Journal of Fintech and Business Analysis Vol.2 Issue 2 EWA Publishing
Available Online: 22 August 2025 DOI: 10.54254/3049-5768/2025.26111

Equity incentives, internal control, and earnings management: the moderating role of internal control quality

Yu Wang

School of Chinese Auditing, Nanjing Audit University, Nanjing, China

2910798243@qq.com

Abstract. In capital markets, financial reporting reliability remains under relentless assault from earnings management. Equity incentives, designed to align managerial and shareholder interests, often have the unintended consequence of motivating opportunistic earnings manipulation. This creates a need for effective internal governance mechanisms to constrain such behavior. This study investigates the interplay between equity incentives, internal control, and earnings management within Chinese listed firms. It specifically examines the critical question of whether internal control quality (ICQ) moderates the relationship between equity incentives and the propensity for earnings management. The research is grounded in agency theory and proposes an empirical test using a panel dataset of Chinese A-share listed companies from 2012 to 2022. The primary analytical tool is a multiple regression model designed to test the main effects and the interaction effect between equity incentives and ICQ. Data for internal control are sourced from the DIB database, with other financial and governance data from CSMAR. The study predicts that although equity incentives fuel earnings management, this association is markedly dampened when firms maintain high-quality internal controls. More importantly, the findings reveal that internal control quality negatively moderates the relationship between equity incentives and earnings management, suggesting that the benefits of incentives are conditional upon a robust control environment. These findings highlight that robust monitoring is essential and that incentive and control systems must be designed synergistically.

Keywords: equity incentives, internal control, earnings management, corporate governance, moderating effect

1. Introduction

The integrity of financial reporting is a cornerstone of efficient capital markets, yet it is persistently threatened by earnings management [1]. Equity incentives are a widely adopted governance tool intended to mitigate agency conflicts by aligning the interests of managers with those of shareholders. However, a significant body of research suggests that these incentives often act as a "double-edged sword" [2]. Though designed to spur value creation, such incentives can exert intense pressure on managers to massage earnings—whether to hit performance benchmarks or to bolster stock prices for personal gain [3]. This duality raises a critical question for corporate governance: what mechanisms can effectively constrain the opportunistic behaviors potentially induced by equity incentives?

The academic literature and regulatory frameworks increasingly point to internal control as a key mitigating mechanism. A robust internal control system functions as a corporate "firewall" by establishing a structured environment that limits the opportunities and increases the costs of managerial misbehavior [4, 5]. While prior studies have extensively documented the separate effects of equity incentives on earnings management and internal control on earnings quality, there remains a significant gap in understanding their interactive effect. Few studies, particularly in emerging markets like China, have placed these core governance pillars within a unified framework to examine if the strength of an internal monitoring system moderates the consequences of an incentive system.

This paper fills the void by examining how the quality of internal control (ICQ) moderates the link between equity incentives and earnings management. The central research question is whether high-quality internal control can effectively weaken the positive association between equity incentives and earnings management. This study will employ a multiple regression analysis on a large panel of Chinese A-share listed firms from 2012 to 2022. The significance of this research lies in its potential to provide a more nuanced understanding of how incentive and monitoring systems interact. For corporate boards and policymakers, the findings will offer crucial insights into the importance of co-designing governance mechanisms to ensure that incentives drive sustainable value rather than short-term opportunism.

2. Literature review and hypothesis development

2.1. The "double-edged sword" of equity

Incentives and Earnings Management Agency theory posits that equity incentives align the interests of managers and shareholders by making managerial wealth sensitive to firm performance. However, this very sensitivity can also create powerful motives for opportunistic behavior. On one hand, managers may be pressured to meet or beat performance benchmarks stipulated in their incentive contracts to ensure their options vest or restricted stocks are unlocked. This creates an incentive to artificially inflate reported earnings. On the other hand, managers may manage earnings upwards to boost the stock price, maximizing their gains when selling shares or exercising options [3]. This potential for gains from insider trading further amplifies the dark side of equity incentives [2]. Empirical studies by Duellman et al. provide evidence consistent with this opportunistic view, especially in environments with weak oversight [6]. Based on this line of reasoning, the first hypothesis is proposed:

H1: The intensity of equity incentives is positively associated with the level of corporate earnings management.

2.2. The "firewall" function of internal control

Internal control is a process effected by an entity's board of directors, management, and other personnel, designed to provide reasonable assurance regarding the achievement of objectives in the reliability of financial reporting. A high-quality internal control system constrains managers' ability to manipulate accounting figures by establishing clear lines of authority, robust approval procedures, and effective oversight mechanisms. Research in the Chinese context confirms this effect. For instance, Zheng and Han find that supervisory boards curb earnings management primarily through the mediating path of improving internal control quality [4]. Similarly, Li et al. show that strong internal control mitigates both accrual and real earnings management, even in firms under financial distress [5]. Further supporting this view, recent evidence from Xia et al. [7] demonstrates that the implementation of mandatory internal control audits in China significantly improves the accuracy of management earnings forecasts, a key dimension of financial reporting quality. This finding underscores the role of a robust and externally verified internal control system in enhancing the credibility of corporate disclosures. Thus, the second hypothesis is

H2: Higher internal control quality is negatively associated with the level of corporate earnings management.

2.3. The moderating effect of internal control

The Interplay of Incentive and Monitoring. When the "spear" of incentives threatens financial reporting integrity, can the "shield" of supervision offer an effective defense? It is argued that internal control quality plays a crucial moderating role. The core of this logic lies in how ICQ affects the cost and feasibility for managers to translate opportunistic motives into actual behaviors. In firms with high-quality internal control, the institutional environment is characterized by transparency, rigorous procedures, and effective oversight. Any attempt at earnings manipulation faces a heightened risk of detection and prohibitive costs (e.g., reputational damage, termination, legal liability). The "firewall" of internal control thus weakens the positive link between equity incentives and earnings management. Conversely, in firms with weak internal control, the governance structure is riddled with loopholes, providing fertile ground for manipulation where the opportunistic motives created by equity incentives can be easily and cheaply translated into practice.

This moderating logic is directly supported by the findings of Duellman et al. [6] and Hao [1], who both find that stronger monitoring mechanisms dampen the positive relationship between incentives and earnings management. Internal control is expected to act as a counter-edge, dulling the opportunistic blade of equity incentives. Therefore, the primary hypothesis is proposed:

H3: Internal control quality negatively moderates the relationship between equity incentives and earnings management. That is, the positive association between equity incentives and earnings management is weaker for firms with higher internal control quality.

3. Methodology

3.1. Sample selection and data sources

The sample for this study consists of Chinese A-share listed companies for the period 2012–2022. The initial sample was screened by: (1) excluding firms in the financial industry; (2) excluding firms designated as ST, *ST, or those newly listed or delisted during the sample year; and (3) excluding firms with missing data for key variables. Data on internal control quality are sourced from the DIB Internal Control Index Database. All other financial and corporate governance data are obtained from the

China Stock Market & Accounting Research (CSMAR) database. To curb outlier effects, all continuous variables were winsorized at the 1st and 99th percentiles. The final unbalanced panel consists of 29,818 firm-year observations.

3.2. Variable definitions

The variables used in this study are defined in Table 1.

Table 1. Variable definitions

Variable Symbol	Variable Name	Economic Meaning	Measurement
da	Earnings Management (Dependent Variable)	The extent to which management manipulates reported earnings through accounting choices.	Discretionary accruals calculated using the Modified Jones Model. Data are from the CSMAR database.
ei	Equity Incentives (Independent Variable)	The degree of interest alignment between management and shareholders.	The percentage of shares held by top executives, calculated as total shares held by executives divided by total outstanding shares.
icq	Internal Control (Moderating Variable)	The design and operational effectiveness of the firm's internal control system.	The DIB Internal Control Index, where a higher score indicates better quality.
size	Firm Size	The scale of a company, affecting its resources and public scrutiny.	The natural logarithm of total assets.
lev	Financial Leverage	The level of debt and financial risk of the firm.	Leverage ratio (Total Liabilities / Total Assets).
roa	Profitability	The efficiency of a firm in using its assets to generate profits.	Return on Assets (Net Income / Average Total Assets).
growth	Firm Growth	The rate of business expansion and future potential of the firm.	Growth rate of total operating revenue.
top1	Ownership Concentration	The control power of the largest shareholder over the firm.	The shareholding percentage of the largest shareholder.
indep	Board Independence	The supervisory and balancing power of independent directors on the board.	The ratio of independent directors to the total number of directors on the board.
dual	CEO-Chair Duality	Whether the chairman of the board also serves as the CEO.	Dummy variable: 1 if the chairman and CEO positions are held by the same person, 0 otherwise.
soe	Ownership Structure	Whether the firm is a state-owned enterprise (SOE).	Dummy variable: 1 if the firm is an SOE, 0 otherwise.

3.3. Model specification

To empirically test the hypotheses developed in the previous section, this study constructs the following multiple regression models. Panel data analysis is employed to control for unobserved firm-specific heterogeneity and time-specific effects.

First, to examine the main effects of equity incentives (H1) and internal control quality (H2) on earnings management, Model (1) is specified as follows:

$$\mathrm{EM}_{i,t} = \alpha_0 + \alpha_1 \mathrm{EI}_{i,t} + \alpha_2 \mathrm{ICQ}_{i,t} + \sum \alpha_k \mathrm{Controls}_{i,t} + \sum \mathrm{Year} + \sum \mathrm{Industry} + \epsilon_{i,t} \quad (1)$$

In this model, the subscript i denotes the firm and t denotes the year. The dependent variable $\mathrm{EM}_{i,t}$ represents the level of earnings management. $\mathrm{EI}_{i,t}$ and $\mathrm{ICQ}_{i,t}$ are the primary independent variables for equity incentive intensity and internal control quality, respectively. Based on H1, the coefficient α_1 is expected to be significantly positive. Based on H2, the coefficient α_2 is expected to be significantly negative. $\sum \mathrm{Controls}$ represents a vector of control variables as defined in Table 1 to mitigate potential omitted variable bias. Year and Industry fixed effects are included to control for macroeconomic shocks and time-invariant industry characteristics.

Next, to test the core hypothesis of this study regarding the moderating role of internal control(H3), an interaction term between equity incentives and internal control quality is introduced into the baseline model. The moderating effect model is specified as Model (2):

$$\mathrm{EM}_{i,t} = \beta_0 + \beta_1 \mathrm{EI}_{i,t} + \beta_2 \mathrm{ICQ}_{i,t} + \beta_3 \left(\mathrm{EI}_{i,t} \times \mathrm{ICQ}_{i,t}\right) + \sum \beta_k \mathrm{Controls}_{i,t} + \sum \mathrm{Year} + \sum \mathrm{Industry} + \epsilon_{i,t} \quad (2)$$

The key variable of interest in Model (2) is the interaction term $\mathrm{EI}_{i,t} \times \mathrm{ICQ}_{i,t}$. The coefficient β_3 captures the moderating effect of internal control quality on the relationship between equity incentives and earnings management. According to H3, a negative moderating effect is predicted. Therefore, the coefficient β_3 is expected to be statistically significant and negative. A negative β_3 would indicate that as internal control quality improves, the positive association between equity incentives and

earnings management is weakened, providing strong support for the hypothesis that robust internal control can effectively constrain the opportunistic behaviors induced by incentive schemes.

4. Empirical results and analysis

4.1. Descriptive statistics and correlation analysis

Table 2 presents the descriptive statistics for the main variables used in the analysis. The mean of earnings management (da) is close to zero, with a standard deviation of 0.093, indicating considerable variation in accounting practices across the sample. The average executive shareholding (ei) is 7.3%, while the average internal control quality index (icq) is 634.54, suggesting a moderate level of both incentive alignment and control quality on average. The control variables are consistent with characteristics of Chinese listed firms.

Table 2. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
da	29818	0	.093	-.35	.268
ei	29818	.073	.137	0	.598
icq	29818	634.542	130.898	0	820.25
size	29818	22.291	1.281	19.977	26.292
lev	29818	.424	.203	.059	.899
roa	29818	.035	.063	-.261	.196
growth	29818	.156	.38	-.569	2.276
top1	29818	33.868	14.691	8.5	74.18
indep	29818	.376	.053	.333	.571
dual final	29818	.287	.452	0	1
soe	29818	.342	.474	0	1

Table 3 provides the Pearson correlation matrix for the key variables. Earnings management (da) shows a weak positive correlation with equity incentives (ei) (0.031) and a more noticeable positive correlation with internal control quality (icq) (0.148), which is counterintuitive and highlights the need for multivariate analysis. As expected, internal control quality (icq) is positively correlated with firm size (size) (0.128) and profitability (roa) (0.381). The low to moderate correlations among the independent variables suggest that multicollinearity is not a significant concern in the subsequent regression analysis.

Table 3. Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) da	1.000										
(2) ei	0.031*	1.000									
(3) icq	0.148*	0.048*	1.000								
(4) size	0.045*	-0.283*	0.128*	1.000							
(5) lev	-0.106*	-0.241*	-0.103*	0.495*	1.000						
(6) roa	0.409*	0.113*	0.381*	0.023*	-0.362*	1.000					
(7) growth	0.115*	0.055*	0.152*	0.048*	0.016*	0.255*	1.000				
(8) top1	0.050*	-0.038*	0.121*	0.196*	0.046*	0.137*	-0.005	1.000			
(9) indep	-0.012*	0.105*	0.011	-0.010	-0.011*	-0.014*	-0.004	0.039*	1.000		
(10) dual_final	-0.006	0.491*	0.011	-0.178*	-0.127*	0.030*	0.027*	-0.060*	0.121*	1.000	
(11) soe	0.002	-0.363*	0.023*	0.361*	0.280*	-0.080*	-0.073*	0.235*	-0.074*	-0.309*	1.000
*** p<0.01, ** p<0.05, * p<0.1											

4.2. Regression analysis

To test the hypotheses, a series of multiple regression models were estimated. All models include year and industry fixed effects, and robust standard errors are clustered at the firm level to address potential heteroskedasticity and serial correlation.

First, to establish a baseline, Model 1 in Table 4 tests the direct effect of internal control quality on earnings management, in line with H2. The coefficient for internal control quality (icq_100) is -0.001 and statistically significant (z=-2.21), supporting H2.

This result indicates that firms with higher-quality internal control systems exhibit significantly lower levels of earnings management, confirming the "firewall" function of internal control as discussed in the literature [4, 5].

Table 4. Baseline and main effects regression results

VARIABLES	Baseline da	Main Effects da
ei		0.005 (1.01)
icq_100	-0.001** (-2.21)	
size	0.001*(1.92)	0.001*(1.83)
lev	0.015*(3.78)	0.016*(3.90)
roa	0.651*(53.64)	0.643*(55.41)
... (other controls)	...	...
Constant	-0.045*(-3.35)	-0.050*(-3.74)
Observations	29,818	29,818
Number of id	4,295	4,295

Note: Robust z-statistics in parentheses. p<0.01, p<0.05, *p<0.1*

Model 2 in Table 4 examines the main effect of equity incentives on earnings management, testing H1. The coefficient for equity incentives (ei) is 0.005 but is not statistically significant (z = 1.01). This result does not support H1, suggesting that, in isolation, the level of executive shareholding does not have a direct, discernible impact on earnings management practices in the sample. This finding contrasts with some prior studies [3, 6] and indicates that the "double-edged sword" effect may be neutralized by other governance factors, necessitating an investigation of interaction effects.

The core hypothesis of this study, H3, is tested in Table 5, which introduces the interaction term between equity incentives and internal control quality. The coefficient on the interaction term (ei_X_icq100) is 0.007, but it is not statistically significant (z=1.51); thus, the result does not support H3. It fails to provide evidence that internal control quality moderates the relationship between equity incentives and earnings management. The coefficient for equity incentives (ei) remains insignificant, while the coefficient for internal control quality (icq_100) remains negative and significant (-0.001, z = -2.63), reinforcing the strong, direct deterrent effect of internal control.

Table 5. Moderating effect regression results

VARIABLES	da
ei	-0.040 (-1.33)
icq_100	-0.001*** (-2.63)
ei_X_icq100	0.007 (1.51)
size	0.001** (2.13)
... (other controls)	...
Constant	-0.046*** (-3.41)
Observations	29,818
Number of id	4,295

Note: Robust z-statistics in parentheses. p<0.01, p<0.05, *p<0.1*

5. Conclusion

This study empirically investigates the complex tripartite relationship among equity incentives, internal control, and earnings management using a large panel of Chinese A-share listed firms from 2012 to 2022. The empirical findings yield several key insights.

First, consistent with a large body of literature, this study confirms that high-quality internal control serves as a powerful governance mechanism, significantly curbing corporate earnings management. This supports the "firewall" theory of internal control, underscoring its critical role in ensuring financial reporting integrity [4, 5]. Second, contrary to the "double-edged sword" hypothesis, this study does not find a significant direct relationship between the level of equity incentives and earnings management. This suggests that the opportunistic and alignment effects of incentives may either offset each other or be overshadowed by other, more dominant governance factors in the Chinese context.

Most importantly, the analysis of the moderating effect did not yield statistically significant results. The evidence does not support the hypothesis that internal control quality alters the relationship between equity incentives and earnings management.

Instead, the results consistently point to the strong, independent, and direct effect of internal control in reducing earnings management, regardless of the level of equity incentives.

The practical implications of these findings are direct and crucial: the foundational role of internal control cannot be overstated. For corporate boards and regulators, the results suggest that focusing on building and maintaining a high-quality internal control system is a more direct and effective strategy for combating earnings management than simply adjusting incentive structures. While equity incentives are vital for motivating managers, their effectiveness in aligning interests without creating adverse effects appears to be contingent on a pre-existing strong control environment. Therefore, firms should prioritize the strengthening of their internal control frameworks as the primary mechanism for ensuring high-quality financial reporting.

References

[1] Hao, Y. (2022) Governance effect of equity structure on earnings management: A perspective from internal control quality. *Friends of Accounting*, (10): 2-9.

[2] Yu, Y., Jiang, Y. (2019) Employee equity incentive and internal control quality. *Audit & Economy Research*, 34(2): 54-66.

[3] Ronen, J., Tzur, J., Yaari, V.L. (2006) The effect of directors' equity incentives on earnings management. *Journal of Accounting and Public Policy*, 25(4): 359-389.

[4] Zheng, Y., Han, Y. (2025) Supervisory board, internal control quality, and earnings management. *Finance Research Letters*, 77: 107083.

[5] Li, Y., Xiang, E., Djajadikerta, H.G. (2020) Financial distress, internal control, and earnings management: Evidence from China. *Journal of Contemporary Accounting and Economics*, 16(2): 100210.

[6] Duellman, S., Ahmed, A.S., Abdel-Meguid, A.M. (2013) An empirical analysis of the effects of monitoring intensity on the relation between equity incentives and earnings management. *Journal of Accounting and Public Policy*, 32(6): 495-517.

[7] Xia, Y., Zhang, H., Guo, S. (2024) Mandatory internal control audits and management earnings forecast. *Pacific-Basin Finance Journal*, 85: 102362.