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Dividend decisions and market reflections: Unveiling the financial signals driving stock prices in Pakistan's chemical sector

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Abstract

This research examines the influence of dividend policies on stock prices in the chemical industry in Pakistan, an economically significant and ESG-relevant sector. Using balanced panel data of seven PSX-listed chemical firms over a decade from 2015 to 2024, the objective is to identify the connection between major dividend decisions and the stock prices of these companies. A dummy variable of COVID-19 was included to check the pandemic effect. Data was analyzed using SAS software, utilizing the robust fixed effect panel regression model, the results show that DPR and DPS are both strongly and positively influencing stock prices. This confirms existing theories such as signaling theory and the bird-in-hand theory. Conversely, DY and the COVID-19 variable did not significantly affect the stock price. This shows that, within Pakistan's emerging market setting, real dividend payments and policy decisions around them have a greater influence on investors' perceptions compared to yield-driven measures. The model explained a very high level of the variation in the DV with an R^2 of 93.55%, further suggesting the robustness of these findings. This study reaffirms the applicability of classic dividend theories, even in an ESG-conscious industry. The study also highlights the need to have stable and transparent dividend policies to gain the confidence of investors and improve share value. This also urges policymakers to develop financial governance policies that give priority to stable dividends. Finally, this study fills an important void in Pakistan's finance literature and speaks to the larger global discourse on dividend strategies.

Keywords: Dividend Policy, Dividend Payout Ratio, Dividend Per Share, Dividend Yield, Chemical Industry, COVID-19.

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1. Introduction

The global chemical industry is a pillar of industrial growth, providing essential inputs to other sectors. Worth more than USD 5.7 trillion, it generates over 120 million jobs globally and accounts for a major proportion of economic production and technological progress (ICCA, 2023). Its critical strategic role is also highlighted by its pivotal function in facilitating the UN SDGs (WBCSD, 2021). The industry leads global development agendas with improved materials. But this is at a steep environmental cost: the chemical industry is responsible for more than 70% of industrial CO_2 emissions, close to 60% of global industrial energy consumption, and it is among the most carbon-intensive industries worldwide (CFO Coalition, 2023; UNEP, 2023). Standing at the crossroads of prospect and duty, the industry is charged with both growing its economic role and reducing its environmental impact.

In Pakistan, the chemical industry is of immense strategic significance even though its relatively smaller contribution to the GDP. It acts as an infrastructure industry supporting downstream industries like textiles, pharmaceuticals, fertilizers, agriculture, and cement. The industry also has very high potential for import substitution, export diversification, and value addition. However, enduring issues such as archaic technology, regulatory gaps, perennial energy deficiencies, and macroeconomic instability have limited its growth and efficiency of operations (Pakistan Economic Survey, 2023). Notwithstanding the sector's significance to Pakistan's industrial resilience, job creation, and ESG adherence, few empirical studies exist on how domestic corporate strategies—particularly monetary policies like dividend payout—impact market confidence and stock performance.

Dividend policy is a firm's policy regarding how much of its profits to pay out as dividends versus retaining for reinvestment—is a core topic of corporate finance. It plays not just the role of an earnings distribution tool but also a signal of strategy towards investors.

The theoretical basis of this study is grounded in two dominant finance theories. Signaling Theory (Bhattacharya, 1979; Miller & Rock, 1985) holds that dividend announcements signal genuine information regarding a firm's future performance, particularly under conditions of information asymmetry—a widespread characteristic in emerging markets such as Pakistan. Bird-in-Hand Theory (Gordon, 1963) argues that investors value the certainty of dividend cash flow rather than risky future capital gains and hence like dividend-paying companies in unstable or underdeveloped markets. These theories are especially applicable in Pakistan, where corporate governance is weak, there are few mechanisms of investor protection, and capital markets are inefficient (Ullah, Fida, & Khan, 2012). The Residual Dividend Theory (Rozeff, 1982) suggests payment of dividends only after covering all feasible investments, which means that the payment of high dividends may be an indicator of few growth opportunities. In the same vein, Efficient Market Hypothesis (Miller & Modigliani, 1961) contends that in ideal capital markets, dividend policy does not influence stock prices. These assumptions, however, hardly hold in real-world, particularly developing market settings.

The research concentrates on three commonly employed measures of dividend policy. First, the Dividend Payout Ratio (DPR) is the ratio of net earnings distributed as dividends, signifying management's faith in the stability of the company's earnings (Al-Najjar & Kilincarslan, 2018). Second, Dividend Per Share (DPS) is the actual cash return paid per share, indicating shareholder returns (Ahmed & Javid, 2009). Third, Dividend Yield (DY) being dividends compared to the stock price, providing an indication of investor return in relation to market valuation (Dhanani, 2005).

All these measures collectively signify managerial plans, investor hopes, and market sentiment. The dependent variable is the annual average stock price, which is used as a proxy for a firm's market valuation and captures investor expectations. A COVID-19 dummy variable—1 for 2020 and 2021, and 0 for all other years—is added to determine if the pandemic affected or moderated the relationship between dividend and stock price since companies worldwide were revising dividend policies due to liquidity stress and uncertainty in the economy (Kowalewski & Śpiewanowski, 2021; Alam & Uddin, 2022).

Despite vast global literature documenting the nexus between dividend policy and stock prices, Pakistan's chemical industry has been largely overlooked in terms of academic scholarship. Most of the current research either takes a cross-industry approach or considers financial or manufacturing companies (Afza & Mirza, 2010). Furthermore, research has not adequately included all three dividend measures—DPR, DPS, and DY—within one model and controlled for external shocks such as the COVID-19 pandemic, which shook supply chains, cut down consumer demand, and tightened corporate balance sheets. This research lacuna inhibits the capacity of companies to make sound financial choices and confines policymakers when making regulations that remain consistent with investor protection, industrial resilience, and ESG considerations.

In light of the strategic and environmental significance of Pakistan's chemical industry, no empirical research widely investigates how dividend policy, as quantified by DPR, DPS, and DY, impacts stock price dynamics, especially during periods of systemic shocks like the COVID-19 pandemic. This restricts academic insight, investor choice, and business financial planning in a vital industry. Furthermore, the previous studies' results are mix and they have time period limitations. Scant literature exists that has solely investigated the very significant, both financially and environmentally, chemical industry, particularly in the case of Pakistan. The primary research objective is to examine the effect of dividend policy on the share prices of listed chemical industries in the Pakistan Stock Exchange.

In order to attain this aim, the study employs an equilibrated panel dataset of seven randomly chosen chemical companies listed on the Pakistan Stock Exchange (PSX), spanning 2015-2024. Accounting data were obtained from audited financial statements of the companies and the authentic PSX database. The analytical technique encompasses descriptive statistics, correlation analysis, and panel regression modeling employing fixed effects as per the Hausman specification test. The addition of the COVID-19 dummy variable facilitates structural change isolation in the dividend–stock price relationship under crisis periods.

This study contributes to several keyways. First, it confirms the relevance of classical finance theories—like signaling and bird-in-hand to a very important but less researched industry. Second, it offers a strong, multi-indicator framework that embodies external shocks in dividend analysis. Third, the research provides lessons for developing dividend strategies that maintain investor confidence, particularly in times of economic stress. Fourth, the results underscore the significance of open and stable dividend practices in promoting financial resiliency, ESG adherence, and long-term industrial sustainability. Through its integration of financial conduct with market performance and sustainability needs, this study is consistent with Pakistan's long-term economic vision of industrial rejuvenation, investor confidence, and sustainable growth.

2. Literature Review

Dividend policy and stock price performance have been a focal issue in corporate finance for decades. Dozens of theoretical arguments, empirical research, and industry-focused research have examined this intersection, providing evidence for the manner in which and the reasons why dividend decisions influence investor actions and company valuation. In spite of widespread investigation on developed markets and broad spectrums of industries, scant regard has been given to how these interplays take place in emerging economies and strategic industries like Pakistan's chemical sector. This review of literature intends to integrate pertinent theories and empirical evidence, with a focus on the dividend policy implications, stock price behavior, and moderating factors like periods of crisis. It also points to the theoretical and contextual reasons for the current research.

Dividend policy is essentially concerned with the manner in which a firm distributes its earnings between paying dividends to shareholders and business. The most widely quoted theoretical work in this area is the signaling theory (Bhattacharya, 1979; Miller & Rock, 1985), which argues that announcements of dividends communicate important information regarding a firm's future earnings ability and financial well-being. Another dominating theory is the bird-in-hand theory (Gordon, 1963), which argues that investors favor the guarantee of dividends over the uncertainty of capital gains. The theory has specific applicability in emerging markets where market volatility and lower investor risk tolerance are the norms. Investors in such markets will be inclined to appreciate certain dividend payments as a type of instantaneous and certain return, leading to higher stock prices.

On the other hand, residual dividend theory (Rozeff, 1982) contends that dividends are to be distributed only after covering all favorable net present value investment projects. From this perspective, generous dividend payments can indicate an absence of growth prospects, which might result in negative investor responses. The efficient market hypothesis (Miller & Modigliani, 1961) also argues that dividend policy is not important in perfectly efficient markets because investors can devise their own dividend streams by either selling or purchasing shares. It goes on the assumption that there are ideal market conditions, and this hardly ever happens in real life, especially in less developed nations like Pakistan.

There is extensive empirical research with mixed yet perceptive findings on the dividend–stock price relation. For example, Baker and Powell (2012) uncover that in the U.S. economy, dividends are central to shareholder valuation and stock price reliability. Likewise, Fama and French (2001) find that companies with stable dividend payments tend to be viewed as established and financially sound, which boosts investor trust and firm valuation.

By contrast, other studies contend that paying too much attention to dividends can weaken the growth prospects of a company. For instance, DeAngelo, DeAngelo, and Skinner (2004) point out that dividend-paying companies often have declining reinvestment rates, which can restrict long-term performance. These conflicting findings illustrate the need for context, industry dynamics, and investor expectations to determine the dividend–stock price relationship.

In the emerging markets, dividends tend to have a greater influence on stock prices because of greater information asymmetry and less stringent regulatory environments. Ullah, Fida, and Khan (2012) study this phenomenon in Pakistan and conclude that dividend announcements significantly affect investor sentiment, especially in industries with unstable earnings and scarce disclosure. Ahmed and Javid (2009) present evidence from Karachi Stock Exchange-listed non-financial companies, which verifies that dividends have a positive effect on stock prices, particularly if they are consistent through time.

Alam and Uddin (2022) also reaffirm that in various South Asian markets, including Pakistan, companies that had stable dividend policies during crises like the COVID-19 pandemic held on to investor confidence and had lower volatility in their stocks. Their evidence aligns with what Kowalewski and Śpiewanowski (2021) noted, where dividend stability during periods of economic recession serves as an important confidence reminder for investors.

Three widely applied measures of dividend policy are the Dividend Payout Ratio (DPR), Dividend Per Share (DPS), and Dividend Yield (DY). DPR is the ratio of earnings paid out to shareholders and is a proxy for managerial optimism about stable earnings. The higher DPR indicates better current performance but also restricted reinvestment opportunities (Lintner, 1956; Al-Najjar & Kilincarslan, 2018).

DPS, however, is the money returned to shareholders and is commonly employed by income-oriented investors to gauge the appeal of a stock. The study by Hashemijoo, Ardekani, and Younesi (2012) indicates that companies that report higher DPS get more retail investors, especially in the emerging economies.

DY, measured as DPS divided by the price of the share, provides information about the investment's potential for generating earnings. It is a relative valuation vehicle to gauge dividend-paying stocks. Dhanani (2005) contends that DY is particularly vital in times of volatility in stock prices, where it acts as a buffer measure of earnings stability. Empirical research conducted by Bali (2003) substantiates that higher DY stocks are most stable during bear markets and thus most appealing to conservative investors.

The dividend policy's role is even more significant in industries that are environmental, capital-intensive, and subject to regulatory swings—like the chemical industry. The World Business Council for Sustainable Development (WBCSD, 2021) states that the global chemical

industry significantly contributes to several SDGs, such as clean water, sustainable energy, and sustainable production. Nonetheless, it is also the most carbon-heavy industry, with a contribution of more than 70% of industrial CO_2 emissions worldwide (UNEP, 2023; CFO Coalition, 2023).

In this double role of enabler and emitter, the chemical industry dividend policy has both financial and signaling implications. Companies here have to balance reinvestment in sustainable innovation with shareholders' needs for regular returns. A study by the International Council of Chemical Associations (ICCA, 2023) points out the significance of financial resilience in this industry, stating that companies with stable dividend payments have improved investor sentiment and reduced cost of capital.

Nevertheless, even with the international importance of the chemical sector, its economics—particularly the effect of dividend policy on stock price—have been investigated in developing nations. In Pakistan, the chemical industry underpins key sectors like agriculture, textiles, and healthcare. Nevertheless, the industry is hampered by aged infrastructure, regulatory uncertainty, and a shortage of energy (Pakistan Economic Survey, 2023). The lack of sector-specific research on financial signaling mechanisms, such as dividends, creates a significant gap in knowing how investor confidence is created within this ESG-sensitive space.

The COVID-19 pandemic presented novel challenges for corporate finance, with disruptions to global supply chains, changing consumption patterns, and heightened market volatility. Various studies have examined the effects of COVID-19 on dividend policy. For example, Kowalewski and Śpiewanowski (2021) show that companies that cut or suspended dividends during the pandemic suffered steeper stock price declines than those that continued to make payments.

In Pakistan, the chemical industry was not unaffected by these disruptions. Alam and Uddin (2022) observe that firms with stable dividends in 2020–2021 had relatively better share price performance and investor loyalty. These results indicate that dividend policy not only serves as a financial mechanism but also as a source of resilience in crisis environments.

The inclusion of a COVID-19 dummy variable in econometric analysis, thus, facilitates researchers to determine structural changes in the relationship between dividend and stock price. Research works like those of Ashraf (2020) and Narayan et al. (2021) highlight that crisis-period research can uncover underlying relationships that do not become clear in stable economic times.

While dividend policy has been researched widely in Pakistan's banking, manufacturing, and services industries (Afza & Mirza, 2010; Rehman & Takumi, 2012), one finds a discernible lack of in-depth analysis of the chemical industry. This is noteworthy considering the industry's strategic position in Pakistan's industrial advancement and ESG agenda. The majority of available studies utilize blanket dividend measures or examine cross-sectional data and ignore firm-level dynamics and external shocks such as pandemics.

The current research attempts to address this knowledge gap by merging a sectoral approach with a full list of dividend indicators (DPR, DPS, DY) and including a crisis perspective via the COVID-19 dummy. This three-pronged approach enables a richer understanding of the

impact of dividend strategy on stock prices in a capital-intensive, ESG-sensitive, and economically sensitive sector.

Based on the above literature synthesis, the research puts forward the following macro hypothesis:

> ***H1:*** *Dividend policy has a significant positive impact on the stock prices of chemical industries listed on the Pakistan Stock Exchange.*

3. Methodology

The research uses a quantitative panel data approach to examine the effect of dividend policy on the stock prices of chemical companies listed on the Pakistan Stock Exchange between 2015 and 2024. Pakistan is selected due to its emerging capital market and strong investor reliance on dividend signals. The chemical industry was selected due to its strategic significance to textiles, agriculture, and pharmaceutical industries, as well as due to its exposure to ESG pressures and economic shocks. The period 2015–2024 is chosen to capture both stable market situations and the COVID-19 pandemic. A panel data set with balanced seven randomly chosen firms (Biafo Industries, Engro Polymer and Chemicals, Ittihad Chemicals, Lotte Chemical Pakistan, Sitara Chemicals, Nimir Chemicals, and Lucky Core Industries) provide time consistency and comparability across entities. The dependent variable is the yearly average stock price, and the independent variables are the three most important dividend measures: Dividend Payout Ratio (DPR), Dividend Per Share (DPS), and Dividend Yield (DY), each capturing different aspects of dividend policy—managerial intention, rewarding shareholders, and investment return, respectively. A dummy for COVID-19 is added to detect structural effects of the pandemic without involving moderation.

Data were obtained from audited financial statements and PSX records, tabulated in Excel, and analyzed with SAS software. Descriptive and correlation analyses were performed first to examine distribution patterns and initial relationships. Panel regression through a robust fixed effects model was then utilized to gauge causal relationships. The fixed effects model was adopted on the basis of the Hausman test, which established considerable firm-level heterogeneity that persists over time. This method accounts for unobserved firm-specific controls—governance quality or operational size—thus enhancing coefficient estimate accuracy and validity. With firm-fixed effects and a crisis dummy included, this method accounts for both cross-sections and time dimensions of the effect of dividend policy on market valuation.

4. Results and Discussions

The descriptive statistics presented in Table 1 give meaningful information regarding the nature and distribution of the dataset employed in this study. The stock price (SP) has a high mean of 181.53 and a median of 45.61, with extreme right skewness that is most likely caused by outliers (as can be seen from the highest value of 914.28). The high standard deviation of 235.79 also proves high volatility in market valuations, typical of emerging markets such as Pakistan's chemical industry, where stock prices remain sensitive to announcements of dividends and investor mood.

For Dividend Payout Ratio (DPR), the mean is 40.5 with a standard deviation of 24.81 and a median of 36.08. This means that, on average, firms are paying out around 40% of earnings, showing moderate dividend dedication. The range (0.01 to 97.89) shows high heterogeneity in the practice of paying out, perhaps because firms differ in profitability, investment requirements, and dividend policy approaches. The variability justifies the applicability of signaling theory, as a greater DPR could indicate managerial confidence in stable earnings (Al-Najjar & Kilincarslan, 2018).

Dividend Per Share (DPS) is 7.68 mean and 3.75 median, with a maximum value of 60 and a standard deviation of 10.12. The wide range underscores the fact that although some companies offer high per-share dividends, numerous companies distribute quite modest amounts, reflecting diversified tastes among companies about shareholder cash payouts. DPS is a concrete indicator to investors and was demonstrated in the regression to have a strong impact on stock prices, consistent with the bird-in-hand theory (Gordon, 1963), in which investors prefer current payoffs.

Dividend Yield (DY) is 4.02 on average and has a minimum standard deviation of 2.94, with a median of 3.17. This suggests that the majority of companies provide fairly modest dividend yields. The low yield might be due to either low payouts on dividends or comparatively higher stock prices. The dispersion's tight correlation indicates limited heterogeneity across firms, and its lack of significance in the regression model might be because investors in the Pakistani chemical industry value payout size (DPS) and policy consistency (DPR) more than relative yield, driven by limited dividend persistence and thin market coverage.

Overall, the descriptive statistics affirm that dividend behavior is firm-specific and heterogeneous in Pakistan's chemical sector. The large variability in SP and dividend measures emphasizes the need to study these variables in panel models, as it highlights the contextual relevance of dividend theories to explain investor behavior in emerging markets.

Table 1: Descriptive Statistics of Study Variables (N = 70)

Variable	Label	Mean	Median	Minimum	Maximum	Std Dev
SP	Stock Price	181.53	45.61	6.25	914.28	235.79
DPR	Dividend Payout Ratio	40.5	36.08	0.01	97.89	24.81
DPS	Dividend Per Share	7.68	3.75	0.01	60	10.12
DY	Dividend Yield	4.02	3.17	0.01	13.17	2.94

Note. SP = Stock Price; DPR = Dividend Payout Ratio; DPS = Dividend Per Share; DY = Dividend Yield. Statistics are based on balanced panel data of seven chemical firms listed on the Pakistan Stock Exchange over the period 2015–2024.

The model fit is very strong overall, as indicated in the Model Fit Statistics table 2. The R-squared of 93.55% indicates that the model accounts for almost all variation in stock prices among firms and over time, which is justifiable in this situation. This is because a fixed effects panel

model has been used, which controls for firm-specific attributes, and a small and homogeneous sample of seven firms in one industry. The high explanatory power evidence reveals that dividend policy is a strong driver of investor views and market valuations within Pakistan's chemical industry. Other fit indicators—MSE (0.0767), Root MSE (0.2769), and a very significant F-test for fixed effects ($F(6,58) = 65.06$, $p < 0.0001$)) also support the model's accuracy and statistical power.

Table 2. Model Fit Statistics for Fixed Effects Panel Regression

Model Fit Metric	Value	Interpretation
R-Square	0.9355	It indicates that **93.55%** of the variation in stock prices is explained by the model.
SSE	4.4478	Measures the unexplained variation; lower values imply better model accuracy.
MSE	0.0767	Reflects average squared prediction error; smaller values signal a good model fit.
Root MSE	0.2769	Standard deviation of residuals; low root MSE indicates precise model predictions.
F-Test for Fixed Effects	$F(6, 58) = 65.06$	Tests if fixed effects are significant across firms.
p-Value (F-Test)	< 0.0001	Statistically significant; supports inclusion of firm-specific fixed effects.

Note. The high R^2 value reflects strong explanatory power, which is expected in fixed effects models due to the control of unobserved, time-invariant firm-specific characteristics. SSE = Sum of Squared Errors; MSE = Mean Squared Error.

Table 3, the correlation matrix provides significant initial information on the associations among dividend policy variables and stock price performance in Pakistan's chemical sector. Among the relationships identified, the strongest positive and statistically important association is between stock price (SP) and dividend per share (DPS), where there is a correlation coefficient of 0.6819 ($p < 0.0001$). This suggests that companies paying higher cash dividends per share have a tendency to have greater stock prices. This is strong evidence in favor of the bird-in-hand hypothesis, where investors, particularly in markets like Pakistan, would rather have the bird in hand. In these markets, where there is greater risk and volatility, investor confidence is boosted by concrete returns in the form of frequent dividends, thus having a positive effect on valuation in the market.

A significant and positive correlation is also found between dividend payout ratio (DPR) and stock price, with a correlation coefficient of 0.3893 ($p = 0.0009$). This indicates that when companies pay out more of their earnings to shareholders, the market interprets this positively. This result supports the signaling theory, which contends that dividends convey important information regarding a company's financial health and managerial optimism. In environments such as Pakistan, where information asymmetry is high, dividends are a reliable indicator of

performance and prospects, further establishing their importance in the determination of stock prices.

On the other hand, the dividend yield (DY) was found to have a weaker relationship with stock price (r = 0.2219), with a p-value of 0.0648, which is marginal. Although the relationship direction is positive, the lower magnitude indicates that dividend yield has a less dominant effect on stock prices in this sector. This could be because market price fluctuations have a tendency to obscure true yield values or investors are more concerned with absolute dividend payouts (DPS) rather than relative returns (DY), especially under conditions of uncertainty.

Further, the matrix also reveals high and statistically significant relationships between DPR and DY (r = 0.5986, p < 0.0001), as would be expected, since increasing payout ratios proportionately lead to higher dividend yields, given stable stock prices. The DPS is also moderately related to both DPR (r = 0.4189) and DY (r = 0.2625), with both being statistically significant. Such mutual dependency among dividend measures highlights the internal reliability of dividend strategies pursued by companies.

The specification also includes a COVID-19 dummy variable in order to identify possible structural impacts during the crisis time. The correlation between stock price and COVID-19 is negative (r = -0.1086), but statistically irrelevant (p = 0.3709), indicating that although there was some downward pressure on stock prices during the pandemic, it was not robust enough to reflect a significant linear relationship. Yet, the negative trend is in line with international market responses to uncertainty stemming from crises. In the same vein, the relationship between COVID-19 and DPR is also negative (r = -0.2223) and of marginal significance (p = 0.0644), indicating that some companies might have cut their dividend payments during the pandemic, perhaps for liquidity conservation purposes. This is in line with worldwide trends as companies cut or suspend dividends with diminished earnings or increased uncertainty.

Table 3: Pearson Correlation Matrix of Stock Price, Dividend Policy Variables, and COVID-19.

Variable	1	2	3	4	5
1. Stock Price (SP)	1				
2. Dividend Payout Ratio (DPR)	0.389**	1			
3. Dividend Per Share (DPS)	0.682***	0.419***	1		
4. Dividend Yield (DY)	0.222	0.599***	0.263**	1	
5. COVID-19	−0.109	−0.222	−0.088	0.020	1

*Note. *N = 70. *p < .01. *p < .001.*

Conversely, however, COVID-19's relationship to DPS and DY is statistically weak and insignificant (r = -0.0876 and 0.0197, respectively), suggesting that although companies might have altered payout ratios overall, actual per-share payout and relative yield did not show significant changes due only to the pandemic. This can be explained by a balancing effect in which decreased earnings were balanced by decreased share prices, keeping yield measures stable.

In sum, the correlation analysis upholds the dividend per share and payout ratio as key drivers of stock prices in Pakistan's chemical industry. The results strongly support the bird-in-hand and signaling theories, highlighting the fact that consistent and hefty dividend payoffs favorably influence the investors' perceptions. Although the effect of COVID-19 seems restricted in linear relationship terms, its marginal contributions to payout conduct are worthy of further investigation using panel regression analysis that can control for firm-specific and time-specific heterogeneity more effectively.

The results of regression analysis provided in Table 4 provide strong evidence regarding the role of dividend policy on stock prices in Pakistan's chemical industry. Dividend Payout Ratio (DPR) and Dividend Per Share (DPS) both have positive and statistically significant effects on stock price at the 1% level. Particularly, one unit increase in DPR results in a 13.3% increase in the log of stock price, whereas one unit increase in DPS results in a 14.3% increase. These results strongly validate signaling theory (Bhattacharya, 1979; Miller & Rock, 1985), highlighting the fact that dividend announcements are good signals of management's optimism about future profitability. In addition, the findings support the bird-in-hand theory (Gordon, 1963), according to which investors in risky or inefficient markets prefer to have money in hand rather than uncertain capital gains—a phenomenon particularly applicable in Pakistan's underdeveloped capital market.

The findings are strongly consistent with previous correlation analysis, wherein stock price had a high, positive correlation with DPS ($r = 0.6819$, $p < 0.0001$) and a moderate correlation with DPR ($r = 0.3893$, $p = 0.0009$). This inter-technique consistency strengthens the validity of the findings. This implies that investors will reward companies with stable dividend policies with higher valuations in the market, reflecting confidence, stability, and managerial integrity. These findings also resonate with previous research, such as Ahmed and Javid (2009) and Al-Najjar and Kilincarslan (2018), who concluded that dividend persistence enhances investor perception and positively affects company valuation in emerging markets.

Conversely, Dividend Yield (DY) is statistically insignificant both under the regression model and the correlation matrix. This lack of significance may arise from the real-world irrelevance of yield in the Pakistani context, where investors are more interested in the absolute payout than in relative returns. Emerging markets, with low financial awareness, erratic dividend payments, and thin institutional coverage, may not possess the structural framework where yield becomes an effective valuation metric. This result deviates from findings in developed markets (e.g., Dhanani, 2005; Bali, 2003), where risk-averse investors typically apply DY as a reliable measure of income. This study reported that the little use of DY indicates that stock price movements are generally more sensitive to cash-based dividends (DPS) and payout policies (DPR) than to yield-based measures.

The COVID-19 dummy variable had a negative, though statistically insignificant, impact on stock price. Even though the coefficient indicates that stock prices decreased weakly in the crisis period (2020–2021), the effect did not stand strong enough to prove a structural change in investors' behavior. This finding is consistent with research conducted by Kowalewski & Śpiewanowski (2021) and Alam & Uddin (2022), which indicates that companies preserving

dividends during crisis times were more likely to maintain investor trust and smooth steep stock price crashes. In Pakistan's chemical industry—already plagued by energy deficits, regulatory delays, and macroeconomic volatility (Pakistan Economic Survey, 2023)—this endurance can be seen as how persistent dividend policies are read as indicators of business stability even in the face of external shocks.

These results also confirm the situational applicability of financial theories in Pakistan's ESG-sensitive and capital-hungry chemical industry. DPR's high effect and DPS's strong impact support the position that dividends are strategic communication devices, mitigating uncertainty in a transparent and impenetrable investment climate. This serves to reinforce points presented by Ullah, Fida & Khan (2012) on the critical function of dividend signaling in weak investor protection and low transparency markets. In addition to its contribution to several of the SDGs—clean water, energy, and industrial innovation (WBCSD, 2021; ICCA, 2023)—financially prudent behavior, such as dividend stability, also underpins more general sustainability stories. Yet the environmental impact of the sector—over 70% of industrial CO_2 emissions (UNEP, 2023)—requires retained earnings to also think about clean technology upgrades and sustainable operations.

Table 4: Fixed Effects Regression Results

Variable	Coefficient Estimate	Std. Error	t-Value	p-Value
Intercept	1.8038***	0.1047	17.23	<0.0001
Dividend Payout Ratio (DPR)	0.1332**	0.0485	2.75	0.008
Dividend Per Share (DPS)	0.1429**	0.0521	2.74	0.0081
Dividend Yield (DY)	0.0085	0.038	0.22	0.8233
COVID_19	-0.0582	0.0348	-1.67	0.1001

*Note. N = 70. *p < .01. **p < .001. Dependent variable: log of stock price. Firm fixed effects applied with robust standard errors.*

Overall, the empirical evidence of this research confirms that dividend policy in Pakistan's chemical industry is not just a monetary instrument but a strategic tool for establishing investor trust, maximizing firm value, and fostering resilience in the market—particularly in ESG-sensitive and crisis-ridden environments. Stable payout ratios and realized per-share payments substantially improve stock performance, supporting the signaling and bird-in-hand theories. These observations highlight the key importance of clear and consistent dividend policies in reconciling company behavior with investor aspirations as well as with sustainable development targets.

5. Conclusion and Implications

This research presents a number of strong theoretical and practical implications. The results strongly confirm Signaling Theory and Bird-in-Hand Theory in an emerging market setting. The use of Dividend Payout Ratio (DPR) and Dividend Per Share (DPS) being significant confirms the argument that dividends serve as credible indicators of firm stability and future profitability when there is high information asymmetry. Furthermore, the research refutes the relevance of the Efficient Market Hypothesis in Pakistan's capital market, pointing out that dividend choices do have an effect on stock prices in imperfect, underdeveloped markets such as the chemical industry.

This study provides practical significance by empirically verifying that stable and concrete dividend policies increase investor faith, even during macroeconomic disruptions such as COVID-19. The evidence highlights the need to implement consistent payout forms to minimize uncertainty and enhance long-term investor commitment. Furthermore, capital-abundant industries like chemicals, the findings highlight the importance of incorporating dividend policy into a more comprehensive corporate strategy. Frequent and transparent dividend payouts should be considered not just as a distribution of earnings but as a mechanism for reputation management, investor signaling, and sustainability positioning. Particularly in Pakistan, where regulatory loopholes and investor doubts remain, dividend policy can be an inexpensive yet effective tool of market signaling and positioning strategy. These implications collectively provide a blueprint for industry practitioners, regulators, and academicians to grasp and take advantage of the strategic value of dividend policy in promoting financial resilience, market trust, and long-term industrial expansion.

It concludes that dividend policy is a strong determinant of stock price behavior in the chemical industry in Pakistan, especially by the persistent employment of Dividend Payout Ratio (DPR) and Dividend Per Share (DPS). The results support core financial theories, especially signaling and bird-in-hand, and indicate that clear dividend decisions are strategic instruments for investors' trust building, even in a pandemic crisis like COVID-19. While Dividend Yield (DY) was not statistically significant, the overall model demonstrated high explanatory power, underscoring the robustness of dividend policy as a valuation mechanism in emerging, ESG-sensitive sectors.

Looking ahead, future researchers are encouraged to extend this inquiry in several directions. First, incorporating larger sample sizes across multiple sectors could test the generalizability of these findings. Second, researchers can introduce corporate governance, volatility in earnings, or levels of ESG disclosures as moderating variables to dig deeper into behavioral dynamics. Third, cross-sectional analysis between dividend-paying and non-dividend-paying companies, or performance before and after COVID, can further enhance insights into strategic payout behavior. Furthermore, the use of dynamic panel models (e.g., GMM) or machine learning methods could reveal non-linear or time-lagged impacts of dividend policies on share valuation. This upcoming research will not only further develop financial theory but also provide

firms and regulators with actionable knowledge for successfully navigating sustainability-aligned capital markets.

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