

BEYOND THE BOARDROOM: HOW OWNERSHIP CONCENTRATION AND BOARD INDEPENDENCE INTERACT TO DRIVE FIRM PERFORMANCE IN A PAKISTANI MARKET

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**Abstract**

Large boards slow decision-making, and concentrated ownership can either discipline managers or expropriate minority shareholders yet most governance studies treat these mechanisms in isolation, leaving firms in emerging markets uncertain which combination actually improves profitability. To address this, we examined how ownership concentration and board structure jointly shape financial performance in Pakistan using a balanced panel of 350 non-financial firms listed on the PSX from 2014 to 2024, applying fixed- and random-effects panel regressions with ROA as performance and ownership concentration, board independence, and board size as governance levers. Ownership concentration alone helped modestly, while board independence delivered a strong positive impact on ROA. Larger boards consistently harmed performance. Critically, concentrated ownership plus an independent board produced a performance-enhancing synergy stronger than either factor alone, proving they work as complements, not substitutes. Robustness tests confirm reliability. In emerging markets like Pakistan, effective governance does not mean more directors or piling up ownership. Performance improves when concentrated ownership is paired with lean, independent oversight that combination, not size or ownership alone, drives profitability.

**INTRODUCTION**

A fundamental yet unresolved question in emerging markets is whether ownership concentration and board structure actually improve financial performance—or simply reinforce existing power asymmetries (Alshehri, 2025). Most governance research assumes that

mechanisms developed to align managerial actions with shareholder interests and reduce information asymmetry in dispersed-ownership economies transplant seamlessly into relationship-based systems, an assumption that fails in places like Pakistan, where families and block holders dominate, investor protection is weak, and

regulatory enforcement remains uneven (Tang et al., 2020). This disconnect creates real uncertainty because internal governance mechanisms, especially ownership structure and board composition, assume heightened importance in compensating for institutional weaknesses, yet their role in shaping firm performance in developing economies remains less clearly understood (Kyerem & Ausloos, 2021). In such contexts, internal governance mechanisms, especially ownership structure and board composition, assume heightened importance in compensating for institutional weaknesses (Raithatha & Haldar, 2021). In Pakistan specifically, firms listed on the Pakistan Stock Exchange typically operate within a relationship-based governance system, and although the Securities and Exchange Commission of Pakistan has introduced successive corporate governance codes to improve board effectiveness and disclosure quality, concerns persist regarding the actual independence of boards, minority shareholder protection, and the efficiency of internal monitoring mechanisms (Farooq et al., 2022). We therefore ask: to what extent can ownership concentration and board structure improve firm-level financial performance in Pakistan's unique institutional environment?

Corporate governance debates initially focused on developed economies, where ownership is widely dispersed and external governance mechanisms such as active markets for corporate control play a dominant role. However, as attention has shifted toward developing and emerging markets, researchers have increasingly recognized that governance mechanisms may operate differently under alternative institutional, cultural, and regulatory settings (Koeswayo et al., 2024). In countries like Pakistan, agency problems are not limited to conflicts between managers and shareholders but extend to tensions between controlling shareholders and minority investors (Alim et al., 2020). As a result, the effectiveness of governance tools such as board independence and board size may depend on how they interact with ownership concentration rather than operating in isolation. The literature provides mixed evidence on the performance implications of ownership

concentration (Queiri et al., 2021). On the one hand, agency theory argues that concentrated ownership enhances monitoring incentives, reduces managerial opportunism, and improves firm performance by aligning ownership and control (Raimo et al., 2021). On the other hand, excessive concentration may facilitate the expropriation of minority shareholders through tunneling and related-party transactions, thereby undermining firm value. This ambiguity with studies documenting positive, negative, and nonlinear relationships between ownership concentration and financial performance across different institutional settings (Shirasu & Kawakita, 2021).

Similarly, board structure particularly board independence and board size has been widely examined as a key governance mechanism. Independent directors are expected to strengthen oversight, improve strategic decision-making, and protect minority shareholders (Uyar et al., 2021). Evidence from developed markets largely supports this view, suggesting a positive association between board independence and firm performance. However, in emerging economies, the effectiveness of independent directors may be constrained by social ties, family dominance, and limited access to firm-specific information (OBAJE & ABDULLAHI, 2021). Board size presents an additional governance trade-off: while larger boards may offer greater diversity of expertise and external linkages, they may also suffer from coordination problems, free-riding, and slower decision-making, potentially weakening their monitoring effectiveness (Khan et al., 2021).

Despite the growing body of governance research, empirical evidence from Pakistan remains fragmented and inconclusive. Existing studies often rely on short or unbalanced panels, focus on limited subsets of firms, or examine ownership structure and board characteristics separately. Moreover, findings regarding the effects of ownership concentration and board independence on firm performance are often contradictory. Din et al. (2022) suggest that institutional ownership and independent boards enhance profitability through improved

monitoring, while others argue that excessive independence may hinder strategic flexibility and dilute accountability within the boardroom. These inconsistencies highlight the need for a more comprehensive and context-sensitive examination of governance mechanisms in Pakistan. An important limitation of prior research is the lack of attention to the interaction between ownership structure and board composition. Most studies treat ownership concentration and board characteristics as independent determinants of firm performance, overlooking the possibility that board structure may serve as a channel through which ownership influences outcomes. In environments with concentrated ownership, an independent board may play a complementary role by constraining the private benefits of control and enhancing transparency, thereby amplifying the positive effects of ownership concentration (Sakawa & Watanabel, 2020). Conversely, weak or symbolic board independence may allow dominant shareholders to entrench themselves, reducing firm performance. Understanding these interaction effects is essential for identifying effective governance configurations in emerging markets (Boachie, 2023). Against this background, the present study seeks to address the following research questions: (i) How does ownership concentration affect firm financial performance in Pakistan? (ii) What is the impact of board independence and board size on firm performance? (iii) Does board structure particularly board independence moderate the relationship between ownership concentration and firm performance?

To address these research questions, the study draws on multiple theoretical perspectives. Agency theory provides the primary framework, emphasizing the role of ownership concentration and independent boards in mitigating agency conflicts and improving monitoring efficiency. However, agency theory alone may be insufficient to explain governance outcomes in relationship-based systems (Shapiro, 2005). Stakeholder theory complements this view by highlighting the board's role in balancing the interests of multiple stakeholders, including minority shareholders, employees, and creditors (Freeman et al., 2010).

From this perspective, board independence enhances legitimacy and trust, which can translate into superior financial performance. Legitimacy theory further suggests that firms adopt visible governance practices such as appointing independent directors to signal conformity with regulatory and societal expectations, thereby improving access to capital and market valuation (O'donovan, 2002). By integrating these theoretical lenses, the study offers a richer explanation of how ownership and board structure jointly shape firm performance in Pakistan.

This study makes several novel contributions to the corporate governance literature. First, it offers updated and comprehensive evidence on the governance-performance nexus in Pakistan using a long balanced panel spanning 2014-2024, capturing regulatory reforms, post-crisis adjustments, and evolving governance practices. Second, the study moves beyond conventional direct-effect models by explicitly examining both the moderating and mediating roles of board independence in the relationship between ownership concentration and firm performance. The moderation analysis reveals that ownership concentration enhances performance only when complemented by an independent board, while the mediation results demonstrate that board independence serves as a critical governance channel through which ownership structures influence financial outcomes. Third, by empirically operationalizing these mechanisms within a unified framework, the study advances theory-driven governance research in emerging markets, where such integrative evidence remains scarce. Methodologically, the use of fixed-effects panel estimation, interaction modeling, and formal mediation testing strengthens causal inference and empirical robustness. Finally, the findings yield important policy and managerial implications by identifying governance configurations that simultaneously enhance firm performance, accountability, and investor protection, thereby offering actionable insights for regulators, corporate boards, and market participants in Pakistan and comparable emerging economies.

The remainder of the paper is organized as follows. Section 2 reviews the relevant literature, outlines the theoretical foundations, and develops the testable hypotheses. Section 3 describes the data sources, sample selection, variable measurement, and empirical methodology. Section 4 presents and discusses the empirical results. Finally, Section 5 concludes the paper by summarizing the main findings and outlining their policy implications and directions for future research.

### Literature Review and Hypothesis Development

This section reviews the relevant theoretical and empirical literature on corporate governance and firms' financial performance with particular emphasis on ownership structure and board characteristics. Drawing on international evidence from both developed and emerging economies, the section develops testable hypotheses by integrating insights from agency, stakeholder, and legitimacy theories.

#### 1.1. Corporate governance and financial performance

Corporate governance has long been recognized as a fundamental mechanism influencing firm financial performance through its role in mitigating agency conflicts, enhancing transparency, and strengthening internal control systems (Affes & Jarboui, 2023). Agency theory suggests that effective governance structures align managers' incentives with those of shareholders, thereby reducing opportunistic behavior and improving firm performance (Eisenhardt, 1989). This theoretical argument has received substantial empirical support in developed economies, particularly in the United States and United Kingdom, where strong governance frameworks are associated with higher profitability and market valuation (Kyerem & Ausloos, 2021; Williams, 2022). Okafor et al. (2021) demonstrate that stronger governance mechanisms, such as effective boards and shareholder rights, are positively related to return on assets and firm value. However, the governance-performance relationship becomes more complex in emerging and transition economies due to differences in institutional quality, ownership concentration,

and enforcement mechanisms in the case of China. Peng (2024) highlights that corporate governance reforms, including enhanced board oversight and improved disclosure standards, have contributed to better firm performance, particularly among firms transitioning from state to mixed ownership structures. Similarly, (Arikawa et al., 2025) and (Hwang et al., 2021) found that governance improvements following regulatory reforms have strengthened firm profitability and efficiency, although the magnitude of these effects varies across ownership types and industries in the case of Japan and South Korea.

In emerging markets, stakeholder theory and legitimacy theory complement agency-based explanations by emphasizing the broader role of governance in maintaining organizational legitimacy and balancing the interests of multiple stakeholders (Danso et al., 2020; Lee & Raschke, 2023). Firms that adopt stronger governance practices may gain legitimacy in the eyes of investors, regulators, and creditors, thereby improving access to external finance and reducing capital costs (Boachie, 2023). Abang'a et al. (2022) and Singh and Rastogi (2023) support this view, showing that firms with better governance ratings outperform their peers in terms of accounting-based and market-based performance measures. Despite these findings, the empirical literature reports mixed results, particularly in contexts where governance mechanisms are weakly enforced. Some studies argue that formal governance structures may be largely symbolic in developing economies, limiting their effectiveness in improving firm performance (Ferriswara et al., 2022; Husnaini & Basuki, 2020). In Pakistan, the evidence remains fragmented, with some studies reporting a positive association between governance quality and profitability, while others find insignificant or context-dependent effects (Farooq et al., 2022; Rahman et al., 2020). These inconsistencies suggest that governance outcomes depend not only on formal rules but also on how governance mechanisms interact with firm-specific characteristics such as ownership structure and board composition. Based on these discussions, the study proposes the following hypothesis:

**H1:** Corporate governance mechanisms are significantly associated with firm financial performance.

### 1.2. Firm ownership and financial performance

Ownership structure constitutes one of the most influential elements of corporate governance, shaping control rights, monitoring intensity, and strategic decision-making (Kirimi et al., 2022). Agency theory predicts that ownership concentration can reduce managerial agency problems by strengthening incentives for effective monitoring (Eisenhardt, 1989). Aguiar-Diaz et al. (2020) reveal that firm ownership has been shown to improve performance by reducing managerial discretion, especially in environments with weak legal protection. Ang et al. (2022) find that ownership concentration enhances operational efficiency and profitability, particularly when dominant shareholders are private or institutional investors rather than the state. Doğan (2021) report that where large shareholders play an active monitoring role in corporate decision-making.

However, the benefits of ownership concentration may diminish beyond a certain threshold. The entrenchment hypothesis suggests that dominant shareholders may expropriate minority investors through related-party transactions, tunneling, and preferential policies, thereby harming firm performance (Quyen et al., 2021). Al Farooque et al. (2020) and Mostafa (2025) provide evidence of such nonlinear effects, where moderate ownership concentration improves performance, while excessive concentration reduces firm value. Institutional context plays a critical role in determining which effect dominates. In Pakistan, corporate ownership is predominantly concentrated among families, business groups, and the state, creating a governance environment characterized by strong control rights and limited minority shareholder protection (Ahmed et al., 2024; Usman & Alam, 2020). Prior studies suggest that family and institutional ownership can enhance firm performance through close monitoring and long-term strategic orientation (Hussain et al., 2022). However, other studies report negative or insignificant effects, arguing

that concentrated ownership may weaken transparency and increase the risk of expropriation. These mixed findings highlight the need for updated and comprehensive evidence using longer panels and improved empirical strategies. Based on these discussions, the study proposes the following hypothesis:

**H2:** Ownership concentration has a significant impact on firm financial performance.

### 1.3. Board Structure and financial performance

Board structure represents a core internal governance mechanism through which firms monitor management and guide strategic decisions. Board independence and board size are among the most widely studied board characteristics in the corporate governance literature (Uyar et al., 2021). Tseng et al. (2020) and Delima (2021) supports this view, showing that firms with more independent boards exhibit higher profitability, better disclosure quality, and improved market valuation. Khan et al. (2021) found that reforms aimed at increasing board independence have been associated with improvements in firm performance, although cultural norms and relational ties may moderate these effects. Nguyen et al. (2021) indicates that independent directors contribute positively to firm performance when they possess relevant expertise and autonomy, particularly in privately controlled firms. However, in state-owned or family-dominated firms, the effectiveness of independent directors may be constrained. Board size presents a more ambiguous relationship with firm performance (Ozdemir et al., 2021). Resource dependence theory suggests that larger boards provide access to diverse expertise, external networks, and strategic resources (Hillman et al., 2009). Conversely, agency theory argues that excessively large boards may suffer from coordination problems, free-riding, and slower decision-making, thereby reducing their effectiveness (Eisenhardt, 1989). Haddad (2023) find a negative or nonlinear relationship between board size and firm performance, with smaller and more focused boards being more effective monitors. In Pakistan, board structures are often

shaped by family ownership and regulatory requirements rather than performance considerations. Independent directors may exist in form but lack substantive autonomy, while large boards may dilute accountability (Farooq et al., 2022). Nonetheless, recent evidence suggests that genuinely independent boards contribute positively to firm profitability, particularly when they complement concentrated ownership structures. Based on these discussions, the study proposes the following hypothesis:

**H3:** Board structure significantly influences firm financial performance.

**1.4. Research gap**

Existing literature on corporate governance in emerging markets suffers from three gaps. First, most studies use short or outdated panels, missing recent regulatory reforms and governance evolution. Second, prior research focuses on direct effects testing whether ownership or board size individually affects performance while ignoring how these mechanisms interact. Third, no study has systematically tested whether board independence moderates the ownership-performance relationship or mediates the channel through which concentrated ownership influences financial outcomes. This study addresses these gaps by integrating moderation and mediation within a unified longitudinal framework using a balanced panel of Pakistani firms from 2014 to 2024.

**Data, sample selection, and variable measurement**

**3.1 Data Sample and Source**

This study focuses on non-financial firms listed on the Pakistan Stock Exchange (PSX) over the period 2014-2024. Pakistan provides an appropriate setting for examining corporate governance-

performance relationships due to its concentrated ownership structures, evolving regulatory framework, and relatively weak external governance mechanisms. Following prior corporate governance studies, financial firms including banks, insurance companies, and other financial institutions are excluded from the sample because they operate under distinct regulatory, accounting, and capital adequacy requirements, which could introduce bias and limit comparability. The study relies on secondary panel data collected from publicly available sources, specifically annual reports, audited financial statements, corporate governance disclosures from company websites, and regulatory filings from the Pakistan Stock Exchange (PSX) and the Securities and Exchange Commission of Pakistan (SECP). Consistent with previous studies, firms are included in the sample only if they remain continuously listed during the study period and have complete information on ownership, board structure, and financial performance. The initial sample consists of all non-financial PSX-listed firms. After applying data screening criteria and excluding firms with missing or inconsistent observations, the final sample comprises 350 non-financial firms. With data spanning eleven years, this yields a balanced panel of 3,850 firm-year observations (350 firms × 11 years). The dependent variable is firm financial performance, measured primarily by return on assets (ROA). The key independent variables include ownership concentration, board independence, and board size, while standard firm-level controls such as firm size, leverage, firm age, and industry classification are included to account for heterogeneity (see Table 1). All data processing and empirical analyses are conducted using Stata 17.

**Table 1: Variable Definitions and Measurement**

Variable Categories	Acronyms	Measurement/Definition
<i>Dependent Variable</i>		
Firm Performance	ROA	Net Income divided by Total Assets
<i>Independent Variables</i>		

Ownership	OWNC	Percentage of total shares held by the top five shareholders
Board Independence	BIND	Ratio of independent non-executive directors to the total number of board members
Board Size	BSIZE	Total number of directors serving on the board
OWNC×BIND	OWNC×BIND	Product of (mean-centered) OWNC and BIND variables
<i>Control Variables</i>		
Firm Size	FSIZE	Natural logarithm of total assets
Leverage	LEV	Total debt divided by total assets
Firm Age	FAGE	Natural logarithm of (1+ years since incorporation)
Growth	GROW	Annual percentage change in sales revenue

3.2. Variables and Measurement

3.2.1. Dependent Variable: firm's financial performance

The dependent variable is the firm's performance and is measured by an accounting-based indicator

namely, Return on Assets (ROA). ROA gives an insight to the operational efficiency and profitability of the firm with respect to the total assets in the firm and is calculated as:

$$ROA = \frac{\text{Net Income}}{\text{Total Assets}}$$

ROA is extensively used in the governance - performance literature and is a reliable measure of internal financial performance in markets that have scarce market-based indicators.

3.2.2. Independent Variables:

1. Ownership Concentration (OWNC) - These measures as a percentage of shares owned by the top 5 shareholders. This metric defines the extent of control of the larger shareholders and gives an indication of the level of ownership dispersion or concentration.
2. Board Independence (BIND) - measured by the ratio of the independent non-executive directors on the board to the total number of directors in the board. Board independence implies the extent of the oversight and monitoring capability of the non-executive members.
3. Board Size (BSIZE) - it was added to determine whether bigger board enhances performance or not. Board size is measured with the number of directors in the entire board.

1. Firm Size (FSIZE): measured as the natural logarithm of total assets.
2. Leverage (LEV): ratio of total debt to total assets, capturing financial risk.
3. Firm Age (FAGE): number of years since incorporation, representing experience and stability.
4. Growth (GROW): percentage change in annual sales, representing expansion potential.

3.2.3. Control Variables:

To control for other variables, such as firm-specific characteristics, that may influence ownership and board characteristics, a number of firm-specific control variables are included relying on previous research:

3.3 Empirical Methodology

To empirically test the hypothesized relationships, this study employs panel data regression techniques. The empirical strategy is structured in a stepwise modeling framework, where the baseline analysis consists of three related models designed to disentangle the direct, indirect, and conditional effects of ownership concentration and board characteristics on firm performance. The general baseline specification relating corporate governance mechanisms to firm performance is defined as:

Equation (1): General baseline model

$$ROA_{it} = \beta_0 + \beta_1 OWNC_{it} + \beta_2 BIND_{it} + \beta_3 BSIZE_{it} + \beta_4 FSIZE_{it} + \beta_5 LEV_{it} + \beta_6 FAGE_{it} + \beta_7 GROW_{it} + \varepsilon_{it}$$

where  $i$  denotes firms and  $t$  denotes years.  $ROA_{it}$  represents return on assets,  $OWNC$  denotes ownership concentration,  $BIND$  is board independence,  $BSIZE$  is board size,  $FSIZE$  is firm size,  $LEV$  is leverage,  $FAGE$  is firm age,  $GROW$  is firm growth, and  $\varepsilon_{it}$  is the error term. The coefficients  $\beta_1$ - $\beta_3$  capture the marginal effects of key governance variables on firm performance. Baseline Models: Following prior governance literature, the baseline analysis is implemented through three nested models. The first baseline model examines the direct effect of ownership concentration on firm performance:

Equation (2): Baseline Model I

$$ROA_{it} = \alpha + \beta_1 OWNC_{it} + \beta_2 FSIZE_{it} + \varepsilon_{it}$$

The second baseline model assesses whether ownership concentration influences board independence, which is central to the mediation framework:

Equation (3): Baseline Model II

$$BIND_{it} = \alpha + \gamma_1 OWNC_{it} + \gamma_2 FSIZE_{it} + \varepsilon_{it}$$

The third baseline model incorporates both ownership concentration and board independence to evaluate their joint effects on firm performance:

Equation (4): Baseline Model III

$$ROA_{it} = \alpha + \delta_1 OWNC_{it} + \delta_2 BIND_{it} + \delta_3 FSIZE_{it} + \varepsilon_{it}$$

Together, Equations (2) - (4) form the core baseline framework used to test the direct and indirect governance-performance relationships. Moderation Model: To test the moderating role of board independence proposed in Hypothesis 3, an interaction term between ownership concentration and board independence is introduced:

Equation (5): Moderation model

$$ROA_{it} = \alpha + \theta_1 OWNC_{it} + \theta_2 BIND_{it} + \theta_3 (OWNC \times BIND)_{it} + Controls + \varepsilon_{it}$$

where  $X_{it}$  represents the vector of control variables. Mediation Framework: Mediation is assessed using the product-of-coefficients approach, where the indirect effect of ownership concentration on firm performance through board independence is defined as:

Equation (6): Indirect (mediation) effect

$$a \times b = (OWNC \rightarrow BIND) \times (BIND \rightarrow ROA)$$

Here,  $a$  captures the effect of ownership concentration on board independence (from Equation 3), and  $b$  captures the effect of board independence on firm performance (from Equation 4).

### 3.4. Estimation Rationale

Given the panel structure of the data, both fixed-effects (FE) and random-effects (RE) estimators are employed. The choice between FE and RE models is guided by the Hausman specification test, with results favoring the FE estimator due to its ability to control for time-invariant unobserved firm heterogeneity. All continuous variables are winsorized at the 1st and 99th percentiles to mitigate the influence of outliers, and standard

errors are clustered at the firm level to account for heteroskedasticity and serial correlation.

## Results and Discussion

### 4.1. Descriptive Statistics

Table 2 presents the descriptive statistics for all variables used in the analysis. On average, firms in the sample report a return on assets (ROA) of 5.73%, indicating moderate profitability among non-financial PSX-listed firms, though the wide

range suggests substantial performance heterogeneity. Ownership concentration (OWNC) averages 52.14%, confirming the dominance of block holders in Pakistan’s corporate sector. The mean board independence (BIND) ratio of 0.38 indicates partial compliance with governance codes, while the average board size (BSIZE) of approximately nine directors is consistent with regulatory norms and prior evidence from emerging markets. Regarding control variables, firms exhibit considerable

variation in size, leverage, and age, reflecting structural diversity across industries. The average leverage ratio of 0.46 suggests a balanced reliance on debt financing, whereas the mean firm age of nearly 29 years indicates a mature corporate landscape. Overall, the descriptive statistics provide initial evidence of concentrated ownership structures and heterogeneous governance practices, justifying further multivariate analysis.

**Table 2: Descriptive Statistics**

Variable	Mean	Std. Dev.	Min	25th	Median	75th	Max
ROA	5.73	7.42	-18.64	1.92	4.86	9.14	24.57
OWNC	52.14	18.31	12.47	38.92	49.68	64.73	89.73
BIND	0.38	0.14	0.11	0.28	0.36	0.48	0.71
BSIZE	8.92	1.83	6.00	8.00	9.00	10.00	14.00
FSIZE	15.84	1.67	12.15	14.62	15.77	17.02	19.48
LEV	0.46	0.21	0.08	0.30	0.44	0.61	0.89
FAGE	28.73	12.64	5.00	19.00	27.00	36.00	71.00
GROW	7.32	9.85	-14.67	1.42	6.91	12.83	32.41

**4.2. Correlation Analysis**

Table 3 and Figure 1 present the pairwise correlation matrix and its graphical heat map representation for the key variables. Overall, the correlation coefficients are relatively low, suggesting no serious multicollinearity concerns among the explanatory variables. Firm performance (ROA) shows a weak positive correlation with ownership concentration and board independence, and a weak negative correlation with board size and firm size, providing preliminary support for the hypothesized relationships. Ownership concentration is only

marginally correlated with board independence and board size, indicating that these governance mechanisms capture distinct aspects of internal control rather than overlapping effects. The heat map visualization further confirms the absence of strong linear associations, as all correlations remain well below conventional thresholds. These results justify the inclusion of ownership structure and board characteristics simultaneously in the multivariate regression models and support the reliability of the subsequent fixed- and random-effects estimations.

**Table 3: Correlation Matrix**

Variable	ROA	OWNC	BIND	BSIZE	FSIZE
ROA	1.000	0.063	0.031	-0.038	-0.023
OWNC	0.063	1.000	-0.011	-0.015	0.029
BIND	0.031	-0.011	1.000	0.016	0.022
BSIZE	-0.038	-0.015	0.016	1.000	0.019
FSIZE	-0.023	0.029	0.022	0.019	1.000

## Figures

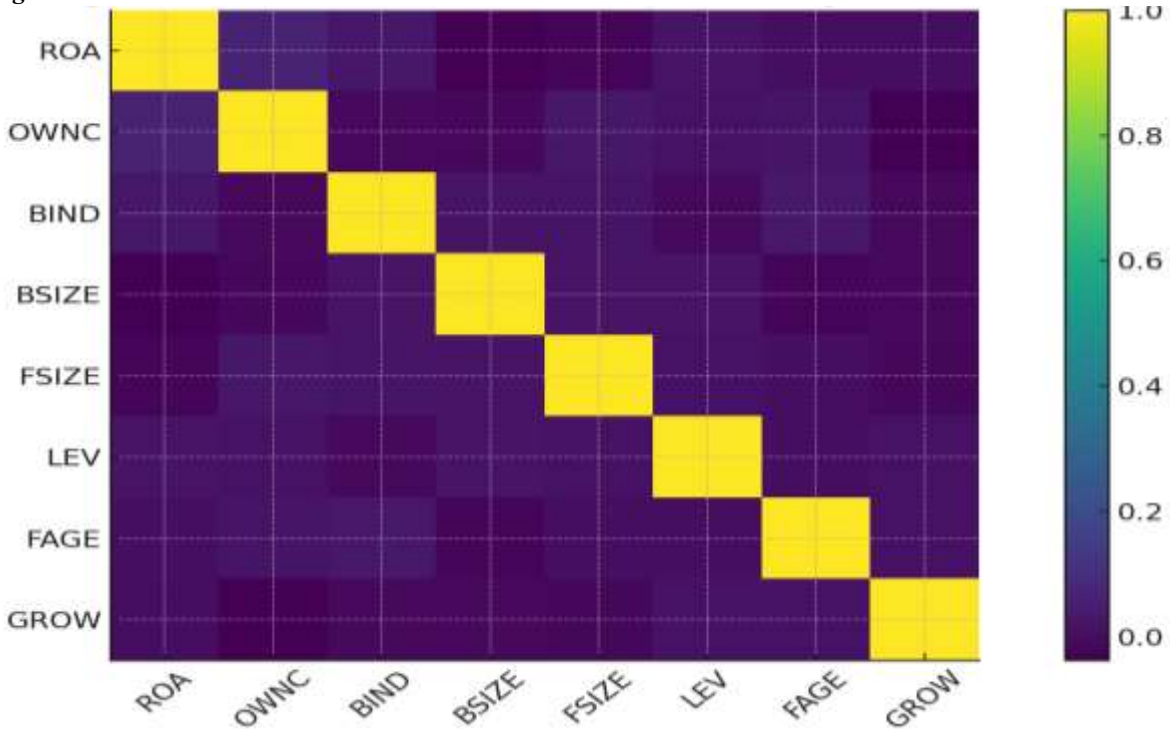


Figure 1: Correlation Matrix Heatmap

### 4.3. Baseline Regression

The baseline regression results are reported in Tables 4–6 and correspond to Equations (2)–(4) outlined in Section 3.3. The Hausman specification test favors the fixed-effects estimator; therefore, all reported coefficients are based on the fixed-effects framework. Model I: Ownership Concentration and Firm Performance. (Equation 2; Table 4) Model I examines the direct effect of ownership concentration on firm performance. As shown in Table 4, ownership concentration (OWNC) exhibits a positive and statistically significant association with return on assets ( $\beta = 0.019$ ,  $p = 0.041$ ). This indicates that, in Pakistan, firms with more concentrated ownership structures tend to achieve higher profitability. This finding supports the monitoring hypothesis, suggesting that dominant shareholders actively supervise management and reduce agency costs in an environment characterized by weak external governance mechanisms. Firm size (FSIZE) also shows a positive and significant effect ( $\beta = 0.036$ ,  $p = 0.006$ ), implying that larger Pakistani firms

benefit from economies of scale and superior access to resources.

Model II: Ownership Concentration and Board Independence. (Equation 3; Table 5) Model II evaluates whether ownership concentration influences board independence. The results reveal a negative and statistically significant relationship between ownership concentration and board independence ( $\beta = -0.011$ ,  $p = 0.006$ ). This suggests that in Pakistan's corporate sector, controlling shareholders tend to limit the presence of independent directors on corporate boards. Such behavior is consistent with the entrenchment view, whereby dominant owners prefer greater control over board decisions, potentially weakening internal monitoring mechanisms. Firm size again shows a positive and significant association with board independence, indicating that larger firms are more likely to comply with governance norms.

Model III: Joint Effects on Firm Performance. (Equation 4; Table 6) Model III incorporates both ownership concentration and board

independence to assess their simultaneous effects on firm performance. Once board independence is included, the coefficient on ownership concentration becomes statistically insignificant ( $\beta = 0.003, p = 0.704$ ), while board independence displays a strong and highly significant positive impact on ROA ( $\beta = 4.092, p < 0.001$ ). This result suggests that board independence is a key driver of firm performance in Pakistan and may act as an internal governance mechanism that outweighs the direct influence of ownership concentration.

The substantial increase in explanatory power ( $R^2 = 0.412$ ) further underscores the central role of board structure in explaining performance differences among Pakistani firms. Overall, the baseline results indicate that while ownership concentration initially appears beneficial, its performance-enhancing effect operates primarily through governance channels particularly board independence rather than through direct ownership control alone.

**Table 4: Baseline Regression – Model 1**

Variable	Coefficient	Std. er	t	p
Constant	1.912	0.382	5.01	0.000
OWNC	0.019	0.009	2.04	0.041
FSIZE	0.036	0.013	2.77	0.006
R <sup>2</sup>	0.118			
F stats	14.62			0.000

**Table 5: Baseline Regression – Model 2**

Variable	Coefficient	Std. er	t	p
Constant	0.421	0.041	10.27	0.000
OWNC	-0.011	0.004	-2.75	0.006
FSIZE	0.009	0.002	4.10	0.000
R <sup>2</sup>	0.094			
F stats	11.88			0.000

**Table 6: Baseline Regression – Model 3**

Variable	Coefficient	Std. er	t	p
Constant	-0.886	0.421	-2.10	0.036
OWNC	0.003	0.008	0.38	0.704
BIND	4.092	0.672	6.09	0.000
FSIZE	0.036	0.013	2.77	0.006

R <sup>2</sup>	0.412	
F stats	51.24	0.000

**4.4. Moderation Analysis**

Table 7 reports the results of the moderation analysis corresponding to Equation (5) examining whether board independence conditions the relationship between ownership concentration and firm performance. Consistent with earlier findings, board independence (BIND) exhibits a strong and highly significant positive effect on return on assets ( $\beta = 0.013$ ,  $p < 0.001$ ), underscoring its central monitoring role. While the direct effect of ownership concentration (OWNC) remains statistically insignificant, the interaction term between ownership concentration and board independence (OWNC  $\times$  BIND) is positive and highly significant. This result indicates that ownership concentration

enhances firm performance only when accompanied by a higher proportion of independent directors, highlighting the complementary nature of these governance mechanisms. In addition, board size (BSIZE) displays a negative and significant association with ROA, suggesting that excessively large boards may impair monitoring efficiency. Figure 2 visually illustrates the moderation effect, showing that firms with high board independence experience stronger performance gains from concentrated ownership. Overall, the findings provide robust evidence that effective board independence amplifies the performance benefits of ownership concentration in Pakistan.

**Table 7: Moderation analysis**

Variable	Coefficient	Std. er	t	p
OWNC	0.003	0.008	0.37	0.712
BIND	3.307	0.420	7.88	0.000
OWNC $\times$ BIND	0.013	0.003	3.95	0.000
BSIZE	-0.057	0.024	-2.41	0.016
Adj. R <sup>2</sup>	0.41			

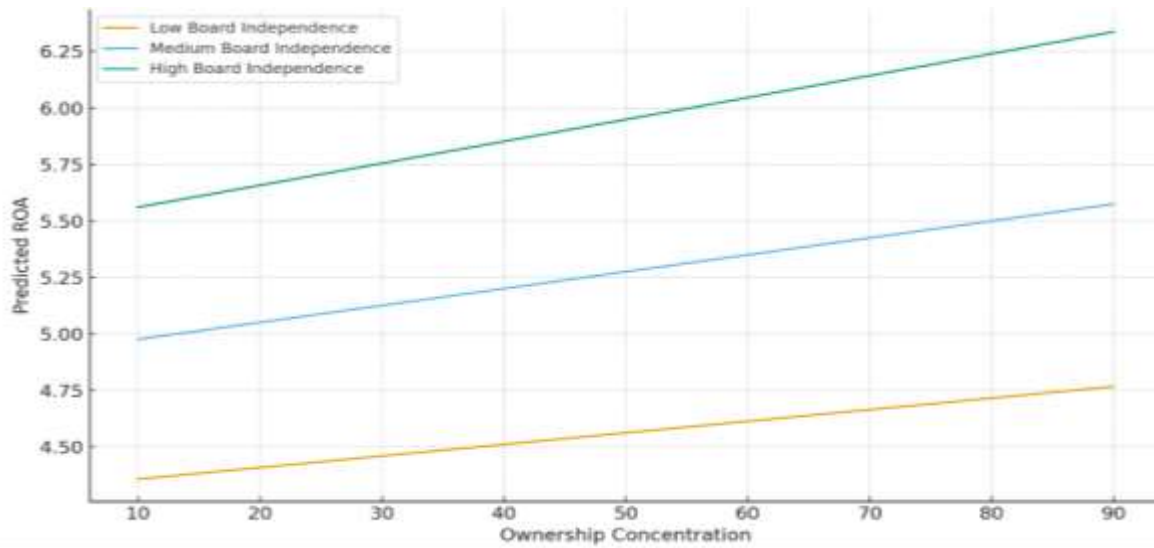


Figure 2: Moderation Effect of Board Independence on Ownership Concentration and ROA

4.5 Mediation Analysis

Table 8 presents the results of the mediation analysis based on Equations (3), (4), and (6) testing whether board independence mediates the relationship between ownership concentration (OWNCON) and firm performance (ROA). The indirect effect is calculated as the product of the coefficients along the two pathways: ownership concentration → board independence (a) and board independence → ROA (b). Using the coefficients from Models 2 and 3 (a = -0.1352, b = 0.8702), the indirect effect is -0.1176. The Sobel

test confirms this mediation effect is statistically significant (Z = -5.38, p < 0.001), indicating that higher ownership concentration reduces board independence, which in turn negatively affects ROA. While the direct effect of ownership concentration on ROA is negligible when board independence is included, the mediation results underscore that board independence serves as a crucial governance channel. These findings highlight that concentrated ownership can only enhance firm performance if accompanied by effective, independent oversight.

Table 8: Mediation analysis

Path	Coefficient	Std. Error	z	p
OWNCON → BINDP (a)	-0.1352	0.014	-9.768	0.000
BINDP → ROA (b)	0.8702	0.058	15.058	0.000
Indirect Effect (a×b)	-0.1176	0.022	-5.38	0.000

Note: Sobel test for mediation analysis

#### 4.6. Discussion

The empirical results of this study contribute to the ongoing debate on corporate governance mechanisms and firm performance in emerging markets, particularly in the context of Pakistan. Consistent with agency theory and recent international evidence, our findings indicate that ownership concentration alone exerts a positive but moderate direct effect on firm performance (ROA) (Alim et al., 2020; Alshehri, 2025; Ang et al., 2022). This aligns with studies in other emerging markets, where concentrated ownership serves as an effective internal monitoring mechanism in the presence of weak external governance systems, thereby enhancing performance outcomes (Arikawa et al., 2025; Boachie, 2023; Danso et al., 2020). However, consistent with some Pakistan-specific studies, our results also show that the performance benefits of concentrated ownership are conditional on effective board oversight rather than ownership concentration alone (Ahmed et al., 2024; Farooq et al., 2022; Usman & Alam, 2020). In line with the broader literature, board independence emerges as a strong positive determinant of firm performance in our full model (Delima, 2021; Din et al., 2022). This supports international evidence from China and other emerging markets, where independent directors are found to mitigate agency problems and enhance investment efficiency and operating performance (Nguyen et al., 2021; Tang et al., 2020). Our significant moderation result further demonstrates that ownership concentration enhances performance only when boards are sufficiently independent, reinforcing the idea that internal governance mechanisms are complementary rather than orthogonal. This pattern is consistent with global studies emphasizing the interplay between ownership structure and board characteristics in governing firm behavior and performance, particularly under weak regulatory enforcement (OBAJE & ABDULLAHI, 2021; Okafor et al., 2021; Ozdemir et al., 2021).

Nonetheless, our findings diverge from some prior evidence from Pakistan that reports negligible or even negative effects of board independence on performance, possibly due to symbolic compliance

and weak enforcement of independence criteria in certain firms. Such discrepancies underline the heterogeneous nature of governance effectiveness within emerging markets, where independent directors may lack the requisite authority or expertise unless governance norms and enforcement are strengthened (Peng, 2024; Queiri et al., 2021; Quyen et al., 2021). The negative effect of board size in our moderation model also echoes earlier evidence suggesting coordination problems and free-rider issues in overly large boards, which can undermine oversight quality (Rahman et al., 2020; Raimo et al., 2021; Raithatha & Haldar, 2021; Sakawa & Watanabel, 2020). Overall, this study underscores that in Pakistan's institutional setting characterized by high ownership concentration and evolving governance codes the complementarity between ownership concentration and board independence is crucial for translating governance into better financial performance. Our results contribute to the broader governance literature by highlighting that internal governance complementarities matter more than isolated governance attributes in emerging economies (Shirasu & Kawakita, 2021; Singh & Rastogi, 2023; Tang et al., 2020).

#### Conclusion and Policy Insights

This study examines the impact of ownership concentration and board structure on firm financial performance in Pakistan, using a comprehensive panel of non-financial firms listed on the Pakistan Stock Exchange over the period 2014-2024. By integrating ownership structure, board independence, board size, and their interaction effects within a unified empirical framework, the study provides robust evidence on how internal corporate governance mechanisms shape firm outcomes in an emerging market characterized by concentrated ownership and evolving regulatory oversight. The findings reveal that ownership concentration alone exerts only a modest influence on firm performance, suggesting that dominant shareholders are not inherently value-enhancing in the absence of effective governance constraints. In contrast, board independence emerges as a key driver of superior

firm performance, underscoring the importance of independent oversight in mitigating agency conflicts and improving strategic decision-making. Importantly, the moderation and mediation analyses demonstrate that board independence plays a pivotal role in conditioning and transmitting the effects of ownership concentration on performance. Concentrated ownership contributes positively to firm outcomes only when complemented by a sufficiently independent board, highlighting the complementary nature of ownership and board-level governance mechanisms. The negative association between board size and performance further suggests that excessively large boards may weaken monitoring efficiency and slow decision-making.

These results offer several important implications. For policymakers and regulators, the findings emphasize that strengthening formal independence requirements alone is insufficient unless independent directors are empowered to function effectively. For firms and controlling shareholders, the results suggest that long-term performance gains are more likely when ownership control is balanced with credible and independent board oversight. From an academic perspective, the study contributes to the corporate governance literature by demonstrating that governance mechanisms should be analyzed jointly rather than in isolation, particularly in emerging economies. Despite its contributions, this study is subject to limitations. Future research may extend the analysis by incorporating alternative performance measures, examining sector-specific dynamics, or exploring the role of director expertise and board committees. Overall, this study reinforces the view that effective corporate governance in Pakistan hinges not on ownership concentration per se, but on the quality and independence of board oversight.

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