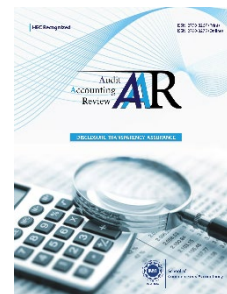
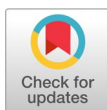


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- Author (s):** Khawaja Aftab Qadir Kant^{1,2} and Attaullah Shah¹
- Affiliation (s):** ¹University of Azad Jammu & Kashmir, Muzaffarabad, Pakistan
²Institute of Management Sciences, Peshawar, Pakistan
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Multi-proxy Investigation of Earnings Management under Diverse Ownership Structures in Pakistan's Commercial Banks

Khawaja Aftab Qadir Kant^{1*}  and Attaullah Shah²,

¹Institute of Management Sciences, University of Azad Jammu & Kashmir, Muzaffarabad, AJ&K, Pakistan

²Institute of Management Sciences, Peshawar, Pakistan

Abstract

The current study empirically examined the effect of government, institutional, and foreign ownership on earnings management (EM) in Pakistan's commercial banking sector. A panel dataset, covering scheduled commercial banks listed on the Pakistan Stock Exchange (PSX) from 2005–2023, was analysed using Pooled Ordinary Least Squares (Pooled OLS), fixed-effects, random-effects, and logistic random-effects models. The current study measured EM using proxies of loan loss provisions (LLP), securities gains and losses, and the frequency of small positive net income (SPNI). Furthermore, the research evaluated how ownership structures function as monitoring mechanisms to constrain specific forms of opportunistic managerial behaviours. The results indicated that institutional ownership is significantly associated with the two proxies of EM, that is, LLP and securities gains and losses. In contrast, government and foreign ownership exhibited a significant relationship only with the proxy capturing the SPNI. The findings suggested that the relationship between ownership structures and EM is sensitive to the choice of EM proxy. The study contributed to the corporate governance (CG) literature by highlighting the proxy-sensitive nature of ownership-based monitoring. Moreover, the study also provided practical insights for regulators and policymakers to design more targeted and effective CG frameworks within the banking sector.

Keywords: earnings management, frequency of small positive net income, ownership structures, institutional ownership, loan loss provisions

JEL Codes: C33, G21, G28, G32, G34, M41.

Introduction

Modern-day economic systems have two dominant structures (Wang & Ma, 2009). The primary difference in these two systems is the financial

*Corresponding Author: phd181811435@imsciences.edu.pk

School of Commerce and Accountancy

instruments offered and the institutions facilitating financial intermediation. Market-oriented systems emphasise direct financing through equity markets, whereas bank-oriented financial systems involve banks issuing and holding contingent claims for borrowers and lenders (Scholtens, [1997](#)). Developed economies are characterised by market-oriented systems, whereas bank-oriented systems are prevalent in emerging economies. Policymakers, therefore, place considerable emphasis on commercial banks due to their role in financial growth in emerging economies (Wu et al., [2016](#)). As a result, banking sector has experienced substantial growth over time. Still, the reliability of financial reporting remains a key concern. Financial statements may be manipulated through earnings management (*EM*) and thus fail to present true business performance (Leuz et al., [2003](#)). Thus, these statements may mislead investors and undermine informed decision-making.

EM, therefore, has become a major research area within the financial reporting literature. Schipper ([1989](#), p.92) defined it as “*purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain*”. Dechow and Skinner ([2000](#)) further distinguished EM from fraudulent reporting by explaining that it involves the use of accounting discretion to influence reported earnings while remaining within the bounds of generally accepted accounting principles. Considering its ethical and informational implications, it has attracted increasing attention from standard setters, accounting professionals, and regulators in particular. In Pakistan, this issue has been explicitly addressed through Prudential Regulation O-2 by the State Bank of Pakistan (*SBP*) under the heading Window Dressing as:

“Banks/DFIs shall refrain from adopting any measures or practices whereby they would either artificially or temporarily show an ostensibly different position of bank’s/DFI’s accounts as given in their financial statements. Particular care shall be taken in showing their deposits, MCR, non-performing loans/assets, provisioning, profit, inter-branch, and inter-bank accounts, or any other method to artificially inflate balance sheet or show improved profitability” (State Bank of Pakistan, [2024](#), pp. 16–17).

Prior literature suggests that corporate governance (CG) mechanisms are effective in constraining managers from engaging in EM (Nguyen et al., [2024](#)). Tricker ([2015](#)) explains CG as the way organisations are directed, controlled, and held accountable, including the distribution of rights and

responsibilities among different participants, such as the board, managers, shareholders, and other stakeholders. Empirical studies demonstrate that effective CG mechanisms are instrumental in discouraging EM behaviour, particularly within the banking sector (Biswas et al., [2022](#)).

This relationship is most significant in emerging economies, such as Pakistan, where CG mechanisms have been evolving in response to global best practices. A CG system can constrain managers from EM by (a) constant monitoring of managers' actions, and (b) bringing into line their interests with those of shareholders (García-Meca & Sánchez-Ballesta, [2009](#)).

Following the broader discussion of CG and its role in constraining EM, recent studies have increasingly focused on ownership structures as key CG mechanisms in emerging economies. However, there is limited empirical evidence from the banking sector in Pakistan. Most studies have examined one ownership attribute, not considering the interaction between different ownership patterns, or employ only one proxy as an EM measure. Shah et al. ([2024](#)), for example, identified that EM in Pakistani firms is mostly opportunistic, which indicates the weakness of the CG effectiveness. Similarly, Bashir et al. ([2024](#)) found that the impact of ownership structure on EM is not consistent, indicating that monitoring mechanisms are not the same across all ownership structures.

This evidence indicates that it is not yet clear whether ownership structures always limit EM or whether they do so to a greater or less extent depending on the dimensions of managerial discretion. This ambiguity is even more important in Pakistan's financial system which is dominated by banks and is in the process of developing regulatory oversight and CG mechanisms. These findings highlight the need for a more holistic and multidimensional approach to understanding EM in Pakistan.

EM remains a constant threat in the commercial banking system in Pakistan that may conceal banks' true financial position. Ownership structures are considered monitoring mechanisms, but their effectiveness in consistently limiting managerial discretion under institutional, government and foreign ownership seem limited. This brings into question the effectiveness of CG. It also emphasizes the need to recognize which ownership structures are better suited to limit EM and provides practical guidance for regulatory oversight.

In this context, the present study has examined the detailed relationship between ownership structure and EM in the banking sector of Pakistan using various ownership dimensions and three proxies of EM. In doing so, the study attempted to reconcile inconsistencies observed in earlier studies and to determine which ownership structures are relatively more effective in constraining EM. This offered context-specific insights for policymakers and regulators. To achieve this, EM was evaluated using loan loss provisions (*LLP*), realised securities gains and losses (*RSGL*), and frequency of small positive net income (*SPNI*), thereby reflecting its multi-dimensional character. The study further explored the role of government, institutional, and foreign ownership under different measures of EM. This allowed for an assessment of whether CG mechanisms operate consistently or differ depending on the proxy used.

Literature Review

The current study integrated *agency* and *positive accounting* theories to help understand the effect of ownership structures on EM in Pakistan's commercial banks. Together, these theories explain managers' financial reporting discretion and the role of effective CG mechanisms in constraining such behaviour.

The significance of CG is derived from *agency theory*. This theory describes that an agency issue arises between shareholders and managers when managers, who are expected to act in the interests of shareholders, often serve their own interests first. Owing to the separation of ownership and control, managers possess decision-making authority that allows them to prioritise personal objectives, sometimes to the detriment of the shareholder value. The situation worsens when there is a misalignment of goals (Jensen & Meckling, [1976](#)). Effective CG mechanisms are therefore required to align managerial actions with shareholders' interests and to limit opportunistic behaviour.

EM is a complicated concept that contributes to changing the reflection of financial reporting without crossing the legal boundaries. Many theories explain the motives for EM, how it is executed, and the circumstances where it is likely to occur. This study examined the phenomena of EM as described by the *positive accounting theory*. The financial reports are not merely operational summaries but also reflect choices in accounting procedures. These accounting choices depend on contractual arrangements.

The theory further argues that managers are motivated to alter accounting information in order to maximise contract-dependent bonuses or meet reporting targets (Watts & Zimmerman, [1978](#)). As such, this theory helps to logically understand the managerial incentives behind financial reporting choices.

Proxies for Earnings Management (EM)

Several proxies are used in the literature to analyse EM practices. These proxies identify patterns and indicate managerial discretion in financial reporting.

In the banking sector, LLP and RSGL are generally accepted as effective measures for EM. Both techniques offer discretion that ultimately shapes reported outcomes. Reserves maintained by banks to cover defaulted loans and expected bad debts fall under LLP. RSGL reflects gains or losses arising from the sale of investment securities. LLP allows managers to increase provisions in profitable years in order to reduce income and release these reserves in loss-making years to inflate earnings. Similarly, RSGL allows managers to realise gains during low profitability or defer losses to minimise impact. Together, these mechanisms enable banks to smooth earnings.

Anandarajan et al. ([2003](#)) established that banks utilize LLP as a tool to influence reported earnings. Their study revealed that the condition aggravates when banks are operating in emerging economies where transparent regulatory settings are weak. The study of U.S. commercial banks by Cornett et al. ([2009](#)) revealed that both LLP and RSGL are frequently used to manage earnings.

The study also employed LLP as the first proxy, given its general acceptance in the literature (Elnahass et al., [2018](#)). RSGL, in combination with LLP (Cornett et al., [2009](#)), was employed as the second proxy.

SPNI was used as the third proxy in the study. Burgstahler and Dichev ([1997](#)), pioneers in this area, noticed a gap in the data streams of earnings around *zero*. They concluded that firms tend to cluster just-above-zero profits instead of negative earnings. Thus, a deviation from normal distribution was observed in the data. This evidence provided solid grounds for using SPNI as another credible proxy of EM. Glaum et al. ([2004](#)) also observed a pattern where earnings cluster just-above-zero, supporting the applicability of SPNI across different geo-economic settings. Accordingly,

SPNI was employed as the third proxy.

The selection of these proxies was guided by both sector-specific relevance and methodological considerations. Unlike non-financial firms, banks operate in a regulated environment where traditional accrual-based approaches may not fully capture discretionary behaviour due to the unique nature of banking accruals (Beatty & Liao, [2014](#)). In this context, LLP and RSGL are widely recognized as more direct measures of managerial discretion in banks, as they are closely linked to lending and investment activities (Anandarajan et al., [2003](#); Cornett et al., [2009](#); Leventis & Dimitropoulos, [2012](#)). Furthermore, the inclusion of SPNI complements these measures by capturing distribution-based earnings manipulation (Burgstahler & Dichev, [1997](#); Glaum et al., [2004](#)). Overall, employing multiple proxies mitigates the limitations associated with any single measure and provides a more comprehensive and robust assessment of EM (Gokhale & Pillai, [2024](#); Leuz et al., [2003](#)).

Ownership and Earnings Management (EM)

Ownership structures have a significant impact on the distribution of control, oversight and decision-making power in firms. These are important factors in shaping the quality of financial reporting. Ownership structures can either improve transparency or, on the other hand, provide a pathway for opportunistic behaviour, especially in the case of EM.

Government Ownership

The literature on government ownership presents two contrasting views, namely the *development* and the *political* view. According to the *political* view, there is political interference that might cause inefficiency in the government-owned banks. In such circumstances, managers may engage in EM to satisfy political or career-related incentives. For instance, Pan et al. ([2024](#)) examined government-owned banks and concluded that managerial career concerns and political pressures increase the likelihood of EM in these banks. Some recent studies suggest that this effect is not always clear. For instance, Nurhayati and Arifin ([2024](#)) reported that government ownership showed no statistically meaningful association with EM.

On the contrary, according to the *development* view, the government monitors banks to ensure stability and public interest. Banks, thus, abstain from EM due to less pressure from capital markets in order to meet interim earnings expectations. Supporting this perspective, Gao et al. ([2023](#)) found

that stronger state protection mechanisms in state-owned enterprises are associated with lower levels of EM. Similarly, Aljuhani et al. (2024) observed that government ownership may act as a CG mechanism that mitigates EM by reducing agency conflicts. Nonetheless, studies also suggest that the impact of government ownership in constraining EM is highly context dependent. For instance, Ruggiero et al. (2022) argued that EM in state-owned enterprises is influenced by public accountability and political objectives, which may either constrain or incentivize managerial discretion. Similarly, Alghemary et al. (2024) showed that ownership structures, including state ownership, interact with the national governance mechanisms to influence EM. These findings indicate that the monitoring role of government ownership is contingent upon institutional and governance environments. In the light of this discussion, the hypothesis can be stated as:

H₁: Government ownership has an inverse relationship with EM in Pakistan's commercial banks.

Institutional Ownership

In this ownership pattern, shares are held by legal entities. These entities manage money on behalf of others. These are generally seen as the stakeholders capable of reducing managerial discretion. Institutional owners possess the financial resources, expertise, and voting power to oversee bank management effectively and are, therefore, expected to reduce EM (Ackah et al., 2024; Al-Duais et al., 2021).

Research studies generally support the monitoring role of institutional ownership, finding that firms with high institutional holding report higher quality earnings (Ali et al., 2024). In countries with strong investor protection and disclosure requirements, institutional ownership effectively curtails EM (Miller et al., 2021). Bashir et al. (2024) reinforced these findings, indicating that high institutional ownership reduces EM in Pakistan. Parwar et al. (2021) also suggested that mutual funds, and particularly foreign institutional investors, are effective in curtailing EM in Pakistan. In addition, research suggests that the monitoring effectiveness of institutional ownership varies under different institutional environments. Wang and Wang (2021), for instance, argued that the effectiveness depends on market conditions, incentives, and overall CG structure.

Conversely, evidence also shows that institutional shareholders may, at

times, facilitate earnings manipulation to safeguard their investment interests. In such situations, institutional investors may support managerial actions that temporarily inflate financial performance. For instance, Susbiyani et al. (2023), examining banking firms, found that institutional ownership has a significant positive effect on EM. Similarly, Hidayah et al. (2024) suggested that such investors may pressurise managers to report favourable financial results in Indonesian banking sector.

Based on the monitoring role, institutional investors are expected to strengthen CG and discourage EM. Therefore, the following hypothesis was proposed:

H₂: Institutional ownership has an inverse relationship with EM in Pakistan's commercial banks.

Foreign Ownership

Gokhale and Pillai (2024) highlighted that foreign ownership is an important determinant of EM in emerging economies. Their influence on the extent of EM behaviours has also produced mixed empirical evidence in recent studies. Emerging evidence suggests that foreign ownership may be positively associated with EM. Evidence from Pakistan supports this positive association, suggesting that the monitoring role of foreign shareholders may be weak in emerging markets (Parveen et al., 2016). Pham and Hoang (2025) also suggested that although foreign ownership may initially constrain EM, higher shareholding levels are associated with greater earnings manipulation.

At the same time, other studies suggest that foreign shareholders tend to demand higher financial transparency and compliance with international standards, thereby enhancing monitoring and improving reporting quality. For instance, Rehman et al. (2023) demonstrated that long-term foreign investors significantly constrain EM across international markets by strengthening external monitoring mechanisms. Supporting this view, Othmani (2022) highlighted that foreign shareholders act as good *monitors* and improve bank performance and the quality of internal governance. Similarly, Hong et al. (2023) highlighted that the impact of foreign investors depends on national governance structures to enhance financial reporting quality.

The monitoring role of foreign investors remains an empirical question in the context of Pakistan's banks given these mixed findings. Therefore,

the following hypothesis was proposed based on the empirical evidence from Pakistan that aligns with the first argument:

H₃: Foreign ownership has a positive relationship with EM in Pakistan's commercial banks.

Studies during the recent period (2021–2025) provide key insights but the relationship between ownership structures and EM remains far from uniform. The impact of government ownership on EM depends on political and institutional pressures; the monitoring effectiveness of institutional ownership varies across different market settings; and foreign ownership tends to improve reporting quality when supported by strong national CG frameworks. Empirical evidence still remains limited in bank-dominated emerging economies, such as Pakistan.

Methodology

The current study employed panel data regression to analyse the data. The population comprised all 25 commercial banks recognised as scheduled banks in Pakistan. To ensure the inclusion of only those banks subject to regular financial disclosure requirements, the sample was restricted to the 20 banks listed on the Pakistan Stock Exchange (PSX) as of December 31st, 2023. Data on CG variables was available only from 2005 onwards; accordingly, the final sample consisted of 20 commercial banks observed over 19 years (2005–2023), resulting in 380 bank-year observations.

The sample period coincided with a phase of mergers and acquisitions (*M&A*) in Pakistan's banking sector, during which a limited number of banks engaged in such activities. To mitigate potential survivorship bias and structural inconsistencies, banks involved in *M&A* events were included based on their operational statuses in each year. Pre-merger entities were retained as separate units up to the year of merger, whereas post-merger observations were attributed to the continuing or acquiring entity.

Bank-level data was collected directly from annual reports available on the official websites of the respective banks. Share price data was obtained from these reports and cross-verified with the official PSX database, which serves as a secondary source for validating market-based variables. Bank-years with incomplete information were excluded to ensure consistency in the empirical analysis.

Econometric Modelling

The first two proxies followed the approach of Leventis and Dimitropoulos (2012). The first proxy, EM_1 , was obtained as the residual of Eq. (1):

$$LLP_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 LLA_{it} + \beta_3 COA_{it} + \beta_4 DIA_{it} + \beta_5 AGA_{it} + \beta_6 INA_{it} + \beta_7 ICA_{it} + \beta_8 SIZ_{it} + \varepsilon_{it} \quad (1)$$

(Variables explained in Table 1)

For the second proxy, EM_2 , the discretionary component of LLP ($DLLP$) was standardised as shown in Eq. (2):

$$DLLP_{it} = (\varepsilon_{it} * ADV_{it}) / ASSETS_{it} \quad (2)$$

The discretionary realised securities gains and losses ($DRSGL$) were obtained as the residual of Eq. (3):

$$RSGL_{it} = \alpha_0 + \alpha_1 SIZ_{it} + \alpha_2 URSGL_{it} + \varepsilon_{2it} \quad (3)$$

Finally, the second proxy for EM was calculated as described in Eq. (4):

$$EM_{2it} = DRSGL_{it} - DLLP_{it} \quad (4)$$

Here, $DRSGL$ is the residual of Eq. (3).

The third proxy, $SPNI$, was estimated following Burgstahler and Dichev (1997). Once computed, $SPNI$ was incorporated into the model as EM_3 .

The regression model testing the impact of ownership structures on EM is presented in Eq. (5). This model is based on Cornett et al. (2009), and was first estimated using EM_1 , followed by EM_2 and EM_3 . The independent variables remained unchanged for all three specifications.

$$EM_{it} = \gamma_0 + \gamma_1 GOVOWN_{it} + \gamma_2 INSOWN_{it} + \gamma_3 FOROWN_{it} + \gamma_4 \sum_{j=4}^7 Z_j + e_{mit} \quad (5)$$

Here, Z represents the set of control variables, and m varies according to the specific EM proxy used in the model.

The choice of methodology was further supported by the structure of the dataset, which consisted of repeated observations for the same banks over time. Panel data regression was therefore appropriate. This is because it

captures both cross-sectional and time-series variation while controlling for unobserved bank-specific heterogeneity that may otherwise bias the estimates (Petersen, 2009; Wooldridge, 2010). To ensure robustness, multiple model specifications were employed, including pooled OLS, fixed-effects, random-effects, and logistic random-effects models. The selection among these models was guided by established diagnostic procedures, such as the Hausman test and the Breusch-Pagan Lagrange Multiplier test (Breusch & Pagan, 1980; Hausman, 1978). This empirical approach is consistent with prior studies in the banking and EM literature that employ similar panel-based frameworks (Biswas et al., 2022; Cornett et al., 2009; Leventis & Dimitropoulos, 2012).

Table 1

Variables and their Measurement

Variables	Abbreviation	Measured by	Type
Loan Loss Provision	<i>LLP</i>	The amount for loan losses in the current reporting period/ the year-end value of Gross Advances (<i>ADV</i>).	Dependent
Standardized Discretionary Loan Loss Provision	<i>DLLP</i>	Residual of Eq. (1) * (<i>ADV/ ASSETS</i>)	Dependent
Realised gains and losses on securities	<i>RSGL</i>	Realised gains and losses on securities (held-to-maturity and available-for-sale)/ <i>ASSETS</i>	Dependent
Residual term of Eq. (1)	ε_{it}	Represents discretionary component of <i>LLP</i> .	First proxy- <i>EM</i> ₁
The frequency of small positive net income	<i>SPNI</i>	Equals 1 if net income (<i>deflated by lagged total assets</i>) is between 0 and 0.01 for each given year and 0 otherwise	Third proxy- <i>EM</i> ₃
Non-Performing Loans	<i>NPL</i>	Non-performing loans/ <i>ADV</i> .	Determinant of <i>LLP</i>

Variables	Abbreviation	Measured by	Type
Loan Loss Allowance	<i>LLA</i>	The contra-asset account to offset loans receivable/ <i>ADV</i>	Determinant of <i>LLP</i>
Advances to construction sector	<i>COA</i>	Advances given to construction sector during the year/ <i>ADV</i>	Determinant of <i>LLP</i>
Advances to other financial institutions	<i>DIA</i>	Advances given to other financial institutions during the year/ <i>ADV</i> .	Determinant of <i>LLP</i>
Advances to agriculture sector	<i>AGA</i>	Advances given to the agriculture sector during the year/ <i>ADV</i>	Determinant of <i>LLP</i>
Advances to individuals	<i>INA</i>	Advances given to individuals during the year/ <i>ADV</i>	Determinant of <i>LLP</i>
Advances to industrial and commercial sector	<i>ICA</i>	Advances given to industrial and commercial sector during the year/ <i>ADV</i>	Determinant of <i>LLP</i>
Unrealised gains and losses on securities	<i>URSGL</i>	Unrealised gains and losses on securities (held-to-maturity and available-for-sale)/ <i>ASSETS</i>	Determinant of <i>DRSGL</i>
Government ownership	<i>govown</i>	(Shares held by the government or government-owned entities/ Total shares outstanding)*100	Ownership
Institutional ownership	<i>insown</i>	(Shares held by the legal entities/ Total shares outstanding)*100	-Ownership
Foreign ownership	<i>forown</i>	(Shares held by foreign individual & companies/ Total shares outstanding)*100	-Ownership

Variables	Abbreviation	Measured by	Type
Total assets	<i>ASSETS</i>	Year-end value of assets held by the bank	-
Bank size	<i>siz</i>	The natural log of <i>ASSETS</i>	Control
Capital position	<i>car</i>	measured through capital adequacy ratio	Control
Market-to-book value of equity	<i>mbe</i>	the ratio between the year-end market value of equity to the year-end book value of equity	Control
Leverage	<i>lev</i>	the ratio of total debt to total common equity	Control

Results and Discussion

Banking data is often sensitive to extreme observations. Therefore, a series of diagnostic checks are applied to detect and reduce the effect of outliers and overly influential cases while maintaining the underlying structure and integrity of the dataset. Hence, before estimating the panel regression models, the dataset is carefully cleaned so that the findings could be interpreted with greater confidence in their quality and reliability. The cleaning process is conducted in two stages: (i) extreme values are treated by means of *winsorisation*; and (ii) regression diagnostics, that is, *studentized residuals*, *leverage values*, and *Cook's distance*, are applied. These procedures help strengthen the credibility of the empirical results by ensuring that the dataset meets the assumptions of regression analysis.

Extraction of residuals from Eq. (1) as the first proxy for Earnings Management (EM_1)

The steps from data cleaning to obtaining EM_1 as the residual of Eq. (1) are as follows:

- Following established econometric practices, *winsorisation* is applied at the ± 3 standard deviation level to limit the influence of outliers and maintain robust statistical inference (Wilcox, [2021](#)).
- To enhance model reliability, influential observations are identified and removed using *studentised residuals*, *leverage values*, and *Cook's distance* (Cook, [1977](#); Fox, [2020](#)).
- Variance Inflation Factor (VIF) analysis revealed a substantial

multicollinearity between *lla* and *npl* ($VIF > 8$). To address this, a PCA-based composite index (*comp_index*) is constructed and substituted for the two variables (Jolliffe & Cadima, 2016).

- The Wooldridge test ($F(1,19) = 30.087, p = .0000$), and the likelihood-ratio test ($\chi^2(19) = 38.45, p = .0052$) indicate the presence of autocorrelation and heteroskedasticity (Wooldridge, 2010). To address these concerns, cluster-robust standard errors at the bank level are applied (Petersen, 2009).
- Following Breusch and Pagan (1980), the BP-LM test is applied which supported the use of a random-effects (*RE*) model ($\chi^2 = 5.40, p = 0.0101$). The Hausman test ($\chi^2(7) = 10.86, p = .1450$) suggested that random-effects estimation is appropriate and efficient (Hausman, 1978).
- The residuals from this regression are saved and used as the first proxy- EM_1 .

Impact of Ownership Variables on EM_1

The impact of ownership variables on EM_1 is analysed through Eq. (5). The variables are *winsorised* and the dataset is cleaned before estimating final regression model. The descriptive statistics for the ownership and control variables used in Eq. (5), after *winsorisation*, are presented in Table 2.

Table 2

Descriptive Statistics of Ownership and Control Variables-Eq. (5)-After Winsorisation

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>govown</i>	300	12.158	22.963	0	72.898
<i>insown</i>	299	6.715	5.318	0	19.341
<i>forown</i>	302	8.654	14.396	0	51.455
<i>siz</i>	315	26.858	1.145	24.141	29.526
<i>mbe</i>	304	1.076	0.651	-0.424	2.624
<i>lev</i>	315	13.149	4.829	5.529	22.016
<i>car</i>	315	2.654	1.893	0.67	8.957

To examine the impact of ownership structures (*forown*, *insown*, and *govown*) on EM_1 , *studentised residuals*, *leverage values*, and *Cook's distance* are applied to identify influential observations. The VIF values,

with a mean VIF = 1.32, are all well below the standard threshold of 10. This indicates that multicollinearity is not a concern in the model specification. Therefore, the estimated coefficients can be considered stable and reliable in terms of collinearity.

In the diagnostic tests, Wooldridge test for autocorrelation yielded an $F(1,18) = 4.644, p < 0.05$, rejecting *no autocorrelation*. The likelihood-ratio test for heteroskedasticity did not show significant evidence of heteroskedasticity ($\chi^2(19) = 24.68, p = 0.1714$). This means that the assumption of homoskedasticity holds in this case. Additionally, the Breusch–Pagan LM test ($\chi^2 = 0.11, p = 0.3714$) and the F-test ($F(19, 224) = 1.30, p = 0.1842$) point towards the pooled OLS specification being a more appropriate model for analysing EM_1 in this dataset.

The results reported in Table 3 indicate that *insown* ($\gamma = 0.372, p < 0.01$) and *car* ($\gamma = 1.571, p < 0.01$) have strong positive effects on EM_1 . This suggests that banks with higher institutional ownership and stronger capital positions are more engaged in *EM*. This finding challenges the traditional monitoring view of institutional investors (Bashir et al., 2024). However, it supports prior evidence that institutional shareholders may align with management and facilitate earnings manipulation (Susbiyani et al., 2023). Here, *mbe* has a significant negative effect ($\gamma = -1.775, p < 0.05$), indicating that banks with higher market valuations engage less in *EM*.

Table 3

Pooled OLS Regression- EM_1 and Ownership Structure

EM_1	Coef.	St.Err.	t	p	[95% Conf Interval]	
<i>govown</i>	0.015	0.01	1.45	0.146	-0.005	0.035
<i>insown</i>	0.372	0.068	5.47	0	0.239	0.505
<i>forown</i>	-0.006	0.033	-0.20	0.845	-0.071	0.058
<i>siz</i>	-0.001	0.421	-0.00	0.998	-0.827	0.824
<i>mbe</i>	-1.775	0.756	-2.35	0.019	-3.256	-0.295
<i>lev</i>	0.068	0.098	0.70	0.487	-0.124	0.261
<i>car</i>	1.571	0.372	4.23	0	0.843	2.299
<i>constant</i>	-6.345	10.116	-0.63	0.531	-26.172	13.482
Mean DV		-1.053		<i>SD DV</i>		5.174
Overall R^2		0.211		Number of obs		251
Chi-square		82.707		Prob > chi2		0.000
R^2 within		0.207		R^2 between		0.447

Govown, *forown*, *siz*, and *lev* do not exhibit a statistically significant effect on EM through LLP in this model. Overall, the model explains about 21% of the variation in EM_1 , with the within $R^2 = 0.207$ and between $R^2 = 0.447$. This highlights that ownership structure, particularly institutional ownership, plays a considerable role in shaping EM.

Impact of Ownership Variables on EM_2

As discussed in detail in the *methodology* section, the second proxy, EM_2 , to be used is calculated by using Eq. (4). EM_2 is then used as the dependent variable in the regression analysis in Eq. (5). Table 4 indicates that the variables exhibit moderate variation and no extreme distortions after *winsorisation*, supporting the reliability of subsequent regression estimates.

Subsequently, the fixed-effect panel regression results reported in Table 5 show that *insown* is significantly negative ($\gamma = -0.205$, $p < 0.01$). This suggests that institutional owners, acting as strong monitors, effectively constrain EM. This evidence strongly supports the monitoring hypothesis advanced by Ali et al. (2024) and Miller et al. (2021). Furthermore, it aligns with the findings from Pakistan by Bashir et al. (2024), who documented that institutional investors enhance reporting discipline. No other ownership variables (*govown*, *forown*) are significant.

Table 4

Descriptive Statistics of EM_2 and Ownership Structure-after Winsorisation

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>govown</i>	246	11.075	21.16	0	70.195
<i>insown</i>	245	7.117	5.323	0	19.581
<i>forown</i>	248	9.443	15.626	0	55.607
<i>siz</i>	259	26.986	1.084	24.141	29.526
<i>mbe</i>	250	1.096	0.677	-0.424	2.761
<i>lev</i>	259	13.609	4.833	6.163	22.295
<i>car</i>	259	2.81	2.216	0.67	10.222

Similarly, *car* is negative ($\gamma = -0.802$, $p < 0.05$), indicating that better-capitalised banks are less inclined towards EM. While *mbe* is strongly positive ($\gamma = 2.000$, $p < 0.01$), reaffirming that market expectations and growth opportunities create incentives for higher EM. These results indicate that banks with more institutional ownership or higher capital adequacy ratios are engaged in less securities-based EM, whereas higher market

valuation is associated with more EM via RSGL.

Table 5

Fixed Effect Panel Regression-EM₂ and Ownership Structure

<i>EM₂</i>	Coef.	St.Err.	<i>t</i>	<i>p</i>	[95% Conf Interval]	
<i>govown</i>	-0.045	0.034	-1.31	0.206	-0.116	0.027
<i>insown</i>	-0.205	0.063	-3.26	0.004	-0.337	-0.074
<i>forown</i>	0.029	0.022	1.34	0.196	-0.016	0.074
<i>siz</i>	0.293	0.397	0.74	0.47	-0.539	1.124
<i>mbe</i>	2.000	0.54	3.70	0.002	0.87	3.13
<i>lev</i>	-0.061	0.077	-0.79	0.442	-0.223	0.101
<i>car</i>	-0.802	0.342	-2.34	0.03	-1.519	-0.086
<i>constant</i>	-5.255	10.414	-0.50	0.62	-27.053	16.542
Mean DV		0.332	<i>SD DV</i>		2.525	
<i>R</i> ²		0.255	Number of obs		205	
<i>F</i> -test		26.501	Prob > <i>F</i>		0.000	
AIC		891.976	BIC		915.237	

Impact of Ownership Variables on *EM₃*

For the binary SPNI measure (*EM₃*), a random-effects logistic regression is used. Table 6 shows that the binary nature of SPNI is reflected in its mean value, while other variables display reasonable variation, indicating suitability for logistic regression analysis. The regression results reported in Table 7 indicate that the coefficient of *govown* is negative ($\gamma = -0.022$, $p < 0.05$), implying state ownership curbs EM by strengthening monitoring. This finding supports the *development view* of government ownership and is consistent with Aljuhani et al. (2024). However, it contrasts with Pan et al. (2024), who documented increased manipulation due to managerial career concerns and political pressures.

Conversely, *forown* has a marginally positive effect ($\gamma = 0.031$, $p \approx 0.06$), indicating that higher foreign ownership may be associated with increased EM. This result contrasts with the monitoring argument of Othmani (2022), suggesting that in the context of Pakistan's banking sector, foreign investors may lack the influence required to effectively discipline managerial behaviour. *Insown* remains insignificant.

Table 6

Descriptive Statistics of EM₃ (SPNI) and Ownership Structure-after Winsorisation

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>spni</i>	373	0.327	0.47	0	1
<i>govown</i>	358	12.152	22.615	0	70.195
<i>insown</i>	357	6.265	5.187	0	18.616
<i>forown</i>	359	7.823	13.811	0	51.186
<i>siz</i>	378	26.62	1.257	24.141	29.526
<i>mbe</i>	360	1.067	0.638	0.283	2.619
<i>lev</i>	378	12.895	5.789	2.914	25.162
<i>car</i>	377	2.582	2.511	0.327	16.367

Among the controls, large banks are significantly less engaged in EM, *siz* ($\gamma = -1.075$, $p < 0.01$), and a higher *mbe* also reduces such practices ($\gamma = -2.686$, $p < 0.01$). In contrast, *lev* ($\gamma = 0.277$, $p < 0.01$) and *car* ($\gamma = 0.406$, $p < 0.05$) both contribute to higher EM.

Table 7

Random-effects Logistic Regression-EM₃ and Ownership Structure

EM ₃	Coef.	St.Err.	t-	p-	[95% Conf Interval]	
<i>govown</i>	-.022	.011	-2.01	.044	-.043	-.001
<i>insown</i>	-.026	.045	-0.57	.571	-.114	.063
<i>forown</i>	.031	.017	1.85	.064	-.002	.063
<i>siz</i>	-1.075	.293	-3.67	0	-1.649	-.5
<i>mbe</i>	-2.686	.429	-6.25	0	-3.527	-1.844
<i>lev</i>	.277	.062	4.50	0	.157	.398
<i>car</i>	.406	.189	2.15	.032	.036	.776
<i>constant</i>	25.736	7.452	3.45	.001	11.13	40.341
Mean DV		0.335		SD DV		0.473
Number of obs		322		χ^2		54.093
Prob > χ^2		0.000		AIC		302.575

Conclusion

In the present study, the impact of government, institutional and foreign ownership on earnings management in the commercial banking sector in

Pakistan has been investigated using a panel data of listed commercial banks for the period 2005-2023. The study used three alternative measures of earnings management (loan loss provisions, securities gains and losses, and the frequency of small positive net income) to determine if ownership-based monitoring mechanisms are effective in all forms of managerial discretion.

The results suggest that the relation between ownership structure and earnings management is proxy dependent. Earnings management showed a significant relationship to institutional ownership. By contrast, government ownership and foreign ownership were only significant when earnings management was measured as the number of small positive net income. Foreign ownership was found to be related to higher earnings manipulation, while government ownership was related to lower earnings management. The findings indicate that ownership structures do not have a uniform effect on all types of earnings management and that they are not equally effective in monitoring the various reporting methods.

The study adds to the corporate governance and earnings management literature in two ways: First, it offers evidence from a bank-dominated emerging economy, and second, it highlights the need to use multiple earnings management proxies. The results support the idea that managerial reporting behaviour is influenced by monitoring incentives and discretionary accounting decisions, and that the governance role of various ownership structures is heterogeneous. The findings also highlight that regulators, boards and other governance actors should be more specific in their approach to monitoring financial reporting practices, as ownership-based monitoring may be appropriate for some types of earnings management, but not for others, from a policy perspective.

Implications

The research outcomes carry important practical and theoretical implications. The practical implications are as follows. Firstly, regulators should recognise that governance outcomes vary by ownership type. Therefore, persistent enforcement of SBP's prudential rules remains vital, and SBP should also strengthen its examination of discretionary provisions and securities gains. Secondly, boards and audit committees must acknowledge that large institutional or foreign shareholders can exert different types of influence. Thus, it is important to have good internal control and clear accounting procedures. Thirdly, institutional investors

should exercise their voting rights and demand high reporting quality. Fourthly, foreign investors should collaborate with boards and regulators to implement international best practice in the local context to enhance transparency. Lastly, external auditors should review loan-loss provisioning and securities accounts, which offer opportunities for managerial discretion.

The findings also have significant theoretical implications. Firstly, these support positive accounting theory by showing that managers adjust accounting choices to meet contractual or market expectations. Secondly, the findings reveal that there are differences in the effects of the various ownership types on bank reporting, suggesting differences in monitoring roles. Finally, treating EM as a multi-dimensional phenomenon and using multiple proxies is essential as the proxies respond differently across ownership structures.

This research offered value addition to the existing literature. Previous studies in this area have largely focused on advanced economies, providing limited evidence from bank-based financial systems, such as Pakistan. By examining Pakistan's commercial banks, this study extended the literature and provided fresh insights into how ownership structures shape EM within this underexplored setting. Furthermore, earlier studies typically relied on a single proxy for EM, whereas the current study employed three distinct measures, enabling a broader and more comprehensive interpretation of EM.

Limitations

The study has some limitations, although it makes a valuable contribution to the literature on ownership structures and EM. Acknowledging these constraints improves clarity in interpreting results and helps to inform future research directions.

Firstly, the analysis is limited to 20 commercial banks. This sample represents the entirety of the listed banking sector of Pakistan and is therefore comprehensive within its defined scope. However, the findings are not generalisable to other segments of the financial sector, such as microfinance institutions, or non-banking financial entities, which may exhibit different governance dynamics and earnings behaviours.

A second limitation lies in the selection of variables as proxies to measure EM and to represent ownership attributes. The proxies selected are widely used in the literature but may not completely represent the

underlying managerial intent or the informal mechanisms through which EM occurs.

Future Research Directions

The study suggested several productive lines for future researchers who have a keen interest in this research area. Firstly, the analysis may be extended to non-listed Pakistani banks. Secondly, cross-country comparisons involving similar CG frameworks may also be explored. Thirdly, additional proxies could be identified and tested for more complete coverage of EM. Fourthly, subsequent research may focus on recent developments in regulatory changes to assess their impact on EM. Fifthly, unique institutional and foreign ownership characteristics may be examined separately. For instance, domestic pension funds may be compared with foreign partners to see which type of investors constrain EM more effectively. Lastly, a qualitative study may be conducted through interviews with bank managers, auditors, and regulators. These qualitative insights may uncover why managers choose specific EM tactics under different ownership patterns, complementing the quantitative findings.

Authors Contribution

Khawaja Aftab Qadir Kant: conceptualization; data curation; formal analysis; investigation; methodology; writing. **Attaullah Shah:** software; supervision; validation.

Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

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