

What Does the Auditor Say?

Auditors' Disclosures of Critical Audit Matters and Audit Fees

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Critical Audit Matters and Audit Fees

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What Does the Auditor Say?

Auditors' Disclosures of Critical Audit Matters and Audit Fees

SUMMARY: We examine whether critical audit matter disclosures contain information about material misstatement risks that is priced in audit fees. We find that textual features of auditors' risk descriptions and the types of risks identified capture fee-relevant information. Further, the results are incremental to other determinants of audit fees considered in prior research and to managements' disclosures in the related notes to the financial statements. Overall, we provide evidence that auditors' perceptions of audit risks revealed in the newly-expanded audit opinion capture information relevant for understanding audit pricing decisions.

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I. SYNOPSIS AND CONTRIBUTION TO PRACTICE

Auditors identify, assess, and respond to risks of material misstatements in the financial statements of the clients they audit. These risks relate to areas of complexity and significant management judgment, and therefore often involve difficult or complex auditor judgments. In his seminal paper on audit pricing, Simunic (1980) identifies accounts receivables and inventories as inherently risky balance sheet components with high audit task complexity and risk of error, and finds that firms with higher balances in these accounts have higher audit fees. Citing this finding, subsequent audit fee research focuses on these two accounts as proxies for risks of material misstatements (Hay et al. 2006). However, areas of elevated risk likely differ across clients and over time. Field-based research uses engagement partners' assessments of risks of material misstatements (Bell et al. 2001; Johnstone et al. 2001), but these survey measures are not publicly available for broad samples of firms.

This paper explores a new approach for identifying and measuring *audit-specific* risks of material misstatements and their relation to audit pricing. Specifically, regulators around the world recently adopted standards requiring auditors to describe in the audit opinion accounts or disclosures where the risk of material misstatement is higher. The new disclosures expand the set of publicly available information about the audit that is potentially relevant to advancing our understanding of audit pricing (Bédard et al. 2016). However, comments on the new regulations suggest that the disclosures are unlikely to contain meaningful information about the audit or that the information is already provided by management in the financial statements and related notes.

Prior research finds that the new auditor disclosures did not increase audit fees in the U.K. (Gutierrez et al. 2018; Reid et al. 2019), Hong Kong (Liao et al. 2019) or the U.S. (Burke et al. 2023). This evidence suggests that the new reporting requirements had no effect on the work

performed by auditors or their communication of material matters to the audit committee, or that any additional costs were not passed on to clients.¹ We ask a fundamentally different research question. Specifically, we investigate whether critical audit matter (CAM) disclosures provide meaningful insights into auditors' assessments of matters involving higher assessed risk as reflected in audit fees. In other words, while the new auditor disclosures do not appear to increase audit fees, they may provide a better understanding of those fees.

We focus on CAMs required in the U.S by the Public Company Accounting Oversight Board (PCAOB) (AS 3101, PCAOB 2017). However, because of the broad interest in expanded auditor reporting, in Appendix C we replicate our tests using key audit matter (KAM) disclosures in Hong Kong (China), which adopted the International Auditing and Assurance Standards Board (IAASB) reporting standard (ISA 701, IAASB 2015). Compiling evidence across these different settings and standards provides a more complete picture of the phenomenon of interest (Lennox and Wu 2022).

A central feature of both the PCAOB and IAASB standards is that they require new audit opinion disclosures containing a qualitative discussion of material risks of misstatements. Thus, we examine textual features of the auditor's assessment of audit-specific risks. All else equal, we expect audit fees to be higher when the narrative indicates greater risks of material misstatements, as measured by CAM risk descriptions that are longer, contain more words indicative of underlying business complexity (e.g., contingent, global, merger), are hedged with litigious words (e.g., contractual, lawyer, claim) or weak modal words (e.g., may, possible, uncertain), and use more audit-specific (less boilerplate) language. Because control risk is an element of audit risk, we also

¹ Only 3 percent of audit firms responding to a PCAOB survey indicated that they made changes to the nature, timing, or extent of audit procedures because of the requirement to communicate CAMs in the auditor's report (PCAOB 2020).

identify CAMs suggesting control risk concerns (e.g., systems, controls, governance). While control deficiencies could be among the factors that the auditor considers in determining whether a financial statement account or disclosure should be reported as CAM, a material weakness or significant deficiency is not, in and of itself, a CAM (PCAOB 2019).

Consistent with our predictions, we find that audit fees are positively associated with the length, complexity, and litigious tone of CAM disclosures and negatively associated with their similarity to industry peers. However, audit fees are not significantly associated with weak tone in CAMs. Further, while audit fees are significantly higher when CAM disclosures suggest control risk concerns, this result is not robust to controlling for auditor reported material weaknesses. All of our results are incremental to industry fixed effects and numerous controls for audit fee determinants identified in prior research.

In additional tests, we include indicator variables for the most frequent CAM risk types and find that they are generally incrementally significant. Thus, it is not only the types of risks that auditors identify but also the language used to describe those risks that explains audit fees. Further, we control for the textual features of the notes to the financial statements referenced in the CAM disclosures. We find that audit fees are positively associated with the length of the notes and the use of complexity, litigious, and weak modal words, and negatively associated with the similarity of the notes to those of industry peers. However, auditors' perceptions of audit risks disclosed in CAMs include fee-relevant information beyond managements' disclosures in the related financial statement notes.²

² Burke et al. (2022) find significant changes to financial statement footnotes referenced by CAMs, consistent with management changing disclosures in areas that are expected to be scrutinized following the adoption of the CAM standard. Yet, our results indicate that CAMs are incrementally associated with audit fees beyond the related notes.

We contribute to a large body of research examining audit fees using standardized quantitative proxies for risks of material misstatements in audited financial statements (e.g., Wang et al. 2013; Lee et al. 2015; Huang et al. 2016; Gul et al. 2018; Jacob et al. 2019). These proxies have changed little in the last four decades of research, largely because of a lack of publicly available data on auditors' perceptions of accounting and disclosure matters involving higher assessed risk. We present large sample evidence that the audit-specific risks and textual features of auditors' qualitative risk assessments in CAM disclosures are associated with audit fees incremental to proxies considered in prior research and managements' disclosures in the notes to the financial statements. Thus, our paper should enable practitioners who prepare, analyze, and verify (audit) financial records, regulators, and researchers to better understand the pricing of audit services and develop more sophisticated audit fee models.

II. BACKGROUND AND HYPOTHESIS DEVELOPMENT

Audit risk is a function of inherent risk, control risk, and detection risk (AS 1101, PCAOB 2015). Inherent risk is the likelihood of a potentially material misstatement before considering any related controls, and is most common when accounting transactions or disclosures are complex or require a high degree of judgment. Auditors assess inherent risk considering the characteristics of the accounts and disclosures in the financial statements. Control risk is the likelihood that a misstatement will not be prevented or detected by the company's internal controls, which the auditor assesses from testing those controls. The auditor then uses the assessed level of inherent and control risk to plan the nature, timing, and extent of the procedures necessary to reduce audit risk to an acceptable level. Therefore, assessing audit risk is a matter of professional judgment. When the auditor's risk assessment indicates higher inherent risk or control risk, the auditor should increase audit effort (i.e., substantive testing) to reduce audit risk to an appropriately low level. In

other words, “auditors plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement” (AS 1101, para. 3, PCAOB 2015). However, even when the auditor complies with all applicable auditing standards, there may still be subsequent accusations of negligence leading to costly litigation and/or reputation loss (Simunic and Stein 1996; Bell et al. 2001; DeFond and Zhang 2014). As a result, auditors may charge a fee premium to compensate for this additional business risk.

Prior research finds consistent evidence that audit fees are increasing in various client attributes associated with increased risk exposure, including size, complexity, and inherent risk (Hay et al. 2006). Following Simunic (1980), this research typically focuses on inventory and receivables as the most complex and risky financial statement components to audit. However, the accounting challenges facing auditors today likely differ from those existing four decades ago. To this end, CAMs are intended to provide a window into relevant client-specific risks as directly assessed by the auditor.

The PCAOB defines CAMs as matters communicated or required to be communicated to the audit committee that (i) relate to accounts or disclosures that are material to the financial statements, and (ii) involve especially challenging, subjective, or complex auditor judgment (AS 3101, PCAOB 2017). The higher the assessed risk of material misstatement, the more auditor judgment is often required to plan and perform audit procedures and evaluate evidence. Additional audit procedures may be required to obtain more persuasive evidence. Further, given the especially challenging, subjective, and complex nature of the matters identified in CAMs, it may not be

possible for the auditor to completely eliminate business risk, leading to a fee premium.³ These arguments suggest a positive association between audit fees and the risks described in CAMs.

However, some commenters expressed concerns that CAMs would be overly standardized, contain only a token description of risks, or, at the other extreme, a laundry list of potential issues that would obscure meaningful information about the audit (PCAOB 2017). Further, preparers may compare with peers and ‘negotiate’ with auditors on the number of identified risks to be reported and the amount of detail to include. Even if the disclosures provide meaningful descriptions of audit risks, they may not have an *incremental* association with audit fees beyond other publicly available information related to client, auditor, and engagement attributes and managements’ description of the matter in the notes to the financial statements. These arguments suggest that CAM disclosures will not have a significant and predictable association with audit fees. Given this tension, our first hypothesis, stated in alternative form, is as follows:

H1: There is a positive association between audit fees and auditors’ CAM disclosures indicating higher risks of material misstatements.

Our second hypothesis considers control risk as an element of audit risk. Holding inherent risk and detection risk constant, audit risk increases with control risk (Raghunandan and Rama 2006; Hogan and Wilkins 2008). AS 3101 includes the severity of control deficiencies as a relevant factor in the assessment of whether a matter is a CAM, although the severity of control risks is not, in and of itself, a CAM (PCAOB 2019). Thus, our second hypothesis, stated in alternative form, is as follows.

³ DeFond and Zhang (2014) observe that archival audit fee research is not able to disentangle whether higher audit fees are due to increased effort, risk premia (or both) because information on actual audit hours (effort) and billing rates (risk premia) is not publicly available. For example, the especially challenging, subjective, and complex nature of CAMs may lead the auditor to engage a specialist, resulting in additional audit hours. However, the specialist may not be able to completely eliminate the auditor’s business risk, leading to a risk premium.

H2: There is a positive association between audit fees and auditors' CAM disclosures indicating higher control risks.

III. RESEARCH DESIGN

We test our hypotheses using the following regression model:

$$LNFEET = \beta_0 + \beta_1 Text_t + \beta_2 Control\ risk_t + \beta_3 Text_notes + \sum \beta_i Controls + \varepsilon_t \quad (1)$$

The dependent variable, *LNFEET*, is the natural logarithm of audit fees.⁴ *Text* is the variable of interest in our tests of H1 and indicates each of the four textual constructs measuring auditors' perceptions of the risks of material misstatements in CAM risk descriptions.

First, because each CAM identifies a specific audit area with higher assessed risk, we expect a larger number of reported risks (*CAMs*) to indicate heightened audit risk. Further, we expect longer risk descriptions, measured as the total number of words (*Words*) or the average number of words per CAM (*AvgWords*), to provide further indication of the potential severity of audit risks. We expect a positive relation between audit fees and the number and length of CAM disclosures.

Second, we measure auditor judgment complexity using the Loughran and McDonald (2019) word list capturing the complexity of a firm's business model, management, and operations (e.g., contingent, global, merger). They find that audit fees are positively associated with *management's* use of complexity words in 10-K filings. We use the average number of complexity words per CAM (*AvgComplex*) to capture *auditors'* perceptions of audit task complexity in CAM risk descriptions. Example 1 of Appendix A provides an example of CAM disclosure with complexity words highlighted. We expect a positive relation between audit fees and *AvgComplex*.

⁴ For ease of interpretation, we report descriptive statistics in raw form but use log transformed variables in the regression analyses. See Appendix B for variable definitions.

Third, we measure CAM tone as the average number of litigious words (e.g., contractual, lawyer, claim) per CAM (*AvgLitigious*) and the average number of weak modal words (e.g., may, possible, uncertain) per CAM (*AvgWeak*), using the sentiment word lists of Loughran and McDonald (2011).⁵ Auditors may intentionally or unintentionally convey increased audit risk through the tone of their disclosures. We expect CAM disclosures to exhibit a more litigious tone when, from the auditors' point of view, the propensity for litigation is higher or the litigation environment for auditor reporting decisions is less favorable. Auditors anticipate future litigation losses and risk-adjust audit fees accordingly (Simunic and Stein 1996). Further, auditors' judgment confidence decreases as perceived task difficulty increases (Chung and Monroe 2000). Therefore, we expect auditors to use more weak modal words when there is greater audit complexity and judgment uncertainty, and hence greater audit risk. Examples 2 and 3 of Appendix A provide example disclosures highlighting litigious and weak modal words, respectively. We expect a positive relation between audit fees and a litigious or weak tone.⁶

Finally, we expect auditors to provide more audit-specific CAM descriptions when audit risk is greater. Therefore, for each CAM in firm *i*'s audit opinion, we calculate the average pairwise similarity with its industry peers following the procedure in Brown and Tucker (2011). We then average these individual risk-level similarity scores across all CAMs to determine opinion-level *Similarity*. If auditors use more audit-specific language for high-risk clients, then we expect a negative relation between audit fees and textual *Similarity*.⁷

⁵ See <https://sraf.nd.edu/textual-analysis/resources/#LM%20Sentiment%20Word%20Lists>. As an alternative to scaling by the number of CAMs, we scale complexity, litigious, and weak modal words by the total number of words in the auditor's risk description with no change in inferences. Inferences are also robust using the (unscaled) natural log of the number of complexity, litigious, and weak model words.

⁶ Because longer disclosures may contain more complex, litigious, and weak modal words, we control for *AvgWords* in the estimations containing *AvgComplex*, *AvgLitigious* and *AvgWeak*.

⁷ In addition to describing each risk of material misstatement, CAMs summarize how the matter was addressed in performing the audit, which may provide insights into how the auditor developed the opinion. Because we examine the association between audit fees and audit risk, our focus is on the CAM risk description rather than the auditor's

To test H2, we include the indicator variable *Control risk*, which captures auditors' use of keywords suggesting control risk concerns (i.e., system, control, govern*, weakness, internal, remediati* and deficienc*). Control risk concerns may exist even when the auditor expresses an unqualified opinion on the effectiveness of internal controls, as Example 4 of Appendix A illustrates. Nevertheless, we also consider reported internal control deficiencies in our empirical tests. H2 predicts a positive relation between *Control risk* and audit fees.

Management also provides disclosures related to the issues identified in CAMs in the notes to the financial statements. Because it is possible that the audit opinion does not capture information beyond the notes, we collect the text of each note referenced by auditors in CAM disclosures and calculate the same textual constructs (*Text_notes*), which we include as a control variable in the empirical model. Finally, the model includes numerous control variables commonly found in prior audit fee research (e.g., Hay et al. 2006; Bills et al. 2015; DeFond et al. 2016) capturing attributes of the auditor and audit engagement (*Big 4*, *Busy season*, *Initial audit*), client firm size (*Size*), client firm complexity (*Segments*), and client firm risk (*CATA*, *Lev*, *Loss*, *ROA*, *Opinion*). Because CAMs are drawn from matters communicated with the audit committee, we also control for audit committee size (*AC size*). Larger audit committees suggest a demand for a high level of audit assurance, resulting in higher audit fees (e.g., Abbott et al. 2003; DeFond and Francis 2005). Finally, we control for whether the firm is headquartered outside the U.S. (*Foreign firm*) and include industry fixed effects to capture audit fee differences across industries.

IV. SAMPLE IDENTIFICATION AND DESCRIPTION

response. Nevertheless, in supplemental untabulated tests, we control for the average number of words in the auditor's response and the response's similarity score with no change in inferences.

Our sample consists of 1,672 large accelerated filers with a fiscal year-end from June 30, 2019 to March 31, 2020 with the text of the CAM risk description and the type of CAM available in *Audit Analytics* and all necessary data to calculate the control variables available in *Compustat*.⁸ The industries representing at least 10 percent of the sample are Finance, Conglomerates, Business Equipment, Healthcare, and Manufacturing (Table 1, Panel A). Figure 1 reports the frequency distribution of CAMs by industries. On average, Chemicals and Allied Products have the fewest CAMs (1.41) while Utilities (1.75) and Consumer Non-durables (1.73) have the most. The maximum number of CAMs by industry ranges from three (Chemicals and Allied Products, Energy, and Consumer Durables) to six (Business Equipment). There are 2,740 CAMs disclosed by auditors of sample firms (Table 1, Panel B). The most common CAM types are *Revenue recognition*, *Impairment of goodwill and intangible assets*, *Property valuation and impairment*, *Liabilities valuation*, *Acquisitions and disposals*, and *Taxation*.

Table 1, Panel C provides descriptive statistics for model variables. The mean (median) audit fee is \$4.7 million (\$2.6 million). All firms in the sample have at least one CAM, with an average of 1.64. CAM risk descriptions average 211 words, including 7.5 complexity words, 2.1 litigious words, and 0.70 weak modal words. To put these frequencies in context, the related notes to the financial statements average 4,318 words, including 56.3 complexity words, 14.5 litigious words, and 4.0 weak modal words. Thus, relative to the length of the related notes, CAMs contain significantly more complexity, litigious, and weak modal words (untabulated). Further, CAMs provide significantly more client-specific language than the related notes, as evidenced by the

⁸ AS1101 is effective for large accelerated filers for audits of fiscal years ending on or after June 30, 2019 and for all other companies for fiscal years ending on or after December 15, 2020. We limit our sample to this time period because of the potentially disruptive effects of the Covid pandemic on later audits.

smaller mean value of *Similarity* (0.061 for CAMs versus 0.089 for the notes). Finally, 4.7 percent of CAMs indicate control risk concerns.⁹

V. RESULTS

Table 2 presents the results of estimating the empirical model. We find a significantly positive association between audit fees and the number of CAMs, and the length, complexity, and litigious tone of the CAM risk descriptions. Although the coefficient on *AvgWeak* is also positive, it is not reliably different from zero at conventional levels of significance (p -value = 0.12). We also find a significantly negative association between audit fees and *Similarity*, consistent with boilerplate CAMs capturing less audit-specific information relevant to audit fees.¹⁰ The evidence indicates that an interquartile increase in *AvgWords*, *AvgComplexity*, and *AvgLitigious* is associated with 4, 8, and 2 percent higher audit fees, respectively, or, in other words, fees that are approximately \$188,000, \$376,000, and \$94,000 higher than the mean audit fee of \$4.7 million.¹¹ These results are economically meaningful yet not so large as to be implausible. Overall, our evidence is consistent with the prediction in H1 that auditors' perceptions of audit risks conveyed by the textual features of CAM disclosures are significantly associated with audit fees, incremental to common quantitative determinants of audit fees from prior research.

⁹ All risk descriptions containing at least one of the control risk keywords were read by one of the authors and spurious observations not related to control risk were eliminated.

¹⁰ Audit fee research often excludes financial firms because some of the financial statement variables are not well defined for these firms. We have no reason to believe that our CAM-based textual approach is industry specific, but because finance is the largest industry in our sample (Table 1, Panel A), we re-estimate our results excluding these firms. Untabulated findings indicate that inferences are robust to the exclusion of financial firms except that the coefficient on *AvgWeak* is significantly positive at the 0.01 level in this subsample. Further, in this subsample of nonfinancial firms, we substitute the sum of inventory and accounts receivable for total current assets with no change in inferences.

¹¹ For example, the coefficient estimate on *AvgWords* is 0.092 and the interquartile range of this variable is from 157 words to 250 words (Table 1, Panel C). Thus, $e^{0.092 \times (\text{Ln}250 - \text{Ln}157)} = 1.04$. The magnitude of the effects we document is consistent with other research examining the relation between audit fees and various measures of audit risk (e.g., Abbott et al. 2006; Krishnan and Wang 2015; Bills et al. 2017; Judd et al. 2017).

We also find a significantly positive association between audit fees and *Control risk*, consistent with H2. The coefficient estimate on this variable suggests that audit fees are higher by 12–19percent when CAM disclosures identify control risks. In untabulated tests, we find that including an indicator variable for reported material weaknesses subsumes the significance of *Control risk*. However, it is important to recognize that an auditor opinion on material weaknesses is not always publicly available outside of the U.S..¹² Thus, our findings suggest that CAM disclosures may provide relevant information on control risk in those settings. We provide evidence on this issue in Appendix C for Hong Kong audits.

Our results also indicate a significantly positive association between audit fees and the number of words in the financial statement notes referenced in CAM disclosures as well as the number of complexity, litigious, and weak modal words in those notes. We find a significantly negative association between audit fees and the textual similarity of the notes to those of industry peers. Thus, our results indicate that CAM disclosures not only provide auditors' perceptions of risks that are priced in audit fees but also contain fee-relevant information beyond managements' disclosures in the related financial statement notes. Finally, the findings for the control variables in the model are generally significant in the predicted direction.¹³

The analyses in Table 2 separately examine each of the four textual constructs (length, complexity, tone, and similarity). Although bivariate correlations between these textual constructs are not high, we estimate the model including *CAMs*, *AvgComplex*, *AvgLitigious*, *AvgWeak*, and

¹² During our sample period, the auditors of the large accelerated filers in our sample were required to report on the effectiveness of internal control over financial reporting (ICFR). Effective April 27, 2020, the Securities and Exchange Commission removed the requirement for public companies with revenues of less than \$100 million.

¹³ An exception is the positive association between audit fees and *ROA*. In untabulated tests, we find that this result is attributable to financial firms. As previously noted, prior research typically excludes financial firms, and research that focuses on this industry (e.g., Fields et al. 2004; Ettredge et al. 2014; Cullen et al. 2018) does not include *ROA* as a control variable. Further, when we include additional control variables (book-to-market ratio, firm age, sales volatility, and CEO duality), the coefficient on *ROA* is significantly negative. Requiring data for these additional variables reduces our sample size to 1,392 observations, but does not alter inferences for the textual variables of primary interest.

Similarity with no change in inferences (untabulated). The adjusted R^2 in this model is 0.722 compared to 0.689 in a baseline regression of *LNFEES* on the control variables, a difference that is significant at the 1 percent level.

To examine whether the CAM risk type subsumes auditors' qualitative narrative, Table 3 presents the results of an augmented audit fee model including categorical variables for each of the six CAM types that appear in at least ten percent of the sample. We find that the CAM types are all positively associated with audit fees except *Property valuation and impairment*. However, controlling for CAM type does not alter inferences regarding the relation between audit fees and the textual attributes of the CAM disclosure. Thus, it is not only the type of risks that auditors identify, but also what they say about those risks that explains audit fees.

Francis et al. (2014) find that each Big 4 audit firm has its own audit style. Similarly, each audit firm may exhibit a unique CAM disclosure style. Table 4, Panel A reports the mean values of the textual variables across all clients of each Big 4 firm and all non-Big 4 audit firms combined. Among the Big 4, EY reports the most CAMs. However, PWC generally provides the longest disclosures using the most complexity words and boilerplate language while Deloitte uses the most litigious and weak modal words. The non-Big 4 fall in the middle on all dimensions except they use fewer weak modal words than any Big 4 firm. These results are consistent with unique disclosure styles across audit firms, although we cannot rule out the possibility that they reflect differences in client portfolios. Regardless of the reason, Table 4, Panel B reports results replacing the *Big4* control variable with audit firm fixed effects. For brevity, we only tabulate the coefficient estimates for the textual variables. Consistent with our main tests, the CAM textual variables are significant in the predicted direction except for *AvgWords*, indicating that the relation between audit fees and CAM disclosures is not an artifact of unique textual styles at the audit firm level.

VII. SUMMARY AND DISCUSSION

Several countries recently adopted standards requiring an expanded audit report, including a qualitative discussion of material risks of misstatement involving significant auditor judgment. We examine whether these critical audit matters, or CAMs, and the language auditors use to describe them provide a window into auditors' perceptions of audit risk, as reflected in the pricing of audit engagements in the U.S.

We find that audit fees are positively associated with the length, complexity, and litigious tone of CAM disclosures, and negatively associated with boilerplate disclosure. Our results are robust to controlling for the analogous textual features of the related financial statement notes, the most frequent CAM risk types, audit firm identification, and numerous controls for audit fee determinants identified in the prior literature. Overall, our evidence suggests that CAMs capture meaningful information about auditors' perceptions of material misstatement risks in client financial statements. Although we cannot claim that our results will generalize to all settings, we provide supplemental evidence that the association between audit fees and the client-specific risks and textual features of CAMs is not limited to a single setting or audit standard.

Our findings contribute to the academic literature and policy debate surrounding CAM disclosures. Although some stakeholders were skeptical that CAMs would provide meaningful insights into the audit (PCAOB 2020), our findings suggest that CAM textual attributes capture audit fee-relevant information incremental to other determinants of audit fees from the financial statements and related notes. Thus, we present a compelling case for incorporating CAM textual attributes, or at a minimum the type of CAM risks unique to the audit, into audit fee models. A deeper understanding of CAM textual attributes could also be useful in identifying risks associated

with the company, developing questions for earnings calls, or making proxy voting decisions, including ratification of the external auditor.

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APPENDIX A

Examples of the Risk Description Section of the Expanded Auditor's Report

Example 1: *Complexity* words highlighted

TransDigm Group Inc

Valuation of intangible assets and loss contract reserves for Esterline acquisition

As described in Note 2 to the consolidated financial statements, during 2019, the Company completed the **acquisition** of all the outstanding stock of Esterline Technologies Corporation ("Esterline") for a total purchase price of approximately \$3,924 million, net of cash **acquired**. The **acquisition** was accounted for under the **acquisition** method of accounting whereby the total purchase price was allocated to tangible and **intangible** assets **acquired** and liabilities **assumed** based on the respective estimated fair values.

Management's accounting for the Company's 2019 **acquisition** of Esterline was significant to our audit because the amounts are material to the consolidated financial statements and the related accounting for this transaction involved a high degree of subjectivity in determination of the fair value of the \$1,310 million **acquired intangible** assets, and \$268 million loss **contract** reserves. The **acquired intangible** assets principally consisted of trademarks and tradenames, technology, order backlog, and customer relationships. The loss **contract** reserves related to **acquired contracts** with customers that were determined to have below market terms. The high degree of subjectivity was primarily due to the sensitivity of the respective fair values to underlying **assumptions** about the **future** performance of the **acquired** business. The Company used a discounted cash flow model to measure the **intangible** assets and loss **contract** reserves. The significant **assumptions** used to estimate the value of the **intangible** assets included discount rates and certain **assumptions** that form the basis of the forecasted results (e.g., revenue growth rates, customer attrition rates, and **royalty** rates). The significant **assumptions** used to estimate the value of the loss **contract** reserves included discount rates, forecasted quantities of the products to be sold under the long-term **contracts** and market prices for respective products. These significant **assumptions** are forward looking and could be affected by **future** economic and market conditions.

Example 2: *Litigious* words highlighted

Edison International

Contingent Liability - Southern California Wildfires and Mudslides

As described in Note 12 to the consolidated financial statements, the Thomas Fire, the Koenigstein Fire, the Montecito Mudslides and the Woolsey Fire (collectively, the "2017/2018 Wildfire/Mudslide Events") within the Company's service territory caused substantial damage to both residential and business properties in the Santa Barbara, Ventura, and Los Angeles Counties. Based on information available to management and consideration of the risks associated with **litigation**, management expects to incur a material loss in connection with the 2017/2018 Wildfire/Mudslide Events. The Company is named as a **defendant** in multiple **lawsuits** filed

related to both the wildfires and mudslides. Final determination of liability for the 2017/2018 Wildfire/Mudslide Events, including determinations of whether the Company was negligent, would only be made during lengthy and complex **litigation** processes. Even when investigations are still pending or liability is disputed, an assessment of likely outcomes, including through future **settlement** of disputed **claims**, may require a liability to be accrued under accounting standards. As of December 31, 2019, management has estimated liabilities of \$4.5 billion, remaining expected recoveries from insurance of \$1.7 billion and expected recoveries through FERC electric rates of \$149 million on the consolidated balance sheet related to the 2017/2018 Wildfire/Mudslide Events. The accrued liability corresponds to the lower end of the reasonably estimated range of expected potential losses that may be incurred in connection with the 2017/2018 Wildfire/Mudslide Events and is subject to change as additional information becomes available. Each reporting period, management reviews its loss estimates for remaining **alleged** and potential **claims** related to the 2017/2018 Wildfire Mudslide Events. The process for estimating losses associated with wildfire **litigation claims** requires management to exercise significant judgment based on a number of assumptions and subjective factors, including, but not limited to: estimates of known and expected **claims** by third parties based on currently available information, opinions of **counsel** regarding **litigation** risk, the status of and developments in the course of **litigation**, and prior experience **litigating** and settling wildfire **litigation claims**. While the low end of the reasonably estimated range of expected losses for the 2017/2018 Wildfire/Mudslide Events is estimated on an aggregate basis, some of the factors evaluated by management in connection with its fourth quarter 2019 review contributed to a significant increase in certain loss estimates, while others contributed to a significant decrease in certain other loss estimates. The net result of management's fourth quarter 2019 review was an increase in estimated losses of \$232 million for total estimated losses of \$4.5 billion as of December 31, 2019 for unpaid **claims** related to the 2017/2018 Wildfire/Mudslide Events. Additional information is expected to become available from multiple external sources, during the course of **litigation** and **settlement** discussions, and from the Company's ongoing internal review, including, among other things, information regarding the extent of damages that may be attributable to any fire determined to have been substantially caused by the Company's equipment, information that may be obtained from the equipment in California Department of Forestry and Fire Protection's possession, and information pertaining to fire progression, suppression activities, damages **alleged** by **plaintiffs** and insurance **claims** made by third parties.

The principal considerations for our determination that performing procedures relating to the 2017/2018 Wildfire/Mudslide Events contingent liability is a critical audit matter are there was significant judgment by management when determining the probability of a loss being incurred and the estimate of the low end of a reasonably estimated range of expected potential loss for these contingencies, including but not limited to assumptions and subjective factors based on currently available information and assessments, opinions regarding **litigation** risk, and prior experience with **litigating** and settling other wildfire cases. This in turn led to a high degree of auditor judgment, subjectivity, and effort in performing procedures and evaluating management's conclusion related to these loss contingencies

Example 3: *Weak* words highlighted

Open Text Corp.

Assessment of recognition of uncertain tax positions

As discussed in Note 14 to the consolidated financial statements, as of June 30, 2019 the Company has recognized **uncertain** tax positions including associated interest and penalties. The Company's tax positions are subject to audit by local taxing authorities across multiple global subsidiaries and the resolution of such audits **may** span multiple years. Tax law is complex and often subject to varied interpretations, accordingly, the ultimate outcome with respect to taxes the Company **may** owe **may** differ from the amounts recognized.

We identified the evaluation of **uncertain** tax positions as a critical audit matter because a higher degree of auditor judgment was required in evaluating the Company's interpretation of, and compliance with tax law globally across its multiple subsidiaries. In addition, a higher degree of auditor judgment was required in evaluating the Company's estimate of the ultimate resolution of its tax positions.

Example 4: *Control risk* keywords highlighted

Diebold Nixdorf, Inc

Performance of incremental audit procedures over IT financial reporting processes

As of December 31, 2018, the Company identified a material **weakness** in **internal control** over financial reporting related to ineffective information technology general **controls** (ITGCs) related to information technology (IT) **systems** used for financial reporting by certain entities throughout the Company, which impacts substantially all financial statement account balances and disclosures. Automated and manual process level **controls** that were dependent on these ITGCs were also ineffective. While our report dated February 26, 2020 expressed an unqualified opinion on the effectiveness of the Company's **internal control** over financial reporting as of December 31, 2019, during a portion of the year the ITGCs were ineffective and the information or **system** generated reports produced by the affected financial reporting systems could not be relied upon without further testing.

We identified the performance of incremental audit procedures over IT financial reporting processes as a critical audit matter. Significant auditor judgment was required to design and execute the incremental audit procedures and to assess the sufficiency of the procedures performed and evidence obtained due to ineffective **controls** and the complexity of the Company's IT environment.

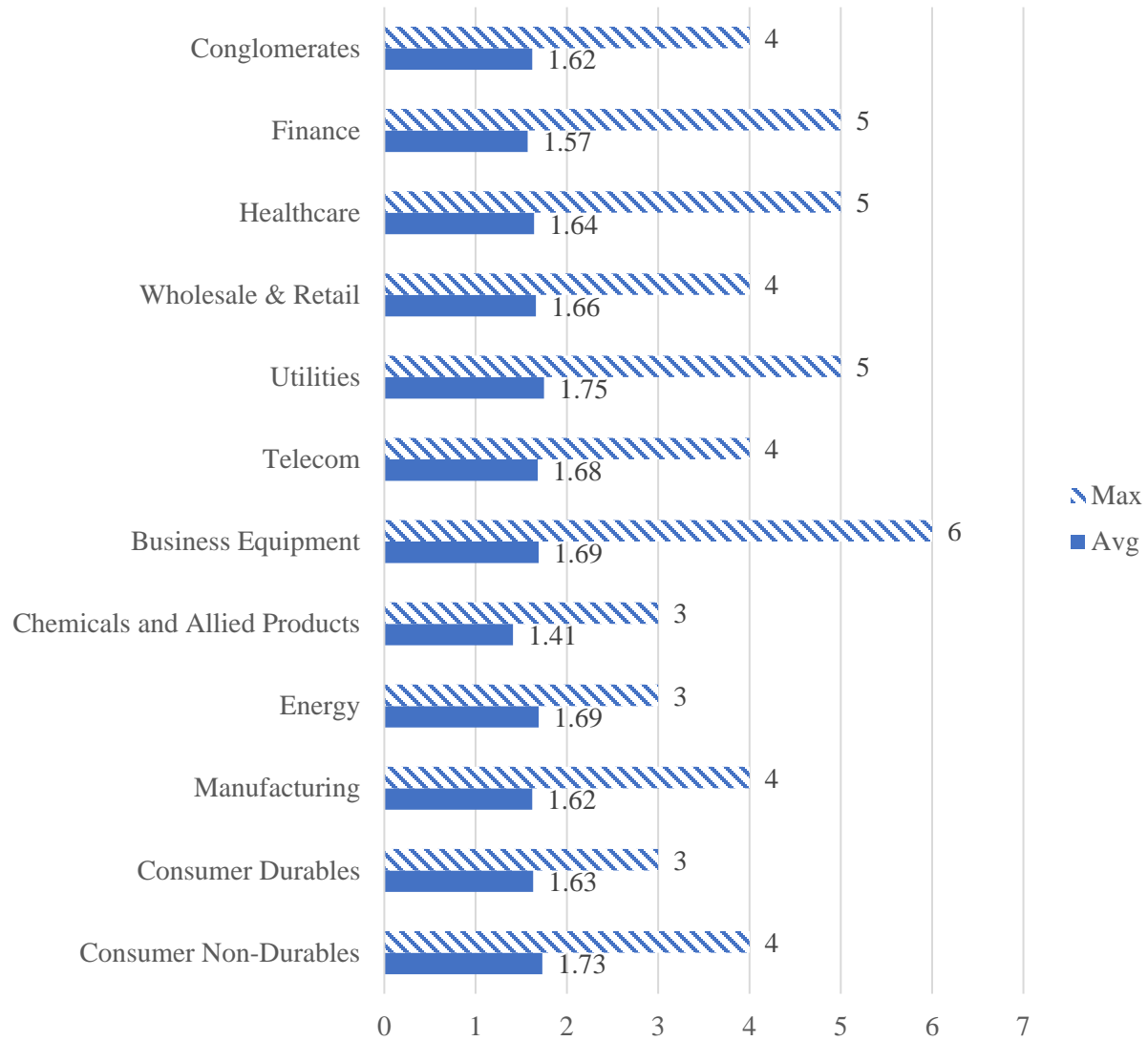
APPENDIX B

Variable Definitions

Variable	Definition
Dependent Variable: <i>LNFEES</i>	The natural logarithm of audit fees.
Variables of Interest: <i>CAMs</i>	The number of CAMs disclosed (log transformed in the regression analyses).
<i>Words</i>	The number of words in the risk description (log transformed in the regression analyses).
<i>AvgWords</i>	The number of words in the risk description divided by the number of CAMs (log transformed in the regression analyses).
<i>AvgComplex</i>	The number of complexity words (including word forms) from the Loughran and McDonald (2019) List of Complexity Words in the risk description divided by the number of CAMs (log transformed in the regression analyses).
<i>AvgLitigious</i>	The number of litigious words (including word forms) from the Loughran and McDonald (2011) Master Dictionary in the risk description divided by the number of CAMs (log transformed in the regression analyses).
<i>AvgWeak</i>	The number of weak modal words (including word forms) from the Loughran and McDonald (2011) Master Dictionary in the risk description divided by the number of CAMs (log transformed in the regression analyses).
<i>Similarity</i>	Average similarity of the risk description between firm <i>i</i> and its industry peers, following Brown and Tucker (2011).
<i>Control risk</i>	An indicator variable equal to 1 if the risk description contains a keyword indicating a control risk concern (system, control, govern*, weakness, internal, remediates*, deficiencies*), and 0 otherwise.
<i>Notes</i>	The number of notes to the financial statement referenced in the risk description (log transformed in the regression analyses).
<i>Words_notes</i>	The number of words in the notes to the financial statement referenced in the risk description (log transformed in the regression analyses).
<i>AvgWords_notes</i>	The number of words in the notes referenced in the risk description divided by the number of referenced notes (log transformed in the regression analyses).
<i>AvgComplex_notes</i>	The number of complexity words (including word forms) from the Loughran and McDonald (2019) List of Complexity Words in the notes referenced in the risk description divided by the number of referenced notes (log transformed in the regression analyses).

<i>AvgLitigious_notes</i>	The number of litigious words (including word forms) from the Loughran and McDonald (2011) Master Dictionary in the notes referenced in the risk description divided by the number of referenced notes (log transformed in the regression analyses).
<i>AvgWeak_notes</i>	The number of weak modal words (including word forms) from the Loughran and McDonald (2011) Master Dictionary in the notes referenced in the risk description divided by the number of referenced notes (log transformed in the regression analyses).
<i>Similarity_notes</i>	Average similarity of the notes referenced in the risk description between firm <i>i</i> and its industry peers, following Brown and Tucker (2011).
Control Variables:	
<i>Big 4</i>	An indicator variable equal to 1 if the firm is audited by a Big 4 audit firm, and 0 otherwise.
<i>Busy season</i>	An indicator variable equal to 1 if the fiscal year end is between December 31 and March 31 in the next year, and 0 otherwise.
<i>Opinion</i>	An indicator variable equal to 1 if the firm receives a going-concern opinion (U.S. sample), and 0 otherwise.
<i>Initial audit</i>	An indicator variable equal to 1 if the audit engagement is in the first two years, and 0 otherwise.
<i>Size</i>	Total assets (log transformed in the regression analyses).
<i>Lev</i>	Total liabilities divided by total assets.
<i>Current assets</i>	Total current assets divided by total assets.
<i>ROA</i>	Earnings before interest and tax divided by total assets.
<i>Loss</i>	An indicator variable equal to 1 if net income before extraordinary items is negative, and 0 otherwise.
<i>Segments</i>	The number of business segments (log transformed in the regression analyses).
<i>AC size</i>	The number of audit committee members (log transformed in the regression analyses).
<i>Foreign firm</i>	An indicator variable equal to 1 if the firm is headquartered outside the U.S., and 0 otherwise. Data source: Audit Analytics.

FIGURE 1
Industry Average and Maximum Number of CAMs



Industries are defined according to the Fama-French 12-industry classification.

TABLE 1
Sample Selection and Description Statistics

Panel A: Industry Distribution

Industry Group	# of obs.	% of obs.
Finance	270	16.15
Conglomerates	263	15.73
Business Equipment	258	15.43
Healthcare	204	12.20
Manufacturing	172	10.29
Wholesale & Retail	142	8.49
Utilities	79	4.72
Energy	73	4.37
Consumer Non-Durables	67	4.01
Chemicals and Allied Products	54	3.23
Consumer Durables	49	2.93
Telecom	41	2.45
Total	1,672	100.00

Panel B: Distribution of CAMs by Type

	#	%	Control Risk Keywords		
			Any	'System'	Other
Revenue recognition	472	17.23	59	48	32
Impairment of goodwill and intangible assets	446	16.28	2	2	2
Liabilities valuation	397	14.49	5	1	5
Acquisitions and disposals	378	13.80	4	0	4
Property valuation and impairment	303	11.06	11	4	11
Taxation	262	9.56	6	0	6
Impairment of loans and receivables	129	4.71	6	1	5
Inventories	98	3.58	9	3	7
Interests in other entities	48	1.75	1	0	1
Development cost	28	1.02	0	0	0
Financial instruments (excluding loans and receivables)	12	0.44	0	0	0
Other	167	6.08	25	16	23
# of CAMs	2,740	100.00	128	73	96

Panel C: Descriptive statistics

Variable	Mean	Median	Std. Dev.	Q1	Q3
<i>FEE (in millions)</i>	4.723	2.626	6.621	1.585	5.197
<i>CAMs</i>	1.639	1	0.765	1	2
<i>Words</i>	342.262	294	192.780	200.500	450
<i>AvgWords</i>	211.327	198	74.703	156.833	249.750
<i>AvgComplex</i>	7.488	7	4.791	4	10
<i>AvgLitigious</i>	2.101	1	3.541	0	3
<i>AvgWeak</i>	0.669	0.500	0.962	0	1
<i>Similarity</i>	0.061	0.052	0.039	0.040	0.070
<i>Control risk</i>	0.047	0	0.212	0	0
<i>CAMs_notes</i>	1.628	1	0.752	1	2
<i>Words_notes</i>	7,033.220	5,560	5,941.389	3,547	8,967.500
<i>AvgWords_notes</i>	4,318.310	4,076	2,605.272	2,466.500	5,622.750
<i>AvgComplex_notes</i>	56.282	52	35.768	31	75
<i>AvgLitigious_notes</i>	14.748	13	10.497	8	19
<i>AvgWeak_notes</i>	4.045	4	2.061	2.667	5
<i>Similarity_notes</i>	0.089	0.082	0.050	0.051	0.120
<i>Big 4</i>	0.920	1	0.271	1	1
<i>Busy season</i>	0.826	1	0.379	1	1
<i>Opinion</i>	0.004	0	0.060	0	0
<i>Initial audit</i>	0.081	0	0.273	0	0
<i>Size (in millions)</i>	20,387.62	4,060.799	97,287.66	1,561.415	12,168.42
<i>Lev</i>	0.611	0.614	0.238	0.461	0.758
<i>Current assets</i>	0.310	0.281	0.252	0.083	0.479
<i>ROA</i>	0.047	0.060	0.126	0.027	0.103
<i>Loss</i>	0.218	0	0.413	0	0
<i>Segments</i>	2.307	1	1.725	1	3
<i>Foreign firm</i>	0.054	0	0.227	0	0
<i>AC size</i>	4.457	4	1.270	3	5

Industry groups in Panel A are based on the Fama-French 12 industry classification. The CAM types in Panel B are from Audit Analytics. See Appendix B for definitions of the variables in Panel C. All monetary amounts are in U.S. dollars.

TABLE 2
Audit Fees and Textual Attributes of CAM Risk Descriptions

Variable	CAMs			Words			AvgWords			AvgComplex			AvgLitigious			AvgWeak			Similarity		
	Coeff.	t-stat.		Coeff.	t-stat.		Coeff.	t-stat.		Coeff.	t-stat.		Coeff.	t-stat.		Coeff.	t-stat.		Coeff.	t-stat.	
<i>Text</i>	0.587	2.57	***	0.159	6.07	***	0.092	2.45	***	0.201	3.31	***	0.054	3.40	***	0.041	1.54		-1.406	-3.66	***
<i>Control risk</i>	0.123	1.92	***	0.130	2.06	***	0.173	2.63	***	0.166	2.55	***	0.186	2.82	***	0.186	2.82	***	0.171	2.52	***
<i>Text_notes</i>	-0.260	-1.13		0.027	1.80	**	0.025	1.57		0.034	1.84	**	0.029	1.62	*	0.055	2.11	**	-1.212	-4.20	***
<i>AvgWords</i>										-0.172	-2.05	***	0.027	0.54		0.043	0.85				
<i>Big4</i>	0.502	11.28	***	0.502	11.10	***	0.482	10.53	***	0.490	10.71	***	0.479	10.56	***	0.480	10.57	***	0.466	10.65	***
<i>Busy season</i>	-0.046	-1.43		-0.041	-1.28		-0.044	-1.37		-0.045	-1.39		-0.048	-1.49		-0.045	-1.39		-0.053	-1.63	
<i>Opinion</i>	-0.208	-0.79		-0.213	-0.83		-0.185	-0.74		-0.172	-0.69		-0.201	-0.79		-0.192	-0.75		-0.216	-0.85	
<i>Initial audit</i>	0.030	0.68		0.016	0.35		0.031	0.69		0.030	0.67		0.034	0.75		0.035	0.78		0.049	1.11	
<i>Size</i>	0.473	44.69	***	0.469	44.22	***	0.482	45.58	***	0.482	45.56	***	0.482	45.66	***	0.482	45.18	***	0.489	46.73	***
<i>Lev</i>	0.263	4.43	***	0.260	4.43	***	0.283	4.74	***	0.285	4.78	***	0.272	4.50	***	0.286	4.76	***	0.295	4.93	***
<i>Current assets</i>	0.734	10.35	***	0.757	10.70	***	0.702	9.94	***	0.701	9.94	***	0.665	9.39	***	0.698	9.86	***	0.644	8.98	***
<i>ROA</i>	0.433	3.39	***	0.464	3.62	***	0.452	3.49	***	0.448	3.45	***	0.411	3.17	***	0.427	3.31	***	0.291	2.24	***
<i>Loss</i>	0.149	3.68	***	0.148	3.70	***	0.172	4.27	***	0.171	4.21	***	0.181	4.50	***	0.172	4.24	***	0.162	4.01	***
<i>Segments</i>	0.245	8.49	***	0.240	8.33	***	0.259	8.97	***	0.260	8.99	***	0.255	8.85	***	0.265	9.19	***	0.237	8.20	***
<i>Foreign firm</i>	0.159	2.77	***	0.156	2.74	***	0.176	3.02	***	0.182	3.15	***	0.162	2.81	***	0.173	2.96	***	0.155	2.68	***
<i>AC size</i>	-0.095	-1.52		-0.088	-1.41		-0.081	-1.28		-0.083	-1.31		-0.096	-1.52		-0.081	-1.28		-0.072	-1.16	
<i>Industry FE</i>	Yes			Yes			Yes			Yes			Yes			Yes			Yes		
<i># of Obs.</i>	1,672			1,672			1,672			1,672			1,672			1,672			1,672		
<i>Adj. R²</i>	0.706			0.708			0.700			0.701			0.701			0.699			0.705		

This table provides the results of OLS regressions of the relation between audit fees and textual characteristics of CAM risk descriptions. The dependent variable is *LNFE* in all columns. Standard errors are robust to heteroscedasticity. ***, **, and * represent significance at the 1, 5, and 10 percent levels, respectively (two-tailed). See Appendix B for variable definitions.

TABLE 3
Controlling for Common CAM Types

Variable	<i>Words</i>			<i>AvgWords</i>			<i>AvgComplex</i>			<i>AvgLitigious</i>			<i>AvgWeak</i>			<i>Similarity</i>		
	Coeff.	t-stat.		Coeff.	t-stat.		Coeff.	t-stat.		Coeff.	t-stat.		Coeff.	t-stat.		Coeff.	t-stat.	
<i>Text</i>	0.065	2.13	**	0.103	2.80	***	0.269	4.49	***	0.032	1.71	*	-0.014	-0.52		-1.419	-3.66	***
<i>Control risk</i>	0.128	1.97	**	0.144	2.20	**	0.136	2.10	**	0.160	2.44	***	0.147	2.23	**	0.142	2.11	**
<i>Text_notes</i>	0.028	1.91	*	0.037	2.41	**	0.040	2.20	**	0.043	2.51	**	0.071	2.80	***	-0.818	-2.74	***
<i>Revenue</i>	0.113	3.58	***	0.144	4.89	***	0.137	4.73	***	0.128	4.15	***	0.147	5.03	***	0.135	4.64	***
<i>Gwill&Intan Impair</i>	0.174	5.25	***	0.205	6.69	***	0.218	7.01	***	0.223	7.06	***	0.210	6.80	***	0.219	7.13	***
<i>Liabilities</i>	0.096	2.94	***	0.136	4.41	***	0.133	4.28	***	0.091	2.64	***	0.132	4.23	***	0.097	3.06	***
<i>Acq&Disp.</i>	0.093	2.84	***	0.142	4.83	***	0.136	4.67	***	0.152	5.05	***	0.148	4.99	***	0.102	3.36	***
<i>Property Impair</i>	-0.060	-1.41		-0.025	-0.60		-0.033	-0.79		-0.016	-0.40		-0.020	-0.48		-0.014	-0.35	
<i>Taxation</i>	0.301	8.36	***	0.342	9.78	***	0.347	9.97	***	0.309	8.25	***	0.332	8.96	***	0.313	9.02	***
<i>Other controls</i>	Yes			Yes			Yes			Yes			Yes			Yes		
<i>Industry FE</i>	Yes			Yes			Yes			Yes			Yes			Yes		
# of Obs.	1,672			1,672			1,672			1,672			1,672			1,672		
Adj. R ²	0.724			0.724			0.726			0.724			0.723			0.726		

This table provides the results of OLS regressions of the relation between audit fees and textual characteristics of CAM risk descriptions. Panel B reports the results of OLS regressions of the relation between audit fees and textual characteristics of CAM risk descriptions, controlling for the most common CAM types in the U.S. sample. The dependent variable is *LNFEES* in all columns. Standard errors are robust to heteroscedasticity. ***, **, and * represent significance at the 1, 5, and 10 percent levels, respectively (two-tailed). See Appendix B for variable definitions.

TABLE 4
Controlling for Audit Firm Fixed Effects

Panel A: Mean Values of Textual Attributes by Audit Firm

Variable	<i>EY</i> N = 488	<i>PWC</i> N = 391	<i>Deloitte</i> N = 355	<i>KPMG</i> N = 303	<i>Non-Big 4</i> N = 135
<i>CAMs</i>	1.777	1.565	1.558	1.607	1.637
<i>Words</i>	314.004	425.476	351.977	272.195	335.111
<i>AvgWords</i>	176.604	273.201	228.978	168.826	206.619
<i>AvgComplex</i>	7.250	8.687	7.835	5.842	7.663
<i>AvgLitigious</i>	1.7179	2.414	3.145	1.378	1.454
<i>AvgWeak</i>	0.630	0.662	0.791	0.650	0.551
<i>Similarity</i>	0.056	0.069	0.059	0.055	0.067

Panel B: Audit Fee Model

Variable	<i>CAMs</i>		<i>Words</i>		<i>AvgWords</i>		<i>AvgComplex</i>		<i>AvgLitigious</i>		<i>AvgWeak</i>		<i>Similarity</i>	
	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.
<i>Text</i>	0.637	2.78 ***	0.126	4.68 ***	-0.031	-0.67	0.038	1.66 *	0.057	3.64 ***	0.055	2.05 **	-1.808	-4.73 ***
<i>Control risk</i>	0.132	2.14 **	0.157	2.52 **	0.194	3.03 ***	0.208	3.27 ***	0.201	3.14 ***	0.204	3.21 ***	0.181	2.82 ***
<i>Other controls</i>	Yes		Yes		Yes		Yes		Yes		Yes		Yes	
<i>Audit Firm FE</i>	Yes		Yes		Yes		Yes		Yes		Yes		Yes	
<i>Industry FE</i>	Yes		Yes		Yes		Yes		Yes		Yes		Yes	
<i>Year FE</i>	Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Adj. R ²	0.724		0.720		0.715		0.716		0.717		0.715		0.724	

Panel A reports the mean values of textual characteristics of CAM risk descriptions by audit firm for each of the Big 4 audit firms and all non-Big 4 combined. Panel B provides the results of OLS regressions of the relation between audit fees and textual characteristics of CAM risk descriptions, controlling for audit firm fixed effects. The control variables correspond to the equivalent model in Table 2 excluding *Big4*. The dependent variable is *LNFE* in all models. Standard errors are clustered at the firm level and robust to heteroscedasticity. *t*-stats are reported in the parentheses. ***, **, and * represent significance at the 1, 5, and 10 percent levels, respectively (two-tailed). All variables are defined in Appendix B.

APPENDIX C

Analysis of Hong Kong (China) Key Audit Matters

The IAASB released new auditor reporting standards in January 2015, a central element of which requires auditors to disclose key audit matters (KAMs) in their audit opinions (IAASB 2015). The IAASB and PCAOB standards are similar, including the framework for determining the matters to be communicated, the considerations underlying that determination, and the communication requirements (IAASB 2016; PCAOB 2017; Jermakowicz et al. 2018).

KAMs are intended to shed light on “those matters that, in the auditor’s professional judgment, were of most significance in the audit of the financial statements of the current period” (IAASB 2016, para. 8). To identify KAMs, the auditor should consider areas of higher assessed risks, areas requiring significant auditor and management judgment, and the effect of significant events or transactions that occurred during the year. The auditor should describe in a concise and understandable manner why each matter is considered to be a KAM as well as reference the related note(s) in the financial statements.

This Appendix repeats our primary tests using the first three years (2016-2018) of KAMs reported in Hong Kong (a special administrative region of China), which adopted the IAASB standard for audits of fiscal years ending on or after December 15, 2016 (HKICPA 2016).¹⁴ As noted in the body of the paper, compiling evidence across different settings and standards provides a more complete picture of the of the underlying economic phenomenon of general interest. We obtain financial statement data, the name of the audit firm, and the audit opinion from the China

¹⁴ Hong Kong was one of the first adopters of the IAASB standard, along with Australia, New Zealand, and Singapore. Relative to these other countries, Hong Kong has more domestic companies listed and a larger total market capitalization. Further, there are also a number of Chinese state-owned enterprises listed in Hong Kong, which provide an opportunity to examine whether the demand for a high-quality external audit affects our results.

Stock Market & Accounting Research (CSMAR) database. We manually collect audit fee data and KAM disclosures from the annual reports. Our final sample consists of 5,101 firm-years.

The mean (median) number of KAMs in the sample is 2.15 (2). The most common risk types are *Impairment of loans and receivables* (20.69 percent), *Property valuation and impairment* (16.84 percent), *Impairment of goodwill and intangible assets* (14.31 percent), *Inventories* (12.44 percent), and *Revenue recognition* (10.59 percent). Thus, the number and type of KAMs varies somewhat relative to U.S. CAMs. Further, the average KAM risk description of 162 words is significantly shorter than that of U.S. CAMs (211 words), but contains 4.53 complexity words, compared to 1.97 for U.S. CAMs. The average number of litigious (0.77) and weak model (0.34) words in KAMs is similar to U.S. CAMs. Auditors reference an average of 3 financial statement notes in KAMs, and the average length of these notes is 621 words, compared to 4,318 words for notes referenced in U.S. CAMs. In addition, KAMs are more boilerplate than U.S. CAMs, as evidenced by the larger mean value of *Similarity* (0.082 versus 0.061). Finally, 2.3 percent of KAM risk descriptions contain language indicating control risk concerns, compared to 4.7 percent of U.S. CAMs. Overall, the descriptive statistics suggest that the textual attributes of auditors' disclosures of key/critical audit matters varies across the two settings. However, in both settings, this qualitative discussion is intended to explain audit-specific risks that are potentially relevant to our understanding of audit pricing.

We test our hypotheses using the same empirical model that we estimated for our U.S. sample. However, because of data availability, there are some differences in control variables. Specifically, we include the number of client firm *Subsidiaries* rather than the number of *Segments*. We also control for the number of audit committee meetings (*AC meetings*) in addition to *AC Size*, and include indicator variables for *Mainland Chinese* firms and Chinese state-owned enterprises (*SOE*). We

define *Opinion* as an indicator variable equal to one for all firms that did not receive a clean (i.e., without an emphasis of matter paragraph) unqualified opinion.¹⁵ Finally, we include year fixed effects in addition to industry fixed effects.

Table C1 presents the results of this analysis. Despite differences in the Hong Kong setting and textual attributes of KAMs, the results are similar to the U.S. evidence reported in Table 2. Specifically, we find a significantly positive association between audit fees and the length, complexity, and litigious tone of KAMs. We also find a significantly negative relation between audit fees and KAM *Similarity*. The only substantive difference in the evidence is that *AvgWeak* is significantly positive in Hong Kong, whereas it is insignificant in the U.S. Finally, we find a significantly positive association between audit fees and *Control risk*, consistent with a 18–22 percent increase in audit fees when KAM disclosures suggest an elevated risk of internal control issues. Importantly, while auditors of public firms in Hong Kong are required to perform an annual internal control review, they do not issue an opinion. Thus, KAMs provide the only public information on the effectiveness of internal controls. Finally, these results are robust to controlling for the textual attributes of the financial statements related to CAMs and several other determinants of audit fees and to including the textual attributes (*Words*, *AvgComplex*, *AvgLitigious*, *AvgWeak*, and *Similarity*) in the same estimation.¹⁶

Next, we augment the audit fee model to include control variables for the five most common KAM risk types. The results of this analysis reported in Table C2 indicate that *Revenue recognition*

¹⁵ There are four types of audit opinions in Hong Kong: unqualified, qualified, disclaimer, and adverse. In addition, auditors are required to add an emphasis of matter paragraph to draw users' attention to a matter presented in the financial statements that is fundamental to users' understanding of the financial statements. Normally, when auditors have substantial doubt about the client's ability to continue as a going-concern, they express an unqualified opinion but modify the auditor's report by adding an emphasis of matter paragraph. In extreme cases, the auditor may express a disclaimer of opinion instead of adding an emphasis of matter paragraph.

¹⁶ Inferences are generally robust when we estimate the model separately for each of the three years in our sample period. The only exception is *Control risk*, which is insignificant in all estimations for the last sample year (2018).

and *Impairment of goodwill and intangible assets* KAMs are associated with significantly higher audit fees, incremental to the textual attributes of the auditor's risk description in the audit opinion and management's discussion in the related financial statement notes. Interestingly, these KAM types rank fifth and third, respectively, while more common KAM types are generally insignificant. The importance of these KAM types is consistent with the regulatory presumption that revenue recognition entails significant risks of fraud (HKICPA 2015) and evidence of a fee premium associated with auditing goodwill for impairment (Ghosh and Xing 2021). However, controlling for KAM type does not alter inferences regarding the significance of the KAM textual attributes.

In additional untabulated analyses, we find that the top seven audit firms in Hong Kong, which include the Big 4, BDO, and two local firms (HLB Hodgson Impey Cheng and Shinewing) audit 82 percent of our sample. Further, consistent with the U.S. evidence, the KAMs disclosed by each audit firm display unique textual styles. However, re-estimating the audit fee model replacing the *Big4* control variable with audit firm fixed effects indicates that, except for *AvgWords*, the textual variables are significant. Thus, the relation between audit fees and KAM disclosures is not an artifact of KAM reporting at the audit firm level.

Finally, we leverage a unique feature of the sample to examine whether the demand for audit quality affects our results. On the one hand, Chinese state-owned enterprises (SOEs) do not have a demand for a high-quality external audit because their strong government support reduces incentives to manage earnings (Chen et al. 2011; Liu and Subramaniam 2013; Ke et al. 2015). On the other hand, the SOEs listed in Hong Kong are generally large companies with complex operations, and thus are more likely to hire large auditors than non-SOE firms.¹⁷ Further, on

¹⁷ We find that the Big 4 (top seven) audit firms in Hong Kong audit 85.4 percent (93.4 percent) of the Chinese SOEs in our sample compared to 63.6 percent (80.5 percent) of the non-SOEs (untabulated).

average, SOEs do not pay significantly different audit fees than non-SOEs, as evidenced by the insignificant coefficient on *SOE* in Table C1. Thus, it is unclear whether a low demand for audit quality by SOEs will extend to KAM disclosures and result in a weak or insignificant relation between audit fees and the textual attributes of KAMs. In untabulated tests, we find that the association between audit fees and the textual features of KAMs are significant for non-SOEs, except for *AvgLitigious*. In contrast, for SOEs there is no association between audit fees and the textual features of KAMs. Further, the 95 percent confidence interval contains zero for the coefficients on the textual attributes of SOEs. Thus, we conclude that the insignificant results for SOEs are not attributable to a lack of statistical power or to SOEs having smaller auditors that are more easily influenced or have lower audit quality overall. In other words, our Hong Kong results are attributable to non-SOE firms with a higher demand for audit quality.

TABLE C1
Audit Fees and Textual Attributes of Hong Kong KAM Risk Descriptions

Variable	<i>KAMs</i>			<i>Words</i>			<i>AvgWords</i>			<i>AvgComplex</i>			<i>AvgLitigious</i>			<i>AvgWeak</i>			<i>Similarity</i>		
	Coeff.	t-stat.		Coeff.	t-stat.		Coeff.	t-stat.		Coeff.	t-stat.		Coeff.	t-stat.		Coeff.	t-stat.		Coeff.	t-stat.	
<i>Text</i>	0.061	2.34	**	0.066	2.84	***	0.090	2.91	***	0.090	4.72	***	0.053	2.31	**	0.085	2.42	***	-1.264	-3.07	***
<i>Control risk</i>	0.206	2.36	**	0.211	2.46	***	0.220	2.59	***	0.232	2.77	***	0.185	2.15	**	0.187	2.17	**	0.211	2.43	**
<i>Text_notes</i>	0.113	3.80	***	0.041	3.77	***	0.043	3.74	***	0.050	3.98	***	0.038	2.86	***	0.080	4.49	***	-0.118	-0.37	
<i>AvgWords</i>										0.018	0.52		0.146	4.35	***						
<i>Big4</i>	0.532	20.18	***	0.514	19.80	***	0.503	19.23	***	0.514	19.90	***	0.489	18.37	***	0.151	4.33	***	0.533	20.34	***
<i>Busy season</i>	-0.084	-1.49		-0.086	-1.52		-0.088	-1.54		-0.085	-1.54		-0.088	-1.54		0.467	17.27	***	-0.087	-1.53	
<i>Opinion</i>	0.106	2.47	**	0.106	2.46	**	0.099	2.30	**	0.101	2.36	**	0.094	2.19	**	-0.089	-1.57		0.095	2.22	**
<i>Initial audit</i>	-0.070	-2.52	**	-0.078	-2.80	***	-0.074	-2.66	***	-0.071	-2.58	***	-0.065	-2.33	**	0.106	2.45	**	-0.069	-2.46	**
<i>Size</i>	0.325	29.99	***	0.322	29.52	***	0.327	30.12	***	0.327	30.35	***	0.330	30.32	***	-0.073	-2.64	***	0.335	30.84	***
<i>Lev</i>	0.039	0.68		0.049	0.88		0.071	1.26		0.044	0.79		0.051	0.91		0.327	30.38	***	0.071	1.27	
<i>Current assets</i>	0.146	2.43	***	0.167	2.78	***	0.171	2.83	***	0.180	3.02	***	0.111	1.84	*	0.059	1.05		0.152	2.51	**
<i>ROA</i>	-0.251	-3.65	***	-0.233	-3.39	***	-0.241	-3.53	***	-0.218	-3.20	***	-0.263	-3.90	***	0.141	2.36	***	-0.255	-3.73	***
<i>Loss</i>	0.004	0.17		0.001	0.02		0.008	0.32		-0.004	-0.16		0.012	0.49		-0.252	-3.75	***	0.011	0.44	
<i>Subsidiaries</i>	0.034	2.83	***	0.033	2.77	***	0.035	2.94	***	0.034	2.88	***	0.037	3.10	***	0.009	0.35		0.033	2.75	***
<i>Mainland</i>	-0.062	-2.11	**	-0.057	-1.95	**	-0.058	-2.00	**	-0.062	-2.15	**	-0.062	-2.11	**	0.035	2.95	***	-0.069	-2.36	***
<i>SOE</i>	0.028	0.56		0.030	0.61		0.026	0.53		0.019	0.38		0.015	0.30		-0.060	-2.08	**	0.023	0.47	
<i>AC size</i>	0.157	1.57		0.160	1.60		0.160	1.60		0.147	1.48		0.142	1.41		0.027	0.55		0.166	1.64	*
<i>AC meetings</i>	0.140	2.86	***	0.147	3.02	***	0.146	3.01	***	0.034	2.88	***	0.134	2.77	***	0.146	1.46		0.132	2.72	***
<i>Industry FE</i>	Yes			Yes			Yes			Yes			Yes			Yes			Yes		
<i>Year FE</i>	Yes			Yes			Yes			Yes			Yes			Yes			Yes		
# of Obs.	5,101			5,101			5,101			5,101			5,101			5,101			5,101		
Adj. R ²	0.694			0.695			0.693			0.697			0.696			0.697			0.691		

This table provides the results of OLS regressions of the relation between audit fees and textual characteristics of KAM risk descriptions. The dependent variable is *LNFE* in all columns. Standard errors are robust to heteroscedasticity. ***, **, and * represent significance at the 1, 5, and 10 percent levels, respectively (two-tailed).

TABLE C2
Controlling for Common Hong Kong KAM Types

Variable	<i>Words</i>		<i>AvgWords</i>		<i>AvgComplex</i>		<i>AvgLitigious</i>		<i>AvgWeak</i>		<i>Similarity</i>	
	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.
<i>Text</i>	0.060	2.44**	0.090	2.86***	0.091	4.44***	0.047	1.88*	0.074	2.10**	-1.108	-2.62***
<i>Control risk</i>	0.186	2.12**	0.189	2.16**	0.194	2.26**	0.173	1.98**	0.164	1.86*	0.184	2.07**
<i>Text_notes</i>	0.041	3.67***	0.037	3.10***	0.048	3.66***	0.033	2.45**	0.078	4.33***	-0.019	-0.06
<i>Loan&Rec Impairment</i>	-0.040	-1.52	-0.006	-0.24	-0.020	-0.78	-0.003	-0.11	-0.002	-0.06	-0.003	-0.14
<i>Property Impairment</i>	-0.003	-0.11	0.027	1.08	0.020	0.81	0.048	1.89*	0.026	1.07	0.026	1.04
<i>Gwill&Intan Impairment</i>	0.048	1.67*	0.085	3.07***	0.029	0.98	0.105	3.83***	0.086	3.14***	0.089	3.23***
<i>Inventories</i>	-0.047	-1.63*	-0.017	-0.58	0.012	0.44	0.003	0.11	-0.021	-0.73	-0.006	-0.22
<i>Revenue</i>	0.086	2.87***	0.115	3.97***	0.117	4.07***	0.074	2.43*	0.106	3.68***	0.114	3.96***
<i>Other controls</i>	Yes		Yes		Yes		Yes		Yes		Yes	
<i>Industry FE</i>	Yes		Yes		Yes		Yes		Yes		Yes	
<i>Year FE</i>	Yes		Yes		Yes		Yes		Yes		Yes	
Adj. R ²	0.697		0.696		0.699		0.697		0.698		0.694	

This table provides the results of OLS regressions of the relation between audit fees and textual characteristics of KAM risk descriptions, controlling for the most common KAM types. The control variables correspond to the equivalent model in Table C1. The dependent variable is *LNFE* in all models. Standard errors are clustered at the firm level and robust to heteroscedasticity. ***, **, and * represent significance at the 1, 5, and 10 percent levels, respectively (two-tailed).