

Initial Analyses on the Impact of the Critical Audit Matter Requirements on Audit Fees

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Summary

We examine the impact of the critical audit matter (CAM) requirements on audit fees. Specifically, we study changes of audit fees in the years prior to or during the implementation of the CAM requirements, for fiscal years from 2016 – 2019, for public companies in the U.S. While we find audit fees for companies that are subject to the CAM requirements increased in 2017 and 2018, we conclude that these increases are not attributed to the CAM requirements. Our analyses help to alleviate the concern that the CAM requirement would add unnecessary costs for businesses and accounting firms. This report is an initial study on the impact of the CAM requirements on audit costs. Further research using data from more time periods is needed to more adequately evaluate the impact of the new rule on audit costs.

1. Introduction

To enhance the relevance and usefulness of the auditor's report, The PCAOB adopted Auditing Standard 3101 (AS 3101) on June 1, 2017, which requires auditors to discuss critical audit matters, auditor tenure, and audit firm independence in the auditor's report (PCAOB 2017).

A major concern on the new CAM requirements is that this rule would increase costs of audit services without providing benefits to stakeholders. After PCAOB adopted AS 3101, about 30 companies and business groups send a joint letter urging the SEC not to approve the rule, in which they argued that this requirement would not benefit investors but only add unnecessary costs if auditors provide disclosure of CAMs in boilerplate language (Thomson Reuters Tax & Accounting). Expressing similar concerns, SEC commission Chairman Jay Clayton said, in a statement, that he would be disappointed if the new auditor reporting standard resulted in added costs without deliver meaningful information to investors (SEC 2017). Apparently, it is critical to investigate the impacts of the CAM requirements on both audit costs and audit quality. In this study, we focus on how the rule affects audit costs.

A number of academic studies have examined the impact of key audit matters (KAMs) communication, a regulation similar to CAM and required by International Standards on Auditing (ISA) 701, on audit costs. However, they use data from foreign jurisdictions and report mixed results (Bedard et al. 2016, Gutierrez et al.2018, Li et al. 2018, Ratzinger-Sakel and Theis 2018, and Reid et al. 2018). Further, the CAM requirements differ from KAMs in defining audit matters needed to report and also auditors in the U.S. are in a more litigious environment. Thus, it is essential to examine the impact of the CAM requirements on audits of companies in the U.S.

AS 3101 divides companies in the U.S. into three categories regarding compliance and implementation timeline of the CAM requirements: (1) effective for large accelerated filers (LAFs) with fiscal years ending on or after June 30, 2019; (2) effective for all other required companies (NLAFs-Required) with fiscal years ending on or after December 15, 2020; and (3) not required for brokers and dealers, investment companies, business development companies, and emerging growth companies (Not-Required) (PCAOB 2017). Accordingly, we split our sample to these three categories and investigate the changes of audit fees surrounding the implementation date, from fiscal year 2016 to 2019, for each category.

We find that audit fees for LAFs and NLAFs-Required increased with statistical significance for fiscal year 2017 or 2018 or both, while Not-Required companies experienced no similar change of audit fees at the same time. However, we conclude that the audit fee increase in 2017 and 2018 could not be contributed to the impact of the CAM requirements on audits for LAFs and NLAFs-Required. We also examine the association between number of CAMs reported on the auditor's report and audit fees for LAFs in the first year of the CAM requirements implementation. We find that the number of CAMs reported are positively related to audit fees.

2. Hypotheses

AS 3101 requires auditors to determine whether there are any audit matters that relates to accounts or disclosures that are material to the financial statements, and involve especially challenging, subjective, or complex judgement (PCAOB 2017). The identification of such accounts and disclosures are likely to take extra effort by auditors beyond current level of audit work. Meanwhile, auditors will need to spend time in discussing the critical audit matters with the audit committee of the client company. In addition, some audit firms may develop training programs for the new audit report (Chalmers 2013). All these additional work by auditors could result in higher audit costs, which could be reflected by higher audit fees charged to the client. Moreover, auditors may even start performing additional work related to the CAM requirements before the year of implementation. Thus, it is possible that the CAM requirements impact audit costs in the years surrounding the effective date for companies that are subject to the new rule. Taken together, we develop our first hypothesis as follows.

H1: Audit fees increase in the years surrounding the effective date for companies that are subject to the CAM requirements.

While we expect the CAM requirements would generally increase audit fees, the amount of related incremental work are likely to vary from company to company. Auditors are expected to determine at least one critical audit matter in the auditor's report (PCAOB 2017). However, it is possible that auditors report more than one critical audit matters in reality. If the auditor determines more CAMs, it is possible that the audit fee would be higher and the audit delay would be longer relatively. We develop the following hypotheses to more specifically discuss the relation between the CAM requirements and the incremental audit costs.

H2: The number of critical audit matters disclosed is positively associated with audit fees.

3. Research Method

Because of the different compliance requirements for the three categories of companies, it is likely that the new rule would impact audit fees of those in different categories differently. This setting allows us to separate the effect of the CAM requirements from other confounding factors on audit fees. In this study, we examine changes of audit fees in each of fiscal years 2017, 2018, and 2019 compared to the prior year. We are not adopting the usual pre/post analysis approach common in research for event study and policy change because of two reasons. The first is that the CAM requirements could affect auditors' behavior not only in the year of implementation but also in the year(s) prior to the implementation. Thus, we may not use a single post indicator to separate the time periods before and after the implementation. The second is that PCAOB's rule

on audit partner identity disclosure took effect for most companies starting from fiscal year 2016 and that rule could affect audit fees in our sample years as well. Thus, analyses of audit fee changes for each year individually could offer a more direct and comprehensive picture on how the regulations impact audit fees in the sample years.

We estimate the following ordinary least squares (OLS) model for the first hypothesis.

$$\begin{aligned}
 LNAFEE_{i,t} = & \beta_0 + \beta_1 \text{YEAR2017}(\text{YEAR2018}, \text{YEAR2019}) + \beta_2 \text{BIG4}_{i,t} + \beta_3 \text{SPEC}_{i,t} + \\
 & \beta_4 \text{LTNR}_{i,t} + \beta_5 \text{OP}_{i,t} + \beta_6 \text{YE}_{i,t} + \beta_7 \text{REST}_{i,t} + \beta_8 \text{ACCR}_{i,t} + \beta_9 \text{SIZE}_{i,t} + \beta_{10} \text{MB}_{i,t} \\
 & + \beta_{11} \text{LEV}_{i,t} + \beta_{12} \text{ROA}_{i,t} + \beta_{13} \text{TANG}_{i,t} + \beta_{14} \text{FRSALE}_{i,t} + \beta_{15} \text{LSEG}_{i,t} + \beta_{16} \\
 & \text{RECINV}_{i,t} + \beta_{17} \text{LOSS}_{i,t} + \beta_{18} \text{LIT}_{i,t} + \beta_{19} \text{SI}_{i,t} + \beta_{20} \text{EVOL}_{i,t} + \text{Company_FE} + \\
 & e_{i,t}
 \end{aligned} \tag{1}$$

where i denotes firm, t denotes the year, *Company_FE* is company fixed effects, and e is the error term. The dependent variable (*LNAFEE*) is log audit fee and the variable of interest is a dummy variable (*YEAR2017*, or *YEAR2018*, or *YEAR2019*) for whether the current fiscal year of an observation is 2017, 2018, or 2019. We perform this regression for each of the three categories of companies respectively. For LAFs, fiscal year 2019 (indicated by *YEAR2019*) is the first year of implementation, fiscal year 2018 (indicated by *YEAR2018*) is the year prior to the implementation year. For NLAFs-Required, fiscal year 2019 is the year prior to the year of implementation. For each compliance category of companies, we further compose three testing sub-samples based on three fiscal year-pairs (2016 vs. 2017, 2017 vs. 2018, and 2018 vs. 2019). Essentially we try to find out how the audit fee in year t changes compared to audit fee of year $t-1$ under the impact of the CAM requirements. We select the control variables by following prior literature (Simunic 1980, Johnstone and Be´dard 2003; Gul and Goodwin 2010; Hanlon, Krishnan, and Mills 2012; Bentley, Omer, and Sharp 2013, and Chen, Gul, Veeraraghavan, Zolotiy 2015). The definition of all the variables are listed in Appendix A.

To test our second hypothesis, we use *NUM_CAMS*, which is the number of critical audit matters reported in the auditor’s report as the variable of interest to the testing model (1). As fiscal year 2019 is the first year of implementation for large accelerated filers, we estimate this specification using data of LAFs with fiscal ending date on or after June 30, 2019. We control industry fixed effects *Ind_FE* instead of company fixed effects because there is only one year data available for this estimation.

$$\begin{aligned}
 LNAFEE_{i,t} = & \beta_0 + \beta_1 \text{NUM_CAMS} + \beta_2 \text{BIG4}_{i,t} + \beta_3 \text{SPEC}_{i,t} + \beta_4 \text{LTNR}_{i,t} + \beta_5 \text{OP}_{i,t} + \beta_6 \\
 & \text{YE}_{i,t} + \beta_7 \text{REST}_{i,t} + \beta_8 \text{ACCR}_{i,t} + \beta_9 \text{SIZE}_{i,t} + \beta_{10} \text{MB}_{i,t} + \beta_{11} \text{LEV}_{i,t} + \beta_{12} \text{ROA}_{i,t} + \\
 & \beta_{13} \text{TANG}_{i,t} + \beta_{14} \text{FRSALE}_{i,t} + \beta_{15} \text{LSEG}_{i,t} + \beta_{16} \text{RECINV}_{i,t} + \beta_{17} \text{LOSS}_{i,t} + \beta_{18} \\
 & \text{LIT}_{i,t} + \beta_{19} \text{SI}_{i,t} + \beta_{20} \text{EVOL}_{i,t} + \text{Ind_FE} + e_{i,t}
 \end{aligned} \tag{2}$$

4. Sample

To examine the impacts of the CAM requirements on audit costs surrounding the effective dates, we compose our sample by using all companies in CompuStat for the fiscal years 2016, 2017, 2018, and 2019. Table 1 shows our sample construction process. As Panel A shows, we started with a total of 22,069 observations. We obtain data on audit fees and critical audit matters from AuditAnalytics. After removing observations that miss necessary variables, the final full sample has 13,522 company-year observations. We then split the full sample into three basic categories corresponding to the specification of AS 3101 regarding implementation timeline and compliance. Panel B presents the sub-samples used for regressions, based on three year-pairs for each category of companies.

Table 1 Sample Construction

Panel A: Full sample and sub-samples in the three categories	
Full sample	Company-Year Observations
Sample from CompuStat (fiscal years 2016, 2017, 2018, and 2019)	22,069
Less: Observations due to missing variables	-8,547
Final full sample	13,522
Samples in the three categories	
Large Accelerated Filers with fiscal year ending on or after June 30, 2019 (required to comply)	6,039
Non-Large Accelerated Filers with fiscal year ending on or after December 31, 2020 (required to comply)	5,961
Brokers and dealers, investment companies, business development companies, and emerging growth companies (not required to comply)	1,522
Panel B: Year-Pair sub-samples for regression testing	
LAFs (including fiscal years 2016, 2017, 2018, and 2019)	6,039
Year-Pair of 2016 vs. 2017	3,197
Year-Pair of 2017 vs. 2018	3,118
Year-Pair of 2018 vs. 2019	2,870
NLAFs-Required (including fiscal years 2016, 2017, 2018, and 2019)	5,961
Year-Pair of 2016 vs. 2017	3,115

Year-Pair of 2017 vs. 2018	3,237
Year-Pair of 2018 vs. 2019	2,896
Not-Required (including fiscal years 2016, 2017, 2018, and 2019)	1,522
Year-Pair of 2016 vs. 2017	851
Year-Pair of 2017 vs. 2018	851
Year-Pair of 2018 vs. 2019	685

5. Empirical Results

Descriptive Statistics

To provide basic ideas about any changes of audit costs during the sample years, we present the descriptive statistics of audit fees¹ for the three sub-samples respectively in Table 2 by two ways. Panel A of Table 2 reports the percentages of companies having decreased, unchanged, or increased audit fees² compared to the prior year for each year of 2017, 2018, and 2019 of the three sub-samples respectively. For both LAFs and NLAF-Required, the percentages in the ‘Increased’ category are higher than those of ‘Decreased’ category for most of the three year-pairs. That suggests audit fees may have been increasing for LAFs and NLAF-Required in the most sample years. But this phenomenon is not obvious for Not-Required. This difference implies that audit fees are more likely to change for companies that are subject to the CAM requirements.

Panel B compares the means of log audit fees for all companies for the fiscal year-pairs of 2016 vs. 2017, 2017 vs. 2018, and 2018 vs. 2019. The differences in means show that audit fees increased for companies in all three categories over most of the sample years. In addition, the statistics significance for the differences in the means are highest for NLAFs-Required for the year-pairs of 2017 vs. 2018 and 2018 vs. 2019, and for Not-Required in the year-pair 2018 vs. 2019. Panel B suggests audit fees changed for both companies that are subject to and not subject to the CAM requirements, which differs from what Panel A shows. While the descriptive statistics offers a preliminary picture on changes of audit fees, the discrepancies between the

¹ To save space, we only present the descriptive statistics for audit fees.

² The percentages of changes in Panel A are based on the original value of audit fees. A company is classified as having decreased (increased) audit fee if the audit fee of the current fiscal year decreased (increased) more than 1% of audit fee of the prior fiscal year. If the change of audit fee of the current fiscal year is less than 1% of audit fee of the prior fiscal year, it is classified as having unchanged audit fee.

Table 2: Descriptive Statistics on Audit Fees

Panel A: Percentages of companies for audit fee changes compared to the prior year									
	2016 to 2017			2017 to 2018			2018 to 2019		
	Decreased	Unchanged	Increased	Decreased	Unchanged	Increased	Decreased	Unchanged	Increased
LAFs	26.30%	6.90%	66.18%	33.90%	8.20%	57.90%	35.80%	7.90%	56.30%
NLAFs-Required	43.50%	9.60%	46.90%	40.40%	12.60%	47.00%	50.90%	10.10%	39.00%
Not-Required	51.90%	3.50%	44.60%	47.90%	3.30%	48.80%	49.30%	2.50%	48.30%

Panel B: Differences in means of logarithm of audit fees									
	2016 vs. 2017			2017 vs. 2018			2018 vs. 2019		
	2016 (N=1579)	2017 (N=1590)	Difference	2017 (N=1590)	2018 (N=1514)	Difference	2018 (N=1514)	2019 (N=1356)	Difference
LAFs	14.62	14.72	0.10 **	14.72	14.78	0.06 **	14.78	14.83	0.05 *
NLAFs-Required	12.22	12.31	0.09 **	12.31	12.42	0.11 ***	12.42	12.68	0.26 ***
Not-Required	12.62	12.67	0.05	12.67	12.87	0.20 **	12.87	13.47	0.61 ***

Note: The percentages of changes in Panel A are based on the original value of audit fees. A company is classified as having decreased (increased) audit fee if the audit fee of the current fiscal year decreased (increased) more than 1% of audit fee of the prior fiscal year. If the change of audit fee of the current fiscal year is less than 1% of audit fee of the prior fiscal year, it is classified as having unchanged audit fee. *, **, *** indicate significance at the 0.10, 0.05, and 0.01 level respectively.

results in Panel A and Panel B highlights the importance of using multivariate regression analysis for the impact of the CAM requirements by controlling other influencing variables.

Multivariate Test Results

Table 3 reports audit fee changes for large accelerated filers during the sample years. The coefficient of YEAR2017 is 0.035 with p-value $< .0001$, which suggest that audit fees for companies in this category increased by 3.5% in fiscal year 2017. However, we cannot conclude that this increase is due to the CAM requirements solely based on results in Table 3 because of two reasons. First, other accounting and auditing standards on revenue recognition, leases, and audit partner identity disclosure were issued and became effective in 2017 or 2018. Compliance with those standards likely caused incremental work for auditors and resulted in raised audit fees in 2017 and 2018. Second, fiscal year 2017 is still two years ahead the implementation year 2019 for LAFs, it is unlikely that the audit fee change in 2017 is directly caused by the CAM requirements. In fiscal years 2018 and 2019, the audit fees are not increased with statistical significance compared to the prior year.

Table 4 presents audit fee changes for non-accelerated filers that are required to comply with the CAM requirements when their fiscal ending dates fall on or after December 31, 2020. For both 2017 and 2018, audit fees are increased with statistical significance of p-value < 0.01 . However, because these time periods are more than two years before the implementation year of companies in the category, it is unlikely that the increases are due to auditors' incremental work on critical audit matters.

Table 5 provides the audit fee changes for companies that are not required to report critical audit matters. There is no audit fee increase with statistical significance for fiscal years 2017 and 2018 compared to the prior year. However, counter-intuitively, the audit fees increased with statistical significance of p-value $< .0001$ in fiscal year 2019. We drill down to the sample of this category for explanations. We further break the sample of this category by separating emerging growing companies (EGCs) from other companies. The rationale is that emerging growing companies would lose their EGC status in five years after their IPO and the losing of EGC status would make the companies to be subject to regular audit requirements. Our untabulated results show that for companies that are in this category but are not EGCs, there is not audit fee increase with statistical significance in fiscal year 2019. But for EGCs, the coefficient of YEAE2019 is positive with statistical significance of p-value $< .0001$. The results suggest that the increase of audit fees in fiscal year 2019 reported in Table 5 is driven by EGCs that are close to lose their EGC status and are preparing for more work needed for regular audit procedures.

Taken together, we cannot conclude that the CAM requirements are responsible for the audit fee increases reported for large accelerated filers and non-large accelerated filers required for the CAM requirements. That rejects the first hypothesis.

Table 3 Audit Fee Changes of Large Accelerated Filers

Dependent variable: log audit fees						
Variables	2016 vs. 2017		2017 vs. 2018		2018 vs. 2019	
	Coef.	P-value	Coef.	P-value	Coef.	P-value
<i>YEAR2017</i>	0.035	<.0001				
<i>YEAR2018</i>			0.012	0.0925		
<i>YEAR2019</i>					0.007	0.4319
<i>BIG4</i>	0.093	0.1156	0.062	0.0027	0.066	0.0724
<i>SPEC</i>	-0.013	0.6257	0.020	0.5079	0.025	0.259
<i>LTNR</i>	0.065	0.0017	0.015	<.0001	0.020	<.0001
<i>OP</i>	1.719	<.0001	0.166	0.0525	0.175	0.6283
<i>YE</i>	-0.095	0.5986	0.162	0.0343	0.270	0.4835
<i>REST</i>	-0.021	0.3321	0.020	0.5622	0.024	0.8127
<i>ACCR</i>	0.338	0.0025	0.104	0.4068	0.130	0.0632
<i>SIZE</i>	0.395	<.0001	0.029	<.0001	0.034	<.0001
<i>MB</i>	0.000	0.1987	0.000	0.838	0.000	0.3687
<i>LEV</i>	0.145	0.0626	0.060	0.0046	0.077	0.0882
<i>ROA</i>	-0.334	<.0001	0.078	0.1694	0.086	0.8048
<i>TANG</i>	0.180	0.3375	0.172	0.0266	0.143	0.0996
<i>FROEIGN</i>	0.061	0.2713	0.058	0.6311	0.062	0.0997
<i>LSEG</i>	-0.022	0.4395	0.033	0.4355	0.038	0.7409
<i>RECINV</i>	0.240	0.2143	0.175	0.0526	0.188	0.0047
<i>LOSS</i>	0.046	0.0771	0.022	0.7432	0.025	0.7577
<i>LITIGATION</i>	0.128	0.6322	0.183	0.6213	0.190	0.3069
<i>SI</i>	0.003	0.8352	0.015	0.6316	0.019	0.3177
<i>EVOL</i>	-0.012	0.807	0.008	0.2431	0.155	0.5721
Observations	3,197		3,118		2,870	
R-Squared	0.98		0.99		0.98	

The full sample of large accelerated filers is 6,039. We further derive the three sub-samples for the three year-pairs based on the full sample. The regression is ordinary least squares (OLS) regression with company fixed effects included. The p-values are two-tailed.

Table 4 Audit Fee Changes of Non-large Accelerated Filers Required to Comply

Dependent variable: log audit fees						
Variables	2016 vs. 2017		2017 vs. 2018		2018 vs. 2019	
	Coef.	P-value	Coef.	P-value	Coef.	P-value
<i>YEAR2017</i>	0.032	0.0028				
<i>YEAR2018</i>			0.035	0.0016		
<i>YEAR2019</i>					0.004	0.7365
<i>BIG4</i>	0.210	0.032	0.685	<.0001	-0.013	0.9259
<i>SPEC</i>	0.117	0.0441	-0.114	0.0709	0.003	0.9661
<i>LTNR</i>	0.190	<.0001	0.078	<.0001	0.072	0.0012
<i>OP</i>	0.495	0.0336	-0.407	0.0306	0.042	0.8413
<i>YE</i>	-0.338	0.231	0.036	0.8427	-0.126	0.436
<i>REST</i>	-0.041	0.2337	0.046	0.2098	-0.088	0.0284
<i>ACCR</i>	0.119	0.2497	0.308	0.0044	0.215	0.0382
<i>SIZE</i>	0.279	<.0001	0.251	<.0001	0.144	0.0004
<i>MB</i>	0.000	0.6532	0.000	0.5435	0.000	0.8215
<i>LEV</i>	0.024	0.6062	-0.060	0.0033	0.036	0.3861
<i>ROA</i>	-0.099	0.0002	-0.103	0.0012	0.038	0.2875
<i>TANG</i>	0.085	0.5606	0.098	0.5532	-0.008	0.9614
<i>FROEIGN</i>	-0.015	0.8727	0.066	0.537	-0.046	0.6694
<i>LSEG</i>	0.035	0.5085	0.084	0.2238	0.101	0.0727
<i>RECINV</i>	-0.006	0.9628	-0.027	0.8457	0.097	0.5282
<i>LOSS</i>	-0.006	0.882	-0.022	0.5499	-0.119	0.0017
<i>LITIGATION</i>	-0.601	0.1551	2.108	<.0001	-0.401	0.3263
<i>SI</i>	0.056	0.0057	0.020	0.3343	0.007	0.7309
<i>EVOL</i>	0.016	0.2804	-0.003	0.8212	0.021	0.1919
Observations	3,115		3,237		2,896	
R-Squared	0.98		0.98		0.98	

The full sample of non-large accelerated filers that are required to comply with the CAMs requirements is 5,961. We further derive the three sub-samples for the three year-pairs based on the full sample. The regression is ordinary least squares (OLS) regression with company fixed effects included. The p-values are two-tailed.

Table 5 Audit Fee Changes of Companies Not Required to Comply

Dependent variable: log audit fees						
Variables	2016 vs. 2017		2017 vs. 2018		2018 vs. 2019	
	Coef.	P-value	Coef.	P-value	Coef.	P-value
<i>YEAR2017</i>	0.043	0.0975				
<i>YEAR2018</i>			0.028	0.164		
<i>YEAR2019</i>					0.094	<.0001
<i>BIG4</i>	0.268	0.1254	0.159	0.2264	1.266	<.0001
<i>SPEC</i>	-0.161	0.2742	0.237	0.0314	0.011	0.9327
<i>LTNR</i>	-0.023	0.6519	0.119	0.0043	0.044	0.3578
<i>OP</i>	0.184	0.7022	-1.253	0.0116	0.000	.
<i>YE</i>	0.126	0.7533	-0.685	0.0003	-0.978	0.0009
<i>REST</i>	-0.005	0.9478	-0.056	0.4009	0.085	0.2008
<i>ACCR</i>	0.071	0.6481	0.025	0.8539	0.027	0.8515
<i>SIZE</i>	0.206	0.0009	0.200	<.0001	0.233	<.0001
<i>MB</i>	0.000	0.0045	0.000	0.9954	0.000	0.9695
<i>LEV</i>	0.039	0.7345	0.184	0.0402	0.034	0.5527
<i>ROA</i>	-0.076	0.1615	-0.001	0.9686	-0.243	0.0026
<i>TANG</i>	-0.157	0.6731	0.601	0.0469	0.511	0.007
<i>FROEIGN</i>	0.051	0.7539	0.026	0.8389	0.563	0.0022
<i>LSEG</i>	0.040	0.7636	0.218	0.0403	0.078	0.4839
<i>RECINV</i>	-0.207	0.422	0.188	0.3379	-0.231	0.334
<i>LOSS</i>	-0.146	0.0218	0.071	0.3766	0.054	0.5261
<i>LITIGATION</i>	-4.204	<.0001	0.732	0.0457	1.124	<.0001
<i>SI</i>	0.014	0.7216	0.065	0.0473	0.028	0.4495
<i>EVOL</i>	-0.001	0.9363	0.006	0.8951	-0.017	0.7724
Observations	851		851		685	
R-Squared	0.98		0.98		0.99	

The full sample of companies that are not required to comply with the CAM requirements is 1,522. We further derive the three sub-samples for the three year-pairs based on the full sample. The regression is ordinary least squares (OLS) regression with company fixed effects included. The p-values are two-tailed.

Table 6 Number of Critical Audit Matters and Audit Fees

Dependent variable: log audit fees			
Variables	Coef.	t Value	p-value
<i>NUM_CAMs</i>	0.067	3.83	0.0001
<i>BIG4</i>	0.038	1.28	0.2021
<i>SPEC</i>	0.045	1.58	0.1151
<i>LTNR</i>	0.058	3.48	0.0005
<i>OP</i>	0.354	0.74	0.4604
<i>YE</i>	-0.005	-0.14	0.8922
<i>REST</i>	0.159	4.50	<.0001
<i>ACCR</i>	0.244	0.85	0.3978
<i>SIZE</i>	0.488	45.47	<.0001
<i>MB</i>	0.000	-1.28	0.2001
<i>LEV</i>	0.253	3.79	0.0002
<i>ROA</i>	-0.066	-0.57	0.5712
<i>TANG</i>	-0.368	-3.81	0.0001
<i>FROEIGN</i>	0.468	6.08	<.0001
<i>LSEG</i>	0.071	3.31	0.001
<i>RECINV</i>	0.162	1.47	0.1421
<i>LOSS</i>	0.131	3.80	0.0002
<i>LITIGATION</i>	-0.099	-1.68	0.0925
<i>SI</i>	0.115	3.23	0.0013
<i>EVOL</i>	-0.133	-0.39	0.6995
Observations	1,356		
R-Squared	0.77		

The full sample of large accelerated filers is 6,039. We use a sub-sample of fiscal year 2019 in this regression. The regression is ordinary least squares (OLS) regression with industry fixed effects included. The p-values are two-tailed.

Table 6 reports the testing results of our second hypothesis. The coefficient of *NUM_CAMs* is positive with significance level at $p < 0.01$ level. This suggests that audit fees for large accelerated filers in the first year of implementation is positively associated with the number of critical audit matters reported by auditors. The findings support the second hypothesis. However, we need to interpret this finding carefully. The results of multivariate tests reported in Table 3, Table 4, and Table 5 provides no evidence that the CAM requirements increased audit fees for companies that required to comply with the CAM rule. Thus, it would be misleading to conclude that reporting of or work relevant to more critical audit matters on auditor's report lead to higher audit fees. Instead, it is more likely that companies with higher audit fees would be found with more critical audit matters. In other words, companies with higher audit fees may have more accounting issues that eventually resulted in more reported critical audit matters.

6. Conclusion

We examine whether the CAM requirements increase the cost of audit services by investigating the change of audit fees from fiscal year 2016 through fiscal year 2019. Though the descriptive statistics show a general trend of rising audit fees in recent years for most companies, our multivariate regressions fail to provide evidence that the CAM requirements already caused audit fees to increase. Our results suggest that the CAM requirements might not cause increase of audit costs as concerned by some accounting firms and businesses. However, we only provide initial analyses on the potential impact of the CAM requirements on audit fees since our data only includes implementation by large accelerated filers for a partial of fiscal year 2019. Further research is necessary to examine the impact of the new rule on audit costs by using data of more years.

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Appendix A
Variable Definitions

<i>ACCR</i>	Accruals, defined as the absolute value of discretionary accruals
<i>BIG4</i>	Big 4, defined as a dummy variable equal to 1 if the firm is audited by one of the Big 4 auditors, and 0 otherwise.
<i>EVOL</i>	Earnings volatility, defined as the standard deviation of quarterly earnings ratio over the preceding five years. Earnings ratio is the ratio of income before extraordinary items over total assets.
<i>FROEIGN</i>	Foreign sales, defined as the proportion of sales by foreign segments.
<i>LEV</i>	Leverage, defined as long-term debt /total assets.
<i>LITIGATION</i>	High-litigation industry, defined as a dummy variable equal to 1 if the firm is in a high litigation industry, and 0 otherwise. High-litigation industries include those with SIC codes 2833–2838, 3570–3577, 3600–3674, 5200–5961, 7370–7374, and 8731–8734.
<i>LNAFEE</i>	Log non-audit fees. Non-audit fees are the fees paid to the auditor for non-audit services.
<i>LTNR</i>	Log auditor tenure. Auditor tenure is the number of years the firm has retained its current auditor.
<i>LOSS</i>	Operating loss, defined as a dummy variable equal to 1 if the firm has negative operating income in the preceding three years, and 0 otherwise.
<i>MB</i>	Market-to-book, defined as (stock price*shares outstanding)/book equity.
<i>NUM_CAMs</i>	Number of critical audit matters reported on the auditor's report
<i>OP</i>	Audit opinion, defined as a dummy variable equal to 1 if the audit opinion is not a standard, unqualified opinion, and 0 otherwise.
<i>REST</i>	Restatement, defined as a dummy variable equal to 1 if the firm restates its financial statements in the preceding three years, and 0 otherwise.
<i>RECINV</i>	Receivable and inventory ratio, defined as (accounts receivable + inventory)/total assets.
<i>ROA</i>	Return on assets, defined as operating income before depreciation/total assets.
<i>LSEG</i>	Log of business segments
<i>SI</i>	Special items, defined as a dummy variable equal to 1 if the firm has non-zero, non-missing special items, and 0 otherwise.
<i>SIZE</i>	Firm size, defined as the log of total assets.
<i>SPEC</i>	Auditor industry specialist, define as a dummy variable equal to 1 if the firm's auditor is an industry specialist, and 0 otherwise. An industry specialist is the auditor with the largest market share by client assets in the industry.

<i>TANG</i>	Tangibility, defined as property, plant, and equipment/total assets.
<i>YE</i>	Fiscal year-end, defined as a dummy variable equal to 1 if the firm's fiscal year-end is December, and 0 otherwise.