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Does Discussing Audit Procedures in Critical Audit Matter Calibrate Financial Reporting Risk Assessments?

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SYNOPSIS: We examine in a controlled experiment whether discussing audit procedures that address a complex investment valuation issue in the critical audit matter (CAM) paragraph of the auditor's report *calibrates* sophisticated users' financial reporting risk (FRR) assessments. Our findings support this calibrating effect, that is, *minimizing shifts in their risk assessments* before versus after the realization of the risk event (i.e., a significant decline in the fair value of investments pre-empted earlier in the CAM disclosures). Minimizing large swings in users' risk perceptions is an important consideration to the profession to minimize negative surprises and audit litigation. Our results support standard-setters' views that discussing audit procedures in the CAM disclosures is value adding in calibrating sophisticated users' FRR assessments.

Data Availability: Data are available from the authors on request.

JEL Classifications: D81; M42.

Keywords: critical audit matter disclosures; audit procedures; calibration; financial reporting risk.

I. SYNOPSIS AND CONTRIBUTION TO PRACTICE

Although highlighting a significant accounting issue in the critical audit matter (CAM) paragraph of the auditor's report could serve as a forewarning of risks, little is known from existing literature about the effects of discussing audit procedures in CAM disclosures. Although not mandated, regulators and standard-setters recognize that discussing audit procedures in CAM disclosures can provide users a better understanding of the audit process (IAASB 2014; PCAOB 2017b). The Center for Audit Quality's review of the CAMs for Standard & Poor's 100 companies in the first year of the CAM implementation shows how CAMs were addressed in the audit by providing a description of the auditor's response, a brief overview of the audit procedures performed, or some combination of both (CAQ 2020). Thus, not all CAM disclosures include a description of the audit procedures conducted.[1]

One concern expressed by practitioners in comment letters to the regulators, however, was that the succinct summary of audit procedures in CAM disclosures could undermine users' confidence in the rigor of the audit, giving an

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[1] Two examples of audit reports that disclose only the auditors' approach without providing details of the audit procedures are Moya Holdings Asia Limited relating to group audits (see http://www.moyaasia.com/uploads/9/7/6/8/97682954/sar1610006_moya_ar_1510__497-498_sign_off_print.pdf) and Slinger Bag, Inc., relating to complex debt and equity transactions (see https://www.connexasports.com/investor-relations/#connexa_chart 2021). Most companies in the recent past have been disclosing CAMs with a brief overview of the audit procedures, for example, Microsoft Corporation (see https://www.microsoft.com/investor/reports/ar21/index.html).

impression that the audit procedures were lesser in scope than was the actual case (Deloitte & Touche (D&T) 2013, 2016; E&Y 2016; IAASB 2014; PCAOB 2017a). On the other hand, if the inclusion of audit procedures in CAM disclosures over assuages perceived risk, it might bring about not only disappointment but also legal action against the auditor, subsequent to an adverse or significant loss event related to the CAM. We thus examine whether and how, the inclusion of audit procedures in CAM disclosures can have a calibrating effect on users' perception of financial reporting risk (FRR) assessments. In the context of our study, we consider a person's subjective risk judgment to be calibrated if the initial information set about a risk event allows him/her to form a judgment that approximates that which would be made upon realization of that risk event in the future (i.e., requires minimal readjustment post-risk event).[2] Minimizing large swings in users' risk perceptions is an important consideration to the profession to minimize negative surprises and audit litigation.

To test this research question, we use an experiment using a 3 × (2) mixed design with the audit report format (i.e., *No CAM*, *CAM only*, and *CAM with procedures*) as a between-participants independent variable and the timing of participants' assessments before and after the announcement of an adverse event (i.e., Stage 1 versus Stage 2) as a within-participants variable. The announcement of an adverse event or bad news that occurred after the release of the auditor's report relates to a significant decline in the value of the audited investments with Level 3 fair value,[3] highlighted earlier in the CAM disclosures. Our key dependent variable of interest is user-perceived risk that the investment fair value in the audited financial statements could be materially misstated (i.e., FRR assessments), with higher FRR assessments indicating lower perceived financial reporting quality.

Our findings based on the responses of 55 professional accountants are in line with our expectations. Consistent with our premise that CAM disclosures increase the salience of risks, users' FRR assessments in the *CAM only* condition is higher than that in the *No CAM* condition. This result is consistent with prior findings (Christensen, Glover, and Wolfe 2014; Kachelmeier, Rimkus, Schmidt, and Valentine 2020).[4] Moreover, users' FRR assessments in the *CAM with procedures* condition is significantly lower than that in the *CAM only* condition as the salience of the risk is reduced by a discussion of audit procedures. Post-adverse event, we find a significant upward shift in FRR assessments in the *No CAM* condition, a significant downward shift in FRR assessments in the *CAM only* condition, and no change in the *CAM with procedures* condition. Our results show that, consistent with standard-setters' arguments, discussing audit procedures in the CAM disclosures is value adding in calibrating sophisticated users' FRR assessments. Post-adverse event, participants perceive higher audit quality in both the *CAM* conditions, with or without procedures, than in the *No CAM* condition. We do not observe any effect on their investment judgments.

Although we make no *a priori* expectation, we reran our experiment using 53 M.B.A. participants and found that they respond to variations in the audit report format in ways that differ from our more sophisticated participants in the main experiment. Pre-adverse event, there is no significant effect of report format on FRR assessments. Post-adverse event, there is no significant change in risk assessments in the *No CAM* and *CAM only* conditions, whereas there is a significant increase in the *CAM with procedures* condition. These findings validate our premise that audit and financial statement user expertise plays a role in determining whether there is any value in including audit procedures in CAM disclosures.

Our study contributes to extant research and understanding on the impacts of CAM disclosures on users' judgments. First, we provide what we believe is the first *causal* evidence on the incremental effect of discussing audit procedures in CAM disclosures, both at the point of reading the CAM disclosure and at the point when the adverse event mentioned in the CAM paragraph actualizes. Second, our design also allows us to determine the extent that sophisticated users' FRR assessments are calibrated at the point of reading the CAM disclosure. Third, we provide evidence on how sophisticated users react to the discussions of audit procedures in CAM disclosures. Our findings also add to public

[2] The concept of calibration that we refer to here is akin to what legal researchers refer to as evaluative calibration, where the researcher seeks "to understand what someone else's evaluative judgment means in light of the other judgments that that decision-maker has reached, and thus in light of what we can infer that decision maker's evaluation scale (or biases) to be" (Schauer and Spellman 2017, 136). Evaluative calibration, applicable in the absence of an objective benchmark, differs from accuracy calibration used in psychology research that investigates the degree of fit between a person's judgment of performance and his actual performance in the presence of an accuracy benchmark (Keren 1991). Our study examines risk, which is based on each person's subjective assessment and influenced by one's risk appetite. Given its subjectivity, we consider an initial risk judgment to be well calibrated if it requires minimal readjustment even after the realization of the risk event. In our experiment scenario, the subsequent investment loss (i.e., the realization of the risk event highlighted in the CAM) provides the most updated data to revise the initial FRR judgment. The revised FRR judgment thus provides a reasonable and appropriate benchmark in the absence of an objective benchmark.

[3] It is more challenging to value investments with Level 3 fair value, which involves the highest level of valuation subjectivity.

[4] For example, Kachelmeier et al. (2020) similarly show that pre-misstatement confidence is lower in the area disclosed as a CAM (that is, FRR assessments are higher). Likewise, our findings are similar to Christensen et al. (2014) who show that investors who receive an auditor's report with a CAM paragraph perceive marginally greater risk that the financial statements contain a material misstatement (higher FRR assessments) than investors who receive a standard auditor's report.

policy and document evidence consistent with the views of standard-setters that discussing audit procedures in CAM disclosures is of value to sophisticated users.

Our conclusion that including audit procedures in CAM disclosures leads to more calibrated users' FRR assessments is subject to at least five caveats. First, consistent FRR assessments before and after the adverse event can also suggest potential underweighting of cues by users relating to management bias in the valuation of stock investments. Second, the null effects on investment judgments and the lack of differences relating to audit quality between the *CAM only* and *CAM with procedures* conditions suggest a limit to the impact of including audit procedures in CAM disclosures. There is also the possibility that the type and quality of audit procedures may differentially impact FRR assessments and investment/audit quality judgments. Third, the constrained information set could be more salient to participants in our experiment than in the real world. Fourth, our experiment examines only one CAM issue, whereas in practice, there may be multiple CAM issues, and the observed effects may thereby differ in such instances. Finally, our differing results with M.B.A. participants could be further explored. These are areas for future research.

II. LITERATURE AND HYPOTHESIS DEVELOPMENT

Kachelmeier et al. (2020) is the only study we are aware of that examines, for a subsample of their participants comprising M.B.A. students, the effect of including audit procedures in CAM disclosures.[5] Their study finds no significant effect of such an inclusion in the CAM paragraph. This null effect may be driven by the participant pool who may not have the necessary expertise/context to understand audit procedures—a concern similarly expressed by several commentators to the proposal to include audit procedures in CAM disclosures (PCAOB 2017b). For this reason, we use sophisticated users in our experiment to understand the efficacy and implications of including audit procedures in CAM disclosures. Our study thus allows us to generalize the effects of CAM disclosures to users with greater levels of accounting/finance expertise (Bédard, Coram, Espahbodi, and Mock 2016).

Participants in prior CAM studies make risk assessments either *before* (Christensen et al. 2014; Kachelmeier et al. 2020) *or after* (Backof, Bowlin, and Goodson 2022; Brasel, Doxey, Grenier, and Reffett 2016; Gimbar, Hansen, and Ozlanski 2016; Kachelmeier et al. 2020) the occurrence of an adverse event related to the CAM. None of these studies systematically examines users' perceptions *before and after* the occurrence of an adverse event.[6] We contribute to this stream of research by examining how auditors' reports of varying formats (*No CAM*, *CAM only*, and *CAM with procedures*) affect sophisticated users' FRR assessments before and after the occurrence of an adverse event. Examining these changes in judgments across stages is crucial to clarify the cognitive process by which the judgments at Stage 2 (post-adverse event) are formed, thus allowing us to assess the evaluative calibration of judgments at Stage 1 (pre-adverse event). Moreover, prior studies have not examined the incremental effect of including audit procedures in the CAM paragraph (Backof et al. 2022; Brasel et al. 2016; Christensen et al. 2014).[7]

In our study, the auditor's report contains a paragraph that highlights CAMs (*CAM only*), both CAMs and related audit procedures (*CAM with procedures*), or no CAM paragraph at all (*No CAM*). The salience effects theory (SET) in psychology posits that the more prominently a piece of information is placed or is of higher value than other information, the more likely it will attract or direct the users' attention and enhance the processing of that information, thereby resulting in a stronger reaction to that information (Fiske and Taylor 1991, 2016; Sirois, Bédard, and Bera 2018). This phenomenon has also been found to be prevalent in accounting settings (Clor-Proell, Proell, and Warfield 2014; Hirst and Hopkins 1998; Hopkins, Houston, and Peters 2000; Miao, Teoh, and Zhu 2016). Drawing from the SET, we predict that the CAM paragraph will draw the readers' attention to the estimation risks, thereby increasing the saliency of these risks.[8]

[5] Kachelmeier et al. (2020) experimental task pertains to FRR relating to measurement/estimation uncertainty (allowance for sales returns or fair valuation of company's investments in financial instruments), which is similar to the task used in our study (fair valuation of investments in the stocks of other companies).

[6] For example, although Kachelmeier et al. (2020) assess participants' confidence in the CAM issues highlighted in the auditor's report before the misstatement, the same measure is not captured after the misstatement. Their study also examined post-misstatement effects of the CAM paragraph on auditor responsibility and liability but not pre-misstatement effects. Unlike our study, Kachelmeier et al. (2020) do not examine the pre- versus post-change effects of any of their key variables.

[7] For example, because Christensen et al. (2014) manipulate not just audit procedures but also either a positive or negative assurance, their study does not isolate or untangle the causal effect of audit procedures. Likewise, although Brasel et al. (2016) show varying effects of *CAM with procedures* across misstatement types, and Backof et al. (2022) show jurors assessing higher negligence likelihood in the *CAM with procedures* condition than in the *No CAM* condition when no clarification is provided, these studies do not examine the incremental effect of including audit procedures in the CAM paragraph.

[8] We are thankful for reviewers' suggestions that the additional information relating to a CAM issue and/or audit procedures could also have the same results from the information content perspective, apart from the salience perspective. The discussion of the audit procedures in CAM disclosures may likely allay sophisticated users' concerns about the highlighted risks, thereby reducing their FRR assessments. Our experimental design does not disentangle the effects of the salience perspective from the information content perspective.

Consequently, users' FRR assessments of the financial statement item are likely to be higher in the *CAM only* condition than in the *No CAM* condition.

Prior studies also show that the more salient information will likely be processed to a greater extent given a person's limited attention capacity (Hirshleifer and Teoh 2003; Ramos, Latoeiro, and Veiga 2020). The salience of the key risk issue could, however, be tempered by a discussion of audit procedures in CAM disclosures. The audit procedures discussed in the CAM paragraph to address the key risk issue will likely reduce the salience of the risk, thereby reducing their FRR assessments. Given that audit procedures are performed to address the key risk issue highlighted in CAM disclosures, users' FRR assessments of the financial statement item will likely be lower in the *CAM with procedures* condition than in the *CAM only* condition.[9] Moreover, given that the discussion of audit procedures in the *CAM with procedures condition* will likely reduce the salience of the key risk issue discussed in the CAM paragraph, users' FRR assessments are likely to be similar to the *No CAM* condition where neither the key risk issue nor the audit procedures to address the risk are discussed.

The above discussion leads to the following hypotheses:

H1a: Users' FRR assessments in the *CAM only* condition are significantly higher than those in the *CAM with procedures* and *No CAM* conditions at Stage 1 (pre-adverse event).

H1b: Users' FRR assessments in the *No CAM* condition will not differ from those in the *CAM with procedures* condition at Stage 1 (pre-adverse event).

We next draw from the expectation violation theory (EVT) to consider a situation where, subsequent to the release of the audited financial statements, the company reports quarterly results that dipped significantly from the previous quarter, primarily due to some fair value losses (e.g., bad news of a significant decline in the fair value of investments, the valuation subjectivity of which was earlier highlighted in the CAM paragraph). The EVT (Burgoon and Le Poire 1993; Hirshman 1988; Jussim, Coleman, and Lerch 1987) suggests that if a decision-maker's expectation about a target person, object, or information is violated, his or her assessment will be more extreme in line with the violation (Biernat, Vescio, and Billings 1999; Jackson, Sullivan, and Hodge 1993). The theory suggests that the violation will result in greater information processing to assess the reason for the violation (Burgoon, Dunbar, and Segrin 2002) and can affect the communicator's credibility, attractiveness, and other attributes perceived by others (J. Burgoon and M. Burgoon 2001).

Users in the *CAM* conditions (with or without audit procedures) are forewarned about issues relating to the complexity/subjectivity/risks of the accounting issue, and they are likely to have elevated expectations of an adverse event occurring. Accordingly, bad news of a subsequent decline in investment value related to the CAM will more likely be within the expectations of users in the *CAM* conditions (with or without audit procedures) than in the *No CAM* condition. By contrast, users in the *No CAM* condition are not forewarned and are not likely to have such elevated expectations before the adverse event and are likely to experience a greater upward shift in their FRR assessments from Stage 1 to Stage 2 as the adverse outcome would likely be "new" information that violates their expectations. By contrast, because users in the *CAM only* and *CAM with procedures* conditions do have such a basis (by virtue of risks made salient in CAM disclosures) for forming elevated expectations of a future adverse outcome, they are not expected to have significant upward shifts in their FRR assessments from Stage 1 to Stage 2.

This discussion suggests that the unequivocal prediction is that there is an upward shift in users' FRR assessments between Stages 1 and 2 in the *No CAM* condition, as expressed in the following hypothesis.

H2: Users' FRR assessments in the *No CAM* condition will increase significantly from Stage 1 to Stage 2 (pre- versus post-adverse event).

We make no predictions relating to the directional changes in users' FRR assessments between Stages 1 and 2 in the *CAM with procedures* and *CAM only* conditions as we are unable to predict the extent to which the salience of the risk information will be affected by the absence/presence of a discussion of the audit procedures. A significant upward (downward) shift in FRR assessments between stages is *prima facie* evidence of under- (over-) elevated FRR assessments at Stage 1, whereas the lack of a significant change is indicative of calibrated FRR assessments at Stage 1. We express this as the following research question:

RQ: What is the effect of the *CAM only* and the *CAM with procedures* conditions on users' FRR assessments from Stage 1 to Stage 2 (pre- versus post-adverse event)?

[9] Our predictions are less likely to hold if the audit procedures discussed are weak in responding to the risks highlighted.

III. RESEARCH DESIGN AND PARTICIPANTS

We used a 3 × (2) mixed-design experiment with the audit report format (*No CAM*, *CAM only*, and *CAM with procedures*) as a between-participants independent variable and the timing of participants' FRR assessments before and after the announcement of the adverse event (Stage 1 versus Stage 2, respectively) as a within-participants variable. The case involved a hypothetical listed investment holding company that only has Level 3 fair-valued stock investments.

At Stage 1 (pre-adverse event), we manipulated the audit report format (henceforth, Report Format) by varying the information content of the audit report. Participants in the *No CAM* condition (auditor's report without CAM)[10] were presented with the auditor's opinion that the financial statements were presented fairly, the audit was performed in accordance with the applicable Standards on Auditing, and the audit evidence obtained was sufficient and appropriate to provide a basis for the auditor's opinion. In the *CAM only* condition, in addition to the above information, the audit report contained a CAMs paragraph that highlighted the valuation of stock investments to be the most significant area in the audit as there were significant risks in determining the fair (i.e., market) value of the stock investments, which were mainly in emerging economies with significant political and currency risks. Finally, in the *CAM with procedures* condition, in addition to the above information, the CAM paragraph further described the audit procedures performed by the auditor to verify the fair value of the stock investments by specifically describing audit procedures that address the principal considerations that led the matter to be identified as a CAM.[11]

At Stage 1 (pre-adverse event), we measure participants' assessments of the risk that the stock investments in the audited financial statements could be materially misstated (FRR assessments) on an 11-point scale (0 (very low) to 10 (very high)), and this served as our dependent variable at Stage 1 (H1). At Stage 2, participants were informed via a press release that the company reported a significant decrease in net income from the previous quarter, attributed mainly to losses arising from revaluing its stock investments to fair value at quarter-end (an adverse event).[12] At this stage, we measure again the participants' FRR assessments of the stock investments to assess the change in participants' FRR assessments from Stage 1 to Stage 2, the dependent variable for H2.

Participants in our experiment comprise 55 professional accountants who attended training sessions conducted by the national accounting professional body in Singapore.[13] Please refer to Appendix A, Part A, for further details on our experimental manipulation and administration and Part B for a manipulation check and debriefing questions.

IV. TESTS OF HYPOTHESES

H1a states that at Stage 1 (pre-adverse event), participants' FRR assessments in the *CAM only* condition are significantly higher than in both the *CAM with procedures* and *No CAM* conditions, whereas H1b states that at Stage 1, participants' FRR assessments in the *No CAM* condition will not differ from those in the *CAM with procedures* condition. Table 1 presents the descriptive statistics (Panel A), ANOVA results (Panel B), and the planned comparisons (Panel C), and Figure 1 presents a graphical representation. We perform a one-way ANOVA and find a marginally significant effect of Report Format ($p = 0.058$). As predicted, the participants' FRR assessments in the *CAM only* condition (mean = 7.90) are significantly higher than that in the *CAM with procedures* (mean = 6.94; $p = 0.041$) and *No CAM* (mean = 6.91; $p = 0.033$) conditions. Moreover, there is no significant difference in participants' FRR assessments between the *No CAM* and *CAM with procedures* conditions ($p = 0.955$, two-tailed). Thus, H1a is supported, and H1b is not rejected.

For H2, we predict that participants' FRR assessments in the *No CAM* condition will increase significantly from Stage 1 to Stage 2 (pre- versus post-adverse event), while our research question considers how the *CAM only* and *CAM with procedures* conditions would shift users' FRR assessments from Stage 1 to Stage 2 (pre- versus post-adverse event).

[10] This condition is not meant to reflect a situation where CAM reporting is required but the company had no CAMs. Instead, this condition serves as a control condition whereby it reflects the regime where CAM reporting has not taken effect—this allows us to tease out the effect of CAM, with and without audit procedures. Our experiment was conducted before the issuance of the new standards on communicating CAMs.

[11] The audit procedures described in our experiment are based on the requirements stipulated in the auditing standards relating to auditing fair value accounting estimates, such as AU 328 (AICPA 2003) and ISA 540 (IFAC 2008).

[12] In the case scenario, we made a design choice to keep silent as to whether the drop in investment value is attributable to the auditor's fault and/or changes in market conditions so as to tease apart the effects of CAM disclosures on risk perception and audit quality, among other factors.

[13] Seventy-two participants took part in the study. We omitted the responses of four participants with incomplete responses and the responses of 11 external auditors given their professional affiliation and therefore likely empathy toward other auditors as suggested by social identity theory (Bamber and Iyer 2002; Reffett, Brewster, and Ballou 2012; Tajfel and Turner 1979). As our study requires participants to assess financial reporting and audit quality, we omitted two participants who lack accounting qualification or accounting and finance-related work experience. Based on the responses of 52 participants, 23 describe their job as accountant or financial controller, 12 as finance manager/executive, five as manager/senior manager, and the remaining as management accountant/head of department.

TABLE 1

Effects of Report Format and Timing on Participants' FRR Assessments

Panel A: Mean (Std. Dev.) of the FRR Assessments Pre- (Stage 1) and Post- (Stage 2) Adverse Event

Report Format	n	FRR (Stage 1)	FRR (Stage 2)	Increase (Decrease) from Stage 1 to Stage 2
No CAM	19	6.91 (1.94)	7.72 (1.30)	0.81
CAM only	19	7.90 (1.29)	7.11 (2.05)	(0.79)
CAM with procedures	17	6.94 (1.52)	7.29 (1.76)	0.35
Total	55			

Panel B: ANOVA Results of the FRR Assessments Pre-Adverse Event (Stage 1)

Between-Participants	Sum of Squares	df	Mean Square	F-value	p-value
Report Format (RF)	11.703	2	5.852	2.260	0.058[a]
Error	134.669	52	2.590		

Panel C: Planned Comparisons of the FRR Assessments Pre-Adverse Event (Stage 1)

	F-value	p-value
CAM only > *CAM with procedures*	3.150	0.041[a]
CAM only > *No CAM*	3.553	0.033[a]
CAM with procedures = *No CAM*	0.003	0.955

Panel D: Mixed ANOVA Results of the FRR Assessments Pre- and Post-Adverse Event

Between-Participants	Sum of Squares	df	Mean Square	F-value	p-value
Report Format (RF)	2.624	2	1.312	0.296	0.745
Error	230.808	52	4.439		
Within-Participants					
Pre-Post	0.414	1	0.414	0.361	0.550
Pre-Post × RF	12.779	2	6.390	5.574	0.006
Error	59.605	52	1.146		

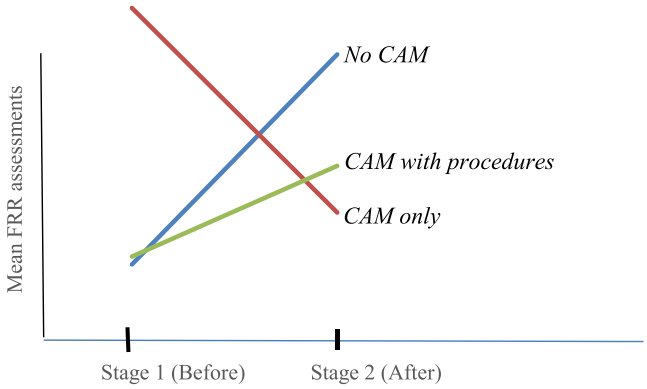
Panel E: Paired Sample t-statistics of the Change in FRR Assessments from Stage 1 (Pre-Adverse Event) to Stage 2 (Post-Adverse Event) for Each Condition

	Change from Stage 1 to Stage 2	t-statistic	p-value
No CAM	Increase	−2.410	0.014[a]
CAM only	Decrease	2.082	0.052
CAM with procedures	No change	−1.031	0.318

Report Format is manipulated at three levels (*No CAM*, *CAM only*, and *CAM with procedures*).
FRR assessments of the stock investments are measured on an 11-point scale (0 (very low) to 10 (very high)) both before (Stage 1) and after (Stage 2) an adverse event.
[a] Denotes that the p-value is one-tailed equivalent.

Table 1 presents the descriptive statistics (Panel A), mixed ANOVA results (Panel D), and paired-sample t-statistic results (Panel E). We perform a one-way mixed ANOVA and find a significant interaction effect between Report Format and Pre-Post FRR assessments ($p = 0.006$, two-tailed), but neither the main effect of Pre-Post FRR assessments nor Report Format is significant ($p > 0.550$, two-tailed). Consistent with our directional expectation, paired-sample t-statistics (Table 1, Panel E) show that there is a significant *increase* in FRR assessments in the *No CAM* condition (Stage 1 mean = 6.91, Stage 2 mean = 7.72, $p = 0.014$). There is a marginally significant *decrease* in participants' FRR assessments in the *CAM only* condition (Stage 1 mean = 7.90, Stage 2 mean = 7.11, $p = 0.052$,

FIGURE 1
Effects of Audit Report Format and Timing on FRR Assessments



(The full-color version is available online.)

two-tailed), whereas there is *no significant change* in the *CAM with procedures* condition (Stage 1 mean = 6.94, Stage 2 mean = 7.29, p = 0.318, two-tailed).[14]

As discussed earlier, the greater the shift, the less calibrated the FRR assessments are at Stage 1 before the adverse outcome. What is of interest is the finding that in the *CAM with procedures* condition, participants' FRR assessments have *not significantly changed* between the stages. Importantly, FRR assessments in the *CAM only* condition *decrease* between the stages, and this is consistent with FRR assessments made upon receipt of the CAM paragraph being higher than those made upon realizing the actual implications of the subsequent adverse outcome. Together, the different patterns of the shifts in FRR assessments for the *CAM only* and *CAM with procedures* conditions are consistent with FRR assessments at Stage 1 being calibrated in the *CAM with procedures* condition and less so in the *CAM only* condition.[15] Please refer to Appendix A, Part C for supplementary analyses.

Supplemental Experiment

To assess if our findings similarly hold for less sophisticated participants, we reperformed our experiment with 53 M.B.A. participants. The participants had, on average, 6.5 years of working experience. Table 2 presents the descriptive statistics (Panel A), ANOVA results (Panel B), and the paired-sample t-statistic results (Panel C). Pre-adverse event, one-way ANOVA shows *no significant effect* of Report Format on FRR assessments (p = 0.525, two-tailed). This is inconsistent with our main findings but is consistent with the findings of Kachelmeier et al. (2020) with M.B.A. participants. Regarding the change in risk assessments, as shown in Panel C, paired-sample t-statistics show that there is *no significant change* in risk assessments in the *No CAM* (Stage 1 mean = 6.64, Stage 2 mean = 7.14, p = 0.586, two-tailed) and *CAM only* conditions (Stage 1 mean = 6.70, Stage 2 mean = 7.27, p = 0.260, two-tailed). However, there is a significant *increase* in the *CAM with procedures* condition (Stage 1 mean = 5.94, Stage 2 mean = 7.56, p = 0.023, two-tailed).

[14] Although the results are statistically significant, the changes in risk assessments do not appear to be large in magnitude, and the risk assessments remain high. We note that movements from a "high" to "very high" risk assessment can mean qualitative changes in further actions that the investor undertakes (e.g., it could motivate the investor to make a sell decision). We perform a one-way ANOVA with Report Format as the independent variable and change in participants' FRR assessments as the dependent variable and find a significant effect of Report Format (p = 0.006, two-tailed). The change in participants' FRR assessments between stages in the *CAM only* condition (mean = −0.79) is significantly different from the change in the *CAM with procedures* (mean = 0.35; p = 0.028, two-tailed) and *No CAM* (mean = 0.81; p = 0.002, two-tailed) conditions. Moreover, there is no statistically significant difference between the *No CAM* and *CAM with procedures* conditions (p = 0.375, two-tailed).

[15] The relative pattern of the shifts in FRR assessments between these two conditions is important in allowing us to make this conclusion. For instance, if FRR assessment shift patterns had also been similar between stages for the *CAM only* and *CAM with procedures* conditions, then it would be difficult to conclude that the *CAM with procedures* condition resulted in calibrated Stage 1 FRR assessments or to make conclusions about the incremental impact of audit procedures.

TABLE 2

Supplementary Experiment—Effects of Report Format and Timing on Participants' FRR Assessments

Panel A: Mean (Std. Dev.) of the FRR Assessments Pre- (Stage 1) and Post- (Stage 2) Adverse Event

Report Format	n	FRR (Stage 1)	FRR (Stage 2)	Increase from Stage 1 to Stage 2
No CAM	16	6.64 (2.18)	7.14 (3.00)	0.50
CAM only	19	6.70 (1.81)	7.27 (2.47)	0.57
CAM with procedures	18	5.94 (2.55)	7.56 (1.72)	1.62
Total	53			

Panel B: ANOVA Results of the FRR Assessments Pre-Adverse Event (Stage 1)

Between-Participants	Sum of Squares	df	Mean Square	F-value	p-value
Report Format (RF)	6.305	2	3.152	0.653	0.525
Error	241.273	50	4.825		

Panel C: Paired-Samples t-statistics of the Change in FRR Assessments from Stage 1 (Pre-Adverse Event) to Stage 2 (Post-Adverse Event) for Each Condition

	t-statistic	p-value
No CAM	−0.556	0.586
CAM only	−1.164	0.260
CAM with procedures	−2.508	0.023

These findings are inconsistent with our main findings. A plausible explanation for the increased risk assessment in the *CAM with procedures* condition following an adverse event could be the expectation gap phenomenon prevalent among less sophisticated users with respect to the auditor's role and their disappointment following the unexpected subsequent loss in investment value, particularly after audit procedures were highlighted in CAMs to address such a risk. By contrast, sophisticated users tend to better understand how the risk highlighted in CAMs are addressed by the audit procedures, which would help calibrate their risk assessment pre-adverse event. This probably explains why their risk assessment did not shift significantly following the occurrence of the adverse event. Overall, these results validate our premise that audit and financial statement report user expertise plays a role in determining whether there is value in including audit procedures in CAM disclosures.

IV. CONCLUSION

We contribute to the stream of research on CAM-related matters by examining the effects of the stage of the decision process (i.e., pre- or post-bad news) and the audit report format (i.e., *No CAM*, *CAM only*, and *CAM with procedures*) on perceived financial reporting quality, measured by FRR assessments. We provide evidence that before the occurrence of an adverse event, audit report format influences sophisticated participants' FRR assessments. Our findings show that participants in the *CAM with procedures* condition perceive significantly lower FRR assessments than those in the *CAM only* condition. The discussion of audit procedures in the CAM paragraph reduces the salience of the key risk issue and, correspondingly, their FRR assessments. These results suggest that it is helpful for auditors to highlight and discuss how audit procedures have been applied to address complex issues documented in CAM disclosures.

With the occurrence of an adverse event or bad news related to an issue highlighted earlier in CAM disclosures, we show that participants in the *CAM with procedures* condition make more informed and calibrated FRR assessments that do not change significantly after receiving news of the adverse event, whereas those in the *CAM only* condition make a downward revision and those in the *No CAM* condition make an upward revision in FRR assessments. Overall, consistent with the views of standard-setters, our findings demonstrate that discussing audit procedures in the CAM paragraph is of value for sophisticated users in that it leads to more informed and calibrated FRR assessments.

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APPENDIX A

Methods and Supplementary Analysis

Part A: Design, Administration, and Participants

Design

The case presented to participants in our experiment involves a hypothetical listed investment holding company with stock investment portfolios in agricultural, exploration, and mining industries in emerging economies that are highly competitive. The company has substantial stock investments (about 70 percent of total assets) in other companies, so that changes in the fair value of its investments would likely have a significant effect on the company's financial position and performance. At Stage 1 of the case, the company's reported net income for the year was 30 percent higher than the previous year and was primarily attributed to revaluing its investments in the stocks of other companies to fair (market) value at year-end. At Stage 2, the company reported a substantial decline in net income for the subsequent quarter, mainly attributed to a significant drop in the fair value of its stock investments (an adverse event). The two stages are described in greater detail below (under Administration and Procedures).

To enhance external validity, we made a specific design choice to provide information relating to the investments identified by the auditor as a CAM in the auditor's report only in the *CAM* conditions (with or without procedures) but not in the *No CAM* condition. However, to ensure no loss of information provided to participants in all experimental conditions, all participants were provided with the case details and Notes to Accounts that highlighted the risks inherent in the measurement of the fair value of the said investments.

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APPENDIX A (continued)

Fair value estimates entail inherent estimation uncertainty, which is the susceptibility of an accounting estimate to an inherent lack of measurement precision due to both measurement uncertainty and macroeconomic risks (Bratten, Gaynor, McDaniel, Montague, and Sierra 2013). Measurement uncertainty arises from variations in the inputs used to determine the fair value. IFRS 13 (IASB 2011) and SFAS No. 157 (FASB 2006) use the fair value hierarchy to categorize investment values into three levels with increasing levels of subjectivity. All participants were provided with the Notes to Accounts that described the criteria for classifying investments as Level 1, 2, or 3, depending on inputs that were used to arrive at the fair value, with increasing levels of subjectivity. In addition, the investments were stated as being primarily in industries in emerging economies where there was significant competition, which further exacerbated the estimation uncertainty related to the fair values. All of the company's investments in the stocks of other companies were classified as Level 3.

Besides eliciting participants' assessments of the risk that the stock investments balance in the audited financial statements could be materially misstated (FRR assessments) at Stage 1 (pre-adverse event) and Stage 2 (post-adverse event), we also measure their perceptions of audit quality and the auditor's culpability.

Administration and Procedures

We administered the experiment in a controlled setting during the training sessions conducted by the Singapore national accounting professional body.[16] Participants took approximately 20 minutes to complete the study. The experiment proceeded in two stages. At Stage 1, participants were provided with a brief introduction to the purpose of the project and were assured of the confidentiality of their responses. In addition, they were asked to indicate their consent to participate in the study.[17] They were next asked to write down their names to acknowledge participation.[18] Following this, participants received a package consisting of three envelopes labeled A, B, and C. At Stage 1 of the experiment, participants were provided with Envelope A containing Part A of the case materials, which described the background information of a hypothetical company as well as excerpts from the balance sheet and income statement for three years. Following this, participants were provided with the Notes to Accounts relating to the investment in the stocks of other companies as well as excerpts from the audit report; the information in these materials varied as a function of the experimental condition that the participants were assigned to. After reading the case materials, Notes to Accounts, and the auditor's report, participants were asked to assess the risk that the stock investments balance in the audited financial statements could be materially misstated. They were asked to place their completed responses back into the envelope before proceeding to Stage 2 of the experiment by opening the second envelope, Envelope B.

At Stage 2 of the study, participants were provided with a press release relating to the company's quarterly earnings. The company reported a significant decrease in net income from the previous quarter, which was mainly attributed to losses arising from revaluing its stock investments to fair value at quarter-end (an adverse event). The press release further informed the participants that following the first-quarter results announcement, the company's stock price had dipped significantly by about 30 percent, wiping out a significant portion of the company's market capitalization value. Following this, participants were asked to reassess the risk that the stock investments balance could be materially misstated. They were asked to insert the completed materials into Envelope B before proceeding to open Envelope C, which contained the materials on manipulation check questions as well as other debriefing questions.

Participants

We selected professional accountants as participants in our experiment to suit the experiment task, which involves complex accounting-related issues, and it allows us to generalize the effects of CAM to users with greater levels of accounting/finance expertise (Bédard et al. 2016). They comprised 43 female (78 percent) and 11 male (20 percent) participants.[19] The participants had, on average, 13 years of accounting/finance-related experience. Thirty-four participants

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[16] During the first few sessions, participants were administered the *No CAM* and the *CAM with procedures* conditions, whereas in the subsequent sessions, the *CAM only* condition was administered. The participants' profiles in terms of accounting experience, gender, familiarity with valuation, familiarity with audit, and investment experience are not significantly different between the sessions ($p > 0.10$, two-tailed).

[17] The study has institutional review board approval.

[18] Participants received $20 for completing the study.

[19] One participant did not indicate gender.

APPENDIX A (continued)

(61.8 percent) had invested in the stock market, and, among these, 56 percent had considered the auditor's report in making their investment decisions. On average, participants rated their familiarity with, or level of expertise on, issues relating to valuation of stock investments as 4.61 on an 11-point scale, which suggests that they had some moderate knowledge in this area. On average, participants rated their familiarity with, or level of understanding of, the independent auditor's role and work as 6.86 on an 11-point scale, which suggests that they had fairly good knowledge in this area. Participants' investment experience, familiarity with valuation, and familiarity with audit and accounting do not vary significantly between the experimental conditions. Overall, the background and work experience of our participants suggest that they have the requisite knowledge necessary to understand the task and make the requisite risk and related assessments.

Part B: Manipulation Checks and Debriefing Questions

To check our manipulation of Report Format, we asked the participants whether the audit report contains a CAM paragraph.[20] Fifty participants (90.9 percent) answered the question correctly.

The debriefing questions captured participants' assessments of various aspects relating to the stock investments, the issue highlighted in the CAM on an 11-point scale. On average, the participants assessed the auditor's foreseeability of the subsequent decline in the value of the stock investments as 5.23 and the level of subjectivity involved in the valuation of the stock investments as 7.40. The participants' responses to these two questions suggest that our chosen issue is perceived to be difficult, subjective, and complex, and therefore an appropriate issue to be highlighted as a CAM. None of these measures, which relate to the nature of our selected CAM that is held constant in all treatment conditions, vary between the experimental conditions ($p > 0.765$, two-tailed).

On average, the participants assessed the riskiness of the stock investments as 7.52 and the susceptibility of the stock investments to changes in market conditions as 7.12.[21] Given that the CAM paragraph is meant to highlight matters that are risky and susceptible to misstatement, these results suggest that our choice of issue is appropriate. Our inferences relating to the hypotheses remain largely unchanged with the exclusion of the manipulation failures, and we report results based on the full sample.

Part C: Supplemental Analysis

Perceived Audit Quality

Although highlighting an issue in the CAM paragraph could serve as a forewarning, highlighting audit procedures that address the risk issue in the CAM paragraph could inflate users' perception of audit quality, a set-up for user disappointment, and auditor culpability and liability implications following the occurrence of an adverse event. To explore this issue, we capture participants' assessment of audit quality.

Participants assessed audit quality after the release of the unfavorable results or bad news (adverse event) based on four dimensions, namely, auditor exercising sufficient professional skepticism and performing the financial statement audit competently, diligently with due care, and objectively. All these questions are on 11-point scales, with higher scores conveying higher audit quality. As the four measured variables are highly positively correlated ($r \geq 0.619$, $p < 0.001$), we use the average of the four measures as our perceived audit quality variable (Cronbach's $\alpha = 0.90$).[22]

We perform a one-way ANOVA and find a marginally significant effect of Report Format (df = 2, MS = 7.233, F-value = 2.785, p = 0.072, two-tailed, untabulated). Consistent with the main findings, compared with the *No CAM* condition (mean = 3.97, Std. Dev. =1.59, n = 17), participants perceive higher audit quality in either the *CAM with procedures* condition (p = 0.033, two-tailed) or the *CAM only* condition (p = 0.069, two-tailed).[23] In contrast to the main

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[20] We provided participants with a snapshot of the CAM paragraph (with or without audit procedures).

[21] Although riskiness does not vary across the experimental conditions (p = 0.170, two-tailed), assessed susceptibility of the stock investments to changes in market conditions marginally varies across the experimental conditions (p = 0.053, two-tailed). Participants assess marginally greater susceptibility of the stock investments to changes in market conditions when presented with the *CAM with procedures* paragraph (mean = 7.77) compared with the *No CAM* paragraph (mean = 6.23; p = 0.069, two-tailed).

[22] Three participants provided incomplete responses. Hence, the analysis is based on 52 participants.

[23] After the release of the unfavorable results, the participants also assess auditor culpability on two dimensions, namely, how much blame the auditor should take for the quarterly losses suffered and the extent to which the auditor was negligent in performing the audit (refer to the earlier discussion in Appendix A, Part A). There is no significant effect of Report Format for each of the variables individually (p > 0.193, two-tailed) or combined (p = 0.195, two-tailed).

APPENDIX A (continued)

findings, participants do not perceive any difference in audit quality between the *CAM only* condition (mean = 4.97, Std. Dev. = 1.59, n = 19) and the *CAM with procedures* condition (mean = 5.20, Std. Dev. = 1.65, n = 16, p = 0.677, two-tailed). Thus, a discussion of audit procedures in the CAM paragraph alters participants' FRR assessments related to the stock investments relative to the *CAM only* report but do not alter their perceptions of audit quality. Specifically, we find that highlighting risks in the CAM paragraph, with or without audit procedures, increases users' assessments of audit quality to a larger extent than in the *No CAM* condition in spite of the occurrence of a subsequent adverse event.[24]

Perceived Adequacy of Audit Procedures

We also measure participants' assessments of the adequacy of audit procedures on an 11-point scale both before and after having knowledge of the decline in earnings. Before the adverse event, there is a marginally significant effect of Report Format (p = 0.055, two-tailed). Adequacy of audit procedures is perceived to be greater for the *CAM with procedures* condition (mean = 5.06) than for the *No CAM* (mean = 3.97, p = 0.060, two-tailed) or *CAM only* conditions (mean = 3.74, p = 0.023, two-tailed). After the adverse event, paired-sample t-statistics for each of the conditions show that there is a marginally significant decrease in the perceived adequacy of audit procedures when presented with the *CAM with procedures* report (mean pre = 5.25, mean post = 4.63, p = 0.096, two-tailed) and the *No CAM* report (mean pre = 4.03, mean post = 3.32, p = 0.069, two-tailed) but no significant change when presented with the *CAM only* report (mean pre = 3.74, mean post = 4.16, p = 0.149, two-tailed).[25]

Perceived Importance of Factors Contributing to Subsequent Decline in Fair Value of Investments

We also analyzed participants' perception of factors that had possibly contributed to the adverse event (i.e., subsequent decline in the fair value of the investments).[26]

The participants attribute greater contribution of inadequate audit procedures in the *No CAM* condition than in the *CAM with procedures* condition (means = 1.106 and 0.376, respectively; p = 0.014, two-tailed). The results mirror the findings for the participants' perceived audit quality in that auditors are perceived to have performed a higher audit quality in the *CAM with procedures* condition than in the *No CAM* condition.

Attractiveness of Investment

Participants also assessed the attractiveness of the investment on an 11-point scale both before and after having knowledge of the decline in earnings. Before the adverse event, there is no significant effect of Report Format on investment attractiveness (p = 0.516, two-tailed). As expected, after the adverse event, paired sample t-statistics in each condition show that investment attractiveness declines in all the conditions (p ≤ 0.07, two-tailed).[27]

[24] For the M.B.A. participants, we perform a one-way ANOVA and find a marginally significant effect of Report Format on perceived audit quality (p = 0.098, two-tailed, F-value = 2.438, MS = 7.510, df = 2), with participants perceiving higher audit quality in the *CAM with procedures* condition than in the *No CAM* condition (means = 5.31 and 3.98, respectively, p = 0.032, two-tailed), which is similar to the main findings. However, unlike the main findings, none of the other comparisons were significant (p > 0.248, two-tailed).

[25] The analysis is based on 52 participants as three participants provided incomplete responses. For the M.B.A. participants, pre-adverse event one-way ANOVA shows no significant effect of Report Format on perceived adequacy of audit procedures (p = 0.828, two-tailed, F-value = 0.190, MS = 0.768, df = 2). After the adverse event, paired-samples t-statistics show a significant decrease in the perceived adequacy of audit procedures in all conditions (p < 0.007, two-tailed). Both of these results are inconsistent with our findings with sophisticated participants.

[26] For the M.B.A. participants, there is no significant effect of Report Format on participants' perception of factors that had possibly contributed to the adverse event (p = 0.298, two-tailed). These results are inconsistent with our main findings.

[27] For the M.B.A. participants, pre-adverse event, there is no significant effect of Report Format on investment attractiveness (p = 0.990, two-tailed), and after the adverse event, paired-samples t-statistics show a decline in investment attractiveness in all conditions (p ≤ 0.006, two-tailed). These results are consistent with our main findings.