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Are Critical Audit Matters Informative?

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Abstract

Breaking from a long stretch of using largely standard language in unqualified audit opinions, the Public Company Accounting Oversight Board (PCAOB) expanded audit reports to disclose Critical Audit Matters (CAMs) and the audit procedures used to address them. The first wave of CAM disclosures began for large accelerated filers after June 2019, with most disclosures occurring in February 2020. Using Natural Language Processing (NLP) techniques, this study examines the types of CAMs disclosed by auditors and the typical audit procedures used to address them. We then explore whether CAMs are informative to investors and security analysts. Our findings are consistent with greater amounts of CAM disclosures as indicators of greater uncertainty. We document that market reactions are more negative for firms with more CAM disclosures; analysts reduce their earnings forecasts to a larger extent for such firms; stock prices become more volatile; and the dispersion of analyst forecasts are greater for firms with more CAM disclosures. We further find that many issues related to CAMs are raised in earnings conference calls with analysts during the immediately subsequent quarter. While these findings indicate that CAMs are informative to investors and analysts, their effects are concentrated around the time of disclosure. We do not find evidence of a drift in returns after the initial disclosures.

Keywords: auditor reports, textual analysis, critical audit matters, abnormal returns.

JEL Classifications: G12, G14, M41.

Data Availability: Data used in this study are available from public sources identified in the study.

1. Introduction

Over 98% of publicly listed firms receive unqualified audit opinions, in language that is standard and rigidly proscribed. There is very little variation, if at all, in the contents of most audit reports –even in their wording. As a result, most investors and analysts simply scan the auditor opinion to verify that it is unqualified, but do not bother to read it. It is not informative. A crude analogy would be a doctor's summary that the patient is "fairly healthy" after an annual checkup. We do not know whether the patient suffers from hypertension that is under control, has diabetes which is managed, or has other symptoms or a family history that can serve as red flags. If over 98% of patients receive the "fairly healthy" designation, health insurers cannot use it to determine their risk or formulate a business strategy.

To provide more information to external users, the PCAOB, the body that regulates the auditing of public US firms, recently required auditors to expand their reports with information about CAMs. The PCAOB defines CAMs as "any matter arising from the audit of financial statements that is communicated to the firm's audit committee, relates to accounts or disclosures that are *material* to the financial statements and involve especially *challenging, subjective or complex* auditor judgement." (PCAOB 2017-001). PCAOB also requires auditors to disclose the type of audit methods they used to address the CAMs. This requirement became effective for large accelerated filers with financial statements after June 2019, and is expected to be in force for all filers after December 15, 2020. Since most public firms follow a December fiscal year-end, most of the CAMs for large accelerated filers were disclosed in February 2020, with a second wave of CAMs for all other (smaller) companies culminating in February 2021.

With this expanded disclosure, external users of financial statements can better assess the specific areas that auditors consider material and sufficiently subjective or challenging. Theoretically,

investors, financial analysts, creditors and other users now have additional information in the audit beyond the typical unqualified opinion. Intuitively, the more CAMs and their required audit procedures, the greater the uncertainty of the financial statements and the riskier the perception of the firm. This expanded audit disclosure is likely to make audit opinions more informative than the prior "one-size-fits-all" unqualified opinion.

Our study first collects data about the type of CAMs and audit procedures disclosed by the first wave of filers. Although a seemingly simple task for a handful of companies, extracting such information at scale is not an easy task. We find that the average similarity of words used to describe CAMs and audit procedures between a pair of companies is about 40%. Hence, we chose to extract CAMs and audit procedures by writing specific NLP rules that capture over 20 of the most common CAMs. We find that over 15% of the firms have CAMs in the areas of fair values, acquisitions, goodwill impairments, revenues and taxes, and a non-trivial percentage in lease accounting, likely because of a recent rule change. There are no surprises in the audit procedures used to address CAM's. Over 50% of the firms in our sample disclose more than one CAM, and there seem to be some sector concentrations in specific CAMs, e.g., rate regulation in Utilities and revenues in Information Technology.

We find a negative and significant correlation between short-term market returns around the Form 10-K filing date, which includes the CAM disclosures, and the extent (number, word count) of CAMs and audit procedures. These negative correlations exist even after controlling for earnings surprises, which were previously disclosed by firms, as well as other information discussed in the earnings conference call.[1] This is a surprising result, because most academic studies do not find

[1] Typically, earnings are released about three weeks prior to the Form 10-K filings, with conference calls immediately afterwards. At the time of the earnings release no information is known about CAMs.

significant market reactions at the time of the 10-K filings. Consistent with the interpretation of greater disclosure of CAMs as an indicator of uncertainty, we find that stock return volatility increases immediately after the Form10-K filing, and security analysts are more likely to revise their earnings forecasts downwards after CAM disclosures. The dispersion of analyst forecasts increases, as well. We further find that many CAM topics are raised in the quarterly earnings conference calls immediately following their release. Thus, we find CAM disclosures to be informative to investors and security analysts.

Our study contributes to the literature along several dimensions. It deals with recent disclosures of new, expanded audit reports of large publicly-listed firms, which may inform the PCAOB about the potential usefulness of its rule. It can be used as a foundation for further research once all firms submit these disclosures in 2021. It provides evidence that CAMs are informative, even though Form 10-K's are not typically associated with significant market reactions. It also shows how to use specific NLP rules to extract information from texts that are otherwise similar in nature.

The next section surveys the relevant literature and develops our predictions. Section III describes the data sources and initial information gleaned from our sample. Section IV provides the empirical findings, and the last section summarizes and concludes the study.

2. Literature and Predictions

Due to the homogeneity in unqualified audit opinions, prior research concentrated on qualified audit opinions and unqualified opinions with explanatory language. Audit reform in 1989 replaced the "subject to" paragraph, which referenced uncertainties during the audit, and the "except for" paragraph, which referenced inconsistent application of standards in the qualified audit opinion with a new explanatory paragraph included in the unqualified opinion. The literature found little

market response to the publication of "subject to" qualified opinions (Elliott 1982; Dodd, Dopuch, Holthausen, and Leftwich 1984; Robertson 1988); "except for" qualified opinions (Robertson 1988); and explanatory language, which replaced the qualification paragraphs (Czerny, Schmidt, and Thompson 2019). Studies document information relevance for qualified and modified audit opinions only when they were unexpected (Loudder, Khurana, Sawyers, Cordery, Johnson, Lowe, and Wunderle 1992; Fleak and Wilson 1994), repeated by the media (Dopuch, Holthausen, and Leftwich 1986), or retracted (Fields and Wilkins 1991). Although they do not elicit a market response, others have argued that audit report qualifications still contain information, as they are correlated with subsequent restatements (Czerny, Schmidt, and Thompson 2014) and higher debt costs (Chen, He, Ma, and Stice 2016). Others have documented different reactions, depending on the type of audit opinion qualification (Firth 1978; Ball, Walker, and Whittred 1979). In particular, the "going concern" opinions seem to be informative (Chen and Church 1996; Jones 1996; Blay, Geiger, and North 2011; Amin, Krishnan, and Yang 2014).

The lack of consistent stock market reaction to qualified audit opinions may not be surprising, as audit opinions are filed along with various other financial information in Form 10-K annual reports. Prior research typically documented minimal price movement around the Form 10-K filing date, a finding that has been attributed to investors anticipating or receiving the information through more timely channels, such as earnings announcements (Dodd, Dopuch, Holthausen, and Leftwich 1984; Ameen, Chan, and Guffey 1994; Easton and Zmijewski 1993; Stice 1991; Li and Ramesh 2009). Additionally, the lack of findings across the general market may be a result of aggregating large firms where information-gathering happens substantially before the smaller firm filing date (Atiase, 1985; Bamber 1987; Freeman 1987).

Answering the call for greater transparency in financial statements, the auditing regulatory bodies started a new wave of audit report reform in the last two decades. With similar goals of providing more information by auditors, France established Justification of Assessments (JOAs), the UK revised their International Standard on Auditing (ISA 700), the International Auditing and Assurance Standards Board implemented Key Audit Matters (KAM), and the Public Company Accounting Oversight Board (PCAOB) required Critical Audit Matters (CAMs). JOAs require auditors to include any information important to the understanding of the financial statements (Bedard, Gonthier-Besacier, and Schatt 2019). The revised ISA 700 requires a list of risks of material misstatements that are significant to the audit. KAMs also mandate communication of matters instrumental to the audit which were reported to those charged with governance. They target similar issues as the CAMs, which require reporting of matters communicated to the audit committee that are "material to the financial statements" and "involved especially challenging, subjective, or complex auditor judgment" (PCAOB 2017-001).

Although standard-setting bodies saw these disclosures as bridging the information gap between auditors and company stakeholders, research into extended audit reporting measures outside of the US showed mixed results (Bedard, Coram, Espahbodi, and Mock 2016; Velte and Issa 2019). Many studies showed no significant market reactions (Bedard, Gonthier-Besacier, and Schatt 2019; Gutierrez, Minutti-Meza, Tatum, and Vulcheva 2018; Lennox, Schmidt, and Thompson 2019). Bedard et al. (2019) find no significant reaction to JOA. They investigate abnormal returns and volume, audit report lag, audit quality, and audit fees. Gutierrez et al. (2018) show that investors do not deem expanded audit reports according to ISA 700 to be useful to decision-making. Although disclosures have differing contents, abnormal return, volume, audit fees, and audit quality do not change around the new ruling. Lennox et al. (2019) also document no

significant immediate market reaction to new ISA 700 disclosures, but they attribute this to information leakage before the filing date and show evidence that ISA 700 disclosures are related to increased risk assessment. On the other hand, Reid, Carcello, Li, and Neal (2019) find an increase in financial reporting quality after revised ISA 700 disclosures, as measured by the Earnings Response Coefficient (ERC), decrease in abnormal accruals and propensity to meet or beat analyst forecasts. They hypothesize that this is motivated by the firm's awareness of increased scrutiny of their financial statements.

While JOA, RMM, and KAM disclosures have been around for a few years, CAM requirements were published by the PCAOB in 2017 and only became mandatory for large accelerated filers starting in June 2019. As such, there have been few studies published on US CAMs; most use experimental designs. Carver and Trinkle (2017) document that CAM disclosures make the audit report less readable, but they have no effect on nonprofessional investors' valuation. Many experiments find that investors treat CAM disclosures as indicators of firm risk (Kachelmeier, Rimkus, Schmidt, and Valentine 2019; Dennis, Griffin, and Zehms 2019; Rapley, Robertson, and Smith 2018). Kachelmeier et al. (2019) document that CAM discussions alert professional and nonprofessional investors to misstatement risk. Dennis et al. (2019) find that nonprofessional investors are able to recognize additional risk from CAMs and subsequently lower their valuations when CAMs include visual information or are accompanied by manager commentary. Rapley et al. (2018) suggest that CAMs alert nonprofessional investors to the risk of managerial intervention in financial reporting. In contrast, Elliott, Fanning, and Peecher (2020) find that CAMs represent better financial reporting quality for nonprofessional investors and increase their willingness to pay for a firm's stock.

Christensen, Glover, and Wolfe (2014) find that nonprofessionals are more likely to react to CAMs than footnotes because of the source of CAMs — auditors are more credible. However, their reaction is to stop investing in the company publishing CAMs. Bentley, Lambert, and Wang (2020) find that managers at firms which disclose CAMs may take on more risky operating decisions. Experimental research has also studied the effect of CAMs on auditor liability (Gimbar, Hansen, and Ozlanski 2016; Vinson, Robertson, and Cockrell 2019; Brasel, Doxey, Grenier, and Reffett 2016).

There is no conclusive archival evidence on the presence and type of information in CAMs. Hollie's (2020) descriptive study focuses on CAMs of companies with fiscal year-ends in 2019, finding that CAMs are concentrated in areas including revenue recognition, intangibles and impairments, acquisitions and taxes. This is not surprising, since these areas have traditionally been associated with more accounting uncertainty (Hollie, 2020). Drake, Goldman, Lusch, and Schmidt (2020) find that CAMs motivate management and auditors to scrutinize financial reporting. Using CAMs filed by US companies up to March 2020, they document a lower propensity to use effective tax rates to meet earnings forecasts, and more revisions to the "uncertain tax benefits" account for companies with tax-related CAMs. Burke, Hoitash, Hoitash, and Xiao (2020) document company size, complexity, and prior record of accounting issues as factors influencing the decision to issue a CAM. They also find similarity in auditor responses to CAMs correlated with audit firm, partner, and office, but substantial variability in the actual topic of CAMs. Consistent with Drake et al. (2020), Burke et al. (2020) document footnote changes in correlation with CAMs becoming longer and including more uncertain language. Finally, compared to matched companies which did not file CAMs, Burke et al. (2020) document no

significant change in abnormal returns around the Form 10-K filing date, meeting or beating analyst forecasts, discretionary accruals, or audit fees for CAM-reporting companies.

Our study is most similar to Burke et al.(2020). However, we focus on the content complexity of CAMs and its relation to market perceptions, which we capture by creating our own measure of CAM issues and length through NLP. Burke et al. (2020) focus on linguistic complexity. They also test the association between the presence of CAMs and market reactions, rather than the CAM's complexity. Additionally, we differ from other studies on CAMs and nonprofessional investors (Carver and Trinkle 2017; Dennis et al. 2019; Rapley et al. 2018; Elliott et al. 2020; Christensen et al. 2014) by looking at market-measurable reactions of analysts through dispersion and revisions.

The informational content of CAM disclosures and how this information affects investors and analysts remains an empirical question. CAMs highlight items in financial statements which resulted in increased uncertainty for auditors when performing their work (Hollie, 2020). As such, more content in CAMs may be an indicator of increased risk for financial statement users (Kachelmeier et al. 2019; Dennis et al.2019; Rapley et al. 2018; Burke et al. 2020; Porumb, Karaibrahimoglu, Lobo, Hooghiemstra, and De Waard 2019). If investors anticipate additional risk and uncertainty, they will require compensation for this additional risk. We would expect immediate returns to decrease, more volatility in returns, a greater propensity of analysts to revise future earnings forecasts downwards, and more dispersion in analyst forecasts. The textual analysis literature also documents added language in the audit opinion to be representative of more risk and uncertainty. Smith (2019) finds audit reports produced after the revised ISA 700 standards to be higher in readability, lower in complexity, and representative of increased risk and uncertainty through more uncertain and negative words. Abernathy, Guo, Kubick, and Masli (2019) find

footnote readability to be negatively correlated with both the likelihood of receiving "going concern" opinions and financial misstatements.

On the other hand, investors may not understand CAM disclosures, because the language is specialized for auditors (Dennis et al. 2019; Carver and Trinkle 2017). They also may not respond to it because it may be perceived as generic and boilerplate (Bedard et al. 2019; Gutierrez et al. 2018) or the information has already been incorporated at an earlier date (Lennox et al. 2019; Atiase 1985; Bamber 1987; Freeman 1987), particularly because the CAM sample is from large accelerated filers. In these cases, we would not expect to observe an incremental market or analyst reaction from CAM disclosures.

We test the informativeness of CAMs by the association between the extensiveness of CAM disclosures and the immediate market reactions at the time of these disclosures; the changes in stock return volatility after CAM disclosures, financial analyst earnings forecast revisions immediately after the CAM disclosures; and changes in analyst forecast dispersion following the disclosure of CAMs. If the extensiveness of CAM disclosures is an indication of additional new uncertainty, we expect it to be negatively associated with abnormal returns and analyst forecast revisions and positively associated with stock return volatility and dispersion in analyst forecasts.

3. Sample Selection and CAM Measures

3.1 Sample Selection

This study focuses on the first batch of CAM disclosures by large accelerated filers (issuers with public float of $700 million or more), whose auditors are required to add CAM disclosures for all annual filings after June 2019. We collected all 10-K Forms in .txt format from July 2019 to May 2020 from the SEC EDGAR database and used regular expressions to extract 2,029 CAM sections

from Item 8 (Financial Statements and Supplementary Data); we also extracted each company's Central Index Key (CIK) and the date of their Form 10-K filing. We matched firms in our sample with identifiers in CRSP for returns, Compustat for accounting data, I/B/E/S for analyst revisions, and Audit Analytics for auditors' characteristics. Table 1 Panel A shows that our sample is distributed across all sectors, with the largest being Financials (16%), Industrials (14%), Healthcare and IT (12% each). More than 90% of all audits were carried out by the "Big Four" audit firms (Ernst & Young [EY], PricewaterhouseCoopers [PWC], Deloitte, and KPMG) and about 7% by the midsize accounting firms (Grant Thornton, BDO, Crowe, RSM and BKD). This is consistent with our sample consisting of large publicly traded firms. Panel B shows that most filings occurred in February of 2020 (71% of our sample), as large accelerated filers have 60 days to file their annual reports and most companies have a December 31 fiscal year-end. Panel C shows the similarity of CAM disclosures for pairs of firms with the same audit firms and only one CAM. We calculated CAM similarity using a cosine and Jaccard methods on the lemmatized CAM corpuses. The resulting statistics highlight how similar these new audit disclosures are across different firms. On average, all CAM filings have 43% cosine similarity across our sample, with this measure going up to 87% for some audit firms. Jaccard similarity that is calculated using unique words in text is lower at 27%, but reaches 47% for BKD. This boilerplate nature of the new audit disclosure is consistent with the high regulation of CAM wording by the PCAOB and shows that a simple bag-of-words approach might not be appropriate to construct a measure of CAM extensiveness, highlighting the need for a more nuanced approach to the textual analysis of CAMs.

We used a proprietary textual analysis software package developed by Amenity Analytics ("Amenity") to analyze CAM disclosures. Amenity tags each word according to its part-of-speech

(i.e., noun, verb, adjective), syntax (i.e., subject, predicate, object) and semantics class (synonymous rows), which allows us to create rules that identify specific CAM topics and audit procedures performed to address them (see Klevak, Livnat, and Suslava 2019, for a more detailed description of Amenity features). First, we uploaded a random sample of 200 CAM disclosures into Amenity's graphic user interface. Next, we created text-processing rules that capture the kinds of CAMs auditors are reporting, and the types of audit procedures they perform to address these complex audit areas. Amenity features allow us to focus of specific key words and phrases that point to a certain type of CAM or a certain type of audit procedure. We present examples of such phrases in Appendices 1A (for CAM issues) and 1B (for audit procedures). For example, we used the following phrases to identify CAMs related to lease accounting: "right-of-use asset," "operating lease asset," "ASC 842," and "adoption of lease standard." Some examples of phrases that identify audit inquiries include "met with management," "met with legal council" and "obtained representation letter." Finally, using the constructed set of rules, we parsed the entire CAM corpus of all firms in our sample using the Amenity batch process, which calculates how many times the rules occur in each CAM filing.

Table 2 shows the distribution of CAMs (Panel A) and audit procedure (Panel B) counts for our sample. Most audit reports identified one (39% of 10-Ks in our sample), two (24%) or three (16%) CAMs per Form 10-K filing, and auditors tended to perform three to five distinct audit procedures to gain assurance for these financial reporting areas. Table 3 shows the types of CAM issues we identified and their frequency (Panel A) and the top sectors for each CAM category (Panel B). Most frequently encountered CAMs relate to accounting areas involving a high degree of estimation, such as fair value (29% of the 10-K sample), goodwill impairment (22%), tax positions (16%), accruals (12%), and loan loss provisions (9%). Some deal with new accounting

pronouncements, such as revenue recognition (23%) and leases (9%) or relate to complex transactions, such as acquisitions (24%). This is consistent with the definition of CAMs as complex and subjective audit areas. The distribution of most frequent sectors across CAMs reveals that Financials are dealing with valuation issues the most (37% of all 10-K filings), Real Estate is coping with complex acquisitions (41% of all 10-K filings) and PPE impairment (46% of all 10-K filings), while Utilities are faced with rate regulation issues (85% of all 10-K filings).

Panel A of Table 4 presents the frequency of audit procedures. The most frequent procedures include test of controls (89% of the 10-K sample), review of managers' methodology (71%), use of specialists (66%), and analytical reviews (64%). However, procedures that involve inspection or observation of more tangible evidence are rarer: 52% of audit reports mention inspection of records. Auditors could only confirm inspection of records in 3% of cases, while inspection of assets (three filings) and observation (one filing) are practically nonexistent. Again, this is consistent with the definition of CAMs, as reporting areas that require significant auditor judgement and reliance on estimates and subjective inputs. Panel B of Table 4 shows that the frequency of audit procedures remains fairly stable across various sectors, with tests of controls, methodological reviews, the use of specialists, and analytics the most popular across all eleven sectors. Panel C of Table 4 shows what audit procedures are performed for different types of CAMs. Auditors consult specialists most frequently when they deal with pension accounting (29%); Variable Interest Entities (VIE) (27%); tax positions (25%); and valuation issues, such as convertible bonds (25%), intangibles (25%) and fair value accounting (23%). Use of analytical procedures is most common for the audits of sales returns and allowances (33%), an audit area which requires auditors to perform extensive trend analysis. Audits of related party transactions

require inspection of records (33%), and the only way to gain assurance over accounting for discontinued operations seems to be the inquiry of managers (100%).

3.2 The CAM Measures

We used six different statistics to measure the extent of CAM disclosures: three measures are based on word counting and three are based on the specific NLP rules we developed to extract information from CAM disclosures. We measured the length of CAM disclosures with *CHAR_COUNT*, the total count of characters in the CAM section, and *WORD_COUNT*, the total count of words in the CAM section. We also calculated *VERB_COUNT* as the total count of verbs in the CAM section; this measure captures the length of disclosures, as well as the extent of audit actions reported in the CAM section. Using NLP rules, we calculated *CAM_COUNT* as the number of distinct CAM issues identified with the NLP rules. If we had several rules that identified the same type of CAM, for example "revenue recognition," we counted it as one *CAM_COUNT*. With this measure we attempted to capture the number of reporting areas that auditors find challenging. Next, we calculated two NLP measures of the degree of effort auditors exerted to achieve reasonable assurance on the firm's financial reporting: *AUDIT_COUNT*, the total count of distinct audit procedures in the CAM section and *AUDIT_SUM*, the total count of all audit procedures (including repetitions) in the CAM section of Form 10-K.

4. Empirical Results

4.1 Descriptive Statistics

Table 5 presents the descriptive statistics of the sample matched to Compustat, CRSP, I/B/E/S, and Audit Analytics. On average, a CAM section consists of 5,922 characters, 864 words, 109 verbs, and two types of CAMs. The tone of the conference calls that happened *before* the 10-K

filings (i.e., after earnings were released for the fourth fiscal quarter), *TONE*, is mostly positive, with the number of negative words starting to exceed the number of positive ones only in the first percentile (P1 is at -0.10). This is consistent with prior findings that managers tend to use this less-regulated voluntary disclosure to promote financial results (Larcker and Zakolyukina 2012; Zhou 2014; Lee 2016; Bushee, Gow, and Taylor 2018). On average, about five to six analysts are following each firm (*N_ANALYST*), 90 percent of our sample is audited by Big Four auditors (*BIG4*), and have mean (median) book assets (*ASSETS*) of $27.4 billion ($4.9 billion); all of this corresponds to our special sample of large accelerated filers.

Table 6 reports the Spearman correlation of CAM measures with firm characteristics, and reveals positive significant correlations between all CAM measures and the level of analyst dispersion (*ANALYST_DISP*). The correlation coefficient ranges from 0.04 for *CAM_COUNT* to 0.10 for *AUDIT_SUM*, indicating that firms with more extensive CAM disclosures have higher analyst dispersion before the 10-K filing date. The correlation remains positive and significant for *AUDIT_COUNT* and *AUDIT_SUM*, with the changes in analyst dispersion (*CH_ANALYST_DISP*), showing that analysts have even less consensus on firms with more extensive CAM disclosures after they are revealed to the market. All CAM measures are negatively correlated with analyst revisions (*ANALYST*) and immediate market returns (*XRET_0*), providing some evidence that analysts and investors are more likely to react negatively to firms' reporting more extensive CAM disclosures. Firms that have lengthier CAM disclosures in their 10-K filings are also larger; they have significantly positive correlation with *ASSETS* and *N_ANALYST*.

4.2 Market Reactions to CAM Disclosures in 10-K Filings

Using our sample of large accelerated filers, we examined the market reactions to CAM disclosures as reflected in the immediate abnormal three-day returns around the 10-K filing date. The measure

of abnormal returns (*XRET_0*) is the buy-and-hold return on a stock minus the return on S&P 500 Index in the interval [-1, +1], where day 0 is the 10-K filing date. We used the following regression model to test our prediction about stock market reaction:

$$XRET\_0_{j,t} = \beta_0 + \beta_1 CAM\ MEASURE_{jt} + \beta_2 TONE_{jt} + \beta_3 SUE_{jt} + \beta_4 ACCRUAL_{jt} + \beta_5 Log(Assets)_{jt} + \varepsilon_{jt} \quad (1)$$

If CAMs signal bad news to the market, we expect to see a negative coefficient on our measures of CAM disclosures. The regression controls for other quantitative and qualitative information that is available to investors around the earnings announcement date. Qualitative information is captured with *TONE,* calculated as the total number of positive words in the earnings conference call less the total number of negative words divided by the sum of the two (the dictionary of positive and negative words is based on the Loughran and McDonald [2011] and Amenity proprietary dictionary). *SUE* (the difference between the actual earnings reported per I/B/E/S and the median earnings preliminary estimate during the 90-day window prior to the earnings release[2] divided by the standard deviation of analyst forecasts during the same 90-day period) and *ACCRUAL* (the difference between quarterly income and quarterly cash flows, scaled by the average total assets during the quarter) control for operating performance. *ASSETS* (the total assets at the end of the prior quarter) control for size. For ease of interpretation and following an accepted practice in accounting (Feldman et al., 2010, Lee 2016, Bushee et al., 2018), CAM measures, *TONE*, *SUE* and *ACCRUAL* are normalized between -0.5 and 0.5, by ranking them into the quartiles (for *CHAR_COUNT, WORD_COUNT, VERB_COUNT, AUDIT_COUNT, AUDIT_SUM*), terciles (*CAM_COUNT*) or deciles (*TONE, SUE, ACCRUAL*), dividing the rank

[2]Only the most recent forecast of each analyst is used to calculate the median and standard deviation.

by the top ranking number and subtracting 0.5. The coefficients in the regressions may be interpreted as the hedge return on a portfolio of top quantile minus bottom quantile.

Table 7 presents the results of estimating the relation between CAM measures and the immediate market reaction to 10-K filings (Regression [1]). The coefficients on all variables of interest are negative, ranging from -0.015 to -0.018 and significant at the - percent level (t-statistics between -3.33 and -2.74). This result suggests that investors interpret more extensive CAM disclosures as a negative signal. Regarding economic significance, the coefficients on CAM measures are comparable to the well-established measure of earnings call (*TONE*) that is positive and significant at 0.020 (t-statistics between 3.04 and 3.21), indicating that investors continue to digest the qualitative disclosures of earnings conference calls at the time of 10-K filings. Our control for earnings surprises is also positive and significant at the 1-percent level, consistent with prior studies that find subsequent drift returns for earnings news surprises.

Next, we use the following regression to examine the association between CAM measures and market volatility to test whether CAM disclosures introduce more uncertainty:

$$CH\_STD\_RET_{j,t} = \beta_0 + \beta_1 CAM\ MEASURE_{jt} + \beta_2 TONE_{jt} + \beta_3 BIG4_{jt} + \beta_4 LOSS_{jt} + \varepsilon_{jt} \quad (2)$$

The measure of market volatility (*CH_STD_RET*) is the change in the standard deviation of returns from the [-10, -1] to the [+1, +10] interval, where day 0 is the Form 10-K filing date. We expected that controlling for size (*BIG4*) would result in less volatility, and that firms in financial distress (*LOSS*) would be more volatile. Table 8 presents the results of estimating Regression (2) and reports positive and significant coefficients on all measures of CAM disclosures with the exception of *CAM_COUNT*. The coefficients range from 0.486 to 0.183 and t-statistics are between 2.71 and

1.04. This suggests that, in addition to being viewed as negative news, CAM disclosures seem to introduce more volatility into market returns. The coefficients on *BIG4* and *LOSS* are consistent with our expectations: firms audited by Big Four auditors have less volatile returns, while firms with negative earnings experience increases in market volatility.

4.3 Analyst Reactions to the CAM Disclosures in Form 10-K Filings

The second set of tests consider analyst reactions to CAM disclosures. Previous literature suggests that this sophisticated group of financial statement users rely on firm disclosures to revise earnings projections. If the new CAM disclosures contain value-relevant information, and more extensive disclosures signal more uncertainty, we expect to see significant negative associations between our CAM measures and analyst revisions. To test this prediction, we used the following regression model:

$$ANALYST_{j,t} = \beta_0 + \beta_1 CAM\ MEASURE_{jt} + \beta_2 TONE_{jt} + \beta_3 SUE_{jt} + \beta_4 ACCRUAL_{jt} + \beta_5 Log(N\_ANALYST)_{jt} + \beta_6 BIG4_{jt} + \varepsilon_{jt} \quad (3)$$

The dependent variable is a measure of analyst optimism (*ANALYST*) calculated as the difference between the number of upwards and downwards earnings revisions in the 10 days after 10-K filings, scaled by the sum of the two. We expect the coefficients on CAM measures to be negative for Regression (3), as more extensive CAM disclosures might signal more uncertainty about firm financial reporting and cause analysts to be less optimistic about their earnings forecasts.

Table 9 presents the results, revealing that all CAM measures have negative coefficients that are significant for four out of six measures. The coefficients on the measures of CAM length in Columns [1] and [2], *CHAR_COUNT* and *WORD_COUNT*, are significant at the 5-percent level (t-statistics = -2.06 and -2.03 respectively), *VERB_COUNT* is significant at the 10-percent level

(t-statistics = -1.82), while *CAM_COUNT* is significant at the 1-percent level (t-statistics = -2.58). These results seem to indicate that analysts have more pessimistic earnings forecasts for firms with a higher number of CAMs and more extensive CAM disclosures. The controls for *TONE*, *SUE*, and *ACCRUAL* are positive and significant, indicating that analysts have more upward revisions for firms with a more positive tone of earnings calls, higher earning surprises and higher accruals.[3] The magnitude of CAM disclosure coefficients are comparable to those of *ACCRUAL* variables between -0.109 and -0.142.

Next, we examined the pattern of analyst forecast dispersions for 10-K filings with CAM disclosures. We expected to see greater dispersion for the filings with more extensive CAM disclosures, as they introduce more uncertainty about a firm's information environment. We used Regressions (4) and (5) to test this prediction:

$$ANALYST\_DISP_{j,t} = \beta_0 + \beta_1 CAM\ MEASURE_{jt} + \beta_2 TONE_{jt} + \beta_3 ABS\_SUE_{jt} + \beta_4 Log(N\_ANALYST)_{jt} + \beta_5 BIG4_{jt} + \beta_6 LOSS_{jt} + \varepsilon_{jt} \quad (4)$$

$$CH\_ANALYST\_DISP_{j,t} = \beta_0 + \beta_1 CAM\ MEASURE_{jt} + \beta_2 TONE_{jt} + \beta_3 ABS\_SUE_{jt} + \beta_4 Log(N\_ANALYST)_{jt} + \beta_5 BIG4_{jt} + \beta_6 LOSS_{jt} + \varepsilon_{jt} \quad (5)$$

We used two measures of analyst dispersion – *ANALYST_DISP*, the standard deviation of annual earnings forecasts scaled by price three days before the earnings announcement for the quarter, and *CH_ANALYST_DISP*, calculated as the difference between *ANALYST_DISP* the month after the 10-K filing date and the mean *ANALYST_DISP* within the preceding six months. We controlled for earnings volatility with the absolute value of earnings surprises (*ABS_SUE*), as firms with more

[3] Typically, higher accruals indicate lower future earnings and abnormal returns. Analysts may ignore it in the short run.

volatile earnings might have larger dispersion. *TONE* controls for other financial information released during earnings announcements; (*N_ANALYST*) for the number of analysts, *BIG4* for size, and *LOSS* for financial distress. We expect the coefficients on CAM measures to be positive, as more extensive CAM disclosures might introduce more uncertainty in analyst earnings forecasts.

Table 10 presents the results for Regression (4) and Table 11 – for Regression (5). The coefficients for CAM measures load positively and significantly both for the levels and the changes in analyst dispersion, with the exception of our *CAM_COUNT* measure. The magnitude of the CAM coefficients are comparable to the ones for *TONE*, which load negatively and significantly for both sets of regressions. The coefficients on the absolute value of earnings surprises, the number of analysts following the firm, and firms with negative earnings are positively associated with the level of analyst dispersion, which is consistent with our expectations.

Overall, the evidence in this section is consistent with our predictions. The results in Table 8-10 indicate that analysts view more extensive CAM disclosures as bad news that introduces some additional dispersion in their earnings forecasts.

4.4 Other Tests

In this section, we present the results of additional tests to check the robustness of the main results. First, we considered whether the results were driven by COVID-19 pandemic, which resulted in significant market returns and volatility fluctuations in March 2020. We re-performed our main results on a subsample that excluded Form10-K filings occurring after March 1, 2020, as those filings were more likely affected by the pandemic, which was officially declared on March 13, 2020. Since most of the sample filings were from before March 1, 2020, we observed very similar results to those reported in the body of the paper.

Second, we validated the informativeness of CAMs using conference calls in the quarter after the 10-K filings. Earnings calls are high-attention events that convey important value-relevant information (Matsumoto, Pronk, and Roelofsen 2011). If CAM issues revealed in the audit reports disclosed important information to the market, analysts would want to ask managers about these issues, and next-quarter earnings calls are likely to present this opportunity. We used a comprehensive set of conference call transcripts provided by Thomson Reuters from June 1, 2019 to July 29, 2020, and using the same CAM NLP rules, extracted mentions of these topics in subsequent conference calls. We found that almost 25% (439 firms) of the sample firms discussed issues that were initially identified in CAMs in the first conference call after the 10-K filing. The number of firms that continued to mention CAM topics in the second conference call decreased to 132. The most popular CAM topics addressed in conference calls were acquisitions, loan loss provisions, revenue recognition, and goodwill, in order of popularity. This is consistent with our expectations, as these CAM issues rank high on the list of 10-K CAM topics and are issues of increased uncertainty and judgment to auditors. We take this as additional evidence that CAM issues identified in 10-Ks contain information, which is recognized and expanded upon at a later date by management and analysts.

5. Summary and Conclusions

A recent PCAOB rule expanded auditor reporting to include information about financial statement areas that are material and complex, challenging or highly subjective. In addition, auditors are now required to provide information about the audit steps taken to form an opinion on these CAMs. This rule required auditors of large accelerated filers to include expanded disclosures for financial statements after June 2019, and for all firms after December 15, 2020. The PCAOB is not the first body to require such disclosures. Similar disclosures have been required in France and the UK in

the last several years. Interestingly, empirical studies of expanded audit disclosures outside of the US have typically been unable to provide conclusive evidence that these disclosures are informative and are used by market participants. This immediately begs the question whether the new CAM disclosures of the PCAOB are informative and used by market participants.

A priori, given the lack of conclusive evidence outside the US, we should not be optimistic about finding any market reactions to indicate the use of these additional disclosures. Furthermore, the initial CAM disclosures were made by large public firms with information environment that is pretty efficient. These firms are followed by analysts, have considerable institutional investors, and are likely to be scrutinized closely by market participants. In addition, the expanded audit report is disclosed to the market in the annual Form 10-K filing a few weeks after firms issue their preliminary earnings announcements, and after most followed up with an analyst conference call. Moreover, there is a plenty of academic evidence that Form 10-K filings are not associated with significant immediate market reactions. Thus, our expectations about finding any significant market reactions or usage of the new CAM disclosures by larger firms in the market were very low.

To our surprise, we were actually able to document in this study significant market reactions to the new CAM disclosures. We found that firms with more extensive CAM disclosures had significantly lower market returns around the Form 10-K filing date than firms with less extensive CAM disclosures. This held true even after adjusting to several other types of information that may have been associated with the extensiveness of CAMs, such as prior earnings surprise, firm size, or other information released in the prior earnings conference call. This was the first evidence of a significant association between the extensiveness of CAM disclosures and immediate market reactions. We also documented that the volatility of stock returns increased significantly from the

10-day window before the Form 10-K filing to the 10-day window afterward for firms with more extensive CAM disclosures. Thus, investors seem to be using the CAM disclosures in their market reactions.

We further examined another group of sophisticated users, financial analysts, and their behavior after the new CAM disclosures. We found that analysts revised their earnings forecasts more negatively for firms with more extensive CAM disclosures than firms with less extensive disclosures, and these differences were statistically significant. We also found that analysts became much less certain about firms with more extensive CAM disclosures than firms with less extensive disclosures. This was reflected in significantly greater forecast dispersion after the Form 10-K filing than before it, for firms with more extensive CAM disclosures. Thus, we documented an additional association of the extensiveness of CAM disclosures with analyst reactions; analysts became more conservative about these firms' future earnings and less certain about them.

Finally, we also documented direct evidence of market participants' usage of the areas disclosed by CAMs; around a quarter of the firms in our sample discussed these areas in their earnings conference calls immediately after the release of the next quarterly earnings. This is even more impressive, since most of our sample firms released their immediately subsequent quarterly earnings during the COVID-19 pandemic. In spite of great uncertainty about economic and social conditions, analysts and management devoted time to discussing the areas of their financial statements with the most uncertainties around them.

The evidence presented in our study points to the benefits that market participants were able to obtain from the new CAM disclosures. More extensive CAM disclosures seemed to indicate greater uncertainties, which were associated with lower valuations, greater volatility of stock returns, lower future earnings forecasts and greater dispersion of earnings forecasts by analysts.

Thus, the PCAOB seems to have been justified in requiring these expanded disclosures. Given our findings for the larger firms in the market, it would be interesting to analyze the effects of the new disclosures on smaller firms in the next wave of CAM disclosures. These firms typically have a less-efficient information environment and a lower percentage of institutional investors, are less likely to be audited by Big-Four audit firms, and may have more areas of uncertainty than their larger counterparts. Thus, the new CAM disclosures may be even more informative for these firms.

We should conclude, though, with a note of caution. Our results are predicated on careful extraction of CAM and audit steps to address these CAMs. We relied on NLP rules that were used to identify over twenty types of the most frequent CAMs and the audit procedures used to address them. The more precise extraction of CAMs and audit procedures may have contributed to our ability to document significant market reactions to these expanded disclosures. With less precise extraction of the CAM information, we might have been unable to document any significant market reactions, similar to the evidence outside of the US. Future research should also use more precise tools to extract CAM disclosures, if we hope to carefully examine the informativeness of CAMs.

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Appendix 1A: Identification of CAM Issues

This table exhibits examples of audit report extracts captured by the Amenity rules. We used these phrases to classify the CAM issues described in the audit reports.

Type of CAM Issue	Audit Report Extracts Captured by Amenity
Fair Value	*Determination of fair value is based on projections | estimates; valuation of assets | liabilities; level 2 | level 3 assets | liabilities; unobservable inputs; valuation methodologies; fair value is determined; fair value estimate; fair value of investments; ASC 820; fair value of securities.*
Acquisition	*Obtain a controlling interest; acquisition; purchase price allocation; acquisition method; purchase price was allocated; equity method; allocation of purchase price; completed the acquisition; accounted for the acquisition; purchase price was allocated; business combination; ASC 805.*
Revenue	*Revenue recognition; company estimates; variable consideration; audit evidence over revenue; timing of revenue recognition; recognize revenue; performance obligations; revenue is recognized; revenue arrangement; ASC 606.*
Goodwill Impairment	*Goodwill impairment test; valuation of goodwill; goodwill impairment assessment; goodwill assessment; fair value of reporting units; test | evaluate goodwill for impairment; ASC 350.*
Tax Positions	*Uncertain tax positions; tax outcome is uncertain; tax position is more likely than not to be sustained; internal revenue service; federal | state tax liability; tax position taken by the company; management tax positions; company's tax expense; communications with the relevant tax authorities; tax rates; income tax liabilities; income tax provision; transfer pricing; deferred tax benefits; deferred tax assets; tax credit carryforwards; ASC 740; tax cuts and jobs act; 2017 tax act.*
Accrual	*Evaluation of insurance reserves; warranty accrual; estimated future warranty; product warranty; provisions for dealer incentives; sales incentives; recoverability of deposits; maintenance reserves; government-mandated rebates; Medicaid rebates; rebate accrual; product recall liabilities | claims; reserve for claims; asset retirement obligations; allowance for doubtful accounts; claim liability.*
Intangibles	*Fair value measurement of intangible assets; franchise rights impairment testing; impairment of trade names | secret |mark; impairment of copyright | brand | certificate | database | easement | formula | franchise | license | patent | right | trademark.*
PPE Impairment	*Assess equipment for impairment; retail sites | building | equipment | property might be impaired; impairment triggering events related to property | plant | equipment; land impairments; assesses community | building | equipment | property to identify indicators of potential impairment; evaluates the recoverability of the community; impairment of real estate assets; recoverability of real estate; ASC 360; impairment triggering events related to property, plant and equipment.*
Loan Loss	*Allowance for loan losses; allowance for credit losses; loan-to-value ratio; ASC 326; allowance for loan and lease losses; alll;*

Lease Accounting	*Accounting for leases; right-of-use assets; operating lease assets; adoption of the lease standard; lease liability; operating lease; lease contracts; ASC 842; financial lease; capital lease.*
Litigation	*Party to legal proceedings; loss contingencies; company is regularly subject to claims; litigation; lawsuit.*
Amortization	*Content amortization; amortize content; amortize; auditing the amortization; judgmental nature of amortization; unit of production; depletion expense; landfill amortization expense.*
Rate Regulation	*Rate-regulation; regulatory commission; regulatory assets; regulatory liabilities; regulated distribution and transmission utilities; accounting for the economics of rate regulation; regulatory accounting; regulation rate; ASC 980.*
Inventory	*Evaluation of inventories for impairment; inventory impairment; program accounting quantity; inventory carrying value adjustments; inventory valuation; recoverability of inventory; quantities of inventory; count inventory quantities; net realizable value of inventory; obsolete inventory; LIFO; FIFO; LIFO reserve; lower of cost; obsolete inventory.*
Pension	*Defined benefit pension obligation; pension plan assets | liabilities; defined benefit pension plan; pension expense.*
VIEs	*Variable interest entity, VIE.*
Stock Compensation	*Stock-based compensation; stock awards; fair value of stock awards; stock-based compensation disclosures.*
Convertible Bonds	*Convertible notes transactions; convertible bonds | notes; accounting for the convertible notes.*
Discontinued Ops	*Discontinued operations; disposal group.*
R&D	*Accrue research and development expense; R&D; research and development; research and development costs; accrual for research and development costs; software capitalization process.*
Related Party	*Related party; related party transaction.*
Capitalization	*Capitalization; capitalization of installation; the company capitalizes; capitalizable activity; capitalization of property; expenditures capitalized.*

Appendix 1B: Identification of Audit Procedures

This table exhibits examples of audit report extracts captured by the Amenity rules. We used these phrases to classify the audit procedures described in the audit reports.

Audit Procedures	Audit Report Extracts Captured by Amenity Rules
Test of Controls	*Evaluated the design of controls; tested the operating effectiveness of controls; tested certain internal controls; tested the effectiveness of managements controls; testing managements process; material weakness.*
Methodology Review	*Assessed the company's methodology; evaluated the asset group level; examination of assumptions; evaluate | analyze | assess | examine | study the reasonableness | appropriateness of methodology; evaluate the method; evaluate the company's accounting; comparing the projections to historical results.*
Specialist	*Involved specialists; assistance of specialist; involved our tax professionals; utilized valuation specialists; utilize an internal actuarial specialist; involvement of our transfer pricing professionals.*
Analytics	*Compared assumptions; assessed consistency; tested the completeness of data; evaluated assumptions; compared to historical data; completeness of underlying data; developed valuation estimates; investigated differences; compared estimates to subsequent transactions; test assumptions; performed sensitivity analyses; performed hindsight reviews; compared our expectations.*
Inspection of Records	*Compare the amounts to relevant documentation; underlying documentation; shipping documents; read the minutes; read the proceedings; assess | analyze | evaluate | examine | monitor correspondence; terms and conditions of each contract; obtain supporting documentation; reviewing the company's contracts; read relevant orders; obtained an analysis from management; reviewed the terms of customer contracts; testing cash payments; review source documentation.*
Recalculation	*Recalculated; tested accuracy of the underlying data; accuracy of underlying data; tested the accuracy of the calculations; assessed the historical accuracy; tested mathematical accuracy; recalculated the company's estimated future cash flows; mathematical extrapolation.*
Inquiry	*Met with management; met with legal counsel; obtained a representation letter; representation letter; make inquiries; corroborating inquiries; inquiry of personnel; interview sales representatives.*
Confirmation	*Confirmation letters; receive confirmation letters; opinions provided by external counsel.*
Inspection of assets	*Compare | tie | trace | vouch cash flows to the general ledger | books | records; conduct site visits.*
Observation	*Observe the contract status; observe assets; observe process.*

Appendix 2: Variable Definitions

CHAR_COUNT	The total count of characters in the CAM section of 10-Ks. For regression analysis, *CHAR_COUNT* is normalized between -0.5 and 0.5 by ranking it into quartiles (0 to 3) each fiscal quarter, dividing the rank by 3 and subtracting 0.5.
WORD_COUNT	The total count of words in the CAM section of 10-Ks. For regression analysis, *WORD_COUNT* is normalized between -0.5 and 0.5 by ranking it into quartiles (0 to 3) each fiscal quarter, dividing the rank by 3 and subtracting 0.5.
VERB_COUNT	The total count of verbs in the CAM section of 10-Ks. For regression analysis, *VERB_COUNT* is normalized between -0.5 and 0.5 by ranking it into quartiles (0 to 3) each fiscal quarter, dividing the rank by 3 and subtracting 0.5.
CAM_COUNT	The total count of CAMs in the CAM section of 10-Ks. For regression analysis, *CAM_COUNT* is normalized between -0.5 and 0.5 by ranking it into terciles (0 to 2) each fiscal quarter, dividing the rank by 2 and subtracting 0.5.
AUDIT_COUNT	The total count of distinct audit procedures in the CAM section of 10-Ks. For regression analysis, *VERB_COUNT* is normalized between -0.5 and 0.5 by ranking it into quartiles (0 to 3) each fiscal quarter, dividing the rank by 3 and subtracting 0.5.
AUDIT_SUM	The total count of all audit procedures (including repetitions) in the CAM section of 10-Ks. For regression analysis, *AUDIT_SUM* is normalized between -0.5 and 0.5 by ranking it into quartiles (0 to 3) each fiscal quarter, dividing the rank by 3 and subtracting 0.5.
TONE	The measure of sentiment based on the number of positive minus the number of negative words in a conference call, scaled by the sum of the positive and the negative words; the list of positive and negative words is based on the Loughran and McDonald (2011) and extended Amenity dictionary. For regression analysis TONE is normalized between -0.5 and 0.5 by ranking it into deciles (0 to 9) each fiscal quarter, dividing the rank by 9, and subtracting 0.5.
SUE	The difference between the actual earnings reported per I/B/E/S and the mean earnings preliminary estimate, divided by the standard deviation of the earnings forecasts. All forecasts made in thee 90-day period prior to the earnings announcement are used to calculate the mean and standard deviation, with only the most recent forecast for each analyst. For regression analysis *SUE* is normalized between -0.5 and 0.5 by ranking it into deciles (0 to 9) each fiscal quarter, dividing the rank by 9, and subtracting 0.5.
ACCRUAL	The most recently available quarterly accruals, measured as the difference between quarterly income before extraordinary items and quarterly operating cash flows, scaled by the average total assets during the quarter.
ANALYST_DISP	The standard deviation of annual analyst earnings forecasts in the 365 days prior to the 10-K filing scaled by price three days before the earnings announcement preceding with the 10-K filing.
CH_ANALYST_DISP	The difference between *ANALYST_DISP* after the 10-K filing date and the mean *ANALYST_DISP* within the preceding 6 months.
ASSETS	The total assets at the end of the prior quarter.
N_ANALYST	The total number of analysts following the firm.

BIG4	The indicator variable that equals to one if the firm auditor is a Big Four firm and zero otherwise.
ANALYST	The difference between the number of upward and downward earnings revisions for a firm in the 10 days after the 10-K filing, scaled by the sum of the two.
XRET_0	The buy-and-hold return on a stock minus the return on S&P 500 Index in the interval [-1, +1], where day 0 is the 10-K filing date.
CH_STD_RET	The change of the standard deviation of returns from the [-10, -1] interval to the [+1, +10] interval, where day 0 is the 10-K filing date

Table 1. Sample Distribution and Similarity

This table shows the distribution of our 10-K sample by sector and audit firm (Panel A) and filing month (Panel B) and similarity of CAM disclosures across audit firms. The column labeled "Number of 10-Ks" shows how many 10-Ks in our sample belong to a particular sector/audit firm/filing month and the column "% of Total 10-Ks" shows it as a percentage of the total number of 10-Ks in our sample. Our corpus includes 2,029 annual 10-K filings of US companies from August 2019 to May 2020. For Panel C, we show similarity averages only for pairs of CAM filings that have same auditor and one CAM issue.

Panel A: Sample Distribution by Sector and Audit Firm

Sector	Number of 10-Ks	% of 10Ks
Financials	331	16%
Industrials	275	14%
Healthcare	250	12%
IT	242	12%
Consumer Discr.	218	11%
Real Estate	153	8%
Utilities	130	6%
Energy	119	6%
Materials	96	5%
Telecom	75	4%
Consumer Staples	71	3%
Other	69	3%
Total	2,029	100%

Audit Firm	Number of 10-Ks	% of 10Ks
EY	558	27.5%
PWC	463	22.8%
Deloitte	448	22.1%
KPMG	369	18.2%
Grant Thornton	74	3.6%
BDO	29	1.4%
Crowe	27	1.3%
RSM	14	0.7%
BKD	11	0.5%
Other	36	1.9%
Total	2,029	100%

Panel B: Sample Distribution by Month

Month/ Year	Number of 10-Ks	% of 10Ks
August 2019	52	2.6%
September 2019	16	0.8%
October 2019	23	1.1%
November 2019	88	4.3%
December 2019	24	1.2%
January 2020	28	1.4%
February 2020	1,447	71.3%
March 2020	276	13.6%
April 2020	14	0.7%
May 2020	1	0.0%
N/A	60	3.0%
Total	2,029	100%

Panel C: Similarity by Audit Firm

Audit Firm	Mean Cosine	Mean Jaccard	Pairs Count
Deloitte	41%	24%	23,871
EY	41%	26%	19,306
PWC	49%	30%	15,400
KPMG	41%	27%	14,535
Grant Thornton	42%	25%	325
BDO	50%	27%	136
Crowe	71%	37%	66
RSM	47%	31%	36
Dixon Hughes	69%	34%	6
BKD	87%	47%	3
Moss Adams	35%	30%	1
All	43%	27%	73,685

Source: SEC 10-K filings (www.sec.gov), Audit Analytics Database, and Amenity software.
As of 6/24/2020.

Table 2. CAM and Audit Procedure Frequency in 10-K Filings

This table shows the distribution of CAMs/audit procedures count across the annual 10-K filings. The column labeled "Number of 10-Ks" shows how many 10-Ks in our sample had a particular number of CAMs/audit procedures in our sample and the column "% of Total 10-Ks" shows it as a percentage of the total number of 10-Ks in our sample. Our corpus includes 2,029 annual 10-K filings of US companies from August 2019 to May 2020.

Number of CAMs per 10-K	Number of 10-Ks	% of 10-Ks
0	145	7%
1	782	39%
2	496	24%
3	326	16%
4	132	7%
5	60	3%
6 and More	88	4%
Total	2,029	100%

Number of Audit Procedures per 10-K	Number of 10-Ks	% of 10-Ks
0	16	1%
1	113	6%
2	237	12%
3	372	18%
4	400	20%
5	376	18%
6 and More	515	25%
Total	2,029	100%

Source: SEC 10-K filings (www.sec.gov) and Amenity software. As of 6/24/2020.

Table 3. CAM Frequency and Distribution by Top Sector

Panel A shows the frequency of CAM disclosures across the annual 10-K filings. The column labeled "Number of 10-Ks" shows how many 10-Ks in our sample had a particular type of CAMs in our sample and the column "% of Total 10-Ks" shows it as a percentage of the total number of 10-Ks in our sample. Panel B shows the distribution of CAMs by the top sector (with the highest proportion of 10-K filings for a particular CAM). The column labeled "Top Sector" lists a sector with the highest proportion of a particular CAM type and the column "% of Total 10-Ks" shows the percentage of 10-Ks for the top sector that have a particular CAM issue. Our corpus includes 2,029 annual 10-K filings of US companies from August 2019 to May 2020.

Panel A: CAM Frequency

Type of CAM Issue	Number of 10-Ks	% of 10Ks	Type of CAM Issue	Number of 10-Ks	% of 10Ks
Fair Value	586	29%	Amortization	119	6%
Acquisition	478	24%	Rate Regulation	119	6%
Revenue	461	23%	Inventory	109	5%
Goodwill Impairment	437	22%	Pension	71	3%
Tax Positions	323	16%	VIEs	58	3%
Accruals/ Allowances	314	15%	Stock Compensation	57	3%
Intangibles	194	10%	Convertible Bonds	33	2%
PPE Impairment	189	9%	Discontinued Ops	20	1%
Loan Loss	187	9%	R&D	19	1%
Lease Accounting	173	9%	Related Party	16	1%
Litigation	139	7%	Capitalization	13	1%
			Total	2,029	100%

Panel B: CAMs by Top Sector

Type of CAM Issue	Top Sector	% of 10Ks	Type of CAM Issue	Number of 10-Ks	% of 10Ks
Fair Value	Financials	37%	Amortization	Energy	34%
Acquisition	Real Estate	41%	Rate Regulation	Utilities	85%
Revenue	IT	52%	Inventory	IT	13%
Goodwill Impairment	Materials	48%	Pension	Materials	10%
Tax Positions	Materials	32%	VIEs	Real Estate	7%
Accrual	Cons. Discr.	19%	Stock Compensation	Financials	7%
Intangibles	Cons. Staples	41%	Convertible Bonds	IT	5%
PPE Impairment	Real Estate	46%	Discontinued Ops	Materials	3%
Loan Loss	Financials	49%	R&D	IT	4%
Lease Accounting	Cons. Discr.	25%	Related Party	Telecom	3%
Litigation	Materials	13%	Capitalization	Telecom	5%

Source: SEC 10-K filings (www.sec.gov) and Amenity software. As of 6/24/2020.

Table 4. Audit Procedures Frequency and Distribution by Sector and CAM Issue

Panel A shows the frequency of audit procedures across the annual 10-K filings. The column labeled "Number of 10-Ks" shows how many 10-Ks in our sample had a particular type of audit procedures in our sample and the column "% of Total 10-Ks" shows it as a percentage of the total number of 10-Ks in our sample. Panel B shows the frequency of audit procedures across sectors, with the percentages indicating the proportions of 10-Ks with a particular audit procedure for a particular sector. Panel C shows the frequency of audit procedures across CAM issues, with the percentages indicating the proportions of a particular audit procedure for a particular CAM issue. Our corpus includes 2,029 annual 10-K filings of US companies from August 2019 to May 2020.

Panel A: Audit Procedures Frequency

Type of Audit Procedure	Number of 10-Ks	% of 10Ks
Test of Controls	1,804	89%
Methodology Review	1,445	71%
Specialist	1,341	66%
Analytics	1,300	64%
Inspection of Records	1,051	52%
Recalculation	522	26%
Inquiry	176	9%
Confirmation	63	3%
Inspection of assets	3	0%
Observation	1	0%
Total	2,029	100%

Panel B: Audit Procedures by Sector

Sector	Test of Controls	Method. Review	Specialist	Analytics	Insp. Records	Recalc.	Inquiry	Confirm
Financials	87%	76%	64%	55%	44%	26%	2%	1%
Industrials	89%	74%	75%	78%	52%	31%	11%	3%
Healthcare	86%	66%	48%	66%	56%	30%	14%	6%
IT	92%	61%	62%	55%	61%	27%	10%	5%
Cons. Discr.	89%	75%	70%	73%	52%	33%	8%	2%
Real Estate	88%	69%	62%	63%	44%	19%	6%	1%
Utilities	90%	85%	61%	38%	62%	9%	21%	2%
Energy	87%	72%	75%	78%	43%	20%	8%	1%
Materials	96%	74%	81%	70%	51%	22%	5%	3%
Telecom	93%	65%	69%	59%	64%	29%	9%	4%
Cons. Staples	90%	63%	79%	70%	45%	18%	3%	8%
Average	90%	71%	68%	64%	52%	24%	9%	3%

Panel C: Audit Procedures by CAM Issues

CAM Issue	Test of Contr.	Method. Review	Specialist	Analytics	Insp. Record.	Recalc.	Inquiry	Confirm
Fair Value	25%	19%	23%	20%	11%	2%	0%	0%
Acquisition	22%	19%	21%	19%	10%	7%	3%	0%
Revenue	33%	14%	5%	13%	20%	7%	5%	1%
Goodwill Impairment	27%	18%	22%	23%	6%	5%	0%	0%
Tax Positions	26%	15%	25%	12%	12%	7%	2%	0%
Accrual	24%	18%	18%	15%	16%	7%	2%	2%
Intangibles	21%	17%	25%	21%	13%	0%	0%	0%
PPE Impairment	29%	17%	13%	20%	15%	5%	1%	0%
Loan Loss	30%	24%	16%	7%	14%	8%	0%	0%
Lease Accounting	27%	15%	17%	21%	12%	4%	4%	0%
Litigation	19%	21%	18%	12%	13%	4%	6%	7%
Amortization	29%	20%	12%	20%	14%	6%	0%	0%
Rate Regulation	30%	31%	4%	3%	23%	1%	8%	0%
Inventory	28%	22%	2%	19%	15%	11%	5%	0%
Sales Allowances	38%	10%	5%	33%	0%	14%	0%	0%
Pension	29%	16%	29%	14%	9%	4%	0%	0%
VIEs	27%	20%	27%	20%	0%	7%	0%	0%
Stock Compensation	20%	20%	20%	7%	20%	13%	0%	0%
Convertible Bonds	19%	19%	25%	25%	6%	6%	0%	0%
Discontinued Ops	0%	0%	0%	0%	0%	0%	100%	0%
R&D	67%	0%	0%	0%	0%	33%	0%	0%
Related Party	57%	0%	0%	0%	43%	0%	0%	0%
Capitalization	44%	11%	11%	11%	11%	0%	11%	0%

Source: SEC 10-K filings (www.sec.gov) and Amenity software. As of 6/24/2020.

Table 5. Summary Statistics

This table reports summary statistics for variables used in the paper. The sample consists of all US firms that had CAM disclosures in their 10-K filings from July 2019 to May 2020. Individual variable definitions are outlined in Appendix 2.

Variable	N	Mean	Std Dev	P1	P25	Median	P75	P99
CHAR_COUNT	1,969	5922.74	2981.75	2265.00	3596.00	5145.00	7490.00	13617.00
WORD_COUNT	1,969	864.31	435.85	335.00	528.00	747.00	1084.00	2011.00
VERB_COUNT	1,969	109.01	55.71	38.00	65.00	95.00	138.00	254.00
CAM_COUNT	1,969	2.01	2.14	0.00	1.00	1.00	2.00	13.00
AUDIT_COUNT	1,969	3.78	1.50	0.00	3.00	4.00	5.00	7.00
AUDIT_SUM	1,969	9.96	7.63	0.00	4.00	8.00	14.00	34.00
TONE	1,658	0.50	0.23	-0.10	0.35	0.53	0.67	0.89
ANALYST_DISP	1,459	0.01	0.02	0.00	0.00	0.00	0.01	0.10
CH_ANALYST_DISP	1,442	0.01	0.02	-0.03	0.00	0.00	0.01	0.12
N_ANALYST	1,502	5.52	5.10	1.00	2.00	4.00	7.00	24.00
BIG4	1,969	0.90	0.30	0.00	1.00	1.00	1.00	1.00
SUE	1,502	1.99	11.19	-42.00	-0.51	1.02	4.00	55.00
ACCRUAL	1,952	-0.02	0.03	-0.13	-0.03	-0.02	0.00	0.06
ASSETS	1,963	27456.23	150839.29	208.25	1794.80	4931.06	13989.74	338516.00
ANALYST	1,306	-0.25	0.75	-1.00	-1.00	-0.50	0.33	1.00
XRET_0	1,905	0.00	0.07	-0.24	-0.03	0.00	0.03	0.21
CH_STD_RET	1,905	0.01	0.03	-0.06	0.00	0.01	0.03	0.09

Source: SEC 10-K filings (www.sec.gov), Datastream prices, I/B/E/S analyst forecasts, and Amenity software. As of 6/24/2020.

Table 6. Correlation

This table provides Spearman correlation coefficients for the variables used in the analyses to the relation between the CAM measures and market participant reaction. Individual variable definitions are outlined in Appendix 2. Boldface represents a significance level of 0.10.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	*CHAR_COUNT*	1.00															
2	*WORD_COUNT*	**0.99**	1.00														
3	*VERB_COUNT*	**0.98**	**0.97**	1.00													
4	*CAM_COUNT*	**0.67**	**0.66**	**0.65**	1.00												
5	*AUDIT_COUNT*	**0.48**	**0.48**	**0.49**	**0.44**	1.00											
6	*AUDIT_SUM*	**0.60**	**0.60**	**0.61**	**0.50**	**0.83**	1.00										
7	*TONE*	0.01	0.01	0.02	-0.02	-0.01	-0.02	1.00									
8	*SUE*	0.03	0.03	0.03	0.01	**0.07**	**0.05**	**0.11**	1.00								
9	ACCRUAL	0.04	**0.04**	0.02	-0.02	**-0.06**	-0.02	**0.06**	**0.08**	1.00							
10	*ASSETS*	**0.30**	**0.30**	**0.28**	**0.17**	**0.15**	**0.19**	-0.02	-0.01	**0.24**	1.00						
11	*BIG4*	0.02	0.02	**0.04**	0.00	**0.18**	**0.14**	0.03	-0.01	**-0.10**	**0.12**	1.00					
12	*N_ANALYST*	**0.10**	**0.09**	**0.10**	**0.05**	**0.07**	**0.09**	-0.03	**-0.11**	-0.02	**0.48**	**0.13**	1.00				
13	*ANALYST_DISP*	**0.05**	**0.05**	**0.06**	**0.04**	**0.06**	**0.10**	**-0.14**	**-0.17**	**-0.15**	0.02	0.04	**0.19**	1.00			
14	*CH_ANALYST_DISP*	0.03	0.03	0.02	0.02	**0.06**	**0.08**	**-0.09**	-0.04	-0.03	0.01	0.00	**0.10**	**0.25**	1.00		
15	*ANALYST*	**-0.04**	-0.04	-0.04	**-0.07**	-0.02	-0.01	**0.25**	**0.21**	**0.07**	**0.06**	0.01	0.04	-0.03	**-0.07**	1.00	
16	*XRET_0*	**-0.06**	**-0.06**	**-0.06**	**-0.07**	**-0.06**	**-0.06**	**0.06**	**0.13**	0.02	0.02	-0.01	**-0.05**	**-0.10**	**-0.09**	**0.16**	1.00
17	*CH_STD_RET*	0.02	0.01	0.01	-0.02	**-0.04**	-0.01	0.02	**-0.07**	**0.11**	0.01	**-0.09**	**-0.04**	0.01	**0.07**	-0.02	0.00

Source: SEC 10-K filings (www.sec.gov), Datastream prices, I/B/E/S analyst forecasts, and Amenity software. As of 6/24/2020.

Table 7. Market Returns and CAM Sentiment Signals

This table reports estimation results of the OLS regression of the immediate abnormal market returns (*XRET_0*) on the CAM sentiment signals and other control variables. The dependent variable, *XRET_0*, is the buy-and-hold return on a stock minus the return on S&P 500 Index in the interval [-1, +1], where day 0 is the 10-K filing date. For regression analysis, all textual variables, *SUE*, and *ACCRUAL* are normalized between -0.5 and 0.5 by ranking them, dividing the rank by the highest rank number and subtracting 0.5. *CHAR_COUNT*, *WORD_COUNT*, *VERB_COUNT*, *AUDIT_COUNT* and *AUDIT_SUM* are ranked into quartiles, *CAM_COUNT* is ranked into terciles, and *TONE*, *SUE*, and *ACCRUAL* are ranked into deciles. Individual variable definitions are outlined in Appendix 2. T-statistics are reported in parentheses. Significance level: *** p < 0.01, ** p < 0.05, * p <0.1.

Variables	Dependent Variable = *XRET_0*					
	[1]	[2]	[3]	[4]	[5]	[6]
Intercept	-0.005	-0.006	-0.004	-0.005	0.001	-0.001
	(-0.46)	(-0.46)	(-0.46)	(-0.46)	(0.03)	(-0.07)
CHAR_COUNT	-0.017***					
	(-3.09)					
WORD_COUNT		-0.018***				
		(-3.18)				
VERB_COUNT			-0.015***			
			(-2.74)			
CAM_COUNT				-0.017***		
				(-3.33)		
AUDIT_COUNT					-0.015***	
					(-2.85)	
AUDIT_SUM						-0.015***
						(-2.76)
TONE	0.021***	0.020***	0.020***	0.020***	0.020***	0.020***
	(3.21)	(3.19)	(3.19)	(3.04)	(3.07)	(3.06)
SUE	0.028***	0.028***	0.028***	0.028***	0.029***	0.028***
	(4.38)	(4.39)	(4.38)	(4.21)	(4.46)	(4.39)
ACCRUAL	0.001	0.001	0.001	0.001	-0.001	0.001
	(0.18)	(0.20)	(0.15)	(0.10)	(-0.04)	(0.12)
Log (*ASSETS*)	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.18)	(0.22)	(0.05)	(-0.04)	(-0.19)	(-0.20)
No. Obs.	1,359	1,359	1,359	1,271	1,359	1,359
R-squared	2.98%	3.02%	2.83%	3.19%	2.87%	2.98%

Source: SEC 10-K filings (www.sec.gov), Datastream prices, I/B/E/S analyst forecasts, and Amenity software. As of 6/24/2020.

Table 8. Market Volatility and CAM Sentiment Signals

This table reports estimation results of the OLS regression of the standard deviation of market returns (*STD_RET*) on the CAM sentiment signals and other control variables. The dependent variable, *CH_STD_RET*, is the change of the standard deviation of returns from the [-10, -1] interval to the [+1, +10] interval, where day 0 is the 10-K filing date. For regression analysis, all textual variables are normalized between -0.5 and 0.5 by ranking them, dividing the rank by the highest rank number and subtracting 0.5. *CHAR_COUNT, WORD_COUNT, VERB_COUNT, AUDIT_COUNT* and *AUDIT_SUM* are ranked into quartiles, *CAM_COUNT* is ranked into terciles, and *TONE* and SUE are ranked into deciles. Individual variable definitions are outlined in Appendix 2. t-statistics are reported in parentheses. Significance level: *** p < 0.01, ** p < 0.05, * p <0.1.

Variables	Dependent Variable = *CH_STD_RET*					
	[1]	[2]	[3]	[4]	[5]	[6]
Intercept	1.682***	1.680***	1.686***	1.701***	1.735***	1.682***
	(7.26)	(7.26)	(7.28)	(7.30)	(7.45)	(7.26)
CHAR_COUNT	0.427**					
	(2.38)					
WORD_COUNT		0.486***				
		(2.71)				
VERB_COUNT			0.342*			
			(1.90)			
CAM_COUNT				0.183		
				(1.04)		
AUDIT_COUNT					0.399**	
					(2.25)	
AUDIT_SUM						0.361**
						(2.03)
TONE	0.093	0.095	0.094	0.107	0.108	0.093
	(0.45)	(0.46)	(0.45)	(0.51)	(0.52)	(0.45)
BIG4	-0.577**	-0.575**	-0.581**	-0.616**	-0.641***	-0.577**
	(-2.40)	(-2.39)	(-2.41)	(-2.51)	(-2.64)	(-2.40)
LOSS	0.958***	0.961***	0.952***	0.949***	0.948***	0.958***
	(4.20)	(4.21)	(4.17)	(4.15)	(4.15)	(4.20)
No. Obs.	1,658	1,658	1,658	1,658	1,658	1,658
R-squared	1.68%	1.78%	1.56%	1.41%	1.68%	1.68%

Source: Thomson Reuters conference call transcripts, Amenity software, Datastream prices, and I/B/E/S analyst forecasts. Source: SEC 10-K filings (www.sec.gov), Datastream prices, I/B/E/S analyst forecasts, and Amenity software. As of 6/24/2020.

Table 9. Analyst Earnings Revisions and CAM Sentiment Signals

This table reports estimation results of the OLS regression of a measure of analyst earning revisions (*ANALYST*) on the CAM sentiment signals and other control variables. The dependent variable, *ANALYST*, is the difference between the number of upward and downward earnings revisions for a firm in the 10 days after the 10-K filing, scaled by the sum of the two. For regression analysis, all textual variables are normalized between -0.5 and 0.5 by ranking them, dividing the rank by the highest rank number and subtracting 0.5. *CHAR_COUNT*, *WORD_COUNT*, *VERB_COUNT*, *AUDIT_COUNT* and *AUDIT_SUM* are ranked into quartiles, *CAM_COUNT* is ranked into terciles, and *TONE* is ranked into deciles. Individual variable definitions are outlined in Appendix 2. T-statistics are reported in parentheses. Significance level: *** p < 0.01, ** p < 0.05, * p <0.1.

Variables	Dependent Variable = *ANALYST*					
	[1]	[2]	[3]	[4]	[5]	[6]
Intercept	-0.352***	-0.349***	-0.354***	-0.372***	-0.355***	-0.353***
	(-3.50)	(-3.47)	(-3.51)	(-3.60)	(-3.50)	(-3.48)
CHAR_COUNT	-0.122**					
	(-2.06)					
WORD_COUNT		-0.119**				
		(-2.03)				
VERB_COUNT			-0.109*			
			(-1.82)			
CAM_COUNT				-0.142***		
				(-2.58)		
AUDIT_COUNT					-0.064	
					(-1.10)	
AUDIT_SUM						-0.053
						(-0.91)
TONE	0.529***	0.528***	0.529***	0.499***	0.526***	0.526***
	(7.67)	(7.65)	(7.66)	(6.99)	(7.60)	(7.60)
SUE	0.459***	0.459***	0.459***	0.526***	0.457***	0.456***
	(6.57)	(6.57)	(6.57)	(7.28)	(6.53)	(6.51)
ACCRUAL	0.147**	0.148**	0.146**	0.170**	0.139**	0.143**
	(2.15)	(2.17)	(2.14)	(2.42)	(2.03)	(2.10)
Log (N_ANALYST)	0.039	0.039	0.039	0.042	0.035	0.035
	(1.24)	(1.24)	(1.24)	(1.30)	(1.10)	(1.12)
BIG4	0.047	0.045	0.049	0.043	0.062	0.054
	(0.50)	(0.47)	(0.52)	(0.45)	(0.66)	(0.57)
No. Obs.	1,028	1,028	1,028	954	1,028	1,028
R-squared	10.84%	10.83%	10.76%	12.21%	10.57%	10.54%

Source: Thomson Reuters conference call transcripts, Amenity software, Datastream prices and I/B/E/S analyst forecasts. Source: SEC 10-K filings (www.sec.gov), Datastream prices, I/B/E/S analyst forecasts, and Amenity software. As of 6/24/2020.

Table 10. Analyst Dispersion and CAM Sentiment Signals

This table reports estimation results of the OLS regression of the contemporaneous analyst dispersion measure (*ANALYST_DISP*) on the CAM sentiment signals. The dependent variable, *ANALYST_DISP*, is the standard deviation of annual analyst earnings forecasts in the 365 days prior to the month end scaled by price three days before the earnings announcement preceding with the 10-K filing. For regression analysis, all textual variables and *ABS_SUE* are normalized between -0.5 and 0.5 by ranking them, dividing the rank by the highest rank number and subtracting 0.5. *CHAR_COUNT, WORD_COUNT, VERB_COUNT, AUDIT_COUNT* and *AUDIT_SUM* are ranked into quartiles, *CAM_COUNT* is ranked into terciles; *TONE* and *ABS_SUE* is ranked into deciles. Individual variable definitions are outlined in Appendix 2. T-statistics are reported in parentheses. Significance level: *** p < 0.01, ** p < 0.05, * p <0.1.

Variables	Dependent Variable = *ANALYST_DISP*					
	[1]	[2]	[3]	[4]	[5]	[6]
Intercept	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(-0.60)	(-0.60)	(-0.55)	(-0.59)	(-0.46)	(-0.31)
CHAR_COUNT	0.002*					
	(1.92)					
WORD_COUNT		0.002**				
		(2.18)				
VERB_COUNT			0.002**			
			(2.46)			
CAM_COUNT				0.001		
				(1.30)		
AUDIT_COUNT					0.002**	
					(2.01)	
AUDIT_SUM						0.003***
						(2.91)
TONE	-0.004***	-0.004***	-0.004***	-0.004***	-0.004***	-0.004***
	(-3.69)	(-3.69)	(-3.72)	(-3.59)	(-3.59)	(-3.59)
ABS_SUE	0.001**	0.001**	0.001**	0.001**	0.001**	0.001**
	(2.33)	(2.31)	(2.32)	(2.53)	(2.40)	(2.35)
Log (N_ANALYST)	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***
	(5.37)	(5.35)	(5.30)	(5.33)	(5.48)	(5.38)
BIG4	0.001	0.001	0.001	0.001	0.001	0.001
	(0.53)	(0.55)	(0.52)	(0.51)	(0.16)	(0.17)
LOSS	0.014***	0.014***	0.014***	0.014***	0.014***	0.014***
	(11.79)	(11.81)	(11.82)	(11.19)	(11.80)	(11.79)
No. Obs.	1,330	1,330	1,330	1,243	1,330	1,330
R-squared	11.78%	11.85%	11.94%	11.65%	12.10%	11.80%

Source: SEC 10-K filings (www.sec.gov), Datastream prices, I/B/E/S analyst forecasts, and Amenity software. As of 6/24/2020.

Table 11. Change of Analyst Dispersion and CAM Sentiment Signals

This table reports estimation results of the OLS regression of the change of analyst dispersion measure (*CH_ANALYST_DISP*) on the CAM sentiment signals. The dependent variable, *CH_ANALYST_DISP*, is the difference between *ANALYST_DISP* the month after the 10-K filing date and the mean *ANALYST_DISP* within the preceding 6 months. For regression analysis, all textual variables and *ABS_SUE* are normalized between -0.5 and 0.5 by ranking them, dividing the rank by the highest rank number and subtracting 0.5. *CHAR_COUNT*, *WORD_COUNT*, *VERB_COUNT*, *AUDIT_COUNT* and *AUDIT_SUM* are ranked into quartiles, *CAM_COUNT* is ranked into terciles; *TONE* and *ABS_SUE* is ranked into deciles. Individual variable definitions are outlined in Appendix 2. T-statistics are reported in parentheses. Significance level: *** p < 0.01, ** p < 0.05, * p <0.1.

Variables	Dependent Variable = *CH_ANALYST_DISP*					
	[1]	[2]	[3]	[4]	[5]	[6]
Intercept	0.001	0.001	0.001	0.001	0.002	0.002
	(0.47)	(0.48)	(0.51)	(0.57)	(0.65)	(0.81)
CHAR_COUNT	0.003*					
	(1.83)					
WORD_COUNT		0.003**				
		(2.40)				
VERB_COUNT			0.003**			
			(2.01)			
CAM_COUNT				0.001		
				(0.71)		
AUDIT_COUNT					0.004***	
					(2.60)	
AUDIT_SUM						0.005***
						(3.40)
TONE	-0.003*	-0.003*	-0.003*	-0.002	-0.003*	-0.003*
	(-1.71)	(-1.73)	(-1.72)	(-1.33)	(-1.61)	(-1.61)
ABS_SUE	0.000	0.000	0.000	0.000	0.000	0.000
	(0.22)	(0.19)	(0.20)	(0.31)	(0.28)	(0.23)
Log (N_ANALYST)	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***
	(3.19)	(3.15)	(3.15)	(3.09)	(3.27)	(3.16)
BIG4	0.001	(0.001	0.001	0.001	0.000	0.000
	(0.50)	(0.52)	(0.48)	(0.40)	(0.04)	(0.09)
LOSS	0.004***	(0.004**	0.004***	0.005**	0.004***	0.004**
	(2.59)	(2.62)	(2.58)	(2.49)	(2.63)	(2.56)
No. Obs.	1,319	1,319	1,319	1,232	1,319	1,319
R-squared	1.77%	1.95%	1.82%	1.47%	2.03%	2.38%

Source: SEC 10-K filings (www.sec.gov), Datastream prices, I/B/E/S analyst forecasts, and Amenity software. As of 6/24/2020.