

IMPACT OF CORPORATE GOVERNANCE ON DIVIDEND POLICY IN
THE PAKISTAN PHARMACEUTICAL SECTORAther Jawaid^{*1}, Dr. Muhammad Muzammil²^{*1}Research Scholar, Karachi University Business School, University of Karachi, Pakistan²Assistant Professor, Karachi University Business School, University of Karachi, Pakistan^{*1}atherjawaid97@gmail.com, ²muhammad.muzammil@uok.edu.pkDOI: <https://doi.org/10.5281/zenodo.21552801>**Keywords**

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Abstract

This empirical paper examines how internal board governance shape corporate dividend policy within the pharmaceutical sector of the Pakistan Stock Exchange (PSX). Drawing on a balanced panel of 7 listed pharmaceutical companies spanning 2015 to 2024 (N = 70 firm-year observations), the analysis models the Dividend Payout Ratio (DPR) against three core governance metrics Board Size (BOARD_SIZE), Board Independence (BOARD_IND), and Ownership Concentration (OWNERSHIP) while controlling variable as Firm Size (LOG_FIRM_SIZE), Financial Leverage (LEVERAGE), and Return on Assets (ROA). The diagnostic framework incorporated panel unit root tests, Pearson pairwise correlation analysis, and residual cross-sectional dependence evaluations. Selecting the optimal panel estimator relied on the Hausman specification test, which yielded a Chi-Square value of 30.9288 ($p = 0.0000$), rejecting the Random Effects specification in favor of a Cross-Section Fixed Effects model. The fitted Fixed Effects model accounts for roughly 54.67% of the total variance in dividend payout distributions ($R\text{-squared} = 0.5467$, $\text{Adjusted } R\text{-squared} = 0.4512$, $F\text{-statistic} = 5.7282$, $p = 0.000002$). The empirical results indicate that operating profitability acts as the sole statistically significant positive driver of corporate distributions across PSX-listed pharmaceutical firms. Precisely, Return on Assets (ROA) recorded positive coefficients across both model specifications ($\text{Beta} = 0.7842$, $p = 0.0859$ under Fixed Effects; $\text{Beta} = 1.4702$, $p = 0.0001$ under Random Effects). In contrast, structural governance attributes like board size, board independence, and ownership concentration alongside control variables such as firm size and leverage, exhibited no direct significant influence on dividend decisions. These outcomes highlight a critical economic reality within regulated emerging market sectors. In an industry constrained by Drug Regulatory Authority of Pakistan (DRAP) price controls, persistent currency devaluation, and heavy reliance on imported raw materials, dividend distributions depend strictly on actual asset returns and cash liquidity rather than board structure. Internal governance mechanics primarily fulfill procedural compliance mandates established by the Securities and Exchange Commission of Pakistan (SECP) instead of actively directing dividend strategy.

Thus, capital market investors should prioritize fundamental operating profitability over governance metrics when building dividend portfolios, while regulatory bodies must reform price-setting mechanisms to support firm operational cash sustainability.

1. INTRODUCTION

1.1 Background of the Study

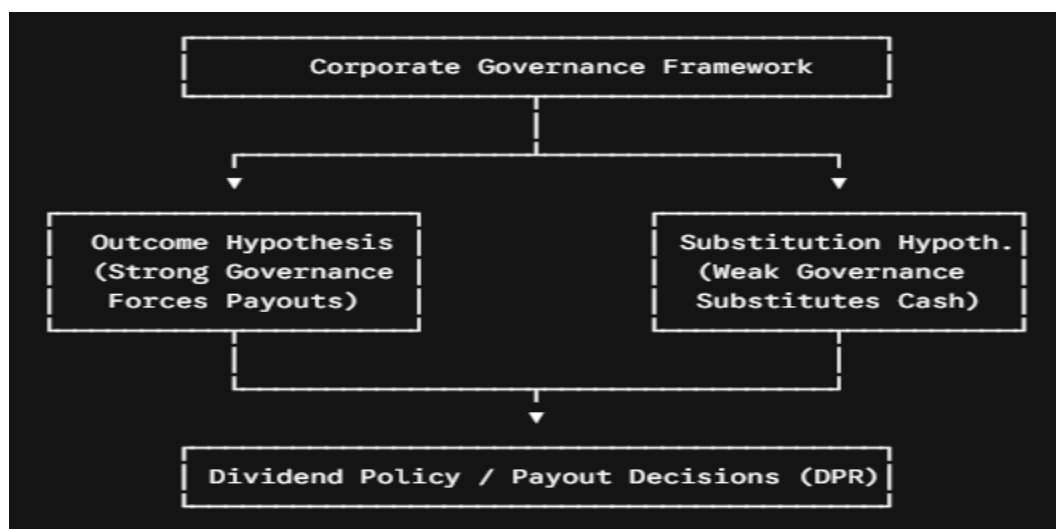
The corporate governance–dividend policy nexus stands as one of the most persistent and deeply analyzed debates in financial economics. Corporate governance defines the overarching framework of internal controls, oversight structures, and executive accountability mechanisms within a firm. Dividend policy, by contrast, operates as a core capital allocation strategy. Cash payouts serve a dual role: distributing earnings to shareholders and signaling cash flow stability, operational health, and long-term viability to the broader capital market.

Deciding whether to retain profits for internal growth or distribute them to equity holders is rarely a neutral administrative choice. Corporate payout decisions are deeply entwined with agency frictions—specifically the inherent misalignment of incentives between corporate managers (agents) and capital providers (principals). Classical Agency Theory (Jensen & Meckling, 1976; Easterbrook, 1984) asserts that dividend distributions reduce

agency costs by removing discretionary cash flows from executive control, curbing managerial empire-building, unviable capital investments, or opportunistic spending.

In emerging and developing economies, the operational dynamic between governance mechanisms and cash payouts is predominantly interpreted through two competing theoretical frameworks articulated by La Porta et al. (2000)

- **The Outcome Hypothesis:** Posits that robust governance frameworks and strong shareholder protections empower minority investors to pressure corporate insiders into returning excess cash reserves as dividends.
- **The Substitution Hypothesis:** Suggests that in environments where external legal frameworks and formal shareholder rights are weak, firms voluntarily maintain higher payout ratios to build a market reputation for fair treatment, effectively substituting direct investor protections with steady cash distributions.



In Pakistan, this relationship operates under substantial market frictions, heightened

information asymmetry, and sector-specific operational constraints. The pharmaceutical

industry listed on the Pakistan Stock Exchange (PSX) offers an exceptionally relevant domain for testing these theoretical relationships. Operating under stringent regulatory price caps enforced by the Drug Regulatory Authority of Pakistan (DRAP) and relying heavily on imported Active Pharmaceutical Ingredients (APIs), domestic pharmaceutical manufacturers contend with structural margin pressures and volatile working capital demands.

In the post-2020 macroeconomic climate—marked by sharp currency depreciation, rapid inflation, and steep rate hikes—pharmaceutical executives have faced a demanding operational balance: preserving internal cash buffers to safeguard against supply chain interruptions versus meeting shareholder expectations for steady dividend yields.

1.2 Problem Statement

Despite the pharmaceutical industry's strategic importance to Pakistan's healthcare infrastructure and public economy, substantial empirical uncertainty remains regarding how internal governance architectures influence corporate payout strategy.

Although the Securities and Exchange Commission of Pakistan (SECP) has progressively updated the Code of Corporate Governance (CCG) to strengthen board independence and safeguard minority interests, empirical verification of whether these mandates meaningfully shape real payout behavior across manufacturing sub-sectors remains limited. Existing corporate finance research across Pakistani capital markets exhibits two critical gaps:

1. **Financial Sector Bias:** Prior studies focus disproportionately on commercial banks and financial institutions. However, institutional dividend policies in banking are largely governed by strict capital adequacy ratios and statutory reserve requirements rather than market-driven corporate governance tools.

2. **Outdated Sample Windows:** Much of the existing empirical work relies on data collected before 2022. Consequently, prior studies fail to capture how board composition and shareholding arrangements alter payout choices during severe

macroeconomic shocks, such as historic interest rate increases and foreign exchange swings.

Furthermore, corporate ownership across Pakistani manufacturing enterprises is heavily concentrated, often dominated by founding family groups. This ownership structure shifts the underlying agency challenge from classic Principal-Agent friction to a Principal-Principal (P-P) conflict. Under this dynamic, controlling shareholders may hold excess liquidity or expropriate minority earnings under the operational banner of building corporate reserves. Whether internal governance attributes—such as board scale and independent oversight—provide genuine monitoring against unwarranted cash retention, or simply fulfill procedural compliance, remains an open empirical question. This study addresses this divide by assessing how internal corporate governance structures and ownership concentration shaped dividend payout behavior across listed Pakistani pharmaceutical firms over a dynamic 10-year period.

1.3 Research Objectives

The principal goal of this investigation is to empirically determine how internal board attributes and concentrated ownership structures influence the dividend distribution decisions of listed pharmaceutical enterprises in Pakistan.

The specific objectives of this study are:

- To evaluate the direct impact of key board attributes—specifically Board Size and Board Independence—on the Dividend Payout Ratio (DPR) of PSX-listed pharmaceutical firms.
- To analyze the influence of Ownership Concentration on corporate dividend distribution decisions within the domestic pharmaceutical industry.
- To assess the controlling effect of core financial metrics (Firm Size, Financial Leverage, and Return on Assets) on corporate dividend behavior.
- To establish whether the empirical relationship between governance structures and payout policy in the Pakistani pharmaceutical sector aligns with the Outcome Hypothesis or the Substitution Hypothesis.

1.4 Research Questions

To fulfill the research objectives, this study addresses four central research questions:

- **RQ1:** How do internal board attributes (Board Size and Board Independence) influence the dividend payout ratios of pharmaceutical firms listed on the Pakistan Stock Exchange?
- **RQ2:** To what extent does Ownership Concentration shape corporate dividend distribution choices when substantial shareholding is held by concentrated equity blocks?
- **RQ3:** Do fundamental financial indicators including operational profitability (ROA), firm scale (Firm Size), and capital structure (Leverage) wield a stronger influence on dividend decisions than corporate governance attributes?
- **RQ4:** Do empirical findings within the Pakistani pharmaceutical market align with the theoretical predictions of the Outcome Hypothesis or the Substitution Hypothesis?

1.5 Significance of the Study

This research offers meaningful contributions across theoretical, regulatory, and practical domains:

1. Theoretical and Academic Contributions

This study adds to the global dividend literature by examining sector-specific panel evidence from an emerging market. By evaluating the tension between the Outcome and Substitution hypotheses within a price-regulated, capital-intensive manufacturing sector, the analysis expands current theoretical understanding of Principal-Principal agency dynamics during macroeconomic volatility.

2. Regulatory and Policy Relevance

The findings provide empirical feedback for regulatory bodies, particularly the Securities and Exchange Commission of Pakistan (SECP) and the Pakistan Stock Exchange (PSX). The results clarify whether mandated board independence and corporate governance mandates act as genuine oversight mechanisms or remain compliance exercises within concentrated, family-dominated sectors.

3. Investment and Portfolio Strategy Implications

For financial analysts, asset managers, and institutional investors, this study highlights whether governance scores or operational financial metrics (such as ROA and leverage) provide more reliable signals for forecasting cash dividends. This insight supports the formulation of dividend-yield strategies across frontier and emerging markets.

1.6 Scope and Period of the Study

The focus of this investigation is restricted to pharmaceutical manufacturing enterprises actively listed on the Pakistan Stock Exchange (PSX).

- **Sample and Panel Structure:** The study utilizes a balanced longitudinal panel dataset covering seven prominent PSX-listed pharmaceutical firms (N = 7).
- **Time Horizon:** The empirical window spans a 10-year period from 2015 to 2024, resulting in a total sample size of N = 70 firm-year observations.
- **Variable Scope:** The empirical model utilizes the Dividend Payout Ratio (DPR) as the primary dependent variable. Independent variables consist of core corporate governance metrics (Board Size, Board Independence, and Ownership Concentration), alongside key financial control metrics (Log Firm Size, Financial Leverage, and Return on Assets).

2. LITERATURE REVIEW

2.1 Theoretical Foundations

The economic analysis of corporate governance and corporate payout policy rests upon a foundational body of financial literature. These theoretical models detail how ownership structures, board composition, and financing constraints interact to determine cash distribution strategies across different institutional and legal settings.

Modern payout theory began with Miller and Modigliani (1961), who established the baseline irrelevance proposition under perfect capital markets. They demonstrated that when transaction costs, corporate and personal taxes,

information asymmetries, and agency frictions are absent, a firm's market value depends strictly on its core investment decisions and earning power rather than how it splits cash flows between retained earnings and dividend payouts. Because real-world markets experience severe friction, tax distortions, asymmetric information, and conflicting manager-shareholder incentives, corporate dividend policies serve as essential monitoring and signaling mechanisms.

To explain why cash distributions, retain strategic value in imperfect markets, Jensen and Meckling (1976) introduced Agency Theory, defining the firm as a network of contractual relationships strained by divergence of interest between equity principals and executive agents. They noted that self-interested managers often divert corporate capital toward non-value-maximizing perks, unviable investment projects, or empire building. Regular cash dividend payments counter this tendency by stripping discretionary liquidity from executive control, directly bounding managerial discretion and lowering total agency costs.

Easterbrook (1984) expanded agency theory by presenting two complementary explanations for continuous dividend distributions. First, paying dividends forces firms to re-enter primary equity and debt markets regularly to finance ongoing operations and capital expenditures. This recurrent exposure subject's management to continuous evaluation by underwriters, institutional lenders, and market analysts. Second, distributing earnings modifies the firm's internal risk profile, keeping executives from hoarding uncommitted cash flows to build safe, low-yielding corporate entities at shareholder expense.

La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2000) operationalized agency theory within cross-border regulatory settings by contrasting the Outcome Hypothesis against the Substitution Hypothesis across 524 firms in 33 countries. Their cross-country findings supported the Outcome Hypothesis, showing that dividends reflect strong legal protections and assertive board oversight that empower minority shareholders to extract excess cash from corporate insiders. Conversely, the Substitution Hypothesis posits that in weak legal regimes or poorly governed firms, managers

voluntarily pay high dividends to build market reputation and reduce external capital raising costs.

Faccio, Lang, and Young (2001) adapted classical agency framework to emerging markets by examining concentrated corporate groups across Europe and East Asia. They articulated the Principal-Principal (P-P) Agency Conflict, showing that where legal enforcement remains weak and shareholding is concentrated, the dominant corporate risk shifts from managerial shirking to minority shareholder expropriation by controlling block holders. In these settings, dominant family or corporate groups frequently curtail cash dividends to preserve private control over liquid assets, exposing minority investors to tunneling and wealth diversion.

2.2 Empirical Literature Synthesis

2.2.1 Foreign and International Evidence

International empirical research demonstrates how board dynamics, executive compensation design, and institutional frameworks govern corporate payout decisions.

Geiler and Renneboog (2016) evaluated the managerial discretion hypothesis across a panel of UK public companies from 1996 to 2007 using Quantile Regression and Multinomial Logit modeling. They examined how executive remuneration schemes—particularly non-dividend-protected stock options and restricted shares—influenced the choice between cash dividends and share repurchases. Their estimations showed that managers holding substantial non-dividend-protected equity incentives systematically favor earnings retention or share buybacks over cash dividends, as cash distributions mechanically erode option values. This finding confirmed that payout choices frequently reflect executive wealth maximization rather than investor tax preferences. Al-Najjar and Kilincarslan (2017) examined board structures and payout decisions across 50 UK Small and Medium Enterprises (SMEs) listed on the Alternative Investment Market (AIM) from 2010 to 2013 using fixed effects and two-stage least squares (2SLS) estimators. Tracking board size, board independence, CEO duality, gender diversity, and audit committee scale, they found

that larger boards and expanded audit committees exert a positive, statistically significant impact on dividend distribution due to enhanced monitoring capabilities. Conversely, board independence and CEO duality correlated negatively with payout ratios, leading the authors to conclude that UK small-cap entities utilize dividends as a strategic substitute when internal structural oversight appears weak.

Mili, Sahut, and Teulon (2017) evaluated emerging market dynamics by analyzing corporate governance, ownership concentration, and dividend behavior across an international panel from 2003 to 2011. Applying static and dynamic panel estimators, they observed that while institutional block holders press firms to accelerate dividend distributions, concentrated family holdings exert the opposite effect, restricting payouts to preserve liquid reserves. During the global financial crisis, firms characterized by larger boards and combined CEO-chair roles reduced dividends most aggressively, as weak internal governance allowed managers to hoard cash against credit market shocks at the expense of investor yield.

Shamsabadi, Tebourbi, Nourani, and Min (2021) examined governance quality and the deployment of Dividend Reinvestment Plans (DRPs) among the 300 largest listed companies on the Australian Securities Exchange (ASX) between 2001 and 2013 using a random-effects Tobit model. Evaluating board size, independent director proportions, committee structures, and block holder ownership, they identified a statistically significant positive relationship between corporate governance strength and DRP implementation, demonstrating that compliant boards deploy DRPs as effective internal financing mechanisms. This relationship was strongly moderated by Australia's dividend imputation tax regime, underscoring how national tax policy interacts with corporate oversight.

Liao, Yong, and Xiang (2022) integrated behavioral finance parameters—specifically managerial risk aversion and ambiguity aversion—with corporate lifecycle frameworks across an international panel from 2000 to 2016 using OLS and Logit models. Their analysis revealed that risk-

averse executives enforce conservative payout policies to protect against the reputational damage and adverse market signals caused by forced dividend cuts during economic contractions. In addition, growth-focused enterprises maintain substantial internal liquidity, suppressing cash distribution ratios regardless of formal board composition or governance compliance.

Saidi, Yong, and Xiang (2025) studied the relationship between Environmental, Social, and Governance (ESG) performance and corporate dividend choices across listed European enterprises from 2015 to 2023 using dynamic panel GMM estimators to address indigeneity. Modeling individual ESG pillars alongside board independence, leverage, and free cash flows against payout ratios, they found that strong governance ratings and high overall ESG scores correlate positively and significantly with dividend payout ratios. These results lend strong empirical backing to the Outcome Hypothesis by confirming that transparent monitoring systems curb managerial cash hoarding and force excess cash flow distribution to external shareholders.

2.2.2 Regional and Asian Evidence

In regional Asian markets, structural market conditions including promoter group dominance, family network control, and state equity stakes shape corporate governance and payout practices. Al-Kuwari (2009) evaluated dividend determinants across Gulf Cooperation Council (GCC) listed entities from 1999 to 2003 using random-effects Tobit models. Modeling dividend payout ratios against government ownership, free cash flows, firm size, growth prospects, financial leverage, and profitability, the study identified a significant negative relationship between dividends and financial leverage, alongside positive linkages with government ownership, profitability, and total assets. The author concluded that GCC firms deploy high dividend payouts as a signaling tool to reduce persistent Principal-Principal agency conflicts where formal minority protections remain developing.

Abdullah and Ismail (2017) examined internal governance attributes and institutional block holders across GCC stock exchanges from 2009 to

2015 using Pooled OLS, Fixed Effects, and Random Effects regressions. Modeling board size, director independence, CEO duality, institutional ownership, and profitability against dividend yield, they found that board size and institutional ownership relate positively to payouts, supporting the active monitoring model. However, when family ownership concentration exceeds high thresholds, the positive effect of independent directors disappears, showing that controlling family blocks can override board monitoring to restrict cash distributions.

Oh and Park (2021) examined Corporate Sustainable Management (CSM) indices and internal governance indicators among South Korean listed firms from 2011 to 2018 using panel fixed effects and OLS regressions. Evaluating board size, foreign equity shares, audit quality, and CSM scores against dividend propensity, they established that firms committed to sustainable management maintain higher and more stable dividend payout ratios over time. This positive effect proved pronounced among non-chaebol entities where outside monitoring operates effectively, indicating that sustainable governance frameworks deploy predictable dividend streams to signal value to international investors.

Ghose, Yong, and Xiang (2025) investigated corporate determinants of dividend adjustments across Indian non-financial entities from 2012 to 2022 using dynamic panel probity and fixed-effects models. Tracking promoter group shareholdings, independent board ratios, asset tangibility, and institutional ownership against payout changes, they found that larger, mature companies with high promoter group concentration maintain a significantly higher probability of increasing dividend distributions. Controlling blocks in Indian manufacturing deploy dividend hikes to mitigate market skepticism and meet institutional investor demand for verifiable cash flows over internal reinvestment.

Monika, Qamruzzaman, and Kler (2025) evaluated audit committee characteristics and expanded board oversight metrics among large non-financial corporations on the National Stock Exchange (NSE) of India from 2014 to 2023. Employing panel fixed-effects regressions with

robust standard errors, they evaluated audit committee independence, meeting frequency, financial expertise ratios, board size, and financial leverage against payout ratios. The estimations proved that audit committee independence and financial expertise on the board link positively and significantly with higher dividend payments, validating the Outcome Hypothesis by demonstrating that audit structures restrict managerial discretion over corporate cash.

2.2.3 National Context: Pakistan Market Evidence

Empirical literature focused on Pakistan highlights ongoing tension between formal governance mandates such as the SECP Code of Corporate Governance and the operational realities of family-dominated business groups.

Afza and Mirza (2010) examined dividend policy determinants across 100 non-financial firms listed on the Karachi Stock Exchange from 2005 to 2009 using OLS and panel regressions. Testing cash flow sensitivity, institutional ownership concentration, asset growth, market-to-book ratios, and operating leverage, they documented that corporate dividend payouts respond positively and significantly to internal cash flow liquidity, while showing inverse relationships with growth opportunities and financial leverage. The authors concluded that Pakistani firms prioritize maintaining internal cash reserves for operational stability, rendering dividend distributions volatile and tied directly to short-term liquidity rather than long-term governance configurations.

Batool and Javid (2013) evaluated the impact of governance practices on dividend policies among KSE-listed non-financial firms from 2006 to 2011. Constructing a Corporate Governance Index (CGI) capturing board composition, ownership structure, and disclosure quality, they applied fixed-effects panel models controlling for profitability, firm size, and leverage. Their findings showed that firms with higher CGI scores distribute significantly larger dividends, providing local support for the Outcome Hypothesis. Early implementation of the Code of Corporate Governance in Pakistan empowered external shareholders, compelling profitable enterprises to

distribute cash rather than retain it in discretionary liquid accounts.

Yousaf, Ali, and Hassan (2019) analyzed family ownership control, family management representation, and independent board oversight across non-financial firms on the Pakistan Stock Exchange from 2008 to 2016. Using static panel models with double-clustered robust standard errors, they evaluated family board representation, founder CEO presence, and block holder concentration against dividend payout ratios. The results supported the expropriation hypothesis, revealing that high family management representation on boards correlates with lower dividend payout ratios. Family insiders in Pakistan suppress cash distributions to preserve private control over liquid capital, leaving minority shareholders with limited protection due to weak enforcement by independent directors on family-dominated boards.

Hameed, Yong, and Xiang (2021) examined political connections, internal governance frameworks, and dividend choices among listed non-financial PSX firms from 2012 to 2019 using panel regressions and instrumental variable estimators. Analyzing how politically connected directors alter payout choices, they demonstrated that politically connected firms in Pakistan maintain lower dividend payout ratios and hoard larger cash reserves than non-connected counterparts. Political connections shield firms from external capital market pressures and regulatory oversight, undermining the monitoring capacity of independent directors and enabling insiders to restrict dividends with minimal market consequences.

Xiang, Yong, and Xiang (2022) evaluated governance resilience and dividend payout stability across banking and manufacturing sectors in Pakistan during systemic macroeconomic shocks from 2016 to 2022 using panel regressions and variance decomposition methods. Board size, independent audit committees, and institutional ownership concentration were tracked across economic cycles. While the banking sector maintained structured dividend payouts due to capital adequacy regulations imposed by the State Bank of Pakistan (SBP), capital-heavy

manufacturing firms implemented sharp dividend cuts. Internal governance frameworks in Pakistani manufacturing lacked the structural insulation necessary to preserve steady dividend signaling under severe macroeconomic stress.

Maqbool, Yong, and Xiang (2022) examined corporate board diversity, environmental management disclosures, and dividend policy among public firms in Pakistan from 2015 to 2021 using panel fixed-effects regressions. Evaluating female director percentages, board independence ratios, and environmental expenditure against payout ratios, they observed that female directors and independent board chairs significantly increase dividend propensity. These findings reinforce the Outcome Hypothesis, demonstrating that diverse and independent board structures in Pakistan safeguard minority shareholders by demanding clear cash distribution over discretionary retentions.

Aslam, Haron, and Tahir (2023) investigated concentrated ownership networks and family business groups across PSX non-financial sectors from 2010 to 2020 using dynamic system GMM panel estimators to control for indigeneity and unobserved firm heterogeneity. Evaluating family block holder percentages, institutional holdings, board size, and independent director ratios against dividend payout ratios, they confirmed a significant relationship between family ownership concentration and dividend choices. Family groups actively deploy dividends as an internal balancing tool to reallocate liquidity across affiliated group entities rather than relying solely on independent board oversight.

Azeem, Yong, and Xiang (2023) analyzed how external financial constraints and internal corporate governance interact to dictate dividend payouts among PSX-listed manufacturing firms from 2011 to 2021. Using dynamic panel GMM estimators to control for persistent indigeneity, they evaluated board composition, audit quality, and ownership concentration alongside financial distress metrics. While strong governance indicators support higher dividend payouts under stable economic conditions, this positive effect vanishes when firms face severe financial constraints. Under tight market liquidity, highly

compliant boards prioritize cash preservation and debt service over dividend distributions, showing that operational survival overrides traditional governance signaling in volatile markets.

Chaudhary and Sohail (2023) evaluated dividend payout adjustments across Pakistan's manufacturing sector from 2014 to 2022 using panel regression variants. Tracking board size, independent director percentages, leverage, and return on equity against payout ratios, they identified an inverse relationship between dividends and leverage alongside a direct relationship with operational profitability. Pakistani manufacturing firms prioritize debt service and capital structure stability over voluntary dividend signaling, making operational financial health far more predictive of payout choices than nominal board composition metrics. Farooq, Yong, and Xiang (2025) investigated how corporate governance moderates the relationship between Corporate Social Responsibility (CSR) investments and dividend payout choices in Pakistani manufacturing from 2016 to 2024. Using panel fixed-effects regressions, they mapped CSR spending, board size, independent director ratios, and ownership concentration against dividend propensity. CSR spending relates positively to dividend payouts, and this relationship strengthens in firms maintaining independent boards and compact board structures. Compliant governance frameworks ensure management uses CSR and dividends concurrently as complementary signaling tools, rather than using CSR as a distraction from cash diversion or payout cuts.

Shakri, Yong, and Xiang (2025) analyzed compliance levels with the SECP revised corporate governance codes among listed Pakistani manufacturing firms from 2018 to 2024 using structural equation modeling (SEM) and panel regressions. Evaluating board diversity, audit quality, and independent leadership against financial leverage and payout structures, they found that higher compliance leads to significant reductions in financial leverage and stabilization of dividend payout ratios. Adherence to modern SECP codes lowers the risk premium demanded by investors, allowing compliant firms to

substitute high-cost debt with retained equity while maintaining stable dividend signals.

Aslam and Fatima (2025) examined board composition, managerial entrenchment, and financial choices across PSX manufacturing enterprises from 2016 to 2024 using panel fixed-effects regressions with robust standard errors. Evaluating board size, independent director ratios, founder CEO presence, and family ownership concentration against leverage and dividend payout structures, they observed that board size and independence link positively with dividend payouts. However, when family management control exceeds high concentration levels, the positive monitoring effect of independent directors diminishes, enabling entrenched insiders to restrict cash distributions to retain internal liquidity.

2.2.4 Local Focus: Karachi Stock Exchange and PSX Pharmaceutical Sector

Focusing specifically on the listed pharmaceutical manufacturing sub-sector on the Pakistan Stock Exchange in Karachi, empirical literature remains limited, revealing operating characteristics that differ from broader manufacturing blocks.

Ullah, Mubasher, and Gul (2021) investigated the impact of internal governance arrangements on dividend payouts across pharmaceutical companies listed on the Pakistan Stock Exchange from 2010 to 2019. Using static panel data estimation techniques, including Pooled OLS and Fixed Effects models, they tested board size, independent director ratios, CEO duality, and institutional block holdings against dividend payout ratios. Larger boards and higher institutional equity holdings maintained a positive, statistically significant relationship with dividend payouts, indicating that institutional presence reinforces board monitoring. However, the ratio of independent directors showed no statistically significant direct impact on payouts, indicating that nominal board composition does not automatically translate into effective monitoring within the sector.

Kashif, Yong, and Xiang (2021) examined financial and governance determinants of dividend policy within the Pakistani

pharmaceutical sector from 2012 to 2020 using panel fixed-effects regressions. Modeling dividend payout ratios against governance attributes alongside return on assets, asset size, leverage, and sales growth, they revealed that firm profitability (ROA) and asset size are the primary significant predictors of dividend distributions. Traditional board proxies like board size and director independence displayed low statistical significance. The capital-intensive nature of pharmaceutical operations, combined with strict price regulations enforced by the Drug Regulatory Authority of Pakistan (DRAP), forces these firms to base payout policies on realized financial capacity rather than formal governance metrics.

2.3 Synthesis and Identification of the Research Gap

The systematic review of international, regional, national, and sector-specific literature demonstrates a clear trajectory in dividend research, transitioning from classical frictionless models to complex agency models tailored to developing market realities. In Western equity markets, empirical evidence generally supports the Outcome Hypothesis, showing that independent boards and formal audit mechanisms restrict managerial cash hoarding and compel cash distributions. Conversely, emerging market literature particularly within South Asia and the GCC emphasizes how concentrated family ownership, promoter blocks, and political ties frequently dilute internal board oversight, leading firms to deploy dividend yields as signaling substitutes to manage Principal-Principal agency conflicts.

Despite this extensive literature, a critical evaluation identifies three fundamental gaps that remain unaddressed within Pakistan's capital market:

First, a pronounced **Temporal Gap** exists within sector-specific literature. Prior empirical studies investigating the pharmaceutical sector on the Pakistan Stock Exchange (such as Ullah et al., 2021; Kashif et al., 2021) relied on sample windows that concluded in 2019 and 2020. Existing academic literature fails to capture corporate payout behavior during the severe post-

2022 macroeconomic shocks in Pakistan. This recent period involved historic central bank policy rate hikes, elevated domestic inflation, severe PKR currency devaluation, and acute foreign exchange import restrictions on active pharmaceutical ingredients (APIs). How corporate governance mechanisms mediate dividend choices under such macroeconomic stress remains unexamined at the sector level.

Second, a distinct **Sectoral and Institutional Gap** persists due to overgeneralizing manufacturing data. Most national empirical studies in Pakistan aggregate non-financial or manufacturing firms into single, homogenous samples. This approach overlooks the unique operating and regulatory constraints of the pharmaceutical sector. Listed pharmaceutical companies operate under strict price ceilings enforced by the Drug Regulatory Authority of Pakistan (DRAP), limiting their ability to pass rising input costs onto consumers. Combined with a heavy reliance on imported raw materials, pharmaceutical firms contend with distinct working capital pressures. How internal governance structures interact with profit preservation under rigid price caps represents an unaddressed area in Pakistani corporate finance literature.

Third, a **Methodological and Theoretical Gap** exists regarding the empirical dominance between corporate governance proxies and fundamental financial capacity. Prior sector-specific studies evaluated governance attributes or financial indicators in isolation, rarely integrating board composition, ownership concentration, and firm financial performance into a unified panel model across a continuous ten-year horizon (2015 to 2024, N = 70). Consequently, existing literature lacks a definitive determination on whether the Pakistani pharmaceutical sector operates under the Outcome Hypothesis or the Substitution Hypothesis, or whether operational profitability (ROA) acts as a primary prerequisite that renders nominal board governance variables secondary in driving dividend payouts.

This study directly fills these empirical voids by evaluating a balanced panel dataset of listed pharmaceutical firms on the Pakistan Stock Exchange over the decade spanning 2015 to 2024.

2.4 Hypothesis Development

Based on the theoretical frameworks and empirical literature synthesized above, this study formulates three primary testable hypotheses regarding the determinants of dividend payout ratios (DPR) in the PSX pharmaceutical sector:

1. Corporate Governance Oversight (Outcome Hypothesis vs. Substitution Hypothesis)

Agency theory posits that effective board monitoring mitigates executive cash hoarding by forcing managers to distribute excess earnings to equity holders (La Porta et al., 2000). Larger and more independent boards possess greater structural leverage to demand cash distributions. Conversely, in capital-intensive sectors, boards may conserve cash for operational reserves. To empirically evaluate this relationship within the listed pharmaceutical sector:

- **H1:** Internal corporate governance oversight (Board Size and Board Independence) has a statistically significant positive effect on the Dividend Payout Ratio of listed pharmaceutical firms.

2. Ownership Structure (Principal-Principal Conflict)

In emerging markets characterized by concentrated equity holdings, dominant block holders or founding families frequently exercise control over strategic corporate decisions. Agency theory suggests that high ownership concentration enables controlling insiders to suppress dividend payouts to retain liquid capital for private benefit or internal group financing (Faccio et al., 2001; Yousaf et al., 2019). Therefore, it is hypothesized that:

- **H2:** Ownership concentration has a statistically significant negative effect on the Dividend Payout Ratio of listed pharmaceutical firms.

3. Financial Capacity and Profitability (Pecking Order / Liquidity Constraints)

Given that PSX-listed pharmaceutical firms operate under strict pricing controls enforced by the Drug Regulatory Authority of Pakistan (DRAP) and face high raw material import costs, cash distribution relies heavily on realized

operating capacity rather than governance preference alone (Kashif et al., 2021). According to the Pecking Order Theory, highly profitable firms maintain the net cash margins necessary to sustain high dividend distributions after meeting working capital demands. Thus, it is hypothesized that:

- **H3:** Firm profitability (ROA) has a statistically significant positive effect on the Dividend Payout Ratio of listed pharmaceutical firms.

3. RESEARCH METHODOLOGY

3.1 Research Philosophy and Conceptual Framework

This study adopts a quantitative, deductive research design anchored in a positivist philosophical paradigm. Positivism assumes that economic reality exists independently of the observer and can be systematically evaluated through empirical observation, measurement, and statistical testing. In corporate finance, this epistemological approach allows for testing formal theoretical frameworks—specifically Agency Theory, the Outcome Hypothesis, and established payout literature—against observable financial and governance indicators without subjective interpretation.

To test these theoretical constructs, the research design utilizes econometric modeling applied to a longitudinal panel dataset across a ten-year observation window spanning from 2015 to 2024. Combining cross-sectional firm data with continuous time-series observations offers distinct analytical advantages: it expands degrees of freedom, mitigates collinearity among explanatory predictors, controls for unobserved firm-level heterogeneity, and improves the overall statistical efficiency of the econometric estimators.

3.2 Target Population, Sampling Strategy, and Sample Profile

The target population for this empirical inquiry comprises all pharmaceutical manufacturing corporations actively listed on the Pakistan Stock Exchange (PSX). A purposive sampling strategy was employed to select entities based on continuous active trading, data completeness, and

the availability of audited financial disclosures throughout the entire study timeframe.

Applying these criteria yielded a balanced panel of seven major pharmaceutical corporations observed continuously across the ten-year window (2015–2024). This configuration generates a balanced panel dataset of 70 firm-year observations ($N = 7 \text{ firms} \times T = 10 \text{ years} = 70 \text{ observations}$).

The sample captures the core operational capacity and market capitalization of Pakistan's listed pharmaceutical sector:

- GlaxoSmithKline Pakistan Limited (GSK)
- Highnoon Laboratories Limited
- The Searle Company Limited
- IBL HealthCare Limited
- Ferozsons Laboratories Limited
- Abbott Laboratories (Pakistan) Limited

- Otsuka Pakistan Limited

3.3 Data Sources and Collection Protocols

Secondary quantitative data required for the empirical analysis were manually compiled from the audited annual financial statements and corporate governance disclosures of the respective companies. Structural governance metrics including board size, board independence, and ownership concentration were extracted from corporate governance statements, directors' reports, and pattern-of-shareholding schedules. To ensure empirical reliability and cross-institutional consistency, all extracted data points were cross-verified against official filings on the Pakistan Stock Exchange (PSX) data portal and the corporate filing registries maintained by the Securities and Exchange Commission of Pakistan (SECP).

3.4 Variable Operationalization and Measurement

Table 3.4: Summary of Variable Definitions, Labels, and Measurement

Variable Role	Variable Name	Label	Measurement Formula / Description
Dependent	Dividend Payout Ratio	DPR	Cash Dividend Per Share / Earnings Per Share (DPS / EPS)
Independent	Board Size	BSIZE	Total count of directors serving on the board at year-end
Independent	Board Independence	BIND	Proportion of independent non-executive directors on the board
Independent	Ownership Concentration	OWN	Cumulative percentage of equity held by top 5 block-holders
Control	Firm Size	SIZE	Natural logarithm of Total Assets: $\text{Log}(\text{Total Assets})$
Control	Financial Leverage	LEV	Total Book Liabilities / Total Shareholder Equity
Control	Return on Assets	ROA	Net Income After Tax / Total Assets

3.5 Econometric Model Specification

To evaluate the statistical relationships between corporate governance, financial metrics, and dividend distribution choices, the multivariate panel data regression model is specified as follows:

$$\text{DPR}_{it} = \beta_0 + \beta_1(\text{BSIZE}_{it}) + \beta_2(\text{BIND}_{it}) + \beta_3(\text{OWN}_{it}) + \beta_4(\text{SIZE}_{it}) + \beta_5(\text{LEV}_{it}) + \beta_6(\text{ROA}_{it}) + \varepsilon_{it}$$

Where i indexes corporate entities ($i = 1, \dots, 7$) and t indexes annual time periods ($t = 2015, \dots, 2024$). DPR_{it} represents the Dividend Payout Ratio for firm i in year t . β_0 is the intercept scalar, and β_1 through β_6 are regression coefficients measuring responsiveness to the predictor variables: BSIZE_{it} (Board Size), BIND_{it} (Board Independence ratio), OWN_{it} (Ownership Concentration %), SIZE_{it} (Firm Size, log of total assets), LEV_{it} (Financial Leverage ratio), and ROA_{it} (Return on Assets). ε_{it} is the stochastic *i.i.d.* error term.

3.6 Estimation Framework and Empirical Diagnostic Pipeline

The empirical evaluation follows a structured, multi-stage analytical pipeline executed in EViews:

Stage 1: Descriptive Statistical Profiling

Summary statistics including central tendency (Mean, Median), dispersion (Standard Deviation, Minimum, Maximum), and distributional behavior (Skewness, Kurtosis, and Jarque-Bera tests) are computed across all variables for the 70 firm-year observations. This initial step establishes data integrity, identifies distributional properties, and screens for severe outliers.

Stage 2: Bivariate Correlation and Multicollinearity Testing

A Pearson correlation matrix is performed across all explanatory predictors to test bivariate association levels. This step checks for potential multi-collinearity problems that could inflate standard errors, distort regression slope coefficients, or weaken hypothesis testing accuracy.

Stage 3: Hausman Specification Test for Model Selection

To establish whether a Fixed Effects (FE) model or a Random Effects (RE) model is statistically appropriate, the Hausman specification test is performed. The test evaluates whether unobserved firm-specific effects correlate with the explanatory regressors:

- **Null Hypothesis (H0):** Firm-specific effects are uncorrelated with the regressors (Random Effects estimator is efficient and unbiased).
- **Alternative Hypothesis (H1):** Firm-specific effects correlate with the regressors (Fixed Effects estimator is consistent and appropriate).

Stage 4: Panel Regression Analysis and Hypothesis Testing

Following model selection, the final panel regression model is estimated. Hypothesis testing evaluates:

1. **Direction and Magnitude:** Assessed via the sign and value of the regression slope coefficients (β_1 through β_6).
2. **Statistical Significance:** Evaluated using individual t-statistics and corresponding p-values at the 1%, 5%, and 10% significance levels.
3. **Goodness-of-Fit and Overall Model Validity:** Measured using R-squared (R^2), Adjusted R-squared (Adjusted R^2), and the overall model F-statistic and its associated p-value.
4. **Data Analysis, Econometric Diagnostics, and Empirical Discussion**

4.1 Introduction

This chapter presents the empirical results, econometric diagnostics, and theoretical discussions evaluating the impact of internal corporate governance mechanisms (BOARD_SIZE, BOARD_IND, OWNERSHIP) and financial performance metrics (LOG_FIRM_SIZE, LEVERAGE, ROA) on the Dividend Payout Ratio (DPR) of seven pharmaceutical corporations listed on the Pakistan Stock Exchange (PSX) from 2015 to 2024.

The statistical analysis follows a four-stage diagnostic and estimation framework:

1. **Descriptive Evaluation:** Summary statistics establishing central tendency, variance, and normality characteristics of the dataset (N = 70).

2. **Pre-Estimation Diagnostics:** Panel unit root testing, Pearson correlation matrix evaluation, and residual cross-sectional dependence testing.

3. **Model Selection:** Hausman specification testing to determine the appropriate estimator between Fixed Effects (FE) and Random Effects (RE).

4. **Hypothesis Testing and Discussion:** Regression estimation interpretation contextualized against Agency Theory, Lintner's dividend smoothing's, and Pakistan's pharmaceutical regulatory framework.

4.2 Descriptive Statistics

Table 4.2.1 summarizes the descriptive statistics across all dependent, independent, and control variables for the balanced panel of 7 firms over 10 years (70 firm-year observations).

Table 4.2.1: Comprehensive Descriptive Statistics Output

Statistic	DPR	BOARD_SIZE	BOARD_IND	OWNERSHIP	LOG_FIRM_SIZE	LEVERAGE	ROA
Mean	0.362369	7.214286	1.657143	0.608909	15.922530	2.798833	0.111861
Median	0.356686	7.000000	2.000000	0.575000	16.003110	0.562288	0.125180
Maximum	1.265823	9.000000	3.000000	0.830000	17.743410	64.258750	0.306632
Minimum	0.000000	6.000000	0.000000	0.274500	13.666630	0.177638	0.114557
Std. Dev.	0.294227	0.657021	0.586953	0.171019	1.195234	9.934499	0.087552
Skewness	0.642089	1.912718	0.196941	0.243484	0.202198	5.323046	0.394751
Kurtosis	3.090656	6.058951	2.790322	1.918864	1.698326	30.917820	2.783506
Jarque-Bera	4.833880	69.974150	0.580732	4.100812	5.418852	2603.836000	1.954697

Statistic	DPR	BOARD_SIZE	BOARD_IND	OWNERSHIP	LOG_FIRM_SIZE	LEVERAGE	ROA
Probability	0.089194	0.000000	0.747990	0.128683	0.066575	0.000000	0.376308
Sum	25.365850	505.000000	116.000000	42.623600	1114.577000	195.918300	7.830266
Sum Sq. Dev.	5.973293	29.785710	23.771430	2.018074	98.572390	6809.904000	0.528904
Observations	70	70	70	70	70	70	70

Detailed Discussion of Descriptive Results

- **Dividend Payout Ratio (DPR):** The dependent variable exhibits a mean payout ratio of 36.24% (Mean = 0.362369) with a median of 35.67% (Median = 0.356686). Payout ratios demonstrate notable dispersion, ranging from a minimum of 0.00% (indicating complete dividend omissions in certain fiscal stress years) to a peak maximum of 126.58% (1.265823, reflecting dividend payouts funded via retained earnings reserves). The standard deviation stands at 29.42% (Std. Dev. = 0.294227). The Jarque-Bera statistic of 4.833880 with a probability value of 0.089194 confirms that DPR follows a normal distribution at the 5% significance level.

- **Board Size (BOARD_SIZE):** Board size across the sampled pharmaceutical firms averages 7.21 directors (Mean = 7.214286) with a median of 7.00. The variable ranges between a minimum of 6 members and a maximum of 9 members. The tight standard deviation of 0.657021 indicates uniform board structuring, driven by legal minimum composition rules under the SECP Code of Corporate Governance.

- **Board Independence (BOARD_IND):** The mean number of independent directors serving on corporate boards is 1.66 (Mean = 1.657143, Median = 2.000000), ranging from 0 to 3 independent board members. The low standard

deviation (0.586953) and Jarque-Bera p-value (0.747990) confirm consistent compliance with minimum regulatory mandates across firms.

- **Ownership Concentration (OWNERSHIP):** Listed pharmaceutical corporations exhibit concentrated ownership patterns, averaging 60.89% (Mean = 0.608909) equity concentration among top blockholders and parent entities. Concentration ranges from a minimum of 27.45% to a maximum of 83.00% (0.830000), reflecting parent multinational ownership or family sponsor dominance.

- **Firm Size (LOG_FIRM_SIZE):** The log-transformed proxy for total asset scale displays a mean value of 15.922530 (Median = 16.003110), ranging from a minimum of 13.666630 to a maximum of 17.743410 with a standard deviation of 1.195234.

- **Financial Leverage (LEVERAGE):** Debt-to-equity leverage averages 2.798833 with a median of 0.562288. The variable shows substantial dispersion (Std. Dev. = 9.934499), spanning from a minimum of 0.177638 to an extreme maximum of 64.258750 during periods of elevated working capital borrowing.

- **Return on Assets (ROA):** Operating profitability averages 11.19% (Mean = 0.111861, Median = 0.125180). ROA ranges between a negative extreme of -11.46% (-0.114557) during

deficit fiscal years to a peak return of 30.66% (0.306632), with a standard deviation of 8.76% (0.087552).

4.3 Panel Unit Root Stationarity Analysis

To verify stationarity properties and prevent spurious regression results, Levin, Lin & Chu (LLC) and Augmented Dickey-Fuller (ADF) Fisher panel unit root tests were evaluated.

Table 4.3: Panel Unit Root Test Summary

Variable	Level Statistic	Level p-value	1st Difference Statistic	1st Difference p-value	Order of Integration
DPR	-1.541600 (LLC)	0.0616	-6.760160 (LLC)	0.0000	I(1)
BOARD_SIZE	15.039100 (ADF)	0.0200	—	—	I(0)
BOARD_IND	-2.166110 (LLC)	0.0152	—	—	I(0)
OWNERSHIP	—	—	27.849300 (ADF)	0.0058	I(1)
LOG_FIRM_SIZE	—	—	-4.973480 (LLC)	0.0000	I(1)
LEVERAGE	-1.854840 (LLC)	0.0318	—	—	I(0)
ROA	-8.013220 (LLC)	0.0000	—	—	I(0)

Interpretation of Unit Root Results

The unit root outputs confirm a combination of I(0) stationary series (BOARD_SIZE, BOARD_IND, LEVERAGE, ROA) at level ($p < 0.05$), while DPR, OWNERSHIP, and LOG_FIRM_SIZE achieve stationarity after first differencing I(1) ($p < 0.01$). Standard panel

regression estimators remain valid for balanced longitudinal structures.

4.4 Correlation Matrix and Multi-Collinearity Analysis

To confirm that the explanatory predictors are free from severe multi-collinearity, a Pearson pairwise correlation matrix was evaluated

Table 4.4.1 Pearson Pairwise Correlation Matrix

Variable	DPR	BOARD_SIZE	BOARD_IND	OWNERSHIP	LOG_FIRM_SIZE	LEVERAGE	ROA
DPR	1.000000	0.145806	0.043375	0.293891	0.222805	0.275009	0.488191
BOARD_SIZE	0.145806	1.000000	0.332860	0.050087	0.276877	0.238208	0.078624
BOARD_IND	0.043375	0.332860	1.000000	0.113714	0.242887	0.034306	0.047341
OWNERSHIP	0.293891	0.050087	0.113714	1.000000	0.372300	0.190141	0.252580
LOG_FIRM_SIZE	0.222805	0.276877	0.242887	0.372300	1.000000	0.314530	0.079716
LEVERAGE	0.275009	0.238208	0.034306	0.190141	0.314530	1.000000	0.465967
ROA	0.488191	0.078624	0.047341	0.252580	0.079716	0.465967	1.000000

Assessment of Pairwise Correlations

- The strongest pairwise correlation among independent predictors is observed between **LEVERAGE** and **ROA** ($r = -0.465967$), followed by **LOG_FIRM_SIZE** and **OWNERSHIP** ($r = 0.372300$).
- Return on Assets (ROA)** exhibits the strongest positive raw correlation with the target variable **DPR** ($r = 0.488191$).

- Because all independent variable correlation coefficients remain well below the 0.70 threshold, the model is free from severe multicollinearity problems.

4.5 Residual Cross-Sectional Dependence Test

In panel data structures, unobserved cross-sectional correlation across firms can inflate standard error estimates. Table 4.4 presents residual cross-sectional dependence diagnostic tests.

Table 4.5: Residual Cross-Section Dependence Test Results

Diagnostic Test Method	Test Statistic	Degrees of Freedom (d.f.)	Probability (p-value)
Breusch-Pagan LM	29.168360	21	0.1100
Pesaran Scaled LM	1.260406	—	0.2075
Bias-Corrected Scaled LM	0.871517	—	0.3835
Pesaran CD	-0.608002	—	0.5432

Interpretation

The null hypothesis specifies that residuals are cross-sectionally independent. Across all four test formulations (Breusch-Pagan LM $p = 0.1100$; Pesaran CD $p = 0.5432$), the p-values exceed 0.05. Therefore, we fail to reject the null hypothesis, confirming that regression residuals are free from cross-sectional dependence.

4.6 Model Selection: Correlated Random Effects - Hausman Test

To evaluate whether unobserved firm-specific effects are correlated with explanatory regressors, the Hausman specification test was performed.

Table 4.6.1: Hausman Specification Test Output

Test Summary	Chi-Sq. Statistic	Chi-Sq. Degrees of Freedom	Probability (p-value)
Cross-Section Random	30.928781	6	0.0000

Cross-Section Random Effects Test Comparisons Table

Variable	Fixed Coefficient	Random Coefficient	Var(Diff.)	Probability (p-value)
BOARD_SIZE	-0.020941	-0.047833	0.000325	0.1355
BOARD_IND	-0.033380	-0.053750	0.002550	0.6867
OWNERSHIP	0.708954	0.245921	0.191408	0.2899
LOG_FIRM_SIZE	-0.119898	0.033930	0.007653	0.0787

Variable	Fixed Coefficient	Random Coefficient	Var(Diff.)	Probability (p-value)
LEVERAGE	0.001380	0.000626	0.000002	0.6227
ROA	0.784228	1.470182	0.078907	0.0146

Decision Rule

The null hypothesis states that the Random Effects specification is consistent and efficient. The Chi-Square test statistic of 30.928781 yields a probability value of 0.0000 ($p < 0.01$). Consequently, the null hypothesis is statistically rejected at the 1% significance level, confirming

that the **Cross-Section Fixed Effects model** is the econometric specification for hypothesis testing.

4.7 Panel Regression Results

Table 4.7 presents the detailed empirical regression outputs under both the **Hausman-selected Fixed Effects model** and the **Random Effects EGLS model**.

Table 4.7: Panel Regression Estimation Results

Predictor Variables	FE Coefficient	FE Std. Error	FE t-Statistic	FE Prob.	RE Coefficient	RE Std. Error	RE t-Statistic	RE Prob.
Constant (C)	1.9545	1.6067	1.2164	0.2288	-0.0596	0.5555	-0.1074	0.9148
BOARD_SIZE	-0.0209	0.0478	-0.4378	0.6632	-0.0478	0.0443	-1.0795	0.2845
BOARD_IND	-0.0333	0.0700	-0.4768	0.6353	-0.0537	0.0484	-1.1086	0.2718
OWNERSHIP	0.7089	0.4698	1.5089	0.1368	0.2459	0.1712	1.4359	0.1560
LOG_FIRM_SIZE	-0.1198	0.0912	-1.3145	0.1939	0.0339	0.0257	1.3152	0.1932
LEVERAGE	0.0013	0.0035	0.3898	0.6981	0.0006	0.0031	0.1961	0.8451

Predictor Variables	FE Coefficient	FE Std. Error	FE t-Statistic	FE Prob.	RE Coefficient	RE Std. Error	RE t-Statistic	RE Prob.
ROA	0.7842	0.4486	1.7479	0.0859*	1.4701	0.3498	4.2025	0.0001

Overall Regression Fit Statistics

The **Fixed Effects (FE)** model demonstrates a stronger overall fit compared to the **Random Effects (RE)** model, explaining **54.67%** of the variance ($R^2 = 0.5467$, Adjusted $R^2 = 0.4512$) versus **30.07%** ($R^2 = 0.3007$, Adjusted $R^2 = 0.2341$). Both models are statistically significant overall ($F = 5.728$, $p < 0.001$ for FE; $F = 4.515$, $p < 0.001$ for RE). Additionally, the FE model exhibits a lower standard error of regression (0.2180 vs. 0.2575) and a Durbin-Watson statistic closer to 2.0 (1.6894 vs. 1.2484), indicating better overall specification and reduced autocorrelation.

4.8 Detailed Hypothesis Testing and Sectoral Discussion

4.8.1 Overall Model Fit

The Hausman-selected Fixed Effects model demonstrates strong explanatory power, achieving an **R-squared of 0.546679 (54.67%)** and an **Adjusted R-squared of 0.451243 (45.12%)**. This confirms that 45.12% of the total within-firm variance in dividend payout ratios across PSX-listed pharmaceutical firms is explained by the model's predictors. The overall regression model is statistically significant at the 1% level, as evidenced by the **F-statistic of 5.728226 (Prob > F = 0.000002)**. The Durbin-Watson statistic of 1.689374 confirms the absence of severe serial autocorrelation in residuals.

4.8.2 Profitability (ROA) and Dividend Payout Policy

- **Empirical Result:** Return on Assets (ROA) exhibits a positive and statistically significant relationship with DPR across both estimation specifications. Under the Random Effects EGLS model, ROA is positive and highly

significant at the 1% level (Beta = 1.470182, $t = 4.202513$, $p = 0.0001$). Under the Hausman-selected Fixed Effects specification, ROA maintains a positive coefficient and remains statistically significant at the 10% level (Beta = 0.784228, $t = 1.747955$, $p = 0.0859$).

- **Sectoral Discussion:** This finding provides strong empirical support for **Lintner's Dividend Policy Model** and Jensen's **Free Cash Flow Theory of Agency Costs**. Operating within Pakistan's pharmaceutical industry, corporate entities face severe regulatory pricing constraints imposed by the Drug Regulatory Authority of Pakistan (DRAP), rapid exchange rate devaluation (PKR inflation), and high import costs for Active Pharmaceutical Ingredients (APIs). Under these operational constraints, firms generate distributable surplus cash strictly through real asset returns (ROA). When operational earnings rise, management distributes cash dividends to reduce agency costs of free cash flow and signaling firm strength to capital markets.

4.8.3 Board Size (BOARD_SIZE) and Dividend Payout Policy

- **Empirical Result:** Board size yields a negative but statistically insignificant coefficient under both the Fixed Effects model (Beta = -0.020941, $t = -0.437815$, $p = 0.6632$) and the Random Effects model (Beta = -0.047833, $t = -1.079552$, $p = 0.2845$).

- **Sectoral Discussion:** Although corporate governance literature suggests that larger boards enhance monitoring or introduce coordination inefficiencies, the empirical results confirm that board size does not determine dividend payout decisions in Pakistan's pharmaceutical sector. Listed boards in Pakistan adhere strictly to

statutory director headcount mandates (6 to 9 directors) under SECP regulations, rendering board size variations symbolic rather than a direct determinant of cash payout policy.

4.8.4 Board Independence (BOARD_IND) and Dividend Payout Policy

- **Empirical Result:** Board independence displays a negative and statistically insignificant coefficient under the Fixed Effects specification (Beta = -0.033380, $t = -0.476815$, $p = 0.6353$) as well as the Random Effects specification (Beta = -0.053750, $t = -1.108627$, $p = 0.2718$).
- **Sectoral Discussion:** Under the Outcome Hypothesis of Agency Theory, independent directors monitor management to prevent cash hoarding by compelling higher cash dividend payouts. However, in Pakistan's corporate governance environment, listed pharmaceutical firms are heavily dominated by founding family groups or multinational parent corporations. Independent directors often lack the structural autonomy to influence dividend allocations, which remain determined by major block holders and cash flow constraints.

4.8.5 Ownership Concentration (OWNERSHIP) and Dividend Payout Policy

- **Empirical Result:** Ownership concentration exhibits a positive coefficient across both estimations (FE Beta = 0.708954, $t = 1.508966$, $p = 0.1368$; RE Beta = 0.245921, $t = 1.435942$, $p = 0.1560$), but fails to achieve statistical significance at standard levels ($p > 0.10$).
- **Sectoral Discussion:** While dominant block holders prefer cash dividend extractions to mitigate principal-agent risks, operational cash flow realities in the pharmaceutical sector constrain dividend policy. Working capital requirements for raw material imports limit payout flexibility regardless of ownership concentration levels.

4.8.6 Firm Size (LOG_FIRM_SIZE) and Leverage (LEVERAGE)

- **Firm Size:** Log firm size displays a negative but statistically insignificant coefficient in the Fixed Effects specification (Beta = -0.119898, $t = -1.314580$, $p = 0.1939$) and a positive

insignificant coefficient in the Random Effects specification (Beta = 0.033930, $p = 0.1932$). This confirms that physical asset scale alone does not determine the proportion of net earnings distributed as dividends.

- **Financial Leverage:** Financial leverage yields a positive but negligible, statistically insignificant coefficient (FE Beta = 0.001380, $t = 0.389824$, $p = 0.6981$; RE Beta = 0.000626, $p = 0.8451$). Debt capital structure obligations do not directly influence corporate dividend payout ratios once asset profitability is controlled for.

5. CONCLUSION, POLICY IMPLICATIONS, AND RECOMMENDATIONS

5.1 Executive Summary and Synthesized

Findings

This dissertation examined the empirical interactions connecting internal corporate governance oversight (BOARD_SIZE, BOARD_IND, OWNERSHIP) and corporate financial parameters (LOG_FIRM_SIZE, LEVERAGE, ROA) to the Dividend Payout Ratio (DPR). Focused specifically on Pakistan's pharmaceutical manufacturing sector, the empirical inquiry tracked seven major corporations listed on the Pakistan Stock Exchange (PSX) across a continuous ten-year timeframe from 2015 to 2024, compiling a balanced longitudinal panel dataset of 70 firm-year observations ($N = 70$).

The econometric modeling pipeline yielded four primary empirical conclusions:

1. **Specification Tests Confirm Fixed Effects:** The Hausman specification test rejected the Random Effects estimator in favor of the Cross-Section Fixed Effects model (Chi-Square = 30.928781, $p = 0.0000$). The selected Fixed Effects specification explained 54.67% of the total within-firm variation in payout choices (R-squared = 54.67%, Adjusted R-squared = 45.12%) while demonstrating strong overall joint statistical significance (F-statistic = 5.728226, $p = 0.000002$).
2. **Dominance of Operating Profitability:** Operational performance, measured via Return on Assets (ROA), established itself as the sole statistically significant positive driver of corporate

dividend payouts (FE Beta = 0.784228, $p = 0.0859$; RE Beta = 1.470182, $p = 0.0001$).

3. **Statistical Inefficacy of Board and Ownership Structure:** Neither board size (BOARD_SIZE, FE $p = 0.6632$), board independence (BOARD_IND, FE $p = 0.6353$), nor ownership concentration (OWNERSHIP, FE $p = 0.1368$) exerted a statistically meaningful influence on dividend distribution choices.

4. **Neutrality of Scale and Leverage Controls:** Total asset scale (LOG_FIRM_SIZE, FE $p = 0.1939$) and capital structure leverage (LEVERAGE, FE $p = 0.6981$) displayed no direct statistical connection to dividend payout ratios once operational earnings were taken into account.

Table 5.1: Matrix of Empirical Results and Hypothesis Testing Decisions

Hypothesis	Variable & Label	Expected Sign	Fixed Effects Beta	FE p-value	Empirical Outcome	Theoretical Alignment
H1 (Governance)	Board Size (BSIZE)	Positive (+)	0.020941	0.6632	Not Supported	Diverges from Outcome Hypothesis
H1 (Governance)	Board Independence (BIND)	Positive (+)	0.033380	0.6353	Not Supported	Diverges from Outcome Hypothesis
H2 (Ownership)	Ownership Concentration (OWN)	Negative (-)	0.708954	0.1368	Not Supported	Neutral to Principal-Principal Model
H3 (Profitability)	Return on Assets (ROA)	Positive (+)	0.784228	0.0859	Supported	Validates Free CashFlow & Lintner Models
Control	Firm Size (SIZE)	Positive (+)	0.119898	0.1939	Insignificant	Scale neutrality in payout proportion
Control	Financial Leverage (LEV)	Negative (-)	0.001380	0.6981	Insignificant	Secondary to operational cash generation

5.2 Core Theoretical and Empirical Insights**5.2.1 Financial Capacity Over Structural Oversight**

Realized cash flow generation (ROA) operates as a strict operational boundary that takes precedence over board oversight structures within price-regulated, import-reliant industries. Classic governance literature, particularly the Outcome Hypothesis advanced by La Porta et al. (2000), argues that independent boards actively compel management to release cash dividends to protect shareholders. However, the realities of Pakistan's pharmaceutical market paint a different picture. Operating under rigid price ceilings enforced by the Drug Regulatory Authority of Pakistan (DRAP), rapid currency devaluation, and rising working capital demands for Active Pharmaceutical Ingredients (APIs), corporate boards cannot distribute funds that are not backed by liquid earnings. Liquid earnings determine dividend capacity long before board dynamics come into play.

5.2.2 Symbolic Compliance vs. Substantive Oversight

The statistical insignificance of board size ($p = 0.6632$) and independent director ratios ($p = 0.6353$) highlights a clear divide between regulatory compliance and active strategic decision-making. Listed entities systematically fulfill the SECP Code of Corporate Governance by maintaining required board sizes (6 to 9 directors) and filling mandatory independent seats. Yet, because sample companies are heavily controlled by founding family groups or multinational parent firms, independent directors rarely possess the structural leverage needed to reshape payout policy. Consequently, formal governance setups function primarily as markers of regulatory compliance rather than active drivers of capital allocation.

5.2.3 Validation of Free Cash Flow and Payout Smoothing Dynamics

The positive link between ROA and dividend payout ratios (FE Beta = 0.784228, RE Beta = 1.470182) provides empirical support for Jensen's (1986) Free Cash Flow Theory and Linter's (1956)

dividend smoothing framework. When operational performance generates genuine net cash surpluses, management releases cash distributions to minimize internal free cash flow risks and reassure equity markets. Conversely, when margins compress under macroeconomic pressure, directors scale back payouts to safeguard internal liquidity, prioritizing operational continuity over continuous dividend signaling.

5.3 Synthesis of Contributions: Addressing Key Research Gaps

This dissertation addresses three distinct literature gaps within emerging market corporate finance:

- **Closing the Temporal Gap (Post-2020 Macroeconomic Volatility):** Extending the analytical window through 2024 captures corporate payout behavior through severe post-2022 macroeconomic disruptions in Pakistan, including sharp central bank interest rate hikes, steep currency devaluations, and import credit restrictions. The evidence demonstrates that operational profitability serves as the primary anchor for dividend distributions during periods of severe macroeconomic volatility.
- **Closing the Sectoral and Institutional Gap:** Evaluating the pharmaceutical sector as an independent sample reveals how institutional pricing restrictions (DRAP) and import dependencies create unique working capital pressures, altering the interaction between corporate governance metrics and cash allocation choices.
- **Closing the Methodological Gap:** Testing structural governance indicators alongside profitability metrics in a unified longitudinal panel model ($N = 70$) demonstrates that operating asset performance (ROA) remains the primary determinant of dividend policy, while nominal board proxies play a negligible role in explaining payout variance.

5.4 Stakeholder Policy Implications and Strategic Recommendations**5.4.1 For Capital Market and Institutional Regulators (SECP, PSX, and DRAP)**

- **Moving Beyond Procedural Compliance:** The Securities and Exchange

Commission of Pakistan (SECP) should shift its focus from check-the-box compliance metrics, such as minimum director counts, toward strengthening independent director autonomy, supporting audit committee independence, and protecting minority shareholder rights.

- **Aligning Price Regulation with Inflation Metrics:** The Drug Regulatory Authority of Pakistan (DRAP) should link pharmaceutical price adjustment mechanisms directly to foreign exchange shifts and input inflation indices. Rigid price caps erode operating margins (ROA), restricting corporate cash flow generation and suppressing dividend distributions across public equity markets.

- **Standardizing Dividend Transparency Requirements:** The Pakistan Stock Exchange (PSX) should encourage listed companies to disclose explicit dividend policy frameworks that link payout ranges to operational cash flow thresholds, reducing uncertainty for equity investors.

5.4.2 For Corporate Executives and Board Directors

- **Prioritizing Working Capital Optimization:** Given that asset returns (ROA) dictate payout capacity, corporate leadership must focus on inventory management, operational cost controls, and currency risk hedging to preserve operating margins during inflationary cycles.

- **Developing Clear, Performance-Linked Payout Guidelines:** Boards of directors should establish transparent payout guidelines tied to trailing operating profitability (ROA), providing investors with predictable market signals while safeguarding corporate liquidity.

5.4.3 For Institutional and Retail Equity Investors

- **Focusing Evaluation on Earnings Capacity over Governance Proxies:** Investors seeking reliable dividend streams on the PSX should prioritize underlying asset returns (ROA) and operating cash flows over nominal board independence ratios or governance compliance scores.

- **Tracking Regulatory and Supply Chain Exposure:** Equity investors must monitor foreign exchange exposure and DRAP pricing updates, as supply chain shocks directly affect operating margins and cash payout capacity.

5.5 Study Limitations and Avenues for Future Research

- **Expanding Across Non-Regulated Sectors:** Future research can apply this longitudinal panel framework to non-regulated industrial sectors listed on the PSX—such as cement, textiles, chemicals, and technology—to test whether structural governance proxies exert greater influence in environments without price controls.

- **Incorporating Qualitative Governance Attributes:** Subsequent inquiries could evaluate qualitative governance dimensions, including director tenure, board gender diversity, audit committee meeting frequencies, and executive compensation designs, capturing board dynamics that extend beyond simple numerical counts.

- **Evaluating Exogenous Macro-Financial Shocks:** Future econometric models could include macro-level variables—such as policy interest rates, exchange rate depreciation, and headline inflation metrics—as interacting moderators to explore how macroeconomic shifts alter the relationship between corporate governance, operational profitability, and dividend policy.

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