The influence of audit quality on real earnings management: Do leverage and cash flow matter?

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Abstract

Purpose – This study examines how financial leverage and cash flow influence the relationship between audit quality and real earnings management.

Design/methodology/approach – We analyze data from 499 non-financial firms listed on the Vietnam stock market between 2008 and 2023. The study uses the Roychowdhury (2006) model to assess real earnings management and applies OLS, FEM, and GLS regressions.

Findings – The results indicate that audit quality influences real earnings management differently depending on a firm's financial condition. Specifically, higher audit quality is associated with lower levels of real earnings management in firms with sufficiently low financial leverage and sufficiently high operating cash flows. However, audit quality is positively related to real earnings management for firms with sufficiently high leverage and sufficiently low or negative cash flows.

Originality/value – This study offers a new insight into the impact of audit quality on real earnings management. Contributing to the agency theory, this study emphasizes the critical role of the firm's financial condition in shaping the relationship. This study argues that a firm's internal financial condition may affect its outside monitoring effectiveness, such as audit quality, in limiting the inherent conflicts of interest between managers and shareholders.

Keywords Agency theory, Audit quality, Cash flow, Leverage, Real earnings management

Paper type Research paper

1. Introduction

Earnings management is a significant topic in accounting due to its role in meeting objectives such as debt covenants, asset valuation, and executive compensation (Healy and Wahlen, 1999; Roychowdhury, 2006). Managers manage earnings to achieve targets or present outcomes as less risky (Nguyen and Le, 2020), impacting result quality by obscuring actual economic transactions. When control mechanisms fail, management exploits opportunities to meet goals like satisfying analysts, avoiding losses, sustaining growth, or smoothing earnings (Xu *et al.*, 2007).

Studies indicate two main earnings management strategies: accrual-based earnings management (AEM) and real earnings management (REM) (Luo *et al.*, 2017). AEM involves adjusting accounting estimates, while REM focuses on altering the structure and timing of actual business activities to meet financial targets. Over the past 2 decades, firms have shifted from AEM to REM due to strict accounting standards, tax regulations, IFRS adoption, and improved audit quality (Zang, 2012). The audit quality of Big Four firms is generally perceived to be higher than that of non-Big Four firms (Becker *et al.*, 1998; Carlin *et al.*, 2015; Tran *et al.*, 2019).

Numerous studies have examined the relationship between audit quality and earnings management (Francis *et al.*, 1999; Huguet and Gandía, 2016; Astami *et al.*, 2017; Houqe *et al.*,

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2017; Alhadab, 2018; Sari and Sari, 2018; Alqudah, 2024). However, empirical findings remain inconclusive. Some studies have identified a negative association, indicating that higher audit quality may constrain earnings management by enhancing the credibility of financial statements and reinforcing external monitoring mechanisms (Astami *et al.*, 2017; Alhadab, 2018), thereby supporting agency theory. Conversely, other studies have found a positive relationship, indicating that high audit quality does not always reduce earnings management and, in some cases, may even coexist with higher levels of such behavior (Antle *et al.*, 2006; Chi *et al.*, 2011). These results may support agency theory by suggesting that while high audit quality reduces accrual-based earnings management (AEM), managers often shift to real earnings management (REM) as an alternative strategy (Antle *et al.*, 2006; Chi *et al.*, 2011). This finding may also be interpreted through the lens of signaling theory. Although high audit quality is typically perceived as an indicator of strong corporate governance, it may paradoxically grant managers greater discretion to engage in real earnings management (REM), based on the expectation that external stakeholders will associate audit quality with a lower likelihood of financial manipulation. The relationship between audit quality and earnings management then needs further theoretical explanations. Such mixed findings provide reasons to suspect that there should be contextual factors moderating the relationship.

According to the debt covenant hypothesis, high financial leverage increases pressure on managers to comply with debt covenants, thereby encouraging income-increasing earnings management and potentially undermining the monitoring role of auditors (Dang and Fang, 2011; Cloney *et al.*, 2019; Pittman and Zhao, 2020). Similarly, under the financial constraint theory, firms experiencing difficulties in operating cash flows tend to engage in REM to maintain financial stability and meet debt obligations. Managers facing financial risks are more likely to prioritize REM to obscure financial distress and ensure compliance (Jha, 2013; Kim *et al.*, 2011). Negative operating cash flows may exacerbate this pressure, bringing firms closer to violating debt covenants (Sulistiani and Tjahjadi, 2023). In such financially constrained settings, even high-quality audits may be less effective in curbing opportunistic reporting behavior (Bansal, 2023). Thus, financial leverage and cash flows are likely to play critical roles in shaping the effectiveness of audit quality in limiting earnings management. In this paper, we propose that financial leverage and operating cash flow may interact with audit quality in influencing REM—an aspect that remains largely overlooked in existing research.

The paper is organized as follows: Section 2 reviews the literature and develops hypotheses. Section 3 outlines the research methodology, including the models and data used. Section 4 discusses the results. Finally, Section 5 concludes with a summary of the findings, implications, limitations, and directions for future research.

2. Literature review and hypotheses development

2.1 The effect of audit quality on real earnings management

The relationship between audit quality and real earnings management can be explained under the agency theory. In fact, agency theory highlights the inherent conflicts of interest that arise between managers and shareholders due to information asymmetry (Jensen and Meckling, 1976). Managers, acting as agents, may prioritize personal interests over shareholder wealth maximization, which can lead to their earnings management strategy (Ghosh and Moon, 2010). Audit quality serves as a crucial mechanism for mitigating these agency problems, as higher audit quality provides greater assurance regarding the integrity of financial reporting (Jiang and Zhou, 2017). In the context of REM, strong audits help constrain manipulative behaviors by imposing oversight and accountability on managerial actions (Mansi *et al.*, 2004).

Empirically, numerous studies demonstrate a negative relationship between audit quality and the use of earnings management practices. For instance, Big-4 audit firms have been shown to curtail discretionary accruals in earnings management more effectively than other

auditing firms (Astami *et al.*, 2017). This negative association is further supported by findings that higher audit fees, an indicator of increased audit quality, are linked to a reduction in REM practices (Alhadab, 2018). Larger audit firms generally deliver higher audit and accounting information quality, which leads to lower earnings management (Frankel *et al.*, 2002; Houqe *et al.*, 2017). Studies across various regions, including Jordan (Alqudah, 2024), Indonesia (Sari and Sari, 2018), and Spain (Huguet and Gandía, 2016), consistently reinforce the notion that strong auditing practices enhance financial reporting integrity. Corroborating the above arguments and empirical evidence, we proposed the following hypothesis:

H1. Audit quality is negatively associated with real earnings management.

It should be noted that, however, there are mixed findings on the effects of audit quality on earnings management. For instance, Antle *et al.* (2006) suggest a positive relationship between audit quality, as represented by the engagement of Big N audit firms, and the level of earnings management, implying that Big N auditors might exhibit greater tolerance for such practices. They also note that elevated audit fees may create bias, potentially enhancing perceived independence but inadvertently increasing tolerance for earnings management. Audit fees, often used as a proxy for audit quality, may threaten auditor independence due to economic bonding with clients (Eshleman and Guo, 2014). Similarly, Jayeola *et al.* (2017) and Jung *et al.* (2016) find that high audit fees are associated with increased earnings management, suggesting that auditors may compromise objectivity or implicitly support managerial discretion in exchange for higher compensation.

On the other hand, Sitanggang *et al.* (2019) found that audit quality proxies are not significantly related to abnormal production costs and the REM index, suggesting that the presence of Big4 auditors alone may not effectively constrain earnings management. Cohen *et al.* (2008) further argue that because REM involves operational decisions beyond the auditor's primary scope, even high-quality audits may have limited influence. Thus, while audit quality helps reduce AEM, its role in limiting REM appears inherently restricted. Next, two contextual variables for the relationship between audit quality and REM would be theorized.

2.2 The effects of leverage on the influence of audit quality on real earnings management

Financial constraint theory indicates that high leverage creates additional pressure on management to perform, intensifying the urgency to manipulate earnings and avoid covenant violations (Bansal, 2023). The debt covenant hypothesis also posits that the presence and strictness of debt covenants incentivize earnings management to ensure compliance (Watts and Zimmerman, 1986). High leverage increases the stringency of these covenants, escalating pressure on managers to meet financial targets. Although high audit quality typically deters earnings management through enhanced monitoring, the intense pressure from covenants in highly leveraged firms can weaken this effect (Pittman and Zhao, 2020). To avoid severe consequences like loan renegotiations or bankruptcy (Jha, 2013), managers at risk of covenant violation may favor REM to mask financial difficulties and ensure compliance (Kim *et al.*, 2011).

Existing research suggests that high financial leverage creates an environment conducive to REM. Hinkel and Hoffman (2017) found a direct relationship between high leverage and increased use of REM by managers to meet earnings targets. This finding aligns with Tulcanaza-Prieto *et al.* (2020), who argue that the pressure to avoid financial covenant violations motivates managers in highly leveraged firms to engage in REM, potentially undermining the effectiveness of high audit quality. This supports the broader notion that a firm's financial structure can influence the effectiveness of corporate governance mechanisms, including audit quality (Bushman and Smith, 2001). The intense pressure created by high leverage may incentivize more aggressive REM, making it difficult for auditors to constrain such behavior (Xu *et al.*, 2021). Additionally, Kim *et al.* (2003) emphasize that the risks

associated with high leverage can normalize earnings management as a managerial strategy, potentially overwhelming auditors' ability to mitigate it, even with strong auditing practices. Therefore, we proposed the following hypothesis:

H2. High leverage weakens the negative influence of audit quality on real earnings management.

2.3 The effect of cash flow on the influence of audit quality on real earnings management

Financial constraint theory also suggests that firms experiencing cash flow shortages are more inclined to engage in earnings management, including REM, as a means to preserve financial stability and meet debt obligations. As a result, under strained financial conditions, particularly when cash flows are negative, companies are more likely to adopt REM practices, thereby weakening the effectiveness of audit quality in ensuring earnings transparency (Bansal, 2023).

Following the debt covenant hypothesis, negative cash flow exacerbates these pressures, as poor cash flow often brings firms closer to covenant breaches (Sulistiani and Tjahjadi, 2023). Consequently, the urgency to meet covenant thresholds may lead managers to prioritize operational manipulations over transparent reporting, potentially diminishing the deterrent effect of even a high-caliber auditor (Ghosh and Moon, 2010).

High audit quality is generally associated with constraints on earnings management, encompassing both AEM and REM (Astami *et al.*, 2017; Alhadab, 2018). However, the pressure stemming from negative cash flow may incentivize managers to favor REM, particularly as auditors increasingly scrutinize AEM (Cohen and Zarowin, 2010). Significant pressures from adverse cash flow situations can increase managers' tendency to implement operational changes to meet earnings targets (Osisioma *et al.*, 2020). As a result, negative cash flow may weaken the restraining effect of high audit quality on REM practices (Le *et al.*, 2024). In instances of severe financial distress, even robust audit controls may become less effective in curbing manipulative actions, as managers might feel compelled to resort to real operational decisions to manage reported earnings (Enomoto *et al.*, 2015). Therefore, we proposed the following hypothesis:

H3. Sufficiently low or negative cash flow weakens the negative influence of audit quality on real earnings management.

3. Research methodology

3.1 Research context

Vietnam offers a suitable context for studying REM, as its evolving financial system continues to face challenges such as information asymmetry, weak corporate governance, and an underdeveloped legal framework (Vietnam Holding, 2024). For example, many listed firms in Vietnam are characterized by concentrated ownership structures, limited financial transparency, and state influence, which increase managerial discretion in earnings reporting. This concentration of ownership often results in a lack of transparency, granting managers considerable discretion over earnings reporting (Nguyen and Duong, 2021; Nguyen *et al.*, 2024). Furthermore, the significant state influence across various sectors complicates corporate governance, fostering a complex interplay between governmental involvement and management practices. This environment can result in a misalignment of interests between managers and shareholders, thereby increasing the potential for earnings manipulation (Vo and Nguyen, 2014; Nguyen, 2022). Moreover, the absence of mandatory adoption of International Financial Reporting Standards (IFRS) provides additional flexibility in accounting practices, creating opportunities for earnings manipulation driven by personal or organizational incentives (Nguyen and Le, 2022).

3.2 Model specification

In this section, the effect of audit quality on REM is examined, along with the moderating roles of financial leverage and operating cash flow. The baseline regression models are estimated as

specified in Equations (1) and (2), which incorporate interaction terms to assess whether the effectiveness of audit quality in constraining REM varies depending on a firm's financial context. Specifically, the regression takes the following form:

$$REM1_{i,t} = \alpha^0 + \alpha_1 Audit_{i,t} + \alpha_2 (Audit \times Leverage)_{i,t} + \alpha_3 Leverage_{i,t} + \alpha_4 (Audit \times Cashflow)_{i,t} + \alpha_5 Cashflow_{i,t} + \gamma\, Controls_{i,t} + Year + Sector + \varepsilon_{i,t} \quad (1)$$

$$REM2_{i,t} = \beta^0 + +\beta_1 Audit_{i,t} + \beta_2 (Audit \times Leverage)_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 (Audit \times Cashflow)_{i,t} + \beta_5 Cashflow_{i,t} + \gamma\, Controls_{i,t} + Year + Sector + \varepsilon_{i,t} \quad (2)$$

Where: $REM1_{i,t}$ and $REM2_{i,t}$ are two alternative proxies for real earnings management for firm i in year t; $Audit_{i,t}$ is the key independent variable; $Leverage_{i,t}$ and Cash $flow_{i,t}$ is the moderating variable capturing audit quality; $(Audit \times Leverage)_{i,t}$ and $(Audit \times Cash\ flow)_{i,t}$ are interaction terms representing the moderating effects of leverage and cash flow on the relationships between audit quality and REM, respectively; α_1, β_1 reflect the direct effects of audit quality on REM; α_2, β_2 capture the interaction effects between audit quality and leverage; α_3, β_3 reflect the direct effects of leverage; α_4, β_4 capture the interaction effects between audit quality and cash flow; α_5, β_5 reflect the direct effects of cash flow; γ $Controls_{i,t}$ is a vector of control variables; Year and Sector denote year and industry fixed effects; $\varepsilon_{i,t}$ is the error term.

3.3 Research data

Data was collected from Vietstock, focusing on the Vietnam stock market. The sample for this study includes data from 499 non-financial listed firms covering the period from 2008 to 2023. To maintain consistency, financial institutions were excluded from the sample because of their distinctive operating, investing, and financing activities compared with other companies (Hill *et al.*, 2010). After collecting the data, all missing data points were excluded from the dataset. Additionally, winsorization was applied to the main variables by trimming observations up to one percent in the tail, to mitigate the potential influence of outliers (Hill *et al.*, 2010). The final panel retained listed firms with 5,387 firm-year observations.

3.4 Analysis method

This study employs a multivariate regression approach to examine how financial leverage and cash flow affect REM, with a focus on the moderating role of audit quality. We use ordinary least squares (OLS) with robust standard errors for the primary estimation. To control unobserved heterogeneity, we include firm and year fixed effects.

We apply generalized least squares (GLS) estimation to improve efficiency in the presence of potential heteroskedasticity and autocorrelation. To ensure the robustness of the findings, we conducted several checks, including using alternative REM proxies (REM1 and REM2), re-estimating the models with different fixed effects combinations, and performing bootstrapping with 1,000 replications to assess the stability of the estimates.

3.5 Variables

This study identified three components essential for constructing REM: operational cash flow, discretionary expenses, and production costs, drawing from the research of Roychowdhury (2006) and Chi *et al.* (2015).

3.5.1 Cash flow from operations scaled by lagged total assets – Roychowdhury (2006).

$$\frac{CFO_{i,t}}{TACC_{i,t-1}} = \alpha_1 \frac{1}{TACC_{i,t-1}} + \alpha_2 \frac{SALES_{i,t}}{TACC_{i.t-1}} + \alpha_3 \frac{\Delta SALES_{i,t}}{TACC_{i,t-1}} + u_{i,t} \quad (3)$$

Where.

$CFO_{i,t}$: Cash flow from operations in year t

$TACC_{i,t-1}$: Total assets at the end of the year t−1

$SALES_{i,t}$: Sale revenue in the year t

$\Delta SALES_{i,t} = SALES_{i,t} - SALES_{i,t-1}$

3.5.2 Discretionary expenses scaled by lagged total assets – Roychowdhury (2006).

$$\frac{DISX_{i,t}}{TACC_{i,t-1}} = \alpha_1 \frac{1}{TACC_{i,t-1}} + \alpha_2 \frac{SALES_{i,t-1}}{TACC_{i,t-1}} + u_{i,t} \quad (4)$$

Where:

$DISX_{i,t}$: Discretionary expense of the year t, defined as the sum of employee benefits and selling and administrative expenses minus taxes and expenses.

$SALES_{i,t-1}$: Sale revenue in the year t−1

Abnormal discretionary costs are estimated by analyzing the residuals of the regression model (2), structured as a linear function of revenue (Dechow *et al.*, 1998). In situations where the desired earnings level is not attained, companies may opt to boost reported income by trimming discretionary expenses. Consequently, elevated abnormal expenses frequently indicate inadequate REM. To compute REM, we multiply the total abnormal production costs by the negative value of abnormal discretionary costs, following the methodology outlined by Chi *et al.* (2015).

3.5.3 Production cost scaled by lagged total assets – Roychowdhury (2006).

$$\frac{PROD_{i,t}}{TACC_{i,t-1}} = \alpha_1 \frac{1}{TACC_{i,t-1}} + \alpha_2 \frac{SALES_{i,t}}{TACC_{i,t-1}} + \alpha_3 \frac{\Delta SALES_{i,t}}{TACC_{i,t-1}} + \alpha_4 \frac{\Delta SALES_{i,t-1}}{TACC_{i,t-1}} + u_{i,t} \quad (5)$$

Where:

$PROD_{i,t}$: Production costs, the sum of the cost of goods sold and change in inventory account in the year t

Other variables are similar to regression models (3) and (4).

Similar to the analysis of cash flow and discretionary expenses, total production costs are computed by examining the residuals of model (5). Firms can engage in earnings management by overproducing, reducing fixed costs per unit, and increasing profits. Higher abnormal production costs thus indicate significant REM practices.

This study adopts two REM metrics based on Cohen and Zarowin (2010). REM1 is calculated as the sum of abnormal production costs and negative abnormal discretionary expenses, while REM2 combines abnormal production costs, negative abnormal discretionary expenses, and negative abnormal cash flows from operations.

$$REM1_{i,t} = ABPROD_{i,t} + ABDISX_{i,t} \times (-1) \quad (6)$$

$$REM2_{i,t} = ABCFO_{i,t} \times (-1) + ABDISX_{i,t} \times (-1) + ABPROD_{i,t} \quad (7)$$

Where:

$ABCFO_{i,t}$: Abnormal cash flows from operations

$ABDISX_{i,t}$: Abnormal discretionary expenses

$ABPROD_{i,t}$: Abnormal production costs

Following previous literature, the control variables used in this study include firm size (Firmsize), profitability (ROA), tangible assets (PPE), and state ownership (State). Firmsize is computed as the natural logarithm of total assets (Huguet and Gandía, 2016; Githaiga *et al.*, 2022). ROA, or return on assets, is calculated by scaling earnings before interest and taxes by total assets (Githaiga *et al.*, 2022; Musa *et al.*, 2023). PPE is calculated as the ratio of property, plant, and equipment to total assets (Xiong, 2016). State is a dummy variable, where 1 indicates state ownership and 0 indicates otherwise (Nguyen *et al.*, 2021). The definitions of these variables are presented in Table 1.

The author includes the firm fixed effect to control the heterogeneity of unobservable factors at the firm level. Moreover, because it may not be strictly normally distributed, we also employ the Bootstrapping standard errors (S.E.) with 1,000 replications with fixed effects to conduct the regression, besides the fixed-effects model.

Table 1. Variables description

Variable	Symbol	Description	References
Real earnings management	REM1	Real earnings management is calculated by Roychowdhury (2006) using abnormal production costs and abnormal discretionary expenses	Roychowdhury (2006)
Alternative measure of real earnings management	REM2	Real earnings management is calculated by Roychowdhury (2006) using abnormal cash flow from operations, abnormal production costs, and abnormal discretionary expenses	Roychowdhury (2006)
Audit quality	Audit	Dummy variable, 1 if the company is audited by a Big 4 firm, 0 if otherwise	Lennox and Pittman (2010)
Leverage	Leverage	Calculated by total debts by total assets	Kuan *et al.* (2011)
Cash flow	CFO	Cash flow from operations scaled by lagged total assets	Roychowdhury (2006)
Firm size	Firmsize	Calculated by logarithm of total assets	Huguet and Gandía (2016)
Profitability	ROA	Return on assets ratio, calculated by scaling earnings before interest and taxes (EBIT) by total assets	Githaiga *et al.* (2022)
Tangible assets	PPE	Calculated by property, plant, and equipment by total assets	Xiong (2016)
State ownership	State	Dummy variable, 1 if the company has state ownership, 0 if otherwise	Nguyen *et al.* (2021)
Sector	Sector	Dummy variable, representing the industry of the company, taking values from 1 to 15, where each number corresponds to a specific industry classification	Datta *et al.* (2013)

Note(s): This table provides definitions of all variables used in the research
Source(s): Author proposed

4. Results and discussions

4.1 Descriptive statistics

Table 2 in the supplementary file presents summary statistics for various variables used in the analysis. The REM1 variable has an average (mean) value of approximately −0.028, indicating a slightly negative average effect. The standard deviation of 0.182 suggests moderate variability around this mean. The mean of REM2 is −0.129, with a standard deviation of 0.286. This variable's range from −1.090 to 0.567 indicates wider variability compared to REM1. The Leverage variable has an average value of 0.095, with a relatively small standard deviation of 0.131, suggesting relatively low variability around the mean. The CFO variable shows a mean of 0.050 and a standard deviation of 0.136. The mean value of Audit is 0.322 with a standard deviation of 0.467, indicating that approximately 32.2% of firm-year observations involve high-quality audits.

4.2 Correlation analysis

Table 3 in the supplementary file presents the correlation matrix, indicating significant associations among the key variables. REM1 and REM2 are strongly and positively correlated, confirming their conceptual alignment. Leverage shows no significant correlation with REM1 but is weakly and positively associated with REM2, as well as moderately correlated with PPE and Firmsize. CFO exhibits strong negative correlations with both REM1 and REM2, and positive correlations with ROA and PPE. Audit is weakly and negatively correlated with REM1 and REM2, while positively associated with Leverage and CFO. Firmsize shows positive correlations with REM1, REM2, Leverage, and Audit. ROA is negatively associated with REM1, REM2, and Leverage, but positively correlated with CFO and State. State ownership is negatively correlated with REM1 and REM2 but positively linked with Leverage, CFO, ROA, and PPE, suggesting its influence on corporate financial behavior.

Next, we test if the results differ among various estimation methods and use alternative fixed-effect estimation with firm dummies to check the robustness. The results from these robustness tests collectively enhance the credibility and reliability of these findings.

4.3 Multivariate regression

Looking at column 1 of Table 4, we can clearly see that the effect of audit quality on REM can be expressed as: $H = -0.034 + 0.058 \times Leverage - 0.071 \times CFO$.

Table 4. Multivariate analysis results

Variables	(1) REM1	(2)	(3)	(4) VIF
Audit	−0.034***	−0.003	−0.023***	2.33
Audit × Leverage	0.058**	0.021	0.032	2.15
Leverage	−0.080***	−0.015	−0.075***	1.81
Audit × CFO	−0.071**	−0.042**	−0.075***	1.63
CFO	−1.007***	−0.998***	−1.004***	1.53
Firmsize	0.011***	0.011***	0.011***	1.62
ROA	0.049*	0.254***	0.052**	1.24
PPE	−0.014	−0.043***	−0.012	1.25
State	0.003	0.011***	−0.004	1.08
Constant	−0.264***	−0.276***	−0.253***	
Mean VIF				*1.63*
Year FE	No	Yes	Yes	
Firm FE	No	Yes	No	
Sector FE	No	No	Yes	
Observations	5,387	5,387	5,387	
R-squared	0.600	0.916	0.655	

Note(s): *, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively
Source(s): Author's estimation

When Leverage is sufficiently low and CFO is sufficiently high, H becomes negative, indicating that higher audit quality is associated with lower levels of REM. However, when leverage is sufficiently high and CFO is sufficiently low or negative, H turns positive, meaning that higher audit quality is linked to higher levels of REM.

In column 2, both the standalone coefficient of Audit and the coefficient of the interaction term Audit × Leverage are not statistically significant. Therefore, the effect of Audit is captured through the interaction term, with the impact $H = -0.042 \times CFO$. When CFO is negative, H becomes positive. This implies that when CFO is negative, high-quality auditing is associated with an increase in REM1. However, if CFO is positive, H is negative, meaning that higher audit quality leads to lower REM1.

In column 3, the coefficient of the interaction term Audit × Leverage is not statistically significant. Thus, the effect of Audit on REM1 is represented by $H = -0.023 - 0.075 \times CFO$. This means that if CFO is sufficiently negative, H becomes positive, indicating that under such conditions, high-quality auditing is associated with an increase in REM1. However, if CFO is positive, H is positive. It means that high-quality auditing leads to a decrease in REM1.

Table 4 shows that the effect of audit quality on REM1 significantly depends on financial leverage and operating cash flow. Specifically, when the leverage is sufficiently low and the CFO is sufficiently high, higher audit quality is associated with lower levels of REM. This suggests that in financially healthy firms, high-quality auditors discourage managerial discretion over real activities. This finding supports agency theory (Jensen and Meckling, 1976), which asserts that in the absence of financial pressure, managers are less incentivized to manipulate earnings, and the presence of strong external monitoring further limits such behavior. It is also consistent with the monitoring hypothesis (Watts and Zimmerman, 1986), which posits that high audit quality enhances transparency and accountability, particularly when firm fundamentals are stable.

In contrast, when leverage is sufficiently high and CFO is sufficiently low or negative, the relationship reverses—higher audit quality is associated with increased levels of REM. Although this finding may appear counterintuitive, it can be interpreted through both agency theory and signaling theory. Agency theory posits that while high audit quality constrains accrual-based earnings management (AEM), managers may compensate by shifting to real earnings management (REM) as an alternative strategy to influence reported performance (Antle *et al.*, 2006; Chi *et al.*, 2011). From the perspective of signaling theory (Knechel *et al.*, 2012; Zhang, 2014), although high audit quality is typically perceived as a signal of strong corporate governance, it may paradoxically grant managers greater discretion to engage in REM, based on the expectation that external stakeholders will perceive a lower risk of financial misreporting. This finding is consistent with Francis and Yu (2009), who documented that in certain contexts, high audit quality may not deter earnings management but instead facilitate it through perceived credibility.

4.4 Robustness check

Table 5 in the supplementary file presents the results of robustness checks conducted to assess the impact of audit quality on REM. The inclusion of firm, year, and industry fixed effects enhances the explanatory power of the models, as evidenced by higher R-squared values compared to the baseline regressions (Models (1) and (2)). Robustness checks confirm the consistency and reliability of the findings across multiple model specifications.

Table 5 in the supplementary file presents the robustness check results. Using the same logic as in Part 4.3, we can see that in cases where firms face financial pressure, characterized by high levels of leverage and low or negative cash flow, higher audit quality is associated with increased levels of REM. In contrast, for firms with lower leverage and strong cash flow positions, the presence of a Big4 auditor tends to reduce REM.

5. Conclusion

This study investigates the impact of audit quality on REM, with a specific focus on the roles of financial leverage and operating cash flows. Using a panel dataset of 5,387 firm-year observations from 499 non-financial listed firms in Vietnam between 2008 and 2023, the study applies the Roychowdhury (2006) model to estimate REM and employs regression models with fixed effects. The author has made several contributions.

5.1 Theoretical contributions

This study contributes to the existing literature by developing a theoretical model that explains the mixed results for the impact of audit quality on REM. In fact, this study shows that audit quality is more strongly negatively associated with REM in firms that exhibit low financial leverage and maintain strong operating cash flows. In contrast, for firms with sufficiently high leverage and sufficiently low or negative cash flows, this relationship would be weakened or may even reverse. Therefore, while high audit quality is generally expected to reduce earnings management, this effect appears to be conditional on a firm's financial context. Under financial constraints, audit quality alone may not be sufficient to prevent REM. It may even unintentionally facilitate REM.

Thus, this study contributes to the agency theory (Jensen and Meckling, 1976) by emphasizing the critical role of a firm's financial condition in shaping this relationship. While agency theory highlights mechanisms such as independent outside monitoring that can limit the inherent conflicts of interest that arise between managers and shareholders, this study highlights that a firm's internal financial condition may affect the its effectiveness.

5.2 Practical implications

The findings highlight the importance of financial structure and audit quality in influencing REM. Ensuring strong internal control systems, low leverage, and maintaining stable operating cash flows are essential to reduce managerial incentives for REM. Investors, fund managers, and policy makers should be cautious of firms that combine high debt ratios and weak cash flows, even when audited by high-quality auditors.

5.3 Limitations and future research directions

This study has certain limitations. First, it focuses solely on non-financial listed firms in Vietnam, which may limit the generalizability of the results to other contexts. Future research could extend this analysis to different institutional settings, such as other emerging or developed markets, to validate the findings across broader samples.

Second, the use of the Roychowdhury (2006) model, while widely accepted, may not fully capture the complexity of managerial behavior related to REM. Using alternative models of REM and incorporating qualitative factors such as managerial incentives or board effectiveness could provide a more comprehensive understanding of how audit quality and financial conditions interact with earnings management. Further studies may also explore how changes in audit regulation or corporate governance reforms influence REM, particularly during periods of economic uncertainty or financial distress.

References

Alhadab, M. (2018), "Abnormal audit fees and accrual and real earnings management: evidence from UK", *Journal of Financial Reporting and Accounting*, Vol. 16 No. 3, pp. 395-416, doi: 10.1108/jfra-07-2017-0050.

Alqudah, M.M.A. (2024), "The effect of audit quality on real earnings management: evidence from Jordan", *Journal of Ecohumanism*, Vol. 3 No. 4, pp. 3343-3355, doi: 10.62754/joe.v3i4.3845.

Antle, R., Gordon, E., Narayanamoorthy, G. and Zhou, L. (2006), "The joint determination of audit fees, non-audit fees, and abnormal accruals", *Review of Quantitative Finance and Accounting*, Vol. 27 No. 3, pp. 235-266, doi: 10.1007/s11156-006-9430-y.

Astami, E.W., Rusmin, R., Hartadi, B. and Evans, J. (2017), "The role of audit quality and culture influence on earnings management in companies with excessive free cash flow", *International Journal of Accounting and Information Management*, Vol. 25 No. 1, pp. 21-42, doi: 10.1108/ijaim-05-2016-0059.

Bansal, M. (2023), "Debt covenants and classification shifting: moderating role of audit quality", *Managerial Finance*, Vol. 49 No. 10, pp. 1558-1576, doi: 10.1108/mf-11-2022-0536.

Becker, C.L., DeFond, M.L., Jiambalvo, J. and Subramanyam, K.R. (1998), "The effect of audit on earnings management", *Contemporary Accounting Research*, Vol. 15 No. 1, pp. 1-24, doi: 10.1111/j.1911-3846.1998.tb00547.x.

Bushman, R.M. and Smith, A.J. (2001), "Financial accounting information and corporate governance", *SSRN Electronic Journal*, Vol. 32 Nos 1-3, pp. 237-333, doi: 10.1016/s0165-4101(01)00027-1.

Carlin, T.M., Nigel, F. and Dung Manh, T. (2015), "Audit quality differences among auditors: the case of Hong Kong", *Journal of Economics and Development*, Vol. 17 No. 1, pp. 75-92, doi: 10.33301/2015.17.01.05.

Chi, W., Lisic, L.L. and Pevzner, M. (2011), "Is enhanced audit quality associated with greater real earnings management?", *Accounting Horizons*, Vol. 25 No. 2, pp. 315-335, doi: 10.2308/acch-10025.

Chi, C.W., Hung, K., Cheng, H.W. and Lieu, P.T. (2015), "Family firms and earnings management in Taiwan: influence of corporate governance", *International Review of Economics and Finance*, Vol. 36, pp. 88-98, doi: 10.1016/j.iref.2014.11.009.

Cloney, T., Vinluan, J., Chen, A., Retegan, C. and McCahy, P. (2019), "Stakeholder's perceived value of surgical audit data provided by the Victorian Audit of Surgical Mortality", *Health Information Management Journal*, Vol. 50 Nos 1-2, doi: 10.1177/1833358319885223.

Cohen, D.A. and Zarowin, P. (2010), "Accrual-based and real earnings management activities around seasoned equity offerings", *Journal of Accounting and Economics*, Vol. 50 No. 1, pp. 2-19, doi: 10.1016/j.jacceco.2010.01.002.

Cohen, D.A., Dey, A. and Lys, T.Z. (2008), "Real and accrual-based earnings management in the pre- and post-sarbanes-oxley periods", *The Accounting Review*, Vol. 83 No. 3, pp. 757-787, doi: 10.2308/accr.2008.83.3.757.

Dang, L. and Fang, Q. (2011), "Audit quality and owner-manager agency costs: evidence from China", *International Journal of Business Innovation and Research*, Vol. 5 No. 1, p. 46, doi: 10.1504/ijbir.2011.037256.

Datta, S., Iskandar-Datta, M. and Singh, V. (2013), "Product market power, industry structure, and corporate earnings management", *Journal of Banking and Finance*, Vol. 37 No. 8, pp. 3273-3285, doi: 10.1016/j.jbankfin.2013.03.012.

Dechow, P.M., Kothari, S.P. and Watts, R.L. (1998), "The relation between earnings and cash flows", *Journal of Accounting and Economics*, Vol. 25 No. 2, pp. 133-168, doi: 10.1016/s0165-4101(98)00020-2.

Enomoto, M., Kimura, F. and Yamaguchi, T. (2015), "Accrual-based and real earnings management: an international comparison for investor protection", *Journal of Contemporary Accounting and Economics*, Vol. 11 No. 3, pp. 183-198, doi: 10.1016/j.jcae.2015.07.001.

Eshleman, J.D. and Guo, P. (2014), "Do Big 4 auditors provide higher audit quality after controlling for the endogenous choice of auditor?", *Auditing: A Journal of Practice and Theory*, Vol. 33 No. 4, pp. 197-219, doi: 10.2308/ajpt-50792.

Francis, J.R. and Yu, M.D. (2009), "Big 4 office size and audit quality", *The Accounting Review*, Vol. 84 No. 5, pp. 1521-1552, doi: 10.2308/accr.2009.84.5.1521.

Francis, J.R., Maydew, E.L. and Sparks, H.C. (1999), "The role of Big 6 auditors in the credible reporting of accruals", *Auditing: A Journal of Practice and Theory*, Vol. 18 No. 2, pp. 17-34, doi: 10.2308/aud.1999.18.2.17.

Frankel, R.M., Johnson, M.F. and Nelson, K.K. (2002), "The relation between auditors' fees for nonaudit services and earnings management", *The Accounting Review*, Vol. 77 No. s-1, pp. 71-105, doi: 10.2308/accr.2002.77.s-1.71.

Ghosh, A.A. and Moon, D. (2010), "Corporate debt financing and earnings quality", *Journal of Business Finance and Accounting*, Vol. 37 Nos 5-6, pp. 538-559, doi: 10.1111/j.1468-5957.2010.02194.x.

Githaiga, P.N., Muturi Kabete, P. and Caroline Bonareri, T. (2022), "Board characteristics and earnings management. Does firm size matter?", *Cogent Business and Management*, Vol. 9 No. 1, doi: 10.1080/23311975.2022.2088573.

Healy, P.M. and Wahlen, J.M. (1999), "A review of the earning management literature and its implications for standard setting", *Accounting Horizons*, Vol. 13 No. 4, pp. 365-383, doi: 10.2308/acch.1999.13.4.365.

Hill, M.D., Kelly, G.W. and Highfield, M.J. (2010), "Net operating working capital behavior: a first look", *Financial Management*, Vol. 39 No. 2, pp. 783-805, doi: 10.1111/j.1755-053x.2010.01092.x.

Hinkel, T.P. and Hoffman, B.W. (2017), "Meeting earnings benchmarks via real activities manipulation: debt market effects", *Journal of Accounting, Auditing and Finance*, Vol. 35 No. 2, pp. 349-378, doi: 10.1177/0148558x17742568.

Houqe, M.N., Ahmed, K. and Zijl, T. (2017), "Audit quality, earnings management, and cost of equity capital: evidence from India", *International Journal of Auditing*, Vol. 21 No. 2, pp. 177-189, doi: 10.1111/ijau.12087.

Huguet, D. and Gandía, J.L. (2016), "Audit and earnings management in Spanish SMEs", *BRQ Business Research Quarterly*, Vol. 19 No. 3, pp. 171-187, doi: 10.1016/j.brq.2015.12.001.

Jayeola, O., Taofeek, A. and Toluwalase, A. (2017), "Audit quality and earnings management among Nigerian listed deposit money banks", *International Journal of Accounting Research*, Vol. 05 No. 02, doi: 10.4172/2472-114x.1000159.

Jensen, M.C. and Meckling, W.H. (1976), "Theory of the firm: managerial behavior, agency costs and ownership structure", *Journal of Financial Economics*, Vol. 3 No. 4, pp. 305-360, doi: 10.1016/0304-405x(76)90026-x.

Jha, A. (2013), "Earnings management around debt-covenant violations – an empirical investigation using a large sample of quarterly data", *Journal of Accounting, Auditing and Finance*, Vol. 28 No. 4, pp. 369-396, doi: 10.1177/0148558x13505597.

Jiang, L. and Zhou, H. (2017), "The role of audit verification in debt contracting: evidence from covenant violations", *Review of Accounting Studies*, Vol. 22 No. 1, pp. 469-501, doi: 10.1007/s11142-016-9383-x.

Jung, S.J., Kim, B.J. and Chung, J.R. (2016), "The association between abnormal audit fees and audit quality after IFRS adoption", *International Journal of Accounting and Information Management*, Vol. 24 No. 3, pp. 252-271, doi: 10.1108/ijaim-07-2015-0044.

Kim, J.B., Chung, R. and Firth, M. (2003), "Auditor conservatism, asymmetric monitoring, and earnings management", *Contemporary Accounting Research*, Vol. 20 No. 2, pp. 323-359, doi: 10.1506/j29k-mrua-0app-yj6v.

Kim, B.H., Lisic, L.L., Myers, L.A. and Pevzner, M. (2011), "Debt contracting and real earnings management", *SSRN Electronic Journal*. doi: 10.2139/ssrn.1701218.

Knechel, W.R., Krishnan, G.V., Pevzner, M., Shefchik, L.B. and Velury, U.K. (2012), "Audit quality: insights from the academic literature", *Auditing: A Journal of Practice and Theory*, Vol. 32, Supplement 1, pp. 385-421, doi: 10.2308/ajpt-50350.

Kuan, T.H., Li, C.S. and Chu, S.H. (2011), "Cash holdings and corporate governance in family-controlled firms", *Journal of Business Research*, Vol. 64 No. 7, pp. 757-764, doi: 10.1016/j.jbusres.2010.07.004.

Le, T.B.N., Tran, T.H.D., Tran, T.Y. and Hoang, C.T. (2024), "The effect of real earnings management on earnings persistence and informativeness before and during COVID-19", *Journal of Corporate Accounting and Finance*, Vol. 35 No. 1, pp. 76-91, doi: 10.1002/jcaf.22650.

Lennox, C. and Pittman, J.A. (2010), "Big five audits and accounting fraud", *Contemporary Accounting Research*, Vol. 27 No. 1, pp. 209-247.

Luo, J.H., Xiang, Y. and Huang, Z. (2017), "Female directors and real activities manipulation: evidence from China", *China Journal of Accounting Research*, Vol. 10 No. 2, pp. 141-166, doi: 10.1016/j.cjar.2016.12.004.

Mansi, S.A., Maxwell, W.F. and Miller, D.P. (2004), "Does auditor quality and tenure matter to investors? Evidence from the bond market", *Journal of Accounting Research*, Vol. 42 No. 4, pp. 755-793, doi: 10.1111/j.1475-679x.2004.00156.x.

Musa, A., Abdul Latif, R. and Abdul Majid, J. (2023), "CEO attributes, board independence, and real earnings management: evidence from Nigeria", *Cogent Business and Management*, Vol. 10 No. 1, doi: 10.1080/23311975.2023.2194464.

Nguyen, T.T. (2022), "State-owned holding company and value of cash holdings in Vietnam", *International Journal of Business and Society*, Vol. 23 No. 3, pp. 1462-1481, doi: 10.33736/ijbs.5175.2022.

Nguyen, H.A. and Duong, T.C. (2021), "Earnings management and new listings: evidence from Vietnam", *Asian Academy of Management Journal*, Vol. 26 No. 2, pp. 27-51.

Nguyen, H.A. and Le, Q.L. (2020), "'Board of directors' characteristics and earnings management: empirical evidence from Vietnam'", *Journal of Economics and Development*, pp. 44-55, Special Issue 2020.

Nguyen, V.K. and Le, H.T.A. (2022), "The mediating mechanism of earnings management on the relationship between life cycle and financial reporting quality: finding from MRA and fsQCA", *Business Strategy and Development*, Vol. 5 No. 4, pp. 375-389, doi: 10.1002/bsd2.205.

Nguyen, H.A., Le, Q.L. and Vu, T.K.A. (2021), "Ownership structure and earnings management: empirical evidence from Vietnam", *Cogent Business and Management*, Vol. 8 No. 1, doi: 10.1080/23311975.2021.1908006.

Nguyen, T., Doan, P. and Kim, H. (2024), "Corporate social responsibility and earnings management: evidence from Vietnam", *Asian Academy of Management Journal*, Vol. 29 No. 1, pp. 127-142, University of Science Malaysia, doi: 10.21315/aamj2024.29.1.5.

Osisioma, B., Okoye, P., Ezejiofor, R. and Okoye, J. (2020), "Operating cash flow and earnings management: evidence from Nigerian banks", *International Journal of Advanced Academic Research*, Vol. 6 No. 12, pp. 53-63, doi: 10.46654/ij.24889849.s61221.

Pittman, J. and Zhao, Y. (2020), "Debt covenant restriction, financial misreporting, and auditor monitoring", *Contemporary Accounting Research*, Vol. 37 No. 4, pp. 2145-2185, doi: 10.1111/1911-3846.12579.

Roychowdhury, S. (2006), "Earnings management through real activities manipulation", *Journal of Accounting and Economics*, Vol. 42 No. 3, pp. 335-370, doi: 10.1016/j.jacceco.2006.01.002.

Sari, R.P. and Sari, R.P. (2018), "Study of earning management and audit quality in Indonesi", *Journal of Economics Business and Government Challenges*, Vol. 1 No. 02, pp. 143-152, doi: 10.33005/ebgc.v1i2.23.

Sitanggang, R.P., Karbhari, Y., Matemilola, B.T. and Ariff, M. (2019), "Audit quality and real earnings management: evidence from the UK manufacturing sector", *International Journal of Managerial Finance*, Vol. 16 No. 2, pp. 165-181, doi: 10.1108/ijmf-03-2018-0095.

Sulistiani, D. and Tjahjadi, B. (2023), "The right purpose on the right covenant: does the loan purpose affect the debt covenant through the Ṣukūk rating?", *ISRA International Journal of Islamic Finance*, Vol. 15 No. 1, pp. 130-147, doi: 10.55188/ijif.v15i1.489.

Tran, M.D., Khairi, K.F. and Laili, N.H. (2019), "A longitudinal study of audit quality differences among independent auditors", *Journal of Economics and Development*, Vol. 21 No. 2, pp. 234-246, doi: 10.1108/jed-10-2019-0040.

Tulcanaza-Prieto, A.B., Lee, Y. and Koo, J.H. (2020), "Effect of leverage on real earnings management: evidence from Korea", *Sustainability*, Vol. 12 No. 6, 2232, doi: 10.3390/su12062232.

Vietnam Holding (2024), "Investing in Vietnam: emerging from the Frontier", UK Investor Magazine, Vol. 22, February, available at: https://ukinvestormagazine.co.uk/investing-in-vietnam-emerging-from-the-frontier/

Vo, D.H. and Nguyen, T.M. (2014), "The impact of corporate governance on firm performance: empirical study in Vietnam", *International Journal of Economics and Finance*, Vol. 6 No. 6, doi: 10.5539/ijef.v6n6p1.

Watts, R.L. and Zimmerman, J.L. (1986), *Positive Accounting Theory*, Prentice-Hall, Englewood Cliffs, NJ.

Xiong, J. (2016), "Chairman characteristics and earnings management: evidence from Chinese listed firms", *Open Journal of Accounting*, Vol. 5 No. 4, pp. 82-94, doi: 10.4236/ojacct.2016.54008.

Xu, Z.R., Dugan, M.T. and Taylor, G.K. (2007), "Review of real earnings management literature", *Journal of Accounting Literature*, Vol. 26, pp. 195-228.

Xu, C., Zhang, H., Hao, J. and Guo, L. (2021), "Real earnings management in bankrupt firms", *Journal of Corporate Accounting and Finance*, Vol. 32 No. 2, pp. 22-38, doi: 10.1002/jcaf.22483.

Zang, A.Y. (2012), "Evidence on the trade-off between real activities manipulation and accrual-based earnings management", *The Accounting Review*, Vol. 87 No. 2, pp. 675-703, doi: 10.2308/accr-10196.

Zhang, D. (2014), "Can enhanced audit quality reduce higher real earnings management – evidence from China", in *Advances in Intelligent Systems Research*, Atlantis Press, Paris.

Supplementary material
Supplementary material for this article can be found online.

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