GENDER DIVERSITY OF NON-CFO SUBORDINATE EXECUTIVES AND REAL EARNINGS MANAGEMENT

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Abstract

This paper examines how gender diversity among subordinate executives, excluding the chief financial officer (CFO), relates to real earnings management. The research question addresses a gap in the literature and responds to the practical need for improving corporate governance. This study examines a sample of U.S. firms from 1992 to 2023. Real earnings management is measured following Roychowdhury (2006). A multiple regression analysis is used to examine the association between the gender diversity of non-CFO subordinate executives and real earnings management. The results show that firms with female non-CFO subordinate executives engage in less real earnings management, after controlling for other factors associated with real earnings management. This suggests that the presence of women in these roles mitigates the manipulation of real activities. The results are robust across alternative measures of real earnings management and remain consistent when excluding firms with female chief executive officers (CEOs) from the sample. This study contributes to the literature on the relationship between gender diversity and financial reporting, as well as real earnings management. In addition to enhancing academic understanding, it highlights the role of gender diversity in internal monitoring mechanisms within top management teams. This study is relevant for both practice and policy regarding corporate governance and financial reporting.

Keywords: Subordinate Executives, Real Earnings Management, Top Management Team

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1. INTRODUCTION

This study examines the association between the gender diversity of subordinate executives and the extent of real earnings management, specifically focusing on non-chief financial officer (CFO) subordinate executives and their impact on income-increasing real earnings management. While prior research on gender diversity and financial reporting has primarily concentrated on corporate boards (Srinidhi et al., 2011; Dobija et al., 2021; Zalata et al., 2022), CFOs (Barua et al., 2010), and CEO/CFO combinations (Hrazdil et al., 2023), the gender diversity of non-CFO subordinate executives has been largely overlooked. These subordinate executives include roles such as chief operating officer (COO), chief technology officer (CTO), president, and vice president. These executives provide critical checks and balances within top management teams through internal governance,

a mechanism where subordinate executives monitor chief executive officers (CEOs) to ensure the decisions are consistent with long-term firm value (Acharya et al., 2011; Cheng et al., 2016). For example, COOs oversee day-to-day operations and ensure compliance with governance standards, while CTOs develop technological strategies that influence long-term investments (Northwest Executive Education, 2025).

Unlike the top-down monitoring of corporate governance, internal governance provides a monitoring role on the CEOs from the bottom up. Subordinate executives, who typically have longer horizons than the CEO, care more about long-term firm value and are ideally positioned to influence the CEO's decisions (Cheng et al., 2016). If a CEO makes self-serving decisions that benefit immediate goals while sacrificing the firm's long-term value, subordinate executives can help constrain such behavior through their monitoring role. Although the gender of CFOs has been extensively studied (Barua et al., 2010), examining the gender diversity of non-CFO subordinate executives is also important, as these executives significantly contribute to the decision-making process and can influence the CEO.

In addition to addressing a gap in the literature, this study is motivated by the goal of enhancing corporate governance practices. There has been a global call to improve the appointment of female board members (Nguyen et al., 2020). It is important to explore whether the presence of women in subordinate executive teams positively influences organizational decision-making and financial reporting.

Women and men often think differently. Previous studies have shown that women tend to be more conservative (Zeng & Wang, 2015) and risk-averse (Zalata et al., 2019) than men. Thus, it is expected that gender diversity among subordinate executives enhances their ability to monitor the CEO and curb behaviors that could negatively impact long-term firm value. This study focuses on real earnings management, as manipulating real activities can boost short-term earnings while sacrificing long-term value. Subordinate executives, who typically have longer decision horizons than the CEO, are more focused on sustaining the firm's value over the long term and are motivated to limit manipulative strategies that jeopardize this value. It is anticipated that gender-diverse subordinate executives will be more effective in reducing such manipulations compared to an all-male team.

The sample of this study comprises 138,414 firm-year observations of U.S. firms from 1992 to 2023. Real earnings management is measured following Roychowdhury (2006). A multiple regression analysis is used to examine the association between the gender diversity of non-CFO subordinate executives and real earnings management. This study finds that the gender diversity of non-CFO subordinate executives is associated with decreased real earnings management. This indicates that the presence of female subordinate executives helps mitigate opportunistic financial reporting decisions that enhance short-term outcomes while harming the firm's long-term value, even when they are not serving as the CFO. The results remain consistent across alternative measures of real earnings management, after controlling for CFO gender, and when excluding firms with female CEOs from the sample. Two methods are adopted to mitigate potential endogeneity concerns (Cheng et al., 2016). First, lagged measures are used to replace the independent variable and executive-related control variables in the original regression model; this ensures temporal precedence between executive team composition and real earnings management. Second, a two-stage least squares instrumental variable approach is applied.

This study contributes to the literature on gender diversity and financial reporting. While prior research has primarily focused on gender diversity within corporate boards (Srinidhi et al., 2011; Dobija et al., 2021; Zalata et al., 2022; Velte, 2023; Baik et al., 2024; Yadav et al., 2024), CFOs (Barua et al., 2010), and CEO/CFO combinations (Hrazdil et al., 2023), this study emphasizes the importance of gender diversity among non-CFO subordinate executives, who have "more direct control and influence" over real activities (Cheng et al., 2016). Additionally, this research enhances the existing literature on real earnings management and deepens the understanding of the role of gender diversity in the internal monitoring mechanisms within top management teams. The findings have implications for corporate leaders and regulators interested in improving corporate governance practices.

The rest of the paper is structured as follows. Section 2 provides a review of the relevant literature and introduces the hypothesis. Section 3 explains the research design. Section 4 presents the study sample and data. Section 5 reports the results of the analyses. Section 6 concludes the study with a summary.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Literature review on gender diversity and financial reporting

Although the relationship between gender diversity and financial reporting has been extensively studied, there are mixed findings across different contexts. Kanter's (1977) critical mass theory states that minority group members, such as women, must reach at least 30–35% representation within organizations to overcome tokenism and exert meaningful influence. While Kanter's (1977) study focuses on proportional representation and group dynamics, subsequent studies apply the theory to corporate governance settings. For example, Torchia et al. (2010) find that boards with at least three female directors are more effective in strategic decision-making; Subhani et al. (2024) find that boards with more than 35% female directors significantly improve financial reporting quality.

Empirical research further examines the relationship between gender diversity and financial reporting quality. Srinidhi et al. (2011) find a positive association between the presence of female directors on corporate boards and improved earnings quality, suggesting that female representation enhances oversight and decision-making. Barua et al. (2010) and Peni and Vähämaa (2010) both show that firms with female CFOs tend to have higher accrual quality and lower discretionary accruals, which points to a more conservative approach to financial reporting. Similarly, Campa et al. (2023) provide evidence that female CFOs are associated with lower levels of real earnings management, reinforcing the idea that gender diversity contributes to more ethical financial practices.

Hrazdil et al. (2023) extend this research by examining gender-diverse CEO/CFO pairs and find that firms led by such pairs tend to report higher-quality earnings than those led by male-only pairs. On the other hand, Peni and Vähämaa (2010) report no significant association between CEO gender alone and earnings management. This suggests that the effect of gender diversity may depend on which executive roles women hold and the level of influence those roles carry within the firm.

International studies show mixed evidence on how gender diversity affects financial reporting quality. For example, Ye et al. (2010) examine a sample of Chinese firms and find no significant association between top executive gender and earnings quality. In contrast, Cumming et al. (2015) find that the presence of female directors is associated with a lower risk of fraud in other settings.

Gupta et al. (2020) find that firms with female CFOs have a lower likelihood of financial misreporting, particularly in environments with weak institutional monitoring. This finding suggests that gender diversity can serve as an effective internal governance mechanism, especially in contexts where external oversight is limited.

Most prior research has concentrated on boards or CFOs. There is limited understanding of how the gender diversity of non-CFO executives impacts financial reporting. This study addresses this gap in the literature by examining how female non-CFO subordinate executives influence real earnings management.

2.2. Literature review on internal governance

Internal governance refers to bottom-up monitoring within the top management team, providing checks and balances that influence decision-making processes (Acharya et al., 2011). Unlike external governance mechanisms, which rely on oversight by boards of directors or institutional investors, internal governance functions through the interactions between subordinate executives and the CEO. This dynamic is particularly effective when subordinate executives have longer decision horizons and are motivated to prioritize long-term firm value over short-term performance (Cheng et al., 2016; Mekhaimer et al., 2022).

Acharya et al. (2011) develop a theoretical model of internal governance in which the CEO's behavior is constrained by non-CEO executives. In their model, a firm is treated as "a composition of diverse agents with different horizons, interests, and opportunities for misappropriation and growth" (p. 690). Subordinate executives, who are often younger than the CEO, have the incentives to constrain myopic behavior by encouraging decisions that align with long-term value creation. For example, key subordinate executives may resist strategies such as overproduction or cutting research and development (R&D) expenditures, which could boost short-term earnings but harm future growth (Cheng et al., 2016; Aggarwal et al., 2017). This governance mechanism becomes particularly critical in firms with limited external oversight or in countries with weak external governance frameworks (Acharya et al., 2011).

Internal governance complements external mechanisms by enhancing efficiency and maintaining a balance of control within firms. Whereas external governance mechanisms, such as board independence and institutional ownership, provide top-down oversight, internal governance introduces bottom-up monitoring that can play an equally important role in shaping corporate decision-making (Fama & Jensen, 1983a; Cheng et al., 2016; Aggarwal et al., 2017). For instance, Cheng et al. (2016) find that subordinate executives, who usually have longer career horizons than CEOs, can influence CEOs to prioritize sustainable strategies over opportunistic practices. Aggarwal et al. (2017) show that internal governance is more effective when the CEO has a shorter horizon, when the CEO is not the firm's founder, when the CEO holds less equity ownership, and when the firm is in an industry more likely to hire insiders as CEOs.

Although internal governance plays an important role in corporate oversight, it remains underexplored in the literature. Much of the existing research focuses on external governance factors and often overlooks the checks and balances within top management teams. This study addresses this gap by examining how gender diversity among non-CFO subordinate executives affects firms' opportunistic financial reporting practices.

2.3. Hypothesis development

Previous research suggests that women are generally more risk-averse (Zalata et al., 2019), while men tend to exhibit greater ambition for achieving measurable performance outcomes (Burke & Collins, 2001). In the context of corporate management, female top executives are often less willing to take risks than their male peers (Francis et al., 2015). Female CFOs, in particular, tend to be more cautious in making decisions related to acquisitions and debt issuance (Huang & Kisgen, 2013). Regarding financial reporting, firms led by female CFOs demonstrate higher earnings quality, as indicated by improved accruals quality (Barua et al., 2010; Peni & Vähämaa, 2010) and lower levels of real earnings management (Campa et al., 2023).

These characteristics are particularly important in the context of real earnings management. Real earnings management refers to managers manipulating real activities to boost short-term earnings at the expense of long-term firm value. These activities include cutting R&D, overproducing, or delaying maintenance (Roychowdhury, 2006). Unlike accrual-based earnings management, which manipulates accounting estimates and has no immediate impact on cash flows, real earnings management involves concrete operational decisions that subordinate executives are often directly responsible for (Cohen et al., 2008; Cheng et al., 2016).

Internal governance theory helps explain how non-CFO subordinate executives mitigate real earnings management. Subordinate executives, such as COOs and CTOs, usually have longer horizons than CEOs. This gives them more incentives to care about long-term firm value (Acharya et al., 2011; Cheng et al., 2016). They have direct control over real activities, such as R&D budgets and production schedules, which are common ways managers engage in real earnings management (Habib et al., 2022). Female executives, who tend to be more risk-averse and conservative (Francis et al., 2015), may strengthen this oversight. Therefore, it is anticipated that the presence of female executives in the subordinate executive team can help mitigate real earnings management, even if they are not serving as the CFO.

Formally stated, the hypothesis is:

H1: The gender diversity of non-CFO subordinate executives is negatively associated with the level of real earnings management.

3. RESEARCH DESIGN

3.1. Measures of real earnings management

Real earnings management is measured following prior studies (Roychowdhury, 2006; Cohen & Zarowin, 2010). Corporate executives can increase reported earnings by: 1) reducing sales costs by ramping up production to spread fixed costs across a larger number of units, leading to abnormally high production costs (*PROD*); 2) cutting discretionary spending on R&D, advertising, and selling, general, and administrative (SG&A) expenses, resulting in abnormally low discretionary expenses (*DISX*); 3) accelerating sales through aggressive pricing strategies or more flexible credit terms, which can result in unusually low cash flow from operations (*CFO*). As a result, higher abnormal *PROD*, lower abnormal *DISX*, and lower abnormal *CFO* suggest income-increasing real earnings management (Roychowdhury, 2006). Given that pricing decisions are primarily made by the CFO, and the non-CFO subordinate executives (e.g., COOs, CTOs) examined in this study are primarily responsible for operational and production decisions (Demeester et al., 2014), the research design emphasizes measures more closely related to operations and production (*RM_DISX*, *RM_PROD*). Chang et al. (2022) highlight that abnormal production costs and discretionary expenses are dominant forms of real earnings management in firms with decentralized decision-making structures.

Furthermore, excluding abnormal cash flows from operations (*RM_CFO*) is consistent with prior studies on real earnings management (Zang, 2012; Hsu & Liao, 2023). These studies point out manipulating real activities impact cash flow from operations in different directions and the net effect is ambiguous, because price discount, channel stuffing, and overproduction all decrease cash flows from operations, while cutting discretionary expenditures increases them (Roychowdhury, 2006).

RM_DISX

$$\frac{DISX_{i,t}}{Assets_{i,t-1}} = \alpha_1 \frac{1}{Assets_{i,t-1}} + \alpha_2 \frac{Sales_{i,t}}{Assets_{i,t-1}} + \alpha_3 \frac{\Delta Sales_{i,t}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (1)$$

Equation (1) is estimated for each industry and year. *RM_DIXS* is the negative of the residual.

RM_PROD

$$\frac{PROD_{i,t}}{Assets_{i,t-1}} = \alpha_1 \frac{1}{Assets_{i,t-1}} + \alpha_2 \frac{Sales_{i,t}}{Assets_{i,t-1}} + \alpha_3 \frac{\Delta Sales_{i,t}}{Assets_{i,t-1}} + \alpha_4 \frac{\Delta Sales_{i,t-1}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (2)$$

Equation (2) is estimated for each industry and year. *RM_PROD* is the residual.

RM_agg, the aggregate measure of real earnings management, is the sum of *RM_DISX* (estimated from Eq. (1)) and *RM_PROD.*

3.2. Empirical model

The following model is used to test *H1*:

$$RM_{i,t} = \beta_0 + \beta_1 Gender\_diversity_{i,t} + \sum \gamma\, Controls + Industry\_FE + Year\_FE + \varepsilon_{i,t} \quad (3)$$

where *RM* refers to the measures of real earnings management developed by Roychowdhury (2006), which include discretionary expenses (*RM_DISX*) and production costs (*RM_PROD*). For robustness checks, the aggregate measure (*RM_DISX + RM_PROD = RM_agg*) used in Cohen and Zarowin (2010) is also applied. Gender diversity (*Gender_diversity_nonceocfo*) is defined as the presence of female non-CFO executives within the subordinate executive group. The control variables include firm characteristics, such as size, return on assets (*ROA*), book-to-market ratio (*BM*), leverage, and CEO characteristics that may influence real earnings management, including CEO compensation (*CEO_comp*) and CEO horizon (*CEO_horizon*). Detailed definitions of these key variables are provided in Table A.1, Appendix.

4. SAMPLE AND DATA

The data for this study are retrieved from Compustat and Execucomp. The sample period spans from 1992 to 2023, as Execucomp's earliest available data begins in 1992. Observations with missing values for the main variables and control variables are excluded from the analysis. Financial firms (SIC codes 6000–6999) are also excluded due to differing financial reporting incentives. The final sample consists of 138,414 firm-year observations from U.S. companies. Panel A of Table 1 shows the sample derivation, while Panel B presents the percentage breakdown of official titles for non-CFO subordinate executives.

Table 1. Sample derivation and executive titles

Panel A: Sample derivation	***Obs.***
Firm-year observations from 1992 to 2023	341,079
After excluding observations of financial firms (SIC codes in the 6000 and 6999 range)	244,729
After excluding missing values from the regression variables	138,414
Panel B: Title of key non-CFO subordinate executives	***%***
Vice president	7.01%
Senior vice president	17.59%
Executive vice president	24.59%
COO	6.15%
President	25.21%
CTO	1.46%

5. RESULTS

5.1. Descriptive statistics

Table 2 provides descriptive statistics for the measures of real earnings management, horizon, gender diversity, and control variables. All continuous variables are winsorized at the 1 percent and 99 percent levels.

Table 2. Descriptive statistics

Variables	*Mean*	*Median*	*Std. Dev.*	*Q1*	*Q3*	*N*
RM_CFO	-0.005	-0.180	0.711	-0.496	0.283	138414
RM_DISX	0.408	0.472	0.258	0.298	0.598	138414
RM_PROD	-0.191	-0.152	0.228	-0.299	-0.042	138414
RM_agg	0.217	0.320	0.466	-0.002	0.547	138414
Gender_diversity_all	0.094	0.000	0.292	0.000	0.000	138414
Gender_diversity_ceo	0.009	0.000	0.092	0.000	0.000	138414
Gender_diversity_cfo	0.019	0.000	0.137	0.000	0.000	138414
Gender_diversity_nonceo	0.085	0.000	0.280	0.000	0.000	138414
Gender_diversity_nonceocfo	0.066	0.000	0.249	0.000	0.000	138414
Horizon	11.631	12.000	7.282	7.000	17.000	138414
CEO_horizon	8.753	9.000	7.077	4.000	13.000	138414
CEO_comp	8.225	8.316	1.005	7.556	8.950	138414
Size	7.616	7.536	1.595	6.491	8.665	138414
BM	0.476	0.390	0.430	0.223	0.630	138414
Leverage	0.536	0.528	0.238	0.373	0.670	138414
ROA	0.052	0.057	0.106	0.015	0.102	138414

Firms with female top executives, including CEOs, CFOs, and non-CFO subordinate executives, represent 9.4% of the sample (*Gender_diversity_all* = 0.094). Female CEOs account for 0.9% (*Gender_diversity_ceo* = 0.009), female CFOs for 1.9% (*Gender_diversity_cfo* = 0.019), and female non-CFO subordinate executives for 6.6% (*Gender_diversity_nonceocfo* = 0.066). Among all female executives, 70% are non-CFO subordinate executives (0.066/0.094), 20% are CFOs (0.019/0.094), and 10% are CEOs (0.009/0.094).

Regarding the real earnings management measures, the mean (median) of *RM_DISX* is 0.408 (0.472), *RM_PROD* is -0.191 (-0.152), and *RM_agg* is 0.217 (0.320). The mean (median) *Horizon* is 11.631 (12), while the mean (median) *CEO_horizon* is 8.753 (9), indicating that subordinate executives tend to have longer horizons than CEOs. The mean (median) *Size* is 7.616 (7.536), and the mean (median) *ROA* is 0.052 (0.057).

5.2. Regression results

Equation (1) is estimated using all observations with available data, employing three dependent variables: the real earnings management proxy that negatively impacts discretionary expenses (*RM_DISX*), the real earnings management proxy that negatively affects production (*RM_PROD*), and the aggregate measure of real earnings management (*RM_agg*). The regression results are shown in Table 3.

Table 3. Gender diversity of non-CFO subordinate executives and real earnings management

	RM_DISX		*RM_PROD*		*RM_agg*	
	Coeff.	*p-value*	*Coeff.*	*p-value*	*Coeff.*	*p-value*
Gender_diversity_nonceocfo	-0.037	< 0.0001	-0.036	< 0.0001	-0.074	< 0.0001
Size	0.067	< 0.0001	0.052	< 0.0001	0.120	< 0.0001
ROA	0.090	< 0.0001	-0.646	< 0.0001	-0.532	< 0.0001
BM	0.153	< 0.0001	0.124	< 0.0001	0.280	< 0.0001
Leverage	0.130	< 0.0001	0.070	< 0.0001	0.204	< 0.0001
CEO_horizon	-0.003	< 0.0001	-0.002	< 0.0001	-0.004	< 0.0001
CEO_comp	-0.029	< 0.0001	-0.024	< 0.0001	-0.053	< 0.0001
N	138,414		138,414		138,414	
Adjusted R^2	21.68%		28.66%		24.06%	

The variable of interest, *Gender_diversity_nonceocfo*, is negative and statistically significant in all regressions ($p < 0.0001$). This supports *H1* that firms with female non-CFO subordinate executives are associated with lower levels of real earnings management. This suggests that the presence of female executives in the top management team helps to reduce real earnings management, even if they are not in the roles of CEO or CFO.

The regression results for control variables are generally consistent with prior studies. Size is consistently positive and significant, indicating that larger firms are more likely to engage in real earnings management. This aligns with prior studies (Roychowdhury, 2006; Cohen & Zarowin, 2010), which document that larger firms have more resources and stronger incentives to manage earnings through real activities. BM is consistently positive and significant, suggesting that firms with higher BM ratios are more inclined to engage in these practices. This is consistent with prior studies (Zang, 2012), which find that firms with higher BM ratios may face greater pressure to meet market expectations, thus increasing their likelihood of engaging in earnings management. Leverage also shows a consistent positive and significant relationship, indicating that firms with higher leverage are more likely to engage in real earnings management. This is in line with prior studies (Gunny, 2010; Cohen & Zarowin, 2010), which report that highly leveraged firms may have stronger incentives to manipulate earnings to avoid debt covenant violations. Additionally, *CEO_horizon* is negative and significant, implying that firms led by CEOs with longer horizons are less prone to real earnings management. This is consistent with prior studies (Cheng et al., 2016), which show that CEOs with longer horizons are more likely to prioritize long-term firm value over short-term earnings manipulation. *CEO_comp* is negative and significant, indicating that firms with higher-compensated CEOs are also less likely to engage in such practices, suggesting that more capable CEOs contribute to higher-quality earnings (Demerjian et al., 2013).

5.3. Additional analysis

Since the gender of CFOs may affect real earnings management, an additional test was conducted by including CFO gender (*Gender_diversity_cfo*) as a control variable in the regression models to test *H1*. The results, presented in Table 4, show that even after controlling for CFO gender, the gender diversity of non-CFO subordinate executives (*Gender_diversity_nonceocfo*) remains negatively associated with real earnings management. This suggests that the presence of female non-CFO subordinate executives is associated with lower levels of real earnings management, reflecting their risk-averse characteristics and the roles they play in decision-making. The coefficient for *Gender_diversity_cfo* is also negative and significant, indicating that having a female CFO is associated with lower levels of real earnings management, which aligns with findings from prior studies (Campa et al., 2023).

Table 4. Gender diversity of non-CFO subordinate executives and real earnings management: Controlling for CFO gender

	RM_DISX		*RM_PROD*		*RM_agg*	
	Coeff.	***p-value***	***Coeff.***	***p-value***	***Coeff.***	***p-value***
Gender_diversity_nonceocfo	-0.038	< 0.0001	-0.036	< 0.0001	-0.075	< 0.0001
Gender_diversity_cfo	-0.017	0.000	-0.014	0.000	-0.031	0.000
Size	0.067	< 0.0001	0.052	< 0.0001	0.120	< 0.0001
ROA	0.091	< 0.0001	-0.646	< 0.0001	-0.532	< 0.0001
BM	0.153	< 0.0001	0.124	< 0.0001	0.280	< 0.0001
Leverage	0.130	< 0.0001	0.070	< 0.0001	0.204	< 0.0001
CEO_horizon	-0.003	< 0.0001	-0.002	< 0.0001	-0.004	< 0.0001
CEO_comp	-0.029	< 0.0001	-0.024	< 0.0001	-0.053	< 0.0001
N	138,414		138,414		138,414	
Adjusted R^2	21.69%		28.66%		24.07%	

In addition, a sensitivity analysis was performed by excluding firms with female CEOs. The gender diversity of non-CFO subordinate executives and CFO gender remained consistently negative and significant, supporting the results reported above.

5.4. Discussions: Addressing endogeneity concerns

Endogeneity concerns may arise if unobserved factors influencing gender diversity also affect the extent of real earnings management. To mitigate this issue, a lagged measure of gender diversity is employed to ensure temporal precedence between executive team composition and earnings management practices. Thus, Eq. (3) is revised as follows:

$$RM_{i,t} = \beta_0 + \beta_1 Gender\_diversity_{i,t-1} + \sum \gamma\ Controls + Industry\_FE + Year\_FE + \varepsilon_{i,t} \quad (4)$$

Among the control variables, CEO characteristics such as CEO horizon and CEO compensation, which control for CEO incentives and power, are also converted to lagged variables in Eq. (4). The results, presented in Table 5, remain consistent with those reported in Table 3. For the additional analysis incorporating CFO gender into the regression model, lagged CFO gender is used. The results shown in Table 6 are consistent with those in Table 4. This confirms the implication that the presence of female executives in the top management team helps reduce real earnings management, even when they do not hold the roles of CEO or CFO.

To further address the endogeneity concerns, a two-stage least squares instrumental variable approach is applied. The two-year lagged value of gender diversity of non-CEO and non-CFO executives and the industry-year median value of gender diversity of non-CEO and non-CFO executives are used as instrumental variables in the first stage. This is consistent with prior studies (Kale et al., 2009; Cheng et al., 2016) that use the lagged endogenous variable and the industry-year median endogenous variable as instruments. The first-stage regression results are presented in Table 7, column 1. The instrumental variables are significantly positively associated with *Gender_diversity*. The weak identification test indicates that the instruments are valid: the F-statistic for the joint explanatory power of the instrumental variables is 52.19, exceeding the critical value of 13.96 recommended by Stock et al. (2002). The second-stage regression results are reported in Table 7, columns 2, 3, and 4. The predicted gender diversity estimated from the first stage is significantly negatively associated with the three real earnings management measures (*RM_DISX*, *RM_PROD*, *RM_agg*), respectively, consistent with the previous results.

Table 5. Lagged gender diversity of non-CFO subordinate executives and real earnings management

	RM_DISX		*RM_PROD*		*RM_agg*	
	Coeff.	***p-value***	***Coeff.***	***p-value***	***Coeff.***	***p-value***
Lagged Gender_diversity_nonceocfo	-0.039	< 0.0001	-0.038	< 0.0001	-0.076	< 0.0001
Size	0.067	< 0.0001	0.053	< 0.0001	0.119	< 0.0001
ROA	0.082	< 0.0001	-0.650	< 0.0001	-0.568	< 0.0001
BM	0.152	< 0.0001	0.123	< 0.0001	0.275	< 0.0001
Leverage	0.129	< 0.0001	0.070	< 0.0001	0.199	< 0.0001
Lagged_CEO_horizon	-0.003	< 0.0001	-0.002	< 0.0001	-0.004	< 0.0001
Lagged_CEO_comp	-0.029	< 0.0001	-0.024	< 0.0001	-0.053	< 0.0001
N	136,593		136,593		136,593	
Adjusted R^2	21.55%		28.68%		24.10%	

Table 6. Lagged gender diversity of non-CFO subordinate executives and real earnings management: Controlling for lagged CFO gender

	RM_DISX		*RM_PROD*		*RM_agg*	
	Coeff.	***p-value***	***Coeff.***	***p-value***	***Coeff.***	***p-value***
Lagged Gender_diversity_nonceocfo	-0.039	< 0.0001	-0.038	< 0.0001	-0.077	< 0.0001
Lagged Gender_diversity_cfo	-0.016	0.000	-0.013	0.001	-0.029	0.000
Size	0.067	< 0.0001	0.053	< 0.0001	0.119	< 0.0001
ROA	0.082	< 0.0001	-0.650	< 0.0001	-0.567	< 0.0001
BM	0.152	< 0.0001	0.123	< 0.0001	0.275	< 0.0001
Leverage	0.129	< 0.0001	0.070	< 0.0001	0.199	< 0.0001
Lagged_CEO_horizon	-0.003	< 0.0001	-0.002	< 0.0001	-0.004	< 0.0001
Lagged_CEO_comp	-0.029	< 0.0001	-0.024	< 0.0001	-0.053	< 0.0001
N	136,593		136,593		136,593	
Adjusted R^2	21.56%		28.69%		24.10%	

Table 7. Gender diversity of non-CFO subordinate executives and real earnings management: Instrumental variables approach

	Gender_diversity		*RM_DISX*		*RM_PROD*		*RM_agg*	
	Coeff.	***p-value***	***Coeff.***	***p-value***	***Coeff.***	***p-value***	***Coeff.***	***p-value***
Prodicted_Gender_diversity			-0.504	< 0.0001	-0.453	< 0.0001	-0.958	< 0.0001
Size	-0.006	< 0.0001	0.064	< 0.0001	0.050	< 0.0001	0.113	< 0.0001
ROA	0.028	0.000	0.089	< 0.0001	-0.641	< 0.0001	-0.552	< 0.0001
BM	-0.001	0.560	0.150	< 0.0001	0.122	< 0.0001	0.272	< 0.0001
Leverage	0.019	< 0.0001	0.137	< 0.0001	0.077	< 0.0001	0.214	< 0.0001
CEO_horizon	-0.000	0.663	-0.003	< 0.0001	-0.002	< 0.0001	-0.004	< 0.0001
CEO_compensation	0.011	< 0.0001	-0.023	< 0.0001	-0.019	< 0.0001	-0.043	< 0.0001
Lagged2_Gender_diversity	0.011	< 0.0001						
Ind-year-median_Gender_diversity	0.603	< 0.0001						
	N: 134,770		N: 134,770		N: 134,770		N: 134,770	
	F-statistic: 52.19		Adjusted R^2: 21.31%		Adjusted R^2: 28.53%		Adjusted R^2: 23.89%	

6. CONCLUSION

This paper examines the association between the gender diversity of non-CFO subordinate executives and the extent of real earnings management. While prior research has shown that gender diversity among boards, CFOs, and CEO/CFO pairs can positively impact financial reporting, this study is the first, to the author's knowledge, to focus specifically on gender diversity among non-CFO subordinate executives. From the perspective of internal governance theory (Acharya et al., 2011), these subordinate executives play crucial roles in corporate decision-making and possess both the motivation and capacity to influence the CEO. Importantly, they exert "more direct control and influence" over real activities (Cheng et al., 2016).

This study finds that, after controlling for factors associated with real earnings management, firms with female non-CFO subordinate executives engage in less real earnings management. This suggests that the presence of women in these roles mitigates the manipulation of real activities. The results are robust across alternative measures of real earnings management and remain consistent when excluding firms with female CEOs from the sample.

This study adds to the existing research on gender diversity and financial reporting and contributes to the understanding of real earnings management. By focusing on non-CFO subordinate executives, this study shows that diversity across all levels of the top management team, not only at the board or CFO level, can enhance monitoring and constrain real activity manipulation. This finding expands our understanding of internal governance and highlights the need to consider the composition of the entire top management team.

This study has implications for both practice and policy. For firms and executive recruiters, the findings highlight the importance of promoting gender diversity not only at the board or CFO level, but also among non-CFO subordinate executives. Such diversity can provide an internal check against opportunistic financial practices, thus enhancing overall governance. For policymakers and regulators, the results suggest that encouraging gender diversity in executive teams may enhance the effectiveness of internal governance and improve the quality of financial reporting.

This study is important for future research. Empirical researchers could examine how other characteristics of executive teams affect internal governance and financial reporting. Experimental researchers could design studies to investigate how gender-diverse subordinate executives influence decision-making and organizational behavior.

This study is subject to several limitations. First, the sample is limited to U.S. firms, which may restrict the generalizability of the results to other countries with different legal environments and corporate governance practices. Second, the firms included in the sample are drawn from Execucomp, which primarily consists of larger companies. Third, there may be unobservable factors that correlate with both the presence of female non-CFO subordinate executives and lower levels of real earnings management, even though known factors associated with real earnings management are controlled for in the research design.

REFERENCES

Acharya, V. V., Myers, S. C., & Rajan, R. G. (2011). The internal governance of firms. *Journal of Finance, 66*(3), 689–720. https://doi.org/10.1111/j.1540-6261.2011.01649.x

Aggarwal, R. K., Fu, H., & Pan, Y. (2017). *An empirical investigation of internal governance* (AFA 2011 Denver Meetings Paper). AFA. https://doi.org/10.2139/ssrn.1571740

Baik, D., Chen, C. X., & Godsell, D. (2024). Board gender diversity and investment efficiency: Global evidence from 83 country-level interventions. *The Accounting Review, 99*(3), 1–36. https://doi.org/10.2308/TAR-2022-0251
Barua, A., Davidson, L. F., Rama, D. V., & Thiruvadi, S. (2010). CFO gender and accruals quality. *Accounting Horizons, 24*(1), 25–39. https://doi.org/10.2308/acch.2010.24.1.25
Burke, S., & Collins, K. (2001). Gender differences in leadership styles and management skills. *Women in Management Review, 16*(5), 244–257. https://doi.org/10.1108/09649420110395728
Campa, D., Ginesti, G., & Allini, A. (2023). CFO characteristics and real earnings management. *European Accounting Review, 33*(4), 1397–1430. https://doi.org/10.1080/09638180.2023.2169734
Chang, K., Kim, Y. S., Li, Y., & Park, J. C. (2022). Labor unions and real earnings management, *Journal of Corporate Finance, 75*, Article 102242. https://doi.org/10.1016/j.jcorpfin.2022.102242
Cheng, Q., Lee, J., & Shevlin, T. (2016). Internal governance and real earnings management. *The Accounting Review, 91*(4), 1051–1085. https://doi.org/10.2308/accr-51275
Cohen, D. A., & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics, 50*(1), 2–19. https://doi.org/10.1016/j.jacceco.2010.01.002
Cumming, D., Leung, T. Y., & Rui, O. (2015). Gender diversity and securities fraud. *Academy of Management Journal, 58*(5), 1572–1593. https://doi.org/10.5465/amj.2013.0750
Demeester, L., De Meyer, A., & Grahovac, J. (2014). The role of operations executives in strategy making. *Journal of Operations Management, 32*(7–8), 403–413. https://doi.org/10.1016/j.jom.2014.09.006
Demerjian, P. R., Lewis-Western, M. F., Lev, B., & McVay, S. E. (2013). Managerial ability and earnings quality. *The Accounting Review, 88*(2), 463–498. https://doi.org/10.2139/ssrn.1650309
Dobija, D., Hryckiewicz, A., Zaman, M., & Puławska, K. (2021). Critical mass and voice: Board gender diversity and financial reporting quality. *European Management Journal, 40*(1), 29–44. https://doi.org/10.1016/j.emj.2021.02.005
Fama, E. F., & Jensen, M. C. (1983a). Separation of ownership and control. *The Journal of Law and Economics, 26*(2), 301–325. https://doi.org/10.1086/467037
Fama, E. F., & Jensen, M. C. (1983b). Agency problems and residual claims. *The Journal of Law and Economics, 26*(2), 327–349. https://doi.org/10.1086/467038
Ford, R. C., & Richardson, W. D. (1994). Ethical decision making: A review of the empirical literature. *Journal of Business Ethics, 13*, 205–221. https://doi.org/10.1007/BF02074820
Francis, B., Hasan, I., Park, J. C., & Wu, Q. (2015). Gender differences in financial reporting decision making: Evidence from accounting conservatism. *Contemporary Accounting Research, 32*(3), 1285–1318. https://doi.org/10.1111/1911-3846.12098
Gunny, K. A. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research, 27*(3), 855–888. https://doi.org/10.2139/ssrn.816025
Gupta, V. K., Mortal, S., Chakrabarty, B., Guo, X., & Turban, D. B. (2020). CFO gender and financial statement irregularities. *Academy of Management Journal, 63*(3), 802–831. https://doi.org/10.5465/amj.2017.0713
Habib, A., Ranasinghe, D., Wu, J. Y., Biswas, P. K., & Ahmad, F. (2022). Real earnings management: A review of the international literature. *Accounting & Finance, 62*(4), 4279–4344. https://doi.org/10.1111/acfi.12968
Hansmann, H. (1996). *The ownership of enterprise*. The Belknap Press of Harvard University Press.
Hrazdil, K., Simunic, D. A., Spector, S., & Suwanyangyuan, N. (2023). Top executive gender diversity and financial reporting quality. *Journal of Contemporary Accounting and Economics 19*(2), Article 100363. https://doi.org/10.1016/j.jcae.2023.100363
Hsu, A. W-H., & Liao, C-H. (2023). Auditor industry specialization and real earnings management. *Review of Quantitative Finance and Accounting, 60*(2), 607–641. https://doi.org/10.1007/s11156-022-01106-3
Huang, J., & Kisgen, D. J. (2013). Gender and corporate finance: Are male executives overconfident relative to female executives? *Journal of Financial Economics, 108*(3), 822–839. https://doi.org/10.1016/j.jfineco.2012.12.005
Kale, J. R., Reis, E., & Venkateswaran, A. (2009). Rank-order tournaments and incentive alignment: The effect on firm performance. *The Journal of Finance, 64*(3), 1479–1512. https://doi.org/10.1111/j.1540-6261.2009.01470.x
Kanter, R. M. (1977). Some effects of proportions on group life: Skewed sex ratios and responses to token women. *American Journal of Sociology, 82*(5), 965–990. https://doi.org/10.1086/226425
Mekhaimer, M., Abakah, A. A., Ibrahim, A., & Hussainey, K. (2022). Subordinate executives' horizon and firm policies. *Journal of Corporate Finance, 74*, Article 102220. https://doi.org/10.1016/j.jcorpfin.2022.102220
Nguyen, H., Ntim, C. G., & Malagila, J. (2020). Women on corporate boards and financial and non-financial performance: A systematic literature review and future research agenda. *International Review of Financial Analysis, 71*(4), Article 101554. http://dx.doi.org/10.1016/j.irfa.2020.101554
Northwest Executive Education. (2025, April 8). *COO vs. CTO — Who is more important for business?* https://northwest.education/insights/careers/coo-vs-cto-who-is-more-important-for-business/
Peni, E., & Vähämaa, S. (2010). Female executives and earnings management. *Managerial Finance, 36*(7), 629–645. https://doi.org/10.1108/03074351011050343
Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics, 42*(3), 335–370. https://doi.org/10.1016/j.jacceco.2006.01.002
Srinidhi, B., Gul, F., & Tsui, J. (2011). Female directors and earnings quality. *Contemporary Accounting Research, 28*(5), 1610–1644. https://doi.org/10.1111/j.1911-3846.2011.01071.x
Stock, J. H., Wright, J. H., & Yogo, M. (2002). A survey of weak instruments and weak identification in generalized method of moments. *Journal of Business & Economic Statistics, 20*(4), 518–529. https://doi.org/10.1198/073500102288618658
Subhani, W., Amin, A., Naz, M. A., Sultan, N., & Aslam, S. (2024). Board gender diversity and firm value: A case of PSX. *Bulletin of Business and Economics (BBE), 13*(1). https://doi.org/10.61506/01.00197
Torchia, M., Calabrò, A., Huse, M., & Brogi, M. (2010). Critical mass theory and women directors' contribution to board strategic tasks. *Corporate Board: Role, Duties and Composition, 6*(3), 42–51. https://doi.org/10.22495/cbv6i3art4
Velte, P. (2023). The relationship between earnings management and integrated reporting quality: Board gender diversity as moderator. *Corporate Ownership & Control, 20*(2), 63–74. https://doi.org/10.22495/cocv20i2art5

Yadav, R., Sharma, P., Hiremath, R. B., & Patil, A. A. (2024). Environmental responsibility and corporate governance: Assessing the impact of gender diversity on greenhouse gas (GHG) emissions in German listed companies. *Corporate Ownership & Control, 21*(1), 158–167. https://doi.org/10.22495/cocv21i1art13

Ye, K., Zhang, R., & Rezaee, Z. (2010). Does top executive gender diversity affect earnings quality? A large sample analysis of Chinese listed firms. *Advances in Accounting, 26*(1), 47–54. https://doi.org/10.1016/j.adiac.2010.02.008

Zalata, A. M., Ntim, C. G., Alsohagy, M. H., & Malagila, J. (2022). Gender diversity and earnings management: The case of female directors with financial background. *Review of Quantitative Finance and Accounting, 58*(1), 101–136. https://doi.org/10.1007/s11156-021-00991-4

Zalata, A. M., Ntim, C., Aboud, A., & Gyapong, E. (2019). Female CEOs and core earnings quality: New evidence on the ethics versus risk-aversion puzzle. *Journal of Business Ethics, 160*(2), 515–534. https://doi.org/10.1007/s10551-018-3918-y

Zang, A. Y. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review, 87*(2), 675–703. https://doi.org/10.2308/accr-10196

Zeng, S., & Wang, L. (2015). CEO gender and corporate cash holdings. Are female CEOs more conservative? *Asia-Pacific Journal of Accounting & Economics, 22*(4), 449–474. https://doi.org/10.1080/16081625.2014.1003568

APPENDIX

Table A.1. Variable definitions

Variables	***Definitions***
Gender_diversity_nonceocfo	1 for at least one female non-CFO subordinate executive, and 0 otherwise
Gender_diversity_nonceo	1 for at least one female subordinate executive, and 0 otherwise
Gender_diversity_ceo	1 for female CEOs, and 0 otherwise
Gender_diversity_cfo	1 for female CFOs, and 0 otherwise
Gender_diversity_all	1 for female executives, and 0 otherwise
Horizon	retirement age (65) minus the average age of subordinate executives
ROA	Income before extraordinary items scaled by beginning total assets
Size	Natural logarithm of total assets
BM	Book-to-market ratio
Leverage	The ratio of total liabilities and debt to total assets
CEO_comp	CEO's logged total compensation
CEO_horizon	CEO's decision horizon, measured as retirement age (65) minus the age of the CEO
Ind-year-median_Gender_diversity	The industry-year median value of gender diversity of non-CFO subordinate executives