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Tightened it and ruined it: Earnings management trade-off as a consequence of key audit matters disclosure

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Abstract

Do changes in audit regulation disclosure always come with positive consequences? The paper studies the effect of expanding audit reporting by key audit matters on earnings management. Using a sample of 580 firm-year observations listed on the Omani stock market covering the period 2012–2019, the empirical results show that these new requirements make managers use more real earnings management and less use of accruals earnings management. Additional analyses provide evidence suggesting that key audit matters disclosure creates an atmosphere inducing managers to excessively substitute accruals earnings management by real earnings management. Thus, we conclude that new key audit matters requirement entails unintended negative consequences.

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1. Introduction

Regulatory changes in capital markets are common events intended to improve the usefulness of financial information and enhance market efficiency (Ipino and Parbonetti 2017). However, these changes do not always come without unintended consequences. In this respect, Ralf and Alfred (2005) argue that tightening accounting standards increases the relevance of financial information but deteriorates firm value as managers substitute the constrained discretions associated with this change with costly change in real activities. In a survey of corporate managers, Graham *et al.* (2005) find that they opt for real earnings strategies if they are subject to greater scrutiny. Cohen *et al.* (2008) report that managers shift the strategies of earnings manipulation from accruals-based to real earnings management (EM) when Sarbanes-Oxley sections are enforced for US corporations. Ipino and Parbonetti (2017) conclude that countries that adopt international financial reporting standards suffer from unintended consequences such as excessive use of real EM in replacing accrual-based EM. Nevertheless, the last decade has witnessed numerous changes in audit regulations intended to increase the relevance and quality of audit and financial reporting (FRC 2013; IAASB 2015; PCAOB 2016). However, research on these changes is burgeoning, and further understanding of their economic consequences is needed (Bédard *et al.* 2019).

This paper aims to shed light on whether the recent adoption of expanded audit reports by adding new key audit matters (KAM) encourages the practice of real EM to replace accruals-based EM. KAM is a new section that has been added to the audit report to discuss matters related to areas with a high risk of misstatements (IAASB 2015).[1] This section is intended to be a disciplinary mechanism for auditors, leveraging their skeptical criticism and contributing to enhanced audit quality (IAASB 2013; PCAOB 2016). Moreover, it reduces the aggressive discretions of managers over accruals (Gold *et al.* 2020). Consistent with this prediction, fast-growing research shows that financial reporting quality has been dramatically enhanced by the requirement for expanded audit reports (e.g., KAM/CAM), as reflected in lower discretionary accruals (Li *et al.* 2019; Reid *et al.* 2019; Zeng *et al.* 2021), less tax-related EM (Drake *et al.* 2021), lower propensity to meet/bear analyst forecasts (Reid *et al.* 2019; Zeng *et al.* 2021), and higher earnings response coefficients (Reid *et al.* 2019). However, Bentley *et al.* (2020) report that managers respond to the expanded audit report requirements by changing their real operational decisions and preferring risk-increased over risk-decreased business activities. Lynch *et al.* (2021) report that firms that received tax-related KAM have seduced their auditors to compromise their independence and considerably increased their tax avoidance. Despite these efforts to explore the salient consequences of KAM, we are aware of no research to date that examines whether reduced accrual-based EM is offset by increasing real EM following the adoption of KAM disclosure. The latter is more costly and harmful to firm value (Kałdoński and Jewartowski 2020; Ralf and Alfred 2005).

Our empirical study focuses on Oman, an emerging economy with an attractive, stable, and fast-growing capital market and a high degree of global trade integration (Al-Yahyaee

[1] This section is similar to the recent US requirement for auditors to discuss critical audit matters (CAM) in their reports.

2014; Gani and Al Mawali 2013; Refai *et al.* 2022); significant improvements in regulatory frameworks related to corporate governance and transparency (Eulaiwi *et al.* 2016); and market disciplines comparable to those in more developed economies such as the United States (Al-Yahyaee 2014). As a result, similar to other Gulf Cooperation Council (GCC) countries, it is a fast-growing destination for foreign investments (Eulaiwi *et al.* 2016) and an interesting laboratory to study various capital market outcomes such as investor reaction to dividend (Al-Yahyaee 2014; Al-Yahyaee *et al.* 2011), corporate governance (Eulaiwi *et al.* 2016; Al-Hadi *et al.* 2016), cost of debt (Al-Hadi *et al.* 2015), investment efficiency (Eulaiwi *et al.* 2020), and reporting quality (Al Lawati *et al.* 2021; Baatwah *et al.* 2021).[2] As a result, the Omani environment provides an appropriate setting to study KAM and earnings management. First, since 2016, KAM disclosure has been a hallmark of Omani-listed firms (ACCA 2018) despite Oman is characterized by a weak governance system, lack of transparency, and the presence of severe agency problems (Al Lawati *et al.* 2021; Al-Yahyaee *et al.* 2011). This puts greater pressure on Omani auditors to play their governance role and influence the quality of financial information, as KAM disclosure comes with greater auditor liability (Gimbar *et al.* 2016; Kachelmeier *et al.* 2020).

Second, as underlined by Al-Yahyaee *et al.* (2011), Oman has several economic and institutional features that allow drawing conclusions beyond the Omani setting.[3] For instance, it was among the first countries in the Middle East and North Africa (MENA) to require listed firms to comply with the code of best corporate governance practices in 2002 (Al Lawati *et al.* 2021). This code is considered as one of the most comprehensive codes in emerging markets and is recommended to other emerging markets (Baatwah *et al.* 2021; Hawkamah 2006). Moreover, public firms and their incumbent auditors are constrained to use international accounting and auditing standards in preparing their financial reports (Al-Shammari *et al.* 2008), report their audited annual reports within 60 days after year-end date, and refrain from providing non-audit services and keeping relationships that exceed four-consecutive years (Baatwah *et al.* 2021).

Third, prior empirical evidence suggests that Omani firms manipulate earnings (Baatwah *et al.* 2021; Baatwah *et al.* 2021). Oman is a civil law country and follows international standards on auditing with a less toughness auditor's liability (Al-Khatib *et al.* 2005; Al-Shammari *et al.* 2008). In such a country, the adoption of new audit standards or changes in audit regulations often comes with higher audit quality (Simunic *et al.* 2017; Bandyopadhyay *et al.* 2014). Thus, Chen *et al.* (2019) consider that the recent extension in audit reports is expected to influence the quality of financial reports in firms from developing and emerging markets because the initial quality is low. Since discretionary accruals is a major concern for auditors (Cohen *et al.* 2008), KAM disclosure is expected to make Omani firms and those in other emerging markets with a similar environment shift

[2] Many of these studies are conducted on the GCC countries with a large proportion of Omani-listed firms.

[3] The number of listed firms in Oman, as in other GCC countries, is relatively small compared to that in developed and mature developing markets. Our sample represents all Omani listed firms with available data. To check whether our results are driven by a particular firm, we rerun our regressions many times after dropping one firm each time. The results remain qualitatively the same. We also re-estimate our regressions many times after dropping each time a particular year or a given industry. The results do not qualitatively change our conclusions. All these regressions are not reported for sake of brevity but are available from the authors upon request.

earnings manipulation to real EM. Despite the importance of the KAM disclosure, little attention has been paid to their economic consequences in emerging markets, including Oman (Zeng *et al.* 2021).

Our findings provide evidence of a decrease in accrual-based EM and an increase in real EM following the adoption of new requirements regarding KAM disclosure. We find strong evidence indicating that the increased propensity for using real EM is attributable to the KAM requirements. However, we do not find a relationship between the number and type of KAM and real EM, implying that it is the atmosphere surrounding the requirements of KAM that causes the EM trade-off rather than the content of these requirements. Our conclusions on the EM trade-off phenomenon are robust to alternative variable measurements and specifications.

Our paper contributes to the literature on the quality of financial reporting associated with expanded audit reports (e.g., Zeng *et al.* 2021; Reid *et al.* 2019). To the best of our knowledge, it is the first empirical evidence on the influence of expanded audit report requirements (e.g., KAM/CAM) on real EM. Second, it shows that KAM is negatively associated with accruals-based EM and positively associated with real EM. This finding extends prior research on earnings quality by showing the presence of EM strategies trade-off resulting from tightened financial reporting regulatory frameworks (e.g., Cohen *et al.* 2008; Ipino and Parbonetti 2017). Last but not least, our additional analysis reports that increases in real EM are, in part, attributable to KAM requirements and that firms are less likely to combine accrual- and real-based EM strategies following KAM requirements. This result sheds light on the use various earnings management methods following changes in the disclosure of KAM.

The rest of this study is organized as follows. Section 2 reports the research methodology. Section 3 presents the results. Section 4 concludes the paper.

2. Methodology

2.1 Sample and data

We start with all firms listed on the Muscat Stock Exchange (Oman) during the 2012-2019 (921 firm-year observations). We exclude firms operating in the financial industry (SIC codes 6000–6999) due to their specificities and unique regulatory framework (286 observations). We also eliminate firms with unavailable needed data in DataStream, Bloomberg, and Omani capital market (34 observations). We further limit our sample to industries with a minimum of ten per year, ending with a dataset of 84 unique firms, corresponding to 580 firm-year observations. The sample period represents four years before and after the introduction of the KAM requirements. Oman is an appropriate setting as it was among the first adopters of the KAM requirements (ACCA 2018) and is the emerging market with the most developed regulatory framework in the region (Baatwah *et al.* 2021).

2.2 Main variables

2.2.1 Discretionary accruals-based earnings management

Accruals allow managers to use the discretions allowed by the generally accepted accounting principles to manage earnings in their best interest. Consistent with prior research, we employ two standard models to estimate discretionary accruals, namely, the modified Jones model, based on Dechow *et al.* (1995), and the performance adjusted industry-based modified Jones model, based on Kothari *et al.* (2005). These models are estimated for each year-industry following prior research on the Omani context (e.g., Baatwah *et al.* 2021). Equations 1 and 2 present these models.

$$\frac{TACC_{i,t}}{TA_{i,t-1}} = \beta_{1,t}\frac{1}{TA_{i,t-1}} + \beta_{2,t}\frac{\Delta SALE_{i.t}}{TA_{i,t-1}} + \beta_{3,t}\frac{PPE_{i,t}}{TA_{i,t-1}} + \varepsilon_{it} \qquad (1)$$

$$\frac{TACC_{i,t}}{TA_{i,t-1}} = \beta_{1,t}\frac{1}{TA_{i,t-1}} + \beta_{2,t}\frac{\Delta SALE_{i.t} - \Delta REC_{i.t}}{TA_{i,t-1}} + \beta_{3,t}\frac{PPE_{i,t}}{TA_{i,t-1}} + \beta_{4,t}ROA_{i,t-1} + \varepsilon_{it} \qquad (2)$$

where subscripts *i* and *t* indicate firm and year, respectively; *TACC* indicates total accruals and *TA* represents total assets; *⊿SALE* is change in sales; *PPE* is gross of property, plant, and equipment; *⊿REC* is change in accounts receivable; *ROA* represents the net profit. For each year-industry, we estimate these regressions to extract the unexplained portion of accruals, corresponding to the residuals from the equations. $ABSDAC\_{DE}$ and $ABSDAC\_{KO}$ correspond to the absolute value of residuals extracted from the year-industry Jones model modified by Kothari *et al.* (2005) and Dechow *et al.* (1995), respectively.

2.2.2 Real earnings management

Real earnings management is an alternative strategy for managing earnings that involves manipulating the real activities through the timing or structuring of transactions (Ralf and Alfred 2005). Consistent with the literature, we construct two aggregate measures for real EM by estimating three equations to capture common real earnings manipulation. The following equations report models for these methods.

$$\frac{CFO_{i,t}}{TA_{i,t-1}} = \beta_{1,t}\frac{1}{TA_{i,t-1}} + \beta_{2,t}\frac{SALE_{i,t}}{TA_{i,t-1}} + \beta_{3,t}\frac{\Delta SALE_{i,t}}{TA_{i,t-1}} + \varepsilon_{it} \qquad (3)$$

$$\frac{PROD_{i,t}}{TA_{i,t-1}} = \beta_{1,t}\frac{1}{TA_{i,t-1}} + \beta_{2,t}\frac{SALE_{i,t}}{TA_{i,t-1}} + \beta_{3,t}\frac{\Delta SALE_{i,t}}{TA_{i,t-1}} + \beta_{4,t}\frac{\Delta SALE_{i,t-1}}{TA_{i,t-1}} + \varepsilon_{it} \qquad (4)$$

$$\frac{DISC_{i,t}}{TA_{i,t-1}} = \beta_{1,t}\frac{1}{TA_{i,t-1}} + \beta_{2,t}\frac{SALE_{i,t-1}}{TA_{i,t-1}} + \varepsilon_{it} \qquad (5)$$

where *CFO* represents the operation cash flow; *SALE* is the year sales; *PROD* is the sum of the cost of goods sold and changes in inventory; *⊿SALE* is the change in sales; and *DISC* is the sum of advertising expenses, R&D expenses, and selling, general, and administrative expenses. For each equation, we extract the residuals to proxy abnormal real activities. Following prior research, we multiply the residuals from equations (3) and (5) by –1 to

show the abnormal level of cash flow and abnormal level of discretionary expenses. The residuals from equation (4) represent abnormal production costs. Then, we combine these estimated residuals from the equations (3), (4), and (5) to construct the two aggregated measures based on the approaches used by Cohen *et al.* (2008) (*REM1*) and Kałdoński and Jewartowski (2020) (*REM2*).

2.2.3 KAM disclosure

Following prior literature (e.g., Reid *et al.* 2019; Li *et al.* 2019), we adopt a dichotomous approach to measure KAM disclosure. We use a dummy variable that takes the value of one if the fiscal period ended on or after 15/12/2016, and zero otherwise (*KAM*). In our sample, auditors were required to implement new audit standards on or after 15/12/2016. In an additional analysis, we use the number and type of KAM (entity-level-risk and accounts-level-risk) following (Sierra-García *et al.* 2019).

2.3 Empirical models

Given the cross-sectional and time-series structure of our dataset and consistent with prior research (Cohen *et al.* 2008; Ipino and Parbonetti 2017), we apply a pooled panel data regression with robust standard error after controlling for industry and year fixed effects. We control for many firm characteristics used in prior EM models to mitigate the potential issue of omitting important control variables or model misspecification. Our testable equations are the following.

$$ABSDAC\_DE_{it}/ABSDAC\_KO_{it} = \beta_0 + \beta_1 KAM_{it} + \beta_{2-16} CONTROLS + Industry\ fixed\ effects + Year\ fixed\ effects + \varepsilon_{it} \quad (6)$$

$$REM1_{it}/REM2_{it} = \beta_0 + \beta_1 KAM_{it} + \beta_{2-16} CONTROLS + Industry\ fixed\ effects + Year\ fixed\ effects + \varepsilon_{it} \quad (7)$$

where *ABSDAC_DE* is the absolute value of discretionary accruals estimated using Dechow et al.'s (1995) model, while *ABSDAC_KO* is the absolute value of discretionary accruals estimated by Kothari et al.'s (2005) model. *REM1* is the sum of standardized values of the residuals and *REM2* is the sum of the estimated residuals. *CONTROLS* are control variables: big4 audit firms (*BIG4*), audit firm tenure (*TENUR*), industry expertise auditor (*INDEX*), audit fees (*ADF*), audit committee independence (*ACI*), audit committee expertise (*ACEXP*), audit committee size (*ACS*), audit committee meetings (*ACM*), concentrated ownership structure (*COS*), return on assets (*ROA*), growth (*GRTH*), firm size (*FSZ*), leverage (*LEV*), market-to-book ratio (*MBV*), cash flow from operations (*CFO*), loss (*LOSS*), and inventory and receivable ratio (*INVREC*). *Industry fixed effects* and *Year fixed effects* are industry and year fixed effects indicators. We include *REM1* in Equation 6 and *ABSDAC_KO* in Equation 7 to capture additional evidence of the trade-off between the two EM strategies.[4] Appendix A presents the definition of variables.

3. Empirical results

[4] We find similar results when we include *ABSDAC_DE* and *REM1* instead of *ABSDAC_KO* and *REM2*.

Table I reports the descriptive statistics for the main key variables. The mean (median) for *ABSDAC_DE* and *ABSDAC_KO* is 0.099 (0.066) and 0.104 (0.064) respectively. For *REM1* and *REM2*, the mean (median) is –0.009 (–0.089) and 0.043 (0.029) respectively. The descriptive results of both methods of EM imply that firms tend to manipulate earnings aggressively using discretionary accruals and real EM methods. These results are consistent with Baatwah *et al.* (2021) who report that Omani firms manage earnings using either discretionary accruals or real earnings techniques. The mean of *KAM* is 0.466, implying that 47% of our sampled firms are subjected to the KAM disclosure requirement.

Table I: Descriptive statistics

Variables	First quartile	Mean	Median	Third quartile	Standard deviation
ABSDAC_DE	0.030	0.099	0.066	0.115	0.116
ABSDAC_KO	0.029	0.104	0.064	0.120	0.132
REM1	–0.377	–0.009	–0.089	0.187	0.781
REM2	–0.179	0.043	0.029	0.213	0.415
KAM	0.000	0.466	0.000	1.000	0.499

This table reports the summary statistics for the variables of interest. The sample comprises all non-financial firms listed on the Omani capital market with available data (580 year-observations) over the period 2012–2019. Appendix A provides the definition of these variables in addition to other variables considered in the analysis of this study.

Table II presents the empirical findings from equations 6 and 7 after winsorizing all continuous variables at 1st and 99th percentiles. The first and second columns present the estimated coefficients for the effect of KAM on discretionary accruals. We observe that *KAM* is negatively and significantly associated with *ABSDAC_DE* and *ABSDAC_KO* at the conventional statistical levels, indicating that a decrease in discretionary accruals practices comes with the application of KAM. This finding is consistent with prior evidence of (e.g., Reid *et al.* 2019; Li *et al.* 2019). More importantly, in the third and fourth columns, we observe that the coefficient on *KAM* is positively and significantly associated with *REM1* and *REM2* at the 5% and 1% threshold levels, respectively, suggesting that real EM is preferred for manipulating earnings following KAM requirements. This finding lends support to the argument that managers have traded off discretionary accruals methods with real EM methods. This may reflect an unintended negative consequence of KAM. The negative and statistically significant coefficients on *REM2 (ABSDAC_KO)* further support the trade-off argument. The results on control variables are consistent with those of prior studies.

Table II: The effect of reporting key audit matters on earnings management: Main analysis

Variable	(1)		(2)		(3)		(4)	
	ABSDAC_DE		ABSDAC_KO		REM1		REM2	
KAM	–0.020**	–0.018*	–0.036***	–0.035***	0.204**	0.198**	0.081***	0.076***
	(–2.49)	(–2.16)	(–4.15)	(–3.62)	(2.77)	(2.65)	(4.87)	(4.88)
REM2		–0.020**		–0.021*				
		(–2.87)		(–2.01)				
ABSDAC_KO						–0.350*		–0.253*
						(–2.05)		(–2.07)
BIG4	–0.007	–0.007	–0.002	–0.002	–0.012	–0.014	–0.024	–0.026
	(–0.81)	(–0.90)	(–0.19)	(–0.25)	(–0.12)	(–0.14)	(–0.00)	(–1.10)
TENUR	–0.004	–0.004	–0.004	–0.004	0.053	0.052	–0.013	–0.014
	(–0.73)	(–0.74)	(–0.87)	(–0.88)	(1.48)	(1.43)	(–0.77)	(–0.77)
INDEX	0.013	0.015	0.029	0.030	0.020	0.025	0.064	0.067*
	(0.90)	(0.99)	(1.28)	(1.33)	(0.20)	(0.25)	(1.67)	(1.90)
ADF	–0.016	–0.015	–0.023	–0.021	0.139*	0.134**	0.064**	0.060**
	(–1.21)	(–1.17)	(–1.58)	(–1.57)	(2.30)	(2.45)	(2.62)	(2.71)
ACI	–0.039	–0.040	–0.039	–0.041	–0.031	–0.045	–0.067	–0.077
	(–1.22)	(–1.28)	(–0.91)	(–0.95)	(–0.18)	(–0.26)	(–1.53)	(–1.77)
ACEXP	0.024	0.025	0.007	0.008	–0.115	–0.107	0.042	0.048
	(1.23)	(1.25)	(0.67)	(0.72)	(–1.57)	(–1.42)	(1.32)	(1.40)
ACS	0.018	0.019*	0.021	0.022	–0.017	–0.011	0.050	0.054*
	(1.79)	(1.98)	(1.73)	(1.86)	(–0.45)	(–0.27)	(1.60)	(1.93)
ACM	–0.000	–0.000	–0.001	–0.001	–0.006	–0.006	–0.016	–0.016
	(–0.00)	(–0.08)	(–0.15)	(–0.20)	(–0.20)	(–0.21)	(–1.67)	(–1.58)
COS	0.000	0.000	0.000	0.000	0.002**	0.002***	0.001	0.001
	(0.73)	(0.80)	(1.36)	(1.45)	(3.21)	(3.52)	(1.60)	(1.63)
ROA	–0.013	–0.004	–0.025	–0.016	0.495	0.490	0.439***	0.436***
	(–0.11)	(–0.03)	(–0.19)	(–0.12)	(0.67)	(0.65)	(4.68)	(3.64)
GRTH	–0.003	–0.003	–0.010	–0.010	0.084	0.083	–0.017	–0.018
	(–0.48)	(–0.64)	(–1.43)	(–1.71)	(1.14)	(1.11)	(–0.49)	(–0.36)

FSZ	0.012**	0.012**	0.016**	0.016**	–0.018	–0.014	0.012	0.015
	(2.52)	(2.52)	(3.01)	(2.99)	(–0.42)	(–0.31)	(1.07)	(1.20)
LEV	0.013	0.014	0.022	0.023	0.127	0.132	0.052	0.056
	(0.44)	(0.47)	(0.71)	(0.74)	(1.68)	(1.74)	(0.97)	(1.06)
MBV	–0.003**	–0.003***	–0.003***	–0.003***	0.026	0.025	–0.006	–0.007
	(–3.28)	(–4.24)	(–8.25)	(–8.81)	(0.87)	(0.84)	(–0.70)	(–0.78)
CFO	–0.018	–0.014	–0.027	–0.022	0.445	0.439	0.219	0.214
	(–0.34)	(–0.25)	(–0.38)	(–0.31)	(1.19)	(1.18)	(1.57)	(1.50)
LOSS	0.022	0.026	0.023	0.026	0.146	0.154	0.179**	0.184**
	(1.26)	(1.51)	(1.49)	(1.76)	(1.29)	(1.34)	(3.38)	(3.40)
INVREC	0.037	0.037	0.040	0.040	–0.032	–0.019	0.015	0.025
	(0.81)	(0.84)	(0.84)	(0.87)	(–0.21)	(–0.12)	(0.13)	(0.21)
Industry fixed effects				Controlled				
Year fixed effects				Controlled				
Constant	0.007	–0.013	–0.013	–0.035	–1.105	–1.102	–1.022**	–1.020**
	(0.09)	(–0.17)	(–0.14)	(–0.38)	(–1.60)	(–1.59)	(–3.41)	(–3.46)
Observations	580	580	580	580	580	580	580	580
R-squared	0.088	0.093	0.094	0.098	0.056	0.058	0.083	0.087

This table shows the results of pooled panel data regressions of key audit matters disclosure (*KAM*) on earnings management proxied by: (1) discretionary accruals estimated by Dechow *et al.* (1995) ($ABSDAC\_{DE}$) and by Kothari *et al.* (2005) ($ABSDAC\_{KO}$); and (2) real earnings management (*REM*) estimated following the methodologies of Cohen *et al.* (2008) (*REM1*) and Kałdoński and Jewartowski (2020) (*REM2*). We winsorize all continuous variables at 1 and 99 percentiles and control for the potential influence of year and industry fixed effects by including indicator variables for years and industries and for the potential influence of heteroscedasticity and autocorrelation by using robust standard errors. Columns (1) and (2) report the corresponding results for the effect of *KAM* on $ABSDAC\_{DE}$ and $ABSDAC\_{KO}$, respectively, while columns (3) and (4) portray the results of the effect of *KAM* on *REM1* and *REM2* respectively. Appendix A presents the list of definition for all variables included in our analyses. ***, **, * refer to the significance level at 10%, 5% and 1%, respectively.

We conduct additional analyses to provide more insight into the practices of real EM following the adoption of KAM. Table III reports the results for the effect of: (1) KAM number/type on *REM1/REM2*; (2) KAM on the changes of *REM1/REM2*; (3) KAM on the simultaneous use of both EM methods; and (4) KAM on the three most common real EM methods. Using a sample from the KAM period, in Panel A, we observe that the coefficients on the number of KAM (*NKAM*), number of KAM related to entity-level risks (*NELKAM*), and number of KAM related to accounts-level risks (*NALKAM*) are positively associated with *REM1* and *REM2* although they are not significant. In Panel B, we report in the first and second columns that the coefficients on *KAM* are positively and significantly associated with the changes in $REM1\_{CH}$ and $REM2\_{CH}$ as the change is measured by the difference between current and previous year *REM1/REM2*. In the third column of Panel B, we also observe that the coefficient on *KAM* is negatively and significantly associated with the combined use of accruals-based and real EM (*DACREM*), as measured by the interaction between $ABSDAC\_{KO}$ and *REM2*.[5] Finally, we observe in Panel C that the coefficient on *KAM* is positively associated with abnormal production costs (REM_{PROD}), and abnormal discretionary expenses (REM_{DISC}). Overall, the results in Table III suggest that KAM requirements per se encourage managers to opt for real EM as an appropriate strategy to manipulate earnings during KAM time.

Table III: The effect of reporting key audit matters on earnings management: Additional analyses

Panel A: Number and type of key audit matters				
Variable	(1)	(2)	(3)	(4)
	REM1	REM2	REM1	REM2
NKAM	0.033	0.005		
	(2.19)	(0.50)		
NELKAM			0.187	0.116
			(0.78)	(1.83)
NALKAM			0.024	0.001
			(1.48)	(0.23)
Controls		Controlled		
Industry fixed effects		Controlled		
Year fixed effects		Controlled		
Constant	–2.223	–1.587**	–2.281	–1.632**
	(–1.64)	(–3.45)	(–1.36)	(–3.55)
Observations	265	265	265	265
R-squared	0.104	0.128	0.105	0.132

Panel B: Changes in real earnings management and simultaneous use of discretionary accruals and real earnings management			
Variable	(1)	(2)	(3)
	$REM1\_{CH}$	$REM2\_{CH}$	DACREM
KAM	0.311***	0.123***	–0.014***
	(3.96)	(5.16)	(–4.73)
Controls		Controlled	
Industry fixed effects		Controlled	

[5] This approach is similar to Li (2019) who examines whether the discretionary accruals and real EM jointly affect stock returns.

Year fixed effects		Controlled	
Constant	–0.859	–0.044	–0.018
	(–1.11)	(–0.13)	(–0.99)
Observations	495	495	580
R-squared	0.047	0.057	0.084
Panel C: Real earnings management strategies			
Variable	(1)	(2)	(3)
	REM_CFO	REM_PROD	REM_DISC
KAM	0.005	0.064***	0.016*
	(0.74)	(3.75)	(1.68)
Controls		Controlled	
Industry fixed effects		Controlled	
Year fixed effects		Controlled	
Constant	–0.261**	–0.747**	0.118*
	(–3.07)	(–3.33)	(1.92)
Observations	580	580	580
R-squared	0.095	0.078	0.054

This table presents the results of pooled panel data regressions in three panels: Panel A for the effect of the number of key audit matters (*NKAM*) and the types of key audit matters in relation to entity-level risks (*NELKAM*), and to accounts-level risks (*NALKAM*) on real earnings management (*REM1* and *REM2*); Panel B for the effect of key audit matters disclosure (*KAM*) on the changes of real earnings management ($REM1\_{CH}$ and $REM2\_{CH}$) and on the simultaneous use of both methods of earnings management (*DACREM*); and Panel C for the effect of key audit matters disclosure (*KAM*) on real earnings management strategies or methods such abnormal operation cash flow (REM_{CFO}), abnormal production costs (REM_{PROD}), and abnormal discretionary expenses (REM_{DISC}). We winsorize all continuous variables at 1 and 99 percentiles and control for the potential influence of year and industry fixed effects by including indicators for years and industries. All reported t-statistics (in parentheses) are based on robust standard errors, controlling for the potential influence of heteroscedasticity and autocorrelation. *Controls* indicates that our control variables are in the main analysis and are suppressed for brevity. Appendix A presents the list of definition for all variables included in our analyses. ***, **, * refer to the significance levels at 10%, 5% and 1% respectively.

4. Conclusion

Understanding the consequences of regulatory changes is crucial in terms of economic policy. This paper shows that the recent changes in audit standards may be associated with unintended negative consequences. For example, during the time of mandatory KAM disclosure, we find evidence suggesting that managers tend to manipulate earnings by real activities instead of discretionary accruals. This type of EM is costly and harmful (Ralf and Alfred 2005). We also expand our analysis to provide more insight into this trend of earnings manipulations associated with KAM. We find that the number and type of KAM are not the main reason for this manipulation; instead, we find strong evidence indicating that the excessive usage of real EM is attributable to KAM implementation and that simultaneous usage of accruals and real EM is not perceived during KAM time. We also find that, during KAM time, the manipulation of real earnings through production activities is more than that through other real activities.

These results are essential in understanding the unintended effects of audit disclosure laws and provide guidance to policymakers, regulators, practitioners, and other market participants to better understand the consequences of KAM regulation. In other words, our findings provide an empirical response to the many advocates for or against the KAM disclosure requirement. For example, regulatory bodies (e.g., PCAOB and IAASB) assumed the new audit disclosure would secure the integrity and quality of auditors and managers and then the quality of financial information, while some users of financial information (e.g., firms and auditors) predicted lower value of this new requirement (KPMG, 2015; PCAOB, 2017; CII, 2019). Although the ultimate intention of this requirement is protecting the users of financial information, our evidence indicates disruption in the interests of shareholders, potential investors, and other users of financial information resulting from KAM disclosure because managers shift the manipulation of earnings to very harmful techniques (real EM) under KAM.

While this evidence is timely and may attract the attention of several policy makers, the KAM disclosure requirement is at the initial stages and further insight into its implications is required. Thus, we call future researchers to consider or expand our study. For example, we encourage researchers to expand the analysis of this study to more developed markets because our evidence is based on an emerging market where the number and the size of listed firms are smaller than those of developed ones. This analysis will be interesting if the application is based on US data as this requirement became effective for all types of firm in 2020. Further, we encourage future researchers to assess the confounding effect of corporate governance mechanisms (e.g., audit committee and ownership structure) on the role of KAM in the quality of financial reports because current research tends to focus on the direct effect, and we believe that these players may have a crucial role in this effect. We strongly recommend future researchers to consider EM trade-off in settings with a voluntary KAM disclosure requirement because this may establish a more robust causal effect of KAM on this trade-off using a difference-in-difference approach.

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Appendix A: Definition of variables

Variables	**Definition**
	Variables of interest
ABSDAC_DE	The absolute value of residuals extracted from year-industry Jones model modified by Dechow *et al.* (1995).
ABSDAC_KO	The absolute value of residuals extracted from year-industry Jones model modified by Kothari *et al.* (2005).
REM1	The aggregated measure for real earnings management which equals the sum of standardized values of three real earnings activities, abnormal operation cash flow, abnormal production cost, and abnormal discretionary expenses as suggested by Cohen *et al.* (2008).
REM2	The aggregated measure for real earnings management which equals the sum of three real earnings activities, abnormal production and abnormal discretionary expenses following Kałdoński and Jewartowski (2020).
REM1_CH	The changes of real earnings management measured by the difference between current *REM1* and previous year *REM1*.
REM2_CH	The changes of real earnings management measured by the difference between current *REM2* and previous year *REM2*.
DACREM	The combined use of accruals-based and real earnings management as measured by the interaction between *ABSDAC_KO* and *REM2*, following Li (2019).
REM_CFO	The abnormal operation cash flow (*REM_CFO*) which is estimated as the residuals extracted from year-industry regression multiplied by –1 following Kałdoński and Jewartowski (2020).
REM_PROD	The abnormal production cost which is estimated as the residuals extracted from year-industry regression following Kałdoński and Jewartowski (2020).
REM_DISC	The abnormal discretionary expense which is estimated as the residuals extracted from year-industry regression multiplied by –1 following Kałdoński and Jewartowski (2020).

KAM	An indicator variable equal to if the accounting period ended on or after 15/12/2016, zero otherwise.
NKAM	The number of KAM points listed on the audit report.
NELKAM	The type of KAM related to entity-level risk which is measured by the number of entity-level KAM reported by the auditor on the audit report.
NALKAM	The type of KAM related to accounts-level risk which is measured by the number of accounts-level risk KAM reported by the auditor on the audit report.
	Control variables
BIG4	An indicator variable equals to 1 if the company is audited by one of big4 audit firms and 0 otherwise.
TENUR	The number of consecutive years the auditor continues to audit the company's financial reports.
INDEX	An indicator variable equals to 1 if the auditor is classified as industry expertise and 0 otherwise. This classification is based on the market share approach in which an auditor who received the highest amount of year-industry is considered as industry expert.
ADF	The natural logarithm of fees paid to external auditor for statutory audit.
ACI	The proportion of independent directors on the audit committee
ACEXP	The proportion of accounting expertise directors on the audit committee.
ACS	The number of directors on the audit committee.
ACM	The number of meetings held by audit committee during the year.
COS	The percentage of shares held by major shareholders (=>10%).
ROA	The net income divided by total assets.
GRTH	The proportion of sales/revenues changes scaled by prior year sales/revenues.
FSZ	The natural log of total assets.
LEV	The total debt divided by total assets.
MBV	The market value of equity divided by book value of equity.
CFO	The proportion of net operating cash flow scaled by total assets.
LOSS	An indicator variable equals to 1 if the company incurred loss in the current year, 0 otherwise.
INVREC	The proportion of inventory and receivable accounting to total assets.
Industry fixed effects	Indicator variables for industries.
Year fixed effects	Indicators variables for years.

This appendix shows the definitions for all variables investigated in the main analysis and additional analysis.