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# Staff White Paper

## Second Econometric Analysis on the Initial Implementation of CAM Requirements

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# I. EXECUTIVE SUMMARY

The PCAOB is committed to understanding the impact of critical audit matter (CAM) requirements on audit firms, preparers, audit committees, investors, and other financial statement users.<sup>2</sup> In furtherance of that commitment, staff of the Office of Economic and Risk Analysis (OERA) has performed an analysis to assess (1) recent trends in CAM communications, and (2) initial implementation of the CAM requirements for audits of issuers that are not Large Accelerated Filers (non-LAFs).<sup>3</sup> Specifically, in this paper, we employ two commonly used research methods to evaluate the initial effects of CAM implementation on non-LAF audits:

1. A “pre-post analysis” – a descriptive analysis of trends before and after CAM implementation.
2. A “difference-in-differences analysis” – an analysis that compares outcome variables (*i.e.*, we examine investor responses in the financial markets, audit fees, audit hours, and number of days to file the audit report) for non-LAFs with those for LAFs whose auditors communicated CAMs for a second time.

In conducting these analyses, we gathered and analyzed data from several sources, including (1) information collected through the PCAOB’s inspections program and (2) third-party data from Audit Analytics, CRSP, and S&P Capital IQ. We report the results of these analyses in this white paper (the “2022 Econometric White Paper”).

This white paper is one part of OERA’s contribution to the PCAOB’s understanding of the impact of CAM requirements and should be read in conjunction with (1) a set of initial documents published in October 2020 studying the impact of the initial implementation of CAM requirements by auditors of LAFs and (2) a set of companion documents released together with this white paper that extend the 2020 analyses to encompass an additional year of CAM reporting for LAFs and the initial implementation of CAM requirements for non-LAFs. Specifically:

- In October 2020, the PCAOB published an [interim analysis report](#) (“2020 Interim Analysis Report”) that summarized early evidence on the initial implementation of CAM requirements by auditors of LAFs. To provide transparency into the technical details of the 2020 Interim Analysis Report, the staff also published two white papers: [a white paper presenting results from econometric analysis](#) (“2020 Econometric White Paper”) and [a white paper presenting results of various outreach activities](#) to describe the data and modeling techniques used (“2020 Stakeholder Outreach White Paper”).
- The PCAOB has published an [interim analysis report](#) (“2022 Interim Analysis Report”) that summarizes additional evidence on the impact of CAM requirements. To again provide additional transparency into the technical details of the 2022 Interim Analysis Report, OERA staff has published two white papers. This white paper extends the 2020 Econometric White

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<sup>2</sup> For more background on CAM requirements and related materials, see the PCAOB’s online resource titled *New Auditor’s Report* (“CAM Implementation Page”), available at <https://pcaobus.org/Standards/Implementation-PCAOB-Standards-rules/Pages/new-auditors-report.aspx>.

<sup>3</sup> The CAM requirements took effect for audits for fiscal years ending on or after June 30, 2019, for large accelerated filers (LAFs) and for audits for fiscal years ending on or after December 15, 2020 for all other issuers to which the requirements apply. LAFs are defined by the U.S. Securities and Exchange Commission (SEC) as issuers having a market float of \$700 million or more, as of the last business day of the issuer’s most recently completed second fiscal quarter.

Paper by providing additional information regarding results of econometric analysis on the impacts of CAM implementation. Another white paper, [Second Stakeholder Outreach on the Initial Implementation of CAM Requirements](#) (“2022 Stakeholder Outreach White Paper”), extends the 2020 Stakeholder Outreach White Paper by providing information regarding results of additional outreach on the impacts of CAM implementation (“2022 Outreach Analysis”).<sup>4</sup>

## Key Findings

### Trends in CAM Communications

- **Number of CAMs per Audit Report:** The average number of CAMs per audit report for LAFs has declined over time (from 1.69 in year 1 to 1.43 in year 3) and the proportion of audit reports that communicate a single CAM has increased (from 49% to 65%).<sup>5</sup> Indeed, all six Global Network Firms (GNFs)<sup>6</sup> communicate fewer CAMs per LAF audit report in year 3 than they did in year 1. Audits of non-LAFs result in fewer CAMs on average (1.18) than audits of LAFs (1.57), potentially reflecting differences in relative size and audit complexity for non-LAFs as compared to LAFs, as proxied by a number of factors. In 12.5% of all non-LAF audits (0.7% of LAF audits), the auditor determined there were no CAMs. On average, non-U.S. member firms of the six global networks communicate more CAMs than their U.S. GNF counterparts. After evaluating a number of possible explanations, the most plausible is that non-U.S. member firms and U.S. member firms may have heterogeneous approaches to applying their judgement in determining whether a matter is a CAM, perhaps because non-U.S. auditors have greater familiarity with determining Key Audit Matters (KAMs) pursuant to the standards of the International Auditing and Assurance Standards Board (IAASB).<sup>7</sup>
- **CAM Topics:** The most commonly communicated CAM topics are similar year over year. At the individual issuer level, CAM topics are the same for 79% of LAFs with the same number of CAMs in years 1 and 2. Auditors of issuers in certain industries concentrate CAM communications on specific topics and often repeat those topics year over year.

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<sup>4</sup> The staff is unable to evaluate all possible costs and benefits of the CAM requirements (*i.e.*, because some potential effects may take more time to manifest or stabilize). On occasion, results are based on limited data and may not be generalizable to the entire stakeholder population. Further discussion of economic considerations related to the CAM requirements is available in the PCAOB’s Adopting Release: [The Auditor’s Report on an Audit of Financial Statements when the Auditor Expresses an Unqualified Opinion and Related Amendments to PCAOB Standards](#), PCAOB Release No. 2017-001 (June 1, 2017) (hereafter the ‘Adopting Release’) at 61–98.

<sup>5</sup> “Year 1 LAF” includes audit reports of LAFs with fiscal year-ends on, or after, June 30, 2019, and until June 29, 2020. “Year 2 LAF” includes audit reports for LAFs with fiscal year-ends on, or after, June 30, 2020, and until June 29, 2021. “Year 3 LAF” includes audit reports for LAFs with fiscal year-ends on, or after, June 30, 2021. “Year 1 non-LAF” includes audit reports of non-LAFs with fiscal year-ends on, or after, December 15, 2020, until December 14, 2021. “Year 2 non-LAF” include audit reports of non-LAFs with fiscal year-ends on, or after, December 15, 2021.

<sup>6</sup> The information on the six global networks that contain the largest number of registered, non-U.S. firms is available on the PCAOB website at <https://pcaobus.org/Registration/Firms/Pages/GlobalNetworkFirms.aspx>.

<sup>7</sup> While the PCAOB requirements to determine CAMs and the IAASB requirements to determine KAMs are similar, there are certain potentially important differences between the standards, such as the PCAOB’s requirement that a CAM relate to an account or disclosure that is material to the issuer’s financial statements.

## Economic Impacts of CAM Communications

- **Investor Responses:** Using information from issuers' stock market returns, we evaluate the market impacts of CAM communications by auditors of non-LAFs.<sup>8</sup> Similar to the results for LAFs in the 2020 Econometric White Paper, we do not find systematic evidence that investors respond to the information content in CAMs during the first year of implementation for non-LAFs. This suggests that investors may still be learning how to find value-relevance for the information CAMs add to the total mix of information investors use in making investment decisions.<sup>9</sup> Overall, our findings are consistent with emerging academic research on the information content of, and market reaction to, CAMs.
- **Audit Fees and Audit Hours:** We use information on audit fees and audit hours to estimate costs of initial CAM implementation for individual non-LAF audits. While the 2020 Econometric White Paper did not find any significant increase in audit fees or hours for the initial year of implementation of LAF audits in 2019, after controlling for other explanatory variables this study finds a statistically significant increase in audit fees (3.0%) and audit hours (6.6%) for non-LAF audits following initial CAM implementation. These findings are largely consistent with those found in stakeholder outreach analysis, in which auditors and their clients indicated the estimated costs associated with the implementation of CAM requirements are not substantial.<sup>10</sup>
- **Time required to file audit reports:** During the rulemaking process, commenters expressed concern that auditors would take longer to issue reports because of the additional effort required in implementing and communicating CAMs.<sup>11</sup> Similar to results for LAF audits in the 2020 Econometric White Paper, we find no evidence of delays associated with the initial implementation of CAM requirements on non-LAF audits.

The remainder of this white paper is organized as follows: in Section II, we provide descriptive statistics on the CAM population and discuss our scope and methodology in Section III. In Section IV, we provide a brief synopsis of the academic literature, with an extended review in Appendix C. In Section V, we detail the collection of our data and variable construction. Finally, we review and discuss our results in Section VI.

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<sup>8</sup> As in the 2020 Econometric White Paper, we examine the absolute cumulative abnormal returns (*3-Day ACAR*)—a measure that captures the information dynamics through changes in issuer stock returns using a three-day window around their annual financial filings. Academic researchers use an event study approach to measure the impact of significant corporate events (such as the filings of 10-K or other annual statements, and changes in accounting and audit policies) on returns. Thus, an increase in *3-Day ACAR* following a disclosure event would suggest that investors find the disclosed information to be value-relevant and use it to make their investment decisions.

<sup>9</sup> While commenters raised concerns during the rulemaking process that CAMs might, “duplicate management disclosure without adding additional information, or that critical audit matters would not provide value-relevant information”, the Board said that “the reporting of CAMs should provide insights that will add to the total mix of information that could be used in investors’ capital allocation decisions.” See Adopting Release at 68.

<sup>10</sup> While an estimation can be statistically significant due to low dispersion or many observations within the sample or population of the estimate, the estimate may not be *economically* significant in actual size. Our use of the phrase ‘statistically significant’ should not be taken to mean truly large, only that the distribution of the estimate is significantly different from zero, or different compared to the distribution of another group, and that the difference is unlikely to be due to sampling error or randomness. Throughout this document, we will often qualify and quantify the economic significance of our findings outside of their statistical significance.

<sup>11</sup> See Adopting Release at 89.

## II. CAM DESCRIPTIVE STATISTICS

This section details descriptive statistics of the CAM population. Since CAMs have been implemented through May 13, 2022, we identified 11,599 audit reports containing a total of 16,429 unique CAM communications.<sup>12</sup> We sourced the CAMs from the Audit Analytics database and perform additional web-scraping<sup>13</sup> of the EDGAR<sup>14</sup> webservice to ensure we have collected all available CAMs. We also checked for duplication among CAMs communicated in multiple filings of audit reports per fiscal year-end and retain one instance of a textually unique CAM per audit report.<sup>15</sup>

### Number of CAMs per Audit Report<sup>16</sup>

**Table 1** provides counts and descriptive statistics regarding the CAM population across filer status and implementation year. We first note that the average number of CAMs per LAF audit is declining year over year. Auditors of LAFs communicated fewer CAMs per audit report in 2020 than they did in 2019, at 1.61 and 1.69, respectively. In 2021, auditors of LAFs have communicated even fewer CAMs per audit report at 1.43. This decline in CAMs per audit report is consistent across the U.S. GNFs and their international affiliates. There is also an increasing number of auditors that are communicating a single CAM in each successive year. **Figure 1** shows that 49% of audit reports for LAFs contained one CAM in year 1, 55% contained one CAM in year 2, and 65% contained one CAM in year 3.

Audit reports of non-LAFs communicated, on average, fewer CAMs than audit reports of LAFs. **Table 1** shows that audit reports of non-LAFs contain 1.23 and 1.12 CAMs per audit report in year 1 and year 2, respectively. **Figure 1** also suggests that on average, 60% and 65% of non-LAF audit reports include only one CAM in year 1 and year 2, respectively. Very few audit reports of non-LAFs contain five or more CAMs in both years. In 12.5% of all non-LAF audits (0.7% of LAF audits), the auditor determined there were no CAMs. Issuers for which auditors communicated no CAMs are mostly smaller companies, with 83% of them holding a market capitalization at or below \$300 million.

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<sup>12</sup> OERA has also identified and excluded CAM communications in 989 audit reports (1,243 CAMs) of companies that self-identified as emerging growth companies. These audits are not subject to the CAM requirements.

<sup>13</sup> Web-scraping is a process by which a computer algorithm is directed to search and extract information from webpages (*i.e.*, HTMLs) or a webservice, such as EDGAR, in large quantities. It provides an automatic, accurate, and efficient means to collect large amounts of data which would otherwise have to be hand collected by a human.

<sup>14</sup> The Electronic Data Gathering, Analysis, and Retrieval system, or more commonly known as EDGAR, is the primary system for companies and others submitting documents under the Securities Act of 1933, the Securities Exchange Act of 1934, the Trust Indenture Act of 1939, and the Investment Company Act of 1940. Further information about EDGAR can be found at <https://www.sec.gov/edgar/about>.

<sup>15</sup> We obtained from a third-party vendor all instances of CAMs communicated in audit reports. Issuers often publish audit reports in multiple filings for a specific fiscal year. This causes duplication within the vendor's record for CAMs in a specific year. Furthermore, auditors sometimes alter the language of the CAMs communicated in successive filings, so we analyze the CAMs content to identify duplicates or accept the most updated version if the alteration is substantive.

<sup>16</sup> The communication of CAMs informs investors and other financial statement users of matters arising from the audit that involved especially challenging, subjective, or complex auditor judgement. In order for there to be a CAM, an auditor must determine, in the context of the specific audit, that a matter involved especially challenging, subjective, or complex auditor judgment. See Adopting Release at 22. Because the determination of CAMs is based on the facts and circumstances of each audit, we caution against making conclusions regarding auditor compliance with the standard based on the number of CAMs communicated in firms' audit reports.

Among audit firms, certain auditors communicate more CAMs per audit report than others (see **Table 1**). Non-affiliated firms (NAFs)<sup>17</sup> issued almost half of all non-LAF audit reports, and these auditors communicate fewer CAMs per audit report compared to GNFs (see **Table 1**). This is likely because issuers audited by NAFs are typically smaller companies and may have less-complex audits compared to issuers audited by GNFs.<sup>18</sup>

Furthermore, non-U.S. member firms of the global networks communicate significantly more CAMs per audit report than their U.S. member firm counterparts. Overall, the data suggests that the U.S. and non-U.S. members may have heterogeneous approaches to their judgment in determining whether a matter is a CAM.<sup>19,20</sup> We will continue to explore this finding as more data becomes available.

## CAM Topics

The most commonly communicated CAM topics are fairly consistent year-over-year. **Figure 2** shows that the top 5 most frequently communicated CAM topics are the same for LAFs in all three years of implementation. These topics are “Business Combinations,” “Revenue from Customer Contracts,” “Goodwill,” “Allowance for Credit Losses,” and “Other Contingent Liabilities.” However, the frequency of each of these topics varies slightly across years. For example, “Business Combinations” is the most frequently communicated CAM topic in year 1 but the third and second most common topic in years 2 and 3, respectively. A “Business Combination” CAM is also one of the most frequently added and removed CAM topics for a given issuer year-over-year. This is likely because the CAM communication involves a particular acquisition or merger transaction reviewed during a specific audit. “Goodwill” and “Revenue from Customer Contracts” CAMs are more common in year 2 than year 1, which appear consistent with large goodwill impairments taken by some U.S. public companies in the second year of CAM implementation and, potentially, may have involved heightened fraud risks related to revenue recognition during the pandemic. The prevalence of CAM topics also may be driven by issuer size and differences in investment and tax planning strategies across LAFs and non-LAFs. For example, auditors of

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<sup>17</sup> Non-affiliated firms are domestic and non-U.S. accounting firms registered with the PCAOB that are not affiliated with one of the global networks.

<sup>18</sup> Issuers audited by NAF auditors have statistically significantly smaller overall total assets, revenue, and audit fees. They also have lower levels of receivables to total assets, and are less likely to report merger, restructuring, or acquisition related expenses within the last year. These differences suggest that issuers with NAF auditors are smaller companies, and their audits are less complex compared to issuers with GNF auditors, on average.

<sup>19</sup> Non-U.S. member firms may be subject to requirements under both PCAOB and IAASB standards. While both PCAOB and IAASB standards use auditor communications with the audit committee as the starting point for sources of the communications, the underlying requirements for CAMs and key audit matters (KAM) are different. The requirements for determining whether a matter is a CAM focuses on matters involving especially challenging, subjective, or complex auditor judgement related to accounts or disclosures that are material to the financial statements. The requirements for determining whether a matter is a KAM under the IAASB’s standard focuses on matters that were the most significant during the audit.

<sup>20</sup> An alternative explanation is that audits conducted by non-U.S. GNFs are more complex. To evaluate this possibility, we compared audit fees, global sales, total assets, intangibles, receivables to total assets, and the existence of merger or restructuring costs between U.S. GNF audits and non-U.S. GNF affiliate and found that U.S. GNFs audits have statistically higher audit fees; are conducted on clients with larger amounts of intangibles and receivables; and are more likely to have a merger or restructure expense within the past year. While audits of non-U.S. GNFs were, on average, for *larger* issuers (as measured by total assets and sales), these findings suggest that U.S. GNFs audit more *complex* issuers, on average. There also is the potential for differential impacts caused by disparate litigation regimes. As auditors may use CAMs as a way to reduce litigation risk, it can cause differences in the number of CAMs communicated based on the perceived litigation risk or environment the issuer and auditor reside in (see, *e.g.*, Sulcaj (2020)). Furthermore, as discussed in the adopting release, CAMs could increase litigation risks for auditors as CAMs could be used as component of litigation (see Adopting Release at 40–44).

non-LAFs tend to communicate fewer “Business Combinations” and “Uncertain Tax Position” CAMs than auditors of LAFs. This finding is consistent with recent news and academic literature on the frequency of M&A activity<sup>21</sup> and the extent of tax planning activities<sup>22</sup> at LAFs and non-LAFs.

Persistence in the communication of CAM topics varies at a given issuer, year-over-year. For example, 69% of LAFs with “Accounts and Loans Receivable” and 80% of LAFs with “Revenue from Customer Contracts” and “Inventory” CAMs in year 1 repeat these topics in year 2.<sup>23</sup> On the other hand, “Business Combinations” is repeated only 30% of the time in year 2 and “Policy Changes” is repeated only 3% of the time, making it the least likely CAM topic to be repeated.<sup>24</sup> The persistence of specific CAM topics is also associated with issuer industry. For instance, approximately half of the LAFs in the Financial sector<sup>25</sup> have an “Allowance for Credit Losses” CAM and, among these issuers, 75% have such a CAM in both year 1 and year 2. Similarly, about 60% of the LAFs in the Utilities sector have a “Regulatory Assets and Liabilities” CAM and, among these issuers, 86% have such a CAM in both year 1 and year 2.

### III. SCOPE AND ANALYTICAL FRAMEWORK

#### Outcomes of Interest

Similar to the 2020 Econometric White Paper, in this paper we perform an econometric analysis to examine the effects of CAM implementation on the audits of non-LAFs using the following outcome measures: *3-Day ACAR*, *Log Audit Fees*, *Log Audit Hour*, and *Log Days to File*. We assess the abnormal stock returns around the filing dates of annual reports containing CAM communications, which provides a measure of the information provision of CAMs communicated in audit reports. We also examine whether auditors and companies incur costs, in terms of increased audit hours and audit fees charged to issuers, related to CAMs. Finally, we assess whether implementing the new requirements changes the number of days taken to issue audit reports.

To measure these items, we construct several outcome (dependent) variables of interest. To examine investor responses to CAM communications, we use the 3-day absolute cumulative abnormal stock returns (*3-Day ACAR*) around the filing dates of annual reports in which the accompanying audit report

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<sup>21</sup> See Kevin Dowd, “Despite Pandemic Fears, A Record-Breaking ‘Frenzy’ Of M&A Activity Is Underway” *Forbes* (May 2, 2021), at <https://www.forbes.com/sites/kevindowd/2021/05/02/despite-pandemic-fears-a-record-breaking-frenzy-of-ma-activity-is-underway/?sh=64f1512b2006> (accessed October 13, 2021). Harford (1999) examines the relationship between the size of issuers and their cash value and the propensity to acquire other issuers. Rhodes-Kropf, Robinson and Viswanathan (2005), and Phillips and Zhdanov (2013) investigate merger waves and the relationship to market valuation. For additional reading, see Harford (1999), Rhodes-Kropf, Robinson and Viswanathan (2005), and Phillips and Zhdanov (2013.)

<sup>22</sup> See Mark Beasley *et al.*, “Make Tax Planning a Part of Your Company’s Risk Management Strategy” *Harvard Business Review* (Nov. 13, 2020), at <https://hbr.org/2020/11/make-tax-planning-a-part-of-your-companys-risk-management-strategy> (accessed October 13, 2021). Rego (2003) finds that larger firms have more opportunity for tax avoidance planning; Dyreng, Hanlon and Maydew (2019) show that tax planning is a prominent activity of large multinational corporations.

<sup>23</sup> These CAM topics often result from recurring transactions, which may involve especially challenging, subjective, or complex auditor judgment year-over-year.

<sup>24</sup> “Policy Changes” CAMs most often relate to a change in accounting standards.

<sup>25</sup> Large sector categorization into 11 broad groups is based on the [Global Industry Classification System \(GICS\)](#).



contains CAM communications, following the extant literature on event studies.<sup>26</sup> If investors view the information contained in CAMs as value relevant, we should expect to see an increase in the *3-Day ACARs*, from the pre- to the post-period. To construct these measures, we take each individual issuer's market return and subtract the return of an overall market benchmark which produces an abnormal return for that specific day. We then take these abnormal returns and add them up from one day prior to the filing of the audit report to one day after the filing of those reports (*i.e.*, producing a three-day window around the filing). Finally, in constructing the absolute cumulative abnormal return (*3-Day ACAR*) measure, we take the absolute value of the summed abnormal returns.

To investigate costs associated with communicating CAMs we use *Log Audit Fees*, measured as the natural log of total audit fees charged on the engagement.<sup>27</sup> To examine auditor effort associated with implementing the CAM requirements, we use *Log Audit Hours*, measured as the natural log of the total audit hours reported for the engagement from PCAOB inspections data. Lastly, to measure any delays in the time taken to file audit reports associated with implementation of the CAM requirements, we construct an estimate of the number of days to issue the audit report (*Log Days to File*) computed as the natural log of the difference in days between the filing date of the audit report and the issuer's fiscal year-end.

## Pre-Post Analysis and Model Specification

To perform the analysis, we use two methods commonly used in research. First, in our pre-post analysis, we provide a descriptive analysis of trends before and after the implementation of CAM requirements for non-LAFs using the following model:

$$Dependent\ Var_{.it} = \alpha + \beta_1 Post_t + \gamma Control\ Variables_{it} + z Fixed\ Effects_{it} + \varepsilon_{it}$$

$Post_t$  is an indicator variable equal to one if fiscal year-end of the issuer's financial statements is on or after December 15, 2020, and zero otherwise; and  $\beta_1$  is the coefficient of interest, denoting the change in the dependent variable after the initial CAM implementation for non-LAFs.<sup>28</sup> We also include additional independent variables and fixed effects commonly used in academic literature to control for other issuer and audit characteristics in the regression.  $Control\ Variables_{it}$  represents these independent variables which may explain the variations of the dependent variable. For example, *Log Total Assets*, the natural log of an issuer's dollar total assets measured in millions, is a standard explanatory variable for variations in audit fees.

<sup>26</sup> ACAR is a commonly employed event study measure used to ascertain investor responses to corporate events, such as the filing of a Form 10-K, annual report, or earnings announcement. A positive change, or increase, in ACAR indicates that investors view the information contained in the event as value-relevant and that the release of that information improved the informational efficiency of the market. In this study, an increase in ACAR would indicate that investors view CAMs as improving market efficiency by increasing the value-relevant information in audit reports. See Kothari and Warner (2006) for a review of event studies and abnormal returns; Burke *et al.* (2022) for the construction of ACARs; and Flannery, Hirtle, and Kovner (2017) for an interpretation of absolute abnormal returns.

<sup>27</sup> The natural logarithm (ln) is a commonly used data manipulation which helps to transform and scale data that is non-normal into a normal shape. In so doing it reduces the skew of data that is typically large, such as total assets, revenues, or market capitalizations, that range from millions to billions. It has the added benefit of converting econometric results into easily interpretable percentage changes.

<sup>28</sup> We include audit reports where the auditors determined that there were no CAMs to communicate. These filers are predominantly found among the smallest of issuers, as measured by market capitalization.

## Difference-in-Differences

Second, we use a difference-in-differences analysis to examine the potential effects of CAM implementation. Difference-in-differences (DiD) analysis is a standard methodology in causal inference used to establish a ‘this-causes-that’ relationship.<sup>29</sup> In this analysis, we take advantage of the staggered implementation to attempt to isolate effects associated with implementing CAM requirements from other confounding factors (*e.g.*, changes in the accounting standards and macroeconomic environment). To do so, we compare outcomes for non-LAFs for which the CAM requirements newly apply (or the *treatment* group) with issuers that were already required to comply with the requirements for fiscal year-ends on or after June 30, 2019 (or the *control* group). We rely on the estimated results from the following model specification:

$$\begin{aligned} \text{Dependent Var.}_{it} &= \alpha + \beta_1 \text{Post}_t + \beta_2 \text{non-LAF}_i + \beta_3 \text{Post}_t \times \text{non-LAF}_i + \gamma \text{Control Variables}_{it} \\ &+ \text{zFixed Effects}_{it} + \varepsilon_{it} \end{aligned}$$

Similar to pre-post analysis,  $\text{Post}_t$  is an indicator variable that equals one if the issuer’s fiscal year-end is on or after December 15, 2020, and zero otherwise.  $\text{non-LAF}_i$  is an indicator variable that equals one for non-LAFs and zero for LAFs.<sup>30</sup>  $\beta_3$  is the coefficient of interest and represents the change in the dependent variable for the treatment group in the post-implementation period and — therefore — the impact of initial CAM implementation on audits of non-LAFs.

## IV. RELATED ACADEMIC RESEARCH

Several academics have begun to examine the initial implementation of CAM requirements using archival data. Overall, the literature to date fails to find any significant causal relationship between CAMs and market reaction. Additionally, most of the literature does not find that auditors’ implementation of CAM requirements increases audit fees. However, some researchers do find impacts of CAM communications on management behaviors such as improvements in internal control over financial reporting (Dee, Luo, and Zhang (2021)) and increased attention given to the matters underlying the CAMs (Drake, Goldman, Lusch, and Schmidt (2021)).

Our econometric analysis complements the extant literature by analyzing private data collected through the PCAOB’s inspection program, including data on audit hours. Furthermore, we provide the first

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<sup>29</sup> DiD is the economic equivalent of a science experiment. For example, imagine a medical researcher attempting to determine the efficacy of a new blood-pressure medication. The researcher might create two groups of lab mice: a *treatment* group and a *control*. The control group should not change over time, while the treatment may change after the medication is administered. Therefore, the researcher uses the control group’s blood pressure as a baseline to compare changes in the blood pressure of the treatment group before, and after, the medication is given to the treated mice. This comparison helps the researcher determine whether the medication significantly decreased (or increased) the treatment mice’s blood pressure compared to the control group, which had no medication at all. In a mathematical sense, DiD mimics this experiment design by examining the quantifiable changes of a treatment group compared to the control group after the implementation event.

<sup>30</sup> There exists a modicum of instances in which an issuer changes their large accelerated filer status across the sample. If the issuer was previously a non-LAF in the pre-period and became an LAF in the post-period, they are treated as a non-LAF for the entire sample as the post-period is still the first time the issuer audit was subject to the CAM requirements. Dropping these observations from the analysis does not significantly alter the ordinary least square estimation results.

evidence on the impact of CAM implementation on non-LAF audits. A larger exposition of relevant academic literature on CAMs is reported in Appendix C.

## V. DATA

### Sample Collection

To perform the pre-post and difference-in-differences analyses, we use the effective date for CAM requirements for non-LAFs to construct the pre- and post-periods. Audits of issuers with fiscal year-ends between June 30, 2019, and December 14, 2020, form our pre-period, and those with fiscal year-ends on or after December 15, 2020, form the post-period. Our sample excludes issuers classified as emerging growth companies (EGCs) which are not subject to the CAM requirements. We collect audit, issuer financial, and stock market data for the control and treatment groups for both pre and post periods. Lastly, we rely on an additional year before the pre-period to compute changes and certain scaled metrics that rely on a prior year of information.<sup>31</sup>

**Table 2** contains details on the sample selection and reports the final sample for each outcome of interest used in the analyses. The final sample for each analysis includes only issuers with complete data on outcome and explanatory control variables in all years of the estimation (*i.e.*, in both pre and post periods), and we employ strict balancing to ensure the same issuer exists as a treatment, or a control, throughout the panel.

### Independent Variable Construction

We described the construction of the outcome variables in Section III. In selecting our control variables for the regression, we follow the well-established literature (see, *e.g.*, DeFond and Zhang (2014), Gutierrez, Minutti-Meza, Tatum, and Vulcheva (2018), Reid, Carcello, Neal, and Francis (2019), Drake *et al.* (2021), and Burke, Hoitash, Hoitash, and Xiao (2022)).

At the issuer level, we control for variations in issuer size and financial characteristics using *Log Total Assets*, measured as the natural log of an issuer's total assets in millions of US dollars. We control for deviations in market valuation for issuers using *Book-to-Market Ratio*, which is the ratio of an issuer's book equity to their market value of equity. To control for cash flow and operational efficiency of an issuer, we use *Cash Flow to Total Assets*, which is computed as the annual cash flow from operating activities reported in the issuer's annual report scaled by the relevant first-quarter total assets. To control for long-term debt levels, we include an estimate of the issuer's debt-to-total assets as *Leverage Ratio* and adjust for issuer-specific deviations in levels of accrued short-term assets relative to short-term liabilities by incorporating the issuer's *Quick Ratio*, which is the issuer's current assets, less inventories, divided by their total current liabilities. Since the growth of an issuer is a major determinant of the complexity of an audit, we include an estimate of the issuer's *Sales Growth*, computed as the year-over-year percentage change of the issuer's annually reported revenue.

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<sup>31</sup> Data for the analysis runs from June 30, 2019, to December 15, 2021, for audit and financial characteristics, and from June 30, 2019, to March 15, 2022, for market returns.

There has been extensive work exploring which specific variables cause issuer-level deviations in audit fees and the time to file audit reports.<sup>32</sup> To account for issuer-specific financial variations which increase the complexity of the audit process, we include estimates of *Intangible Assets to Total Assets*, *Receivables to Total Assets*, and *Inventory to Total Assets*. *Intangibles Assets to Total Assets* is computed as the amount of intangible assets divided by the issuer's total assets. *Receivables to Total Assets* is computed as receivables divided by total assets, and *Inventory to Total Assets* is computed as the issuer's inventory divided by total assets.

For use in the market reaction analysis, we construct estimates of the size of the issuer as the log of the issuer's total market capitalization measured in millions of dollars (*Log Market Cap.*). To control for the profitability of the issuer which would likely impact market returns, we use *Return on Assets*, computed as the net income of the issuer each year divided by their total assets in the prior year. Because cash flows are a major component of issuer market pricing and the volatility of those cash flows significantly impacts issuer returns, we include an estimate of the issuer's *Cash Flow Volatility*. We construct *Cash Flow Volatility* by taking the standard deviation of the issuer's annual cash flow from operations over the past three years.

As issuer growth is a core component of asset prices and the volatility of that growth an indicator of issuer-specific risk, we include an estimate of *Sales Growth Volatility*, computed as the standard deviation of the issuer's annual sales over the past three years. Finally, to adjust for risks specific to the issuer and not the overall market, we include the issuer's *Stock Beta*, which is a well-established measure of the issuer's risk relative to the risk of the overall stock market.<sup>33</sup>

As mergers, acquisitions, and restructuring events often are the cause of increased audit fees and significant market reactions (Zhang 2018), we include an indicator variable, *Merger Indicator*, that is one (1) if an issuer had a merger within the last year, and zero (0) otherwise. For restructuring expenses unrelated to mergers, we include an indicator variable (*Restructuring Indicator*) that is one (1) if an issuer had non-merger (or acquisition) related restructuring expenses in that year, and zero (0) otherwise. Similarly, issuers will likely have differentials in the level of hours engaged and fees charged if they have had: a loss in the current year (*Loss Indicator*), an adverse opinion on the issuer's internal controls over financial reporting because of a material weakness (*No Material Weakness* and *Material Weakness Exists*), a going-concern explanatory paragraph (*Going Concern Indicator*) or are a new client for their auditor (*New Client Indicator*). Each is represented with an indicator variable in our model: one (1) if the condition exists for that issuer, and zero (0) otherwise.

Issuers that have restated previously issued financial statements (often referred to as "Big R" restatements),<sup>34</sup> are likely to be subject to increased auditor effort and additional scrutiny by investors

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<sup>32</sup> See DeFond and Zhang (2014) for a review of research related to auditing outcomes.

<sup>33</sup> Issuer Stock Beta are obtained from S&P Capital IQ.

<sup>34</sup> A "Big R" restatement, also known as a reissuance restatement, is a declaration by the issuer that the previously released financial statements contained a materially misstated error or omission. Upon determination that such an error exists, issuers are required to restate their previously filed financial statements and reissue the restated financials within a Form 8-K Item 4.02 "Non-Reliance on Previously Issued Financial Statements or a Related Audit Report of Completed Interim Review." "Big R" restatements are distinct from "Little R" restatements, where corrections are made to a current period for mistakes in a prior period, but the prior financial statements are not withdrawn and restated. We do not attempt to measure "Little R" restatements.

and regulators. As a result, we include an indicator, *BigR Restatement Ann. Indicator*, that is equal to one (1) if an issuer announced a “Big R” restatement in the past two years at time  $t$ .<sup>35</sup>

To account for off-year-end filers and multi-national corporations, which are subject to regulations and accounting standards different than those for issuers operating solely in the United States, we include indicator variables *December Year-End Indicator* and *Multi-National Corp. Indicator*. *December Year-End Indicator* is one (1) if an issuer ends its fiscal year in December and zero (0) otherwise, and *Multi-National Corp. Indicator* is one (1) if the issuer reports non-zero foreign income taxes in that year and zero (0) otherwise.

Finally, to adjust for variations across industries, we employ fixed effects by including the Fama-French industry classifications.<sup>36</sup> Similarly, to control for auditor variations, we use fixed effects for GNFs to account for variations among firms that are members of a global network.<sup>37</sup> A full set of variable definitions and descriptions can be found in Appendix A.

## Outcome and Control Variable Summary Statistics

We report outcome and control variable sample statistics in **Table 3** for variables relevant to the market reaction analysis and in **Table 5** for analyses on audit fees, audit hours, and days to file. These summary statistics are consistent with the metrics reported in the 2020 Econometric White Paper. We calculate the average *3-Day ACAR* by the number of CAMs communicated in the audit report (**Table 3, Panel A**). These averages show that there is no apparent relationship between the number of CAMs communicated and abnormal returns. For audit fees, audit hours, and days to file, we also include the average of each outcome variable by the number of CAMs communicated in the audit report (**Table 5, Panels A, B, and C**). Results suggest that the number of CAMs communicated is related to the overall *complexity* of the audit. For example, audit reports where the auditors determined that there was not a CAM were significantly less costly than those containing a single CAM. Audits which communicated 4 or more CAMs were significantly more expensive. The same relationship exists for audit hours and days to file, suggesting a distinct correlation between the number of CAMs communicated and the complexity of the underlying audit for a given issuer.

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<sup>35</sup> Our results are robust to whether the window of restatements was two years prior to the fiscal year end date, or two years prior to the opinion date but note that there are a limited number of BigR restatements observed within the sample. The results presented are for the two-year period prior to the issuer’s fiscal year end date.

<sup>36</sup> Fama and French (1997) proposed industry classifications that are routinely used in economic research on financial markets. Definitions and files for the classifications are maintained on Kenn French’s website at <http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/index.html>

<sup>37</sup> Indicator variables (a.k.a. dummy variables) and fixed-effect factor variables allow the model to control for characteristics that may otherwise bias the results of the main variable of interest. Each allows the model to mitigate the impact of that control; for example, in the case of multi-national corporations, the indicator variable reduces the differential in the outcome variable for multi-national corporations and non-multi-national corporations which could otherwise explain our effect.

## VI. RESULTS AND DISCUSSION

### Investor Responses

To investigate the market impact of CAM communications on non-LAFs, we regress *3-Day ACARs* on capital market control variables and issuer financial characteristic variables. The use of absolute cumulative abnormal returns allows us to determine the magnitude of the market impact following CAM communications by auditors of non-LAFs. Our 2020 Econometric White Paper found no systematic evidence that investors respond to the information content in CAMs in the first year of implementation for LAFs. Using the same approach in the current study, we also do not find systematic evidence that investors respond to the information content in CAMs in the first year of implementation for non-LAFs.

After controlling for factors that affect stock returns, our pre-post analysis results, reported in columns (1) and (2) of **Table 4**, suggest statistically significant declines in *3-day ACARs* in the post period for both treatment and control groups (3.0% and 0.8%, respectively). The estimate of our DiD model in column (4) documents a statistically significant decline in *3-day ACARs* (2.2%) following the CAM implementation on non-LAF audits. However, as in the 2020 Econometric White Paper, these findings are likely influenced by the volatile market disruptions of the COVID-19 pandemic. After omitting issuers that filed their annual reports during the volatile market experienced in the early COVID-19 period, results in columns (5) and (6) do not indicate a statistically significant market reaction to CAM implementation on non-LAF audits.<sup>38</sup> Overall, these results indicate that investors may not fully incorporate the information contained in CAMs.<sup>39</sup> While CAM communications reduce information asymmetry between investors and auditors/management,<sup>40</sup> investors may still be learning to find value-relevance for the information CAMs add to the total mix of information investors use in making investment decisions. These findings could also indicate that the information contained in CAMs is helpful but not in a material way that impacts the market value of assets. There may also be differential, and offsetting, impacts we cannot observe (such as retail and institutional investor differences), in the interpretation of the information contained in CAMs.<sup>41</sup> Consistent with our findings, the

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<sup>38</sup> We omit issuers with filing dates between February 21, 2020, and April 7, 2020 (*i.e.*, a drop of observations from 7,167 to 2,704 across the pre-post period and for both control and treatment groups). After omitting these issuers from our sample, we find no market impact resulting from the implementation of CAM requirements. The dates of the pandemic collapse were selected from Forbes review of the market collapse. See Liz Frazer, “The Coronavirus Crash Of 2020, And The Investing Lesson It Taught Us” *Forbes* (Feb. 11, 2021) at <https://www.forbes.com/sites/lizfrazierpeck/2021/02/11/the-coronavirus-crash-of-2020-and-the-investing-lesson-it-taught-us/?sh=608bd5c346cf> (accessed May 16, 2022). Our results are robust to alternative date specifications, including beginning on February 15, and extended windows out to June 30, 2020.

<sup>39</sup> To mitigate the potential bias resulting from the differences in explanatory variables between the treatment and control groups, we also estimate our model by using an entropy-balanced samples (see Appendix D for a further discussion). The entropy-balanced DiD estimate in column (3) is consistent with the unweighted DiD estimate in column (4).

<sup>40</sup> See Adopting Release at 66.

<sup>41</sup> In untabulated results, we have attempted to analyze whether alternative specifications might explain the lack of market reaction response. For example, we have performed analysis on the length of the CAMs, the number of CAMs, and particular topics of the CAMs and their relationship to market reactions. We have not found consistent significant evidence to suggest that any of these has a particular market impact, either. One reason for this is that these metrics may function as observables of the latent concept of audit complexity, rather than informativeness of CAMs.

contemporaneous academic literature also does not document any significant relationship between CAM communications and market reactions in LAFs (*e.g.*, Burke *et al.* 2022).<sup>42</sup>

While we conclude that CAMs have not had a significant market impact after controlling for the confounding impact of the COVID-19 pandemic, we acknowledge the challenge of empirically assessing the investor responses of CAM communications and refer the readers to other qualitative evidence we collected from the 2022 Outreach Analysis. In that analysis, some audit committee chairs and financial statement preparers indicated in interviews that they considered CAMs having an overall positive impact on the ability of investors to understand, and better analyze, financial disclosures. Often respondents to the investors survey also commented that they generally found CAMs helpful to identify critical reporting risks and to provide a basis for questions that they would ask company management. Other investors also mentioned that CAMs provide insights and clarity about the audit process. There is also evidence that retail investors are reviewing CAMs and considering them in making their investment decisions.<sup>43</sup> Finally, some preparers and audit committee chairs noted that they reviewed, or altered, their disclosures in-light of the CAMs proposed by their auditors.<sup>44</sup>

## Audit Fees and Audit Hours

We use information on audit fees and audit hours to estimate the costs of initial CAM implementation for individual non-LAF audits. Other costs incurred by audit firms and issuers to implement the new requirements are discussed in the 2022 Outreach Analysis.

### Audit Fees

To examine the impact of CAM implementation on non-LAF audit fees, we regress *Log Audit Fees* on issuer financial characteristics and audit metrics following DeFond and Zhang (2014). Our 2020 Econometric White Paper found no evidence of increased audit fees for LAFs following the initial implementation of CAM requirements. The results in this study for non-LAFs, reported in **Table 6 Panel A**, show a moderate increase in audit fees following implementation of CAM requirements on audits of non-LAFs.

Specifically, after controlling for factors that typically affect audit fees, our pre-post regression results reported in column (1) indicate a statistically insignificant change in audit fees for non-LAFs in the post period. In column (3), the results suggest that audit fees for LAFs declined significantly in the post-period by 4.3%. The pre-post analysis indicates that non-LAFs experienced a relative increase in audit fees compared to the LAFs over the same period. Indeed, the estimate of our DiD model in column (4) shows a significant 3.0% increase in audit fees for non-LAFs following the initial implementation of the CAM

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<sup>42</sup> With respect to KAMs, Rousseau and Zehms (2020) finds that the unique nature of the communication could be associated with increased market reaction. We performed untabulated analysis of specific CAM topics to evaluate their investor market reaction, and there appears to be no significant difference in market reaction between the particular topics communicated.

<sup>43</sup> We have found off-hand evidence that retail investors publicly discuss the existence of specific CAM topics within an audit report in popular social media websites, such as [Twitter](#). These discussions imply that investors are reading CAMs and attempting to incorporate information contained in the CAMs into their investment decisions.

<sup>44</sup> Details on the specific survey outcomes can be found in the 2022 Stakeholder Outreach Whitepaper.

requirements.<sup>45</sup> This estimated increase translates to about a \$20,000 increase in audit fees for an average non-LAF in the sample.<sup>46</sup>

Compared to the results for LAFs in the 2020 Econometric White Paper, the increase in audit fees for non-LAFs could be due to the baseline amount of audit hours required for CAM implementation.<sup>47</sup> Smaller issuers typically have less complicated audits and, therefore, lower overall total audit hours and resulting fees (see **Table 5, Panels A and B**). An increase of fees resulting from the communication of CAMs, even of a nominal amount, would proportionally affect smaller issuers more as they have a lower base of audit fees. Furthermore, results from interviews with financial statement preparers in the 2022 Outreach Analysis suggests that larger issuers are likely to perceive any increase in fees resulting from the communication of CAMs as being embedded in the fee agreement, whereas smaller issuers were more likely to specifically discuss an increase in audit fees related to CAM implementation.<sup>48</sup>

## Audit Hours

To examine changes in auditor effort following CAM implementation on non-LAF audits, we regress *Log Audit Hours* on audit metrics and issuer financial characteristics control variables. While the 2020 Econometric White Paper found no increase in audit hours associated with initial CAM implementation on audits of LAFs, we document a moderate and statistically significant increase in audit hours resulting from implementation of the CAM requirements on non-LAF audits.

We report the results of our analysis of audit hours in **Table 6 Panel B**. The regression results of a pre-post analysis reported in column (1) indicate a statistically insignificant change in audit hours for non-

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<sup>45</sup> The entropy-balanced DiD estimate in column (3) indicates a positive, but insignificant, increase in audit fees of 1.3%. We also note that further analysis finds that specific variables are correlated with the increased audit fees for the non-LAFs. The existence of a loss in the prior period for an issuer (*i.e.*, *Loss Indicator*) is a primary driver of the change in audit fees during our sample. It is worth noting that the frequency of the *Loss Indicator* increased substantially because of the concurrent COVID pandemic. We believe that these covariates are partially responsible for driving the magnitude of our result.

<sup>46</sup> The average audit fees for non-LAFs in the pre-period was \$669,568 (see Table 5 Panel A). A 3% increase in audit fees corresponds to  $\$669,568 \times 3\% = \$20,087$ . This figure is consistent with anecdotal evidence reported in audit committee chair and preparer interviews from the 2022 Outreach Analysis. One interviewed non-LAF preparer, when asked whether the issuer experienced a change in audit fees because of their auditor's implementation of CAM requirements, reported: "\$25,000 each [CAM]. \$50k total. Now we pushed and negotiated, full disclosure here, they tried to charge us for the one that was kind of required, we argued and fought back, got our audit committee chair involved, they agreed to waive the routine one that was going to be there, really only paid extra for the acquisition one."

<sup>47</sup> Engagement partner survey results from the 2022 Outreach Analysis suggest that engagement teams incurred a baseline amount of audit hours for CAM communications irrespective of issuer size. See Table 3 in "Second Stakeholder Outreach on the Initial Implementation of CAM Requirements".

<sup>48</sup> For example, within the stakeholder outreach interviews, when asked about the main costs associated with CAM implementation, one LAF preparer stated: "There haven't been. I'm sure [they] billed us. It's one of those things that if we try to find it in a \$4 million bill, it's hard to find out what is from CAMs. But I don't think it was a lot. There were no specific costs allocated to this, [auditor] saying 'we have to bill you for 100 extra hours because of CAMs.' It's probably somewhere in the audit fees but haven't been able to find where. I think it's just how they do business, the cost to them is probably pretty small. From our perspective, the cost of implementation was very small. Maybe just the first year. But there were no surprises about the CAMs." A non-LAF preparer answered the same question with, "I would say, probably number one would have been any additional fees we paid to auditors for what they needed to do over and above historically what they needed to do. Internally, not a significant amount of additional cost. We had additional hours where we discussed actual disclosures, but I would say in the context of the whole audit, not an overwhelming amount of additional effort from internal perspective, external auditor fees, reviewing it would have been incremental cost. [INTERVIEWER: explicit billing related to CAMs?] I think so. In the first year, but not ongoing."



LAFs in the post period. In column (3), the results suggest that audit hours for LAFs declined significantly in the post-period by 4.1%. Similar to our results in the audit fees analysis, the pre-post analysis indicates that non-LAFs experienced a relative increase in audit hours compared to LAFs over the same period. The estimate of our DiD model in column (4) shows a 6.6% increase in audit hours for non-LAFs following initial implementation of the CAM requirements<sup>49</sup> — equivalent to around 430 hours, on average, for audit engagements of all auditors as a group and approximately 135 hours, on average, for clients of NAFs.<sup>50</sup>

Input from the 2022 Outreach Analysis suggest that CAM implementation has generally not caused audit firms or their clients to suffer economic hardships. Results from the engagement partner survey suggest that the average proportion of total audit hours spent on CAM implementation is only 1.6% among non-LAF audits. Moreover, several financial statement preparers and audit committee chairs interviewed in stakeholder outreach indicated the actual cost of CAM implementations was minimal.<sup>51</sup>

## Time to File Audit Report

To investigate whether the implementation of CAM requirements on audits of non-LAFs caused a delay in filing of the audit report, we regress the *Log Days to File* on audit metrics and issuer financial characteristics.<sup>52</sup> Similar to findings in the 2020 Econometric White Paper, we do not find any evidence of delays associated with initial CAM implementation on non-LAF audits.

We report the results for our analysis of time to file in **Table 6 Panel C**. In columns (1) and (2) we report the results of the pre-post analysis. For both non-LAF and LAF groups, we find a statistically significant decline in days to file in the post period (3.3% decline for non-LAFs and 1.3% decline for LAFs). Comparing the pre-post results of non-LAFs in column (1) to LAFs in column (2), there is a relative decline in the days to file for non-LAFs when the audits of their financial statements first became subject to the CAM requirements. The estimate of our DiD model in column (4) further indicates a 1.6% decline in days to file for non-LAFs following the initial implementation of CAM requirements. This suggests a

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<sup>49</sup> The entropy-balanced DiD estimate in column (3) indicates a statistically insignificant decrease in audit hours of 2.0%.

<sup>50</sup> The average total audit hours for non-LAFs in the pre-period was 6,476 hours (see Table 5, Panel B). A 6.6% increase in audit hours corresponds to  $6,476 \text{ hours} \times 6.6\% = 427 \text{ hours}$ . However, the distribution of non-LAFs audit hours is highly skewed due to a few larger audits. Since the median audit hours of non-LAF audits is 3,471 hours, there was an increase of  $3,471 \times 6.6\% = 229 \text{ hours}$ . Furthermore, audits conducted by NAFs have, on average, lower audit hours than audits conducted by GNFs. As a result, non-LAF audits among NAFs experienced a 135-hour increase, on average ( $2,039 \text{ hours} \times 6.6\% = 135 \text{ hours}$ ), and a 93-hour increase at the median ( $1,407 \text{ hours} \times 6.6\% = 93 \text{ hours}$ ).

<sup>51</sup> One non-LAF preparer interviewed, when asked about costs associated with implementing CAM requirements, responded, “None, or minimal. I don’t think there were any that we incurred. It really isn’t a cost burden on us.” Another non-LAF preparer interviewed answered the same question with, “A little bit of having legal review, but pretty nominal. Time you could have used doing something else. It wasn’t a cash cost. Wasn’t a lot from our standpoint.” An LAF preparer interviewed, answered that same question with “I would just say, it’s going to be reflected in the audit fee. The updated audit fee. Internally wouldn’t be an incremental cost other than the few hours of conversations we may have had with auditors to review their documentation.” An LAF audit committee chair interviewed, when asked about costs associated with implementing CAM requirements other than increased audit fees, replied “My impression from discussions on this topic with [redacted] is that it wasn’t [too] material in terms of time added to accounting staff’s time to prepare the financial statements. You look at cost of finance or accounting staff mostly a fixed cost, they work a few hours of overtime, not much incremental cost to the company.”

<sup>52</sup> During the rulemaking stage, commenters raised that one of the potential unintended consequences of the CAM implementation was the expectation that the time required to file the audit report would be increased due to an increase in the required audit effort to determine, communicate, and document CAMs. See Adopting Release at 89.

decline of approximately 1.4 days which is not an economically meaningful change from the pre-implementation period.

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## APPENDIX A. DATA DEFINITIONS

The table below defines the dependent and independent variables used in the econometric analysis. Audit fees and days to file are obtained from publicly available information from Audit Analytics, audit hours are from a PCAOB proprietary database, and issuers' stock returns and market returns are from CRSP, and issuer financial characteristics are from S&P Capital IQ. The independent variables are from publicly available information from CRSP, S&P Capital IQ, and Audit Analytics.

Variable	Definition
<u>Dependent Variables</u>	
<i>Log Audit Fees</i>	The natural logarithm of the audit fees.
<i>Log Audit Hours</i>	The natural logarithm of the total number of global audit hours reported by the issuer's audit firm to the PCAOB.
<i>Log Days to File</i>	The number of calendar days between the period end date and the filing date.
<i>3-Day ACAR</i>	The absolute value <sup>53</sup> of cumulative abnormal returns for a 3-day event window (includes one day before and after the filing date).  Cumulative abnormal returns are calculated as the sum of the daily abnormal returns (obtained by subtracting the CRSP total market index return from the issuer's stock return) during the event window.
<u>Independent Variables</u>	
<i>Post</i>	An indicator variable equal to one if the fiscal year end date of an issuer audit is on or after December 15, 2020.
<i>non-LAF</i>	An indicator variable equal to one if the issuer is a first-time communicator of CAMs.
<u>Issuer Characteristics</u>	
<i>Log Market Cap.</i>	The natural logarithm of the issuer's market capitalization as of the fiscal year end date.
<i>Log Total Assets</i>	The natural logarithm of total assets in year t.
<i>Loss Indicator</i>	An indicator variable equal to one if the net income before extraordinary items is negative in year t.

<sup>53</sup> An absolute value function of x, denoted as  $\text{abs}(x)$ , calculates the distance of x from zero. For example,  $\text{abs}(-0.02)$  is 0.02,  $\text{abs}(-0.01)$  is 0.01,  $\text{abs}(0.01)$  is 0.01.

Variable	Definition
<i>Book-to-Market Ratio</i>	The book value of equity divided by the market capitalization as of the fiscal year end date.
<i>Merger Indicator</i>	An indicator variable equal to one if the acquisitions that contribute to sales is nonzero in year t.
<i>Restructuring Indicator</i>	An indicator variable equal to one if the non-merger related restructuring costs is nonzero in year t.
<i>Cash Flow to Total Assets</i>	The cash flow from operations divided by beginning period total assets in year t.
<i>Cash Flow Volatility</i>	Standard deviation of the cash flow from operations divided by beginning period assets from year t-2 through t.
<i>Sales Growth</i>	One year growth rate of sales revenue in year t.
<i>Sales Growth Volatility</i>	Standard deviation of one year growth rate of sales revenue from year t-2 through t.
<i>Leverage Ratio</i>	Total debt divided by total assets in year t.
<i>Quick Ratio</i>	Current assets minus inventories divided by current liabilities.
<i>BigR Restatement. Ann. Indicator</i>	An indicator variable equal to one if a Big-R restatement affected at least one of the financial statements over the past two years.
<i>Multi-National Corp. Indicator</i>	An indicator variable equal to one if the foreign income taxes are non-zero in year t.
<i>Return on Assets</i>	Net income before extraordinary items divided by total assets in year t.
<i>Stock Beta</i>	Slope coefficient obtained by regressing the company daily return on daily returns of the S&P 500 index over a 220-day period (-250, -21), relative to the filing date.
<i>Intangible Assets to Total Assets</i>	One minus the ratio of Gross Property, Plant & Equipment and current assets to Total Assets.
<i>Inventory to Total Assets</i>	Total inventory scaled by total assets in year t.
<i>Receivables to Total Assets</i>	Total receivables scaled by total assets in year t.
<i>Issuer Industry</i>	Industry categories using the Fama-French 12 and 48 industry classifications.

Variable	Definition
<u>Audit Characteristics</u>	
<i>December Year-End Indicator</i>	An indicator variable equal to one if the issuer audit has a December fiscal year-end date in year t.
<i>New Client Indicator</i>	An indicator variable equal to one if the current issuer audit is a new client engagement with the auditor.
<i>No Material Weakness</i>	An indicator variable that identifies if the auditor was required to perform an audit of internal control over financial reporting (ICFR), but that no material weakness was found to exist. If the issuer is exempt from having an ICFR audit, it is equal to 0.
<i>Material Weakness Exists</i>	An indicator variable that identifies if the auditor was required to perform an audit of ICFR, and that material weakness was found to exist. If the issuer is exempt from having an ICFR audit, it is equal to 0.
<i>Going Concern Indicator</i>	An indicator variable equal to 1 if a going concern opinion is issued in year t.
<i>Audit Firm Indicator</i>	An indicator for each audit firm based on their PCAOB registration ID.

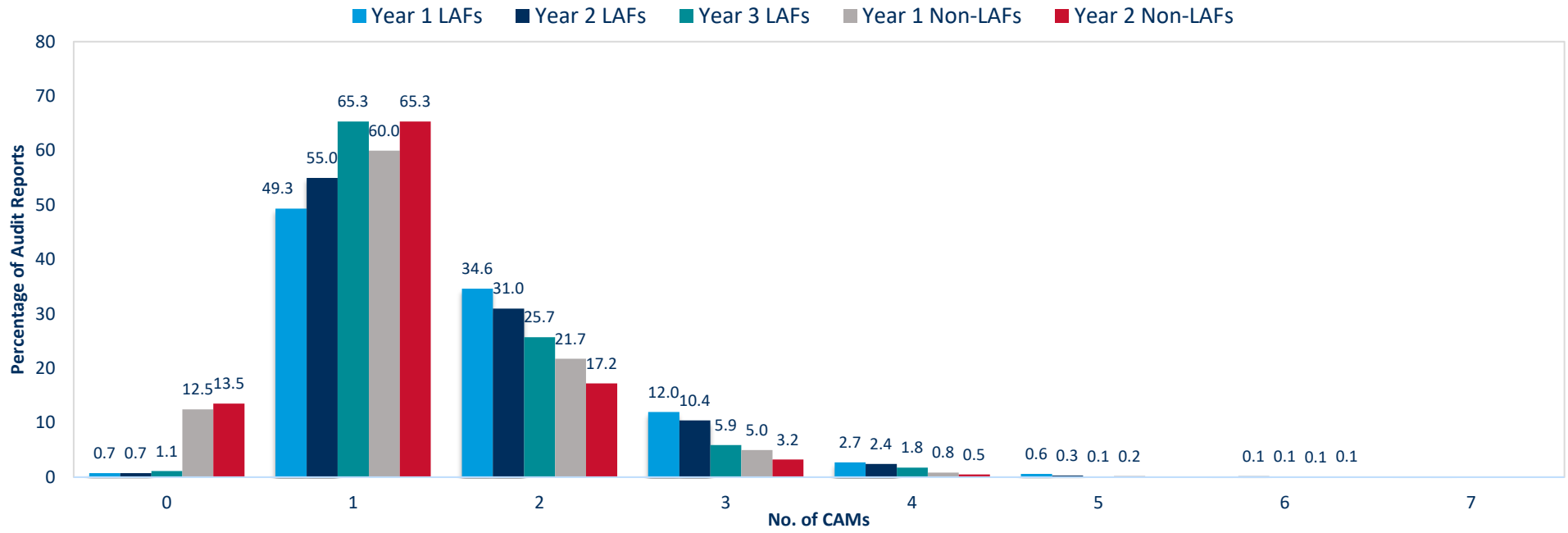
## APPENDIX B. TABLES AND FIGURES

**Table 1 Number of CAMs per Audit Report**

Filer group	Number of audit reports		Number of CAMs communicated			
	Count	Average market capitalization (Millions)	Count	Average	High	Low
<b>Year 1 LAF</b>						
U.S. — GNF	1,890	\$16,462	3,072	1.63	5	0
Non-U.S. Affiliate — GNF	385	22,644	798	2.07	7	0
Non-Affiliated (NAF)	92	1,641	124	1.35	3	0
<b>Year 2 LAF</b>						
U.S. — GNF	1,752	23,439	2,689	1.53	5	0
Non-U.S. Affiliate — GNF	369	29,243	741	2.01	7	1
NAF	77	2,669	99	1.29	3	0
<b>Year 3 LAF</b>						
U.S. — GNF	1,809	25,192	2,455	1.36	5	0
Non-U.S. Affiliate — GNF	353	25,754	642	1.82	6	0
NAF	95	2,147	123	1.29	4	0
<b>Year 1 non-LAF</b>						
U.S. — GNF	1,193	1,095	1,549	1.30	5	0
Non-U.S. Affiliate — GNF	260	1,683	360	1.38	4	0
NAF	1,403	174	1,617	1.15	7	0
<b>Year 2 non-LAF</b>						
U.S. — GNF	828	1,047	942	1.14	6	0
Non-U.S. Affiliate — GNF	177	1,860	240	1.36	4	0
NAF	916	140	978	1.07	6	0



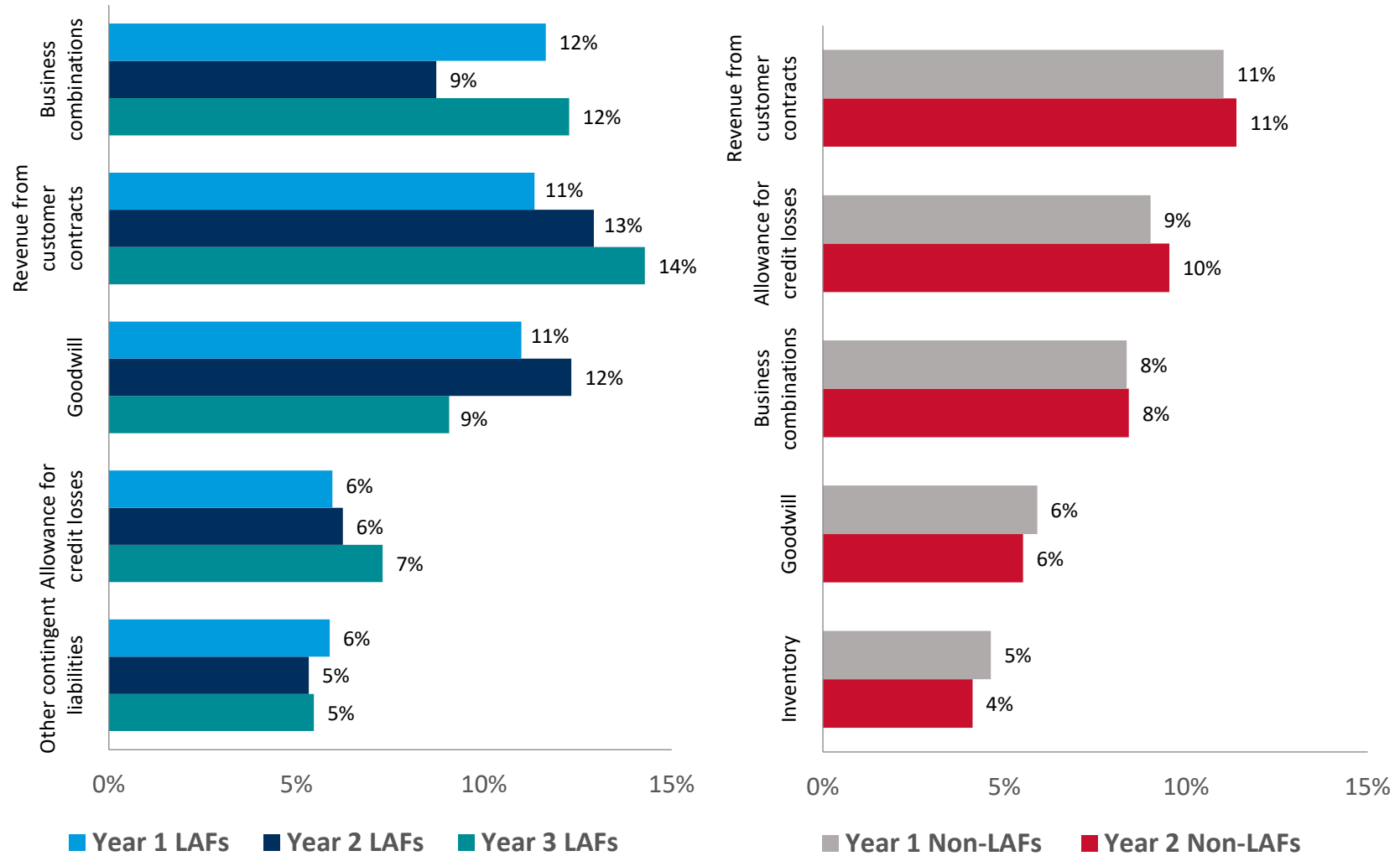
Figure 1 Audit Reports by Number of CAMs



Notes for Figure 1 Audit Reports by Number of CAMs and Figure 2 Most Frequently Communicated CAMs:

“Year 1 LAF” includes audit reports of LAFs with fiscal year-ends on, or after, June 30, 2019, and until June 29, 2020. “Year 2 LAF” includes audit reports for LAFs with fiscal year-ends on, or after, June 30, 2020, and until June 29, 2021. “Year 3 LAF” includes audit reports for LAFs with fiscal year-ends on, or after, June 30, 2021. “Year 1 non-LAF” includes audit reports of non-LAFs with fiscal year-ends on, or after, December 15, 2020, until December 14, 2021. “Year 2 non-LAF” include audit reports of non-LAFs with fiscal year-ends on, or after, December 15, 2021.

Figure 2 Most Frequently Communicated CAMs



## Table 2 Sample Selection

	Non-LAFs <sup>†</sup>	LAFs <sup>†</sup>	Period total
<b>Issuers in Analysis<sup>a</sup></b>			
Pre-Period	2,413	2,262	4,675
Post-Period	2,413	2,262	4,675
Issuers with data in both pre and post periods, and for both outcome and explanatory variables (Issuer-year observations between June 2019 and Dec 2021) <sup>b</sup>			
<b>Market Reaction Analysis</b>			
Pre-Period	1,409	2,198	3,607
Post-Period	1,423	2,137	3,560
Group Total	2,832	4,335	7,167
<b>Audit Fees Analysis</b>			
Pre-Period	1,640	2,092	3,723
Post-Period	1,640	2,092	3,723
Group Total	3,280	4,184	7,464
<b>Audit Hours Analysis<sup>c</sup></b>			
Pre-Period	558	1,564	2,122
Post-Period	558	1,564	2,122
Group Total	1,116	3,128	4,244
<b>Days to File Analysis</b>			
Pre-Period	1,832	2,189	4,021
Post-Period	1,832	2,189	4,021
Group Total	3,664	4,378	8,042

**Notes:**

† The non-LAFs group contains issuer audits for which the CAM requirements newly applied on or after December 15, 2020, and the auditor either communicated CAMs in the audit report or communicated that there were no CAMs. The LAFs group contains issuer audits that have been required to comply with the new requirements for fiscal year-ends ending on or after June 30, 2019. See Section V for additional details.

- We use the Audit Analytics and PCAOB's AuditorSearch database to identify issuers that are operating companies, and exclude mutual funds, investment companies and trusts, employee benefit plans, and subsidiary companies or operating partners whose financial information is consolidated with that of their parent company.
- We use the first effective date for CAM requirements, and the effective date for non-LAFs, to construct the pre and post periods. For example, the pre period represents audits with fiscal year-ends June 30, 2019, through December 14, 2020. And the post period represents audits with fiscal year-ends on or after December 15, 2020.
- The final counts for the audit hours analysis are lower than those for the audit fees, days to file, and issuers' stock market analyses because the sample is limited to issuers that in the sample are required to have audit hours collected through the PCAOB inspections in both pre and post periods.

**Table 3 Issuers' Market Reaction Analysis: Descriptive Statistics**

*Panel A: Dependent Variables, Returns*

	Pre (06/30/19 – 12/14/20)	Post (12/15/20 – 12/14/21)	Diff. (Post – Pre)
<b>3-Day ACAR (% Return)</b>			
Non-LAFs	9.32	6.35	-2.96***
LAFs	4.56	3.94	-0.62***
<b>3-Day ACAR (% Return)</b>			
Non-LAFs			
No CAM Communicated	-	7.01	-
1 CAM	-	5.96	-
2 CAMs	-	7.20	-
3 CAMs	-	7.95	-
4 or More CAMs	-	7.88	-
LAFs			
No CAM Communicated	6.44	2.53	-3.91
1 CAM	4.33	3.91	-0.42**
2 CAMs	4.70	4.11	-0.58**
3 CAMs	5.42	3.78	-1.64***
4 or More CAMs	4.01	3.44	-0.57

*Panel B: Independent Variables, Returns*

	Pre (06/30/19 – 12/14/20)	Post (12/15/20 – 12/14/21)	Diff. (Post – Pre)
<b>Log Total Assets</b>			
Non-LAFs	5.46	5.55	0.09
LAFs	8.68	8.43	-0.09**
<b>Log Market Cap.</b>			
Non-LAFs	4.85	4.83	-0.02
LAFs	8.52	8.43	-0.09**
<b>Book-to-Market Ratio</b>			
Non-LAFs	0.83	0.97	0.14***
LAFs	0.52	0.66	0.14***
<b>Return on Assets</b>			
Non-LAFs	-0.17	-0.19	-0.02
LAFs	0.02	0.01	-0.01**

*Panel B: Independent Variables, Returns (Cont.)*

	Pre (06/30/19 – 12/14/20)	Post (12/15/20 – 12/14/21)	Diff. (Post – Pre)
<b>Cash Flow Volatility</b>			
Non-LAFs	0.09	0.10	0.14
LAFs	0.03	0.04	0.00**
<b>Leverage Ratio</b>			
Non-LAFs	0.27	0.26	-0.02
LAFs	0.33	0.33	0.00
<b>Sales Growth Volatility</b>			
Non-LAFs	0.12	0.13	0.01
LAFs	0.08	0.09	0.01***
<b>Stock Beta</b>			
Non-LAFs	0.78	0.89	0.11***
LAFs	1.01	0.99	-0.02
<b>Loss Indicator</b>			
Non-LAFs	0.56	0.55	-0.01
LAFs	0.21	0.30	-0.10***

Notes:

See Appendix A for definitions of the variables. Two-sided t-tests assuming unequal variables.

\*\*\* denotes significance at 1%, \*\* at 5%, and \* at 10%.

**Table 4 Issuers' Market Reaction Analysis: Results**

	Dependent Variable: 3-Day Absolute Cumulative Abnormal Returns (ACAR)					
	Pre-Post Analysis		Difference-in-Differences			
	(1) Non-LAFs, FE	(2) LAFs, FE	(3) Weighted, FE	(4) Unweighted, FE	(5) Weighted, No COVID	(6) Unweighted, No COVID
Post	-0.030 *** (0.003)	-0.008 *** (0.001)	-0.009 (0.010)	-0.008 *** (0.001)	-0.016 (0.018)	-0.001 (0.002)
Non-LAF			0.021 ** (0.009)	0.030 *** (0.003)	-0.023 (0.018)	0.007 (0.005)
Post x Non-LAF			-0.022 ** (0.011)	-0.022 *** (0.003)	0.015 (0.019)	0.000 (0.004)
Log Total Assets	-0.001 (0.002)	-0.005 *** (0.001)	0.002 (0.003)	-0.004 *** (0.001)	-0.004 (0.002)	-0.004 *** (0.001)
Return on Assets	-0.006 (0.005)	-0.004 (0.008)	0.010 (0.007)	-0.003 (0.004)	0.014 ** (0.006)	0.002 (0.005)
Loss Indicator	0.014 *** (0.004)	0.009 *** (0.003)	0.012 * (0.006)	0.012 *** (0.002)	0.019 *** (0.005)	0.011 *** (0.002)
Book-to-Market Ratio	0.006 *** (0.002)	0.007 *** (0.002)	0.016 *** (0.005)	0.006 *** (0.001)	0.004 (0.003)	0.005 *** (0.001)
Cash Flow Volatility	0.010 (0.015)	0.055 * (0.029)	0.069 *** (0.018)	0.011 (0.013)	0.042 ** (0.018)	0.016 (0.015)
Leverage Ratio	0.049 *** (0.008)	0.022 *** (0.004)	0.027 *** (0.009)	0.036 *** (0.004)	0.006 (0.009)	0.029 *** (0.005)
Sales Growth Volatility	0.019 * (0.011)	0.007 (0.010)	0.025 * (0.015)	0.017 ** (0.008)	-0.001 (0.016)	0.018 ** (0.009)
Stock Beta	0.011 *** (0.003)	0.007 *** (0.002)	0.004 (0.005)	0.009 *** (0.002)	0.015 *** (0.004)	0.010 *** (0.002)
GNF Group FE	Yes	Yes	Yes	Yes	Yes	Yes
FF-48 Ind. FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.108	0.115	0.272	0.166	0.180	0.130
Observations	3,280	4,184	7,464	7,464	4,738	4,738

#### Note For Table 4 Issuers' Market Reaction Analysis: Results

The table presents the regression results of Equations (1) and (2) with the three-day absolute cumulative abnormal returns (*3-Day ACAR*) as the dependent variable. *Post* refers to the post-December 15, 2020 fiscal year issuer audits. *non-LAF* is an indicator variable that equals one if the issuer audit was newly subject to the CAM requirements in the post period. The estimated coefficient for *Post* in column (1) indicates the change in *3-Day ACAR* between the pre and post CAM implementation periods for the non-LAFs whose audit reports contain CAMs or the non-LAF auditors determined there were no CAMs to communicate. The estimated coefficients for *Post* $\times$ *non-LAF* in columns (3) through (6) indicate the difference between: the change over time in *3-Day ACAR* for the non-LAFs and the change for LAFs. The number of observations in columns (1) and (2) are lower because the pre-post analysis is performed using only the data from non-LAFs and LAFs, respectively. The number of observations in columns (5) and (6) is lower relative to columns (3) and (4) because we exclude COVID-19 observations. See Sections V, VI and Appendix D for further details. The definitions of all the variables are provided in Appendix A, and we include industry and auditor fixed effects in our models. The standard-errors are clustered at the issuer-level and presented in the parenthesis below the estimated coefficient. Significance levels are \*\*\* 1%, \*\* 5%, and \* 10%, respectively.

**Table 5 Audit Fees, Hours, and Days to File Analysis: Descriptive Statistics**

*Panel A: Dependent Variables, Audit Fees*

	Pre (06/30/19 – 12/14/20)	Post (12/15/20 – 12/14/21)	Diff. (Post – Pre)
<b>Log Audit Fees</b>			
Non-LAFs	12.74	12.71	-0.03
LAFs	14.86	14.86	0.01
<b>Audit Fees (Dollars)</b>			
Non-LAFs	\$ 669,568	\$ 616,759	\$ -52,810
No CAM Communicated	-	246,154	-
1 CAM	-	577,145	-
2 CAMs	-	794,593	-
3 CAMs	-	1,003,710	-
4 or More CAMs	-	1,913,198	-
LAFs	\$ 4,881,157	\$ 4,893,999	\$ 12,842
No CAM Communicated	535,819	620,418	84,599
1 CAM	3,350,913	3,655,762	304,849*
2 CAMs	5,597,282	5,474,086	-123,196
3 CAMs	8,084,537	8,422,849	338,277
4 or More CAMs	11,600,000	14,900,000	3,309,436

*Panel B: Dependent Variables, Audit Hours*

	Pre (06/30/19 – 12/14/20)	Post (12/15/20 – 12/14/21)	Diff. (Post – Pre)
<b>Log Audit Hours</b>			
Non-LAFs	8.47	8.43	-0.04
LAFs	9.39	9.38	-0.01
<b>Audit Hours (Hours)</b>			
Non-LAFs	6,476	6,055	-421
No CAM Communicated	-	2,724	-
1 CAM	-	5,476	-
2 CAMs	-	7,570	-
3 CAMs	-	10,979	-
4 or More CAMs	-	14,550	-
LAFs	15,774	15,613	-162
No CAM Communicated	3,352	3,709	358
1 CAM	12,355	12,682	328
2 CAMs	17,417	17,726	309
3 CAMs	25,080	24,704	-376
4 or More CAMs	32,683	39,703	7,021



Panel C: Dependent Variables, Days to File

	Pre (06/30/19 – 12/14/20)	Post (12/15/20 – 12/14/21)	Diff. (Post – Pre)
<b>Log Days to File</b>			
Non-LAFs	4.42	4.37	-0.05***
LAFs	4.03	4.02	-0.02***
<b>Days to File (Days)</b>			
Non-LAFs	87.78	82.62	-5.16***
No CAM Communicated	-	86.85	-
1 CAM	-	81.83	-
2 CAMs	-	81.40	-
3 CAMs	-	87.83	-
4 or More CAMs	-	107.20	-
LAFs	59.12	57.84	-1.33***
No CAM Communicated	63.00	58.73	-4.27
1 CAM	58.44	56.81	-1.64***
2 CAMs	58.76	58.44	-0.32
3 CAMs	60.46	60.39	-0.08
4 or More CAMs	69.83	64.88	-4.95

Notes for Table 5 Audit Fees, Hours, and Days to File Analysis: Descriptive Statistics

We do not report the descriptive statistics separately for the subset of U.S. GNF-issuer audits used in the audit hours analysis. The results are qualitatively similar to those reported above and below in Panel D.

See Appendix A for definitions of the variables. Two-sided t-test assuming unequal variances.

\*\*\* denotes significance at 1%, \*\* at 5%, and \* at 10%.

Panel D: Independent Variables

	Pre (06/30/19 – 12/14/20)	Post (12/15/20 – 12/14/21)	Diff. (Post – Pre)
<b>Log Total Assets</b>			
Non-LAFs	4.88	4.99	0.11
LAFs	8.68	8.77	0.09*
<b>Book-to-Market Ratio</b>			
Non-LAFs	0.67	0.76	0.09***
LAFs	0.51	0.65	0.14***
<b>Cash Flow to Total Assets</b>			
Non-LAFs	-0.13	-0.09	0.03***
LAFs	0.07	0.07	0.00
<b>Leverage Ratio</b>			
Non-LAFs	0.33	0.33	0.00
LAFs	0.33	0.33	0.00
<b>Sales Growth</b>			
Non-LAFs	0.12	0.04	-0.08***
LAFs	0.09	0.02	-0.08
<b>Quick Ratio</b>			
Non-LAFs	3.11	3.84	0.73***
LAFs	2.18	2.41	0.23
<b>Intangible Assets to Total Assets</b>			
Non-LAFs	0.08	0.06	-0.01
LAFs	0.19	0.18	-0.01
<b>Receivables to Total Assets</b>			
Non-LAFs	0.10	0.09	-0.01**
LAFs	0.09	0.08	0.00
<b>Inventory to Total Assets</b>			
Non-LAFs	0.07	0.07	0.00
LAFs	0.05	0.05	0.00

Panel D: Independent Variables (Cont.)

	Pre (06/30/19 – 12/14/20)	Post (12/15/20 – 12/14/21)	Diff. (Post – Pre)
<b>Merger Indicator</b>			
Non-LAFs	0.12	0.10	-0.02
LAFs	0.28	0.26	0.03*
<b>Restructuring Indicator</b>			
Non-LAFs	0.14	0.14	0.01
LAFs	0.34	0.39	0.05***
<b>BigR Restatement Ann. Indicator</b>			
Non-LAFs	0.02	0.01	0.00
LAFs	0.00	0.00	0.00
<b>December Year-End Indicator</b>			
Non-LAFs	0.79	0.78	-0.01
LAFs	0.82	0.80	-0.02
<b>Loss Indicator</b>			
Non-LAFs	0.58	0.57	-0.01
LAFs	0.20	0.30	0.09***
<b>Multi-National Corp. Indicator</b>			
Non-LAFs	0.25	0.25	0.01
LAFs	0.56	0.57	0.01
<b>ICFR Group (% of Issuers)</b>			
Non-LAFs			
<i>Exempt</i>	50.00	65.06	15.06***
<i>No Material Weakness</i>	44.63	32.87	-11.76***
<i>Material Weakness Exists</i>	5.37	2.07	-3.30***
LAFs			
<i>Exempt</i>	2.01	2.72	0.71
<i>No Material Weakness</i>	94.31	95.22	0.91
<i>Material Weakness Exists</i>	3.68	2.06	-1.62***
<b>Going Concern Indicator</b>			
Non-LAFs	0.20	0.15	-0.04***
LAFs	0.01	0.00	0.00
<b>New Client Indicator</b>			
Non-LAFs	0.09	0.08	-0.01
LAFs	0.02	0.02	0.00

## Table 6 Audit Fees, Hours, and Days to File Analysis: Results

### Panel A: Audit Fees

	Dependent Variable: Log Audit Fees			
	(1) Pre-Post Analysis		(3) Difference-in-Differences	
	Non-LAFs, FE	LAFs, FE	Weighted, FE	Unweighted, FE
Post	-0.014 (0.010)	-0.043 *** (0.007)	-0.001 (0.061)	-0.052 *** (0.006)
Non-LAF			-0.151 *** (0.048)	0.016 (0.026)
Post x Non-LAF			0.013 (0.061)	0.030 *** (0.011)
Log Total Assets	0.437 *** (0.012)	0.483 *** (0.009)	0.369 *** (0.015)	0.471 *** (0.007)
Book-to-Market Ratio	-0.068 *** (0.012)	-0.064 *** (0.021)	-0.007 (0.024)	-0.070 *** (0.010)
Cash Flow to Total Assets	-0.220 *** (0.048)	-0.295 ** (0.120)	-0.233 *** (0.072)	-0.291 *** (0.044)
Leverage Ratio	-0.058 (0.038)	0.197 *** (0.061)	-0.096 ** (0.043)	0.004 (0.032)
Quick Ratio	-0.012 *** (0.002)	-0.021 *** (0.004)	-0.006 (0.004)	-0.014 *** (0.002)
Intangible Assets to Total Assets	-0.089 *** (0.032)	0.055 (0.044)	-0.225 *** (0.046)	-0.033 (0.027)
Receivables to Total Assets	0.688 *** (0.132)	1.151 *** (0.160)	0.963 *** (0.157)	0.921 *** (0.096)
Inventory to Total Assets	0.246 * (0.136)	0.160 (0.177)	0.194 (0.140)	0.157 (0.109)
Sales Growth	-0.035 ** (0.018)	0.023 (0.026)	0.025 (0.045)	-0.027 * (0.015)
Merger Indicator	0.089 *** (0.033)	0.049 ** (0.022)	0.028 (0.046)	0.070 *** (0.018)
Restructuring Indicator	0.218 *** (0.032)	0.210 *** (0.022)	0.211 *** (0.032)	0.224 *** (0.018)
BigR Restatement Ann. Ind.	0.281 *** (0.075)	-0.093 (0.144)	0.124 (0.109)	0.231 *** (0.067)
December Year-End Ind.	0.075 ** (0.031)	-0.010 (0.030)	0.029 (0.040)	0.021 (0.022)
Loss Indicator	0.178 *** (0.027)	0.098 *** (0.025)	0.170 *** (0.048)	0.137 *** (0.018)
Multi-National Corp. Ind.	0.252 *** (0.033)	0.354 *** (0.029)	0.416 *** (0.050)	0.316 *** (0.022)
No Material Weakness	0.127 *** (0.031)	0.101 (0.095)	0.246 *** (0.040)	0.039 (0.029)
Material Weakness Exists	0.383 *** (0.059)	0.387 *** (0.111)	0.524 *** (0.061)	0.327 *** (0.047)
Going Concern Indicator	0.056 (0.042)	0.180 (0.158)	0.169 *** (0.047)	0.098 ** (0.041)
New Client Indicator	-0.066 * (0.036)	-0.151 ** (0.071)	-0.114 (0.122)	-0.072 ** (0.033)
GNF Group FE	Yes	Yes	Yes	Yes
FF-48 Ind. FE	Yes	Yes	Yes	Yes
Adjusted R-squared	0.803	0.755	0.877	0.883
Observations	3,280	4,184	7,464	7,464

**Table 6 Audit Fees, Hours, and Days to File Analysis: Results**

*Panel B: Audit Hours*

	Dependent Variable: Log Audit Hours			
	(1) Pre-Post Analysis		(3) Difference-in-Differences	
	Non-LAFs, FE	LAFs, FE	Weighted, FE	Unweighted, FE
Post	0.038 (0.029)	-0.041 *** (0.009)	0.041 (0.066)	-0.040 *** (0.008)
Non-LAF			-0.004 (0.065)	0.043 (0.037)
Post x Non-LAF			-0.020 (0.066)	0.066 *** (0.023)
Log Total Assets	0.262 *** (0.044)	0.323 *** (0.010)	0.247 *** (0.032)	0.319 *** (0.010)
Book-to-Market Ratio	-0.024 (0.019)	-0.061 *** (0.022)	-0.041 ** (0.018)	-0.042 *** (0.015)
Cash Flow to Total Assets	0.083 (0.173)	-0.223 ** (0.104)	0.182 * (0.096)	-0.140 (0.102)
Leverage Ratio	-0.027 (0.105)	0.110 * (0.063)	0.016 (0.059)	0.058 (0.051)
Quick Ratio	0.006 (0.035)	-0.020 (0.029)	0.014 (0.029)	-0.008 (0.021)
Intangible Assets to Total Assets	-0.026 *** (0.004)	-0.016 *** (0.005)	-0.025 *** (0.004)	-0.020 *** (0.003)
Receivables to Total Assets	0.024 (0.045)	0.096 ** (0.044)	0.086 * (0.049)	0.048 (0.033)
Inventory to Total Assets	0.847 *** (0.164)	0.700 *** (0.153)	0.631 *** (0.162)	0.798 *** (0.110)
Sales Growth	0.514 * (0.291)	0.300 (0.210)	0.210 (0.272)	0.290 * (0.159)
Merger Indicator	0.038 (0.064)	0.072 *** (0.022)	0.037 (0.052)	0.071 *** (0.021)
Restructuring Indicator	0.115 ** (0.046)	0.100 *** (0.022)	0.070 (0.049)	0.101 *** (0.019)
BigR Restatement Ann. Ind.	0.090 (0.106)	-0.120 (0.122)	0.049 (0.099)	0.060 (0.078)
December Year-End Ind.	0.112 (0.085)	-0.041 (0.034)	0.048 (0.078)	-0.015 (0.032)
Loss Indicator	0.120 *** (0.046)	0.099 *** (0.026)	0.169 *** (0.036)	0.101 *** (0.021)
Multi-National Corp. Ind.	0.090 * (0.047)	0.228 *** (0.029)	0.169 *** (0.039)	0.194 *** (0.024)
No Material Weakness	0.254 *** (0.080)	0.067 (0.084)	0.173 *** (0.066)	0.191 *** (0.049)
Material Weakness Exists	0.559 *** (0.102)	0.398 *** (0.116)	0.450 *** (0.092)	0.531 *** (0.067)
Going Concern Indicator	0.047 (0.087)	0.147 (0.114)	-0.064 (0.061)	0.065 (0.062)
New Client Indicator	0.125 ** (0.049)	0.409 *** (0.073)	0.095 (0.061)	0.252 *** (0.042)
GNF Group FE	Yes	Yes	Yes	Yes
FF-48 Ind. FE	Yes	Yes	Yes	Yes
Adjusted R-squared	0.683	0.622	0.687	0.720
Observations	1,116	3,128	4,244	4,244

## Table 6 Audit Fees, Hours, and Days to File Analysis: Results

*Panel C: Days to File*

	Dependent Variable: Log Days to File			
	(1) Pre-Post Analysis		(3) Difference-in-Differences	
	(2) Non-LAFs, FE	LAFs, FE	Weighted, FE	(4) Unweighted, FE
Post	-0.032 *** (0.005)	-0.013 *** (0.003)	-0.016 (0.036)	-0.013 *** (0.002)
Non-LAF			0.279 *** -0.033	0.160 *** -0.011
Post x Non-LAF			-0.006 -0.036	-0.016 *** -0.005
Log Total Assets	-0.015 *** (0.005)	-0.015 *** (0.004)	-0.003 (0.008)	-0.016 *** (0.003)
Book-to-Market Ratio	0.001 (0.005)	0.031 *** (0.007)	0.016 (0.011)	0.011 *** (0.004)
Cash Flow to Total Assets	-0.001 (0.012)	-0.138 *** (0.033)	-0.066 ** (0.030)	-0.007 (0.011)
Leverage Ratio	0.002 (0.006)	-0.047 ** (0.019)	0.000 (0.009)	0.001 (0.006)
Quick Ratio	-0.001 * (0.001)	-0.001 (0.001)	0.003 * (0.002)	-0.001 ** (0.001)
Intangible Assets to Total Assets	0.004 (0.015)	0.006 (0.014)	0.042 ** (0.021)	0.007 (0.010)
Receivables to Total Assets	0.075 * (0.042)	-0.014 (0.043)	0.281 *** (0.062)	0.041 (0.030)
Inventory to Total Assets	0.011 (0.066)	-0.050 (0.075)	-0.259 *** (0.078)	0.001 (0.050)
Sales Growth	0.012 * (0.006)	0.009 (0.008)	0.014 (0.011)	0.011 ** (0.005)
Merger Indicator	-0.009 (0.013)	-0.009 (0.008)	-0.061 ** (0.026)	-0.012 * (0.007)
Restructuring Indicator	-0.047 *** (0.012)	-0.020 ** (0.009)	-0.092 *** (0.032)	-0.028 *** (0.007)
BigR Restatement Ann. Ind.	0.063 (0.049)	-0.130 *** (0.048)	0.013 (0.040)	0.022 (0.043)
December Year-End Ind.	0.032 ** (0.013)	0.040 *** (0.012)	0.041 ** (0.018)	0.039 *** (0.009)
Loss Indicator	0.024 ** (0.010)	0.005 (0.010)	0.078 *** (0.019)	0.024 *** (0.007)
Multi-National Corp. Ind.	-0.036 *** (0.013)	-0.076 *** (0.011)	-0.037 ** (0.017)	-0.065 *** (0.008)
No Material Weakness	-0.121 *** (0.013)	0.047 (0.036)	-0.056 * (0.029)	-0.100 *** (0.011)
Material Weakness Exists	-0.032 (0.022)	0.154 *** (0.047)	0.060 (0.047)	-0.008 (0.020)
Going Concern Indicator	0.069 *** (0.017)	0.115 (0.091)	0.097 ** (0.048)	0.071 *** (0.017)
New Client Indicator	0.045 *** (0.014)	0.099 *** (0.023)	0.061 *** (0.017)	0.063 *** (0.012)
GNF Group FE	Yes	Yes	Yes	Yes
FF-48 Ind. FE	Yes	Yes	Yes	Yes
Adjusted R-squared	0.245	0.132	0.598	0.425
Observations	2,952	4,280	7,232	7,232

Notes to Table 6 Audit Fees, Hours, and Days to File Analysis: Results

The tables in panels A, B, and C present the regression results of the pre-post and difference-in-differences analyses (equations (1) and (2), respectively) with *Log Audit Fees*, *Log Audit Hours*, and *Log Days to File* as the dependent or outcome variables. *Post* refers to the post-December 15, 2020 fiscal year issuer audits. *non-LAF* is an indicator variable that equals one if the issuer was newly subject to the CAM requirements in the post period. In Panels A, B, and C the estimated coefficient for *Post* in column (1) indicates the change in the dependent variable between the pre and post CAM implementation periods for the non-LAFs whose audit reports contain CAM communications. The estimated coefficients for *Post×non-LAF* in columns (3) and (4) indicate the difference between: the change over time in the dependent variable for the non-LAFs and the change for LAFs. The number of observations in columns (1) and (2) are lower because the pre-post analysis is performed using only the data from non-LAFs and LAFs, respectively. See Sections V, VI, and Appendix D for further details. The definitions of all the variables are provided in Appendix A, and we include industry and auditor fixed effects in our models. The standard-errors are clustered at the issuer-level and presented in the parenthesis below the estimated coefficient. Significance levels are \*\*\* 1%, \*\* 5%, and \* 10%, respectively.

## APPENDIX C. RELATED ACADEMIC RESEARCH

While much of the academic research on expanded audit reports focuses on the communication of Key Audit Matters (KAMs) in audits subject to international auditing standards,<sup>54</sup> there are recent findings on the initial impact of CAMs in the U.S. market.<sup>55</sup> As the implementation of CAM requirements occurred only recently, academic literature on CAMs is still developing. Furthermore, all of the literature has focused on market reactions and changes in auditor fees around implementation of CAM requirements on audits of LAFs. Academic studies focusing on causal inference do not find that CAMs have significant market reactions. Furthermore, the literature documents no significant overall increase in audit fees or the time to file audit reports. The literature reports mixed results that fees are associated with CAM content or complexity and suggests that any changes found in audit fees are likely due to particularly lengthy CAMs, those with a high use of specific language or narrative style, or caused by increased auditor effort in the account relevant to the CAM and not the CAM itself (see discussions in Drake *et al.* (2021), and Burke *et al.* (2022)).

In examining market reaction to implementation of CAM requirements on LAF audits, Burke *et al.* (2022), Drake, *et al.* (2021), and Bochkay, Chychyla, De George, Minuti-Meza, and Schroeder (2020) find no significant market reaction. Other researchers find similar outcomes for KAMs. Gutierrez, Minutti-Meza, Tatum, and Vulcheva (2018) and Reid *et al.* (2019) provided the first evidence of no or limited market impact following auditor implementation of KAM requirements. Klevak, Livnat, Pei, and Suslava (2021) documents that there is a negative correlation between the number of CAMs reported and market reaction, and a positive correlation between the number of CAMs reported and analyst forecast dispersion and issuer uncertainty. Huang (2021) also documents that the number and length of CAMs is associated with increased issuer volatility and uncertainty.

Bochkay *et al.* (2020), in response to the PCAOB's Request for Comment on the Interim Analysis of AS 3101,<sup>56</sup> provided an assessment on the consequences of CAM implementation on audits of LAFs. Their analysis describes relative homogeneity among audit firms in the implementation of CAM requirements, and no significant increase in LAF audit fees. Burke *et al.* (2022) also do not find evidence of a significant increase in audit fees. However, a recent paper by Dee *et al.* (2021) shows that CAMs reduce the number of reported material weaknesses in internal controls following an account-specific CAM communication, suggesting that issuers, and auditors, increase scrutiny in CAM-related areas.

Overall, the academic literature on CAMs is still maturing given the recency of implementation and, to date, there have not been any studies that examine the implementation on non-LAF audits. PCAOB staff will continue to monitor emerging academic research in this field of study.

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<sup>54</sup> In January 2015, the IAASB [International Standard on Auditing \(ISA\) 701, Communicating Key Audit Matters in the Independent Auditor's Report](#). ISA 701 became effective for audits of financial statements for periods ending on or after December 15, 2016.

<sup>55</sup> See *e.g.*, Gutierrez *et al.* (2018), Lynch (2020), Rousseau and Zehms (2020), Marques *et al.* (2021), Gold *et al.* (2020).

<sup>56</sup> PCAOB, *Request for Comment: Interim Analysis of Critical Audit Matter Requirements* (Apr. 17, 2020), available at <https://pcaobus.org/EconomicAndRiskAnalysis/pir/Documents/RFC-Interim-Analysis-CAM-Requirements.pdf>.



## APPENDIX D. POTENTIAL CONFOUNDING FACTORS AND BACKGROUND ON OTHER ROBUSTNESS TESTS

Confounding factors are events concurrent with the analysis period that may also correlate with outcome measures. For our analysis in this study, examples of such events include macroeconomic events, other financial disclosure in the annual filings, and the implementation of new accounting standards. This appendix discusses possible confounding factors and how we addressed them in our analysis.

### COVID-19 Pandemic

Issuers with fiscal year-ends after December 2019 and/or issuers that filed annual reports after mid-February 2020 (when market volatility started to increase due to the pandemic in the United States) may have faced significant disruptions to their financial statement reporting and audit processes. Furthermore, the COVID-19 pandemic could have impacted issuers differently, particularly with respect to market reactions.

The SEC granted extensions to file reports that would otherwise have been due, which in turn affects the average number of days taken to file the annual report and could have increased the audit fees and hours. Thus, to adjust for the impact of the pandemic on audit outcomes (audit fees, audit hours, and days to file), we perform additional tests using an alternative sample accounting for non-timely filers. This sample excludes issuers (from both the pre- and post-periods) that indicate a delay of their annual filings in Form 8-K and/or Form NT filings in 2020. Our results were robust to this additional specification.

Additionally, the pandemic directly impacted capital market outcomes in our analysis. There were significant swings in the daily market returns beginning around mid-February 2020, especially on days when many issuers concurrently file their annual reports. Therefore, we conduct tests on an alternate sample that excludes issuers with a filing date between February 21, 2020, and April 7, 2020, to reduce the impact of the pandemic on the results. February 21, 2020, represents the date that the market began to drop due to news of the COVID-19 pandemic spreading to the U.S.<sup>57</sup> April 7, 2020 represents the approximate return to pre-COVID market behavior. After excluding these filers from our sample, as discussed in Section VI, we find no significant market reaction to the implementation of CAM requirements for non-LAF audits. In an unreported robustness check, we also perform a similar exclusion for audit fees, audit hours, and days to file regression and find consistent results in sign and magnitude as those reported in Table 6.

### Accounting Standards, Macro-Events, and Treatment-Control Differentials

The analysis period coincides with changes in accounting rules promulgated by the Financial Accounting Standards Board (FASB), such as new requirements for leases, derivatives and hedging, and accounting for credit losses. There is evidence to suggest that FASB standards have differential impacts on large and

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<sup>57</sup> Lockdowns across the United States began in mid-March; however, markets had already begun pricing in the risks starting in mid-February as news emerged out of Asia and Europe.

smaller issuers.<sup>58</sup> Furthermore, although the influence of macroeconomic events, such as Brexit, the transition away from LIBOR as a benchmark rate, and fiscal and monetary policy related to the pandemic, could be potentially large in scale, their effects on issuers are company specific.

Our analysis accounts for some of these changes because we include relevant fixed effects — by audit firm and issuer industry — to accommodate trends that either do not change or change at a constant rate between the pre- and post-period or between the treatment and control groups. For example, FASB’s Current Expected Credit Losses standard is likely to impact issuers in the financial industry more than other issuers — and the inclusion of the financial industry fixed-effect in our analysis will absorb this impact. Also, Brexit is likely a larger concern for issuers which have a significant presence in the U.K. market, and the LIBOR transition is most likely to affect issuers with financial contracts and related obligations tied to LIBOR. Our analysis accounts for these potentially confounding events by including issuer industry fixed effects in the model.

The descriptive statistics in **Tables 3** and **5** in **Appendix B** indicate significant differences in some of the explanatory variables across LAFs and non-LAFs. These differences suggest that on average, relative to non-LAFs, LAFs tend to be larger in size — as measured by total assets or market capitalization — more profitable and have fewer restatements and going concern explanatory paragraphs. Such differences could be large enough that these variables bias our difference-in-differences analysis. To mitigate these treatment-control differentials, we estimate our models using entropy-balanced samples following Hainmueller (2012). Hainmueller (2012) proposed an optimization procedure to obtain estimation weights for the observations in the control group (*i.e.*, LAFs in our setting) such that these weights equalize the distribution moments (mean, variance, skew, etc.) of the explanatory variables to those of the treatment group (*i.e.*, non-LAFs in our setting). In our implementation of Hainmueller’s entropy-balancing, we form weights to equalize the means of the explanatory variables for the treatment and the control groups; we then estimate a weighted regression using these balancing weights. In this way, the LAFs that are characteristically similar to the non-LAFs receive greater weights (see columns titled Weighted in the tables in Appendix B), and those that are dissimilar are downweighted. Entropy balancing has advantages relative to other methods such as propensity score matching due to its ability to achieve a better match and retain all observations in the control and treatment groups.<sup>59</sup> We discuss the results from the weighted regressions in Section VI.

## Market Reactions to Topical CAM Content

Prior literature has investigated the impact of specific CAM topics and the impacts of those topics on market reactions and audit fees (see, *e.g.*, Drake *et al.* (2021) and Burke *et al.* (2022)). Drake *et al.* (2021) finds that behavior of issuers changes once an auditor has communicated a tax-related CAM, specifically in the amount of earnings management that the firm undertakes. Burke found that the relationship to specific CAM topics was related to the expectation that an issuer would receive a particular CAM topic. When an auditor did not communicate the expected CAM topic, they observed a significant market reaction, but no market reaction otherwise.

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<sup>58</sup> For example, accounting for credit losses, leases, and revenue recognition has been noted by the FASB as being particularly difficult for smaller issuers to implement. See Tysiac (2019), [FASB to propose delaying effective dates for 4 major standards](#).

<sup>59</sup> We also considered alternative covariate-balancing methodologies, such as Synthetic Control Method, Propensity Score Matching, and Coarsened Exact Matching—however, we determined that each either suffers from less balanced matching than the entropy-balancing method or reduces the set of matched treatment-control issuers in the case of Coarsened Exact Matching.

Given that there is a significant clustering of CAMs within a few frequently communicated CAM topics, we performed cross-sectional analysis on CAM topics among LAF audits where the auditors communicated CAMs for the first time from June 30, 2019, to December 14, 2020, using the non-LAFs as a baseline comparison. Our results indicate that there is no significant market reaction attributed to any one particular CAM topic. Furthermore, we found using our cross-sectional analysis that communicating CAMs within the top-5 most frequently communicated topics was not associated with any significantly different market reaction compared to the communication of topics that are less frequently communicated. Rousseau and Zehms (2020) finds that the unique nature of KAM communication could be associated with increased market reaction or audit fees. We do not find evidence in support of this hypothesis, and so our result follows in line with findings reported by Burke *et al.* (2022) for CAMs and Gutierrez *et al.* (2018) for KAMs — as there appears to be no significant difference in market reaction between the particular topics communicated.