

CEO Compensation and Gender Impacts on Earnings Management

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[Abstract] We examine how chief executive officer (CEO) compensation status, ownership, gender, and leadership duality are associated with earnings management. Using a sample of Chinese publicly listed firms from 2010 to 2018, we investigate three dimensions of accrual-based earnings management—earnings smoothing, cash flow management, and earnings aggressiveness—following the framework developed by Leuz, Nanda, and Wysocki (2003). This setting provides a unique opportunity to study executive reporting incentives in an environment characterized by heterogeneous compensation arrangements and concentrated ownership structures.

Our results indicate that CEOs who do not receive direct monetary compensation exhibit significantly greater earnings smoothing, suggesting that the absence of formal pay does not mitigate opportunistic financial reporting behavior. We also find that CEOs with equity ownership engage in higher levels of earnings smoothing, consistent with incentives to reduce earnings volatility and protect equity value. In addition, firms led by female CEOs display greater earnings smoothing and cash flow management relative to firms led by male CEOs, while exhibiting substantial heterogeneity in earnings aggressiveness. Finally, CEO–chair duality is associated with higher levels of earnings management.

Collectively, our findings contribute to the literature on earnings management and executive characteristics by highlighting the importance of compensation status, gender, and leadership structure in shaping financial reporting behavior. Our results highlight that the relationship between executive gender and earnings management is influenced by the operating environment, suggesting that institutional, cultural, and organizational contexts shape how gender affects financial reporting behavior. The results have implications for investors, boards, and regulators seeking to assess reporting quality using observable executive attributes, particularly in emerging market settings.

[Keywords] chief executive officer (CEO), compensation, earnings management, gender

1. Introduction

Earnings management remains a central concern in accounting research, capital market regulation, and corporate governance, owing to its implications for the reliability of financial reporting and the efficient allocation of capital. A substantial body of literature documents that corporate insiders

possess both the incentives and the discretion to influence reported accounting numbers, often in ways that obscure underlying economic performance (Healy and Wahlen 1999; Dechow, Sloan, and Sweeney 1995; Leuz, Nanda, and Wysocki 2003). While prior research has made considerable progress in identifying firm-level, institutional, and governance-related determinants of earnings management, comparatively less is known about how specific chief executive officer (CEO) characteristics—particularly compensation status, ownership, gender, and leadership duality—jointly shape managers' reporting behavior. Understanding how these CEO attributes influence earnings management is especially important given the increasing heterogeneity of executive compensation arrangements and the growing representation of women in top executive roles worldwide.

Economic theory suggests that CEO incentives and personal characteristics play a pivotal role in shaping financial reporting outcomes. Compensation contracts are designed, at least in part, to align managerial interests with those of shareholders; however, such contracts may also create incentives for opportunistic financial reporting when performance-based rewards are tied to accounting outcomes (Chung, Firth, and Kim 2002). At the same time, ownership stakes held by CEOs can alter risk preferences and reporting incentives, potentially encouraging earnings smoothing to stabilize stock prices or protect private benefits of control. In contrast, relatively little attention has been paid to CEOs who receive little or no direct monetary compensation—a phenomenon that is particularly prevalent in emerging markets—despite the possibility that such arrangements may weaken monitoring, exacerbate agency conflicts, or shift incentives toward indirect wealth extraction through equity value manipulation.

In parallel, a growing literature examines whether gender differences in executive leadership translate into systematic differences in financial reporting behavior. Behavioral and organizational research suggests that male and female executives may differ in risk tolerance, ethical judgments, and preferences for stability versus performance volatility, which could, in turn, influence earnings management strategies. Empirical evidence in accounting, however, remains mixed. While some studies find that greater female representation in leadership is associated with higher reporting quality and reduced earnings manipulation, others document no significant differences—or even greater use of certain forms of earnings management by female executives—depending on the measurement approach and institutional setting. These mixed findings underscore the need for further investigation using multiple earnings management proxies and non-U.S. contexts.

This study contributes to the literature by examining how CEO compensation status, ownership, gender, and leadership duality affect earnings management in Chinese publicly listed firms. China provides a particularly salient setting for this analysis. As one of the world's largest and fastest-growing capital markets, China attracts substantial global investment while exhibiting distinctive institutional features, including concentrated ownership structures, varying degrees of state involvement, and heterogeneous executive compensation practices. These characteristics make China an informative laboratory for studying how CEO attributes interact with governance mechanisms to influence financial reporting behavior. Moreover, publicly available disclosures regarding CEO compensation, shareholdings, and board roles allow investors to readily observe many of the characteristics examined in this study, enhancing the practical relevance of the findings.

Using firm-level data from the China Stock Market and Accounting Research (CSMAR) database over the period 2010–2018, we examine three dimensions of accrual-based earnings management: earnings smoothing, cash flow management, and earnings aggressiveness, as developed by Leuz et al. (2003). This multidimensional approach allows us to move beyond a single proxy for earnings management and to assess whether CEO characteristics influence not only the extent but also the form of reporting discretion exercised by managers. In particular, we investigate whether uncompensated CEOs, CEOs with equity ownership, female CEOs, and CEOs who simultaneously serve as chair of the board of directors exhibit systematically different earnings management behavior.

Our findings yield several insights. First, CEOs who do not receive compensation exhibit significantly higher levels of earnings smoothing and earnings aggressiveness, suggesting that the absence of direct pay does not mitigate opportunistic reporting behavior and may, in fact, exacerbate it. Second, CEOs who are also shareholders engage in greater earnings smoothing, consistent with incentives to reduce earnings volatility and protect equity value. Third, female CEOs display a greater tendency toward earnings smoothing and cash flow management, while exhibiting substantial heterogeneity in earnings aggressiveness, with a subset engaging in extreme reporting behavior. Finally, CEO–chair duality is associated with higher earnings management across all examined dimensions, reinforcing concerns about weakened monitoring when leadership roles are concentrated in a single individual.

This study makes several contributions to accounting literature. First, it extends research on executive compensation by highlighting the understudied role of uncompensated CEOs and demonstrating that the absence of formal pay does not eliminate earnings management incentives. Second, it contributes to the growing literature on gender and financial reporting by providing nuanced evidence that gender effects depend on the type of earnings management and the distributional properties of reporting behavior. Third, it adds to the corporate governance literature by jointly considering CEO ownership, compensation, gender, and duality within a single empirical framework. Finally, by focusing on China, this study enhances our understanding of earnings management in an important international setting and offers insights that are relevant to global investors, regulators, and policymakers concerned with financial reporting quality.

The remainder of the paper proceeds as follows. Section 2 reviews the related literature and develops empirical predictions. Section 3 describes the data and research design. Section 4 presents empirical results. Section 5 discusses the implications of the findings, and Section 6 concludes.

2. Literature Review

Earnings management has been a major topic in accounting literature for several decades. For a summary of the research, Walker (2013) reviewed research on earnings management published over the preceding 20 years in ten leading accounting journals, highlighting the continued importance of this field. An important stream of earnings management literature focuses on the measurement of earnings management. Jones (1991) developed the modified cross-sectional Jones model, which has become one of the most widely used approaches for estimating discretionary accruals. Building on earlier studies by Dechow et al. (1995), Healy & Wahlen (1999), and Dechow & Skinner (2000), Leuz et al. (2003) proposed three measures of earnings management that capture

earnings smoothing, cash flow management, and earnings aggressiveness. These measures primarily focus on accrual-based earnings management. Recognizing that managers may also manipulate reported performance through operational decisions, Roychowdhury (2006) developed measures of real earnings management based on abnormal levels of cash flow from operations, discretionary expenses, and production costs. Subsequently, Cohen et al. (2008) examined both accrual-based and real earnings management, providing a more comprehensive assessment of managerial reporting behavior. More recently, researchers have applied Benford's Law as an alternative approach to detecting earnings management, demonstrating its usefulness in identifying anomalies in financial reporting (Grammatikos & Papanikolaou, 2021; Istrate, 2019; Prachyl & Fischer, 2020).

Recent empirical studies have examined the use of both accrual-based earnings management and real earnings management across different institutional settings. Das et al. (2017) found that Indian companies engage in both accrual-based and real earnings management, with a greater propensity toward accrual-based earnings management. Similarly, Duong (2023) reported that managers are more likely to engage in income-increasing real earnings management during economic downturns and that the substitution between real earnings management and accrual-based earnings management becomes stronger during such periods.

Zang (2012) advanced the earnings management literature by demonstrating that managers' trade-off decisions between accrual-based and real earnings management are influenced by the relative costs and timing of these activities. Specifically, managers choose between the two methods based on their comparative costliness, suggesting that accrual-based and real earnings management can serve as substitute mechanisms for achieving desired financial reporting outcomes. Several studies have also examined how the adoption of International Financial Reporting Standards (IFRS) affects earnings management practices. Ho et al. (2015) found that Chinese firms in the post-IFRS period (2007–2011) were less likely to report positive discretionary accruals and exhibited a significant decline in the magnitude of discretionary accruals. However, firms increasingly relied on real activities manipulation as a substitute for upward accrual-based earnings management.

Similarly, Ipino & Parbonetti (2017) documented a decline in accrual-based earnings management following mandatory IFRS adoption, accompanied by a simultaneous increase in real earnings management in countries with strong institutional enforcement. Consistent with these findings, Ferentinou & Anagnostopoulou (2016) reported a significant reduction in accrual-based earnings management after the mandatory adoption of IFRS in 2005. While they found no significant evidence of real earnings management before IFRS adoption, they documented evidence of upward real earnings management after 2005 using all three commonly employed measures of real earnings management. Collectively, these studies suggest that although IFRS adoption constrains accrual-based earnings management, managers may substitute toward real earnings management, particularly in environments with strong enforcement.

Gender diversity has been widely examined as a determinant of earnings management, with most studies suggesting that female representation in corporate leadership enhances earnings quality and constrains earnings management. Using a sample of European companies, Saona et al. (2019) found that boards with greater gender diversity were more effective in mitigating earnings

management. Similarly, Orazalin (2020) reported that companies with more gender-diverse boards exhibited lower levels of earnings management. The study also found that larger boards were associated with more restrained earnings management practices and that more profitable and smaller firms tended to adopt more conservative accounting policies. Several studies have highlighted the importance of the specific characteristics of female directors rather than merely their presence on the board.

Aryani et al. (2024) found that women directors with advanced educational backgrounds in economics, finance, or accounting significantly reduced earnings manipulation in Indonesian banks. Likewise, Zalata et al. (2022) argued that improvements in earnings quality are driven not simply by female representation but by female directors' financial expertise. These findings suggest that the effectiveness of gender diversity depends on the qualifications and professional competencies of female directors. However, Qi et al. (2018), using Chinese firms from 2000 to 2015, found that older executives and female executives were less likely to engage in accrual-based earnings management, whereas executives with financial work experience or higher educational attainment were more likely to engage in such practices. Research has also examined the influence of gender diversity on both accrual-based earnings management and real earnings management. Attia et al. (2024) reported that greater board gender diversity constrained both accrual-based and real earnings management.

Similarly, Li et al. (2023) found that firms with female executives and supervisors were more effective in limiting real earnings management during both bull and bear market periods. Other studies have focused on the monitoring role of female directors within corporate governance. Lakhal et al. (2015) found that a higher proportion of women serving as directors or board chairs reduced earnings management among French firms, suggesting that increasing female representation on corporate boards enhances board effectiveness in detecting managerial opportunism. Harakeh et al. (2019) similarly reported a negative association between female directors and earnings management, although CEO incentive compensation was positively associated with earnings manipulation. Alves (2023) also found that female directors improved earnings quality.

At the executive level, Chen et al. (2024) reported that CEO characteristics significantly influenced earnings management, with CEO tenure, male gender, and overconfidence positively associated with earnings management, while CEO age had no significant effect. Consistent with these findings, Putra and Setiawan (2024) recommended that firms appoint CEOs who exhibit lower levels of narcissism, are female, possess foreign nationality, and have no family ties to company founders in order to reduce earnings management. Despite the predominance of evidence supporting the governance benefits of gender diversity, some studies have reported inconsistent findings. Harris et al. (2019), using U.S. data and measures of real earnings management based on abnormal production costs and abnormal discretionary expenses, found that female CEOs did not necessarily reduce earnings management. Similarly, Ye et al. (2010) reported no significant differences in earnings quality between firms led by female and male executives.

A substantial body of research has examined how CEO and board characteristics influence earnings management. Commonly studied characteristics include CEO age, tenure, duality,

reputation, nationality, and compensation structure, as well as the role of corporate social responsibility (CSR) in moderating managerial reporting behavior. Several studies have investigated the effects of CEO age and tenure on earnings management. Neifar & Ajili (2019), using German firms, found that CEO age negatively moderated the relationship between tax aggressiveness and stock price synchronicity, whereas CEO tenure was positively associated with stock price synchronicity.

In contrast, Bouaziz et al. (2020) reported that longer CEO tenure was associated with lower levels of discretionary accruals, suggesting that experienced CEOs are less likely to engage in earnings management. Similarly, Uddin (2023) found that firms led by foreign CEOs exhibited lower levels of accrual-based earnings management and that CEO remuneration was negatively associated with both accrual-based and real earnings management. The study also reported that firms engaged in less earnings management during the COVID-19 pandemic. CEO duality, where the CEO simultaneously serves as chair of the board, has received considerable attention in the corporate governance literature.

Most studies suggest that CEO duality weakens board independence and increases earnings management. Smaili & Labelle (2016) found that financial reporting irregularities occurred more frequently when the CEO also served as board chair. Likewise, Stenheim & Madsen (2016) reported that firms with CEO duality were more likely to recognize fewer and smaller impairment losses. Zouari et al. (2015) found that discretionary accruals increased with CEO reputation, arguing that highly reputed CEOs may exploit greater managerial discretion to manipulate reported earnings. The study also suggested that CEO-chair duality facilitates earnings management because reduced board oversight allows CEOs to maximize personal benefits.

Consistent with these findings, Bouaziz et al. (2020), Isidro & Gonçalves (2011), Uddin (2023), and Kadiri (2022) concluded that CEO duality is positively associated with earnings management. However, García-Meca and Sánchez-Ballesta (2009) did not find a significant relationship between CEO duality and earnings management, indicating that the evidence remains mixed. CEO compensation has also been identified as an important determinant of earnings management. Chung et al. (2002) found that managers receiving incentive-based compensation manipulate reported earnings upward or downward through discretionary accruals.

More recently, Dakhli & Houcine (2025) reported a positive and statistically significant relationship between CEO compensation and earnings management, while also showing that corporate social responsibility partially mediates this relationship. Their findings further suggest that the structure of CEO compensation is an important determinant of earnings management behavior. The interaction between corporate social responsibility and earnings management has attracted increasing attention. Li & Thibodeau (2019) found that the relationship between corporate social responsibility performance and earnings management depended on whether executive compensation was linked to corporate social responsibility objectives. Specifically, firms with corporate social responsibility-contingent compensation exhibited a significant relationship between corporate social responsibility ratings and earnings management, whereas no such relationship was observed among firms without corporate social responsibility-related compensation incentives. Overall, the literature suggests that CEO characteristics play a significant

role in shaping earnings management practices. CEO duality and incentive-based compensation are generally associated with higher levels of earnings management, whereas greater CEO tenure, foreign nationality, and stronger corporate social responsibility mechanisms are often associated with lower levels of earnings manipulation. Nevertheless, the evidence regarding certain governance characteristics, particularly CEO duality, remains inconclusive, indicating that institutional and organizational contexts may influence these relationships.

In addition to managerial characteristics, the literature has extensively examined the influence of ownership structure, auditor quality, and board composition on earnings management. These governance mechanisms are widely regarded as important determinants of the effectiveness of corporate oversight and the quality of financial reporting. Ownership structure has long been recognized as a fundamental component of corporate governance (Shleifer & Vishny, 1997; Gul et al., 2010). Gillan & Starks (2003) argued that institutional investors can influence managerial decision-making by strengthening monitoring mechanisms.

Similarly, Sueyoshi et al. (2010) concluded that stable shareholder ownership plays an important role in Japanese corporate governance. Kabaciński et al. (2024) reported that ownership structure has differential effects on real earnings management, with institutional ownership constraining real earnings management more effectively than insider or family ownership. However, Smaili & Labelle (2016) found that financial reporting irregularities were more common in firms with concentrated ownership by dominant shareholders. Leuz et al. (2003) found that earnings management is less prevalent in countries characterized by dispersed ownership, well-developed capital markets, strong investor protection, and effective legal enforcement.

García-Meca & Sánchez-Ballesta (2009) found no significant relationship between ownership structure and earnings management, except for board ownership, indicating that the evidence remains inconclusive. Auditor quality represents another important governance mechanism for constraining earnings management. Can (2019) found that firms audited by Big Four audit firms exhibited significantly lower levels of discretionary accruals, suggesting that higher audit quality improves financial reporting reliability and limits managers' ability to manipulate earnings. Board characteristics have also received considerable attention in the corporate governance literature. Prior studies generally conclude that board composition influences firms' earnings management practices (Bebchuk & Hamdani, 2009; Musteen et al., 2010; Duchin et al., 2010).

Chouaibi et al. (2018) found that sales manipulation was negatively associated with board size, the proportion of independent directors, and the frequency of board meetings. Consistent with these findings, Alsultan (2023) and Kadir (2022) reported that larger boards and greater board independence reduce earnings management. Akter & Thakur (2025), however, found that among several governance variables—including board size, board independence, board meeting frequency, and audit committee independence—only board size significantly constrained discretionary accruals in Bangladeshi firms. However, Oh & Jeon (2017) found that neither board independence nor board size significantly reduced real earnings management. Similarly, Al-Absy (2022), examining Malaysian listed firms with the lowest reported earnings, found that board chairman independence was positively associated with real earnings management, whereas chairman age was associated with lower levels of real earnings management. Other chairman

characteristics, including tenure, ethnicity, and family membership, were not significantly related to real earnings management. Young et al. (2012) offered an explanation for these inconsistent findings. They argued that firms with strong incentives to meet or slightly exceed earnings benchmarks are more likely to engage in real earnings management, particularly during the fourth quarter. Their results further indicate that effective board governance—measured by board independence, diligence, and professionalism—reduces real earnings management among firms facing such benchmark-beating incentives. These findings suggest that the effectiveness of board governance depends not only on-board characteristics but also on the firm's reporting incentives and operating environment.

This study focuses on CEO characteristics, including shareholding, compensation, duality and gender.

3. Methodology

Our data is from China Stock Market & Accounting Research Database (CSMAR). The data range is from 2010-2018.

3.1 Earnings Management Measures

Earnings management has been the subject of extensive accounting research. Earnings management is generally understood to mean attempts by company insiders to protect their positions and benefits by manipulating the financial information provided to outsiders. This often takes the form of income smoothing or income manipulation. Earnings management include accrual-based and real earnings management.

This study gauges accrual-based earnings management only. Accrual basis earnings management isolates the discretionary portion of accruals from operational changes. The data is highly available and reliable. Real earnings management attempts to capture abnormal levels of specific operational metrics, such as sales manipulation, overproduction, and reduction in discretionary expenses (Roychowdhury, 2006). These factors can easily be confounded by legitimate strategic pivots or genuine cost-cutting measures. Even though accrual-based earnings management has established theoretical framework, measuring the degree of earnings management has presented challenges, and researchers have devised various methods. This study uses the methods developed by Leuz et al. (2003). Insiders can “smooth”, i.e., reduce the variability of reported earnings, by altering the accruals of revenues and expenses.

The operational definition of accruals is:

$$Accruals = (\Delta CA - \Delta Cash) - (\Delta CL - \Delta STD - \Delta TP) - Dep \quad \text{Equation (1)}$$

Where:

ΔCA = change in total current asset;

$\Delta Cash$ = change in cash/cash equivalents;

ΔCL = change in total current liabilities;

ΔSTD = change in short-term debt included in current liabilities;

ΔTP = change in income taxes payable;

Dep = depreciation and amortization expense.

We then calculate cash flow from operations:

Cash flow from operations = Operating earnings - Accruals Equation (2)

$EM1 = SD(\text{Operating earnings}) / SD(\text{Cash flow from operations})$ Equation (3)

Where: SD represents standard deviation. Cash flow from operations is defined in equation (2).

EM1 captures the degree to which insiders use their discretion to alter accruals, thus, to reduce the variability of operating earnings. A low value of this measure is indicative of insiders using their discretion to smooth reported earnings. The higher EM1 implies firms are less prone to managing earnings. The implicit assumption is that over time accrual basis operating earnings and cash flow from operations will have similar fluctuation. When the fluctuation of operating earnings is small in comparison to the fluctuation in cash flow from operations, it is likely that management has used discretionary accruals to smooth reported operating earnings.

$EM2 = \text{Spearman}(\Delta \text{Accruals}, \Delta \text{Cash flow from operations})$ Equation (4)

Where: Spearman is the Spearman correlation coefficient, which is used to measure the correlation between two variables. A perfect Spearman correlation would be +1 if the variables are positively correlated or -1 if the variables are negatively correlated. A Spearman value of 0 indicates no correlation.

EM2 is based on the contemporaneous correlation between the change in accruals and the change in cash flow from operations. This measure is based on the idea that insiders may attempt to hide reductions in cash flow by manipulating the accruals. The insiders may use their discretion to report accounting accruals that offset economic shocks to the firm's operating cash flow that would otherwise affect reported earnings. A negative correlation implies the use of discretionary accounting accruals to offset undesirable cash flow shocks, hence, earnings management. Therefore, the higher the EM2, the less is the tendency to manage earnings.

EM3 is related to earnings aggressiveness, which represents the insiders that use their reporting discretion to misstate the firm's actual economic performance. The assumption is that accruals for firms that wish to manipulate their reported earnings will be large compared to the cash flow from operations. Thus, EM3 compares the absolute value of accruals with the absolute value of cash flow from operations using the following formula:

$EM3 = |\text{Accruals}| / |\text{Cash flow from operations}|$ Equation (5)

The larger EM3 are indicative of large-scale use of discretion to manipulate reported accounting earnings. Based on previous literature findings, we propose the following hypotheses for earnings aggressiveness:

- H1: Uncompensated CEOs are associated with higher earnings aggressiveness.
- H2: CEO ownership increases earnings aggressiveness.
- H3: Female CEOs differ from male CEOs in earnings aggressiveness.
- H4: CEO duality increases earnings aggressiveness.

4. Results

After excluding observations with missing values, the final sample consists of 150 firms and 447 firm-year observations. Female CEOs account for 7.16% of the observations, while 8.05% of the observations involve CEOs who receive no direct compensation. The sample is concentrated in the manufacturing sector, which represents 62.86% of the observations. The remaining observations are distributed across the utilities (15.44%), real estate (10.74%), wholesale and retail (6.71%), financial (3.58%), and conglomerate (0.67%) industries. See Table 1 next page.

Table 1. *Earnings Smoothing Indicator EMI*

	Cash Flow from Operations	Operating Earnings	EM1= $\frac{SD(OperatingEarnings)}{SD(CashFlowFromOperations)}$
CEO is also a shareholder			
Mean	1,988,354,735	2,023,947,067	0.6291
Standard Deviation	8,895,731,036	5,596,361,115	
CEO is not a shareholder			
Mean	7,248,871,022	6,779,000,869	0.9966
Standard Deviation	42,099,746,809	41,957,318,767	
CEO is male			
Mean	5,187,649,491	4,922,587,793	0.9806
Standard Deviation	33,029,661,714	32,389,021,238	
CEO is female			
Mean	844,270,424	540,889,965	0.3138
Standard Deviation	1,769,833,733	555,452,272	
CEO receives compensation			
Mean	5,046,941,840	4,902,121,540*	0.9817
Standard Deviation	33,153,621,135	32,548,150,951	
CEO does not receive compensation			
Mean	3,026,570,037	1,261,401,666*	0.1949
Standard Deviation	8,703,395,798	1,696,229,740	
CEO serves as BOD Chair			
Mean	1,045,864,336	1,031,974,824	0.5939
Standard Deviation	2,772,564,794	1,646,731,838	
CEO does not serve as BOD Chair			
Mean	5,475,629,998	5,184,934,997	0.9830
Standard Deviation	34,193,732,628	33,610,812,622	

A lower value of EMI indicates a greater likelihood that insiders exercise discretion to smooth reported earnings. As shown in Table 1, firms in which the CEO is also a shareholder, firms led by female CEOs, firms with uncompensated CEOs, and firms where the CEO also serves as Chair of the Board of Directors exhibit lower EMI values. These findings suggest that these CEO characteristics are associated with a greater tendency toward earnings smoothing behavior. The largest difference appears between compensated and uncompensated CEOs (0.9817 vs. 0.1949).

Female CEOs show substantially lower EM1 values than male CEOs (0.3138 vs. 0.9806). CEOs who are also shareholders have lower EM1 values than non-shareholder CEOs (0.6291 vs. 0.9966). CEO duality (CEO also serving as Board Chair) is associated with lower EM1 values (0.5939 vs. 0.9830).

Table 2. *Cash Flow Management Indicator EM2*

	Δ Accruals	Δ CashFlowFromOperations	EM2=Spearman (Δ Accruals, Δ Cash flow from operations)
CEO is also a shareholder			
Mean	155,421,446	292,957,811	-0.8904
Standard Deviation	10,651,400,000	11,190,100,000	<0.0001
CEO is not a shareholder			
Mean	88,262,590	128,157,925	-0.9028
Standard Deviation	7,536,929,805	7,622,247,810	<0.0001
CEO is male			
Mean	122,582,596	212,882,245	-0.8958
Standard Deviation	9,341,522,147	9,674,598,868	<0.0001
CEO is female			
Mean	53,960,798	37,359,438	-0.9439
Standard Deviation	2,358,366,106	2,325,485,841	<0.0001
CEO receives compensation			
Mean	-13,230,876	339,229,066	-0.8995
Standard Deviation	8,652,862,089	8,981,181,421	<0.0001
CEO does not receive compensation			
Mean	1,521,619,986	-1,288,110,000	-0.8852
Standard Deviation	12,396,300,000	12,663,200,000	<0.0001
CEO serves as BOD Chair			
Mean	-33,656,674	196,061,406	-0.9826
Standard Deviation	3,092,155,463	3,108,948,328	<0.0001
CEO does not serve as BOD Chair			
Mean	138,976,618	201,014,676	-0.8870
Standard Deviation	9,569,694,811	9,913,105,812	<0.0001

A negative correlation between changes in accruals and changes in cash flow from operations suggests the use of discretionary accruals to offset undesirable cash flow shocks. Therefore, a more

negative EM2 value indicates a greater tendency toward earnings management through cash flow smoothing. As shown in Table 2, firms led by female CEOs and firms where the CEO also serves as Chair of the Board exhibit the most negative EM2 values, suggesting a higher degree of cash flow management behavior. Female CEOs exhibit strong negative correlation (-0.9439), suggesting comparatively greater smoothing activity. CEOs serving as Board Chair show the most extreme negative correlation (-0.9826), indicating substantial accrual-based offsetting behavior.

Table 3. *Earnings Aggressiveness Indicator EM3*

CEO is also shareholder			
	Accruals	Cash Flow from Operations	$EM3 = \frac{ Accruals }{ CashFlowFromOperations }$
Mean	2,089,905,520	3,142,122,403	2.7892
Standard Deviation	7,361,659,580	8,554,800,081	12.1043
Median	300,780,887	521,035,782	0.6185
CEO is not a shareholder			
Mean	1,604,612,816	7,726,649,529	2.6497
Standard Deviation	4,582,569,955	42,014,331,017	21.9421
Median	304,348,411	534,132,095	0.6754
CEO is male			
Mean	1,903,995,775	6,018,426,533	1.7435
Standard Deviation	6,198,542,572	32,888,082,709	7.1870
Median	307,521,718**	538,239,656**	0.6549
CEO is female			
Mean	754,300,735	982,353,863	15.4972
Standard Deviation	1,273,083,331	1,694,602,410	62.8149
Median	256,745,127**	429,749,857**	0.6322
CEO receives compensation			
Mean	1,689,806,073	5,818,177,310	2.8353
Standard Deviation	5,807,136,305	33,026,689,755	18.9507
Median	288,728,858**	484,767,184	0.6281**
CEO does not receive compensation			
Mean	3,317,665,025	3,929,049,682	1.3339
Standard Deviation	7,718,188,410	8,324,208,167	1.6355
Median	603,991,482**	1,053,960,489	0.9071**
CEO serves as BOD Chair			
Mean	1,012,644,390*	1,455,109,462*	7.0269
Standard Deviation	2,088,774,957	2,577,975,457	44.2234
Median	173,968,468**	287,187,966**	0.7155
CEO does not serve as BOD Chair			
Mean	1,948,481,826*	6,315,322,739*	2.0444
Standard Deviation	6,379,461,828	34,048,267,488	8.9144
Median	321,025,269**	561,842,760**	0.6489

EM3 measures earnings aggressiveness and reflects the extent to which insiders use reporting discretion to distort a firm's underlying economic performance. Higher EM3 values indicate greater earnings aggressiveness.

The results in Table 3 provide mixed evidence regarding the relationship between CEO characteristics and earnings aggressiveness. Female CEOs do not appear to exhibit greater earnings aggressiveness overall when considering the median EM3 values, which are slightly lower than those of male CEOs (0.6322 versus 0.6549). However, the substantially larger mean EM3 value for female CEOs (15.4972 versus 1.7435) suggests the presence of several extreme observations. This indicates greater variability in earnings aggressiveness among female CEOs, where most female-led firms are not more aggressive than male-led firms, but a small number exhibit exceptionally high aggressiveness.

Uncompensated CEOs appear to engage in greater earnings aggressiveness overall, as indicated by the significantly higher median EM3 value (0.9071 versus 0.6281). Although compensated CEOs display a higher mean EM3 value, the median measure suggests that the typical uncompensated CEO is associated with more aggressive earnings behavior. CEOs who also serve as Chair of the Board exhibit higher median EM3 values than CEOs who do not hold both positions (0.7155 versus 0.6489), suggesting greater earnings aggressiveness under CEO duality. However, the differences in EM3 themselves are not statistically significant, even though significant differences exist in several underlying accrual and cash flow measures.

*The two groups are significantly different at $p < .05$. P values take equality of variances into consideration and adopt methods accordingly.

** The two groups are significantly different at $p < .05$ using Wilcoxon Two-Sample Test.

Table 4

Summary of Earnings Management Indicators

	EM1	EM2	EM3 mean	EM3 median
CEO is also a shareholder	0.6291	-0.89042	2.7892	0.6185
CEO is not a shareholder	0.9966	-0.90275	2.6497	0.6754
CEO is male	0.9806	-0.89575	1.7435	0.6549
CEO is female	0.3138	-0.94394	15.4972	0.6322
CEO receives compensation	0.9817	-0.8995	2.8353	0.6281
CEO does not receive compensation	0.1949	-0.8852	1.3339	0.9071
CEO serves as BOD chair	0.5939	-0.98258	7.0269	0.7155
CEO does not serve as BOD chair	0.983	-0.88698	2.0444	0.6489

As illustrated in Table 4, CEOs who are also shareholders exhibit greater earnings smoothing behavior, as indicated by lower EM1 values. Since lower EM1 values suggest a greater use of managerial discretion to smooth reported earnings, the results imply that shareholder-CEOs may

have stronger incentives to stabilize reported performance. Prior literature documents that firms with lower earnings volatility often experience favorable market reactions and higher stock valuations (Su, 2013; Ugras & Ritter, 2025). Consequently, CEOs holding company shares may engage in earnings smoothing to protect or enhance personal wealth tied to stock performance. However, shareholder-CEOs do not appear to exhibit substantially greater cash flow management or earnings aggressiveness based on EM2 and EM3 measures.

Female CEOs demonstrate a substantially greater tendency to smooth earnings relative to male CEOs, as reflected by lower EM1 values. Female CEOs also exhibit stronger cash flow management behavior, as indicated by the more negative EM2 correlation values. Because a stronger negative EM2 correlation suggests greater use of discretionary accruals to offset cash flow shocks, the findings imply that female CEOs place greater emphasis on presenting stable financial performance. The EM3 results reveal a more nuanced pattern regarding earnings aggressiveness among female CEOs. Although the mean EM3 value for female CEOs is substantially higher than that for male CEOs, the median EM3 value for female CEOs is slightly lower. This divergence between mean and median values suggests that the female CEO sample contains several extreme observations that heavily influence the mean.

Therefore, female CEOs do not appear to be more aggressive overall in earnings reporting but rather exhibit greater variability in reporting behavior. Most female CEOs appear no more aggressive than their male counterparts, while a small subset demonstrates extremely aggressive reporting practices. Overall, the findings suggest that female CEOs may prioritize earnings stability rather than aggressive earnings inflation. In cases where extreme reporting aggressiveness is observed, it may reflect attempts to conceal financial instability or unfavorable operating conditions. These findings are generally consistent with Harris, Karl, & Lawrence (2019), who conclude that female CEOs do not necessarily reduce earnings management behavior.

CEOs who do not receive compensation exhibit particularly strong earnings, smoothing behavior, as reflected by the extremely low EM1 values. In addition, uncompensated CEOs display greater earnings aggressiveness based on the higher median EM3 values. Because EM3 means appear heavily influenced by outliers, the median EM3 measure likely provides a more reliable representation of typical reporting behavior. However, the association between uncompensated CEOs and earnings aggressiveness is no longer statistically significant after controlling for firm financial and board characteristics. One possible explanation is that uncompensated CEOs often have incentives that differ from those of salaried executives, such as substantial ownership interests or long-term control objectives, which may influence their financial reporting decisions. However, our data shows that close to 90% of uncompensated CEOs also do not own company shares, so the results cannot be readily explained by equity ownership incentives. Future research should examine alternative explanations for why uncompensated CEOs appear more likely to smooth earnings in descriptive analyses, including differences in governance arrangements, founder status, family ownership, or other organizational characteristics that were not directly examined in this study.

Finally, CEO duality, where the CEO also serves as Chair of the Board, appears associated with higher earnings management across all three dimensions examined. Firms with CEO duality

exhibit greater earnings smoothing (EM1), stronger cash flow management behavior (EM2), and higher earnings aggressiveness (EM3). These findings are consistent with governance theories suggesting that concentrated managerial authority may weaken oversight and increase opportunities for discretionary financial reporting behavior.

Table 5

Regression Analysis for Earnings Aggressiveness

Overall model fit: P=0.0419; R-Square=0.0758

**The analysis incorporated year and industry fixed effect*

Parameter	Estimate	Standard Error	t Value	Pr > t
Intercept	23.8610	16.0689	1.48	0.1384
CEO Receives No Compensation	-2.2381	3.5043	-0.64	0.5234
CEO Ownership	-1.4685	2.0329	-0.72	0.4705
Board of Director Size	-20.3597	14.0843	-1.45	0.1491
Board of supervisors	-7.1005	21.9013	-0.32	0.7460
FirmSize	-0.4736	0.5801	-0.82	0.4148
Leverage	1.91700	1.6789	1.14	0.2542
ROA	3.3784	4.8567	0.70	0.4871
Sales Growth	0.0680	1.2840	0.05	0.9578
Ownership Concentration	-0.0632	0.0575	-1.10	0.2722
State Ownership	0.8180	2.5165	0.33	0.7453
CEO BOD Chair Duality	4.0578	2.9060	1.40	0.1634
Female CEO	13.0844	3.8152	3.43	0.0007

Regression results after controlling industry and year effects are presented in Table 5. After controlling firm financial characteristics, board characteristics, industry, and year effects, CEO compensation status is no longer significantly associated with earnings aggressiveness. A robustness test excluding uncompensated CEOs who also own company shares yield similar results, indicating that the findings are not driven by ownership incentives. Likewise, CEO–chair duality is no longer a significant determinant of earnings aggressiveness after controlling for firm size, board characteristics, leverage, profitability, sales growth, ownership concentration, and state ownership. Board size and supervisory board size are scaled by firm sales, firm size is measured as the natural logarithm of sales, and ownership concentration is proxied by the ownership percentage of the ten largest shareholders. State ownership is also not significantly associated with earnings aggressiveness.

In contrast, the coefficient on Female CEO remains positive and statistically significant, indicating that female-led firms exhibit higher earnings aggressiveness after controlling for firm and governance characteristics. This finding is consistent with the mean analysis but should be

interpreted alongside the descriptive statistics. As shown in Tables 1 and 2, female CEOs are more likely to engage in earnings smoothing and cash flow management. However, Table 3 shows that female CEOs have a slightly lower median EM3 value than male CEOs (0.6322 versus 0.6549), despite a substantially higher mean EM3. The divergence between the mean and median suggests that the positive regression coefficient may be influenced by a relatively small number of firms exhibiting unusually high levels of earnings aggressiveness. One possible explanation is that female CEOs operating in environments with greater performance pressure or heightened scrutiny may be more likely to engage in aggressive reporting under financial stress. This interpretation should be viewed cautiously and warrants further investigation.

Our finding that female CEOs are associated with higher earnings aggressiveness differs from much of the prior literature, which generally reports that female executives are associated with higher earnings quality and lower levels of earnings management. However, our results are consistent with those of Wang & Fung (2022), who document similar evidence using Taiwanese firms. One possible explanation is that female executives in settings where women remain underrepresented in senior leadership positions may experience greater scrutiny and stronger pressure to demonstrate superior performance. Such institutional and social pressures may increase incentives to present stable or favorable financial results, particularly during periods of financial stress. This interpretation should be viewed cautiously, as our study does not directly examine the mechanisms underlying these incentives.

Our findings are also broadly consistent with Liu et al. (2022), who report that Chinese listed companies with female chief financial officers exhibit greater tax aggressiveness than those led by male CFOs. Collectively, these studies suggest that the relationship between executive gender and financial reporting behavior may depend on institutional context, organizational environment, and the specific reporting decisions being examined, rather than gender alone.

CEO compensation, duality, and ownership are not significantly associated with earnings aggressiveness after controlling for other firm characteristics. Accordingly, Hypotheses 1, 2, and 4 are not supported, whereas Hypothesis 3, which predicts that female CEOs differ from male CEOs in earnings aggressiveness, is supported.

5. Conclusion

CEO compensation structure appears to be associated with earnings management behavior. Firms led by uncompensated CEOs exhibit greater earnings smoothing and higher earnings aggressiveness relative to firms with compensated CEOs. However, after controlling for firm financial and board characteristics, whether CEO is compensated or not is no longer a significant factor in earnings aggressiveness. While it is possible that uncompensated CEOs are actually substantial shareholders of the company, our data shows that close to 90% uncompensated CEOs also do not own company shares. These findings suggest that the absence of direct monetary compensation does not necessarily reduce managerial opportunism.

Our results contribute to the growing literature on CEO gender and financial reporting, with most studies suggesting that female representation in corporate leadership enhances earnings quality and constrains earnings management. Our findings indicate that female CEOs are more likely to

engage in earnings smoothing, cash flow management, and earnings aggressiveness. Our results are consistent with other research on Asian firms. Future research should investigate whether institutional pressures, promotion barriers, or cultural expectations explain these differences.

Finally, the findings are mostly consistent with the corporate governance literature concerning CEO duality. Firms in which the CEO also serves as board chair exhibit higher levels of earnings management across multiple measures, supporting the argument that concentrated leadership weakens board monitoring and increases managerial discretion. Although the regression analysis indicates that this relationship becomes insignificant after controlling for firm characteristics, the descriptive evidence nevertheless highlights the governance risks associated with combining executive leadership and board oversight.

The evidence suggests that firms should strengthen internal monitoring whenever CEOs possess substantial ownership interests or occupy multiple leadership positions. Independent audit committees, robust internal controls, and rigorous financial oversight become increasingly important when executive influence is concentrated. Regarding gender diversity, the findings should not be interpreted as evidence against appointing female CEOs. Instead, they suggest that boards should ensure that all executives operate within governance systems that discourage earnings management regardless of gender. At the same time, boards should recognize that female CEOs, particularly in environments where senior leadership positions remain predominantly occupied by men, may face greater scrutiny and stronger performance pressures. Such pressures may create incentives to demonstrate stable or superior financial performance, thereby increasing the risk of certain forms of earnings management. Consequently, boards should provide governance structures, objective performance evaluation systems, and organizational support that reduce unnecessary pressure while maintaining accountability. Although this study is based on Chinese listed firms, similar dynamics may exist in other countries, industries, or organizations where female executives remain underrepresented.

Investors should consider executive compensation arrangements, CEO ownership, and leadership structure alongside traditional financial ratios when evaluating corporate governance risk. Firms with uncompensated CEOs, substantial CEO ownership, or CEO–chair duality may warrant additional scrutiny because these characteristics are associated with greater earnings management in certain dimensions. At the same time, investors should avoid simplistic interpretations of executive gender. Rather than assuming that female CEOs are associated with either higher or lower reporting quality, investors should evaluate the broader governance environment, organizational context, and institutional pressures under which executives operate. A comprehensive assessment of governance mechanisms and managerial incentives is likely to provide a more reliable indication of financial reporting quality than reliance on any single executive characteristic.

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