	0.249‡	0.022*	0.040‡	0.02	-0.139‡	0.154‡	0.234‡	0.057‡	0.012	0.174‡
25	*deloitte*	0.133‡	-0.002	-0.085‡	-0.035‡	0.002	0.217‡	0.057‡	0.031†	0.097‡	-0.130‡	0.089‡	0.102‡	-0.078‡	-0.041‡	0.150‡
26	*kpmg*	0.062‡	-0.009	-0.065‡	-0.082‡	-0.022*	0.184‡	0.051‡	0.020	0.052‡	-0.105‡	0.118‡	0.118‡	-0.006	-0.022*	0.125‡
27	*pwc*	0.228‡	0.069‡	-0.143‡	0.008	0.042‡	0.293‡	0.111‡	0.019	0.102‡	-0.149‡	0.175‡	0.231‡	-0.044‡	-0.022*	0.207‡
28	*mcw*	0.030†	-0.030**	-0.012	-0.025*	0.071‡	0.045‡	0.054‡	0.017	0.002	-0.048‡	0.018	-0.037‡	-0.030**	-0.030†	0.034†
29	*gc*	-0.255‡	0.113‡	0.235‡	0.116‡	0.127‡	-0.588‡	-0.107‡	-0.303‡	-0.284‡	0.574‡	-0.244‡	-0.308‡	0.104‡	-0.146‡	-0.263‡
30	*rest*	0.021	-0.030†	0.011	-0.006	0.047‡	-0.006	0.023*	-0.008	-0.012	0.017	-0.002	-0.028†	-0.009	-0.029†	0.016

	Variables	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
16	*lev*	1														
17	*loss*	-0.078‡	1													
18	*fcf*	0.080‡	-0.248‡	1												
19	*roa*	0.081‡	-0.262‡	0.077‡	1											
20	*acquire*	-0.02	0.142‡	-0.085‡	-0.050‡	1										
21	*downsize*	-0.044‡	0.220‡	-0.070‡	-0.334‡	-0.119‡	1									
22	*busseg*	0.046‡	-0.271‡	0.151‡	0.129‡	-0.131‡	-0.098‡	1								
23	*forseg*	0.060‡	-0.232‡	0.197‡	0.164‡	-0.135‡	-0.126‡	0.216‡	1							
24	*ey*	0.057‡	-0.069‡	0.084‡	0.091‡	0.001	-0.044‡	-0.014	0.056‡	1						
25	*deloitte*	0.038‡	-0.123‡	0.051‡	0.070‡	-0.036‡	-0.067‡	0.118‡	0.056‡	-0.192‡	1					
26	*kpmg*	-0.014	-0.117‡	0.033**	0.076‡	-0.031†	-0.049‡	0.036‡	0.050‡	-0.179‡	-0.144‡	1				
27	*pwc*	0.039‡	-0.129‡	0.159‡	0.085‡	-0.058‡	-0.071‡	0.120‡	0.173‡	-0.198‡	-0.159‡	-0.149‡	1			
28	*mcv_dummy*	-0.003	0.026*	-0.029†	0.032†	-0.005	-0.014	0.002	0.073‡	-0.016	-0.031†	0.043‡	0.018	1		
29	*gc*	-0.087‡	0.394‡	-0.130‡	-0.438‡	0.070‡	0.316‡	-0.201‡	-0.234‡	-0.138‡	-0.122‡	-0.127‡	-0.136‡	-0.051‡	1	
30	*rest*	0.002	0.039‡	-0.012	-0.011	0.011	0.005	-0.02	-0.004	-0.069‡	-0.010	-0.016	0.045‡	0.174‡	0.017	1

Notes: N= 5,320. The table presents the correlation matrix for the variables used in the study. * $p < 0.05$, † $p < 0.01$, ‡ $p < 0.001$. All dependent variables are defined in **Table 5.1** and all independent variables are defined in **Table 5.2**.

5.6 Empirical tests and results

5.6.1 Do managers respond to CAMs through changes in MD&A sections?

To answer the research question, **Table 5.8** reports the results of the difference-in-differences regression analysis (**Equation 5.1**) for the full sample. Columns 1 through 5 show the results for *mda_length*,*mda_complex*, *mda_spec*, *mda_uncert* and *mda_tone* as dependent variables, respectively. Year and industry-fixed effects are considered in the test. Standard errors are clustered by firm. The table shows a significant interaction term *Post*Adopt* at 1% for four out of the five measures, namely length, complexity, specificity and uncertainty. This implies that the introduction of CAM disclosures pushed managers of large accelerated filers to change some of the textual properties of their own disclosures.

Moreover, the control variables are largely in line with the predictions made in **Section 5.3**. For instance, *size* is significantly and positively associated with the length and complexity of the text as larger firms have more economic events and more complex transactions. *risk* has a positive association with all five measures. Furthermore, with the exception of *ca* all measures of liquidity are positively associated with the dependent variables. Moreover, while the coefficients for *loss* match the predictions, the coefficient for the other measure of the results of operations, *roa*, does not. This may be attributable to the notion that management attempts to justify the negative results of operations through longer texts (Dyer et al., 2017). Additionally, the table shows varying degrees of significance for the dummy variables representing the Big 4 auditors. Lastly, *gc* is significantly associated with all five textual measures.

To provide a more robust setting for the difference-in-differences analysis by decreasing the effect of endogeneity created by other factors in the market, the study also uses a matched sample in the difference-in-difference analysis in the next section. For instance, the sample period includes two events that have affected the business environment worldwide, namely the COVID-19 pandemic[17] or other changes in the firm's environment (Brown & Tucker, 2011). Therefore, a matched sample would provide more robust results and help in identifying if the results observed in **Panel A** could be attributable to the introduction of CAMs. The results introduced in **Table 5.8** should be taken in tandem with the ones presented in **Table 5.9**, which presented the results of the matched sample.

[17] The analysis was run after removing firms that had a fiscal year end after December 2019, when news of the COVID-19 pandemic first emerged. Similar to Burke et al. (2023), several cutoff dates were examined, namely firms with fiscal years ending on the first of January, February, March, April, May and June 2020. The results are consistent regardless of removing these firms for both the full sample and the matched sample.

5.6.1.1 Matched sample

Using propensity score matching (PSM) to create a matched sample is a popular tool in recent archival accounting research that is used to navigate endogeneity concerns that are inherently present in a multiple regression analysis. Specifically, PSM decreases the potential bias that could be introduced to a multiple regression analysis through model misspecification and significant dissimilarities between adopting and non-adopting cross-sections (Rosenbaum & Rubin, 1983; Shipman et al., 2016). While using a matched sample reduces endogeneity concerns, its main inherent drawback is limiting the sample to firms with similar control variables values in spite of the variations in the dependent variable.

Following recent archival studies (Burke et al., 2023; Duboisée de Ricquebourg & Maroun, 2024) as well as the mechanisms outlined in Shipman et al. (2016) and Abadie and Imbens (2016), the matched sample was created by estimating propensity scores using a logit model where the dependent variable is the likelihood of the firm being a large accelerated filers (*adopt* = 1) and using the same control variables in **Equation 5.1**. The primary design choices for estimating the propensity score, namely using a binary variable as the dependent variable in the prediction model, and the control variables in **Equation 5.1** as covariates, is supported by the study's setting as well as prior literature, and make the estimation process much more straightforward (Peel & Makepeace, 2012; Shipman et al., 2016). Using these propensity scores, each treatment observation (*adopt* = 1) was matched with its single closest control observation (without replacement) based on their industry, *post* binary variable, and size of their audit firm (Big 4 or non-Big 4) within a calliper distance of 0.1 where a suitable control observation was found (Burke et al., 2023; Duboisée de Ricquebourg & Maroun, 2024). These design choices are best practices in accounting research as they decrease the likelihood of poor matches, but result in a significantly smaller sample (Shipman et al., 2016). The binary variable post was used instead of the fiscal year due to the fact that the effective date was in June, 2019, thus the first year of reporting CAMs for some firms was 2019 and others was 2020, thus making it impossible to have a balanced PSM sample. Finally, to assess the quality of the matching process, a test of the difference in the mean between the treatment and control groups is performed to ensure that the difference in means is statistically insignificant between both groups, and the balance of the covariates after matching was tested using an F-test to ensure the treatment and control groups have a similar distribution of the propensity scores (Shipman et al., 2016).

While **Table 5.8** shows a significant interaction term *Post*Adopt* at 1% for four out of the five measures, **Table 5.9** shows a significant interaction term for complexity only (p<0.1). This implies

that CAM disclosure has led to management using more complex terminology in their communication with the users through the MD&A. This is in line with Dyer et al. (2017), who explain that changes in auditing regulations, such as the introduction of SOX, are associated with an increase in the complexity of texts in the 10-K report. Overall, this suggests that while there were significant changes to the MD&A sections for large accelerated filer after the effective date of AS 3101, these changes cannot be attributed to CAMs disclosures, which contradicts the predictions made in this study.

The lack of significant changes to the textual properties of the MD&A can be attributable to a number of elements. First, it is possible that while CAMs may operate as a monitoring mechanism for audited financial information (Reid et al., 2019), audited narrative disclosures (Al-mulla & Bradbury, 2022; Burke et al., 2023; Drake et al., 2024), they have very little effect on the MD&A sections. This could either be due to the difference in methodology, or the area of the annual report under investigation as MD&A sections have a unique nature. In a more practical sense, this may be due to the lack of interest of equity investors in CAMs (Gutierrez et al., 2018; Lennox et al., 2022), or the lack of perceived "threat of disclosure" by management. Second, as Li (2019) points out, managers use repetitive disclosures to highlight specific information. The lack of changes in the text implies that managers may not have wanted to repeat the same information disclosed by the auditor, either as managers did not want to emphasize the negative information to the users, or as they considered that the information was communicated by the auditor and repeating it will not add incremental value to the users.

If the changes in the textual properties cannot be attributed to the change in regulations, then it could be partially explained by the auditor. Specifically, prior literature suggests that auditors influence MD&A disclosures (De Franco et al., 2020). This is supported by the coefficients for the binary variables for the auditors and the audit-related controls in **Table 5.8** as well as the correlation matrix in **Table 5.7**. Therefore, the additional tests in the study address the possibility of the influence of the auditor on the textual properties of MD&A through CAMs by accounting for the types of CAMs, the topic of CAMs and the number of CAMs.

Table 5.8 - Difference-in-differences and pre-post analyses of textual properties of MD&A sections for the full sample

	(1)		(2)		(3)		(4)		(5)	
	mda_length		***mda_complex***		***mda_spec***		***mda_uncert***		***mda_tone***	
Variable	***Coefficient***	***t-statistic***	***Coefficient***	***t-statistic***	***Coefficient***	***t-statistic***	***Coefficient***	***t-statistic***	***Coefficient***	***t-statistic***
Post	-212.149	(-0.87)	0.429‡	(3.52)	0.000	(0.14)	-0.000	(-0.44)	0.000*	(1.79)
Adopt	349.883	(1.46)	0.276†	(2.23)	0.001†	(2.49)	0.000	(0.55)	-0.000*	(-1.81)
*Post*Adopt*	-1223.996‡	(-8.68)	0.167‡	(3.43)	0.000‡	(2.62)	0.000‡	(4.43)	-0.000	(-0.42)
size	2726.710‡	(17.94)	0.247‡	(3.33)	-0.001‡	(-6.56)	-0.000†	(-2.22)	0.001‡	(4.00)
intang	-322.301	(-0.86)	0.060	(0.36)	0.000	(0.03)	0.002‡	(5.24)	0.002‡	(4.38)
btm	-156.012‡	(-3.27)	-0.025	(-0.97)	0.000†	(2.26)	0.000	(0.97)	0.000	(0.97)
age	-269.799‡	(-2.95)	-0.221‡	(-5.21)	0.000‡	(3.14)	0.000†	(2.49)	0.001‡	(7.20)
risk	2740.191†	(2.01)	1.744†	(2.09)	0.005†	(2.34)	0.001	(0.29)	0.005‡	(2.65)
inst	-302.150	(-1.48)	-0.154*	(-1.76)	-0.001‡	(-3.80)	-0.000	(-0.01)	0.000*	(1.94)
analyst	-29.226	(-1.36)	0.024‡	(3.12)	-0.000	(-1.62)	0.000†	(2.18)	-0.000‡	(-3.55)
litig	-48.905	(-0.30)	0.363‡	(4.30)	-0.000‡	(-2.86)	0.000†	(1.96)	-0.002‡	(-8.67)
ca	-65.840‡	(-4.95)	0.016†	(1.99)	0.000	(0.62)	0.000‡	(2.71)	-0.000	(-1.58)
debtdue	135.427†	(2.49)	0.028	(1.51)	0.000‡	(3.94)	0.000	(0.23)	0.000‡	(3.34)
lev	10.672	(0.81)	0.019‡	(3.13)	0.000	(0.61)	-0.000	(-0.13)	-0.000	(-0.46)
loss	870.575‡	(5.42)	0.341‡	(4.60)	-0.000	(-0.68)	-0.000	(-0.63)	0.002‡	(11.51)
fcf	-1.128*	(-1.81)	0.000‡	(2.87)	0.000‡	(3.79)	0.000	(1.35)	0.000	(0.75)
roa	-167.115‡	(-5.86)	-0.054‡	(-3.96)	0.000	(0.28)	0.000	(0.26)	-0.000‡	(-2.72)
acquire	-256.601†	(-2.16)	-0.029	(-0.42)	0.000	(1.27)	-0.000	(-0.21)	-0.001‡	(-6.48)
downsize	338.060*	(1.84)	0.378‡	(3.41)	-0.000	(-0.17)	-0.000	(-1.37)	0.001‡	(4.22)
busseg	83.326‡	(3.35)	-0.012	(-1.27)	0.000	(1.41)	-0.000†	(-2.30)	0.000	(0.62)
forseg	8.344	(0.67)	-0.012†	(-2.11)	-0.000	(-1.12)	-0.000	(-1.05)	0.000‡	(4.46)
ey	92.858	(0.35)	-0.051	(-0.44)	-0.001‡	(-4.32)	-0.001†	(-2.43)	-0.001‡	(-2.70)
deloitte	141.387	(0.55)	-0.019	(-0.15)	-0.001‡	(-3.89)	-0.000	(-1.31)	-0.000	(-1.35)
kpmg	-398.798	(-1.42)	-0.080	(-0.62)	-0.001‡	(-3.04)	-0.001‡	(-3.83)	-0.000*	(-1.85)
pwc	939.594‡	(3.17)	0.142	(1.10)	-0.001‡	(-5.18)	-0.000	(-0.66)	-0.000	(-0.42)
mcw	-237.986	(-0.70)	-0.078	(-0.56)	0.000	(0.70)	-0.000	(-0.47)	0.001‡	(2.99)
gc	517.437†	(2.42)	0.582‡	(5.08)	0.000	(0.93)	0.001‡	(2.91)	0.002‡	(5.96)
rest	166.882	(0.74)	-0.245†	(-2.29)	0.000	(0.75)	-0.000	(-0.11)	0.000	(1.40)
N	5,320		5,320		5,320		5,320		5,320	
Industry FE	Yes		Yes		Yes		Yes		Yes	
Year FE	Yes		Yes		Yes		Yes		Yes	
Cluster std. error	Yes		Yes		Yes		Yes		Yes	
cons	-5042.463‡	(-4.39)	14.294‡	(23.56)	0.016‡	(9.73)	0.011‡	(9.67)	0.004‡	(3.65)
adj. R²	0.371		0.123		0.176		0.066		0.184	

Notes: the table shows the coefficients and t-statistics (in parentheses) for the difference-in-differences and pre-post regression model for the full sample (**Equation 5.1**) including industry and year fixed effects. The analyses employ clustered standard errors clustered by firm. Columns 1 through 5 show the results for *mda_length*,*mda_complex*, *mda_spec*, *mda_uncert* and *mda_tone* as dependent variables, respectively. ‡, †, and * denote p-value significance at the 1%, 5%, and 10% levels. All dependent variables are defined in **Table 5.1** and all independent variables are defined in **Table 5.2**.

Table 5.9 - Difference-in-differences and pre-post analyses of textual properties of MD&A sections for the matched sample

	(1)		(2)		(3)		(4)		(5)	
	mda_length		*mda_complex*		*mda_spec*		*mda_uncert*		*mda_tone*	
Variable	***Coefficient***	***t-statistic***	***Coefficient***	***t-statistic***	***Coefficient***	***t-statistic***	***Coefficient***	***t-statistic***	***Coefficient***	***t-statistic***
Post	-982.650	(-1.437)	0.147	(0.276)	0.001	(1.168)	0.000	(0.552)	0.000	(0.331)
Adopt	74.823	(0.169)	-0.268	(-1.392)	0.000	(0.460)	0.000	(0.452)	-0.001‡	(-2.825)
*Post*Adopt*	155.043	(0.295)	0.504*	(1.831)	0.000	(0.390)	-0.000	(-0.217)	0.001	(1.224)
size	3,406.318‡	(7.318)	0.930‡	(2.976)	-0.001†	(-2.593)	-0.000	(-0.867)	0.002‡	(2.229)
intang	75.022	(0.074)	0.873†	(2.059)	0.000	(0.475)	0.001	(0.950)	0.001	(1.369)
btm	-342.322†	(-1.995)	0.025	(0.456)	0.000	(0.037)	0.000	(0.712)	-0.000	(-0.509)
age	-534.884‡	(-2.886)	-0.202†	(-2.175)	0.001‡	(4.071)	0.000†	(1.979)	0.001‡	(3.931)
risk	4,236.316	(0.530)	3.477	(1.063)	0.006	(1.154)	-0.004	(-0.524)	-0.013	(-1.309)
inst	209.704	(0.762)	-0.262	(-1.397)	-0.001‡	(-2.605)	-0.000	(-0.659)	-0.000	(-0.710)
analyst	1.403	(-0.058)	0.041*	(1.725)	-0.000	(-1.566)	0.000	(0.636)	-0.000	(-1.716)
litig	283.061	(0.860)	0.477†	(2.647)	-0.001†	(-2.125)	0.001*	(1.726)	-0.001‡	(-3.494)
ca	-84.401‡	(-3.212)	0.045†	(1.879)	0.000†	(2.263)	0.000	(0.520)	0.000†	(1.605)
debtdue	171.787	(1.658)	-0.062	(-0.942)	0.000	(1.166)	0.000	(0.451)	0.000	(0.526)
lev	-4.131	(-0.131)	0.029*	(1.872)	0.000	(1.227)	0.000	(1.223)	-0.000	(-0.005)
loss	289.930	(0.907)	0.316*	(2.025)	0.000	(0.709)	0.000	(0.527)	0.001‡	(4.298)
fcf	-5.971†	(-2.358)	-0.002*	(-1.606)	-0.000	(-0.328)	0.000	(0.893)	0.000†	(2.097)
roa	-125.252	(-1.304)	-0.225‡	(-4.400)	-0.000	(-1.477)	-0.000‡	(-2.864)	-0.001‡	(-6.859)
acquire	46.197	(0.191)	-0.227	(-1.211)	-0.000	(-0.145)	-0.001*	(-1.923)	-0.001†	(-2.391)
downsize	680.989	(0.479)	0.337	(0.474)	0.002	(1.523)	-0.001	(-0.540)	0.000	(0.063)
busseg	20.913	(0.518)	-0.010	(-0.408)	-0.000	(-0.158)	-0.000	(-0.798)	0.000†	(2.583)
forseg	15.688	(0.995)	0.005	(0.410)	-0.000	(-0.416)	0.000	(0.318)	0.000	(1.090)
ey	171.758	(0.425)	0.599‡	(2.710)	-0.000	(-0.681)	-0.001†	(-1.984)	-0.001	(-1.591)
deloitte	-336.352	(-0.830)	0.153	(0.652)	-0.000	(-0.408)	-0.000	(-0.925)	-0.000	(-0.362)
kpmg	-712.525	(-1.576)	0.377	(1.447)	0.000	(0.754)	-0.001†	(-2.311)	0.000	(0.697)
pwc	1,315.635†	(2.578)	0.440*	(1.802)	-0.000	(-1.051)	-0.001†	(-2.144)	0.000	(0.450)
mcw	-176.219	(-0.312)	0.030	(0.095)	0.001	(1.296)	0.000	(0.194)	0.001	(1.169)
gc	582.692	(0.382)	1.213*	(1.731)	-0.001	(-0.539)	-0.000	(-0.094)	0.002†	(2.339)
rest	-1,039.248	(-1.611)	0.127	(0.380)	0.001	(1.608)	-0.001	(-1.024)	-0.000	(-0.403)
N	592		592		592		592		592	
Industry FE	Yes		Yes		Yes		Yes		Yes	
Year FE	Yes		Yes		Yes		Yes		Yes	
Cluster std. error	Yes		Yes		Yes		Yes		Yes	
cons	-7,960.302‡	(0.008)	8.879‡	(0.000)	0.013‡	(0.000)	0.011‡	(0.002)	-0.004	(0.260)
adj. R^2	0.292		0.153		0.114		0.062		0.275	

Notes: the table shows the coefficients and t-statistics (in parentheses) for the difference-in-differences and pre-post regression model for the matched sample (**Equation 5.1**) including industry and year fixed effects. The analyses employ clustered standard errors clustered by firm. Columns 1 through 5 show the results for *mda_length*,*mda_complex*, *mda_spec*, *mda_uncert* and *mda_tone* as dependent variables, respectively. ‡, †, and * denote p-value significance at the 1%, 5%, and 10% levels. All dependent variables are defined in **Table 5.1** and all independent variables are defined in **Table 5.2**.

5.6.2 Do Managers respond to the type of CAMs?

To answer RQ 5.*2*, the study investigates if management responds to the type of CAMs disclosed by the auditor as explained in **Section 4.3**. It could be argued that management may respond to more risky or uncertain CAMs through changes in the MD&A text as a means to respond to the increased uncertainty. Following the argument in **Section 4.3**, measurement-related CAMs often induce more uncertainty (Kachelmeier et al., 2020). To test this prediction, the following equation is used:

$$mda\_text_{i,t} = \beta_0 + \beta_1 cam_{i,t} + controls + INDFE + FYFE + \varepsilon_{i,t}$$

(**Equation 5.2**)

Where the variable *mda_text* refers to the dependent variables in **Table 5.1**, and the variable *cam* refers to the type of CAMs in **Table 4.2**. Similar to **Section 4.3**, the coding method for the types of CAMs followed Lennox et al. (2022) and Sierra-García et al. (2019) where CAM topics that refer to individual accounts, such as Goodwill and Revenue recognition, are classified as an account-related cam (*acam*). CAMs that are related to the entity as a whole, such as business combinations, internal controls, discontinued operations, fraud and bribery and going concern are classified as entity-related CAMs (*ecam*). Following Lennox et al. (2022) and Sierra-García et al. (2019), the glossary of words to indicate uncertainty developed by Loughran and McDonald (2011) was used to identify measurement-related CAMs (*mcam*). CAMs that did not include any of the uncertainty words were reviewed individually to determine whether they were measurement or category-related (*ccam*).

Table 5.9 shows the regression results for **Equation 5.2**, for the dependent variables in the study[18]. **Panels A** through **D** show the results for the *ccam*, *mcam*, *ecam*, and *acam*, respectively. The results show that the measurement-related, entity-related and account-related CAMs are associated with changes in the MD&A text. Specifically, for one measurement-related CAM, the firm's MD&A tends to be longer, more complex, more uncertain and has a more negative tone, on average. Furthermore, for every entity-related CAM, the firm's MD&A tends to be longer and more complex, on average. Lastly, for every account-related CAM, the firm's MD&A tends to be longer, more uncertain and has a more negative tone, on average. Overall, the results in **Tables 5.8** and **5.9** imply that while there are changes in the MD&A text for large accelerated filers after the effective date that cannot be attributed to CAMs, these changes, at least to some extent, are a reflection of the type of information the auditor

[18] Since non-adopters used a control group in this study do not disclose CAMs, they cannot be used in a difference in differences analysis. Therefore, the sample used in tests investigating the reaction to specific CAM characteristics is limited to adopters after the effective date.

discloses in the audit report. Another interpretation of the results is based on prior literature that suggests that auditors are able to influence the textual properties of the MD&A (De Franco et al., 2020). Therefore, the changes in the MD&A that are associated with the type of CAMs may be a reflection of the auditor's awareness of the CAMs they will disclose.

Table 5.10 - Linear regression results for textual changes in the MD&A considering types of CAMs

Panel A - Classification-related CAMs

	(1) ***mda_length***	**(2)** ***mda_complex***	**(3)** ***mda_spec***	**(4)** ***mda_uncert***	**(5)** ***mda_tone***
ccam	1,283.972	-0.33	-0.001	0.000	-0.001
	(1.08)	(-0.91)	(-1.10)	(-0.88)	(-1.16)
Controls	Yes	Yes	Yes	Yes	Yes
N	1,175	1,175	1,175	1,175	1,175
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Cluster std. error	Yes	Yes	Yes	Yes	Yes
_cons	-8917.995***	5.964***	0.007***	0.004*	0.002
	(-3.13)	(5.67)	(3.64)	(1.88)	(0.79)
adj. R^2	0.161	0.138	0.07	0.06	0.249

Panel B - Measurement-related CAMs

	(1) ***mda_length***	**(2)** ***mda_complex***	**(3)** ***mda_spec***	**(4)** ***mda_uncert***	**(5)** ***mda_tone***
mcam	849.894***	0.198**	0.000	0.000**	0.001***
	(3.46)	(2.55)	(-0.76)	(2.55)	(4.42)
Controls	Yes	Yes	Yes	Yes	Yes
N	1,175	1,175	1,175	1,175	1,175
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Cluster std. error	Yes	Yes	Yes	Yes	Yes
_cons	-8317.018***	6.250***	0.007***	0.005**	0.003
	(-2.95)	(5.93)	(3.62)	(2.13)	(1.23)
adj. R^2	0.175	0.142	0.069	0.066	0.261

Panel C - Entity-related CAMs

	(1) *mda_length*	(2) *mda_complex*	(3) *mda_spec*	(4) *mda_uncert*	(5) *mda_tone*
ecam	766.648**	0.175*	0.000	0.000	0.000
	(2.55)	(1.76)	(0.47)	(0.79)	(-0.34)
Controls	Yes	Yes	Yes	Yes	Yes
N	1,175	1,175	1,175	1,175	1,175
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Cluster std. error	Yes	Yes	Yes	Yes	Yes
_cons	-8360.575***	6.236***	0.007***	0.004**	0.002
	(-2.91)	(5.9)	(3.72)	(2.01)	(0.84)
adj. R²	0.168	0.14	0.069	0.06	0.248

Panel D - Account-related CAMs

	(1) *mda_length*	(2) *mda_complex*	(3) *mda_spec*	(4) *mda_uncert*	(5) *mda_tone*
acam	466.746**	0.075	0.000	0.000*	0.001***
	(2.09)	(0.89)	(-1.42)	(1.87)	(4.66)
Controls	Yes	Yes	Yes	Yes	Yes
N	1,175	1,175	1,175	1,175	1,175
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Cluster std. error	Yes	Yes	Yes	Yes	Yes
_cons	-9134.636***	6.053***	0.007***	0.004*	0.002
	(-3.20)	(5.76)	(3.68)	(1.96)	(0.95)
adj. R²	0.164	0.138	0.07	0.063	0.263

Notes: the table shows the coefficients and t-statistics (in parentheses) for the regression model (**Equation 5.2**) including industry and year fixed effects. The dependent variables are defined in **Table 5.1** and control variables are defined in **Table 5.2**. The analyses employ clustered standard errors clustered by firm. All continuous variables are winsorized at 1 and 99%. **Panels A** through **D** includes a variable denoting a type of CAM independently, namely *ccam, mcam, ecam* and *acam*. ***, **, and * denote p-value significance at the 1%, 5%, and 10% levels.

5.6.3 Do Managers respond to CAM topics?

Table 5.10 responds to *RQ 5.3*, and shows the results of the linear regression (**Equation 5.2)** after considering the CAM topics discussed in **Table 4.5**. The results in the table are consistent with the results in **Table 5.9**, where there is a significant association between a number of CAM topics and the textual properties of the MD&A. Specifically, the text is longer when the auditor includes a CAM discussing Business combinations, non-financial assets, revenue & sales matters or systems, policies & governance. Similarly, the text is more complex if the CAM discusses a financial asset, operating expenses, tax, systems, policies & governance or fresh start accounting & going concern. Moreover,

MD&A texts tend to include more uncertainty if the CAM discusses a *Business Combination*, *Non-financial assets*, *Revenue & sales matters* and *Tax*. Finally, MD&A texts tend to take a more negative tone if the CAM discusses a *Non-financial asset*, *Liabilities & Provisions*, *Tax*, S*ystems, policies & governance*, and tend to take a more positive tone if the CAM discusses *Operating expenses* or *Fresh start accounting & going concern*. The results in the table may be also attributable to the influence of the auditor on the MD&A.

Table 5.11 - Linear regression results for textual changes in the MD&A including CAM topics

	(1) *mda_length*	(2) *mda_complex*	(3) *mda_spec*	(4) *mda_uncert*	(5) *mda_tone*
CAM topic_Business combination	944.399**	0.216	0.000	0.001**	-0.000
	(2.07)	(1.60)	(1.14)	(2.10)	(-0.24)
CAM topic_non financial assets	596.544*	0.081	-0.000	0.001**	0.001***
	(1.76)	(0.70)	(-1.14)	(2.42)	(5.88)
CAM topic_financial assets	575.686	0.771*	-0.001	0.000	-0.000
	(0.50)	(1.72)	(-0.99)	(0.06)	(-0.14)
CAM topic_operating expenses	231.051	0.937**	0.001	-0.001	-0.002***
	(0.33)	(2.42)	(1.15)	(-1.53)	(-2.79)
CAM topic_liabilities & provisions	692.233	0.055	-0.000	0.000	0.002***
	(1.60)	(0.37)	(-1.27)	(1.20)	(6.00)
CAM topic_revenue & sales matters	876.385***	0.147	-0.000	0.000*	-0.000
	(2.83)	(1.07)	(-1.20)	(1.93)	(-0.59)
CAM topic_tax	518.635	0.249*	-0.000	0.001*	0.001***
	(1.33)	(1.67)	(-0.62)	(1.80)	(3.36)
CAM topic_systems, policies and governance	2125.950***	0.304*	-0.000	-0.000	0.001*
	(4.07)	(1.86)	(-1.21)	(-1.10)	(1.66)
CAM topic_fresh start accounting & going concern	1166.621	-1.574***	-0.001	0.000	-0.004**
	(0.64)	(-3.59)	(-0.36)	(0.02)	(-2.35)
CAM topic_complex estimates	871.947	-0.152	0.000	0.000	0.000
	(1.24)	(-0.53)	(0.73)	(0.36)	(0.38)
Controls	Yes	Yes	Yes	Yes	Yes
N	1,175	1,175	1,175	1,175	1,175
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Cluster std. error	Yes	Yes	Yes	Yes	Yes
_cons	-7563.749***	6.578***	0.007***	0.004**	0.002
	(-2.62)	(6.21)	(3.64)	(2.02)	(1.11)
adj. R^2	0.181	0.143	0.069	0.067	0.300

Notes: The table shows the coefficients and t-statistics (in parentheses) for the regression analysis (**Equation 5.2**) in addition to dummy variables to account for CAM topics. The models include industry and year fixed effects. The dependent variables are defined in **Table 5.1** and the control variables are defined in **Table 5.2**. The analyses employ clustered standard errors clustered by firm. All continuous variables are winsorized at 1% and 99%. ***, **, and * denote p-value significance at the 1%, 5%, and 10% levels.

5.6.4 Do Managers respond to the number of CAMs?

Following Klevak et al. (2023), who use the number of CAMs as a measure of extensive CAM disclosures and find a significant association between the number of CAMs and stock volatility, *RQ 5.4* investigates if the number of CAMs is associated with changes in the textual properties of the MD&A. **Table 5.11** provides the results of the regression analysis (**Equation 5.2**), where the variable *cam* is replaced by the number of CAMs reported in the audit report, *cam_no*. Similar to **Tables 5.9** and **5.10**, the results show that an increase of one CAM is associated with a longer, more complex, more uncertain and more negative MD&A text. Overall, the results suggest that either management may be picking up differences in CAM disclosures and reacting to them, or that auditors are influencing the textual properties of the MD&A.

Table 5.12 - Linear regression results for textual changes in the MD&A considering the number of CAMs

	(1) ***mda_length***	**(2)** ***mda_complex***	**(3)** ***mda_spec***	**(4)** ***mda_uncert***	**(5)** ***mda_tone***
Cam_no	906.953***	0.180**	-0.000	0.000**	0.001***
	(3.70)	(2.32)	(-1.02)	(2.37)	(4.15)
Controls	Yes	Yes	Yes	Yes	Yes
N	1,175	1,175	1,175	1,175	1,175
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Cluster std. error	Yes	Yes	Yes	Yes	Yes
_cons	-8046.301***	6.272***	0.007***	0.005**	0.003
	(-2.87)	(5.94)	(3.59)	(2.16)	(1.27)
adj. R^2	0.177	0.141	0.069	0.065	0.260

Notes: The table shows the coefficients and t-statistics (in parentheses) for the regression analysis (**Equation 5.2**) where the independent variable of interest is *cam_no,* which refers to the number of CAMs in the audit report. The models include industry and year fixed effects. The dependent variable is *shrt_o*. The analyses employ clustered standard errors clustered by firm. All continuous variables are winsorized at 1% and 99%. ***, **, and * denote p-value significance at the 1%, 5%, and 10% levels. All dependent variables are defined in **Table 5.1** and all control are defined in **Table 5.2**

5.6.5 Alternative measures

In an attempt to obtain a comprehensive understanding of the potential changes to the MD&A text, the study employs different measures for four of the dependent variables, namely complexity, specificity, uncertainty and tone. Specifically, the variable *mda_smog* refers to the SMOG readability index, which has an inverse association with readability (Fisher et al., 2019; Rajabalizadeh, 2023). In other words, the higher the SMOG index, the more complex the text is. Additionally, the variables

mda_spec_pos, mda_unc_pos and *mda_tone_pos* refer to the ratio of specific words, uncertain words and negative words to the number of positive words in the text. Lastly, the variable *mda_sent* refers to the sentiment of the text, which measures the polarity of the text on a scale between -1 and 1, where -1 refers to a text with an extremely high negative tone, and 1 refers to a text with an extremely high positive tone[19], making it another measure of tone.

Table 5.12 shows the results of the results of the difference-in-differences regression analysis (**Equation 5.1**) using the alternative measures, where **Panel A** shows the results of the full sample and **Panel B** shows the results for the matched sample. Columns 1 through 5 show the results for *mda_smog*, *mda_spec_pos*, *mda_unc_pos*, *mda_tone_pos* and *mda_sent* as dependent variable, respectively[20]. Year and industry-fixed effects are considered in the test. Standard errors are clustered by firm.

The results in **Table 5.12** are consistent with the results shown in T**able 5.8**, where the coefficients for the measures of complexity (*smog*), specificity (*mda_spec_pos*) and uncertainty (*mda_unc_pos*) are significant for the full sample, and only the measure of complexity (*smog*) is significant for the matched sample. Additionally, the variables *mda_tone_pos* and *mda_sent* have insignificant coefficients for the full sample, indicating no changes in the tone and polarity of the text for adopting firms after the effective date of AS 3101.

[19] Polarity is calculated using the Python library TextBlob (https://textblob.readthedocs.io/en/dev). This method is different from the method used in calculating *mda_tone* as polarity does not take into consideration the accounting and finance-oriented nature of the text.

[20] The number of observations in columns 2, 3 and 4 is less than the number of observations for other models as four observations had no positive words, which was the denominator in the variables corresponding to these columns.

Table 5.13 - Difference-in-differences and pre-post analyses of textual properties of MD&A sections using alternative measures

Panel A - Full Sample

Variable	(1) *mda_smog*	(2) *mda_spec_pos*	(3) *mda_unc_pos*	(4) *mda_tone_pos*	(5) *mda_sent*
Post	0.336***	-0.052	-0.087	0.045	-0.000
	(4.14)	(-0.72)	(-0.98)	(0.60)	(-0.04)
Adopt	0.188**	0.093	-0.019	-0.119*	-0.001
	(2.24)	(1.54)	(-0.27)	(-1.93)	(-0.87)
*Post*Adopt*	0.121***	0.051*	0.106***	0.027	0.001
	(3.68)	(1.91)	(3.28)	(0.90)	(1.25)
Controls	Yes	Yes	Yes	Yes	Yes
N	5,320	5,316	5,316	5,316	5,320
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Cluster std. error	Yes	Yes	Yes	Yes	Yes
cons	13.205***	3.831***	2.867***	1.764***	0.054***
	(32.49)	(7.36)	(8.28)	(4.08)	(8.80)
adj. R²	0.129	0.220	0.112	0.150	0.058

Panel B - Matched Sample

Variable	(1) *mda_smog*	(2) *mda_spec_pos*	(3) *mda_unc_pos*	(4) *mda_tone_pos*	(5) *mda_sent*
Post	0.166	0.081	-0.213	-0.132	-0.006
	(0.474)	(0.416)	(-0.717)	(-0.539)	(-0.907)
Adopt	-0.165	-0.063	-0.127	-0.286***	-0.001
	(-1.163)	(-0.730)	(-1.279)	(-3.055)	(-0.560)
*Post*Adopt*	0.325*	0.013	0.014	0.113	0.001
	(1.651)	(0.100)	(0.098)	(0.832)	(0.419)
Controls	Yes	Yes	Yes	Yes	Yes
N	592	592	592	592	592
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Cluster std. error	Yes	Yes	Yes	Yes	Yes
cons	9.561***	3.003***	2.942***	-0.162	0.091***
	(0.000)	(0.002)	(0.004)	(0.863)	(0.000)
adj. R²	0.158	0.054	0.048	0.176	0.057

Notes: the table shows the coefficients and t-statistics (in parentheses) for the difference-in-differences and pre-post regression model (**Equation 5.1**) including industry and year fixed effects. The analyses employ clustered standard errors clustered by firm. **Panel A** shows the results for the full sample, while **Panel B** shows the results for the matched sample. Column 1 shows the results for *mda_smog* as a dependent variable, column 2 shows the results for *mda_spec_pos* as a dependent variable, column 3 shows the results for *mda_unc_pos* as a dependent variable, column 4 shows the results for *mda_tone_pos* as a dependent variable, and column 5 shows the results for *mda_sent* as a dependent variable. ***, **, and * denote p-value significance at the 1%, 5%, and 10% levels. All independent variables are defined in **Table 5.2**.

5.7 Conclusion, contributions and limitations

As an unaudited narrative section of Form 10-K sections have received increasing attention in academic literature due to their relevance to users, and their ability to provide firm-specific information through the voice of the management. Motivated by prior literature studying the textual properties of these narrative disclosures, as well as literature documenting the influence of CAM disclosures on management reporting behaviour, this study investigates if and how management responds to CAM disclosures through changes in the textual properties in item 7 of the 10-K report, which is the MD&A section.

Using a balanced U.S. based sample of large accelerated filers as the treatment group, and non-large accelerated filers as the control group, the study employs a difference-in-difference research setting using a control group of non-large accelerated filers, and a control group of matched non-large accelerated filers to investigate changes to five textual properties of the MD&A section. The results for the full sample document significant changes to the textual properties of MD&A sections for large accelerated filers after the implementation of the new auditing regulations. However, the results of the analysis for the matched sample show that the changes are not attributable to the introduction of CAMs in the audit report, and that the complexity of the MD&A is the only observable change that could be attributable to the disclosure of CAMs. This may indicate that management either do not think readers of the MD&A find CAM disclosures informative, or that they do not perceive a possible threat of disclosure emanating from CAM disclosures. Another less cynical interpretation of the results implies that since auditors have already disclosed certain information in the CAM disclosures, management do not see the need to disclose this information again, either for concern of emphasizing certain negative information highlighted in CAMs, or as they consider that the information was communicated by the auditor and repeating it will not add incremental informational value. While this result contradicts the expectations made based on prior literature (Gold et al., 2020; Reid et al., 2019), this may highlight the uniqueness of the MD&A section as compared to other areas in the annual report.

The additional tests in the study follow the line of thought that suggests that auditors influence the textual properties of the MD&A section (De Franco et al., 2020), where the study documents a statistically significant association between CAM disclosures and the textual properties of the MD&A. Specifically, the results of linear regression analyses show that the textual properties of the MD&A are influenced by the type of CAM, topic of CAM and the number of CAMs disclosed in the audit report.

The results of the study contribute to the line of literature that investigates one of the spillover effect of CAMs, which is managerial disclosure behaviour (e.g. Burke et al., 2023; Gold et al., 2020; Reid et al., 2019). This should be of relevance to standard setters, who explicitly indicate that the new auditing regulations are likely to affect managerial disclosure behaviour (PCAOB, 2017).

One caveat of the analysis is that the sample period used in this study includes events that have affected the financial markets worldwide, such as the COVID-19 pandemic. Thirdly, the assumption used in the propensity score matching, as per prior literature, have led to the dropping of around 90% of the sample. Furthermore, it would be interesting to see if the changes to narrative disclosures extend to other items that discuss external factors in the 10-K, such as item 1A, Risk Factors, or item 7A, Quantitative and Qualitative Disclosures About Market Risk. Furthermore, since the CAM reporting process is likely to involve negotiations and discussions between auditors and the audit committee, future research may explore how auditor and audit committee characteristics moderate the relationship between CAMs and narrative disclosures.

Chapter 6: "Short" of informative: Do Short-sellers react to Critical Audit Matters?

Abstract

This study investigates whether short-sellers respond to Critical Audit Matters (CAMs). In response to calls disputing the usefulness of traditional audit reports, the PCAOB revised relevant auditing standards in favour of expanding audit reports to allow for more disclosures, including the addition of CAMs. Prior literature indicates that short-sellers react to reliable public and private information that predicts negative returns. Since the amount of short-selling interest is positively linked to the overvaluation of the stock and suspicious financial reporting, and since CAMs represent an area of concern for auditors, it is expected that short-sellers will react to CAMs disclosed by auditors, especially CAMs that induce a high level of uncertainty. Contrary to this expectation, the results show no reaction by short-sellers to CAM disclosures. There is, however, weak evidence that suggests that short-sellers may respond to entity-related CAMs, and firms that receive a CAM discussing an operating expense. The results of the main test are robust to different measures of short-interest. The results support earlier findings on the insufficiency of informativeness of CAMs to investors.

6.1 Introduction

This study aims to investigate if short-sellers respond to information disclosed in Critical Audit Matters (CAMs) through increased short-interest. In response to strong calls disputing the usefulness of traditional audit reports, major standard setting bodies worldwide revised relevant auditing standards to reduce information asymmetry between users and auditors by incorporating more relevant and informative disclosures (Minutti-Meza, 2021). In the US, the Public Company Accounting Oversight Board (PCAOB) has adopted Auditing Standard (AS) 3101, which relates to "*The Auditor's Report on an Audit of Financial Statements When the Auditor Expresses an Unqualified Opinion*" (PCAOB, 2017, p. 1). This standard retains the original pass-or-fail nature of the audit report, but adds more information through the disclosing CAMs, which are matters that the auditor has found especially challenging or complex (SEC, 2017).

Yet prior research examining the usefulness of CAMs to investors finds mixed results. On the one hand, a number of studies done in Europe (Bédard et al., 2019), the UK (Gutierrez et al., 2018, 2024; Lennox et al., 2022; Reid et al., 2019), as well as Mainland China and Hong Kong (Liao et al., 2022) do not find a significant investor reaction to CAM disclosures. On the other hand, Li and Luo (2023) provide evidence that the initial disclosure of CAMs by large U.S. accelerated filers was value-relevant and informative. While some of the mixed results can be attributed to different country variations (Choi et al., 2008; Simnett & Huggins, 2014; Simnett & Smith, 2005; Simunic et al., 2017; Van Tendeloo & Vanstraelen, 2011), the variation may also be due to the aggregation of cross-sections of firms into one cluster with little consideration for the differences among firms' regulatory and information settings. Prior literature implies that different types of firms have different information environments (Brent & Addo, 2012; Fosu et al., 2016; Huynh et al., 2020), and that firms with different information environments receive different treatment from financial market participants (e.g. Armstrong et al., 2011). For instance, using a sample of large accelerated filers only, which are known to have a relatively strong information environment, Li and Luo (2023) find that audit reports with one CAM, relative to firms with no CAMs, provide incremental information to equity investors.

In addition, these studies fail to consider that users with varying degrees of professionalism and experience may respond to CAMs differently. Distinguishing between different kinds of investors rather than treating them as one static group is crucial for understanding how CAM disclosures are perceived in the market. This is supported by prior studies by prominent authors in finance, who argue that news is interpreted differently by readers based on their experience, resources and opinions

(Kandel & Pearson, 1995; Miller, 1977; Rubenstein, 1993). This is supported by Köhler et al. (2020), whose experimental research provides evidence that professional investors find CAMs more informative than non-professional investors. Therefore, this research expands on the notion of segregating firms based on their regulatory setting by building on earlier studies that provide evidence of the informativeness of CAMs in the audit reports of large accelerated filers. Simultaneously, this research also aims at isolating a particular, highly sophisticated group of investors, namely short-sellers, and investigating if and how they respond to CAM disclosures. Regarding short-sellers as the most sophisticated market participants is a notion that is heavily supported in the literature. Studies show that short-sellers are more informed than analysts (Drake et al., 2011), making them possibly the most sophisticated participants in financial markets thus justifying the calls by researchers to further examine the role of short-sellers in capital markets.

The choice of examining short-sellers as sophisticated market participants who might react to CAMs is based on two strands of literature. First, the study follows the argument of Diamond and Verrecchia (1987), who contend that short-sellers act upon reliable information that predicts negative returns. A large number of studies have followed that line of thought, indicating that short-sellers react to negative publicly available information (e.g. Dechow et al., 2001). Moreover, a number of studies suggest that short-sellers take advantage of firm-specific events that could lead to negative future returns (e.g. Christophe et al., 2004; Christophe et al., 2010). Karpoff and Lou (2010) add that the amount of short-selling interest is positively linked to the severity of the financial misconduct. Therefore, it is also plausible to argue that the more uncertain the firm's CAMs, the higher the short-interest will be.

Second, this study extends the line of literature that shows that short-sellers utilise auditors and audit reports as sources of information. For instance, short-seller interest is likely to increase after auditor-related "bad news" (Blau et al., 2013). Within the context of the present study, the bad news is the CAMs, to the extent of which CAMs can be perceived as bad news. CAMs highlight the salience of risks, which brings them to the forefront of the attention of users, who then process the information and react to it according to their ability and experience. This is in line with the notion that short-sellers are among the most sophisticated market participants who are able to process information proficiently (Boehmer et al., 2008; Chen, 2016; Diether et al., 2009; Drake et al., 2011; Engelberg et al., 2012), which enables them to process CAMs differently based on the distinct topic of each CAM. Additionally, Engelberg (2008) states that the cost of processing qualitative information is higher than

quantitative information. Since CAMs are constituted of a mix of text and numbers, professional investors, such as short-sellers, are more likely than non-professional investors to be able to process and react to CAMs.

Consequently, the study attempts to examine if short-sellers respond to CAM disclosures by using short-interest as a dependent variable. Additionally, in line with recent studies that encourage investigating the informational content of CAMs on readers of the audit report (Elsayed et al., 2023), this study considers the differences in the informational content of CAMs as observed in similar literature (Kachelmeier et al., 2020; Lennox et al., 2022; Ozlanski, 2019; Sierra-García et al., 2019). This is done by breaking down CAMs into sub-categories that are of interest to short-sellers, specifically CAMs with a high level of certainty vs. CAMs with a low level of certainty, and CAMs that discuss specific accounts vs. CAMs that discuss the firm as a whole. Examining the informational content of CAMs is particularly important when considering short-sellers' ability to observe and process more complicated information. For instance, prior literature provides evidence that measurement-related matters are more complex (Chen, 2022), thus inducing more uncertainty, which is likely to attract short-sellers (Karpoff & Lou, 2010).

This study distinguishes itself from previous studies that examine short-sellers' reaction to CAMs in three main ways. First, the study takes advantage of the staggered approach to implementing AS 3101 in the U.S. by using a difference-in-differences research design where large accelerated filers are the treatment group, and non-large accelerated filers as the control group, unlike prior studies that examined the relationship between short-sellers and CAMs (Rezaee & Homayoun, 2024). Second, the study takes into consideration the differences between the different types of CAMs (as explained in Section 3.2) and the different CAM topics (as explained in Section 4.3.3). This allows us to further understand the reaction of short-sellers to specific pieces of information disclosed by auditors. Third, this study uses the U.S. as a research setting, which is important for two main reasons. First, the U.S. offers a setting where the business environment is significantly more litigious (Simnett et al., 2016). Second, that ratio of short volume is approximately one-fifth of total volume further substantiates the calls for more research into the behaviour of short-sellers (Engelberg et al., 2012). The increased litigation risk, combined with the high short-seller activity, makes the U.S. an appropriate setting for investigating how this unique kind of investors react to the changes in auditing regulations.

The study contributes to the literature in four main ways. Firstly, this study contributes to our understanding of short-sellers and how they interpret publicly available information. Specifically, this study extends the line of literature that shows how short-sellers serve as information intermediaries (Drake et al., 2011) by processing and reacting to expanded audit reports. The research also adds to the line of literature that links auditors and short-sellers as market intermediaries and sources of information for each other (Blau et al., 2013; Cassell et al., 2011; Hope et al., 2017). Thirdly, since the expansion of the audit report was mainly motivated by users' demands, the study also extends the line of literature that addresses the informational value of CAMs to users (e.g. Lennox et al., 2022; Reid et al., 2019). Finally, this line of research responds to the calls for more practically relevant research in accounting (Inanga & Schneider, 2005; Lukka & Becker, 2023; Malmi & Granlund, 2009), which should aid standard setters in future revisions to the relevant auditing standards.

Using a balanced sample of 3,698 firm-year observations, the results of the study show no significant relationship between short-seller interest. These results are robust for a number of alternative measures of short-interest, namely short-interest decile ranking and change in short-interest, as well as a sample of matched observations based on propensity scores. The result is consistent with prior literature investigating the reaction of equity investors to CAMs (e.g. Burke et al., 2023; Gutierrez et al., 2018; Reid et al., 2019), as well as short-sellers reaction to CAMs (Rezaee & Homayoun, 2024). The results of additional tests do not find evidence that suggests that short-sellers react to the type of CAMs, or the number of CAMs disclosed. There is, however, evidence to suggest that short-sellers may be interested in firms that receive CAMs related to operating expenses and CAMs related to systems, policies and governance, and that short-interest is negatively associated with firms that receive CAMs related to financial assets.

The remainder of this study is divided as follows: Section 6.2 reviews the relevant literature, where section 6.2.1 presents the literature on investor perception of CAMs, Section 6.2.2 presents the literature on short-sellers and how they obtain information, and Section 6.2.3 presents the literature on why it is expected that short-sellers react to CAMs as well as the research question. Section 6.3 introduces the methodology, empirical model, and variables description. Section 6.4 discusses the identification strategy and the sample composition. Section 6.5 presents the descriptive statistics, followed by Section 6.6 which presents the empirical results. Finally, the conclusion, recommendations and limitations of this study are presented in Section 6.7.

6.2 Literature Review

6.2.1 Investor perception of CAMs

Studies examining investor reaction to CAMs have been conducted in three different settings, namely Europe, the United States and China, and offer mixed results. Lennox et al. (2022) concluded that disclosing the risk of material misstatements, the predecessor to the CAM in the United Kingdom, has no significant effect on investor reaction. Their results support the notion that investors rarely find these additional disclosures informative (Gutierrez et al., 2018). Their study involved a sample of firms whose audits were mandated to follow the 2013 version of ISA (UK) 700, which required auditors to disclose risks of material misstatements (RMMs) rather than key audit matters (KAMs), which are the equivalent of CAMs in the United Kingdom. Lennox et al. (2022) provide further evidence that the information disclosed in RMMs found its way to the investors using earnings announcements or press releases, and has already been reflected in the stock price before the RMM disclosure in the audit report. Gutierrez et al. (2018) also find that there is no significant effect on how investors react to the release of the expanded auditor's report in the short term based on a study conducted in the UK. Bédard et al. (2019) show evidence that Justifications of Assessments (JOAs), a disclosure that is similar to CAMs in France, have no significant effect on abnormal returns or abnormal trading volume in France. Similar results were obtained by Burke et al. (2023) in their U.S.-based study. These results are consistent with the notion that CAMs do not provide incremental information to investors.

When examining a specific cross-section in the U.S., namely large accelerated filers, Li and Luo (2023) examine a sample of large accelerated filers with and without CAMs, and find evidence to suggest that the presence of a single CAM in the audit report provides incremental information to equity investors without a significant increase in cost. The results of Li and Luo (2023) highlight the importance of examining cross-sections of firms to take advantage of the differences in the regulatory framework. Lastly, evidence from China suggests that abnormal trading volume and earnings response coefficient have changed following the adoption of the new auditing standards. The authors also emphasize that within their research setting, expanded audit reports are more useful for private sector

firms than for state-owned ones and for firms with high information asymmetry (Dang et al., 2017; Goh et al., 2023; Hu et al., 2019)[21].

Moreover, in an experimental research setting, Elliott et al. (2020) show evidence that investors respond positively to increased disclosure in the expanded auditor's report in a laboratory setting. Specifically, increased disclosure by auditors indicating that a firm has a high financial reporting quality increases investors' willingness to pay more for the firm's shares. This shows that investors perceive the auditor's report as a reliable method of communication and react to information disclosed in the expanded audit report. This shows that investors perceive the auditor's report as a reliable method of communication, and perceive firms that have high financial reporting quality as cooperative firms. Furthermore, in a similar research setting, Köhler et al. (2020) consider the distinction between professional and non-professional investors. The authors find that professional investors find CAM disclosure to be informative, while non-professional investors do not. Christensen et al. (2014) indicates otherwise by claiming that non-professional investors who are presented with an audit report with a new CAM that induces uncertainty are more likely to change their decision with regard to investing in that firm. The negative influence of the CAM disclosure, however, is diminished if the CAM is followed by a resolution paragraph in the audit report. Similar results were obtained by Rapley et al. (2021), where their results suggest that non-professional investors are less likely to invest in a firm if one CAM is disclosed, relative to disclosing no CAMs. These results imply that unlike non-professional investors who require a resolution paragraph, professional investors understand that in order for the auditor to issue an unqualified report, all outstanding issues must have been resolved in a manner that is satisfactory to the auditor, or at least, discussed with those in charge with governance in the firm, even if the resolution was not disclosed in the report. These results also highlight the importance of dissecting different user groups so that the impact of CAM disclosures can be fully understood.

Taken together, the mixed results in CAM literature can be attributed to three main factors: country settings, sample identification strategies and cross-sections, and the type of investors involved in experimental studies. Therefore, similar to Li and Luo (2023), the study utilises a U.S.-based sample.

[21] The results of research based on Chinese data could raise some questions due to the high level of information asymmetry in the country Hu et al. (2019). The high level of information asymmetry and the low level of financial reporting quality/audit quality associated with Chinese firms could explain the significant impact of a regulatory change that involves higher disclosure.

Moreover, following prior experimental studies (Christensen et al., 2014; Köhler et al., 2020; Rapley et al., 2021), the present study acknowledges the difference between professional and non-professional investors in terms of opinions, estimations, and the ability to process and interpret information (Kandel & Pearson, 1995; Miller, 1977; Rubenstein, 1993). Therefore, the study expands on the findings of Köhler et al. (2020), and takes into account what is arguably the most sophisticated group of investors, namely short-sellers (Blau et al., 2015). Desai et al. (2016) differentiate between different professional investors and provide evidence that short-sellers are the fastest group of information intermediaries to recognize negative information and react to it. Specifically, they were the fastest group of intermediaries that realized the increased risk of bank distress in publicly available information before the 2008 financial crisis. Moreover, Aitken et al. (1998) show that news of short sales can be interpreted as bad news and incorporated into stock prices within 15 minutes, indicating the significant role of short-sellers as information intermediaries. This is in line with earlier studies that suggest that short-sellers have a superior ability to process and react to information compared to other intermediaries (Chen, 2016; Drake et al., 2011). Therefore, while the aforementioned studies enhance our understanding of how investors react to CAMs, in order to fully understand the informational value of CAMs, further investigation is required as to whether highly sophisticated groups of investors, such as short-sellers react to their disclosure.

6.2.2 Short-sellers

Short selling is the controversial trading strategy of selling securities that are not owned by the seller, but rather borrowed from a broker. Profit is made by selling the borrowed security at a high price, then buying the security at a lower price at a later point in time, and returning it to the original owner. The difference in prices between the original selling price and the new lower buying price represents the short-sellers' profit. The role and strategy of short-sellers are heavily debated among scholars. One view identifies short-sellers as sophisticated investors who play a significant disciplinary role for managers, as well as contribute to the overall market efficiency through uncovering overvalued stocks (Boehmer et al., 2013; Christophe et al., 2010). Others view short-sellers as predatory investors whose actions lead to market illiquidity (e.g. Brunnermeier & Pedersen, 2005; Rahman & Sah, 2022). For instance, there is anecdotal evidence of short-sellers using the "distort and short" strategy (Cox, 2008).

Since their strategy depends on the expectation that the share price will decrease, short-sellers seek information that is reliable (Boehmer et al., 2008; Diamond & Verrecchia, 1987; Rapach et al., 2016), predicts future price decreases (Dechow et al., 2001; Drake et al., 2011) and negative returns (Asquith et al., 2005; Au et al., 2009; Diether et al., 2009; Mohamad et al., 2013). In line with this view, Rapach et al. (2016, p.46) argues that short-interest is "arguably the strongest predictor of aggregate stock returns".

Additionally, prior literature points out the sophistication of short-sellers as market participants with regard to their ability to process and interpret information. For instance, Chen (2016) finds evidence that short-sellers identify and target firms that have a high risk of financial reporting better than analysts. Furthermore, Drake et al. (2011) find that investing based on short-seller interest, compared to analyst recommendations, results in higher abnormal returns. The authors also argue that the motivations of short-sellers lead to better predictions than analyst recommendations since short-sellers risk their own capital, which gives more credibility to their decision-making process. Desai et al. (2016) provides evidence that short-sellers seem to have been able to recognize future financial distress prior to the 2008 financial crisis, and that they were the first out of all market intermediaries to react. Additionally, Boehmer et al. (2008) add that short-sellers never conduct transactions for liquidity reasons, but only to generate profit [22]. This makes it logical to assume that short-sellers do not violate the "axioms of rationality" (De Bondt, 2002, p.607), and that they are not operating emotionally, but rather rationally and for their own economic self-interest.

Thus, a significant strand of literature is dedicated to understanding how short-sellers obtain information. Diamond and Verrecchia (1987) argue that due to the risks involved in short-selling, short-sellers will only act based on reliable information that predicts negative future returns. This implies detailed processing of publicly available information (Engelberg et al., 2012). Moreover, a number of studies provide evidence that short-sellers utilise private information as well. For instance, Chakrabarty and Shkilko (2013) find evidence of short-sellers having knowledge that is unobservable to external users in most cases. Liu et al. (2012) obtained similar results as they show that short-sellers have access to information that was not yet publicly available, namely asset write-downs during the 2007-2008 crisis. Singer et al. (2018) provide evidence that short-sellers obtain short positions in firms that are about to disclose a material weakness in their internal control for the first time. Moreover,

[22] Boehmer et al. (2008) also explain that regulations in the U.S. require that proceedings of short-selling plus an additional margin amount must be kept on record to offset any potential loss for the broker in case the short-seller defaults.

Huang (2021) finds that investors react negatively to CAM disclosures for firms with high levels of short-interest. These results indicate that short-sellers have an information advantage (Engelberg et al., 2012), and further supplement the role of short-sellers as information intermediaries in the capital markets (Pownall & Simko, 2005). Consequentially, both superiority in analysing public information and having an access to private information suggest that short-sellers may react to CAMs differently than other market participants.

The notion that short-sellers utilise public information implies their focus on specific firm transactions, or specific accounts that usually involve misstatements or fraud. Drake et al. (2011) provide evidence that short-sellers use information relevant to the company's financial reporting quality, such as earnings surprises and total accruals, in addition to valuation measures and growth measures. Their results also show that short-sellers tend to take greater short positions in firms with high market-to-book ratio, earnings-to-price ratio, total accruals, unexpected earnings, capital expenditures, and sales growth. This implies that short-sellers target firms that are overvalued, exhibit poor financial reporting quality, and have reported excellent operating performance. The findings of Drake et al. (2011) are in line with Chen (2016), as well as earlier findings by Christophe et al. (2004), who also add that short-sellers are interested in firms with earnings surprises. Furthermore, Desai et al. (2006) provide evidence indicating that short-seller interest is higher for firms with higher levels of accruals, which is a proxy for low financial reporting quality.

Taken together, these results suggest that short-sellers target firms that exhibit specific "red flags" (Chen, 2016). Specifically, short-sellers are motivated, at least in part, by low, or suspicious, financial reporting quality, such as earnings surprises and high levels of accruals, and overvaluation of stocks. Moreover, short-interest is associated with unusually high sales growth, as well as firms with high levels of asset write-downs and capital expenditures from a measurement-related perspective rather than a classification-related perspective. This is consistent with the notion that measurement-related matters are more complex and represent a "red flag" for readers (Kachelmeier et al., 2020) and require more audit effort (Christensen et al., 2012). This follows the line of thought introduced by Diamond and Verrecchia (1987), who argue that the inherent short-selling constraints in the market reduce its desirability by investors, thus any short-selling transaction is more likely to involve well-informed investors with access to private, reliable information that will lead to a negative stock return. The more the short-interest in a particular firm, the more the probability of suspicious accounting is performed

(Karpoff & Lou, 2010). As a result, it could be expected that short-sellers are able to process and react to CAMs, particularly to uncertainty-inducing CAMs.

6.2.3 Do short-sellers react to CAMs?

Rubinstein (1993) and Kandel and Pearson (1995) highlight the ability of certain investors to process information in a more superior way than others, thus resulting in different reactions to the same piece of information. As Rubinstein (1993, p.473) phrases it, "Agents reading the same morning newspapers with the same stock price lists will interpret the information differently". Consistent this with the view, and that short-sellers are arguably the most sophisticated and informed market participants (e.g. Blau & Wade, 2012; Boehmer et al., 2008; Drake et al., 2011), Blau et al. (2013) find that short-sellers use auditors as sources of information. Particularly, they find that short-sellers respond to auditor changes, such as auditor downgrades, or changing from a Big-4 auditor to a non Big-4 auditor, auditor resignations and auditor changes resulting from disagreements with the client's management. Their results indicate that short-sellers take short positions relative to firms with "bad news" that relate to auditors. The authors also contend that short-sellers are a subset of the market that is sophisticated enough to distinguish between "good news" and "bad news".

Based on the line of thought of Diamond and Verrecchia (1987), which reasons that short-sellers respond to credible news that implies negative future returns by taking short positions, as well as the view that short-sellers react to audit and auditor-related information (Blau et al., 2013), it is expected that short-sellers will react to CAMs as information introduced by auditors. This is further motivated by the fact that short-sellers, as professional traders, are able to process both textual and numerical information (Engelberg, 2008). Furthermore, the study argues that short-sellers are able to distinguish between CAMs that induce uncertainty and CAMs that do not. Specifically, since AS 3101 requires auditors to disclose how the auditors addressed the matters disclosed (PCAOB, 2017), unseasoned readers are likely to find no information that induces uncertainty or concern, while sophisticated readers, such as short-sellers, will be able to make more sophisticated inferences. Additionally, since short-sellers are interested in specific accounts (Christophe et al., 2004; Desai et al., 2006; Drake et al., 2011; Park, 2017) and certain firm-related information (Singer et al., 2018), it is expected that short-sellers will react to specific CAM topics. Therefore, the main research question and the sub-research questions of this study can be formalised as follows:

RQ 6.1: How do short-sellers react to CAM disclosures?

RQ 6.2: How do short-sellers react to the different types of CAM disclosures?

RQ 6.3: How do short-sellers react to the different topics of CAM disclosures?

RQ 6.4: How do short-sellers react to the number of CAM disclosures?

6.3 Methodology and variables

The study examines whether short-sellers react to CAM disclosures through increased short positions by using AS 3101 as an exogenous shock. Specifically, the study uses the staggered implementation of AS 3101, where only the auditors of large accelerated filers were required to disclose CAMs in the fiscal year ending on or after June 30, 2019, and all other firms in the fiscal year ending on or after June 30, 2020 (SEC, 2017). This allows for the utilization of a difference-in-differences research design that compares two groups of companies with different auditor's report requirements, with large accelerated filers operating as a treatment group, and non-large accelerated filers, acting as a control group. Therefore, the regression model used in the study is presented in **Equation 6.1** below:

$$shrt\_o_{i,t} = \beta_0 + \beta_1 post_{i,t} + \beta_2 adopt_{i,t} + \beta_3 post * adopt_{i,t} + \beta_4\, mret\_c_{i,t-5,t-1} + \beta_5 mret\_p_{i,t-10,t-6} + \beta_6 hshrt\_o_{i,t-3,t-1} + \beta_7 turn_{i,t} + \beta_8 vol\_c_{i,t-5,t-1} + \beta_9 vol\_p_{i,t-10,t-6} + \beta_{10} size_{i,t} + \beta_{11} btm_{i,t} + \beta_{12} ins\_rank_{i,t} + INDFE + FYFE + \varepsilon_{i,t}$$

(**Equation 6.1**)

Where the dependent variable in the equation *shrt_o,* which refers to the short-interest to shares outstanding ratio. The dependent variable is constructed as of the end of the month following the release of CAMs. The date of CAM announcement has been identified as the source date on Audit Analytics, which refers to the date the annual report is released. This gives short-sellers approximately one month to process the information and make a decision, which is consistent with the time frame set in Desai et al. (2016). Utilising the short-shares outstanding ratio is a common practice used in short-interest literature (Bao et al., 2019; Chen et al., 2022; Desai et al., 2002; Drake et al., 2011). Data for short-interest was obtained from the Compustat Supplemental Short-interest File Database. This database contains monthly short-interest data from U.S. exchanges.

Furthermore, the variable *post* is an indicator variable which refers to the fiscal year ending on or after the 30th of June, 2019, which is the effective date for AS 3101 for large accelerated filers. The variable *adopt* is an indicator variable that is equal to one for large accelerated filers and zero for non-large accelerated filers. The variable *Post*adopt* is the interaction term of the treatment and time indicator variables that capture the difference-in-differences effect.

Following Desai et al. (2016), Blau and Pinegar (2013) and Engelberg et al. (2012), who studied short-interest as a dependent variable, a number of control variables have been added to the model. Variables *mret_c* and *mret_p* represent current and past returns, respectively. *mret_c* represents the mean returns for the five months from *t-5* to *t-1*, where *t* is the month when short-interest is measured, while *mret_p* represents the mean returns for the five months from *t-10* to *t-6*, where *t* is the month when short-interest is measured. Returns have been calculated as the closing price on the short-selling month less the closing price of the previous month divided by the closing price of the previous month. *turn* represents turnover, calculated as the volume of trade divided by the number of shares outstanding. *hshrt_o* refers to the historical short-interest, and is calculated by dividing the number of shares shorted by the shares outstanding for the three months prior to the month considered in *shrt_o*. Price volatility is denoted as *vol_c* and *vol_p* which represent current and past price volatility, respectively, where *vol_c* represents mean price volatility for the five months leading up to the short-outstanding ratio, while *vol_p* represents the price volatility for the preceding five months. *size* refers to the market capitalization of the firm on the last day of its fiscal year. Book-to-market ratio is represented as *btm*, and is calculated as the book value of the firm's share divided by the closing price of the share on the last day of trading in the firm's fiscal year. In line with Blau and Pinegar (2013), institutional ownership, which is a constraint for short-selling, is accounted for. The dummy variable *inst_rank* accounts for the difficulty of shorting stock (Asquith et al., 2005; D'Avolio, 2002), where the firms in the highest institutional ownership quartile are the ones that face the least short-selling constraints and, therefore receive the value of 1, otherwise zero.

Following Desai et al. (2016), all variables with the exception of *size* and *btm* are considered with respect to the same date of the short-selling indicators, while *size* and *btm* are considered with respect to the fiscal year-end. In line with prior literature, it is expected that both current returns and price volatility will be positively associated with short-interest, while past returns and price volatility will be negatively associated (Blau & Pinegar, 2013). Additionally, historical short-interest and turnover are expected to have a positive association with the dependent variable, while size and book-to-market

ratio are expected to be negatively associated. Lastly, institutional ownership is expected to have a positive coefficient. Finally, *INDFE* and *FYFE* refer to industry and fiscal year fixed effects, respectively. All continuous variables have been winsorized at 1% and 99%. All the variables in **Equation 6.1,** their definitions and sources are presented in **Table 6.1**.

Table 6.1 - Variable definition and sources

Variable	Description	Source
shrt_o	Short-interest, calculated as the ratio of shares sold short to shares outstanding.	Compustat North America - Supplemental Short Interest file
mret_c	Current returns, calculated as the mean of monthly returns for months t-5 to t-1, where t is the short-interest month (Blau & Pinegar, 2013; Desai et al., 2016).	Compustat North America - Security Monthly
mret_p	Past returns, calculated as the mean of monthly returns for months t-10 to t-6, where t is the short-interest month (Blau & Pinegar, 2013).	Compustat North America - Security Monthly
hshrt_o	historical short interest, calculated as shares held short divided by shares outstanding, averaged over the previous quarter (Blau & Pinegar, 2013).	Compustat North America - Supplemental Short Interest File for short interest and Security Monthly databases for trade volume
turn	Turnover, calculated as the volume of trade divided by the number of shares outstanding.	Compustat North America - Security Monthly
vola_c	Past Price volatility, calculated as the difference between the ask/high and bid/low prices divided by the ask/high price and averaged for the months t-5 to t-1, where month t is the short-interest month (Desai et al., 2016).	Compustat North America - Security Monthly
vola_p	Past Price volatility, calculated as the difference between the ask/high and bid/low prices divided by the ask/high price and averaged for the months t-10 to t-6, where month t is the short-interest month (Desai et al., 2016).	Compustat North America - Security Monthly
size	Closing price multiplied by the number of shares outstanding on the fiscal year end date and log-transformed to the base of 10 (Blau & Pinegar, 2013).	Compustat North America - Security Monthly
btm	Book-to-market ratio on the fiscal year end date (Desai et al., 2016).	Compustat North America - Fundamentals Annual for book value and Security Monthly for market price
Ins_rank	A dummy variable is assigned the value of 1 if the firm is in the lowest institutional ownership quartile during a particular year, zero otherwise for the month(s) specified in the short-interest measure (Blau & Pinegar, 2013; Desai et al., 2016)	Thomson/Refinitiv

Notes: The table presents the dependent variable, the variables of interest, and the control variables used in the Chapter, their definitions and sources.

6.4 Identification strategy and sample composition

To answer the research questions above, the study takes advantage of the staggered implementation of AS 3101, where only the auditors of large accelerated filers were required to disclose CAMs in the fiscal year ending on or after June 30, 2019, and all other firms in the fiscal year ending on or after June 30, 2020 (SEC, 2017). This allows for the utilisation of a difference-in-differences research design that compares two groups of companies with different auditor's report requirements, with large accelerated filers operating as a treatment group, and non-large accelerated filers, acting as a control group.

Two databases are mainly used: Audit Analytics and Compustat North America. Following the sample selection process explained in Section 4.2, observations with missing short-seller data have been dropped (3,640 observations/ 1,891 firms). Furthermore, 965 observations (241 firms) have been eliminated due to missing firm-level data. Finally, to obtain a balanced sample, 617 firms with only one year of data available in the sample so far have been dropped, and 188 observations with different filer status (*adopt*) for the two periods (*post* = 0 and *post* = 1) have been dropped.

The final sample consists of 3,698 observations representing 1,849 unique firms. Specifically, the sample consists of 998 large accelerated filers (treatment group) for both pre and post-periods, and 851 non-large accelerated filers (control group) for both periods. Additionally, and following prior literature (Burke et al., 2023; Duboisée de Ricquebourg & Maroun, 2022), the study also uses a sample of matched observations based on a propensity score. The propensity scores are estimated based on the likelihood of the firm being a large accelerated filers (*adopt* = 1) using the same control variables in **Equation 6.1**. Using these propensity scores, each treatment observation (*adopt* = 1) was matched with its single closest control observation (*adopt* = 0) without replacement, based on their industry and post binary variable within a caliper distance of 0.1 where a suitable control observation was found (Burke et al., 2023; Duboisée de Ricquebourg & Maroun, 2022). The binary variable post was used instead of the fiscal year due to the fact that the effective date was in June 2019, thus the first year of reporting CAMs for some firms was 2019 and for others was 2020, thus making it impossible to have a balanced PSM sample. After identifying the matches, the mean differences of the control variables between the treatment and control groups are statistically insignificant. The matching process results in 344 matched observations[23].

[23] The identification process of the matched sample is explained in detail in section 5.6.1.1.

Table 6.2 shows the identification strategy and the sample composition, where **Panel A** shows the steps followed identification strategy for this Chapter, and **Panel B** shows the composition of both the full sample and the PSM sample.

Table 6.2 - Sample construction

Panel A - Identification strategy

Sample selection steps	Number of observations	Number of firms
Sample subjected to unique data cleaning steps from Section 4.2	9,120	4,698
Less observations with missing short-seller data	(3,640)	(1,891)
Less observations with missing firm-level data	(965)	(241)
Less firms dropped due to changing fiscal year end	(12)	(6)
Less firms with only one year of data available	(617)	(617)
Less firms with different filer status for the two years	(188)	(94)
Final Sample	**3,698**	**1,849**

Panel B - Sample composition

Sample composition	Large accelerated filers pre-CAM	Large accelerated filers post-CAM	Non-large accelerated filers pre-CAM	Non-large accelerated filers post-CAM	Total
Full Sample	998	998	851	851	**3,698**
PSM Sample	86	86	86	86	**344**

Notes: The table shows the identification strategy and the final sample. **Panel A** shows the steps taken in the identification strategy. **Panel B** shows the sample composition.

6.5 Descriptive Statistics

Table 6.3 reports descriptive statistics for the full sample. The table shows a mean of 0.046 for the variable *shrt_o*. This is higher than the mean 0.032 in prior studies (e.g. Drake et al., 2011), which is expected, given that short-selling interest increases over time (Desai et al., 2002). The table also shows that the firms in the sample, on average, have positive contemporaneous and past returns, as well as a positive book to market ratio.

Table 6.3 - Descriptive Statistics for the full sample

	Mean	Median	Std. Dev.	Min	Max
shrt_o	0.046	0.028	0.052	0.000	0.262
mret_c	0.008	-0.005	0.124	-0.181	0.83
mret_p	0.004	0.002	0.075	-0.18	0.387
hshrt	0.048	0.028	0.057	0.000	0.531
turn	0.188	0.137	0.193	0.005	1.183
vola_c	0.216	0.193	0.100	0.064	0.505
vola_p	0.178	0.157	0.087	0.051	0.464
size	8.937	9.000	1.007	6.797	11.104
btm	0.550	0.383	0.656	-0.713	3.786
inst_rank	0.289	0	0.453	0	1

Notes: N = 3,698. The table reports the mean, median, standard deviation, minimum, and maximum values for the variables used in the study. *shrt_o* is the ratio of shares held short to the number of shares outstanding. *mret_c* and *mret_p* refer to contemporaneous and past returns and are calculated as the mean monthly returns from months t-1 to t-5 and t-6 to t-10, respectively. *hshrt_o* refers to the short-interest divided shares outstanding averaged over the previous quarter. *Turn* refers to the turnover, which is calculated as the volume of trade divided by shares outstanding. *vol_c* and *vol_p* denote contemporaneous and past price volatility and are calculated by dividing the difference between the monthly high and monthly low prices by the monthly high price. *Size* is the log-transformed product of the monthly closing price multiplied by the number of shares outstanding. *btm* is the book-to-market ratio. s*hrt_o*, *abn_shrt_o*, *mret_c, mret_p*, *hshrt_o, turn*, *vol_c* and *vol_p*, for the month after the fiscal year end, while *turn* and *btm* are reported as of the end of the fiscal year. All continuous variables are winsorized at 1% and 99%.

Table 6.4 shows a test of overall differences in means for short-interest as well as the control variables. **Panel A** shows the differences between large accelerated filers and non-large accelerated filers (*adopt* = 1 and *adopt* = 0) for the full sample, while **Panel B** shows the differences for large accelerated filers (*adopt* = 1) after and before adoption (*post* = 1 and *post* = 0). Finally, **Panel C** shows the difference for non-large accelerated filers(*adopt* = 0) after and before adoption (*post* = 1 and *post* = 0).

Panel A shows a statistically significant difference in the mean short-interest between adopters (large accelerated filers) and non-adopters (non-large accelerated filers) (difference = 0.017, $p<0.01$). The panel also shows significant differences for the means of all control variables, implying significant differences between the treatment and the control group. **Panels B** and **C**, however, show there is a statistically insignificant difference for mean short-interest ($p>0.10$) for large accelerated filers, and non-large accelerated filers, respectively before and after the effective date of AS 3101. This implies that a significant difference is there between the treatment and control groups themselves, and not before and after the implementation of the new auditing regulations.

Table 6.4 - Difference in means

Panel A - difference in means for full sample

	Adopters/ Large accelerated filers (N = 1,996)					Non-adopters/ Non-large accelerated filers (N = 1,702)					
	Mean	**Median**	**Std.**	**Min**	**Max**	**Mean**	**Median**	**Std. Dev.**	**Min**	**Max**	**Diff**
shrt_o	0.054	0.035	0.053	0.000	0.262	0.037	0.018	0.05	0.000	0.262	0.017***
mret_c	-0.003	-0.003	0.054	-0.181	0.83	0.021	-0.009	0.172	-0.181	0.83	-0.024***
mret_p	0.008	0.008	0.045	-0.18	0.387	-0.001	-0.011	0.1	-0.18	0.387	0.009***
hshrt	0.056	0.036	0.058	0.000	0.515	0.038	0.018	0.054	0.000	0.531	0.018***
turn	0.2	0.158	0.154	0.005	1.183	0.173	0.102	0.23	0.005	1.183	0.027***
vola_c	0.166	0.154	0.063	0.064	0.505	0.276	0.265	0.103	0.064	0.505	-0.110***
vola_p	0.135	0.125	0.051	0.051	0.406	0.229	0.216	0.093	0.051	0.464	-0.094***
size	9.677	9.585	0.592	7.95	11.104	8.069	8.124	0.628	6.797	10.703	1.608***
btm	0.414	0.321	0.402	-0.713	3.786	0.708	0.502	0.835	-0.713	3.786	-0.294***
inst_rank	0.412	0	0.492	0	1	0.144	0	0.351	0	1	0.268***

Panel B - Difference in means for adopters before and after CAM adoption

	Adopt = 1, post = 1 (N = 998)					Adopt = 1, post = 0 (N = 998)					
	Mean	**Median**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Median**	**Std. Dev.**	**Min**	**Max**	**Diff**
shrt_o	0.055	0.034	0.054	0.000	0.262	0.053	0.036	0.051	0.000	0.262	0.002
mret_c	-0.010	-0.008	0.053	-0.181	0.381	0.003	0.002	0.054	-0.145	0.830	-0.013***
mret_p	0.002	0.004	0.042	-0.156	0.209	0.014	0.012	0.047	-0.180	0.387	-0.012***
hshrt	0.058	0.035	0.064	0.000	0.492	0.053	0.037	0.052	0.000	0.515	0.005*
turn	0.197	0.149	0.163	0.005	1.183	0.204	0.169	0.145	0.005	1.183	-0.007
vola_c	0.165	0.149	0.072	0.064	0.505	0.167	0.16	0.053	0.064	0.417	-0.002
vola_p	0.140	0.130	0.054	0.051	0.399	0.129	0.121	0.047	0.051	0.406	0.011***
size	9.711	9.619	0.600	8.136	11.104	9.643	9.539	0.582	7.950	11.104	0.068**
btm	0.404	0.309	0.420	-0.713	3.786	0.425	0.337	0.385	-0.713	3.381	-0.022
inst_rank	0.507	1	0.5000	0	1	0.317	0	0.465	0	1	0.190***

Panel C - Difference in means for non-adopters before and after CAM adoption

	Adopt = 0, post = 1 (N = 851)					Adopt = 0, post = 0 (N = 851)					
	Mean	**Median**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Median**	**Std. Dev.**	**Min**	**Max**	**Diff**
shrt_o	0.036	0.018	0.045	0.000	0.262	0.039	0.018	0.054	0.000	0.262	-0.003
mret_c	0.013	-0.026	0.186	-0.181	0.830	0.029	0.000	0.157	-0.181	0.830	-0.016*
mret_p	0.006	-0.004	0.102	-0.18	0.387	-0.008	-0.016	0.096	-0.18	0.387	0.014***
hshrt	0.037	0.019	0.050	0.000	0.363	0.039	0.018	0.058	0.000	0.531	-0.002
turn	0.198	0.112	0.257	0.005	1.183	0.149	0.096	0.197	0.005	1.183	0.049***
vola_c	0.297	0.293	0.103	0.064	0.505	0.255	0.242	0.098	0.064	0.505	0.042***
vola_p	0.233	0.218	0.094	0.051	0.464	0.226	0.213	0.092	0.052	0.464	0.007
size	8.084	8.137	0.643	6.797	10.703	8.053	8.115	0.612	6.797	10.652	0.031
btm	0.672	0.467	0.822	-0.713	3.786	0.745	0.541	0.848	-0.713	3.786	-0.073*
inst_rank	0.179	0	0.383	0	1	0.109	0	0.312	0	1	0.070***

Notes: The table shows the mean, median, standard deviation and difference in means for short-interest as well as all the control variables. **Panel A** shows the differences between large accelerated filers and non-large accelerated filers (*adopt* = 1 and *adopt* = 0) for the full sample, while **Panel B** shows the differences for large accelerated filers (*adopt* = 1) after and before adoption (*post* = 1 and *post* = 0). Finally, **Panel C** shows the difference for non-large accelerated filers (*adopt* = 0) after and before adoption (*post* = 1 and *post* = 0). The difference in means is shown in the last column (* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.).

Huszár et al. (2017) report that short-sellers display a preference for certain industries over others. Similarly, Iskandar (1996) points out that the industry in which the firm operates plays an important role in the auditor's decision-making. Therefore, **Table 6.5** shows the distribution of the sample across industries, as well as the mean *shrt_o* for both adopters and nonadopters.

The table shows that the manufacturing sector is the most represented sector in the full sample, adopters and non-adopters. The table also shows that the retail sector is the most shorted sector by short-sellers for large accelerated filers, with the highest *shrt_o* (mean = 0.091). This implies an increased short-position, relative to the previous year, for large accelerated filers in this sector one month after CAMs are released to the public. With regards to the control group, the retail sector also has the highest mean of short-interest (mean = 0.080). Additionally, the non-classifiable/ conglomerates report the lowest mean short-interest ratio for both large accelerated filers and non-large accelerated filers (mean = 0.009 and 0.002, respectively). This implies that short-sellers may have a decreased interest in these firms due to their nature as firms operating in several sectors simultaneously. Furthermore, the mean difference for short-interest is highly significant for firms operating in Mining, construction, manufacturing, transportation, communication and utilities, wholesale trade as well as services sectors. This implies that short-sellers are more interested in bigger firms in these industries.

Table 6.6[24] represents the correlation matrix for the variables used in the study. The matrix shows that all independent variables are statistically correlated with the dependent variable *shrt_o*, with the exception of current and past returns (*mret_c* and *mret_p*). Due to the mixed nature of the statistics, the following Section will present the results of the difference-in-differences analysis.

[24] The variance inflation factor (VIF) test was used to test for multicollinearity. Following the rule of thumb where an independent variable whose VIF value is more than 10 implies severe multicollinearity. Similarly, some practitioners observe the tolerance level, which is calculated as 1/VIF. (O'brien, 2007). Another approach to interpret the results of the VIF test is to assess the severity of multicollinearity by the mean VIF, where severe multicollinearity is implied if the mean VIF is "considerably larger than 1" (Kennedy, P., 2008, p. 183). No multicollinearity was found in any of the regression equations used in the study based on both measures.

Table 6.5 - Distribution across industries

	Full Sample	Large accelerated filers		Non-large accelerated filers		
Industry	**(N)**	**(N)**	**Mean shrt_o**	**(N)**	**Mean shrt_o**	**Diff of mean shrt_o**
Agriculture, Forestry & Fishing	10	2	0.023	8	0.030	-0.007
Mining	188	88	0.072	100	0.023	0.049***
Construction	68	48	0.053	20	0.020	0.033***
Manufacturing	1,943	959	0.052	984	0.040	0.012***
Transportation, Communications & Utilities	413	277	0.039	136	0.026	0.013***
Wholesale Trade	120	62	0.050	58	0.024	0.026***
Retail Trade	238	138	0.091	100	0.080	0.012
Services	706	412	0.055	294	0.030	0.025***
Non-classifiable/ Conglomerate	12	10	0.009	2	0.002	0.007

Notes: The table presents the distribution of the sample across industries, as well as the mean *shrt_o* for adopters and nonadopters. The difference in means is shown in the last column (* p < 0.1, ** p < 0.05, *** p < 0.01.).

Table 6.6 - Correlation Matrix

	shrt_o	*mret_c*	*mret_p*	*hshrt*	*turn*	*vola_c*	*vola_p*	*size*	*btm*	*inst_rank*
shrt_o	1									
mret_c	-0.001	1								
mret_p	-0.018	-0.118***	1							
hshrt	0.942***	-0.0189	-0.023	1						
turn	0.453***	0.135***	0.079***	0.471***	1					
vola_c	0.148***	0.245***	-0.059***	0.135***	0.373***	1				
vola_p	0.153***	0.237***	0.006	0.154***	0.343***	0.795***	1			
size	0.072***	-0.146***	0.091***	0.070***	-0.0587***	-0.659***	-0.653***	1		
btm	-0.075***	-0.022	-0.119***	-0.0704***	0.0365*	0.187***	0.124***	-0.307***	1	
inst_rank	0.145***	0.052**	0.020	0.136***	0.289***	-0.043*	-0.050**	0.381***	-0.071***	1

Notes: N = 3,698. The table presents the correlation matrix for the variables used in the study. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

6.6 Empirical tests and results

6.6.1 Do short-sellers react to CAMs

To answer *RQ1*, **Table 6.7** reports the results of the difference-in-differences model (**Equation 6.1**), where the dependent variable is *shrt_o*. Year and industry fixed effects are considered in the tests. Standard errors are clustered by firm. Column 1 shows the results for the full sample (N = 3,698) and column 2 shows the results for the PSM/matched sample (N = 344). The results show that the indicator variable *Post* is negative and statistically significant ($p<0.01$) for the dependent variable, which implies that short-sellers, on average decreased their short position after the effective date of AS 3101. Moreover, the coefficient for the *Adopt* indicator variable is significant and positive, which implies that, on average, large accelerated filers have increased short-interest compared non-large accelerated filers, but the interaction term *Post*Adopt* is not statistically significant. Therefore, it shows no evidence that there was short-interest one month after the release of CAMs for large accelerated filers, as compared to the control group and as compared to large accelerated filers prior to CAMs for the sample.

The substantially large explanatory power for both columns (Adj. R^2 = 0.891 and 0.901) is attributable to the historical short-interest variable[25]. Furthermore, the positive coefficient and strong significance of historical short-interest for both columns is in line with prior literature (Blau & Pinegar, 2013). The results also show positive, statistically significant coefficients for current volatility, which is in line with Blau and Pinegar (2013).

As discussed in section 5.6.1.1, the thesis uses a matched sample in the difference-in-differences analysis to provide a more robust setting for the difference-in-differences analysis when appropriate, which decreases the effect of endogeneity created by other factors in the market. Short-sellers detect and react to various channel of information in the market, therefore, a matched sample would provide more robust results. The results introduced in **Table 6.8** should be taken in tandem with the ones presented in **Table 6.7**, which presented the results of the matched sample.

[25] Removing historical short-interest results in a significantly lower adjusted R^2 of 0.2896 for the full sample, which is similar to Drake et al. (2015) and 0.5812 for the matched sample, which is similar to Christophe et al. (2004) and Blau & Pinegar (2013).

Table 6.7 - Difference-in-differences and pre-post analyses of short-interest for full sample

Variable	***Full Sample***
Post	-0.006***
	(-3.73)
Adopt	0.001
	(1.08)
*Post*Adopt*	0.001
	(0.91)
mret_c	0.003
	(0.78)
mret_p	0.007
	(1.24)
hshrt	0.952***
	(72.58)
turn	-0.003
	(-0.84)
vola_c	0.023***
	(3.77)
vola_p	-0.010
	(-1.57)
ln_size	-0.004
	(-0.87)
btm	0.000
	(0.00)
inst_rank	0.003***
	(3.67)
N	3,698
Industry FE	Yes
Year FE	Yes
Cluster std. error	Yes
_cons	0.004
	(0.34)
Adj. R^2	0.912

Notes: the table shows the coefficients and t-statistics (in parentheses) for the difference-in-differences and pre-post regression model for the full sample (**Equation 6.1**) including industry and year fixed effects. The dependent variable is *shrt_o*. The analyses employ clustered standard errors clustered by firm. All continuous variables are winsorized at 1 and 99%. ***, **, and * denote p-value significance at the 1%, 5%, and 10% levels. All independent variables are defined in **Table 6.1**.

6.6.1.1 Matched Sample

As discussed in section 5.6.1.1, using propensity score matching (PSM) to create a matched sample is a popular tool in recent archival accounting research that is used to navigate endogeneity concerns that are inherently present in a multiple regression analysis. Specifically, PSM decreases the potential

bias that could be introduced to a multiple regression analysis through model misspecification and significant dissimilarities between adopting and non-adopting cross-sections, but involves reducing the sample size as it limits the sample to firms with similar control variables values in spite of the variations in the dependent variable (Rosenbaum & Rubin, 1983; Shipman et al., 2016).

The process of estimating the propensity scores, matching and testing the quality of the PSM matching is identical to the one outlined in section 5.6.1.1 (Abadie & Imbens, 2016; Burke et al., 2023; Duboisée de Ricquebourg & Maroun, 2024; Shipman et al., 2016). The matched sample was created by estimating propensity scores using a logit model where the dependent variable is the likelihood of the firm being a large accelerated filers (*adopt* = 1) and using the same control variables in **Equation 5.1**. The primary design choices for estimating the propensity score, namely using a binary variable as the dependent variable in the prediction model, and the control variables in **Equation 5.1** as covariates, is supported by the study's setting as well as prior literature, and make the estimation process much more straightforward (Peel & Makepeace, 2012; Shipman et al., 2016). Using these propensity scores, each treatment observation (*adopt* = 1) was matched with its single closest control observation (without replacement) based on their industry, *post* binary variable, and size of their audit firm (Big 4 or non-Big 4) within a calliper distance of 0.1 where a suitable control observation was found (Burke et al., 2023; Duboisée de Ricquebourg & Maroun, 2024). These design choices are best practices in accounting research as they decrease the likelihood of poor matches, but result in a significantly smaller sample (Shipman et al., 2016). The binary variable post was used instead of the fiscal year due to the fact that the effective date was in June, 2019, thus the first year of reporting CAMs for some firms was 2019 and others was 2020, thus making it impossible to have a balanced PSM sample. Finally, to assess the quality of the matching process, a test of the difference in the mean between the treatment and control groups is performed to ensure that the difference in means is statistically insignificant between both groups, and the balance of the covariates after matching was tested using an F-test to ensure the treatment and control groups have a similar distribution of the propensity scores (Shipman et al., 2016).

The indicator variable *Adopt* in **Table 6.8** is positive and significant, indicating that for the sample of matched firms, short-sellers assumed higher positions, on average, in large accelerated filers. Yet, both the *Post* indicator variables and the interaction term Post*Adopt are not statistically significant, indicating that short-sellers did not respond to the introduction of CAMs.

The table also shows a negative, statistically significant coefficient for *btm*, which is inconsistent with both Blau and Pinegar (2013) and Desai et al. (2016), yet is explained by Boehmer et al. (2008), who clarifies that the evidence that short-sellers target firms with high book to market ratio is weak at best. The table also shows a negative, statistically significant coefficient for *turn*, which is explained in Chang et al. (2014), who argue that short-sellers trade heavily when other sellers are relatively inactive, and avoid trading when other sellers trade heavily. Moreover, as predicted, institutional ownership is positively associated with short-interest (Blau & Pinegar, 2013; Desai et al., 2016).

Table 6.8 - Difference-in-differences and pre-post analyses of short-interest for matched sample

Variable	***PSM sample***
Post	-0.015**
	(-2.077)
Adopt	0.003
	(1.406)
*Post*Adopt*	0.002
	(0.607)
mret_c	-0.002
	(-0.106)
mret_p	0.005
	(0.303)
hshrt	0.935***
	(22.445)
turn	-0.026**
	(-2.150)
vola_c	0.035*
	(1.928)
vola_p	-0.005
	(-0.203)
ln_size	-0.005
	(-0.249)
btm	-0.002
	(-1.256)
inst_rank	0.011***
	(3.564)
N	344
Industry FE	Yes
Year FE	Yes
Cluster std. error	Yes
_cons	0.010
	(0.834)
Adj. R^2	0.949

Notes: the table shows the coefficients and t-statistics (in parentheses) for the difference-in-differences and pre-post

regression model for the matched sample (**Equation 6.1**) including industry and year fixed effects. The dependent variable is *shrt_o*. The analyses employ clustered standard errors clustered by firm. All continuous variables are winsorized at 1 and 99%. ***, **, and * denote p-value significance at the 1%, 5%, and 10% levels. All independent variables are defined in **Table 6.1**.

6.6.2 Do short-sellers react to the type of CAMs?

By attempting to answer *RQ 6.2*, the research further examines if short-sellers process the information in CAMs in a more sophisticated way. Specifically, the study argues that short-sellers may react to the informational content of CAMs by identifying matters that provoke uncertainty through specific keywords. While CAMs are generally areas for concern identified by auditors, some of them induce uncertainty more than others. The inherent lack of precision with regards to measurement-related matters, which occurs due to the complexity of business transactions, economic trends or input volatility, is associated with uncertainty in prior literature. For instance, Misstatements in complex, measurement-related issues result in inaccurate net income and, by extension, inaccurate investor-centric measures such as earnings per share as well as share prices (Chen, 2022; Christensen et al., 2012). Furthermore, measurement-related matters, such as the measurement of fair values and other estimates, constitute problematic matters for auditors (Griffith, 2019).

Therefore, measurement-related CAMs often represent "red flags" for investors, have a forewarning effect of a possible future misstatement due to their higher complexity, and may lower users' assessment of confidence in the financial statement area disclosed in the CAM (Brasel et al., 2016; Kachelmeier et al., 2020). This is consistent with the litigation hypothesis by Skinner (1994), which suggests that auditors choose to disclose negative information as a forewarning to mitigate litigation risk or to protect their reputation. The results of Kachelmeier et al. (2020) also captured the difference between measurement-related and classification-related CAMs, where they show that measurement-related CAMs are of higher complexity. In other words, measurement-related CAMs involve estimation, whereas classification-related CAMs involve categorisations. Thus, it is contended that the nature of each CAM evokes different reactions from users; measurement-related CAMs induce uncertainty and a forewarning effect (Kachelmeier et al., 2020), while classification-related matters invoke counterfactual thinking in terms of "what could have been" (Medvec & Savitsky, 1997).

In line with the notion that short-sellers are sophisticated information intermediaries, it is expected that they are able to identify "uncertain" CAMs. To test this hypothesis, the following equation is used:

$$shrt\_o_{i,t} = \beta_0 + \beta_1 cam_{i,t} + controls + INDFE + FYFE + \varepsilon_{i,t}$$

(**Equation 6.2**)

Where the dependent variable in the equation is *shrt_o,*. The independent variable of interest is *cam,* which refers to the types of CAMs presented in **Table 3.1** and will be substituted for the different types of CAMs in the empirical tests. This will help obtain a more holistic view of how short-sellers react to different types of CAMs. Specifically, the variable *cam* will be replaced with *acam* for account-related CAMs, *ecam* for entity-related CAMs, *mcam* for measurement-related CAMs and *ccam* for classification-related CAMs. Categorizing CAMs allows for considering the different informational content with the CAMs themselves, which is a more robust measure than the number of risks disclosed (Elsayed et al., 2023). All other control variables are similar to **Equation 6.1.**

The coding method for the types of CAMs followed Lennox et al. (2022) and Sierra-García et al. (2019) where CAM topics that refer to individual accounts, such as Goodwill and Revenue recognition, is classified as an account-related cam (*acam*). CAMs that are related to the entity as a whole, such as business combinations, internal controls, discontinued operations, fraud and bribery and going concern are classified as an entity-related CAM (*ecam*). Following Lennox et al. (2022) and Sierra-García et al. (2019), the glossary of words to indicate uncertainty developed by Loughran and McDonald (2011) was used to identify measurement-related CAMs (*mcam*). CAMs that did not include any of the uncertainty words were reviewed individually to determine whether they are measurement or category-related (*ccam*).

Table 6.8 shows the regression results for **Equation 6.2**, where the dependent variable is *shrt_o*[26]. Columns 1 through 4 show the coefficients and t-statistics for *ccam, mcam, ecam* and *acam,* respectively and independently. The table shows that none of the types of CAMs are significantly associated with short-interest. As a test of robustness, the tests are performed again where the number of CAMs is replaced by binary variables indicating the presence of the types of CAMs. The results of the second test also show insignificant coefficients for all binary variables. Therefore, the table does not show any evidence to indicate that short-sellers respond to the informational content in the CAMs.

[26] Since non-adopters used a control group in this study do not disclose CAMs, they cannot be used in a difference in differences analysis. Therefore, the sample used in tests investigating the reaction to specific CAM characteristics is limited to adopters after the effective date.

Table 6.9 - Linear regression results for short-interest considering types of CAMs

Variable	*(1)*	*(2)*	*(3)*	*(4)*
ccam	0.014			
	(1.43)			
mcam		-0.000		
		(-0.02)		
ecam			0.001	
			(1.11)	
acam				-0.000
				(-0.38
Controls	Yes	Yes	Yes	Yes
N	998	998	998	998
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster std. error	Yes	Yes	Yes	Yes
_cons	-0.044	-0.046	-0.044	-0.047
	(0.038)	(0.038)	(0.038)	(0.038)
Adj. R²	0.915	0.915	0.915	0.915

Notes: the table shows the coefficients and t-statistics (in parentheses) for the regression model (**Equation 6.2**) including industry and year fixed effects. The dependent variable is *shrt_o*. The analyses employ clustered standard errors clustered by firm. All continuous variables are winsorized at 1 and 99%. Each column includes a variable denoting a type of CAM independently, namely *ccam, mcam, ecam* and *acam*. ***, **, and * denote p-value significance at the 1%, 5%, and 10% levels. All control variables are defined in **Table 6.1**.

6.6.3 Do short-sellers respond to CAM topics?

Pertinent to *RQ 6.3,* a number of papers investigate if and how short-sellers are interested in certain accounts or measures. For instance, Desai et al. (2016) finds evidence that short-sellers were sensitive to certain risks relevant to banks before the financial crisis of 2008, and increased their positions accordingly. Drake et al. (2011) finds that short-sellers target firms with 11 attributes. Most of these attributes relate to items that are beyond the scope of CAMs as they exist beyond the disclosures provided in the financial statements, such as book-to-market ratio, market value of equity and earnings forecast revisions. However, there are some attributes that can be related to items that are disclosed in CAMs. For instance Drake et al. (2011) provides evidence that unexpected earnings, total accruals and sales growth are of interest to short-sellers. Moreover, CAM topics such as Business combinations & Consolidation, Long-lived assets, Long-term investments, Equity investments & joint ventures, which are all related to Capital expenditure, which is positively associated with short-interest (Drake et al., 2011). Furthermore, Menon and Williams (2010) argues that going concern disclosures are associated with negative excess returns. In congruence with the argument given by Diamond and

Verrecchia (1987), going concern disclosures can be a trustworthy sign of future negative returns. Therefore, it could be argued that short-sellers are particularly interested in firms with CAMs that discuss going concern issues. Lastly, Inventory and Accounts receivable are frequently referred to as being difficult to audit (Cassell et al., 2011), therefore it is worthwhile to investigate whether short-sellers are interested in firms with CAMs discussing such accounts.

To account for CAM topics in the regression model, and following a similar logic as Duboisée de Ricquebourg and Maroun (2024), all CAMs are classified into 10 categories (*CAM topics*) and include a dummy variable for each topic to identify those CAM topics which are most likely to be of interest to short-sellers. **Table 6.9** shows the results of the regression analysis performed after accounting for the topics. The regression follows **Equation 6.2** where the dependent variable is *shrt_o*, and *cam* is replaced by the CAM topics. Year and industry fixed effects are considered in the tests. Standard errors are clustered by firm. The results show that there is a positive, statistically significant coefficient for the CAM topic *operating expenses* (0.017, $p<0.01$), which includes CAM topics such as research and development expenses, selling and administrative expenses, and other expenses, and the CAM topic *systems, policies and governance* (0.006, $p<0.05$), which includes topics such as internal control policy changes and regulatory assets and liabilities. Moreover, the table shows a negative significant coefficient for the topic financial assets (-0.008, $p<0.10$), which includes the CAM topic derivatives and hedging. The results of the table imply that short-sellers may be reacting to specific CAM topics.

Table 6.10 - Linear regression results for short-interest including CAM topics

Variable	***shrt_o***
CAM topic_Business combination	0.000
	(0.13)
CAM topic_non financial assets	-0.001
	(-0.46)
CAM topic_financial assets	0.000
	(0.05)
CAM topic_operating expenses	0.012***
	(2.63)
CAM topic_liabilities & provisions	-0.000
	(-0.30)
CAM topic_revenue & sales matters	-0.001
	(-0.70)
CAM topic_tax	0.001
	(0.56)
CAM topic_systems, policies and governance	0.003
	(1.24)
CAM topic_fresh start accounting & going concern	0.044
	(1.27)
CAM topic_complex estimates	0.003
	(0.88)
Controls	Yes
N	998
Industry FE	Yes
Year FE	Yes
Cluster std. error	Yes
_cons	0.071*
	(0.038)
R^2	0.891

Notes: The table shows the coefficients and t-statistics (in parentheses) for the regression analysis (**Equation 6.2**) in addition to dummy variables to account for CAM topics. The models include industry and year fixed effects. The dependent variable is *shrt_o*. The analyses employ clustered standard errors clustered by firm. All continuous variables are winsorized at 1% and 99%. ***, **, and * denote p-value significance at the 1%, 5%, and 10% levels. All independent variables are defined in **Table 6.1**.

6.6.4 Do short-sellers react to the number CAM disclosures?

Following Klevak et al. (2023), who use the number of CAMs as a measure of extensive CAM disclosures and find a significant association with the number of CAMs and stock volatility, *RQ 6.4* investigates if short-sellers react to the number of CAMs disclosed by auditors. Since CAM disclosure is a mandatory requirement for auditors, it is possible that short-sellers react only do extensive CAM disclosures as a high number of CAMs indicates significant risk with regards to the firm's operations and cashflows. **Table 6.10** provides the results of the regression analysis (**Equation 6.2**), where the

variable *cam* is replaced by the number of CAMs reported in the audit report, *cam_no*. The results show no significant association between the dependent variable *shrt_o* and the independent variable of interest *cam_no*. This indicates the number of CAM disclosures does not affect the insignificance of the reaction of short-sellers, which is in line with the previous results in this study.

Table 6.11 - Linear regression results for short-interest including the number of CAMs

Variable	***Shrt_o***
cam_no	0.000
	(0.42)
Controls	Yes
N	998
Industry FE	Yes
Year FE	Yes
Cluster std. error	Yes
_cons	-0.045
	(-1.01)
Adj. R²	0.915

Notes: The table shows the coefficients and t-statistics (in parentheses) for the regression analysis (**Equation 6.2**) where the independent variable of interest is *cam_no,* which refers to the number of CAMs in the audit report. The models include industry and year fixed effects. The dependent variable is *shrt_o*. The analyses employ clustered standard errors clustered by firm. All continuous variables are winsorized at 1% and 99%. ***, **, and * denote p-value significance at the 1%, 5%, and 10% levels. All independent variables are defined in **Table 6.1**.

6.6.5 Robustness tests

6.6.5.1 Short-interest decile ranking

To explore whether there is any evidence of short-seller reaction to CAMs, two other measures of the dependent variable have been used. To begin with, Cassell et al. (2011) account for short-interest using a decile ranking system, where firms are ranked into deciles, based on their short-interest ratio. This method helps reduce the influence of noise and corrects for the skewness in the distribution of short-interest for samples with longer time spans (Asquith et al., 2005). While the sample in the current study has a shorter time span compared to Asquith et al. (2005), the ranking method is used specifically to capture the dependent variable in a nominal manner so as to test for the relationship between short-interest and CAM disclosure using a multidimensional perspective to ensure the robustness of the results in the Section above. Similar to Drake et al. (2011), and since this method accounts for short-interest as an ordinal variable, the ordered logistic regression method is employed. **Table 6.11** shows the results of the ordered logistic model, where the dependent variable is the short-interest decile

ranking (*shrt_o_decile*). Both Industry and year fixed effects are considered in the test. Additionally, standard errors are clustered by firm. The table shows a statistically insignificant association between the interaction term of *Post*Adopt* and short-interest ranking. This is in line with the results in **Table 6.7**.

Table 6.12 - Ordered logistic regression of short-interest decile ranks

Variable	*(1)* ***shrt_o_decile***	*(2)* ***PSM sample***
Post	-0.199	0.172
	(-1.22)	(0.25)
Adopt	-8.657***	-8.516***
	(-20.15)	(-6.99)
*Post*Adopt*	-0.199	0.086
	(0.30)	(0.22)
Controls	Yes	Yes
N	3,698	344
Industry FE	Yes	Yes
Year FE	Yes	Yes
Cluster std. error	Yes	Yes
Psuedo R^2	0.1303	0.1946

Notes: the table shows the coefficients and z-statistics (in parentheses) for the difference-in-differences and pre-post ordered logistic regression. The dependent variable is *shrt_o_decile*, which refers to the decile ranking of short-interest. The independent and control variables are the same as **Equation 6.1**. The model includes industry and year fixed effects. The analyses employ clustered standard errors clustered by firm. All continuous variables are winsorized at 1 and 99%. ***, **, and * denote p-value significance at the 1%, 5%, and 10% levels. All independent variables are defined in **Table 6.1**.

6.6.5.2 Change in short-interest

Boehmer et al. (2010) argue that short-interest levels change drastically from month to month. For instance, a stock that is currently lightly shorted at one point in time might have recently experienced a sharp decline. To account for that, changes in short-interest are used as the dependent variable in the second robustness test. Change is calculated as the month-to-month change in short-interest ratio. **Table 6.12** shows the regression results, where the dependent variable is *ch_shrt_o*. The results support earlier findings, which imply that the relation between short-interest and CAM disclosures is statistically insignificant.

Table 6.13 - Difference-in-differences and pre-post analyses of change in short-interest

Variable	*(1)* *ch_shrt_o*	*(2)* *PSM sample*
Post	0.049	0.073
	(0.43)	(0.73)
Adopt	0.061	0.032
	(0.45)	(0.77)
*Post*Adopt*	-0.076	-0.022
	(-0.57)	(-0.19
Controls	Yes	Yes
N	3,698	344
Industry FE	Yes	Yes
Year FE	Yes	Yes
Cluster std. error	Yes	Yes
_cons	6.651***	1.665
	(2.94)	(1.46)
R^2	0.0261	0.0687

Notes: The table shows the coefficients and t-statistics (in parentheses) for the difference-in-differences and pre-post regression model. The dependent variable is *ch_shrt_o*, which refers to the month to month change of short-interest. The independent and control variables are the same as **Equation 6.1**. The model includes industry and year fixed effects. The analyses employ clustered standard errors clustered by firm. All continuous variables are winsorized at 1 and 99%. ***, **, and * denote p-value significance at the 1%, 5%, and 10% levels. All independent variables are defined in **Table 6.1**.

6.7 Conclusion, contribution, and limitations

After decades of stability in audit reporting, expanded audit reports and CAMs constitute a revolutionary new disclosure. As such, archival studies represent a major opportunity to aid standard setters with their post-implementation reviews in understanding the true informational value of CAMs. Hence, this study attempts to expand the literature on the informativeness of CAMs by investigating if and how short-sellers, who are regarded as sophisticated investors, react to CAM disclosures. The study makes use of the staggered implementation of AS 3101, and utilises a difference-in-differences approach with large accelerated filers as the treatment group, and non-large accelerated filers as the control group. The analysis includes the year before CAMs are mandated as well as the first year of CAM disclosure. Using a U.S. based balanced sample of 3,698 firm-year observations, the results of this study finds no evidence that short-sellers react to CAM disclosures in the U.S. This result is robust to different measures of short-interest, namely short-interest decile ranking and month-to-month change in short-interest. Moreover, the results indicate that short-sellers do not react to the type of CAMs or the number of CAMs disclosed. However, there is evidence to

suggest that short-sellers react to specific CAM topics. These results support earlier findings on the insufficiency of informativeness of CAMs to investors (Gutierrez et al., 2018; Reid et al., 2019), and supplements earlier findings that provide evidence that investors may have obtained information about CAMs before their issuance through other means (Lennox et al., 2022).

Moreover, the study takes into consideration the different types of CAMs discussed in relevant literature, as well as the different CAM topics that auditors disclose. While the results do not show any significant short-seller reaction to the types of CAMs, there is evidence that suggests that short-sellers may be reacting to specific CAM topics. Specifically, the results show a negative association between short-interest and CAM topics related to financial assets, and a positive association between short-interest and CAM topics related to operating expenses and systems, policies and governance.

These findings should assist standard-setting bodies during their post-implementation review of the auditing standards relevant to CAM disclosures as they highlight certain topics that are of interest to a specific group of investors who are differentiated from typical investors by their experience and sophistication. The results are also pertinent to auditors with regards to how professional investors react to their disclosures. Even with the insufficient evidence to establish a significant association between CAM disclosure and short-interest, researchers acknowledge that CAMs could still be a step towards establishing a more informative audit report (Minutti-Meza, 2021).

This study expands on the literature that regards short-sellers serving as information intermediaries with a superior ability to process and react to new disclosures, and react to red flags identified by the auditor (Desai et al., 2016; Kachelmeier et al., 2020; Rezaee & Homayoun, 2024). More broadly, this study responds to the PCAOB's call for more academic research to help fully understand the effect of CAM disclosures, and sheds light on the awareness and responsiveness of informed traders in the market by looking at an overarching question: Are CAMs informative? By answering this question, the study complements recent literature examining investors' reactions to CAM disclosures (e.g. Lennox et al., 2022; Reid et al., 2019). In contrast to earlier literature, this study does not equate all investors in terms of knowledge and experience, but argues that some investors have superiority when it comes to processing new information introduced in the market. Thus, this is the first study to examine the usefulness of CAM disclosures for professional investors in a non-experimental setting.

This study is subject to three main limitations. First, as is the case with numerous studies in short-selling (e.g. Engelberg et al., 2012), this study is limited by the lack of information that covers short-selling transactions thoroughly. Using an event-study methodology where short-interest right after the

release of CAMs is considered might provide different insights. Second, in creating the PSM sample that follows similar literature, a significant number of observations was dropped. Third, examining the reoccurrence of CAMs in subsequent years could shed more light on how short-sellers react, yet this requires a longer time series than that which this study investigates.

Additionally, two main recommendations for future studies should be considered along with the outcomes of the study. First, while the setting of this thesis is the U.S., investigating other jurisdictions helps in understanding the true influence of the new regulations, and enriches our comprehension of how country-related differences lead to differences in CAMs (Federsel & Hörner, 2023). Throughout accounting and auditing literature, there have been differences in the informational value disclosures across different markets (Alford et al., 1993). This could be attributed to country regulations (Van Tendeloo & Vanstraelen, 2011), litigation environment of the country (Choi et al., 2008; Simunic et al., 2017), regulatory regime and the nature of the auditing oversight body (Simnett & Smith, 2005). Therefore, further investigation should be done concerning the informational value of CAMs to short-sellers in other jurisdictions.

Second, since CAM disclosures do not seem to be informative to short-sellers, future research should focus on other user groups. Chapter Seven of this thesis expands on this notion by investigating the reaction of the investment community online.

Chapter 7: #CAMS: Twitter reaction to Critical Audit Matter disclosures

Abstract

Using Twitter as a novel setting, we explore if Critical Audit Matters (CAMs) have informational value to Twitter users, and whether the topics discussed online align with those disclosed as CAMs. To do so we examined 824,916 Tweets sent for 1,870 US firms within a two-month window surrounding their 10-K filings containing their initial CAM disclosures. Our findings show only 442 of these companies received a total of 1,905 tweets associated with the subject areas of their CAMs, most of which were sent *before* the 10-K filing date. While some CAM topics increased the likelihood they would be mentioned on Twitter, our results overall suggest that Twitter users do not consider CAMs to be incrementally informative or worthy of discussing. Examining the relevance of CAMs and CAM topics to the online investment community in a novel setting adds to the rapidly growing CAM-related literature and complements prior studies which suggest a lack of incremental information provided by these disclosures.

7.1 Introduction

Under pressure to enhance the usefulness of audit reports, standard setters have issued requirements for auditors to disclose Critical Audit Matters (CAMs) identified during their engagement and the steps taken to address these, as part of their audit reports (PCAOB, 2017). CAMs are intended to make the audit report "more informative and relevant to investors and other financial statement users" by providing "enhanced communication about the audit" (PCAOB, 2017, p. 1). That these disclosures provide useful information to investors has been supported by some experimental research (Christensen et al., 2014; Köhler et al., 2020; Moroney et al., 2021). Yet recent empirical evidence suggests otherwise, finding a lack of investor response to these new disclosures in the UK (Gutierrez et al., 2018, 2024; Lennox et al., 2022), France (Bédard et al., 2019), Asia (Liao et al., 2022), and the United States (U.S.) (Burke et al., 2023). On the other hand, Li and Luo (2023) provide evidence that the initial disclosure of CAMs by large U.S. accelerated filers was value-relevant and informative. While the mixed results regarding the influence of CAMs in the equity market may be due to different settings (Lennox et al., 2022; Simnett & Huggins, 2014) the debate on CAM relevance is far from resolved, and provides the basis for this paper.

Using the social media platform Twitter as a research setting enables us to investigate if and how CAMs are being discussed by the online investment community (Pedersen, 2022) during the initial year of their disclosure in the U.S. Twitter's archives[27] include information that was previously beyond our processing capabilities which advances in textual analysis and Big Data analytics now allow us to explore. Relative to other platforms, Twitter is one of the most frequently used in accounting and finance research due to its high adoption rate among firms (Ayman et al., 2018; Jung et al., 2017; Zhang, 2015) and investors (e.g. Bartov et al., 2018). Together with similar social media platforms, Twitter has provided a novel setting to examine reactions to political (e.g. Acemoglu et al., 2018), social (e.g. Goncharenko, 2021; Neu et al., 2019) and financial (e.g. Bartov et al., 2018; Cookson et al., 2023) issues. The platform offers a rich dataset for evaluating how individuals access and interact with different types of information, including CAMs.

To do so, we use textual analysis tools to mine and then scrape 824,916 Tweets sent for the 1,870 public U.S. companies within a one-month window before and after the release of their 10-K filings containing the first CAMs reported under the new PCAOB requirements. From this population, we

[27] The tweets were obtained using Twitter API's Academic Access. Since Elon Musk's takeover, Twitter has been renamed "X" and has eliminated Academic Access to the API. Access to these tweets now requires a monetary subscription.

identified only 442 firms which received a total of 1,905 tweets mentioning their CAMs. CAMs related to revenue, business combinations, operating expenses and complex estimates were most often discussed. Further analysis of these tweets found they rarely developed into conversations involving replies, retweets or quote retweets from other users. Further textual analysis tests show that most tweets were sent *before* the CAMs were even released, indicating that CAMs provided very little incremental information. Overall, we find little evidence to support the notion that CAMs are providing the market with relevant information worthy of discussion, implying that what auditors consider "critical" may not always be of interest to Twitter users.

This study contributes to the current literature on CAMs by taking advantage of advancements in textual analysis, data mining and data scraping to expand our understanding of how users react to CAMs using a unique setting. Doing so provides the first account of the discourse on CAMs on social media and provides a summary of which topics are discussed on Twitter compared to those matters identified by the auditors as critical in their audit reports. CAMs were initially introduced as an attempt by standard setters to make audit processes more transparent and increase the provision of useful information to users of financial statements (Quick, 2020). While completely eliminating the audit expectations gap is unlikely (Deepal & Jayamaha, 2022), improving auditing standards by expanding the audit report to include CAMs was meant to help reduce this gap (Porter et al., 2012a). That we find little evidence of CAMs being discussed on Twitter, provides cause for reflection. Regulators, such as the PCAOB, and standard setters may need to re-assess the costs and benefits of expanded audit reporting. Post-implementation reviews of the applicable prescriptions should take cognisance of feedback received directly from stakeholders, complemented by current assessments by academics of the extent to which investors are engaging with what has been touted as one of the most significant advances in assurance practice in recent years.

Finally, the results of this study contribute to the growing body of research examining the intersection between technology and financial markets (Kumar & Ravi, 2016), and specifically how the investor community on social media responds to financial and economic news (e.g. Bradley et al., 2023; Cookson et al., 2023; Neu et al., 2019), and should be of import to standard setters as a basis for refining similar standards.

The remainder of this study is organised as follows. Section 7.2 provides the background and motivation for the study, followed by a discussion of the methodology in Section 7.3. The identification strategy, data collection process and sample description are provided in Section 7.4,

while a barrage of statistics used to explore the relevance of CAMs to the Twitter community are provided in Section 7.5. We conclude our analysis of this data with a basic probit regression model in Section 7.6 to explore the factors associated with the likelihood of a company's CAM's being mentioned on Twitter, followed by a discussion of these findings and conclusions in Section 7.7.

7.2 Background and motivation

Traditionally, the audit report states if a firm's financial statements are fairly presented in accordance with the applicable reporting framework. Prior literature has shown that public companies usually receive an unqualified (clean) audit report with standard wording (Church et al., 2008; Gray et al., 2011; Lennox, 2005).

In both the US and internationally, the format and content of the audit report were codified. Homogenised audit reports were intended to avoid misunderstanding and improve ease of use but limited the auditor's ability to provide more insights into the audit process and how significant issues arising during an engagement were addressed. In response, the (IAASB, 2015a) and the (PCAOB, 2017) each issued new standards requiring the disclosure of Key/Critical Audit Matters as part of auditors' reports. In the U.S., CAMs include:

> *"Any matter arising from the audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved especially challenging, subjective, or complex auditor judgment".* (PCAOB, 2022)

While the PCAOB has made it clear that CAMs are not expressly intended to provide investors with an source of new information concerning underlying accounting or governance issues , CAMs have the potential to be *"meaningful to investors"* (PCAOB, 2019, p.1). Specifically, CAMs are intended to enhance the communicative value of auditor reports by offering investors information beyond the traditional pass/fail outcome(Chan & Liu, 2023; Seebeck & Kaya, 2022). With prior literature showing that auditors' disclosures of going concern issues (Gutierrez et al., 2020; Willenborg & McKeown, 2000) or internal control weaknesses (De Franco et al., 2005) provided incremental information for the users, it was expected that CAMs would provide a similar outcome. This notion is supported by a number of experimental studies which show CAMs have a substantial impact on investors' perception of firm value and their investment behaviours, particularly by non-professional investors (Christensen et al., 2014; Rapley et al., 2021), and when reported by non-Big 4 firms (Moroney et al., 2021).

However, empirical evidence examining the aggregate reaction of the stock market from the U.K. (Gutierrez et al., 2018, 2024; Lennox et al., 2022), France (Bédard et al., 2019), Asia (Liao et al., 2022), and the U.S. (Burke et al., 2023) shows a lack of investor response to these new disclosures, implying that CAMs do not provide users with new information[28]. To elaborate, while CAMs may be value relevant, most investors are already aware of the underlying issues before reading the audit report published several months after the end of an organisation's financial year (Czerney et al., 2019; Lennox et al., 2022).

That extended audit reporting was found to be uninformative within these contexts does not necessarily mean CAMs will be uninformative within a U.S. context. Indeed, Lennox et al. (2022) and Simnett and Huggins (2014) point out that the institutional differences between the U.S and other jurisdictions might lead to different findings. Compared with the U.K., U.S. companies have far more reporting requirements, and operate within a significantly more litigious environment. For example, U.S. companies must issue quarterly financial reports, company with Regulation Fair Disclosure, and obtain assurance over the effectiveness of their internal controls - none of which are requirements for U.K. companies. Moreover, U.S. regulatory bodies (the Securities and Exchange Commission (SEC) and the PCAOB) have more enforcement power than the U.K. Financial Reporting Council. Compared to their U.K. counterparts, U.S. auditors are therefore likely to be more concerned with shareholder litigation, which may encourage fewer, but more relevant, CAMs to be disclosed. Indeed, recent empirical findings from the initial disclosure of CAMs by large U.S. accelerated filers suggests CAMs enhanced the short term market reaction, and long term value relevance, of the reported earnings for these companies (Li & Luo, 2023). In short, the debate on CAM relevance is far from resolved and provides the basis for the remainder of this paper.

We respond to the call by Lennox et al. (2022) for more research investigating expanded audit reporting in other jurisdictions and different institutional settings to further our understanding of the impact of increased auditor reporting on financial markets. We also build on earlier research by examining large accelerated filers, whose CAMs have been shown to be informative to users (Li & Luo, 2023), by using Twitter as a novel setting where the majority of members are broadly considered non-professionals within the context of investment communities (Pedersen, 2022).

[28] While auditing standards requiring the disclosure of Critical Audit Matters (U.S.), Key Audit Matters (U.K, Europe, Hong Kong and Mainland China), Justifications of Assessments (France are different in name, they are very similar in substance (Jermakowica, 2018).

By choosing Twitter as a setting, we overcome an inherent obstacle with traditional dissemination channels such as media channels and analyst recommendations. These tend to prioritize coverage of highly visible firms which will be of most interest to the applicable readership (Miller, 2006). While the platforms are an important source of information, they may hinder the broad and efficient dissemination of facts and circumstances emerging at a wider range of firms (Blankespoor et al., 2014). By comparison, social media, in particular Twitter, allows investors to play the role of intermediaries (Blankespoor et al., 2020). Twitter caters to a broad group of individuals with more diverse backgrounds and experiences than financial analysts, thus are less likely to engage in herd behaviour (Bartov et al., 2018; Gómez-Carrasco et al., 2021; Rozario et al., 2023). Twitter is widely regarded as one of the most popular platforms for microblogging[29] (Rakowski et al., 2021; Rozario et al., 2023) with a high rate of adoption among investors (e.g. Bartov et al., 2018) and firms (e.g. Ayman et al., 2018). The distinctive attributes of Twitter include its utilization of a short message format, the conversational nature of some posts (Sprenger et al., 2014), and the implementation of cashtags which allows users to post and share information promptly about specific firms.

Twitter's widespread popularity has established it as a social media platform with a broad user base allowing for the collection of a wide range of reactions and responses to posts (Bartov et al., 2018; Rozario et al., 2023). As a result, Twitter provides an ideal setting to examine the public awareness and interest in CAM disclosures for all types of firms, regardless of their visibility in traditional communication channels. It provides non-professional investors the opportunity to uncover new information (Pedersen, 2022), and show their interest in a tweet by "retweeting" and sharing it with their followers. The interactive two-way nature of Twitter also implies that firms have significantly less control over information dissemination in comparison to traditional communication channels (Cade, 2018; Miller & Skinner, 2015). As a result, dissemination on Twitter can represent the heterogeneity of investors' thoughts and may help mitigate information asymmetry for firms that tend to receive less press coverage (Blankespoor et al., 2020; Blankespoor et al., 2014).

Accordingly, based on the above arguments, and given current advances in data (Loughran & McDonald, 2016), investigating Twitter users' reactions enables us to gain more insights into the informativeness of CAM disclosures for the investor community on Twitter. We conduct this study in a similar way to prior studies using Twitter and other similar social media platforms to examine

[29] As of 2023, Twitter has 528.3 million monthly active users. For more statistics, please refer to https://www.searchlogistics.com/learn/statistics/twitter-user-statistics/#:~:text=There%20are%20237.8%20million%20monetizable,users%20(mDAU)%20on%20Twitter.

reactions to political (e.g. Acemoglu et al., 2018), social (e.g. Goncharenko, 2021; Neu et al., 2019), and financial (e.g. Bartov et al., 2018; Cookson et al., 2023) issues. Using such an unconventional setting allows us to extend our understanding of the usefulness of CAMs by investigating the extent of Twitter activity on CAMs and CAM topics shortly before and after their initial disclosure within the auditors' reports. Accordingly, our primary research question is:

RQ 7.1: Are CAMs relevant to Twitter's investor community?

7.3 Methodology and variables

To answer this question, we use the probit regression model outlined in **Equation 7.1** to investigate the likelihood of a company's CAMs being discussed on Twitter:

$$tweet\_rel\_dum_{it} = \beta_{0_{it}} + \beta_1 cam\_num_{it} + \beta_2 tweet\_num_{it} + \beta_3 cam\_topics_{it} + \beta_4 revenue_{it} + \beta_5 reverage_{it} + \beta_6 liquidity_{it} + \beta_7 age_{it} + \beta_8 size_{it} + \beta_9 loss_{it} + \beta_{10} btm_{it} + \beta_{11} deloitte_{it} + \beta_{12} ey_{it} + \beta_{13} kpmg_{it} + \beta_{14} pwc_{it} + \beta_{15} mcw_{it} + \beta_{16} gc_{it} + \beta_{17} rest_{it} + INDFE + FQFE + e_{it} \quad \textbf{(Equation 7.1)}$$

where t*weet_rel_dum* is a binary variable allocated the value of 1/(0) if a company received at least one/(no) relevant tweet(s) within a one-month window before and after the release of their 10-K filings. *cam_num* is a discrete variable that shows the number of CAMs disclosed by the firm's auditor. We expect users on Twitter will discuss certain attention-grabbing firms more than others (Barber et al., 2022). To control for this, we estimate each company's popularity on Twitter (t*weet_num)* as the log transformed number of tweets discussing the company one month before and after their 10-K filing (Cookson & Niessner, 2019). Following a similar logic as Duboisée de Ricquebourg and Maroun (2024), we then group all CAMs into 10 categories (*cam_topics*) and include a dummy variable for each topic to identify those CAM topics which are most likely to be discussed on Twitter.

To address the possibility that Twitter users are more likely to discuss firms with certain characteristics (Bartov et al., 2018; Blankespoor et al., 2014), we also include a number of firm-related control variables. Specifically, we include controls for the log transformed value of the firm's annual revenue *(revenue)*, the number of years since the firm's IPO *(age)*, the log transformed value of the firm's total assets *(size)*, a binary variable (l*oss)* set to 1/(0) to indicate whether a firm's net income is below/(above) zero, and the firm's book to market ratio (*btm)* calculated by dividing the book value per share of the firm's stock by the closing price of the firm's stock at the end of the fiscal year.

Finally, audit related controls are also considered. These include audit firm dummy variables (*deloitte*, *ey*, *kpmg* and *pwc*)[30], and binary variables that receive the value of 1/(0) if the firm has no/(has) material control weaknesses reported by the auditor (*mcw*), received/(did not receive) a going concern opinion (*gc*), or has/(does not have) at least one restatement (*rest*) for the fiscal year. We expect that firms with going concern opinions, internal control issues, or restatements are more likely to be mentioned on Twitter. All variables along with their definitions and sources are listed in **Table 7.1**.

7.4 Identification strategy and sample selection

We start our sample selection process by using Audit Analytics to identify 1,968 large U.S. accelerated filers with common shares, a fiscal year ending between June 30, 2019, and June 30, 2020, and with at least one CAM reported during the initial year in which CAM disclosures were required. From this initial sample we removed 53 firms which changed fiscal year ends during the period, and a further 38 firms with no tweets[31] during the sample period, leaving a sample of 1,877 firms shown in **Table 7.2**.

Next, using the python library "Tweepy"[32], we searched Twitter's historical archives through the Twitter Application Programming Interface (API) for the cashtags[33] of each of these companies one month before and after the release of their audit reports containing their CAM disclosures. The API is an interface that allows users to find and retrieve information about Tweets and users. Accessing Twitter API was done through the "Academic Access" feature, which Twitter used to offer to academics, provided they present sufficient information as to why they need this information for this research, and how they will use the information[34]. Specifically, Twitter API provides access credentials that are unique to the user requesting access.

[30] We exclude "Other auditors" which forms the reference group.
[31] In most cases matching between Audit Analytics and Twitter was done using each observations respective ticker. Where this information was missing, observations were manually matched using company names.
[32] The syntax used to scrape the tweets is a variation of the code that can be found here: https://github.com/jdfoote/Intro-to-Programming-and-Data-Science/blob/fall2021/extra_topics/twitter_v2_example.ipynb
[33] Company related tweets are prefixed with a cashtag "$" symbol, followed by the firm's ticker. For example, to refer to Microsoft, a user would include the term "$MSFT" in their tweet.
[34] The Academic access has been removed following Elon Musk's acquisition of Twitter.

Table 7.1 - Variable definition and sources

Variable	Definition	Source
Tweet_rel_dum	Binary variable that is allocated the value of 1 if the firm received at least one relevant tweet, otherwise zero	Twitter
Tweet_rel_num	Number of relevant tweets received by each firm	Twitter
CAM_num	Discrete variable that shows the number of CAMs disclosed by the firm's auditor	Audit Analytics
Tweet_num	Log transformed total number of tweets discussing each firm in our sample one month before and after the release of their 10-K reports	Twitter
Revenue	Log transformed value of the firm's annual revenue	Compustat
Age	Number of years since the firm's IPO	Bloomberg
Size	Log transformed value of the firm's total assets	Compustat
Loss	Binary variable that receives the value of 1 if the firm's net income is below zero, 0 otherwise	Compustat
BTM	Book value per share of the firm's stock scaled by the closing price of the firm's stock at the end of the fiscal year.	Compustat
Leverage	Total liabilities divided by total equity	Compustat
Liquidity	Current assets divided by current liabilities	Compustat
Deloitte	Binary variable that receives the value of 1 if the firm's auditor is Deloitte, 0 otherwise	Audit Analytics
EY	Binary variable that receives the value of 1 if the firm's auditor is EY, 0 otherwise	Audit Analytics
KPMG	Binary variable that receives the value of 1 if the firm's auditor is KPMG, 0 otherwise	Audit Analytics
PWC	Binary variable that receives the value of 1 if the firm's auditor is PWC, 0 otherwise	Audit Analytics
NB4	Binary variable that receives the value of 1 if the firm's auditor is a non Big 4 auditor, 0 otherwise	Audit Analytics
MCW	Binary variables that receive the value of 1 if the firm has no material control weaknesses reported by the auditor for the fiscal year	Audit Analytics
GC	Binary variables that receive the value of 1 if the firm received a going concern opinion	Audit Analytics
Rest	Binary variables that receive the value of 1 if the firm has at least one restatement for the fiscal year	Audit Analytics

Notes: the table presents the dependent variable, the independent variables of interest, and the control variables as well as other variables used in the study, along with their definitions and sources.

Next, the Python library "Tweepy" was used to perform a research query using the firm's ticker. A Python library is a collection of codes and functions that add to the existing capabilities of the Python programming language. Tickers were chosen as Twitter users refer to firms through their tickers. The query allowed for the mining of tweets for a certain period of time using a start date and an end date that the user inputs. Python is able to understand the dates inputted by the user through the Python Library "Time". Additionally, it allowed for obtaining other information, such as the username of the sender of the tweet, the number of followers they have, the time of sending the tweet, and the number of interactions the tweet has (favourites, retweets and replies). The Python library "Pandas" was then

used to store the output. Pandas is a Python library designed for data manipulation and analysis. Specifically, the output is then stored in a "Pandas dataframe" on the local Python environment, and then saved as a comma-separated values file (CSV file) on the hard drive.

This resulted in a sample of 1,870,860 tweets, along with their associated properties, such as the number of likes, retweets, followers, and the location of the user/author of each tweet. From this initial sample, 116 tweets were dropped since Twitter had removed their contents for a violation of their user policies and a further 1,045,828 tweets which cite more than one[35] cashtag. This results in a final sample of 1,870 companies shown in **Table 7.2** which were mentioned in 824,916 tweets in the one month before and after the release of their auditors' reports containing a total of 2,965 CAMs.

Table 7.2 - Sample selection process and identification strategy

Sample selection steps	Number of firms	Number of CAMs	Number of Tweets	Number of relevant Tweets
Initial sample of large U.S. accelerated	1,968			
Less firms with two fiscal year ends in	(53)			
Less firms with no tweets for time frame	(38)			
Firms with Twitter activity	**1,877**	**2,977**	**1,870,860**	
Less tweets whose content has been	-	-	(116)	
Usable tweets	**1,877**	**2,977**	**1,870,744**	
Less tweets including more than one	(7)	(12)	(1,045,828)	
Final sample of firms, CAMs, and	**1,870**	**2,965**	**824,916**	**1,905**
Sample of firms without relevant tweets	(1,428)	(2,158)	(481,253)	-
Sample of firms with relevant tweets	**442**	**807**	**343,663**	**1,905**

Notes: This table shows the sample selection process and identification strategy followed in the study.

From this sample, CAMs are identified as "relevant" if we observe a company's followers tweeting the same topic within the sample period. The task of topic identification can be accomplished through text mining (Kumar & Ravi, 2016). To do so, we start by using the Audit Analytics CAM topic normalization list to group the sample of 2,965 CAMs into 50 topics. Then, for each topic we created a list of keywords and phrases, or a bag of words (see **Table 7.3**) which we use to search through the full text of each of the 824,916 tweets.

The Bag-of-words method entails searching the tweets for specific keywords or phrases, and then classifying each tweet based on the existence/non-existence of the keywords. Tweets are very short

[35] A similar rationale is provided by Cookson et al. (2023) but, since they are interested in examining the tweets associated with either of the two parties involved in a given merger or acquisition, they exclude Tweets with more than two cashtags.

bodies of text that do not require overly complicated parsing as the text saved in the CSV file does not allow for the inclusion of pictures, tables or emojis. Therefore, the parsing process was limited to converting all letters to small letters and identifying the firm the user is discussing by isolating the ticker after the "$" sign.

Using the Bag-of-words was done through Python due to its ability to handle string data, or text, as well as CSV files. The operation was done by accessing the CSV where tweets and their related information are stored in Python through the Pandas library. A list of keywords pertaining to each CAM topic is then inputted in Python, and the code checks for their occurrence in the text of the tweets. Tweets that were found to include any of the keywords of the CAM topic were then classified as "relevant tweets" and stored in a separate CSV file.

Tweets are tagged as relevant/(irrelevant) where a keyword(s) listed for the topic(s) associated with that company's CAM(s) matched / (did not match) the content within the full text of the tweet. Finally, the "relevant" tweets identified from this process are only confirmed as such after manually reading each "relevant" Tweet alongside the company's CAM disclosures. For instance, Tesla received two CAMs related to the topics "Sales returns and allowances" and "Warranty liabilities". For the CAM topic "Warranty liabilities" we searched all the tweets concerning Tesla for the keyword's "warranty", "warranties", "liability", and "liabilities" during the month before and after the disclosure of their CAMs, which identified the tweet shown in **Figure 7.1**.

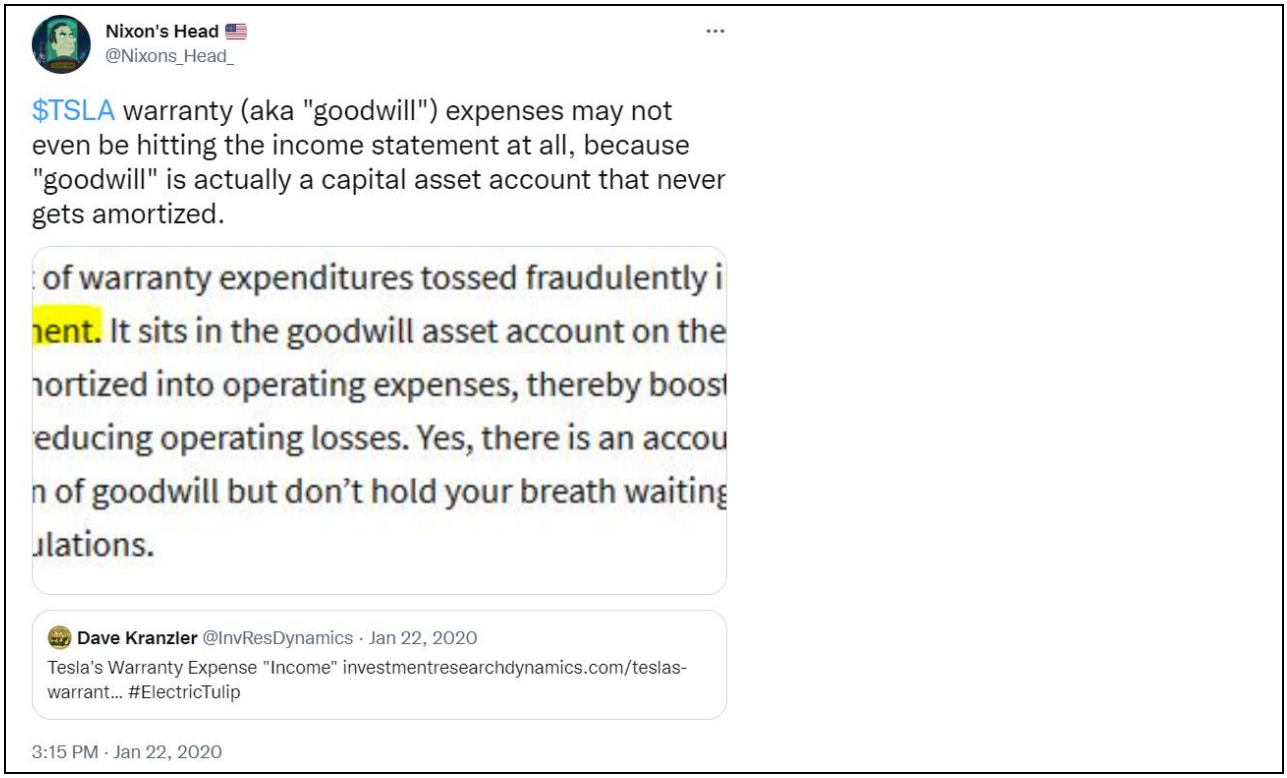
The outcome of this process identified from the sample of 824,916 tweets for the 1,870 firms in our final sample, only 1,905 tweets were related to the CAM topics disclosed by the auditors of 442 of these firms. The sample has a notable right skew as evidenced by 10 of these firms accounting for over 25% of all relevant tweets (see **Table 7.4**). The remaining 1,428 firms (approximately 75% of the final sample) received no relevant tweets. This finding raises an important question; why were some firms CAMs discussed and not others?

Table 7.3 - CAM topics and their associated keywords for the Bag-of-words

Topic	Keywords
Accounts/loans receivable	Account receivable, account, loan receivable, loan, receivable
Allowance for credit losses	Allowance, credit allowance, credit loss
Asset retirement and environmental obligations	Asset retirement, retirement, environmental obligations, environmental
Balance sheet classification of assets	Balance sheet, classification of asset, asset classification
Business combinations and consolidation	Combination, consolidation, merger, merge acquisition, acquire
Deferred and capitalized costs	Deferred cost, deferred, capitalized cost, capitalised cost
Deferred and stock-based compensation	Deferred compensation, based compensation, compensation
Deferred income taxes	Deferred tax, deferred income tax, income tax
Depreciation and amortization	Depreciation, depreciate, amortization, amortize
Derivatives and hedging	Derivative, hedging, hedge
Discontinued operations	Discontinued, operation
Disposals and divestitures	Disposal, divestiture
Equity investments and joint ventures	Investment, equity investment, joint venture
Financial statements and disclosures	Financial statement, disclosure
Foreign currency translation	Foreign currency, translation
Fresh start accounting	Fresh start, fresh, start, accounting
Going concern	Going concern
Goodwill and intangible assets	Goodwill, intangible
Insurance contract liabilities	Insurance, liability, liabilities
Interest revenue	Interest revenue, interest income
Internal controls	Internal control
Inventory	Inventory
Leases	Lease
Long-lived assets	Long lived asset, long-lived asset, long term asset, long-term asset
Long-term investments	Investment
Other assets	Other asset, asset
Other contingent liabilities	Liabilities, liability, contingent
Other debt	Debt, other debt
Other expenses	Other expense, expense
Other income taxes	Income tax
Other intangible assets	Intangible
Other investments	Invest, investment
Other liabilities and provisions	Other liabilities, other provisions, provisions
Other revenue	Other revenue
Pension and other post-employment benefits	Pension, employment, benefit
Policy changes	Policy
Property, plant and equipment	Property, properties, plant, equipment, PPE
Proven and unproven reserves	Proven reserves, unproven reserves
Real estate investments	Real estate
Regulatory assets and liabilities	Regulatory, regulation
Related party transactions	Related, party, transaction
Research and development expenses	Research expense, research, research and development, development, R&D, R & D
Revenue from customer contracts	Revenue
Sales return and allowances	Return, sales return, sales allowance, allowance
Selling, general and administrative expenses	Selling expense, selling, general expense, general, administrative expense, admin expense, admin, expense, SG & A
Shareholder valuation	Shareholder, valuation
Subsidiary/affiliate	Subsidiary, affiliate
Uncertain tax positions	Tax
Vendor/supplier rebates	Vendor, vendor rebates, supplier, supplier rebates
Warranty liabilities	Warranty, warranties, liability, liabilities

Notes: The table shows all the CAM topics of the CAMs in the sample, as well as the key words used to search for relevant tweets.

Figure 7.1 - Example of relevant tweet discussing warranty liabilities for Tesla



Notes: The tweet can be found here: https://twitter.com/Nixons_Head_/status/1220002091814404096

Table 7.4 - Top 10 firms with relevant tweets

Firm	Relevant tweets
VMware, Inc.	111
Twitter, Inc.	88
Tesla, Inc.	76
Roku, Inc.	62
Snap, Inc.	42
Delta Air Lines, Inc.	26
AerCap Holdings N.V.	25
Salesforce, Inc.	20
Altria Group, Inc.	20
Elastic N.V.	19
Sample Mean	1.02

Notes: This table shows the top 10 firms with the most relevant tweets within the two months window surrounding the release of their respective form 10-K, where the start date of the window is one month before the release of form 10-K and the end date of the window is one month after the release of form 10-K.. Firms are referred to on Twitter using the cashtag "$" symbol and ticker.

7.5 Descriptive statistics

7.5.1 Which topics do Twitter users discuss?

As a starting point we extracted the common themes and topics that users were discussing. To do so, we compiled the sample of 824,916 tweets into a text file for which we could then generate a word cloud using the Python library "Wordcloud". Following best practices (e.g. Salton, 1983; Vu, 2019), a list of stop words and characters which added no value were removed from the text, in addition to the list of stop words existing within the Wordcloud library. **Table 7.5** shows the list of stop words. The outcome of this procedure is illustrated within **Figure 7.2** which shows the 200 most used words where each word's size reflects its frequency count within the sample of tweets. Consistent with Bartov et al. (2018) who report Twitter users discussing information directly related to stock trading and firm fundamentals, **Figure 7.2** shows words such "stock", "news" and "daytrading" among the most frequently used, suggesting a keen interest in information affecting stock prices and market returns. The figure also illustrates the popularity of certain stocks, such as TSLA and AAPL, on Twitter, leading us to explore in **Table 7.6** the differences between the characteristics of those companies whose CAMs were tweeted, with those companies whose CAMs were not mentioned by their Twitter followers.

Additionally, we perform a simple text search for the terms "audit matters", "CAM", and "#CAM" on the set of usable tweets (1,870,744 tweets). After accounting for duplicated tweets due to the usage of multiple cashtags and manually reviewing the results of the search to verify that the results in fact discuss CAMs, we find that the term "audit matter" appears in the tweets 50 times, the hashtag "#CAM" and the term "CAM" appear in one tweet each. **Figure 7.3** shows an example of this instance.

Table 7.5 - List of stop words eliminated before creating a word cloud

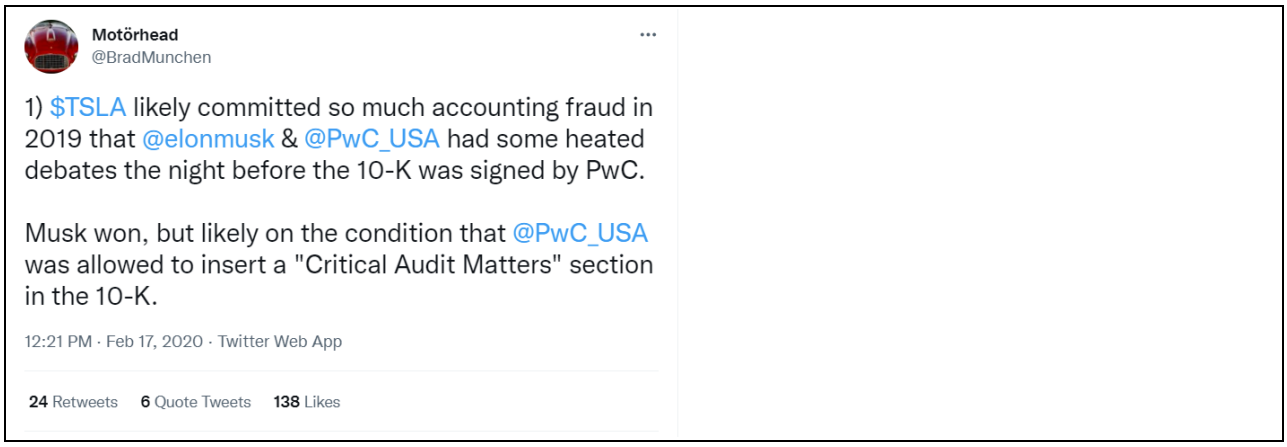
c	doesn't	i'm	r	until
a7qrdarjhy	doing	in	rt	up
about	don't	inc	s	very
above	down	into	same	view
after	during	is	shall	was
again	each	isn't	shan't	wasn't
against	else	it	she	we
alert	ever	its	she'd	we'd
all	few	it's	she'll	we'll
also	for	itself	she's	were
am	from	i've	should	we're
amp	further	just	shouldn't	weren't
an	get	k	since	we've
and	had	let's	so	what
any	hadn't	like	some	what's
are	has	me	such	when
aren't	hasn't	more	t	when's
as	have	most	than	where
at	haven't	mustn't	that	where's
average	having	my	that's	which
be	he	myself	the	while
because	he'd	new	their	who
been	he'll	no	theirs	whom
before	hence	nor	them	who's
being	her	not	themselves	why
below	here	odd	then	why's
between	here's	odds	there	with
both	hers	of	therefore	won't
but	herself	off	there's	would
by	he's	on	these	wouldn't
can	him	once	they	www
cannot	himself	only	they'd	you
can't	his	or	they'll	you'd
co	how	other	they're	you'll
com	however	otherwise	they've	your
could	how's	ought	this	you're
couldn't	http	our	those	yours
day	https	ours	through	yourself
did	i	ourselves	to	yourselves
didn't	i'd	out	today	you've
do	if	over	too	
does	i'll	own	under	

Notes: The table shows the list of stop words eliminated before creating the word cloud in **Figure 7.2.**

Figure 7.2 - Word cloud showing the 200 most frequently used words in the final sample of tweets

Notes: The figure shows a word cloud of the 200 most frequently mentioned words in the final sample of 824,916 relevant tweets. In addition to the list of stop words that exist within the Wordcloud python library, nine other words and characters have been removed due to their irrelevance before the word cloud was created. A list of the stop words eliminated from the text can be found in **Table 7.5**.

Figure 7.3 - Example of Tweet mentioning "audit matters"



Notes: The tweet can be found here: https://twitter.com/BradMunchen/status/1229380410578067456.

7.5.2 Comparative statistics of companies with and without relevant tweets

Table 7.6 clearly shows significant differences between the two cross-sections of firms. Specifically, compared to companies whose CAMs receive no mention on Twitter, those whose CAMs are mentioned reported a higher average number of CAMs (*CAM_num*). Similar to Burke et al. (2023) who report an average of 1.57 CAMs for their sample of large accelerated filers, *CAM_num* shows an average company receives 1.59 CAMs. But this increases/(decreases) notably to 1.83/ (1.51) CAMs

for firms with/(without) relevant tweets. Moreover, these companies also received more than double the average number of tweets (*Tweet_num*) during the sample period (777.52 compared with 336.48 tweets). This could support the notion that firms which are discussed more on Twitter have their CAM topics discussed more than their peers, alluding to the presence of attention-grabbing firms in the sample.

As expected with a sample of large accelerated filers, the firms in the sample have healthy short-term liquidity shown by an average current ratio of 1.75 (*Liquidity*). However, a comparison of the average liquidity between firms shows firms with relevant tweets have significantly higher liquidity (2.41) than firms without relevant tweets (1.66). Moreover, firms with relevant tweets are, on average, smaller in size (8.44) than firms without relevant tweets (8.65). Furthermore, these companies are more likely to have a material control weakness (*MCW*) or going concern opinion (*GC*) and are more likely to be audited by Deloitte or PWC, but less likely to be audited by EY.

Table 7.6 - Descriptive statistics

	Full sample			Firms with relevant tweets			Firms without relevant tweets			
Variable	**Mean**	**Med**	**SD**	**Mean**	**Med**	**SD**	**Mean**	**Med**	**SD**	**Diff**
CAM_num	1.59	1.00	0.72	1.83	2.00	0.76	1.51	1.00	0.69	0.32***
Tweet_num	440.72	270.00	1,551.24	777.52	340.00	3,098.36	336.48	256.50	372.73	441.04***
Tweet_rel_dum	0.24	0.00	0.43	1.00	1.00	0.00	0.00	0.00	0.00	1.00***
Tweet_rel_num	0.02	0.00	4.71	4.31	2.00	8.94	0.00	0.00	0.00	4.31***
Revenue	7.65	7.61	1.75	7.59	7.50	1.84	7.67	7.63	1.72	-0.08
Age	20.85	17.00	17.27	21.10	18.00	17.33	20.78	17.00	17.26	0.33
Size	8.60	8.50	1.57	8.44	8.32	1.65	8.65	8.54	1.54	-0.21**
Loss	0.18	0.00	0.39	0.23	0.00	0.42	0.23	0.00	0.42	0.00
BTM	0.48	0.39	0.58	0.07	0.00	0.26	0.10	0.00	0.29	-0.02
Leverage	0.79	1.55	62.09	1.23	1.48	26.32	0.65	1.60	69.53	0.58
Liquidity	1.75	1.27	2.41	2.06	1.41	2.72	1.66	1.23	2.30	0.39***
Deloitte	0.20	0.00	0.40	0.28	0.00	0.45	0.15	0.00	0.36	0.13***
EY	0.29	0.00	0.46	0.34	0.25	0.37	0.53	0.43	0.63	-0.18***
KPMG	0.19	0.00	0.39	0.19	0.00	0.39	0.20	0.00	0.40	-0.02
PWC	0.23	0.00	0.42	0.33	0.00	0.47	0.28	0.00	0.45	0.04*
NB4	0.09	0.00	0.29	0.18	0.00	0.39	0.19	0.00	0.39	-0.01
MCW	0.18	0.00	0.38	0.12	0.00	0.33	0.19	0.00	0.39	-0.07***
GC	0.00	0.00	0.07	0.01	0.00	0.10	0.00	0.00	0.05	0.01*
Rest	0.07	0.00	0.26	0.08	0.00	0.27	0.07	0.00	0.25	0.01

Notes: The table shows descriptive statistics for all the variables in the study for the full sample of 1,870 US firms, along with the subsamples of firms with/(without) relevant tweets. *CAM_num* is the number of CAMs disclosed within each audit report. *Tweet_num* is the log transformed total number of tweets discussing each firm in our sample one month before and after the release of their 10-K reports. *Tweet_rel_dum* is a binary variable taking the value of 1/(0) when a company received/(did not receive) any tweets relevant to their CAM topic(s) during the same period. *Tweet_rel_num* refers to the number of relevant tweets received by each firm. *Revenue* is the log transformed value of the firm's annual revenue. *Age* refers to the number of years since the firm's IPO. *Size* refers to the log transformed value of the firm's total assets. *Loss* is a binary variable that receives the value of 1 if the firm's net income is below zero, 0 otherwise. *BTM* is the Book to market ratio calculated by dividing the book value per share of the firm's stock by the closing price of the firm's stock at the end of the fiscal year. *Leverage* is calculated as total liabilities divided by total equity; *Liquidity* is calculated as current assets divided by current liabilities. Dummy variables for each of the major audit firms in the sample are shown by *Deloitte*, *EY*, *KPMG, PWC* and *NB4* which receive the value of 1/(0) depending on the firm's auditor. *MCW*, *GC*, and *Rest* are binary variables which respectively receive the value of 1 if the firm has no material control weaknesses reported by the auditor, received a going concern opinion, has at least one restatement for the current fiscal year ended. The difference in means between the firms with/(without) relevant tweets are shown in the final column (* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.)

7.5.3 Distribution of observations with and without relevant tweets

To further explore the differences between companies whose CAMs are/(are not) discussed on Twitter, we report sample distributions in **Table 7.7** by industry (**Panel A**), auditor (**Panel B**), number of CAMs reported (**Panel C**).

Table 7.7 - Distribution of observations with relevant tweets

Panel A - Distribution of relevant tweets by industry

Industry	Full sample	Firms with relevant tweets	Number of relevant tweets	Relevant tweets per firm
Services	309	159	890	5.6
Manufacturing	665	138	584	4.2
Finance	473	66	164	2.5
Transportation, Comms, Electric, Gas & Sanitary service	175	33	138	4.2
Retail Trade	91	18	44	2.4
Mining	68	9	17	1.9
Construction	23	8	27	3.4
Wholesale Trade	58	8	33	4.1
Conglomerate	6	2	6	3.0
Agriculture, Forestry and Fishing	2	1	2	2.0
Total	1,870	442	1,905	4.3

Panel B - Distribution of relevant tweets by auditor

Auditor	Full sample	Firms with relevant tweets	Number of relevant tweets	Relevant tweets per firm
EY	550	145	528	3.6
PWC	428	101	686	6.8
Deloitte	375	83	307	3.7
KPMG	349	81	281	3.5
Others	168	32	103	3.2
Total	1,870	442	1,905	4.3

Panel C - Distribution of relevant tweets by number of CAMs disclosed in the auditors' report

Number of CAMs disclosed in the auditors' report	Full sample	Firms with relevant	Number of relevant tweets	Relevant tweets per firm
1	1,002	163	515	3.2
2	672	202	1,124	5.6
3	167	69	249	3.6
4	27	7	13	1.9
5	2	1	4	4.0
Total	1,870	442	1,905	4.3

Notes: This table shows the distribution of observations with relevant tweets by industry (**Panel A**) based on the Standard Industry Classification (SIC), auditor (**Panel B**), number of CAMs (**Panel C**).

Panel A shows over 75% of all relevant tweets were for firms within the Manufacturing or Services industries. Overall, firms within the Services sector account for the greatest total number of 890 relevant tweets and attracted the highest average number of 5.6 relevant tweets per company which is unsurprising since this industry includes high profile companies such as Netflix, Twitter, Alphabet, and Microsoft. Likewise, the Manufacturing sector which includes Tesla, one of the most discussed firms on Twitter due to the popularity of its CEO, received the joint second highest average number of 4.2 relevant tweets per company.

Panel B shows descriptive statistics distributed by audit firm. Given the market dominance of the Big 4 audit firms (accounting for 1,702 of companies in the full sample), each of the Big 4 firms is shown separately. The remaining 23 audit firms responsible for the audits of 168 companies in the full sample are shown as one group of "non-Big 4" audit firms. Overall, EY audited the most companies in both the full sample and the subsample of companies whose CAMs were discussed on Twitter. This is followed by PWC but, compared to EY, and possibly due to PWC auditing Tesla Inc, the CAMs for their clients attracted nearly double the average number of 6.8 tweets per firm. Upon further inspection, we found that PWC was also the only audit firm specifically mentioned (a total of 14 times) in any of the 1,905 relevant tweets, all of which were in relation to their association with Tesla Inc[36].

[36] We searched through all 824,916 tweets using various keywords related to auditing. We found the word "audit" appeared 205 times, of which only 60 instances were discussing the audit of financial statements or the company's audit firm. The remaining instances related to tweets concerning the audits of governmental agencies or regulatory bodies, a user with the word "auditor" in their username, or internal audits. Only 16 tweets used the term "going concern", but none of these tweets did so based on any evidence provided by the auditor. Likewise, the term "explanatory" appeared in six tweets, yet none referred to an explanatory paragraph by an auditor. Finally, not a single tweet mentioned the terms "audit report".

Panel C reports the distribution of relevant tweets by the number of CAMs reported within each audit report showing an inverted U-shaped relationship between the number of CAMs disclosed and the average number of relevant tweets per firm. Most companies (1,002) in the full sample reported only a one CAM. Reporting two CAM's, however, appears to increase the likelihood of receiving a relevant tweet and account for the highest proportion of companies with relevant tweets. However, with the exception an outlier company with 5 CAM's and 4 relevant tweets, reporting more than two CAMs does not appear to increase the average level of interest on Twitter in your company.

While auditors may not identify any CAMs this is uncommon (Hallas & Coleman, 2020). Most firms have, at least, one CAM. That firms with two CAMs were discussed the most may be due to a perception that these CAMs were not simply an outcome of complying with the minimum requirements of the standards. However, this does not account for the apparent lower interest on Twitter for those firms with more than two CAMs. Differences in the nature of the CAMs will likely play a role.

Indeed, certain news topics such as revenue surprises (e.g. Jegadeesh & Livnat, 2006), tax expense (e.g. Thomas & Zhang, 2011), joint ventures (e.g. Hanvanich & Çavuşgil, 2001) and research and development expenses (e.g. Eberhart et al., 2004), have been shown to signal the prospect of higher market returns. Accordingly, similar to Duboisée de Ricquebourg and Maroun (2024), all CAMs are grouped into one of ten classifications to analyse the distribution of relevant tweets by CAM topic.

Table 7.8 shows the four most common CAM topics in order of importance are "Non-financial assets", "Liabilities and provisions", "Revenue and Sales related matters", and "Business Combinations". These also account for the four largest topics to solicit relevant tweets, but with a significant emphasis on CAMs concerning "Revenue and Sales related matters". Specifically, while 1,223 (64.20%) of relevant tweets were related to CAMs in this topic, "Revenue and Sales related matters" only accounted for 16.16% of the 2,965 CAMs reported in the full sample. By comparison, CAMs related to "Non-financial assets" which account for 30.39% of the full sample, make up less than 5% of the sample of relevant tweets.

Table 7.8 - Distribution of relevant tweets by CAM topic classification

CAM topic classifications	Number of CAMs	Number of relevant tweets	Relevant tweets per CAM
Revenue and Sales related	479	1,223	2.6
Business Combinations	449	353	0.8
Non-financial assets	901	95	0.1
Liabilities and Provisions	483	92	0.2
Operating Expenses	33	59	1.8
Complex Estimates	75	38	0.5
Taxes	285	29	0.1
Systems, Policies & governance	234	13	0.1
Financial Assets	21	2	0.1
Fresh Start Accounting & Going Concern	5	1	0.2
Total	2,965	1,905	0.6

Notes: This table shows CAM topic classification discussed by the relevant tweet. CAM topics classifications are based on the variable topic name from the Audit Analytics database.

Heighted interest in CAMs concerning "Revenue and Sales related matters" could be due to new revenue recognition standards in the form of ASC 606 coming into effect for periods beginning after 15 December 2017 (FASB, 2014). Concerns had already been raised that delays in the implementation of the revenue recognition standards in the U.S. could result in significant challenges for entities and their auditors (Hollie, 2020). Prior capital markets research may also provide insight into why these specific topics may be of import to the Twitter investment community. For example, CAMs concerning revenue (Jegadeesh & Livnat, 2006), business combinations (Hanvanich & Çavuşgil, 2001), tax expenses (Thomas & Zhang, 2011), and research and development expenses (Eberhart et al., 2004) may serve as signals of future abnormal stock returns.

7.5.4 Descriptive statistics for relevant tweets

Users' views and opinions on social media can serve as a catalyst for starting conversations. Accordingly, **Table 7.9** reports descriptive statistics of the Twitter users whose tweets were identified as relevant to our study to examine the influence of their tweets. **Panel A** shows the statistics for the retweets, quote retweets, replies and likes associated with the sample of relevant tweets, while **Panel B** reports the user-related metrics and shows the number of distinct users who sent a relevant tweet, the average number of relevant tweets they sent (*Relevant tweets sent*), the average number of other users following them on Twitter (*indegree*), and the average number of tweets (*Tweets sent*) each user had sent since they had starting tweeting on Twitter.

Panel A shows that liking a tweet (*Likes*) is the most popular form of interaction with 32.60% (620 tweets) of relevant tweets receiving at least one like. While many tweets received no likes, one tweet was liked 176 times. Overall, a relevant tweet was liked 2.45 times which is comparable to the 2.66 likes per tweet reported by Neu et al. (2019) when examining Twitter users' reactions to the release of the Panama Papers. However, very few followers retweeted the relevant tweets to their followers in our sample (0.54 retweets compared to the 5.70 retweets of the Panama Papers in Neu et al., (2019), and even fewer replied or sent quote retweets. Overall, the statistics in **Panel A** suggest an inability of these tweets to start conversations on Twitter, as they may not be perceived as important enough to warrant sharing with other users.

Another plausible explanation could be due to the popularity, or lack thereof, of the users sending the tweets. Accordingly, **Panel B** reports the public metrics for the individual users sending the relevant tweets. Overall, 733 distinct users sent the sample of 1,905 tweets, with an average user sending 2.60 relevant tweets each. These users are reported to have an average following (indegree) of 16,383.29 users and have sent an average of 43,756.78 tweets over the duration of their time on Twitter. Evidently the average Twitter user responsible of sending a relevant tweet is quite popular. That these tweets receive such little interactions among their followers further supports the notion that the CAM-related tweet, rather than the user sending the tweet, appears of little interest to the average Twitter follower.

Table 7.9 - Descriptive statistics of the relevant tweets

Panel A - Public metrics of relevant tweets

Measure	Percentage of tweets with interactions	Mean	St. dev	Min	Max
Likes	32.60%	2.45	10.3	0	176
Retweets	19.42%	0.54	2.28	0	41
Replies	18.74%	0.35	1.20	0	19
Quote retweets	4.83%	0.08	0.46	0	7

Panel B - Public metrics of users of relevant tweets

Measure	Number of users	Mean	St. dev	Min	Max
Indegree	733	16,383.29	76,781.62	2	1,484,726
Tweets sent	733	43,756.78	13,6517.94	12	1,754,672
Relevant tweets sent	733	2.60	9.60	1	164

Notes: The table shows the descriptive statistics of the relevant tweets and the users who sent them. **Panel A** shows the statistics for the retweets, quote retweets, replies and likes. **Panel B** focuses on user-related metrics and shows the number of distinct users within the sub-sample of relevant tweets, how many relevant tweets are sent by users on average, as well as the mean, standard deviation, minimum, and maximum values for users followship, or indegree, tweets sent by users, and relevant tweets sent by users.

7.5.5 Timing of the relevant tweets

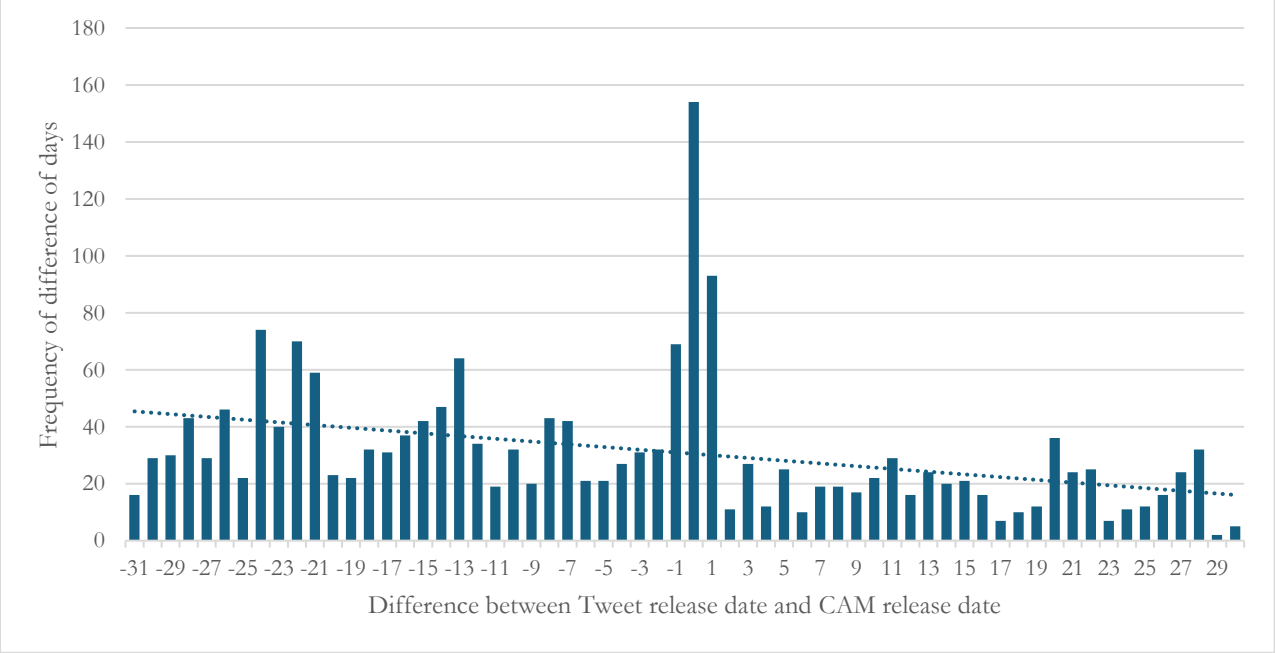
Lennox et al. (2022) report that investors may already be aware of the information provided by KAMs prior to their inclusion in the auditor's report through alternative channels such as earnings announcements or conference calls. Accordingly, we proceed our analysis by examining the timing of the relevant tweets in relation to the 10-K filing dates containing the CAM topics discussed by these tweets. The outcome of this analysis is shown in **Table 7.10** and illustrated in more detail by **Figure 7.4** and show most of the relevant tweets (60.21%) were sent before the public filing of the 10-K reports. In line with Lennox et al. (2022), the information reported within CAMs appears to already be within the public domain before the audit report is released.

Table 7.10 - Timings of sending relevant tweets compared to form 10-K release

	Frequency	Percentage
Relevant tweets sent before 10-K is released	1,147	60.21%
Relevant tweets sent on the day of the 10-K release	154	8.08%
Tweets sent after 10-K is released	604	31.71%
Total	1,905	100%

Notes: This table presents the number of relevant tweets sent before, on, and after the date of the form 10-K filing of each company mentioned on Twitter. The code used to scrape the tweets allows for identifying the time at which the tweet was sent, while the Audit Analytics database includes the date on which the CAMs were publicly filed.

Figure 7.4 - Column chart of difference between tweet date and 10-K date



Notes: The figure shows the distribution and frequency of the difference between the tweet date and the date of the release of the 10-K for all relevant tweets. The X axis shows the difference between the two dates in days, where a positive number means the tweet was sent after the 10-K was released, and a negative number indicates the tweet was sent before the release of the 10-K. the Y axis shows the frequency of the occurrence of the difference.

7.6 Regression analysis

To examine the likelihood of a CAM topic being discussed by the Twitter investment community, **Table 7.11** reports results of the multivariate probit regression using **Equation 7.1**. Our findings show a significant positive coefficient for *Tweet_num,* in line with our expectation that companies with more tweets will be more likely to have their CAM topics mentioned. Specifically, a 1% increase in *tweet_num* increases the likelihood of CAMs being tweeted by 10%.

An examination of the ten different CAM topics shown in **Table 7.8**, indicate four of these topics are associated with an increased likelihood of a company's CAMs being tweeted. Reporting a CAM associated Revenue and Sales matters, Business Combinations, Operating Expenses, or Complex Estimates is associated with 49%, 19%, 17%, and 12% increase in the likelihood that your CAM will be mentioned on Twitter. However, the remaining CAM topics are not associated with the likelihood receiving a relevant Tweet. Evidently, many topics which regarded as critical by the auditor to their engagement, do not automatically translate into a matter worthy of discussion on Twitter.

Other characteristics shown to increase/(decrease) the likelihood of a company's CAMs being discussed include *Loss, (BTM), and (EY).* Firms reporting losses are 4% more likely to have their CAMs discussed on Twitter, while a 1% increase in a firms *BTM* results in a 3% decline in the likelihood your CAMs will be discussed. Finally, EY clients are 5% less likely to have their CAMs Tweeted compared to the clients of any other audit firm. All remaining control variables are insignificant.

Table 7.11 - Probit regression results estimating the likelihood of receiving a relevant tweet

Variable	Coefficient	t-statistic	Average Marginal
Constant	-2.56***	(1.03)	
CAM_num	-0.04	(0.13)	-0.01
Tweet_num	0.50***	(0.07)	0.10***
Topic_Revenue & Sales Matters	1.74***	(0.16)	0.49***
TopicBusiness Combinations	0.88***	(0.16)	0.19***
Topic_Non-Financial Assets	0.10	(0.15)	0.02
Topic_Liabilities & provisions	0.11	(0.15)	0.02
Topic_Operating Expenses	0.74**	(0.33)	0.17**
Topic_Complex Estimates	0.55**	(0.24)	0.12**
Topic_Taxes	0.10	(0.18)	0.02
Topic_Systems, Policies & Governance	0.05	(0.19)	0.01
Topic_Financial Assets	0.51	(0.37)	0.11
Topic_Fresh Start Accounting & Going Concern	0.15	(0.74)	0.03
Revenue	-0.05	(0.05)	-0.00
Leverage	0.00	(0.00)	0.00
Liquidity	0.00	(0.02)	0.00
Age	-0.00	(0.00)	0.00
Size	0.06	(0.05)	0.01
Loss	0.22*	(0.11)	0.04*
BTM	-0.14*	(0.08)	-0.03*
Deloitte	-0.10	(0.16)	-0.02
EY	-0.26*	(0.16)	-0.05*
KPMG	-0.15	(0.17)	-0.03
PWC	-0.03	(0.16)	0.01
MCW	0.02	(0.13)	0.00
GC	0.30	(0.47)	0.06
Rest	0.08	(0.15)	0.02
N	1,870		
Industry FE	Yes		
Fiscal quarter FE	Yes		
Pseudo R^2	0.3509		

Notes: This table shows the results of the probit regression results, along with the average marginal effects, of estimating **Equation 7.1** examining the factors influencing the likelihood of a firm receiving relevant tweet. The dependent variable (*Tweet_rel_dum)* is a binary variable that is allocated the value of 1 if the firm received at least one relevant tweet, otherwise zero. The ten CAM topic classifications listed in **Table 7.8** are included as separate dummy variables prefixed by "*Topic*". An explanation of the remaining variable definitions is provided in **Table 7.1**. Robust standard errors are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

7.7 Discussion and conclusion

Motivated by the mixed findings regarding the usefulness of the information contained within extended audit reports (Christensen et al., 2014; Köhler et al., 2020; Lennox et al., 2022; Moroney et al., 2021), this study explores whether CAMs are of interest to the investment community on Twitter. Utilizing Big Data Analytics tools, we scraped and mined 824,916 tweets discussing 1,870 publicly listed U.S. firms within a one-month period before and after the release of their 10-K reports containing the first ever CAM disclosures for these companies.

Our findings show little evidence that CAM disclosures are being discussed by the investment community on Twitter. Only 1,905 tweets for 442 firms (less than one quarter of the initial sample) discussed the same topics disclosed as CAMs, and 60% of these tweets were sent *before* their CAMs were publicly available. That the act of reporting CAMs may have led users to discuss these topics *before* their public release cannot be precluded (Lennox et al., 2022), but our findings suggests most Twitter users were not getting their information from the CAMs themselves. We also report certain CAM topics increase the likelihood of receiving a tweet, but there is little engagement by other users on Twitter with these relevant tweets.

These findings have two major inter-related inferences. First, auditors and users appear to disagree on what is relevant, or "critical". While auditors disclose matters that proved challenging during the audit, users are more interested in matters that may influence their stock returns. As a result, Twitter users do not discuss CAMs or their topics as often as might have been expected when the standard setters first announced these changes. This leads to the second inference, which is that the addition of CAMs to the audit report has not achieved the intended goal of decreasing the audit expectation gap through addressing the performance gap using more efficient standards (Porter et al., 2012a). In other words, and in line with prior literature, there is very little evidence to suggest that what has been referred to as the greatest change to the audit report in recent decades offers incremental informational to Twitter users.

While obtaining and parsing the tweets was straightforward, this study has four important limitations. First, it is impossible to trace the source of information used to inform each Tweet. For example, even though around one third of the relevant tweets were sent after the release of 10-K, this alone does not definitively confirm these users depended on the CAMs for their source of information. As a result, we can only claim associations between the CAM topics and the subject matter contained within the tweets of those users following each company. We cannot claim a causal relationship

between the CAM disclosures and these tweets. Second, it is hard to gauge the sophistication of the users sending the relevant tweets. Despite textual analysis techniques which can quantify measures such as specificity (e.g. Li, 2008), using them to measure the sophistication of these users would be inaccurate at best. That said, it is not unreasonable to consider these users as novice investors (Pedersen, 2022). Third, due to their infrequency relative to other topics discussed on the Twitterverse, the relevant tweets are unlikely to have a significant market impact on their own, however this remains a prospect for future research to consider. Finally, one million tweets were dropped from our initial sample since they mentioned more than one firm in their text, thus making it infeasible to retain them in the sample. It may be that some of these tweets could be relevant to one or more of the companies they are tagged against. However, given the underwhelming number of relevant tweets we identify from such a large sample, this is unlikely.

The present study focuses on the first disclosers of CAMs in the U.S., which leaves several interesting research opportunities. For example, we only examine the initial year in which CAMs were disclosed in the US by large, accelerated filers. Future research could explore whether CAMs have gained in popularity later among social media users. Other jurisdictions outside the U.S. would also offer a different perspective on the relevance of extended audit reporting among online investment communities. Bartov et al. (2018) show evidence that stock price reaction is stronger for firms that have a weak information environment. Future studies could therefore explore whether smaller firms show different findings. Prior literature suggests social media posts and sentiments are reflected in the stock market (e.g. Antweiler & Frank, 2004; Renault, 2017). Future studies could therefore explore how CAM tweets translate into the financial markets. The answers to these questions will only enrich our understanding of how users react to additional disclosures in the audit report.

Chapter 8: Conclusion

The addition of CAMs to the audit report is regarded as the most important change to the structure of audit reports over the last century (Minutti-Meza, 2021). CAMs were supposed to increase the informational content of the audit report, and provide more transparency to the readers. Minutti-Meza (2021) contends that most CAM studies attempt to answer three main questions: first, does the expanded report provide incremental information? Secondly, is the additional information relevant to the user or able to change his perception? Thirdly, do the additional disclosures provide information about an internal or external threat that may have not been communicated using other means of communication? By answering these questions, academics can find themselves in a unique position where their ability to aid standard setters in their post-implementation review is aided by their capacity to obtain a more holistic understanding of the impact of CAM disclosures and expanded audit reports.

However, CAM studies have provided mixed results as to the usefulness and relevance of CAMs to both internal and external users. Therefore, this thesis examines the reaction of internal users in the form of management, and external users in the form of short-sellers and Twitter users. Specifically, the first empirical chapter addresses the line of literature that investigates the consequences of the new auditing regulations on management disclosures, and how management may react to CAMs through changes to their disclosure behaviour.

Based on the PCAOB's expectation that CAMs may have an influence on disclosures by the management (PCAOB, 2017), the third empirical study investigates if CAMs are associated with changes in managerial disclosure behaviour as reflected in Item 7 of the 10-K report, the Management Discussion and Analysis section. The findings show that while there are significant changes to the textual properties of the MD&A sections, they cannot be attributed to CAMs. This implies that CAMs do not operate as an influential monitoring mechanism for their unaudited narrative disclosures. Additionally, and following prior literature that suggests that auditors influence the textual properties of the MD&A text (De Franco et al., 2020), the results of additional tests provide evidence that the type, topic and number of CAMs are associated with changes in the MD&A textual properties.

Next, the second and third empirical chapters investigate if CAMs provide incremental information as well as the relevance of the information disclosed in CAMs by dissecting the investor population and using a novel approach to understand the effect of CAM disclosure on them. Most archival evidence does not show that CAMs provide incremental information to external users (Bédard et al., 2019; Gutierrez et al., 2018; Lennox et al., 2022). One major caveat with the existing literature is their inability to consider the varying degrees of experience and resources that the population of investors has. While some investors may have the resources and capabilities to perform sophisticated analysis on publicly available information, other investors may be getting their information from social media (Kandel & Pearson, 1995; Miller, 1977; Rubenstein, 1993). Therefore, in order to fully understand how investors react to CAMs, we need to consider the cross-sections of investors separately, and investigate how they react to CAMs independently. This is supported by experimental research that shows different reactions by both professional and novice investors (Christensen et al., 2014; Köhler et al., 2020; Moroney et al., 2021).

Therefore, the second empirical study of this thesis examines the reaction of short-sellers in their capacity as sophisticated market participants. The study finds no significant relationship between short-seller interest as measured by short-interest, and CAMs. This is consistent with prior studies investigating the reaction of equity investors and short-sellers to CAMs (e.g. Burke et al., 2023; Gutierrez et al., 2018; Reid et al., 2019; Rezaee & Homayoun, 2024). These results are robust for alternative measures of short-interest. There is, however, evidence to suggest that short-sellers may be interested in firms that receive CAMs related to operating expenses and CAMs related to systems, policies and governance, and that short-interest is negatively associated with firms that receive CAMs related to financial assets.

Finally, the third empirical chapter investigates the discourse on CAMs by Twitter users, in their capacity as the online investment community (Pedersen, 2022), during the initial year of their disclosure in the U.S. The findings show that CAMs related to revenue, business combinations, operating expenses and complex estimates were most often discussed on Twitter. Furthermore, the study identified only 1,905 tweets discussing 442 firms were relevant to the CAM which the firm received, out of 824,916 Tweets sent for the 1,870 firms. Overall, I find little evidence to support the notion that CAMs are providing the market with relevant information worthy of discussion, implying that what auditors consider "critical" may not always be of interest to Twitter users.

It is believed that the vibrancy and durability of an academic discipline depend heavily on its ability to generate knowledge about a given phenomenon that matters to the discipline's sub-domains; namely public, professional, policy, and critical domains (Burawoy, 2005; Samsonova-Taddei & Gendron, 2022). This thesis addresses all four sub-domains. First, the empirical studies investigate how specific groups of the public react to the new auditing regulations. Second, the second empirical study provides recommendations to the professional body of auditors by highlighting the differences between what they deem as "critical" and what the public sees as relevant. Third, the empirical studies are of use to policy makers as it further clarifies the impact of CAM disclosures on specific user groups. As Kim and Klein (2017) point out, the SEC is required to perform a periodical assessment of current regulations with the aim of making them more effective (The White House - Office of the Press Secretary, 2011). Fourth, the thesis provides a critical review of literature where mixed results are featured and explained. By doing so, the thesis attempts to navigate out of the insularity that accounting and auditing scholars have created for themselves, and help us understand how auditing standards are perceived by the societies around us (Lukka & Becker, 2023) and connect accounting and auditing research to users in the real world (Inanga & Schneider, 2005).

While the thesis contributes to the literature on the reaction of direct and indirect users of the audit report, its three main caveats should be considered in congruence with its results, which offer opportunities for future research. Firstly, the thesis considers the first year of CAM implementation only, and is thus limited to the early adopters of CAMs in the U.S. Therefore, while the early analyses of the consequences of changes in auditing regulations provide a much needed understanding of their initial impact, a longer time series, and a sample of non-large accelerated filers as second-year adopters would provide more understanding of the consequences of CAMs. In other words, a longer time series and variations in the informational environment and characteristics of the firms under investigation may contribute to our understanding of the consequences of CAMs as auditors, investors and management gradually further their own understanding of the dynamics of the new disclosures. Second, the specifications used in the propensity score matching in Chapters four and five, which closely follow prior literature, have led to dropping around 90% of the sample.

Third, the three empirical studies in the thesis identified investors and management in the U.S. as key user groups that are likely to be affected by additional disclosures in the audit report. The financial markets are an intricate web of many other users that are likely to contribute to the consequences of CAMs. Therefore, future research may investigate the reaction of other user groups, such as analysts

or financial media. Additionally, while the thesis focuses on the U.S. as a research setting due to its mature financial market, as well as its structured and standardised data formats that facilitate data scraping and mining, CAMs are being reported globally. Future studies may want to examine the persistence of these results in different jurisdictions.

The insights gained from this thesis also offer a number of avenues for future research. While this thesis generally investigates the reaction of specific cross-sections of users, investigating cross-sections of firms might enhance our understanding as to the circumstances where CAMs could provide incremental information. For instance, it would be useful to investigate the reaction of different user groups to firms with high vs. low information asymmetry or strong vs. weak corporate governance structures, which might shed some light on the usefulness of CAMs in different settings.

Furthermore, while the staggered implementation of the new auditing regulations offers a quasi-experimental research setting that aids with pre-post analysis, other research methods will help in our understanding of the effect of extended audit reports. For instance, the findings in this thesis for the three empirical chapters could be significantly enhanced by semi-structured interviews with corporate managers, short-sellers and Twitter users who are active in the investing community. Interviews are a useful tool of primary date collection, which could then be used in thematic analysis and would aid in gaining valuable insights that are beyond the scope of the research methods used in this thesis. Using different methodologies to capture different aspects of the consequences of CAM disclosures will not only help in future revisions of the relevant auditing standards, but also in identifying the gaps in investors' information, which would ultimately be a starting point towards educating various stakeholders as to the usefulness of CAMs as a tool to reduce information asymmetry.

From a broader perspective, it is worthwhile expanding on certain recent findings that have been discussed in the literature review of this thesis. For instance, Ma et al. (2024) discusses how auditors respond to the media tone by increasing/reducing boilerplate in the KAMs in China. It would be interesting to see if CAMs can act as a moderator to the relationship between media tone and stock returns, which would speak to the effectiveness of CAMs as a channel of communication between assurance providers and equity investors.

References

Abadie, A., & Imbens, G. W. (2016). Matching on the Estimated Propensity Score. *Econometrica, 84*(2), 781-807. https://doi.org/10.3982/ecta11293

Abdelfattah, T., Elmahgoub, M., & Elamer, A. A. (2020). Female audit partners and extended audit reporting: UK evidence. *Journal of Business Ethics, 174*(1), 177-197. https://doi.org/10.1007/s10551-020-04607-0

Aboud, A., Elbardan, H., El-Helaly, M., & Kotb, A. (2024). Does the audit committee member's accounting experience associated with key audit matter types? *Review of Quantitative Finance and Accounting, 63*(2), 753-780. https://doi.org/10.1007/s11156-024-01276-2

ACCA (Association of Chartered Certified Accountants). (2010). *Reshaping the audit for the new global economy*. Association of Chartered Certified Accountants (ACCA). Retrieved 28 March from https://www.accaglobal.com/content/dam/acca/global/pdf/ReshapingAuditForGlobalEconomy.pdf

Acemoglu, D., Hassan, T. A., & Tahoun, A. (2018). The power of the street: Evidence from Egypt's Arab spring. *The Review of Financial Studies, 31*(1), 1–42. https://doi.org/10.1093/rfs/hhx086

Aitken, M. J., Frino, A., McCorry, M. S., & Swan, P. L. (1998). Short sales are almost instantaneously bad news: Evidence from the australian stock exchange. *The Journal of Finance, 53*(6), 2205-2223. https://doi.org/10.1111/0022-1082.00088

Al-mulla, M., & Bradbury, M. E. (2022). Auditor, client, and investor consequences of the enhanced auditor's report. *International Journal of Auditing, 26*(2), 134-150. https://doi.org/10.1111/ijau.12255

Alford, A., Jones, J., Leftwich, R., & Zmijewski, M. (1993). The relative informativeness of accounting disclosures in different countries. *Journal of Accounting Research, 31*, 183-223. https://doi.org/10.2307/2491170

Ali, A., & Kallapur, S. (2001). Securities price consequences of the private securities litigation reform act of 1995 and related events. *The Accounting Review, 76*(3), 431-460. https://doi.org/10.2308/accr.2001.76.3.431

Antweiler, W., & Frank, M. Z. (2004). Is all that talk just noise? The information content of internet stock message boards. *The Journal of Finance, 59*(3), 1259-1294. https://doi.org/10.1111/j.1540-6261.2004.00662.x

Armstrong, C. S., Core, J. E., Taylor, D. J., & Verrecchia, R. E. (2011). When does information asymmetry affect the cost of capital? *Journal of Accounting Research, 49*(1), 1-40. https://doi.org/10.1111/j.1475-679X.2010.00391.x

Asbahr, K., & Ruhnke, K. (2019). Real effects of reporting key audit matters on auditors' judgment and choice of action. *International Journal of Auditing, 23*(2), 165-180. https://doi.org/10.1111/ijau.12154

Asquith, P., Pathak, P. A., & Ritter, J. R. (2005). Short interest, institutional ownership, and stock returns. *Journal of Financial Economics, 78*(2), 243-276. http://doi.org/10.1016/j.jfineco.2005.01.001

Au, A. S., Doukas, J. A., & Onayev, Z. (2009). Daily short interest, idiosyncratic risk, and stock returns. *Journal of Financial Markets, 12*(2), 290-316. https://doi.org/10.1016/j.finmar.2008.09.001

Audi, R., Loughran, T., & McDonald, B. (2016). Trust, but Verify: MD&A Language and the Role of Trust in Corporate Culture. *Journal of Business Ethics, 139*(3), 551-561. https://doi.org/10.1007/s10551-015-2659-4

Axelton, Z., Gramlich, J., & Szerwo, B. (2024). Insights from Auditors' Disclosures of How They Addressed Critical Audit Matters. *Working Paper*, 1-57. https://dx.doi.org/10.2139/ssrn.4969676

Ayman, A., El-Helaly, M., & Shehata, N. (2018). Board diversity and earnings news dissemination on twitter in the UK. *Journal of Management and Governance, 23*(3), 715-734. https://doi.org/10.1007/s10997-018-9441-9

Backof, A. G., Bowlin, K., & Goodson, B. M. (2019). The importance of clarification of auditors' responsibilities under the new audit reporting standards. *Contemporary Accounting Research, 39*(4), 2284-2304. https://doi.org/10.1111/1911-3846.12802

Bandyopadhyay, S. P., Chen, C., & Yu, Y. (2014). Mandatory audit partner rotation, audit market concentration, and audit quality: Evidence from China. *Advances in Accounting, 30*(1), 18-31. https://doi.org/10.1016/j.adiac.2013.12.001

Bao, D., Kim, Y., Mian, G. M., & Su, L. (2019). Do managers disclose or withhold bad news? Evidence from short interest. *The Accounting Review, 94*(3), 1-26. http://doi.org/10.2308/accr-52205

Barber, B. M., Huang, X., Odean, T., & Schwarz, C. (2022). Attention-induced trading and returns: Evidence from robinhood users. *The Journal of Finance, 77*(6), 3141-3190. http://doi.org/10.1111/jofi.13183

Bartov, E., Faurel, L., & Mohanram, P. S. (2018). Can twitter help predict firm-level earnings and stock returns? *The Accounting Review, 93*(3), 25-57. http://doi.org/10.2308/accr-51865

Beattie, V., Fearnley, S., & Brandt, R. (2000). Behind the audit report: A descriptive study of discussions and negotiations between auditors and directors. *International Journal of Auditing, 4*(2), 177-202. https://doi.org/10.1111/1099-1123.00312

Bédard, J., Gonthier-Besacier, N., & Schatt, A. (2019). Consequences of expanded audit reports: Evidence from the justifications of assessments in France. *AUDITING: A Journal of Practice & Theory, 38*(3), 23-45. http://doi.org/10.2308/ajpt-52339

Bentley, J. W., Lambert, T. A., & Wang, E. Y. (2021). The effect of increased audit disclosure on managers' real operating decisions: Evidence from disclosing critical audit matters. *The Accounting Review, 96*(1), 23-40. https://doi.org/10.2308/tar-2017-0486

Bepari, M. K., & Mollik, A. T. (2023). Audit partners' gender and time variances of key audit matters. *Managerial Auditing Journal, 38*(7), 1187-1214. https://doi.org/10.1108/MAJ-11-2022-3752

Bepari, M. K., Mollik, A. T., Nahar, S., & Islam, M. N. (2022). Determinants of Accounts Level and Entity Level Key Audit Matters: Further Evidence. *Accounting in Europe, 19*(3), 397-422. https://doi.org/10.1080/17449480.2022.2060753

Bepari, M. K., Nahar, S., Mollik, A. T., & Azim, M. I. (2023). Content characteristics of key audit matters reported by auditors in Bangladesh and their implications for audit quality. *Journal of Accounting in Emerging Economies, 14*(4), 855-885. https://doi.org/10.1108/jaee-12-2022-0344

Beyer, A., Cohen, D. A., Lys, T. Z., & Walther, B. R. (2010). The financial reporting environment: Review of the recent literature. *Journal of Accounting and Economics, 50*(2-3), 296-343. https://doi.org/10.1016/j.jacceco.2010.10.003

Blankespoor, E., deHaan, E., & Marinovic, I. (2020). Disclosure processing costs, investors' information choice, and equity market outcomes: A review. *Journal of Accounting and Economics, 70*(2-3), 1-46. https://doi.org/10.1016/j.jacceco.2020.101344

Blankespoor, E., Miller, G. S., & White, H. D. (2014). The role of dissemination in market liquidity: Evidence from firms' use of twitter™. *The Accounting Review, 89*(1), 79-112. http://doi.org/10.2308/accr-50576

Blau, B. M., Brough, T. J., Smith, J. L., & Stephens, N. M. (2013). An examination of short-selling activity surrounding auditor changes. *Journal of Accounting, Auditing & Finance, 28*(4), 348-368. https://doi.org/10.1177/0148558x13505594

Blau, B. M., DeLisle, J. R., & Price, S. M. (2015). Do sophisticated investors interpret earnings conference call tone differently than investors at large? Evidence from short sales. *Journal of Corporate Finance, 31*, 203-219. http://doi.org/10.1016/j.jcorpfin.2015.02.003

Blau, B. M., & Pinegar, J. M. (2013). Are short sellers incrementally informed prior to earnings announcements? *Journal of Empirical Finance, 21*, 142-155. http://doi.org/10.1016/j.jempfin.2013.01.005

Blau, B. M., & Wade, C. (2012). Informed or speculative: Short selling analyst recommendations. *Journal of Banking & Finance, 36*(1), 14-25. http://doi.org/10.1016/j.jbankfin.2011.06.001

Boehmer, E., Huszar, Z. R., & Jordan, B. D. (2010). The good news in short interest. *Journal of Financial Economics, 96*(1), 80-97. https://doi.org/10.1016/j.jfineco.2009.12.002

Boehmer, E., Jones, C. M., & Zhang, X. (2008). Which shorts are informed? *The Journal of Finance, 63*(2), 491-527. https://doi.org/10.1111/j.1540-6261.2008.01324.x

Boehmer, E., Jones, C. M., & Zhang, X. (2013). Shackling Short Sellers: The 2008 Shorting Ban. *Review of Financial Studies, 26*(6), 1363-1400. http://doi.org/10.1093/rfs/hht017

Bradley, D., Jr., J. H., Jame, R., & Xiao, Z. (2023). Place your bets? The value of investment research on reddit's wallstreetbets. *The Review of Financial Studies, 37*(5), 1-61. https://doi.org/10.1093/rfs/hhad098

Brasel, K., Doxey, M. M., Grenier, J. H., & Reffett, A. (2016). Risk disclosure preceding negative outcomes: The effects of reporting critical audit matters on judgments of auditor liability. *Current Issues in Auditing, 10*(2), 1-10. http://doi.org/10.2308/ciia-51546

Brent, W. H., & Addo, C. K. (2012). Minimizing information asymmetry: Does firm's characteristics matter? *Academy of Banking Studies Journal, 11*(1), 43-54. https://doi.org/10.1016/j.irfa.2016.05.002

Brown, S. V., & Tucker, J. W. (2011). Large-Sample Evidence on Firms' Year-over-Year MD&A Modifications. *Journal of Accounting Research, 49*(2), 309-346. https://doi.org/10.1111/j.1475-679X.2010.00396.x

Brown, T., Majors, T. M., & Peecher, M. E. (2020). Evidence on how different interventions affect juror assessment of auditor legal culpability and responsibility for damages after auditor failure to detect fraud. *Accounting, Organizations and Society, 87*, 1-21. https://doi.org/10.1016/j.aos.2020.101172

Brunnermeier, M. K., & Pedersen, L. H. (2005). Predatory trading. *The Journal of Finance, 60*(4), 1825-1863. https://doi.org/10.1111/j.1540-6261.2005.00781.x

Burawoy, M. (2005). For public sociology. *American Sociological Review, 70*(1), 4-28. http://doi.org/10.1177/000312240507000102

Burke, J. J., Hoitash, R., Hoitash, U., & Xiao, S. X. (2023). The disclosure and consequences of U.S. critical audit matters *The Accounting Review, 98*(2), 59–95. https://doi.org/10.2308/TAR-2021-0013

Cade, N. L. (2018). Corporate social media: How two-way disclosure channels influence investors. *Accounting, Organizations and Society, 68-69*, 63-79. https://doi.org/10.1016/j.aos.2018.03.004

Cade, N. L., & Hodge, F. D. (2014). The effect of expanding the audit report on managers' communication openness. *Working Paper*, 1-38. https://dx.doi.org/10.2139/ssrn.2433641

Carson, E., Fargher, N. L., Geiger, M. A., Lennox, C. S., Raghunandan, K., & Willekens, M. (2013). Audit reporting for going-concern uncertainty: A research synthesis. *AUDITING: A Journal of Practice & Theory, 32*(Supplement 1), 353-384. http://doi.org/10.2308/ajpt-50324

Cassell, C. A., Drake, M. S., & Rasmussen, S. J. (2011). Short interest as a signal of audit risk. *Contemporary Accounting Research, 28*(4), 1278-1297. https://doi.org/10.1111/j.1911-3846.2011.01102.x

Cassell, C. A., Myers, L. A., & Seidel, T. A. (2015). Disclosure transparency about activity in valuation allowance and reserve accounts and accruals-based earnings management. *Accounting, Organizations and Society, 46*, 23-38. https://doi.org/10.1016/j.aos.2015.03.004

Casterella, J. R., Jensen, K. L., & Knechel, W. R. (2010). Litigation risk and audit firm characteristics. *AUDITING: A Journal of Practice & Theory, 29*(2), 71-82. https://doi.org/10.2308/aud.2010.29.2.71

CFA Society. (2021, 23 February 2021). *What investors need to know about audits*. Retrieved 17 April from https://cfany.org/event/what-investors-need-to-know-about-audits-investor-audits/

Chakrabarty, B., & Shkilko, A. (2013). Information transfers and learning in financial markets: Evidence from short selling around insider sales. *Journal of Banking & Finance, 37*(5), 1560-1572. http://doi.org/10.1016/j.jbankfin.2012.12.017

Chan, D. K., & Liu, N. (2023). The effects of critical audit matter disclosure on audit effort, investor scrutiny, and investment efficiency. *The Accounting Review, 98*(2), 97–121. https://doi.org/10.2308/TAR-2020-0121

Chang, E. C., Luo, Y., & Ren, J. (2014). Short-selling, margin-trading, and price efficiency: Evidence from the Chinese market. *Journal of Banking & Finance, 48*, 411-424. https://doi.org/10.1016/j.jbankfin.2013.10.002

Chen, B. (2022). Do investors value audit quality of complex estimates? *Advances in Accounting*, 1-14. https://doi.org/10.1016/j.adiac.2022.100595

Chen, J., Kadapakkam, P.-R., & Yang, T. (2016). Short selling, margin trading, and the incorporation of new information into prices. *International Review of Financial Analysis, 44*, 1-17. https://doi.org/10.1016/j.irfa.2016.01.002

Chen, L. (2016). The informational role of short sellers: The evidence from short sellers' reports on US-listed Chinese firms. *Journal of Business Finance & Accounting, 43*(9-10), 1444-1482. https://doi.org/10.1111/jbfa.12225

Chen, Q., Jiang, X., & Zhang, Y. (2019). The effects of audit quality disclosure on audit effort and investment efficiency. *The Accounting Review, 94*(4), 189-214. https://doi.org/10.2308/accr-52286

Chen, S., Sun, S. Y. J., & Wu, D. (2010). Client importance, institutional improvements, and audit quality in china: An office and individual auditor level analysis. *The Accounting Review, 85*(1), 127-158. https://doi.org/10.2308/accr.2010.85.1.127

Chen, Y., Da, Z., & Huang, D. (2022). Short selling efficiency. *Journal of Financial Economics, 145*(2), 387-408. https://doi.org/10.1016/j.jfineco.2021.08.006

Cheng, S., Felix, R., & Indjejikian, R. (2019). Spillover Effects of Internal Control Weakness Disclosures: The Role of Audit Committees and Board Connections. *Contemporary Accounting Research, 36*(2), 934-957. https://doi.org/10.1111/1911-3846.12448

Choi, J.-H., Kim, J.-B., Liu, X., & Simunic, D. A. (2008). Audit pricing, legal liability regimes, and big 4 premiums: Theory and cross-country evidence. *Contemporary Accounting Research, 25*(1), 55-99. https://doi.org/10.1506/car.25.1.2

Christensen, B. E., Glover, S. M., & Wolfe, C. J. (2014). Do critical audit matter paragraphs in the audit report change nonprofessional investors' decision to invest? *AUDITING: A Journal of Practice & Theory, 33*(4), 71-93. http://doi.org/10.2308/ajpt-50793

Christensen, B. E., Glover, S. M., & Wood, D. A. (2012). Extreme estimation uncertainty in fair value estimates: Implications for audit assurance. *AUDITING: A Journal of Practice & Theory, 31*(1), 127-146. http://doi.org/10.2308/ajpt-10191

Christophe, S. E., Ferri, M. G., & Angel, J. J. (2004). Short-selling prior to earnings announcements. *The Journal of Finance, 59*(4), 1845-1875. https://doi.org/10.1111/j.1540-6261.2004.00681.x

Christophe, S. E., Ferri, M. G., & Hsieh, J. (2010). Informed trading before analyst downgrades: Evidence from short sellers. *Journal of Financial Economics, 95*(1), 85-106. https://doi.org/10.1016/j.jfineco.2009.02.004

Church, B. K., Davis, S. M., & McCracken, S. A. (2008). The adutitor's reporting model: A literature overview and research synthesis. *Accounting Horizons, 22*(1), 69-90. https://doi.org/10.2308/acch.2008.22.1.69

Clarkson, P. M., Kao, J. L., & Richardson, G. D. (1999). Evidence that management discussion and analysis (MD&A) is a part of a firm's overall disclosure package. *Contemporary Accounting Research, 16*(1), 111-134. https://doi.org/10.1111/j.1911-3846.1999.tb00576.x

Clayton, J. (2017). *Statement on SEC approval of the PCAOB's new auditor's reporting standard*. https://www.sec.gov/news/public-statement/clayton-statement-pcaob-new-auditor-reporting-standard

Cohen Report: The Commission on Auditors' Responsibilities. (1978). *The commission on auditors' responsibilities: Report, conclusions, and recommendations*. AICPA. Retrieved 20 October from http://3197d6d14b5f19f2f440-5e13d29c4c016cf96cbbfd197c579b45.r81.cf1.rackcdn.com/collection/papers/1970/1978_0101_CohenAuditors.pdf

Cole, C. J., & Jones, C. L. (2004). The usefulness of MD&A disclosures in the retail industry. *Journal of Accounting, Auditing & Finance, 19*(4), 361-388. https://doi.org/10.1177/0148558X0401900401

Cole, C. J., & Jones, C. L. (2005). Management discussion and analysis: A review and implications for future research. *Journal of Accounting Literature, 24*, 135-174. https://go.openathens.net/redirector/leeds.ac.uk?url=https://www.proquest.com/scholarly-journals/management-discussion-analysis-review/docview/216303399/se-2?accountid=14664

Cookson, J. A., & Niessner, M. (2019). Why don't we agree? Evidence from a social network of investors. *The Journal of Finance, 75*(1), 173-228. http://doi.org/10.1111/jofi.12852

Cookson, J. A., Niessner, M., & Schiller, C. (2023). Can social media inform corporate decisions? Evidence from merger withdrawals. *Journal of Finance, Forthcoming*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4059633

Cordoş, G.-S., & Fülöp, M.-T. (2015). Understanding audit reporting changes: Introduction of key audit matters. *Accounting and Management Information Systems, 14*(1), 128-152. https://go.openathens.net/redirector/leeds.ac.uk?url=https://www.proquest.com/scholarly-journals/understanding-audit-reporting-changes/docview/1760332939/se-2?accountid=14664

Cordoş, G.-S., Fülöp, M.-T., & Tiron-Tudor, A. (2020). UK audit reporting practices in the pre-ISA 700 (2015 revision) era. *Asian Journal of Business Ethics, 9*(2), 349-370. https://doi.org/10.1007/s13520-020-00113-8

Cox, C. (2008). *What the SEC really did on short selling*. Wall Street Journal. Retrieved November 4 from https://www.sec.gov/news/speech/2008/spch072408cc.htm

Curtis, A. B., Lundholm, R. J., & McVay, S. E. (2014). Forecasting sales: A model and some evidence from the retail industry. *Contemporary Accounting Research, 31*(2), 581-608. https://doi.org/10.1111/1911-3846.12040

Czerney, K., Schmidt, J. J., & Thompson, A. M. (2014, Nov). Does auditor explanatory language in unqualified audit reports indicate increased financial misstatement risk? [Article]. *The Accounting Review, 89*(6), 2115-2149. http://doi.org/10.2308/accr-50836

Czerney, K., Schmidt, J. J., & Thompson, A. M. (2019). Do investors respond to explanatory language included in unqualified audit reports? *Contemporary Accounting Research, 36*(1), 198-229. http://doi.org/10.1111/1911-3846.12425

D'Avolio, G. (2002). The market for borrowing stock. *Journal of Financial Economics, 66*(2-3), 271-306. https://doi.org/10.1016/S0304-405X(02)00206-4

Dang, C. M., Fargher, N., & Lee, G. (2017). Audit quality for US-listed Chinese companies. *International Journal of Auditing, 21*(2), 150-163. https://doi.org/10.1111/ijau.12085

Davis, A. K., & Tama-Sweet, I. (2012). Managers' use of language across alternative disclosure outlets: Earnings press releases versus MD&A. *Contemporary Accounting Research, 29*(3), 804-837. http://doi.org10.1111/j.1911-3846.2011.01125.x

De Bondt, W. (2002). Discussion of "Competing theories of financial anomalies". *Review of Financial Studies, 15*(2), 607-613. https://doi.org/10.1093/rfs/15.2.607

De Franco, G., Fogel-Yaari, H., & Li, H. (2020). MD&A Textual Similarity and Auditors. *AUDITING: A Journal of Practice & Theory, 39*(3), 105-131. http://doi.org/10.2308/ajpt-18-016

De Franco, G., Guan, Y., & Lu, H.-f. (2005). The wealth change and redistribution effects of Sarbanes-Oxley internal control disclosures. *Working Paper*, 1-36. https://dx.doi.org/10.2139/ssrn.706701

Dechow, P. M., Hutton, A. P., Meulbroek, L., & Sloan, R. G. (2001). Short-sellers, fundamental analysis,and stock returns. *Journal of Financial Economics, 61*(1), 77-106. https://doi.org/10.1016/S0304-405X(01)00056-3

Deepal, A. G., & Jayamaha, A. (2022). Audit expectation gap: A comprehensive literature review. *Asian Journal of Accounting Research, 7*(3), 308-319. http://doi.org/10.1108/ajar-10-2021-0202

DeFond, M., & Zhang, J. (2014). A review of archival auditing research. *Journal of Accounting and Economics, 58*(2-3), 275-326. https://doi.org/10.1016/j.jacceco.2014.09.002

Deneuve, E., Filip, A., & Jeny, A. (2024). Detecting Informative Value in Key Audit Matters: The Importance of Dissimilar KAM Risk Descriptions. *Working Paper*, 1-56. https://dx.doi.org/10.2139/ssrn.4643764

Desai, H., Krishnamurthy, S., & Venkataraman, K. (2006). Do short sellers target firms with poor earnings quality? Evidence from earnings restatements. *Review of Accounting Studies, 11*(1), 71-90. https://doi.org/10.1007/s11142-006-6396-x

Desai, H., Rajgopal, S., & Yu, J. J. (2016). Were information intermediaries sensitive to the financial statement-based leading indicators of bank distress prior to the financial crisis? *Contemporary Accounting Research, 33*(2), 576-606. https://doi.org/10.1111/1911-3846.12161

Desai, H., Ramesh, K., Thiagarajan, S. R., & Balachandran, B. V. (2002). An investigation of the informational role of short interest in the NASDAQ market. *The Journal of Finance, 57*(5), 2263-2287. https://doi.org/10.1111/0022-1082.00495

Diamond, D. W., & Verrecchia, R. E. (1987). Constraints on short-selling and asset price adjustment to private information. *Journal of Financial Economics, 18*(2), 277-311. https://doi.org/10.1016/0304-405X(87)90042-0

Diether, K. B., Lee, K.-H., & Werner, I. M. (2009). Short-sale strategies and return predictability. *Review of Financial Studies, 22*(2), 575-607. https://doi.org/10.1093/rfs/hhn047

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review, 48*(2), 147-160. https://doi.org/10.2307/2095101

Donelson, D., Kadous, K., & McInnis, J. (2014). Research on litigation against auditors. In D. Hay, W. R. Knechel, & M. Willekens (Eds.), *The Routledge Companion to Auditing* (pp. 54-66). Taylor & Francis.

Drake, K. D., Goldman, N. C., Lusch, S. J., & Schmidt, J. J. (2024). Disclosure of tax-related critical audit matters and tax-related outcomes. *Contemporary Accounting Research, 41*(2), 719-747. https://doi.org/10.1111/1911-3846.12920

Drake, M. S., Rees, L., & Swanson, E. P. (2011). Should investors follow the prophets or the bears? Evidence on the use of public information by analysts and short sellers. *The Accounting Review, 86*(1), 101-130. https://doi.org/10.2308/accr.00000006

Duboisée de Ricquebourg, A., & Maroun, W. (2024). How do auditor rotations affect key audit matters? Archival evidence from South African audits. *The British Accounting Review, 55*(2), 1-33. https://doi.org/10.1016/j.bar.2023.101263

Duguay, R., Minnis, M., & Sutherland, A. (2019). Regulatory spillovers in common audit markets. *Management Science, 66*(8), 3389-3411. https://doi.org/10.1287/mnsc.2019.3352

Durnev, A., & Mangen, C. (2020). The spillover effects of MD&A disclosures for real investment: The role of industry competition. *Journal of Accounting and Economics, 70*(1), 1-19. https://doi.org/10.1016/j.jacceco.2020.101299

Dutta, S., Fuksa, M., & Macaulay, K. (2019). Determinants of MD&A sentiment in Canada. *International Review of Economics & Finance, 60*, 130-148. https://doi.org/10.1016/j.iref.2018.12.017

Dwyer, K.-A. M., Brennan, N. M., & Kirwan, C. E. (2023). Disclosure of auditor risk assessments in expanded audit reports. *Journal of Applied Accounting Research, 25*(1), 1-23. http://doi.org/10.1108/jaar-07-2022-0181

Dye, R. A. (1985). Disclosure of nonproprietary information. *Journal of Accounting Research, 23*(1), 123-145. https://doi.org/10.2307/2490910

Dyer, T., Lang, M., & Stice-Lawrence, L. (2017). The evolution of 10-K textual disclosure: Evidence from Latent Dirichlet Allocation. *Journal of Accounting and Economics, 64*(2-3), 221-245. https://doi.org/10.1016/j.jacceco.2017.07.002

Eberhart, A. C., Maxwell, W. F., & Siddique, A. R. (2004). An examination of long-term abnormal stock returns and operating performance following R&D increases. *The Journal of Finance, 59*(2), 623-650. https://doi.org/10.1111/j.1540-6261.2004.00644.x

Ecim, D., Maroun, W., & Duboisee de Ricquebourg, A. (2023). An analysis of key audit matter disclosures in South African audit reports from 2017 to 2020. *South African Journal of Business Management, 54*(1). https://doi.org/10.4102/sajbm.v54i1.3669

Economic and Social Research Council. (2020). *What is freely given informed consent?* Retrieved November 2 from https://esrc.ukri.org/funding/guidance-for-applicants/research-ethics/frequently-raised-questions/what-is-freely-given-informed-consent/

Elliott, W. B., Fanning, K., & Peecher, M. E. (2020). Do investors value higher financial reporting quality, and can expanded audit reports unlock this value? *The Accounting Review, 95*(2), 141-165. https://doi.org/10.2308/accr-52508

Elmarzouky, M., Hussainey, K., Abdelfattah, T., & Karim, A. e. (2022). Corporate risk disclosure and key audit matters: the egocentric theory. *International Journal of Accounting & Information Management, 30*(2), 230-251. https://doi.org/10.1108/IJAIM-10-2021-0213

Elsayed, M., Elshandidy, T., & Ahmed, Y. (2023). Is expanded auditor reporting meaningful? UK evidence. *Journal of International Accounting, Auditing and Taxation, 53*, 1-19. https://doi.org/10.1016/j.intaccaudtax.2023.100582

Engelberg, J. (2008). Costly information processing: Evidence from earnings announcements. *AFA 2009 San Francisco Meetings*, 1-49. https://dx.doi.org/10.2139/ssrn.1107998

Engelberg, J. E., Reed, A. V., & Ringgenberg, M. C. (2012). How are shorts informed? Short sellers, news, and information processing. *Journal of Financial Economics, 105*(2), 260-278. https://doi.org/10.1016/j.jfineco.2012.03.001

[Record #46 is using a reference type undefined in this output style.]

FASB (Financial Accounting Standards Board). (2014). *ASU 2014-09 revenue from contracts with customers (topic 606)*. Retrieved 15 December from https://fasb.org/page/PageContent?pageId=/projects/recentlycompleted/revenue-recognition-summary.html#:~:text=2014%2D09%2C%20Revenue%20from%20Contracts,revenue%20from%20contracts%20with%20customers.

Federsel, F., & Hörner, S. (2023). Do country differences matter? Key audit matter disclosure and the role of country attributes. *Working Paper*, 1-38. https://dx.doi.org/10.2139/ssrn.4522764

Federsel, F. P. (2024). Fresh-look effect of audit firm and audit partner rotations? Evidence from European key audit matters. *International Journal of Auditing, 29*(1), 160-187. https://doi.org/10.1111/ijau.12364

Firth, M., Rui, O. M., & Wu, X. (2012). How do various forms of auditor rotation affect audit quality? Evidence from china. *The Internatioanl Journal of Accounting, 47*(1), 109-138. https://doi.org/10.1016/j.intacc.2011.12.006

Fischer, P. E., & Verrecchia, R. E. (2000). Reporting bias. *The Accounting Review, 75*(2), 229-245. https://doi.org/10.2308/accr.2000.75.2.229

Fisher, R., van Staden, C. J., & Richards, G. (2019). Watch that tone - An investigation of the use and stylistic consequences of tone in corporate accountability disclosures. *Accounting, Auditing & Accountability Journal, 33*(1), 77-105. https://doi.org/10.1108/aaaj-10-2016-2745

Fisher, R. T., & Naylor, S. T. (2016). Corporate reporting on the Internet and the expectations gap: new face of an old problem. *Accounting and Business Research, 46*(2), 196-220. https://doi.org/10.1080/00014788.2015.1029866

Fosu, S., Danso, A., Ahmad, W., & Coffie, W. (2016). Information asymmetry, leverage and firm value: Do crisis and growth matter? *International Review of Financial Analysis, 46*, 140-150. https://doi.org/10.1016/j.irfa.2016.05.002

Francis, J., Philbrick, D., & Schipper, K. (1994). Shareholder litigation and corporate disclosures. *Journal of Accounting Research, 32*(2), 137-164. https://doi.org/10.2307/2491279

FRC (Financial Reporting Council). (2013a). *Feedback Statement on consultation on proposed revision to ISA (UK and Ireland) 700 requiring the auditor's report to address risks of material misstatement, materiality and*

a summary of the audit scope. https://www.frc.org.uk/getattachment/95da69ad-6996-496b-adb7-b0f1522badc9/Feedback-Statement-for-publication.pdf

FRC (Financial Reporting Council). (2013b). *International Standard on Auditing (UK and Ireland) 315: Identifying and assessing the risks of material misstatement through understanding the entity and its environment.* https://www.frc.org.uk/getattachment/0737b946-b24a-441d-a313-54e0a90f9e7d/ISA-(UK)-315_Revised-June-2016.pdf

FRC (Financial Reporting Council). (2013c). *International Standard on Auditing (UK and Ireland) 700: The independent auditor's report on financial statements*. https://www.frc.org.uk/getattachment/501de004-b616-43c3-8d65-aeaebde19f8d/ISA-700-(UK-and-Ireland)-700-(Revised)-Independent-auditors-report-June-2013.pdf

FRC (Financial Reporting Council). (2014). *International Standard on Auditing (UK and Ireland) 700: The independent auditor's report on financial statements*. https://www.frc.org.uk/getattachment/458999f8-5e60-45e4-8b54-90bf252b76c7/ISA-700-Sept-2014.pdf

FRC (Financial Reporting Council). (2016a). *Extended auditors' reports: A further review of experience*. https://www.frc.org.uk/getattachment/76641d68-c739-45ac-a251-cabbfd2397e0/Report-on-the-Second-Year-Experience-of-Extended-Auditors-Reports-Jan-2016.pdf

FRC (Financial Reporting Council). (2016b). *International Standard on Auditing (UK) 700 (Revised June 2016) Forming an Opinion and Reporting on Financial Statements*. https://www.frc.org.uk/getattachment/a08b0906-f40c-4735-bbc7-45908bee2b32/ISA-(UK)-700_Revised-June-2016.pdf

FRC (Financial Reporting Council). (2016c). *International Standard on Auditing (UK) 701 Communicating Key Audit Matters in the Independent Auditor's Report*. https://www.frc.org.uk/getattachment/b250cf61-407f-4b1e-9f1c-e959174e1426/ISA-(UK)-701.pdf

FRC (Financial Reporting Council). (2020). *ISA (UK) 315 (Revised July 2020): Identifying and Assessing the Risks of Material Misstatement* https://www.frc.org.uk/getattachment/a23392ac-9063-4f13-a064-23b879f5321c/ISA-(UK)-315-Jul-2020.pdf

FRC (Financial Reporting Council). (2022). *International Standard On Auditing (Uk) 701 (Revised November 2019)*

Fuller, S. H., Joe, J. R., & Luippold, B. L. (2021). The effect of auditor reporting choice and audit committee oversight on management financial disclosures. *The Accounting Review, 96*(6), 239-274. http://doi.org/10.2308/tar-2016-0246

Fulop, M. T., Tiron-Tudor, A., & Cordos, G. S. (2019, 2019/07/04). Audit education role in decreasing the expectation gap. *Journal of Education for Business, 94*(5), 306-313. https://doi.org/10.1080/08832323.2018.1527752

Gaetano, C. (2014). Expanded audit report proposal raises litigation concerns. *Newspaper of the New York State Society of Certified Public Accountants*. https://www.nysscpa.org/news/publications/the-trusted-professional/article/expanded-audit-report-proposal-raises-litigation-concerns

Gimbar, C., Hansen, B., & Ozlanski, M. E. (2016). The effects of critical audit matter paragraphs and accounting standard precision on auditor liability. *The Accounting Review, 91*(6), 1629-1646. https://doi.org/10.2308/accr-51382

Godewatta, N., Phang, S.-Y., Prasad, A., & Xiao, X. (2024). Investors' Reactions to Cybersecurity Incidents: The Joint Effects of Disclosure Tone, Critical Audit Matters, and IT Knowledge. *European Accounting Review*, 1-26. https://doi.org/10.1080/09638180.2024.2445692

Goh, B. W., Lee, J., Li, D., & Wang, M. (2023). Informativeness of the expanded audit report: Evidence from China. *AUDITING: A Journal of Practice & Theory, Forthcoming*, 1-26. https://doi.org/10.2308/AJPT-2020-099

Gold, A., & Heilmann, M. (2019). The consequences of disclosing key audit matters (KAMs): A review of the academic literature. *Maandblad Voor Accountancy en Bedrijfseconomie, 93*(1/2), 5-14. https://doi.org/10.5117/mab.93.29496

Gold, A., Heilmann, M., Pott, C., & Rematzki, J. (2020). Do key audit matters impact financial reporting behavior? *International Journal of Auditing, 24*(2), 232-244. https://doi.org/10.1111/ijau.12190

Gómez-Carrasco, P., Guillamón-Saorín, E., & García Osma, B. (2021). Stakeholders versus firm communication in social media: The case of twitter and corporate social responsibility information. *European Accounting Review, 30*(1), 31-62. https://doi.org/10.1080/09638180.2019.1708428

Goncharenko, G. (2021). In the spotlight: Rethinking NGO accountability in the #MeToo era. *Critical Perspectives on Accounting, 92*, 1-20. https://doi.org/10.1016/j.cpa.2021.102308

Gordon, L. A., Loeb, M. P., Lucyshyn, W., & Sohail, T. (2006). The impact of the Sarbanes-Oxley Act on the corporate disclosures of information security activities. *Journal of Accounting and Public Policy, 25*(5), 503-530. https://doi.org/10.1016/j.jaccpubpol.2006.07.005

Gray, G. L., Turner, J. L., Coram, P. J., & Mock, T. J. (2011). Perceptions and misperceptions regarding the unqualified auditor's report by financial statement preparers, users, and auditors. *Accounting Horizons, 25*(4), 659-684. https://doi.org/10.2308/acch-50060

Greenhouse, L. (2005). *Justices unanimously overturn conviction of Arthur Andersen*. The New York Times. Retrieved November 3 from https://www.nytimes.com/2005/05/31/business/justices-unanimously-overturn-conviction-of-arthur-andersen.html#:~:text=WASHINGTON%2C%20May%2031%20%2D%20With%20a,the%20nation's%20biggest%20corporate%20scandals.

Griffith, E. E. (2019). Auditors, specialists, and professional jurisdiction in audits of fair values. *Contemporary Accounting Research, 37*(1), 245-276. http://doi.org/10.1111/1911-3846.12506

Guiral-Contreras, A., Gonzalo-Angulo, J. A., & Rodgers, W. (2007). Information content and recency effect of the audit report in loan rating decisions. *Accounting & Finance, 47*(2), 285-304. https://doi.org/10.1111/j.1467-629X.2006.00208.x

Gutierrez, E., Krupa, J., Minutti-Meza, M., & Vulcheva, M. (2020). Do going concern opinions provide incremental information to predict corporate defaults? *Review of Accounting Studies, 25*, 1344–1381. https://doi.org/10.1007/s11142-020-09544-x

Gutierrez, E., Minutti-Meza, M., Tatum, K. W., & Vulcheva, M. (2018). Consequences of adopting an expanded auditor's report in the United Kingdom. *Review of Accounting Studies, 23*(4), 1543-1587. https://doi.org/10.1007/s11142-018-9464-0

Gutierrez, E., Minutti-Meza, M., Tatum, K. W., & Vulcheva, M. (2024). Consequences of expanded audit reports: Evidence from the United Kingdom's alternative investment market. *Working Paper*, 1-66. https://dx.doi.org/10.2139/ssrn.3805879

Hallas, N., & Coleman, D. (2020). *No critical audit matters identified for Redfin Corp.* Retrieved December 21 from https://blog.auditanalytics.com/no-critical-audit-matters-identified-for-redfin-corp/

Hanlon, M., Yeung, K., & Zuo, L. (2021). Behavioral Economics of Accounting: A Review of Archival Research on Individual Decision Makers*. *Contemporary Accounting Research, 39*(2), 1150-1214. http://doi.org/10.1111/1911-3846.12739

Hanvanich, S., & Çavuşgil, S. T. (2001). Stock market reactions to international joint venture announcement: An event analysis. *International Business Review, 10*(2), 139-154. https://doi.org/10.1016/S0969-5931(00)00048-2

Hollie, D. (2020). Early evidence on the AS 3101 critical audit matters disclosure. *Journal of Forensic and Investigative Accounting, 12*(1), 45-54. https://dx.doi.org/10.2139/ssrn.3481403

Hope, O.-K., Hu, D., & Lu, H. (2016). The benefits of specific risk-factor disclosures. *Review of Accounting Studies, 21*(4), 1005-1045. https://doi.org/10.1007/s11142-016-9371-1

Hope, O.-K., Hu, D., & Zhao, W. (2017). Third-party consequences of short-selling threats: The case of auditor behavior. *Journal of Accounting and Economics, 63*(2-3), 479-498. https://doi.org/10.1016/j.jacceco.2016.09.006

Hosseinniakani, M., Overland, C., & Samani, N. (2024). Do key audit matters matter? Correspondence between auditor and management disclosures and the role of audit committees. *Journal of International Accounting, Auditing and Taxation, 55*, 1-70. https://doi.org/10.1016/j.intaccaudtax.2024.100617

Hu, X., Huang, H., Pan, Z., & Shi, J. (2019). Information asymmetry and credit rating: A quasi-natural experiment from China. *Journal of Banking & Finance, 106*, 132-152. https://doi.org/10.1016/j.jbankfin.2019.06.003

Huang, Q. (2021). Do critical audit matter disclosures impact investor behavior? *PhD Thesis, Columbia University*, 1-58.

Huang, T.-C., Chang, H., & Chiou, J.-R. (2016). Audit market concentration, audit fees, and audit quality: Evidence from China. *AUDITING: A Journal of Practice & Theory, 35*(2), 121-145. https://doi.org/10.2308/ajpt-51299

Huang, X., Huang, H., & Yuan, L. (2024). Do firms incur financial restatements? A recognition study based on textual features of key audit matters reports. *International Review of Financial Analysis, 96*, 1-10. https://doi.org/10.1016/j.irfa.2024.103606

Humphrey, C., Moizer, P., & Turley, S. (1993). The audit expectations gap in Britain: An empirical investigation. *Accounting and Business Research, 23*(sup1), 395-411. https://doi.org/10.1080/00014788.1993.9729907

Huszár, Z. R., Tan, R. S. K., & Zhang, W. (2017). Do short sellers exploit industry information? *Journal of Empirical Finance, 41*, 118-139. http://doi.org/10.1016/j.jempfin.2016.10.001

Huynh, T. L. D., Wu, J., & Duong, A. T. (2020). Information asymmetry and firm value: Is Vietnam different? *The Journal of Economic Asymmetries, 21*(e00147), 1-9. https://doi.org/10.1016/j.jeca.2019.e00147

IAASB (International Auditing and Assurance Standards Board). (2011). *Enhancing the value of auditor reporting: Exploring options for change.*

https://www.ifac.org/system/files/publications/exposure-drafts/CP_Auditor_Reporting-Final.pdf

IAASB (International Auditing and Assurance Standards Board). (2012). *Improving the auditor's report: Invitation to comment*. https://www.ifac.org/system/files/publications/files/Auditor_Reporting_Invitation_to_Comment-final_0.pdf

IAASB (International Auditing and Assurance Standards Board). (2015a, 14 January). *International Standard on Auditing 701: Communicating key audit matters in the independent auditor's report*. Retrieved 12 September from https://www.ifac.org/system/files/publications/files/ISA-701_2.pdf

IAASB (International Auditing and Assurance Standards Board). (2015b). *Reporting on audited financial statements – new and revised auditor reporting standards and related conforming amendments*. https://www.iaasb.org/system/files/publications/files/Reporting-on-AFS-New-&-Revised-Stds-Combined_1.pdf

Inanga, E. L., & Schneider, W. B. (2005). The failure of accounting research to improve accounting practice: a problem of theory and lack of communication. *Critical Perspectives on Accounting, 16*(3), 227-248. https://dor.org/10.1016/s1045-2354(03)00073-x

International Auditing and Assurance Standards Board (IAASB). (2013, July 2013). *Reporting on audited financial statements: Proposed new and revised international standards on auditing (ISAs): Exposure draft*. International Auditing and Assurance Standards Board. Retrieved 16 October from https://www.ifac.org/system/files/publications/files/Complete%20ED,%20Reporting%20on%20Audited%20Financial%20Statements.pdf

International Auditing and Assurance Standards Board (IAASB). (2015). *Auditor reporting*. International Auditing and Assurance Standards Board,. Retrieved June 21 from https://www.iaasb.org/projects/auditor-reporting

International Auditing and Assurance Standards Board (IAASB). (2017). *A comparison between the IAASB and the US PCAOB standards*. https://www.ifac.org/system/files/publications/files/Auditor-Reporting-Comparison-between-IAASB-Standards-and-PCAOB-Standard.pdf

International Auditing and Assurance Standards Board (IAASB). (2020). *Auditor reporting: Post implementation review: Project update*. https://www.ifac.org/system/files/publications/files/Auditor-Reporting-Communique-Final.pdf

Iskandar, T. M. (1996). Industry type: a factor in materiality judgements and risk assessments. *Managerial Auditing Journal, 11*(3), 4-10. http://dx.doi.org/10.1108/02686909610115196

Jahan, N., & Karim, M. S. (2024). Does goodwill-related critical audit matters disclosure influence firms' financial reporting decisions? Evidence from goodwill impairment. *AUDITING: A Journal of Practice & Theory*, 1-29. http://doi.org/10.2308/AJPT-2022-129

Jegadeesh, N., & Livnat, J. (2006). Revenue surprises and stock returns. *Journal of Accounting and Economics, 41*(1-2), 147-171. https://doi.org/10.1016/j.jacceco.2005.10.003

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managrial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305-360. https://doi.org/10.1016/0304-405X(76)90026-X

Jermakowicz, E. K., Epstein, B., & Ramamoorti, S. (2018, February 2018). *CAM versus KAM - A distinction without a difference? Making judgements in reporting critical audit matters*. Retrieved October 30 from https://www.cpajournal.com/2018/02/19/cam-versus-kam-distinction-without-difference/

Jung, M. J., Naughton, J. P., Tahoun, A., & Wang, C. (2017). Do firms strategically disseminate? Evidence from corporate use of social media. *The Accounting Review, 93*(4), 225-252. http://doi.org/10.2308/accr-51906

Kachelmeier, S. J. (2010). Introduction to a forum on individual differences in accounting behavior. *The Accounting Review, 85*(4), 1127–1128. https://doi.org/10.2308/accr.2010.85.4.1127

Kachelmeier, S. J., Rimkus, D., Schmidt, J. J., & Valentine, K. (2020). The forewarning effect of critical audit matter disclosures involving measurement uncertainty. *Contemporary Accounting Research, 37*(4), 2186-2212. https://doi.org/10.1111/1911-3846.12583

Kandel, E., & Pearson, N. D. (1995). Differential interpretation of public signals and trade in speculative markets. *Journal of Political Economy, 103*(4), 831-872. https://doi.org/10.1086/262005

Kang, Y. J. (2019). Are Audit Committees more challenging given a specific investor base? Does the answer change in the presence of prospective critical audit matter disclosures? *Accounting, Organizations and Society, 77*. https://doi.org/10.1016/j.aos.2019.04.001

Kang, Y. J., Trotman, A. J., & Trotman, K. T. (2015). The effect of an audit judgment rule on audit committee members' professional skepticism: The case of accounting estimates. *Accounting, Organizations and Society, 46*, 59-76. https://doi.org/10.1016/j.aos.2015.03.001

Karpoff, J. m., & Lou, X. (2010). Short sellers and financial misconduct. *The Journal of Finance, 65*(5), 1879-1913. https://doi.org/10.1111/j.1540-6261.2010.01597.x

Katz, D. (2013, December 12, 2013). *Robust auditor reports lure investors.* CFO.com. Retrieved July 17 from https://www.cfo.com/news/robust-auditor-reports-lure-investors-pcaob-audit-chief/665700/

Katz, D. (2014). Revamped audit report seen launching 'wave of litigation'. Retrieved 5 October, 2020, from https://www.cfo.com/auditing/2014/04/revamped-audit-report-seen-launching-wave-litigation/

Kend, M., & Nguyen, L. A. (2020). Investigating recent audit reform in the Australian context: An analysis of the KAM disclosures in audit reports 2017–2018. *International Journal of Auditing, 24*(3), 412-430. http://doi.org/10.1111/ijau.12205

Kim, S., & Klein, A. (2017). Did the 1999 NYSE and NASDAQ listing standard changes on audit committee composition benefit investors? *The Accounting Review, 92*(6), 187-212. http://doi.org/10.2308/accr-51716

Kitiwong, W., & Sarapaivanich, N. (2020). Consequences of the implementation of expanded audit reports with key audit matters (KAMs) on audit quality. *Managerial Auditing Journal, 35*(8), 1095-1119. https://doi.org/10.1108/MAJ-09-2019-2410

Klevak, J., Livnat, J., Pei, D., & Suslava, K. (2023). Critical audit matters: Possible market misinterpretation. *AUDITING: A Journal of Practice & Theory, 42*(3), 45-70. https://doi.org/10.2308/ajpt-2020-113

Klevak, J., Livnat, J., Pei, D. S., & Suslava, K. (2021). A New Uncertainty Measure—CAM. *The Journal of Investing, 30*(2), 93-113. https://doi.org/10.3905/joi.2020.1.161

Köhler, A., Ratzinger-Sakel, N., & Theis, J. (2020). The effects of key audit matters on the auditor's report's communicative value: Experimental evidence from investment professionals and non-professional investors. *Accounting in Europe, 17*(2), 105-128. https://doi.org/10.1080/17449480.2020.1726420

Kumar, B. S., & Ravi, V. (2016). A survey of the applications of text mining in financial domain. *Knowledge-Based Systems, 114*, 128-147. http://doi.org/10.1016/j.knosys.2016.10.003

Kumari, J. S., & Ajward, R. (2022). Whether the audit expectation-performance gap is expanding amid changes in audit landscape? New evidence from an emerging economy. *Asian Journal of Accounting Research, 8*(1), 53-65. http://doi.org/10.1108/ajar-12-2021-0267

Lang, M., & Stice-Lawrence, L. (2015). Textual analysis and international financial reporting: Large sample evidence. *Journal of Accounting and Economics, 60*(2-3), 110-135. http://doi.org/10.1016/j.jacceco.2015.09.002

Lau, C. K. (2021). Measurement uncertainty and management bias in accounting estimates: the perspective of key audit matters reported by Chinese firms' auditors. *Asian Review of Accounting, 29*(1), 79-95. https://doi.org/10.1108/ARA-07-2020-0109

Lawrence, A. (2013). Individual investors and financial disclosure. *Journal of Accounting and Economics, 56*(1), 130-147. https://doi.org/10.1016/j.jacceco.2013.05.001

Lee, A. H. (2020). *The promise of structured data: True modernization of disclosure effectiveness*. Retrieved 20 November from https://www.sec.gov/news/speech/lee-structured-data-2020-11-17

Lee, Y. J., Petroni, K. R., & Shen, M. (2006). Cherry picking, disclosure quality, and comprehensive income reporting choices: The case of property-liability insurers. *Contemporary Accounting Research, 23*(3), 655-692. https://doi.org/10.1506/5QB8-PBQY-Y86L-DRYL

Lennox, C. (2005). Audit quality and executive officers' affiliations with CPA firms. *Journal of Accounting and Economics, 39*(2), 201-231. https://doi.org/10.1007/s11142-021-09650-4

Lennox, C. S., Schmidt, J. J., & Thompson, A. M. (2022). Why are expanded audit reports not informative to investors? Evidence from the United Kingdom. *Review of Accounting Studies, 28*, 497–532. https://doi.org/10.1007/s11142-021-09650-4

Leuz, C., & Verrecchia, R. E. (2000). The economic consequences of increased disclosure. *Journal of Accounting Research, 38*, 91-124. https://doi.org/10.2307/2672910

Li, F. (2008). Annual report readability, current earnings, and earnings persistence. *Journal of Accounting and Economics, 45*(2-3), 221-247. https://doi.org/10.1016/j.jacceco.2008.02.003

Li, F. (2010a). The Information Content of Forward-Looking Statements in Corporate Filings—A Naïve Bayesian Machine Learning Approach. *Journal of Accounting Research, 48*(5), 1049-1102. https://doi.org/10.1111/j.1475-679X.2010.00382.x

Li, F. (2010b). Textual Analysis of Corporate Disclosures: A Survey of the Literature. *Journal of Accounting Literature, 29*, 143-165. https://ssrn.com/abstract=1756926

Li, H. (2019). Repetitive disclosures in the MD&A. *Journal of Business Finance & Accounting, 46*(9-10), 1063-1096. https://doi.org/10.1111/jbfa.12405

Li, H., Hay, D., & Lau, D. (2019). Assessing the impact of the new auditor's report. *Pacific Accounting Review, 31*(1), 110-132. https://doi.org/10.1108/par-02-2018-0011

Li, V., & Luo, Y. (2023). Costs and benefits of auditors' disclosure of critical audit matters: Initial evidence from the United States. *Advances in Accounting, 60*, 1-20. https://doi.org/10.1016/j.adiac.2022.100641

Li, Y., Lin, Y., & Zhang, L. (2018). Trade Secrets Law and Corporate Disclosure: Causal Evidence on the Proprietary Cost Hypothesis. *Journal of Accounting Research, 56*(1), 265-308. https://doi.org/10.1111/1475-679X.12187

Li, Y., Luo, B., Singer, Z., & Zhang, J. (2024). Can critical audit matters be a signal of poor accruals quality? *AUDITING: A Journal of Practice & Theory*, 1-25. http://doi.org/10.2308/ajpt-2022-065

Liao, L., Minutti-Meza, M., Sulcaj, V., Zhang, Y., & Zou, Y. (2024). Consequences of key audit matters in emerging economies: Evidence from Hong Kong and mainland China. *Working Paper*, 1-86. https://dx.doi.org/10.2139/ssrn.4776994

Liao, L., Minutti-Meza, M., Zhang, Y., & Zou, Y. (2022). Consequences of the adoption of the expanded auditor's report: Evidence from Hong Kong and Mainland China. *Working Paper*, 1-74. https://dx.doi.org/10.2139/ssrn.3392449

Liao, L., Sharma, D., Yang, Y., & Zhao, R. (2023). Adoption and content of key audit matters and stock price crash risk. *International Review of Financial Analysis, 88*, 1-17. https://doi.org/10.1016/j.irfa.2023.102706

Litjens, R., van Buuren, J., & Vergoossen, R. (2015). Addressing information needs to reduce the audit expectation gap: Evidence from Dutch bankers, audited companies and auditors. *International Journal of Auditing, 19*(3), 267-281. https://doi.org/10.1111/ijau.12042

Liu, M., Ma, T., & Zhang, Y. (2012). Are short sellers informed? Evidence from the 2007–2008 subprime mortgage crisis. *The Financial Review, 47*(1), 199-218. https://doi.org/10.1111/j.1540-6288.2011.00326.x

Loughran, T., & McDonald, B. (2011). When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks. *The Journal of Finance, 66*(1), 35-65. https://doi.org/10.1111/j.1540-6261.2010.01625.x

Loughran, T. I. M., & McDonald, B. (2016). Textual analysis in accounting and finance: A survey. *Journal of Accounting Research, 54*(4), 1187-1230. http://doi.org/10.1111/1475-679x.12123

Lukka, K., & Becker, A. (2023). The future of critical interdisciplinary accounting research: Performative ontology and critical interventionist research. *Critical Perspectives on Accounting, 93*, 1-13. https://doi.org/10.1016/j.cpa.2022.102447

Lymer, A., & Debreceny, R. (2003). The auditor and corporate reporting on the internet: Challenges and institutional responses. *International Journal of Auditing, 7*(2), 103-120. https://doi.org/10.1111/1099-1123.00063

Ma, Q., Wang, Q., Wang, K., & Wu, C. (2024). Does reduced boilerplate of KAMs indicate increased audit effort? Evidence from China. *International Review of Economics & Finance, 96*, 1-18. https://doi.org/10.1016/j.iref.2024.103697

Ma, Q., Zhou, J., Wang, K., & Wang, Q. (2023). Does Differentiated Key Audit Matter in Unqualified Audit Reports Indicate Increased Financial Misstatement Risk? Evidence from China*. *Asia-Pacific Journal of Financial Studies, 52*(4), 645-672. https://doi.org/10.1111/ajfs.12444

Mahoney, J. (2019). *Critical Audit Matters Reporting: A First Look*. C. R. a. E. Fund.

Maines, L. A., & Wahlen, J. M. (2006). The nature of accounting information reliability: Inferences from archival and experimental research. *Accounting Horizons, 20*(4), 399-425. https://doi.org/10.2308/acch.2006.20.4.399

Malmi, T., & Granlund, M. (2009). In search of management accounting theory. *European Accounting Review, 18*(3), 597-620. https://doi.org/10.1080/09638180902863779

Maroun, W., & Duboisée de Ricquebourg, A. (2024). How auditors identify and report key audit matters - An organizational routines perspective. *The British Accounting Review, 56*(2). https://doi.org/10.1016/j.bar.2023.101263

Mashayekhi, B., Dolatzarei, E., Faraji, O., & Rezaee, Z. (2024). Mapping the state of expanded audit reporting: a bibliometric view. *Meditari Accountancy Research, 32*(2), 579-612. https://doi.org/10.1108/MEDAR-09-2022-1809

Matsumoto, D. A. (2002). Management's incentives to avoid negative earnings surprises *The Accounting Review, 77*(3), 483-514. https://doi.org/10.2308/accr.2002.77.3.483

Mayew, W. J., Sethuraman, M., & Venkatachalam, M. (2014). MD&A Disclosure and the Firm's Ability to Continue as a Going Concern. *The Accounting Review, 90*(4), 1621-1651. http://doi.org/10.2308/accr-50983

McEnroe, J. E., & Martens, S. C. (2001). Auditors' and investors' perceptions of the "expectation gap". *Accounting Horizons, 15*(4), 345-358. https://doi.org/10.2308/acch.2001.15.4.345

Medvec, V. H., & Savitsky, K. (1997). When doing better means feeling worse: The effects of categorical cutoff points on counterfactual thinking and satisfaction. *Journal of Personality and Social Psychology, 72*(6), 1284-1296. https://psycnet.apa.org/doi/10.1037/0022-3514.72.6.1284

Menon, K., & Williams, D. D. (2010). Investor Reaction to Going Concern Audit Reports. *The Accounting Review, 85*(6), 2075-2105. http://doi.org/10.2308/accr.2010.85.6.2075

Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology, 83*(2), 340-363. https://www.jstor.org/stable/2778293

Miller, E. M. (1977). Risk, uncertainty, and divergence of opinion. *The Journal of Finance, 32*(4), 1151-1168. https://doi.org/10.2307/2326520

Miller, G. S. (2006). The press as a watchdog for accounting fraud. *Journal of Accounting Research, 44*(5), 1001-1033. https://doi.org/10.1111/j.1475-679X.2006.00224.x

Miller, G. S., & Skinner, D. J. (2015). The evolving disclosure landscape: How changes in technology, the media, and capital markets are affecting disclosure. *Journal of Accounting Research, 53*(2), 221-239. https://doi.org/10.1111/1475-679X.12075

Minutti-Meza, M. (2021). The art of conversation: The expanded audit report. *Accounting and Business Research, 51*(5), 548-581. https://doi.org/10.1080/00014788.2021.1932264

Mock, T. J., Bédard, J., Coram, P. J., Davis, S. M., Espahbodi, R., & Warne, R. C. (2013). The audit reporting model: Current research synthesis and implications. *AUDITING: A Journal of Practice & Theory, 32*(Supplement 1), 323-351. https://doi.org/10.2308/ajpt-50294

Mohamad, A., Jaafar, A., Hodgkinson, L., & Wells, J. (2013). Short selling and stock returns: Evidence from the UK. *The British Accounting Review, 45*(2), 125-137. https://doi.org/10.1016/j.bar.2013.03.001

Morgan, J., & Stocken, P. (1998). The effects of business risk on audit pricing. *Review of Accounting Studies, 3*, 365-385. https://doi.org/10.1023/A:1009687101871

Moroney, R., Phang, S.-Y., & Xiao, X. (2021). When do investors value key audit matters? *European Accounting Review, 30*(1), 63-82. http://doi.org/10.1080/09638180.2020.1733040

Muslu, V., Radhakrishnan, S., Subramanyam, K. R., & Lim, D. (2015). Forward-looking MD&A disclosures and the information environment. *Management Science, 61*(5), 931-948. https://doi.org/10.1287/mnsc.2014.1921

Neu, D., Saxton, G., Rahaman, A., & Everett, J. (2019). Twitter and social accountability: Reactions to the Panama Papers. *Critical Perspectives on Accounting, 61*, 38-53. https://doi.org/10.1016/j.cpa.2019.04.003

Nguyen, L. A., & Kend, M. (2021). The perceived impact of the KAM reforms on audit reports, audit quality and auditor work practices: stakeholders' perspectives. *Managerial Auditing Journal, 36*(3), 437-462. https://doi.org/10.1108/maj-10-2019-2445

Ozlanski, M. E. (2019). Bright lines vs. blurred lines: When do critical audit matters influence investors' perceptions of management's reporting credibility? *Advances in Accounting, 45*, 1-11. https://doi.org/10.1016/j.adiac.2019.04.001

Pandit, G. M., & Baker, C. R. (2021). Historical Development of the Standard Audit Report in the U.S.: Form, Scope, and Renewed Attention to Fraud Detection. *Accounting Historians Journal, 48*(1), 31-45. https://doi.org/10.2308/aahj-19-015

Park, K. (2017). Earnings quality and short selling: Evidence from real earnings management in the United States. *Journal of Business Finance and Accounting, 44*(9-10), 1167-1476. http://doi.org/10.1111/jbfa.12264

PCAOB (Public Company Accounting Oversight Board). (2011). *Concept release on possible revisions to PCAOB standards related to reports on audited financial statements and related amendments to PCAOB standards: Notice of roundtable.* https://pcaobus.org/Rulemaking/Docket034/Concept_Release.pdf

PCAOB (Public Company Accounting Oversight Board). (2012). *AS 1301: Communications with Audit Committees*. Retrieved January 3 from https://pcaobus.org/oversight/standards/auditing-standards/details/AS1301

PCAOB (Public Company Accounting Oversight Board). (2013). *Proposed auditing standards – the auditor's report on an audit of financial statements when the auditor expresses an unqualified opinion; the auditor's responsibilities regarding other information in certain documents containing audited financial statements and the related auditor's report; and related amendments to PCAOB standards* https://pcaobus.org/Rulemaking/Docket034/Release_2013-005_ARM.pdf

PCAOB (Public Company Accounting Oversight Board). (2017). *The auditor's report on an audit of financial statements when the auditor expresses an unqualified opinion and related amendments to PCAOB*

standards. Retrieved 2 October from https://pcaobus.org/Rulemaking/Docket034/2017-001-auditors-report-final-rule.pdf

PCAOB (Public Company Accounting Oversight Board). (2019). *Implementation of critical audit matters - staff guidance*. https://pcaobus.org/Standards/Documents/Implementation-Critical-Audit-Matters-Deeper-Dive-Communication-of-CAMs.pdf

PCAOB (Public Company Accounting Oversight Board). (2022). *AS 3101: The auditor's report on an audit of financial statements when the auditor expresses an unqualified opinion (amended for fye on or after 12/15/2024)*. Retrieved March 8 from https://pcaobus.org/oversight/standards/auditing-standards/details/as-3101-the-auditor's-report-on-an-audit-of-financial-statements-when-the-auditor-expresses-an-unqualified-opinion-(amended-for-fye-on-or-after-12-15-2024)

Pearson, R. (2020). The indigenous origins of UK corporate financial accountability: a comment. *Business History, 64*(3), 583-586. https://doi.org/10.1080/00076791.2020.1769606

Pedersen, L. H. (2022). Game on: Social networks and markets. *Journal of Financial Economics, 146*(3), 1097-1119. http://doi.org/10.1016/j.jfineco.2022.05.002

Peecher, M. E., Solomon, I., & Trotman, K. T. (2013). An accountability framework for financial statement auditors and related research questions. *Accounting, Organizations and Society, 38*(8), 596-620. https://doi.org/10.1016/j.aos.2013.07.002

Peel, M. J., & Makepeace, G. H. (2012). Differential Audit Quality, Propensity Score Matching and Rosenbaum Bounds for Confounding Variables. *Journal of Business Finance & Accounting, 39*(5-6), 606-648. https://doi.org/10.1111/j.1468-5957.2012.02287.x

Pelzer, J. R. E. (2021). Processing change: A qualitative study examining the frontstage and backstage of audit firms contemplating the implementation of critical audit matters. *International Journal of Auditing, 25*(3), 769-796. https://doi.org/10.1111/ijau.12248

Peters, G. F., & Romi, A. M. (2013). Discretionary compliance with mandatory environmental disclosures: Evidence from SEC filings. *Journal of Accounting and Public Policy, 32*(4), 213-236. https://doi.org/10.1016/j.jaccpubpol.2013.04.004

Pinto, I., Morais, A. I., & Quick, R. (2020). The impact of the precision of accounting standards on the expanded auditor's report in the European Union. *Journal of International Accounting, Auditing and Taxation, 40*, 1-18. https://doi.org/10.1016/j.intaccaudtax.2020.100333

Podsakoff, P. M., & Podsakoff, N. P. (2019). Experimental designs in management and leadership research: Strengths, limitations, and recommendations for improving publishability. *The Leadership Quarterly, 30*(1), 11-33. https://doi.org/10.1016/j.leaqua.2018.11.002

Porter, B., Ó hÓgartaigh, C., & Baskerville, R. (2012a). Audit expectation-performance gap revisited: Evidence from New Zealand and the United Kingdom. Part 1: The gap in New Zealand and the United Kingdom in 2008. *International Journal of Auditing, 16*(2), 101-129. http://doi.org/10.1111/j.1099-1123.2011.00443.x

Porter, B., Ó hÓgartaigh, C., & Baskerville, R. (2012b). Audit expectation-performance gap revisited: Evidence from New Zealand and the united kingdom. Part 2: Changes in the gap in New Zealand 1989-2008 and in the United Kingdom 1999-2008. *International Journal of Auditing, 16*(3), 215-247. https://doi.org/10.1111/j.1099-1123.2011.00444.x

Power, M. K. (2003). Auditing and the production of legitimacy. *Accounting, Organizations and Society, 28*(4), 379-394. https://doi.org/10.1016/S0361-3682(01)00047-2

Pownall, G., & Simko, P. J. (2005). The information intermediary role of short sellers. *The Accounting Review, 80*(3), 941-966. https://doi.org/10.2308/accr.2005.80.3.941

Quick, R. (2020). The audit expectation gap: A review of the academic literature. *Maandblad Voor Accountancy en Bedrijfseconomie, 94*(1/2), 5-25. http://doi.org/10.5117/mab.94.47895

Rahaman, M. M., & Karim, M. R. (2023). How do board features and auditor characteristics shape key audit matters disclosures? Evidence from emerging economies. *China Journal of Accounting Research, 16*(4), 1-19. https://doi.org/10.1016/j.cjar.2023.100331

Rahman, A., & Sah, N. B. (2022). Female directors in play keep short-sellers away. *European Accounting Review*, 1-30. https://doi.org/10.1080/09638180.2022.2103012

Rajabalizadeh, J. (2023). Readability of auditor reports: does audit market competition matter? Empirical evidence from Iran. *Asian Review of Accounting*, 1-28. https://doi.org/10.1108/ara-04-2022-0096

Rakowski, D., Shirley, S. E., & Stark, J. R. (2021). Twitter activity, investor attention, and the diffusion of information. *Financial Management, 50*(1), 3-46. https://doi.org/10.1111/fima.12307

Rapach, D. E., Ringgenberg, M. C., & Zhou, G. (2016). Short interest and aggregate stock returns. *Journal of Financial Economics, 121*(1), 46-65. http://doi.org/10.1016/j.jfineco.2016.03.004

Rapley, E. T., Robertson, J. C., & Smith, J. L. (2021). The effects of disclosing critical audit matters and auditor tenure on nonprofessional investors' judgments. *Journal of Accounting and Public Policy, 40*(5), 106847. http://doi.org/10.1016/j.jaccpubpol.2021.106847

Rautiainen, A., Saastamoinen, J., & Pajunen, K. (2021). Do key audit matters (KAMs) matter? Auditors' perceptions of KAMs and audit quality in Finland. *Managerial Auditing Journal, 36*(3), 386-404. https://doi.org/10.1108/maj-11-2019-2462

Reid, L. C., Carcello, J. V., Li, C., Neal, T. L., & Francis, J. R. (2019). Impact of auditor report changes on financial reporting quality and audit costs: Evidence from the United Kingdom. *Contemporary Accounting Research, 36*(3), 1501-1539. https://doi.org/10.1111/1911-3846.12486

Renault, T. (2017). Intraday online investor sentiment and return patterns in the U.S. Stock market. *Journal of Banking & Finance, 84*, 25-40. http://doi.org/10.1016/j.jbankfin.2017.07.002

Rezaee, Z., & Homayoun, S. (2024). Key Audit Matters Disclosures and Informed Traders. *The British Accounting Review*, 1-47. https://doi.org/10.1016/j.bar.2024.101386

Robinson, J. R., Xue, Y., & Yu, Y. (2011). Determinants of disclosure noncompliance and the effect of the SEC review: Evidence from the 2006 mandated compensation disclosure regulations. *The Accounting Review, 86*(4), 1415-1444. https://doi.org/10.2308/accr-1003

Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika, 70*(1), 41-55. https://doi.org/10.1093/biomet/70.1.41

Rousseau, L. M., & Zehms, K. M. (2024). It's a matter of style: The role of audit firms and audit partners in key audit matter reporting. *Contemporary Accounting Research, 41*(1), 529-561. https://doi.org/10.1111/1911-3846.12902

Rozario, A. M., Vasarhelyi, M. A., & Wang, T. (2023). On the use of consumer tweets to assess the risk of misstated revenue in consumer-facing industries: Evidence from analytical procedures. *AUDITING: A Journal of Practice & Theory, 42*(2), 207-229. https://doi.org/10.2308/AJPT-2020-078

Rubenstein, A. (1993). On price recognition and computational complexity in a monopolistic model. *Journal of Political Economy, 101*(3), 473-484. https://doi.org/10.1086/261883

Rubinstein, A. (1993). On price recognition and computational complexity in a monopolistic model *Journal of Political Economy, 101*(3), 473-484. https://doi.org/10.1086/261883

Ruhnke, K., & Schmidt, M. (2014). The audit expectation gap: existence, causes, and the impact of changes. *Accounting and Business Research, 44*(5), 572-601. https://doi.org/10.1080/00014788.2014.929519

Salton, G. (1983, 1983). Introduction to modern information retrieval. *McGraw-Hill*. https://cir.nii.ac.jp/crid/1574231873785747328

Samsonova-Taddei, A., & Gendron, Y. (2022). Critical auditing studies: Adopting a critical lens toward contemporary audit discourse, practice and regulation. *Critical Perspectives on Accounting, 83*, 1-6. https://doi.org/10.1016/j.cpa.2022.102432

SEC (Securities and Exchange Commission). (1989). *Management's discussion and analysis of financial condition and results of operations; certain investment company disclosures*. Retrieved December 4 from https://www.sec.gov/rules/1989/05/managements-discussion-and-analysis-financial-condition-and-results-operations

SEC (Securities and Exchange Commission). (2008). *Financial reporting manual: Topic 9 - management's discussion and analysis of financial position and results of operations (MD&A)*. Retrieved December 4 from https://www.sec.gov/corpfin/cf-manual/topic-9

SEC (Securities and Exchange Commission). (2013). *Public Company Accounting Oversight Board (PCAOB)*. Retrieved 27 October from https://www.sec.gov/fast-answers/answerspcaobhtm.html#:~:text=When%20Congress%20created%20the%20PCAOB,inspection%20reports%20and%20disciplinary%20actions.

SEC (Securities and Exchange Commission). (2017). *Public company accounting oversight board; order granting approval of proposed rules on the auditor's report on an audit of financial statements when the auditor expresses an unqualified opinion, and departures from unqualified opinions and other reporting circumstances, and related amendments to auditing standards*. https://www.sec.gov/rules/pcaob/2017/34-81916.pdf

SEC (Securities and Exchange Commission). (2020a). *Accelerated filer and large accelerated filer definitions*. Retrieved July 11 from https://www.sec.gov/corpfin/secg-accelerated-filer-and-large-accelerated-filer-definitions

SEC (Securities and Exchange Commission). (2020b). *Management's discussion and analysis, selected financial data, and supplementary financial information*. https://www.sec.gov/rules/final/2020/33-10890.pdf

SEC (Securities and Exchange Commission). (2021, 25 January, 2021). *How to read a 10-K/10-Q*. Retrieved 14 November from https://www.sec.gov/oiea/investor-alerts-and-bulletins/how-read-10-k10-q#:~:text=Item%201A%20%E2%80%9CRisk%20Factors%E2%80%9D%20includes,the%20company%20addresses%20those%20risks.

Seebeck, A., & Kaya, D. (2022). The power of words: An empirical analysis of the communicative value of extended auditor reports. *European Accounting Review*, 1-31. https://doi.org/10.1080/09638180.2021.2021097

Segal, M. (2019). Key audit matters: Insight from audit experts. *Meditari Accountancy Research, 27*(3), 472-494. http://doi.org/10.1108/medar-06-2018-0355

Shipman, J. E., Swanquist, Q. T., & Whited, R. L. (2016). Propensity Score Matching in Accounting Research. *The Accounting Review, 92*(1), 213-244. https://doi.org/10.2308/accr-51449

Siddiqui, J., Nasreen, T., & Choudhury-Lema, A. (2009). The audit expectations gap and the role of audit education: the case of an emerging economy. *Managerial Auditing Journal, 24*(6), 564-583. https://doi.org/10.1108/02686900910966530

Sierra-García, L., Gambetta, N., García-Benau, M. A., & Orta-Pérez, M. (2019). Understanding the determinants of the magnitude of entity-level risk and account-level risk key audit matters: The case of the United Kingdom. *The British Accounting Review, 51*(3), 227-240. https://doi.org/10.1016/j.bar.2019.02.004

Simnett, R., Carson, E., & Vanstraelen, A. (2016). International archival auditing and assurance research: Trends, methodological issues, and opportunities. *AUDITING: A Journal of Practice & Theory, 35*(3), 1-32. https://doi.org/10.2308/ajpt-51377

Simnett, R., & Huggins, A. (2014). Enhancing the auditor's report: To what extent is there support for the IAASB's proposed changes? *Accounting Horizons, 28*(4), 719-747. https://doi.org/10.2308/acch-50791

Simnett, R., & Smith, A. (2005). Public oversight: An international approach to auditing. In T. Campbell & K. Houghton (Eds.), *Ethics and Auditing* (pp. 45-62). ANU Press.

Simunic, D. A. (1980). The pricing of audit services: Theory and evidence. *Journal of Accounting Research, 18*(1), 161-190. https://doi.org/10.2307/2490397

Simunic, D. A., Ye, M., & Zhang, P. (2017). The joint effects of multiple legal system characteristics on auditing standards and auditor behavior. *Contemporary Accounting Research, 34*(1), 7-38. https://doi.org/10.1111/1911-3846.12242

Singer, Z., Wang, Y., & Zhang, J. (2018). Can short sellers detect internal control material weaknesses? Evidence from section 404 of the Sarbanes–Oxley act. *Journal of Accounting, Auditing & Finance*, 3–38. http://doi.org/10.1177/0148558x17748524

Sirois, L.-P., Bédard, J., & Bera, P. (2018). The informational value of key audit matters in the auditor's report: Evidence from an eye-tracking study. *Accounting Horizons, 32*(2), 141-162. http://doi.org/10.2308/acch-52047

Skinner, D. J. (1994). Why firms voluntarily disclose bad news. *Journal of Accounting Research, 32*(1), 38-60. https://doi.org/10.2307/2491386

Smith, M., & Taffler, R. (1995). The incremental effect of narrative accounting information in corporate annual reports. *Journal of Finance & Accounting, 22*(8), 1195-1210. https://doi.org/10.1111/j.1468-5957.1995.tb00901.x

Smith, M., & Taffler, R. (2000). The chairman's statement - A content analysis of discretionary narrative disclosures. *Accounting, Auditing & Accountability Journal, 13*(5), 624-646. https://doi.org/10.1108/09513570010353738

Sprenger, T. O., Tumasjan, A., Sandner, P. G., & Welpe, I. M. (2014). Tweets and trades: The information content of stock microblogs. *European Financial Management, 20*(5), 926-957. http://doi.org/10.1111/j.1468-036X.2013.12007.x

Stettler, H. (1994). Accounting and auditing history: Major developments in England and the United States from ancient roots through the mid-twentieth century. Auditing Symposium XII: Proceedings of the 1994 Deloitte & Touche/University of Kansas Symposium on Auditing Problems,

Stice, J. D. (1991). Using financial and market information to identify pre-engagement factors associated with lawsuits against auditors. *The Accounting Review, 66*(3), 516-533. https://www.jstor.org/stable/247807

Sulcaj, V. (2023). Litigation risk, financial reporting quality, and critical audit matters in the audit report: Early u.S. Evidence. *Working Paper*. https://ssrn.com/abstract=3771081

Suttipun, M. (2021). Impact of key audit matters (KAMs) reporting on audit quality: evidence from Thailand. *Journal of Applied Accounting Research, 22*(5), 869-882. https://doi.org/10.1108/jaar-10-2020-0210

Tarca, A., Street, D. L., & Aerts, W. (2011). Factors affecting MD&A disclosures by SEC registrants: Views of practitioners. *Journal of International Accounting, Auditing and Taxation, 20*(1), 45-59. https://doi.org/10.1016/j.intaccaudtax.2010.12.001

Tetlock, P. E. (1983). Accountability and complexity of thought. *Journal of Personality and Social Psychology, 45*(1), 74–83. https://doi.org/10.1037/0022-3514.45.1.74

Tetlock, P. E. (1985). Accountability: A social check on the fundamental attribution error *Social Psychology Quarterly, 48*(3), 227-236. https://doi.org/10.2307/3033683

The White House - Office of the Press Secretary. (2011). *Executive order 13563 -- improving regulation and regulatory review* https://obamawhitehouse.archives.gov/the-press-office/2011/01/18/executive-order-13563-improving-regulation-and-regulatory-review

Thomas, J., & Zhang, F. X. (2011). Tax expense momentum. *Journal of Accounting Research, 49*(3), 791-821. https://doi.org/10.1111/j.1475-679X.2011.00409.x

Van Tendeloo, B., & Vanstraelen, A. (2011). Earnings management and audit quality in europe: Evidence from the private client segment market. *European Accounting Review, 17*(3), 447-469. https://doi.org/10.1080/09638180802016684

Vanstraelen, A., Schelleman, C., Meuwissen, R., & Hofmann, I. (2012). The audit reporting debate: Seemingly intractable problems and feasible solutions. *European Accounting Review, 21*(2), 193-215. https://doi.org/10.1080/09638180.2012.687506

Verrecchia, R. E. (1983). Discretionary disclosure. *Journal of Accounting and Economics, 5*, 179-194. https://doi.org/10.1016/0165-4101(83)90011-3

Verrecchia, R. E. (2001). Essays on disclosure. *Journal of Accounting and Economics, 32*, 97-180. https://doi.org/10.1016/S0165-4101(01)00025-8

Vinson, J. M., Robertson, J. C., & Cockrell, R. C. (2018). The effects of critical audit matter removal and duration on jurors' assessments of auditor negligence. *AUDITING: A Journal of Practice & Theory, 38*(3), 183-202. https://doi.org/10.2308/ajpt-52319

Vu, D. (2019). *Generating wordclouds in python tutorial.* Retrieved January 16 from https://www.datacamp.com/tutorial/wordcloud-python

Whalen, D., Coleman, D., & Tanona, D. (2020). *2019 Financial Restatements: A Nineteen Year Comparison*. https://www.auditanalytics.com/audit-analytics-reports?categories%5B%5D=Financial%20Restatements

Willenborg, M., & McKeown, J. C. (2000). Going-concern initial public offerings. *Journal of Accounting and Economics, 30*(3), 279-313. https://doi.org/10.1016/S0165-4101(01)00014-3

Wilson, A. (2021). 'The art of conversation: the expanded audit report' – a practitioner view. *Accounting and Business Research, 51*(5), 582-584. https://doi.org/10.1080/00014788.2021.1932269

Wu, X., Fan, Y., & Yang, Y. (2019). Do critical audit matters signal higher quality of audited financial information? Evidence from asset impairment. *China Journal of Accounting Studies, 7*(2), 170-183. https://doi.org/10.1080/21697213.2019.1676037

Yim, A. (2009). Efficient committed budget for implementing target audit probability for many inspectees. *Management Science, 55*(12), 2000-2018. https://doi.org/10.1287/mnsc.1090.1083

Zeng, Y., Zhang, J. H., Zhang, J., & Zhang, M. (2020). Key audit matters reports in china: Their descriptions and implications of audit quality. *Accounting Horizons*, 167-192. https://doi.org/10.2308/HORIZONS-19-189

Zhai, H., Lu, M., Shan, Y., Liu, Q., & Zhao, Y. (2021). Key audit matters and stock price synchronicity: Evidence from a quasi-natural experiment in China. *International Review of Financial Analysis, 75*, 1-11. http://doi.org/10.1016/j.irfa.2021.101747

Zhang, J. (2015). Voluntary information disclosure on social media. *Decision Support Systems, 73*, 28-36. https://doi.org/10.1016/j.dss.2015.02.018

Zhang, P. F., & Shailer, G. (2020). Changes in audit effort and changes in auditors' disclosures of risks of material misstatement. *The British Accounting Review*, 1-12. https://doi.org/10.1016/j.bar.2020.100970

Appendix
Examples of types of CAMs

Example of Account-related CAM

Extract from the 2020 audit report issued by Ernst & Young LLP to Agnico Eagle Mines Limited

Goodwill and property, plant and mine development impairment

At December 31, 2020, the carrying values of goodwill and property, plant and mine development were $407.8 million and $7,325.4 million, respectively. The Company's impairment test with regard to the Canadian Malartic cash generating unit ("CGU") required management to make significant assumptions in determining the recoverable amount, such as gold price, discount rate, and rate of conversion from resources to reserves. The Company discloses significant judgements, estimates and assumptions in respect of impairment in Note 4 to the consolidated financial statements and the results of their analysis in Note 23.

This matter was identified as a critical audit matter in respect of the Canadian Malartic CGU due to the significant estimation uncertainty and judgement applied by management in determining the recoverable amount, primarily due to the sensitivity of the underlying key assumptions to the future cash flows and the significant effect changes in these assumptions would have on the recoverable amount.

How We Addressed the Matter in Our Audit: We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's impairment and mineralization processes.

We involved our valuation specialist to assist in evaluating the discount rate against current industry and economic trends as well as company-specific risk premiums. We also involved our valuation specialist to compare gold prices against market data, including a range of analyst forecasts. We performed sensitivity analyses over the discount rate and gold price assumptions to assess the impact on the recoverable amount of the Canadian Malartic CGU.

To evaluate the estimates of reserves, resources and exploration potential used in the impairment analysis, we reviewed the economic assumptions used in establishing cut-off grades for reserve and resource estimates. We involved our geology specialist to assist in understanding and evaluating the factors that affected the Company's estimated conversion of mineral resources and exploration potential into reserves.

To test estimates of the fair value of mineralization in excess of the life of mine plan, we involved our valuation specialist to assist in reviewing the valuation methods selected by management for each area of mineralization, which was based on each deposit's characteristics. Where an income approach was employed, we inspected and evaluated management's analysis supporting the anticipated economics, including comparing the deposits to existing operations and involving our specialist.

Example of Entity-related CAM

Extract from the 2020 audit report issued by KPMG LLP to Adams Resources & Energy, Inc:

Initial measurement of the fair value of the customer relationship intangible asset acquired in the CTL Transportation, LLC acquisition
As discussed in Note 6 of the consolidated financial statements, on June 26, 2020, the Company completed the purchase of assets from CTL Transportation, LLC (CTL) in an asset acquisition . As a result of the transaction,

the Company acquired a customer relationship intangible asset associated with the generation of future income from CTL's existing customers and product lines. The allocation of the purchase price based on the estimated acquisition-date fair value of the customer relationship intangible asset was $3 .2 million.

We identified the evaluation of the initial measurement of the fair value of the customer relationship intangible asset acquired in the CTL transaction as a critical audit matter. A high degree of subjectivity was required to assess the internally-developed assumptions used to determine the fair value of the intangible asset, specifically the forecasted revenue attributable to customer contracts and estimated annual attrition rate of existing customers. Subjective auditor judgment was required as there was limited observable market information and the estimated fair value of the customer relationship intangible asset was sensitive to possible changes to these assumptions.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls over the Company's acquisition date valuation process, including certain controls over the development of the key assumptions noted above. We compared the Company's estimate of forecasted revenue attributable to customer contracts used in the valuation to the historical results of the Company, CTL and market participants . We evaluated the Company's estimated annual attrition rate of existing customers by comparing to the historical customer retention rate of the Company. In addition, we involved valuation professionals with specialized skills and knowledge, who assisted in (1) assessing the reasonableness of the Company's revenue growth projections by comparing to those of a market participant and (2) calculating an annual attrition rate of existing customers using CTL's historical data and comparing that result to the attrition rate used by the Company .

Example of Measurement-related CAM

Extracted from the 2020 audit report issued by PricewaterhouseCoopers LLP to American Electric Power company inc. :

Valuation of Level 3 Risk Management Commodity Contracts

As described in Notes 1, 10 and 11 to the consolidated financial statements, the Company employs risk management commodity contracts including physical and financial forward purchase-and-sale contracts and, to a lesser extent, over-the-counter swaps and options to accomplish its risk management strategies. Certain over-the-counter and bilaterally executed derivative instruments are executed in less active markets with a lower availability of pricing information. The fair value of these risk management commodity contracts is estimated based on available market information including valuation models that estimate future energy prices based on existing market and broker quotes, and other assumptions. Fair value estimates involve significant uncertainties and matters of significant judgement including future commodity prices and future price volatility. The main driver of contracts being classified as Level 3 is the inability to substantiate energy price curves in the market. Management utilized such unobservable pricing data to value its Level 3 risk management commodity contract assets and liabilities, which totalled $256.3 million and $174.8 million, as of December 31, 2020, respectively.

The principal considerations for our determination that performing procedures relating to the valuation of Level 3 risk management commodity contracts is a critical audit matter are the significant judgment and estimation by management when developing the fair value of the commodity contracts; which in turn led to significant audit effort and a high degree of auditor subjectivity in performing procedures and in evaluating audit evidence relating to the unobservable assumptions for projections of future commodity prices and future price volatilities used within management's discounted cash flow models. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's valuation of the risk management commodity contracts, including controls over the assumptions used to value the Level 3 risk management commodity contracts. These procedures also included, among others, testing the data used in and management's process for developing the fair value of the Level 3 risk management commodity contracts. Professionals with specialized skill and knowledge were used to assist in evaluating the appropriateness of the discounted cash flow models and reasonableness of the future commodity prices and future price volatilities assumptions.

Example of Classification-related CAM

Extract from the 2019 audit report issued by KPMG LLP to MGP INGREDIENTS INC
Revenue recognition under bill and hold arrangements

As discussed in Note 1 to the consolidated financial statements, the Company's distillery products segment routinely enters into bill and hold arrangements, whereby the Company produces and sells unaged distillate to customers. A portion of brown goods premium beverage alcohol revenue, totalling $107,190 for the year ended December 31, 2019, is for bill and hold arrangements.

We identified the evaluation of revenue recognized under bill and hold arrangements as a critical audit matter because of the complexity from the additional effort required to test the incremental bill and hold revenue recognition criteria. The incremental bill and hold revenue recognition criteria include the evaluation of: 1) the customer reason for the bill and hold arrangement; 2) the identification of the product as separately belonging to the customer; 3) the product being currently ready for physical transfer to the customer; and 4) the Company's inability to use the product or direct it to another customer.

The primary procedures we performed to address this critical audit matter included the following. We tested certain internal controls over the Company's revenue recognition process, including controls related to bill and hold revenue recognition criteria being met. We examined a sample of bill and hold revenue transactions to assess the incremental bill and hold revenue recognition criteria. Specifically, we inspected documentation received from the customer directing the Company to warehouse distillate after production. Additionally, we observed a sample of customer owned barrels to determine they were marked with unique identifiers separating them from Company owned inventory and were ready for physical transfer to the customer upon request. Also, to evaluate that the Company does not have the ability to use the product or direct to another customer, we inspected underlying documentation for the same sample of bill and hold transactions to determine legal title to the product had transferred to the customer.