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STAKEHOLDER THEORY, HEURISTIC BIAS, ACCRUAL- AND LOSS-AVOIDANCE-BASED EARNINGS MANAGEMENT: EVIDENCE FROM PAKISTAN'S COMMERCIAL BANKS

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ABSTRACT

Purpose: This study examines the impact of board size, shareholding, and meeting frequency on earnings management practices in Pakistan's commercial banks, considering both accrual-based (EM_1) and threshold-based (EM_2) measures of earnings management.

Design/Methodology: The study employs a panel of 251 observations for EM_1 and 316 observations for EM_2 across multiple years, using random-effects regression for EM_1 and random-effects logistic regression for EM_2. Models incorporate control variables along with era dummies capturing corporate governance reforms in 2012, 2017, and 2019.

Findings: Board meetings are negatively and board shareholding is positively associated with EM_1. Board size is negatively associated with EM_2, suggesting a stronger role in mitigating threshold-based earnings manipulation. Regulatory reforms significantly shaped reporting behaviour, with the 2017 reforms showing the strongest negative association with EM_1, alongside a contrasting increase in EM_2. The findings are interpreted through stakeholder theory and heuristic bias theory, indicating that board attributes operate as both monitoring and behavioural-correction mechanisms, with different attributes more relevant to different forms of earnings management. The study is limited to commercial banks and two proxies of earnings management; future research could extend to non-financial firms, alternative earnings management proxies, and qualitative assessment of board behaviour.

Originality: Findings highlight the differential effectiveness of board characteristics across types of earnings management, informing policymakers and regulators about the role of board size, shareholding, and meeting frequency in enhancing financial reporting quality. The study contributes to the existing literature by combining stakeholder and heuristic bias theories in a Pakistani banking context, simultaneously

analyzing accrual- and threshold-based earnings management under evolving corporate governance regimes.

Keywords: *stakeholder theory, heuristic bias, board characteristics, loan loss provisions, loss avoidance*

Paper type: Research Paper

INTRODUCTION

Healy and Wahlen (1999) defined earnings management in a way that addresses the fundamental questions regarding this concept. The questions in this regard may be, "What is earnings management?" and "Why is it done?" The definition answers these questions as, "Earnings Management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports", "to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers." It is accomplished by taking advantage of the managerial judgment allowed by the accounting standards (Dechow & Skinner, 2000). Therefore, the possibility of distorting financial information exists, that ultimately erodes investors' trust—especially in financial sectors, like banks—where lenders' trust relies heavily on such figures. If financial integrity and public trust are the utmost priorities, then earnings management through different strategies raises serious regulatory and ethical concerns.

The primary purpose of the financial reporting is to remove ambiguity in the mind of shareholders about the performance of corporation as well as to provide a fair view of corporation's position. Fair, accurate and transparent disclosure of financial condition and statements of the corporation not only enhances the trust of stakeholders but also serve as the foundation for successful strategic planning. The flow of misinformation—in the form of earnings management—may distort this rationality of informed decisions (Burlacu et al., 2024).

The literature suggests that the Corporate Governance —"the system by which companies are directed and controlled" (Cadbury Report, 1992)—may help restrain managers from such practices. It improves transparency and reduces information asymmetry, thus restricting earnings manipulation. Researchers have generally concluded that there exists a negative association between effective corporate governance mechanisms and earnings management practices (Biswas et al., 2022; García-Meca & Sánchez-Ballesta, 2009; Klein, 2002; Puni & Anlesinya, 2020; Xie et al., 2003). Effective board oversight, board independence and active monitoring are considered to be significant governance mechanisms that limit managerial discretion and enhance financial reporting quality. However, the empirical findings are not unanimous, as the impact of the different board attributes differs from one institutional context to another, from one ownership structure to another, from one regulatory context to another, and from one measure of earnings management to another. The mixed results indicate that more evidence from new banking markets

will be needed to better understand the impact of board characteristics on various types of earnings management.

In contrast to much of the existing literature, this study simultaneously examines both accrual-based and threshold-based earnings management within Pakistan's commercial banking sector. It further extends previous governance research by integrating Stakeholder Theory with Heuristic Bias Theory to explain how board characteristics may influence managerial reporting behaviour, while also evaluating whether successive revisions to Pakistan's Code of Corporate Governance (2012, 2017, and 2019) have strengthened the effectiveness of corporate governance in constraining earnings management.

Therefore, with the specific context of Pakistan's commercial banks, the research objective of this study is to analyse the significance of board characteristics (board size, shareholding and frequency of meetings per year) on limiting earnings management practices. Also, to analyse whether corporate governance reforms (revisions in code in 2012, 2017 & 2019) have helped in curtailing such practices in this sector.

The study finds that board meetings are negatively while board shareholding is positively associated with accrual-based earnings management. Board size is negatively associated with threshold-based earnings management, indicating that different board attributes are relevant to different forms of managerial discretion. The findings further show that successive corporate governance reforms, particularly those introduced in 2017, had the strongest effect on accrual-based earnings management, although the same period is associated with an increase in threshold-based earnings management, a pattern discussed in detail in Section 4.

This study contributes to the literature in several ways. First, it provides evidence from Pakistan's bank-based financial system, a context that remains comparatively underexamined relative to developed economies and the MENA region. Second, it evaluates two distinct earnings management proxies—accrual-based and threshold-based—within a single empirical framework, offering a more complete picture than studies relying on a single measure. Third, it extends the predominantly agency-based governance literature in Pakistan by integrating stakeholder theory with heuristic bias theory, offering a behavioural perspective on how board characteristics impact managerial discretion. Finally, the study evaluates the effectiveness of three successive revisions to Pakistan's Code of Corporate Governance (2012, 2017, and 2019) in curbing earnings management, providing evidence relevant to ongoing regulatory development.

THEORY AND HYPOTHESES

Theoretical Framework

Managers often seek ways to recover from the difficulties created due to the errors they commit in uncertain situations. To solve their problems and avoid the complexities of such situations, they try shortcuts, technically known as heuristics (Tversky & Kahneman, 1974). Although these heuristics may sometimes effectively

work to avoid the situation, mostly they lead to systematic biases in decision making. Heuristic bias theory suggests that influenced by cognitive shortcuts and mental heuristics, managers may rely on anchoring, representativeness, overconfidence, and zero earnings heuristic while estimating revenues or expenses, creating discretionary accruals that distort reported earnings. This eventually results in opportunistic practices like earnings management.

These biases can be reduced through effective board of directors and good corporate governance mechanisms. The stakeholder theory framework, which was put forward by Freeman (1984), states that corporations require a social network to function. This network includes a number of stakeholders and a board of directors acts as a wider stakeholder, advocating transparency and ethical reporting.

This research combines the theories of stakeholder bias and heuristic bias. In addition to the monitoring role (stakeholder theory), corporate governance mechanisms can also be seen as behavioural control mechanisms that reduce the cognitive biases of managers (heuristic bias theory).

The board structure, thus, affects earnings management by monitoring discipline and behavioural correction. In particular, board size can offer a range of views that mitigate the cognitive biases of individual members, board shareholding can help to ensure that management interests are aligned with long-term stakeholder value, and regular board meetings can enable ongoing monitoring of management actions, which can limit opportunistic earnings management.

The reasons for combining these two theories and not using one alone are as follows. Stakeholder theory suggests that governance institutions limit earnings management by monitoring and holding managers accountable, but it does not explain how managers make the biased reporting decision in the first place. Heuristic bias theory highlights the importance of mechanism, which suggests that managers under uncertainty use cognitive shortcuts that can lead to systematic errors in accrual estimates, but does not identify the governance context in which these biases are exacerbated or mitigated. Both theories predict the same direction of effect, albeit in different and complementary ways: board structures that create deliberative conditions that minimize cognitive shortcuts (heuristic bias theory) are also board structures that provide stronger oversight (stakeholder theory). However, heuristic bias is a latent cognitive process not directly observable in archival data. Board characteristics in this study therefore serve as structural conditions associated with deliberative versus heuristic processing environments, rather than as direct measures of cognitive states. This is a recognized limitation of applying behavioural theory in archival settings, and the behavioural interpretations offered are accordingly framed as theoretically informed readings rather than direct empirical tests of cognitive processes.

Earnings Management: Conceptual and Empirical Perspectives

Loan Loss Provisions (*LLPs*) are widely recognised as a key indicator of earnings management in the banking sector (e.g. Bouvatier et al., 2014; Hakim Ben Othman, 2016; Jin et al., 2018; Lim & Yong, 2017; Ozili, 2019). Their flexible, judgment-based

nature motivates managers to surge such provisions in profitable years to reduce income, and to release these reserves in loss-making years to inflate earnings, thereby smoothing reported performance. This mechanism equips banks with the capacity to smooth earnings. Thus, without proper monitoring increases the risk of untrue reporting in financial sectors like banking industry compared to non-financial firms.
Consistent with prior literature, the frequency of small positive net income (*SPOS*) has also gained considerable recognition as a reliable proxy for identifying earnings management (Kolsi et al., 2023). It is used as an indicator of threshold-based earnings management (Burgstahler & Dichev, 1997). Firms face substantial economic and reputational costs when reporting losses. In banking institutions avoiding losses is particularly crucial due to regulatory capital requirements, depositor confidence concerns, and supervisory monitoring. Consequently threshold-based earnings behaviour is economically likely in this setting.

Board Characteristics and Earnings Management

The framework and constitution of board is a topic of interest in the realm of earnings management. The board endorses accounting policies of an entity. Since financial integrity and information reliability is critical to the baking sector, any negligence by board in fulfilling responsibilities can create adverse consequences in financial sectors (Duncan, 2001). The literature generally supports a negative relationship between board monitoring effectiveness and earnings management practices (Peasnell et al., 2000; Xie, et al. , 2003).
Given the financial intermediary role that banks play, they require vigilant and competent boards to protect all stakeholders' interests. The impact of certain board characteristics on earnings management, with specific reference to commercial banking sector is discussed here under.

Board Size

Board size (*bodsiz*) is a frequently discussed board characteristic in corporate governance literature, particularly its influence on financial oversight and earnings management. From a stakeholder theory perspective, larger boards enhance representation and monitoring, thereby reducing earnings management. However, heuristic bias theory suggests that there may be an issue of coordination, diffusion of responsibility, and collective decision making in larger boards, and hence may weaken scrutiny.
Few researchers are of opinion that board monitoring is more efficiently done by small boards as compared to large ones. They argue that unnecessarily large boards may slow down strategic decisions, thereby diminishing its effectiveness (Chaudhary, 2022; Chemmaa et al., 2025) .
Opponents are of the view that small boards cannot perform their work of supervision effectively as they lack a wide range of viewpoints and are also unable to challenge auditors on argumentative reporting issues. They suggest that larger boards contribute to improve governance and discourage manipulative accounting practices, attributing this to enhanced monitoring with lower risk-taking and more prudent financial reporting (Beasley & Salterio, 2001; Muthuswamy & Nasrulla, 2023).

In Pakistan, it is observed that structural board characteristics must be supported by active oversight mechanisms to effectively constrain earnings management (Kant & Shah, 2025). Insignificant relation between *bodsiz* and earnings management is also reported in the studies (Usman et al., 2024).

In conclusion, the evidence of *bodsiz* and earnings management is mixed in contexts. Research in developed countries with high investor protection standards generally shows that larger boards are associated with better governance, whereas research in emerging markets or concentrated-ownership countries generally shows null or perverse results. This context-dependency implies that the use of *bodsiz* as a governance tool is not enough without having a proper system of governance monitoring, which is especially important in Pakistan where governance enforcement is still in its infancy. The present study contributes to this debate by examining whether *bodsiz* constrains two empirically distinct forms of earnings management, thereby testing whether context-specific effects differ by the type of managerial discretion involved. Based on the discussion, for *bodsiz*, this study hypothesizes:

Hypothesis 1*: Board size is negatively associated with earnings management.*

Board Shareholding

Board shareholding (*bodsh*) affects the supervising effectiveness of the board by creating ownership-aligned incentives. Under stakeholder theory, higher board shareholding aligns directors' financial interests with shareholders, encouraging long-term value preservation and reducing inclination towards earnings management. Conversely, heuristic bias theory suggests that higher ownership may intensify self-justification behaviour. Directors with substantial ownership may potentially facilitate earnings management for showing improvement in firm performance and increasing board members' wealth.

Given the concentrated insider-ownership environment of Pakistan's commercial banking sector, this study predicts a net positive association between board shareholding and earnings management. This prediction is consistent with the entrenchment argument advanced by Kao and Cheng (2007) and Shuaib and Dabor (2025) and is not a contradiction of stakeholder theory per se, but rather reflects the conditions under which stakeholder theory's alignment prediction is weakened. The hypothesis is formulated as under:

Hypothesis 2*: Board shareholding is positively associated with earnings management.*

Board Meetings

The frequency of board meetings (*bodmet*) is widely considered a practical indicator of board diligence and engagement. Under stakeholder theory, *bodmet* enhance oversight and reduce information asymmetry. From a heuristic bias perspective, increased *bodmet* encourages deliberative processing, reducing reliance on cognitive shortcuts such as anchoring and overconfidence.

More frequent meetings is a mechanism to enhance board effectiveness in curbing managerial opportunism (Brick & Chidambaran, 2010; Ford & Harper, 2025; Mensah & Boachie, 2023). In Pakistan's banking sector, it is also observed that *bodmet* is

instrumental in deterring earnings manipulation resulting in greater transparency in earnings (Khalil, 2022; Naveed et al., 2020). A few studies have concluded otherwise (Muthuswamy & Nasrulla, 2023).

The present study contributes to this debate by distinguishing the effect of board meetings on accrual-based provisioning discretion and threshold-based income smoothing. The related hypothesis is stated as:

Hypothesis 3*: The frequency of board meetings is negatively associated with earnings management.*

METHODS

This study analyses secondary data from Pakistan's commercial banks using panel data techniques. The population for this analysis consists of all the 25 scheduled commercial banks of Pakistan from 2002–2023. The related of 20 listed banks—listed on Pakistan Stock Exchange—is available from the year 2005. So, the final sample of banks and the study period is calculated as: 20 Commercial Banks * 19 Years = 380 Bank Years.

Data Analysis Methods

As discussed above, banks commonly use *LLPs* to manage their earnings. Hence, following Cornett et al., (2009), this study measures earnings management using discretionary loan loss provisions (*DLLP*). The *DLLP* is obtained as the residual from the following estimation model:

$$LLP_{it} = \beta_0 + \beta_1 NPA_{it} + \beta_2 LLA_{it} + \beta_3 READV_{it} + \beta_4 DIADV_{it} + \beta_5 AGRIADV_{it} + \beta_6 CONADV_{it} + \beta_7 CIADV_{it} + \beta_8 SIZ_{it} + \varepsilon_{1_{it}} \quad \ldots (1)$$

(Variables are explained in Table 3-1. As discussed in Section 4.1, NPA and LLA are subsequently replaced by a composite index, comp_index, to address multicollinearity; the residual of the resulting model is retained as EM_1)

This *DLLP* is the first proxy for earnings management denoted by EM_1. It should be noted that using estimated residuals as the dependent variable in a second-stage regression — a standard approach in the banking earnings management literature — introduces potential two-step estimation concerns. First, if the first-stage *LLP* model does not perfectly capture non-discretionary provisions, the residuals contain measurement error, which may bias second-stage standard errors. The cluster-robust standard errors applied in the second stage partially address this by allowing for within-bank error clustering, but they do not fully resolve generated-regressor bias. Second, if unobserved bank-level factors simultaneously influence provisioning decisions and board governance quality, the second-stage estimates may reflect endogeneity. In the absence of suitable instruments, we treat this as a recognised limitation of the archival two-step design, following established practice in the literature, and accordingly interpret the results as evidence of association.

*Table **Error! No text of specified style in document.**-1: Definitions of Variables*

S. No.	Abbreviation	Variable Name	Definition/Measured by
1	*SPOS*	The frequency of small positive net income	equals 1 if net income *deflated by lagged total assets* is between 0 and 0.01 for each given year and 0 otherwise.
2	*LLP*	Loan Loss Provision	The amount that is added to the allowance for loan losses in the current reporting period *deflated by gross advances*.
3	*NPA*	Non-Performing Advances	Non-performing advances as a *ratio to gross advances*.
4	*LLA*	Loan Loss Allowance	Loan loss allowance *as a ratio to gross advances.*
5	*READV*	Advances for Real Estate Sector	Advances given in the real estate sector during the year *as a ratio to gross advances*.
6	*DIADV*	Advances to Depository Institutions	Advances given to depository institutions during the year *as a ratio to gross advances*.
7	*AGRIADV*	Advances to Agriculture Sector	Advances provided to the agriculture sector during the year *as a ratio to gross advances*.
8	*CONADV*	Advances to Consumers	Advances provided to individuals during the year *as a ratio to gross advances.*
9	*CIADV*	Advances to Commercial and Industrial Activities	Advances given to commercial and industrial sector during the year *as a ratio to gross advances*.
10	*BODSIZ*	Board of Directors' Size	Total number of directors on the board.
11	*BODSH*	Shares Held by Directors	Shares held by directors, their spouses, and minor children as a percentage of total shares outstanding.
12	*BODMET*	Board Meetings per Year	Number of board meetings per year.
13	*SIZ*	Size of the Bank	The natural log of year-end *Assets*.
14	*MKBK*	Market-to-Book Value of Equity	Ratio between the year-end market value and the year-end book value of equity.
15	*LEVER*	Leverage	the ratio of total debt to total common equity
16	*CAP*	Capital Position of the Bank	Capital Adequacy Ratio.

To calculate the second proxy, EM_2, we estimate the indicator variable *SPOS* following Leventis and Dimitropoulos, 2012 (as described in Table 3-1).

The baseline econometric model used to examine the impact of board attributes on earnings management, as presented in Equation (2), is adopted from Cornett et al.

(2009). First, EM_1 is used as the dependent variable to estimate the model, after which the analysis is repeated using EM_2 as the dependent variable.

$$EM_{it} = \gamma_0 + \gamma_1 BODSIZ_{it} + \gamma_2 BODSH_{it} + \gamma_3 BODMET_{it} + \gamma_4 SIZ_{it} + \gamma_5 MKBK_{it} + \gamma_6 LEVER_{it} + \gamma_7 CAP_{it} + \varepsilon_{m_{it}} \dots (2)$$

(Variables are explained in Table 3-1)

Where *m* has different values for each proxy used for earnings management. Drawing from the extant literature, four prominent control variables are incorporated into this empirical investigation to ensure robust model specification.

- First control variable is the asset size (*siz*) operationalized as the *natural logarithm of total assets*. According to Masihi (2013), the probability of engaging in earnings manipulation decreases as the firm size increases, owing to enhanced external monitoring.
- Second control variable, following Cornett et al. (2009), is capital adequacy (*cap*). It is hypothesized to be negatively associated with earnings management.
- Third control variable, *the ratio between the year-end market value to the year-end book value of equity* (*mkbk*) is the most commonly used measure used in the literature for growth prospects. The higher the value of this ratio, the lower the expected level of earnings management (Cornett et al., 2009).
- Finally, leverage (*lever*), measured as *the ratio of total debt to total common equity*, serves as the fourth control variable used in the study, following Leventis and Dimitropoulos (2012).

To examine the effect of corporate governance reforms, eq. (2) is extended with era dummy variables corresponding to the 2012, 2017, and 2019 revisions of the Code of Corporate Governance:

$$EM_{it} = \gamma_0 + \gamma_1 BODSIZ_{it} + \gamma_2 BODSH_{it} + \gamma_3 BODMET_{it} + \gamma_4 SIZ_{it} + \gamma_5 MKBK_{it} + \gamma_6 LEVER_{it} + \gamma_7 CAP_{it} + \gamma_8 ERA2012_{it} + \gamma_9 ERA2017_{it} + \gamma_{10} ERA2019_{it} + \varepsilon_{m_{it}} \dots (3)$$

where *ERA2012*, *ERA2017*, and *ERA2019* are dummy variables equal to 1 for bank-years falling within or after the respective reform period, and 0 otherwise.

The regression models are pre-tested for multicollinearity, serial correlation, and heteroskedasticity. Following these diagnostics, the appropriate estimator is selected based on the following decision rule: if the Breusch-Pagan LM test indicates significant panel-level variance, the random-effects model is preferred over pooled OLS; if it does not, pooled OLS is appropriate. Among panel models, the Hausman test determines whether fixed or random effects are preferred. Where serial correlation or heteroskedasticity is detected, cluster-robust standard errors are applied regardless of the estimator chosen. As reported in Sections 4.1 and 4.2, these diagnostics yield different estimators for the two dependent variables: pooled OLS with cluster-robust standard errors for EM_1, and random-effects logistic regression for EM_2.

DATA ANALYSIS AND RESULTS

Impact of Board Characteristics on EM_1

The banking datasets are often extremely sensitive to the presence of extreme values, therefore, following steps are undertaken from data cleaning in eq. (1) to estimating the residuals to be used as first proxy of earnings management.

i. Extreme values identified through descriptive statistics are treated by means of winsorisation at the ±3 standard deviation level (Tukey, 1962; Wilcox, 2021). This criterion was preferred over fixed percentile cutoffs given the relatively small sample size in this study.
ii. Next, influential observations are identified in initial regression model and excluded using studentized residuals (Belsley et al., 1980), leverage values (Fox, 2020), and Cook's distance (Cook, 1977). This process ensured that the results are not driven by unusual observations and would produce more robust and consistent estimates in the data. It should be noted that the descriptive statistics are based on 374 observations — the full sample after removing bank-years with missing *LLP* data. The regression uses 315 observations because few observations produce missing values during the studentized residual prediction step, and many observations were removed as high-studentized-residual outliers in the pre-cleaning stage.
iii. Variance inflation factor (VIF) analysis revealed substantial multicollinearity between *lla* and *npa* (VIF>8), consistent with the high correlation expected between these balance-sheet indicators (Akinwande et al., 2015). To address this, a composite index (*comp_index*) was constructed by applying principal component analysis (PCA) to these two variables (Jolliffe & Cadima, 2016). This approach was preferred over arbitrarily dropping one variable because it retains the information from both series while eliminating the collinearity between them. The resulting *comp_index* has a mean VIF of 1.36, confirming that the collinearity problem is resolved. Standardized scores of both *npa* and *lla* were used as inputs to PCA to ensure that the index is not dominated by scale differences between the two variables.

Table 4-1: Regression-Eq. (1)

llp	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
comp_index	.001	0	3.79	0	.001	.002	***
readv	-.03	.019	-1.55	.122	-.068	.008	
diadv	-.03	.017	-1.76	.078	-.063	.003	*
agriadv	-.026	.015	-1.70	.089	-.055	.004	*
conadv	.014	.014	1.02	.306	-.013	.041	
ciadv	-.009	.006	-1.47	.141	-.022	.003	
siz	-.001	.001	-2.16	.031	-.002	0	**
constant	.046	.012	3.96	0	.023	.068	***

Mean dependent var	0.007	SD dependent var	0.008
Overall r-squared	0.170	Number of obs	315
Chi-square	225.350	Prob>chi2	0.000
R-squared within	0.187	R-squared between	0.281

*** p<.01, ** p<.05, * p<.1

iv. Given the panel structure of the dataset, several specification tests are employed. The Wooldridge test (F (1,19)=30.087, p=0.0000) rejected the null hypothesis of no autocorrelation. The likelihood-ratio test (χ^2 (19)=38.45, p=0.0052) indicated heteroskedasticity (Wooldridge, 2010). Accordingly, cluster-robust standard errors at the bank level are applied, as described in Section 3.1. Further, following Breusch and Pagan (1980), the Breusch–Pagan LM test is applied which supported the use of a random effects (RE) model over pooled OLS (χ^2=5.40, p=0.0101). The Hausman test (Hausman, 1978) (χ^2 (7)=10.86, p=0.1450) suggests that RE estimation is appropriate and efficient relative to fixed effects.

As discussed earlier, the impact of board structure is analysed as per eq. (2). Table 4-2 highlights the mean, standard deviation, ranges of the measures used of these variables after applying winsorisation at ± 3 SD criteria.

Table 4-2: Descriptive Statistics of Variables-Eq. (2)

Variable	Obs	Mean	Std. Dev.	Min	Max
bodsiz	301	8.791	1.661	4	13
bodsh	299	4.737	6.562	0	19.842
bodmet	300	6.348	2.085	4	11.5
siz	315	26.858	1.145	24.141	29.526
mkbk	304	1.076	.651	-.424	2.624
lever	315	13.149	4.829	5.529	22.016
cap	315	2.654	1.893	.67	8.957

The impact of board characteristics (*bodsiz*, *bodsh* and *bodmet*) on EM_1 is now analysed. Following the procedure described earlier, influential observations are identified and excluded using studentized residuals, leverage values, and Cook's distance (Belsley at al., 1980). After data cleaning, the model fit remained robust, but with clearer significance emerging for board characteristics.

Table 4-3: VIF-EM_1 & Board Characteristics

Variable	VIF	Tolerance (1/VIF)
siz	1.366	.732
bodmet	1.364	.733
mkbk	1.357	.737
bodsiz	1.284	.779
cap	1.284	.779
lever	1.27	.788
bodsh	1.077	.929
Mean VIF	1.286	

The VIF values (Table 4-3) for all predictors are well below even from the stricter threshold of 5, while tolerance values remain comfortably above 0.2, indicating that multicollinearity is not a concern. The mean VIF of 1.286 further confirms that the explanatory variables are largely independent of one another, ensuring stable coefficient estimates.

Table 4-4 reports the coefficient estimates with cluster-robust standard errors applied at the bank level to correct for serial correlation (Wooldridge test: F(1,17)=19.039, p=0.0004). The likelihood-ratio test for heteroskedasticity was conducted, it did not provide evidence of heteroskedasticity (LR χ^2 (19)=27.11, p=0.1022). The Breusch–Pagan LM test (χ^2=0.00, p=1.000) indicated no evidence of significant random effects in the model. This suggests that the variation across entities is negligible, and a simple pooled OLS regression may be more appropriate than a random effects specification. Similarly, to confirm fixed effects, F-test for individual effects is conducted (F (19, 262)=0.94, p=0.5331), which failed to reject the null hypothesis that all unit-specific effects are equal to zero. Together, these results confirm the absence of both random and fixed individual effects, implying that Panel-specific heterogeneity is not a major concern in this dataset. Therefore, pooled OLS regression is appropriate.

Table 4-4: Regression-EM_1 & Board Characteristics

EM_1	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
bodsiz	-.237	.218	-1.09	.291	-.694	.22	
bodsh	.103	.04	2.57	.019	.019	.188	**
bodmet	-.54	.213	-2.54	.02	-.986	-.094	**
siz	.394	.276	1.43	.17	-.185	.972	
mkbk	-1.945	.539	-3.61	.002	-3.074	-.816	***
lever	.023	.08	0.29	.774	-.144	.19	
cap	1.192	.3	3.97	.001	.564	1.82	***
constant	-7.549	7.104	-1.06	.301	-22.417	7.319	

Mean dependent var	-0.832	SD dependent var	5.319
R-squared	0.116	Number of obs	251
F-test	8.982	Prob>F	0.000
Akaike crit. (AIC)	1535.240	Bayesian crit. (BIC)	1563.444

*** p<.01, ** p<.05, * p<.1

Based on the panel diagnostics, pooled OLS with cluster-robust standard errors is the appropriate estimator for the EM_1 model. Table 4-4 presents these results. *Bodsiz* shows a negative but statistically insignificant association with EM_1 (γ=–0.237, p=0.291), indicating that the association is not statistically significant to draw definitive conclusions. This insignificant association is consistent with the findings of Usman et al. (2024), who report no statistically meaningful relationship between board size and earnings management. From a heuristic bias perspective, the

insignificant effect may reflect coordination frictions and diffusion of responsibility within larger boards, offsetting potential monitoring benefits.

However, *bodsh* has a strong positive and significant correlation with EM_1 (γ=0.103, $p<0.05$). The result is consistent with the suggestion of Kao and Cheng (2007) and Shuaib and Dabor (2025) that increased board ownership could lead to directors' actions that maximize their personal wealth through the reported earnings. As per heuristic bias theory, directors who have significant ownership stake may indulge in self-justification behaviour, which involves rationalizing discretionary accounting decisions that boost short-term performance measures.

This finding could be attributed to ownership concentration effects, apart from opportunistic behaviour. If directors own a significant number of shares, the ownership is concentrated in the hands of the directors, which can reduce the external monitoring that usually exists with dispersed ownership. In these situations, the independence of board oversight may be diminished because of the concentrated ownership of the directors. This concentration-based explanation does not demand that the directors act with conscious self-interest; it simply implies that the governance structure itself offers less external checks in the case where ownership and control are in the same hands. Both explanations are not mutually exclusive: heuristic bias theory is related to the behavioural tendency of self-justification, and ownership concentration is related to the structural conditions in which such behaviour can take place with less external constraint.

The results reveal that *bodmet* has a significant negative relationship (γ=–0.540, $p<0.05$) with managerial discretion in financial reporting, which means that the more often meetings are held, the less managerial discretion in financial reporting. This finding is consistent with prior empirical studies—such as Brick and Chidambaran (2010) and Mensah and Boachie (2023)—that boards that meet more frequently exhibit stronger oversight and improved financial reporting quality. In the Pakistan's banking sector context, Khalil (2022) similarly reports that active board engagement significantly reduces discretionary reporting practices.

The result confirms stakeholder theory, which states that more active boards are related to better protection of stakeholder interests. Furthermore, from a heuristic bias perspective, frequent meetings can lead to more deliberative cognitive processing, which can decrease the reliance on anchoring biases by managers in exercising accounting discretion.

The coefficient of *siz* is positive and not significant (γ=0.394, $p=0.170$), which indicates that larger banks may have more opportunities to engage in earnings management. The earnings manipulation is negatively associated with the *mkbk* (γ=–1.945, $p<0.05$), indicating that banks with greater growth opportunities are less likely to manipulate their earnings, possibly because of greater scrutiny by the market. The relationship between *cap* and EM_1 is positive and significant (γ=1.192, $p<0.05$), which is consistent with the notion that well-capitalized firms can smooth their earnings to convey stability. There was no significant correlation between *lever* and EM_1 in this model (γ=0.023, $p=0.774$)

Overall, the model explains around 11.6% of the variation in earnings management (R^2=0.116). The F-statistic (F=8.982, p<0.001) shows that the explanatory variables are jointly significant. The results indicate that some of the board characteristics such as *bodsh* and *bodmet* have opposing and significant impact on earnings management practices of commercial banks in Pakistan.

This study modifies the baseline model by introducing corporate governance reform period dummies that capture the corporate governance reforms as they were introduced in Pakistan's banking sector in 2012, 2017 and 2019. The inclusion of era-specific dummy variables allows the model to capture regime shifts in regulatory oversight that may have systematically influenced earnings management behaviour across time. The results are reported in the Table 4-5.

Table 4-5: Board Characteristics and EM_1 across Regulatory Reform Eras (2012, 2017 & 2019) in Pakistan's Commercial Banks

EM_1	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
bodsiz	-.211	.186	-1.14	.269	-.6	.177	
bodsh	.05	.026	1.90	.072	-.005	.104	*
bodmet	-.636	.224	-2.84	.01	-1.105	-.168	**
siz	1.428	.408	3.50	.002	.574	2.282	***
mkbk	-2.733	.818	-3.34	.003	-4.445	-1.021	***
lever	.049	.076	0.65	.524	-.11	.208	
cap	.897	.373	2.40	.027	.116	1.678	**
era2012	-3.244	1.212	-2.68	.015	-5.781	-.707	**
era2017	-7.177	1.355	-5.30	0	-10.013	-4.342	***
era2019	-5.017	1.601	-3.13	.005	-8.368	-1.667	***
constant	-30.087	8.764	-3.43	.003	-48.43	-11.744	***

Mean dependent var	-0.832	SD dependent var	5.319
R-squared	0.235	Number of obs	251
F-test	13.939	Prob>F	0.000
Akaike crit. (AIC)	1505.024	Bayesian crit. (BIC)	1543.804

*** p<.01, ** p<.05, * p<.1

The era dummies exhibit strong negative and statistically significant associations with EM_1. *Era2012* (γ=–3.244, p<0.05), *era2017* (γ=–7.177, p<0.01), and *era2019* (γ=–5.017, p<0.01) indicate that bank-years occurring during or after these reform periods are associated with lower levels of accrual-based earnings management. It should be noted that these era dummies capture average level differences across regulatory periods and do not isolate the causal effect of the reforms from concurrent time trends or macroeconomic changes. The associations are therefore interpreted as descriptive evidence that reporting behaviour shifted around the reform periods, consistent with the predictions of stakeholder theory regarding institutional governance frameworks, rather than as causal estimates of reform impact.

Compared to baseline model, some relationships have changed in magnitude and significance. In the baseline model, *bodsh* and *bodmet* were significant, whereas *bodsiz*

was not. Similarly, *mkbk* and *cap* were significant, whereas *siz* and *lever* were not. After controlling for era dummies, *bodsiz* is still negative and insignificant (γ=–0.211, p=0.269). The continuing insignificance reinforces the claim of Usman et al. (2024) that *bodsiz* is not a significant determinant of earnings management.

The relationship between directors' ownership and earnings management is still positive but becomes weakly significant at the 10% level (γ=0.050, p<0.10), as compared to the baseline model (previously significant at 5%). This indicates that there is a need to enhance corporate governance structures to temper opportunism in part. The weakening of statistical significance indicates that regulatory tightening may have curtailed the extent to which ownership concentration enables discretionary reporting, thereby partially mitigating the entrenchment concerns raised by Kao and Cheng (2007) and Shuaib and Dabor (2025). This weakening pattern is also consistent with an ownership concentration interpretation, as regulatory reforms introduce additional external monitoring requirements, the governance gap created by concentrated board ownership is partly compensated for by outside scrutiny, reducing the net effect of insider shareholding on discretionary reporting.

Bodmet remains negatively and significantly associated with EM_1 (γ=–0.636, p<0.01), and its magnitude slightly increases compared to the earlier estimate. The persistence and strengthening of this effect after controlling for regulatory reform periods suggests that board diligence operates as an independent governance mechanism rather than merely reflecting the regulatory pressure. This reinforces the monitoring argument advanced by Brick and Chidambaran (2010) and Mensah and Boachie (2023), confirming that active board engagement remains negatively associated with discretionary reporting practices even in evolving regulatory environments.

Among control variables, *siz* (γ=1.428, p<0.01) becomes strongly positive and highly significant, with a much larger coefficient than in the earlier model. This suggests that once regulatory changes are accounted for, larger banks appear more prone to earnings management. The *mkbk* remains strongly negative and significant (γ=–2.733, p<0.01) confirming that growth opportunities remain negatively associated with earnings manipulation, while *lever* remains insignificant (γ=0.049, p=0.524), consistent with prior results. *Cap* continues to be positive and significant (γ=0.897, p=0.05), although its magnitude decreases slightly compared to the earlier model, indicating that well-capitalized banks may still engage in income smoothing even after accounting for regulatory shifts.

The explanatory power of the model improved substantially after including the era controls. The R^2 increases from 0.116 in the earlier model to 0.235, indicating that approximately 23.5% of the variation in earnings management is now explained. The F-statistic (F=13.939, p<0.001) confirms the overall significance of the model.

Overall, compared to the previous specification, the core governance findings largely hold, i.e., *bodmet* is consistently and negatively associated with earnings management, *bodsh* is weakly and positively associated, and *bodsiz* remains insignificant. However, regulatory era effects play a substantial role in explaining earnings management behaviour, suggesting that governance reforms in Pakistan significantly curtailed opportunistic reporting practices.

Impact of Board Characteristics on EM2

Before turning to the results, it is useful to consider why board characteristics might affect EM_1 and EM_2 differently. EM_1 captures discretionary loan loss provisioning, an ongoing accrual-based judgment that managers exercise incrementally throughout the reporting period. From a heuristic bias perspective, this type of discretion is particularly susceptible to anchoring and overconfidence, as provisioning estimates are built up gradually and are sensitive to managers' running assessment of asset quality. Continuous board engagement—through frequent meetings—is therefore well positioned to interrupt this gradual accumulation of bias, consistent with the strong role of *bodmet* for EM_1. EM_2, by contrast, captures a discrete, end-of-period outcome, whether reported net income falls just above zero. This form of earnings management is less about ongoing estimation bias and more about a final, threshold-driven decision typically made closer to year-end, when the scope for incremental correction through routine meetings is more limited. Stakeholder theory suggests that constraining this type of behaviour instead requires breadth of oversight capable of scrutinising the full set of year-end choices—accruals, provisioning, and classification decisions together—a function more closely associated with board size than with meeting frequency alone. This distinction provides a theoretical basis for expecting *bodmet* to be more relevant to EM_1 and *bodsiz* to be more relevant to EM_2, a pattern borne out in the results that follow.

The impact of selected board characteristics is analysed on EM_2. Tables 4-6 and 4-7 indicate that multicollinearity and heteroskedasticity is not a concern for the model, whereas serial correlation is present in the dataset. Table 4-8 indicates that the random-effects specification is the most suitable estimation approach for this logistic regression model.

Table 4-6: VIF-EM_2 & Board Characteristics

Variable	VIF	Tolerance (1/VIF)
siz	1.427	.701
mkbk	1.361	.735
cap	1.359	.736
bodmet	1.292	.774
bodsiz	1.257	.795
lever	1.246	.802
bodsh	1.084	.923
Mean VIF	1.29	

Table 4-7: Panel Diagnostics-EM_2 & Board Characteristics

Wooldridge test for autocorrelation	Likelihood-ratio test
H_0: no first-order autocorrelation	LR $chi^2(19)$ = -1936.49
F(1,19) = 12.186	(Assumption: (nested in hetero)
Prob>F = 0.0024	Prob>chi2 = 1.0000

Note: The negative chi-square value (−1936.49) is a Stata output artefact specific to the likelihood-ratio heteroskedasticity test for panel logistic models, arising when the constrained (homoscedastic) model has a higher log-likelihood than the unconstrained alternative. A negative value indicates that the null hypothesis of homoskedasticity is not rejected, consistent with the p-value of 1.000. Heteroskedasticity is therefore not a concern in this model.

Table 4-8: Estimation Choice-EM_2 & Board Characteristics

Breusch–Pagan LM test	Hausman test
chibar2(01) = 25.11 Prob > chibar2 = 0.0000	H_0: difference in coefficients not systematic chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 7.72 Prob>chi2 = 0.3579

Table 4-9: Descriptive Statistics of EM_2 & Board Characteristics

Variable	Obs	Mean	Std. Dev.	Min	Max
spos	373	.327	.47	0	1
bodsiz	359	8.694	1.612	4	13
bodsh	353	4.433	6.411	0	19.834
bodmet	353	6.501	2.208	4	12
siz	378	26.62	1.257	24.141	29.526
mkbk	360	1.067	.638	.283	2.619
lever	378	12.895	5.789	2.914	25.162
cap	377	2.582	2.511	.327	16.367

Table 4-9 reports the descriptive statistics of the dependent, independent and control variables used in the model to check the impact of selected board characteristics on EM_2.

Based on the panel diagnostics reported in Tables 4-7 and 4-8, random-effects logistic regression is the appropriate estimator for the EM_2 model. Table 4-10 presents these results. Among the board characteristics, *bodsiz* (γ=–0.355, p=0.057) has a significant negative association with EM_2. This coefficient corresponds to an odds ratio of exp(−0.355) = 0.70, indicating that each additional board member is associated with approximately a 29.9% reduction in the odds of engaging in threshold-based earnings management, holding other variables constant. This finding supports the argument that larger boards are associated with a lower likelihood of threshold-based earnings management (Beasley & Salterio, 2001; Muthuswamy & Nasrulla, 2023). Unlike the

significant effect observed for EM_1, the significant negative association here suggests that *bodsiz* is more effective in constraining strategic loss-avoidance behaviour than discretionary loan-loss provisioning decisions. From a stakeholder theory perspective, broader board representation enhances monitoring and scrutiny in periods when firms face incentives to avoid reporting losses.

The insignificant effect of *bodsh* (γ= –0.014, p=0.607) corresponds to an odds ratio of exp(−0.014) = 0.99, indicating that a one-unit increase in board shareholding is associated with only about a 1.4% reduction in the odds of engaging in *SPOS*-type earnings management. However, this relationship is not statistically significant. This contrasts with the positive association observed under EM_1 and suggests that *bodsh* may influence accrual-based discretion more than threshold-based loss avoidance. This partially contradicts the entrenchment concerns raised by Kao and Cheng (2007) and Shuaib and Dabor (2025), indicating that *bodsh* does not significantly influence *SPOS*-type earnings management in this context.

Table 4-10: Random-Effects Logistic Regression-EM_2 & Board Characteristics

spos	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
bodsiz	-.355	.186	-1.91	.057	-.719	.01	*
bodsh	-.014	.028	-0.51	.607	-.07	.041	
bodmet	-.035	.102	-0.35	.727	-.235	.164	
siz	-.931	.212	-4.40	0	-1.345	-.516	***
mkbk	-2.259	.401	-5.63	0	-3.045	-1.473	***
lever	.284	.058	4.90	0	.17	.397	***
cap	.179	.207	0.87	.387	-.226	.584	
constant	25.169	6.121	4.11	0	13.173	37.166	***

Mean dependent var	0.348	SD dependent var	0.477
Number of obs	316	Chi-square	46.208
Prob>chi2	0.000	Akaike crit. (AIC)	296.169

*** *p<.01*, ** *p<.05*, * *p<.1*

Although prior studies such as Brick and Chidambaran (2010) and Mensah and Boachie (2023) document that *bodmet* improves financial reporting quality, the insignificant association here (γ=–0.035, p=0.727) corresponds to an odds ratio of exp(−0.035) = 0.97, implying that each additional board meeting is associated with approximately a 3.4% reduction in the odds of engaging in threshold-based earnings management. Nevertheless, because this relationship is statistically insignificant, the evidence suggests that *bodmet* may be more effective in constraining accrual-based earnings management (EM_1) than strategic income threshold management captured by *SPOS*.

For the control variables, *siz* (γ=–0.931, p=0.000) corresponds to an odds ratio of exp(−0.931) = 0.39, indicating that a one-unit increase in bank size is associated with approximately a 60.6% reduction in the odds of engaging in threshold-based earnings management. Likewise, *mkbk* (γ =–2.259, p=0.001) corresponds to an odds ratio of exp(−2.259) = 0.10, suggesting that a one-unit increase in the market-to-book ratio is

associated with approximately an 89.6% reduction in the odds of engaging in *SPOS*-type earnings management. These findings indicate that larger and more highly valued banks are subject to stronger market discipline and regulatory scrutiny, thereby reducing the likelihood of threshold-based earnings management. Cap is not found to be statistically significant (γ=0.179, p=0.387). The estimated coefficient corresponds to an odds ratio of exp(0.179) = 1.20, indicating approximately 19.6% higher odds of engaging in threshold-based earnings management; however, this relationship is not statistically significant. By contrast, *lever* is positive and highly significant (γ=0.284, p<0.001). This coefficient corresponds to an odds ratio of exp(0.284) = 1.33, indicating that a one-unit increase in leverage is associated with approximately 32.8% higher odds of engaging in threshold-based earnings management, suggesting that higher debt levels may create incentives for earnings management.

Overall, the results indicate that larger boards and stronger market valuation are associated with significantly lower odds of engaging in threshold-based earnings management (EM_2), whereas higher leverage is associated with greater odds of such behaviour.

The results from the random-effects logit regression including era dummies (Table 4-11) show that certain board and control variables remain significantly negatively associated with earnings management.

Table 4-11: Board Characteristics and EM_2 across Regulatory Reform Eras (2012, 2017 & 2019) in Pakistan's Commercial Banks

spos	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
bodsiz	-.389	.188	-2.07	.038	-.757	-.021	**
bodsh	-.009	.03	-0.31	.76	-.067	.049	
bodmet	-.086	.104	-0.82	.411	-.29	.119	
era2012	.266	.587	0.45	.65	-.884	1.416	
era2017	1.707	.837	2.04	.041	.067	3.347	**
era2019	-.411	.852	-0.48	.629	-2.081	1.258	
siz	-.946	.371	-2.55	.011	-1.675	-.218	**
mkbk	-2.792	.475	-5.88	0	-3.722	-1.861	***
lever	.303	.06	5.06	0	.186	.421	***
cap	.201	.201	1.00	.316	-.192	.595	
constant	26.153	9.459	2.76	.006	7.614	44.692	***

Mean dependent var	0.348	SD dependent var	0.477
Number of obs	316	Chi-square	47.979
Prob>chi2	0.000	Akaike crit. (AIC)	287.616

*** *p<.01*, ** *p<.05*, * *p<.1*

Bodsiz remains negative and becomes more statistically significant (γ=–0.389, p=0.038). This coefficient corresponds to an odds ratio of exp(−0.389) = 0.68, indicating that each

additional board member is associated with approximately a 32.2% reduction in the odds of engaging in threshold-based earnings management. The strengthening of this association during the corporate governance reform periods suggests that regulatory improvements may have enhanced the effectiveness of board structures, reinforcing stakeholder theory's prediction that internal governance mechanisms operate more effectively within stronger institutional environments.

Among the control variables, *mkbk* (γ=–2.792, p<0.001) remains strongly negative. The estimated coefficient corresponds to an odds ratio of exp(−2.792) = 0.06, indicating approximately a 93.9% reduction in the odds of engaging in threshold-based earnings management. The remaining board and control variables exhibit results that are broadly consistent with the baseline model.

Focusing on to the era dummies, *era2017* shows a positive and statistically significant effect (γ=1.707, p =0.041). This coefficient corresponds to an odds ratio of exp(1.707) = 5.51, indicating that, relative to the reference period, banks operating during the 2017 regulatory era had approximately 451% higher odds of engaging in threshold-based earnings management. This finding contrasts with the strong negative association observed for the same reform period under EM_1, , suggesting that while the reforms may have constrained accrual-based earnings management, they were associated with a higher likelihood of income-threshold management as measured by *SPOS*. One plausible interpretation is a substitution effect: as the 2017 reforms tightened oversight of discretionary accrual estimates such as loan loss provisioning, managers seeking to avoid reporting losses may have shifted toward threshold-based income management, a channel not directly targeted by provisioning-related governance requirements. Under this interpretation, the result reflects sample-period characteristics specific to the years surrounding the 2017 reform—such as macroeconomic or sector-wide conditions affecting bank profitability—rather than the reform itself inducing more threshold management. Given that this result is based on a single era dummy within one model specification, it should be treated as an indicative rather than conclusive finding, and we flag it as a candidate for further investigation in future research using more granular, year-by-year reform-window analysis. *Era2012* and *era2019* are both statistically insignificant for EM_2, suggesting that this pattern is specific to the 2017 reform period rather than a general feature of regulatory tightening.

Overall, the contrasting results across EM_1 and EM_2 indicate that board characteristics influence different forms of earnings management in distinct ways. Consistent with the theoretical reasoning outlined above, *bodmet*—reflecting continuous monitoring—is effective against discretionary provisioning (EM_1), a gradually accumulated form of accrual bias, while *bodsiz*—reflecting breadth of oversight—appears more relevant in loss avoidance behaviour (EM_2), a discrete year-end reporting outcome. This distinction reinforces the view, drawn from heuristic bias theory, that different board attributes correct different stages and forms of managerial judgment, and stresses the importance of employing multiple proxies to capture the multidimensional nature of earnings management.

DISCUSSION

Implications

The results of this study validate the stakeholder theory and heuristic bias theory. Consistent with stakeholder theory, board meetings and board size—reflecting, respectively, monitoring intensity and breadth of representation—are associated with lower earnings management, indicating that boards which engage more actively or represent a wider range of perspectives better serve the interests of depositors, shareholders, and regulators. Consistent with heuristic bias theory, the findings suggest that certain board configurations — particularly those involving high director ownership — may not only fail to correct managerial cognitive biases but actively reinforce them, as directors with strong personal interests in reported outcomes are less likely to challenge discretionary accounting estimates. Conversely, frequent board meetings appear to create deliberative conditions that interrupt the anchoring and overconfidence shortcuts that characterise heuristic-driven provisioning decisions. These behavioural interpretations, while not directly testable with archival data, provide a theoretically coherent account of why governance structures matter for reporting quality beyond standard monitoring explanations. The contrasting results across EM_1 and EM_2 further indicate that these two theoretical mechanisms—monitoring and behavioural correction—operate with different strength depending on whether the form of earnings management is accrual-based or threshold-based. These findings, discussed in detail below, carry several implications.

i. The finding that board meeting frequency is negatively associated with accrual-based earnings management (γ=–0.540, $p<0.05$) while board size with threshold-based earnings management (γ=–0.355, $p<0.10$) suggests that different governance mechanisms serve different oversight functions. Regulators and board designers should not treat governance attributes as interchangeable: increasing meeting frequency may more effectively address provisioning discretion, while expanding board size may be more relevant for preventing year-end income threshold manipulation. Consistent with heuristic bias theory, board size and the frequency of meetings will only strengthen corporate governance when board members contribute substantial expertise capable of correcting, rather than reinforcing, managerial judgment biases. Governance design should therefore consider not only structural attributes but also the cognitive and incentive environment they create for directors.
ii. For regulators, the message is twofold. Revisions in the codes is negatively associated with provision-based manipulation, consistent with stakeholder theory's emphasis on the role of institutional governance frameworks in protecting depositor and shareholder interests, but the positive association observed between the 2017 reform period and threshold-based earnings management (γ=1.707, $p<0.05$) suggests that tightening one reporting margin may shift managerial discretion toward another. Rules must therefore be paired with monitoring of alternative windows of manipulation. Regulators should require clearer disclosure of provisioning policies, fuller notes on securities gains and

losses, and closer supervision of realised trading outcomes, particularly around periods of regulatory transition when substitution effects of this kind may be most likely to emerge.

iii. The positive association between board shareholding and accrual-based earnings management (γ=0.103, $p<0.05$) suggests that concentrated director ownership does not align director interests with those of external stakeholders in the Pakistani banking context; rather, it appears to be associated with increased discretionary reporting. Provisioning, an ongoing accrual-based judgment, and threshold smoothing, a discrete year-end outcome, respond differently because they draw on different forms of managerial discretion and require different forms of board oversight, a distinction that reflects the complementary roles of stakeholder-based monitoring and behavioural correction emphasised throughout this study. Governance codes should consider not only requiring director shareholding to align incentives, as is common in ownership-alignment arguments, but also specifying thresholds above which ownership concentration may itself become a governance risk, particularly in banking sectors where depositor protection depends on reporting accuracy.

Contributions of the Research Study

This study contributes to the existing literature in the following ways:

i. First, most of the studies in this field have been conducted in the developed economies or the MENA region, and there is limited evidence from bank-based financial systems such as Pakistan. This study examines the relationship between board characteristics and earnings management in a relatively under-researched area, namely commercial banks in Pakistan, by analysing the characteristics of boards of commercial banks in Pakistan.
ii. Second, unlike earlier works in Pakistan, this study evaluates two different proxies for earnings management. This not only validates the findings but also provides a richer understanding of the phenomenon.
iii. Prior studies in Pakistan focused on agency conflicts, this research shows that boards aligned with stakeholders' interests curb earnings management.
iv. Understanding heuristic biases in board decision making provides a behavioural perspective to enhance government practices in Pakistan.
v. Finally, the study evaluates effectiveness of successive revisions to Pakistan's Code of Corporate Governance— in 2012, 2017 & 2019—in curbing earnings management.

Limitations

This study is useful in the existing literature on board characteristics and earnings management in the context of commercial banks in Pakistan, but it has its limitations. Acknowledging these boundaries provides a more transparent and reflexive basis for interpreting the results and guiding future research.

i. The results cannot be extrapolated to other parts of the financial sector, including microfinance institutions, or non-banking financial companies, which may have different governance structures and income patterns.

ii. While the panel spans 19 years (2005–2023), some variables had missing observations in certain years due to incomplete disclosures in annual reports. Although care is taken to address this through panel modelling, the completeness of the dataset varied across banks and time periods.
iii. The era dummy variables used to capture regulatory reform effects cannot isolate the causal impact of the 2012, 2017, and 2019 Code of Corporate Governance revisions from concurrent time trends or macroeconomic developments. A more rigorous identification of reform effects would require difference-in-differences designs with suitable control groups or regression discontinuity approaches applied to reform dates, which are not feasible within the current dataset structure.
iv. The use of estimated residuals from the first-stage *LLP* regression as the dependent variable in the EM_1 model is a standard but acknowledged limitation of two-step earnings management designs. Potential measurement error in the constructed EM_1 measure and possible endogeneity between board governance quality and unobserved provisioning determinants should be considered when interpreting the findings.
v. Another limitation lies in the use of proxy variables to measure earnings management and board characteristics. Proxies like loan loss provisions and small positive net income are commonly employed but may not accurately reflect the underlying managerial intent or the informal methods by which earnings management is achieved. Similarly, board characteristics are based on quantitative disclosures, which may not reflect actual behaviour. These variables, while statistically measurable, might not capture qualitative dimensions like board culture, or interpersonal influence, the aspects which may strongly shape earnings management but are not observable in financial statements.

Future Directions for Research

The study indicates some fruitful directions for future researchers interested in this area of research:

i. Analysis can be expanded to cover non-listed banks and other financial institutions. Cross-country comparisons may be studied which have endorsed similar corporate governance mechanisms.
ii. Further proxies could be identified and tested for a possible complete coverage of earnings management phenomenon.
iii. Complete focus should be on the new developments in the codes or regulatory changes after 2019. These changes may be studied and their effect analysed on earnings management practices.
iv. Future research could employ difference-in-differences or event-study designs to more rigorously estimate the causal effect of Pakistan's corporate governance reforms on earnings management, using cross-sectional variation in governance exposure or pre-reform trends as identifying variation.

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