

Analyzing the Impacts of Dividend Strategy and earnings per share on the volatility of stock prices: A comparative study in Financial and Non-Financial Sectors.

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Abstract

This research paper illustrates the impacts of dividend strategy and earnings per share on the volatility of stock prices in Pakistan's financial and non-financial sectors, with a particular emphasis on insurance companies, banks, textile, and cement industries. This study investigates the effect of payout ratio and earnings per share on the stock value. A detailed examination of the correlation of dividends, earnings per share, and volatility of stock prices is presented in this literature review. In this research, the payout ratio and earnings per share are independent variables, while volatility in stock prices is the dependent variable. Various theories of dividend policies are examined to provide a theoretical foundation for the investigation. Using EViews 11 software, the multicollinearity regression model, correlation analysis, unit root tests, and fixed random effects models are utilized in the data analysis. The findings indicate that the ratio at which dividends are paid relative to earnings influences the stock price's volatility negatively, whereas earnings per share have a crucial role, showing a significant positive effect. The data includes only four industries over 10 years for 20 selected companies, and certain industries were excluded from the analysis, including government savings institutions, modaraba companies, leasing companies, power generation, fertilizers, oil & gas, pharmaceuticals, automobiles, and technology companies. Therefore, the results must be interpreted considering these restrictions.

Keywords: dividend policy, dividend distribution policy, earnings per share ratio, stock price fluctuations, stock price variance, financial sector, non-financial sector, dividend payout, stock value, regression, correlation analysis, fixed random effects models, EViews 11 software.

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1 Introduction

The study examines the concept and significance of dividend policies, and how dividend policies contribute to the fluctuations in the prices of stocks. The dividend policy is a strategic framework through which corporations determine the distribution of profits to shareholders, which may be in the form of dividends. These payments may be made annually, semiannually, or quarterly and are typically a portion of the company's total earnings (Nazir et al., 2010). The research's main focus is investigating the correlation between dividends and variables like earnings per share for managing stock prices (Neelan et al., 2019). Tailoring the right dividend distribution strategies is an important step for companies as it impacts future investment prospects and stakeholder expectations, hence affecting the financial well-being and long-term sustainability of the firm. Dividends act as a tool for evaluating a company's investment appeal, beyond their conventional role of distributing profits. Furthermore, the method of dividend distribution and the payout ratio can significantly impact various stakeholders such as employees, managers, investors, creditors, and customers (Ahmad et al., 2019c).

In corporate finance, the responsibility to determine dividends lies with the board of directors. Once declared, dividends become a liability for a company, signifying its commitment to shareholder returns (Alamnaseer et al., 2019). Key factors in financial management are dividend policies and earnings per share (EPS), which determine the distribution of earnings and the company's earning capacity per share, respectively. The dividend policy of businesses across industries such as finance, cement, insurance, textiles, and investment are fundamental to their financial strategies. This policy dictates the quarterly, semiannual, or annual dividends that companies pay to investors, influencing the perception of company stability (Ali, 2015). The fluctuation in the stock prices is intricately linked to this policy and is frequently influenced by various theories. (Ahmed et al., 2016).

Dividend distribution among shareholders reflects the financial well-being of a company, showing that it possesses enough liquidity to meet its obligations (Aziz et al., 2019). Investors take higher dividend ratios as an indication of a company's consistent cash flow, which boosts their confidence. The optimal dividend policy for a company achieves a balance between future development and payouts to maximize share price. This ratio enables investors to assess a company's potential for future development versus imminent payouts, a decision-making process that is especially important in growth-oriented financial markets such as Pakistan (Arslan et al., 2014). However, if a company pays minimal or no dividends, its retained earnings increase, indicating future investment or expansion potential (Afzal et al., 2019). However, if a company pays a large dividend, reducing its retained earnings, it may be forced to rely on debt or external financing, which can have a direct impact on its dividend strategies and, consequently, its stock prices (Scholes, 1978). Therefore, the dividend policy becomes a crucial factor in determining the capital structure and investment decisions of a company.

Financial experts have analyzed the link between distributing dividends and fluctuations in stock price. Lashargo (2014) observed, that dividend payout policies promote information symmetry among investors by providing vital cash flow information, thereby influencing stock prices. According to Mani et al. (2012), the tax or commitment implications of high dividends have an immediate influence on stock prices, indicating a relation between higher dividends and the value of stocks. In contrast, Mehmood et al. (2019) argued that the decision of distributing dividends is influenced by the preferences of investors and that companies should only pay dividends when necessary and can generate a return on investment. Diverse studies have uncovered various relationships between dividends and stock price volatility. Some studies have witnessed the inverse relation between dividends distribution and fluctuations in stock prices while there's exist a positive and no relation between these variables as well. Company's earnings per share is another important factor to consider as it demonstrates the financial stability and future potential (Nadeem

et al., [2019](#)). Changes in earnings can cause fluctuations in the stock price as investors react to the new financial information. Price volatility is also influenced by the dynamics of primary and secondary markets, including the Colombo Stock Exchange (Zakaria et al., [2012](#)).

In conclusion, the fluctuations in the prices of stocks is affected by dividend policy and earnings per share. Understanding these factors is essential for businesses, investors, and financial managers to make informed investment strategy and financial planning decisions (Ullah et al., [2019b](#)). This framework serves as a solid basis for determining how these variables influence the fluctuations in stock prices within Pakistan's financial and non-financial sectors. The subject of stock price volatility has been extensively examined in finance, yet there few questions remain unanswered despite thorough exploration (Yusra et al., [2019](#)). Although several factors influence stock prices, their precise dynamics and effects are still under investigation. Among these, dividend policy has consistently attracted the focus of investors and financial analysts. As a governance mechanism, dividends serve as predictors of agency costs, particularly for firms with substantial cash flow volatility.

The effect of dividend policy on corporate dividend payout ratios is uncertain irrespective of its various aims like, maximizing profit margins and overall industrial growth. In order to know about the financial potential of an organization, dividend payout ratio serves as the key indicating the part of net profit allocated to shareholders as dividend (Widyanti et al., [2019](#)). The precise correlation between dividends and stock price's fluctuations remains undefined despite its critical significance. This lack of understanding creates uncertainty in financial decision makings of both investors and companies. Therefore, it is crucial to investigate how dividend influences stock price's volatility within Pakistan's financial and non-financial industries (Singh et al., [2019](#)). Understanding this relation will provide investors and corporations with valuable information, enabling them to make wise decisions and contributes to the stability and development of these sectors.

This study seeks to fill a considerable knowledge void regarding the impacts of dividends and earnings per share on the fluctuations in stock prices within Pakistan's financial and non-financial industries (Sheikh et al., [2012](#)). Despite the existence of extensive material and empirical evidence on a global scale, Pakistan, Bangladesh, and India have conducted little research in this field. Therefore, this investigation contributes significantly to the existing Pakistani knowledge bases. The giant provider of data for this study in Pakistan is the Pakistan Stock Exchange (Sharma et al., [2017](#)). Pakistan's stock exchange has a remarkable track record, rating among the world's top performers from 2009 to 2015 in terms of performance. Nevertheless, it is essential to comprehend the fundamental patterns and trends that drive its performance. In this investigation, we investigate the complexities of dividend payment dates, the financial ratios, and their significance, mainly focusing earnings per share ratio, types of price fluctuations with their effects on stock price volatility (Sharma et al., [2017](#)).

1.1 Objective of the Study

This study has following objectives:

- Examining the impact of payout ratio and earnings per share on the variations in stock prices.
- Analyzing the correlation between dividend policy and stock price's volatility.
- Observing the main factors that influence the stock prices within the financial sector of Pakistan.

2 Literature Review

Typically, dividend growth is indicative of anticipated earnings growth (Le, [2018](#)). Bokhari et al. ([2019](#)) argue that investors benefit from cost reductions. They believe that higher dividends indicate future success, whereas lower dividends indicate lower future profitability. Therefore,

stock price volatility reflects dividend changes rather than a preference for retained earnings. Different stockholders have diverse distribution preferences; some prioritize financial income, while others reinvest earnings in high-profit years. Dividends payouts are the indicator of a company's financial health (Chintrakan et al., [2019](#)). Haque et al. ([2019](#)) assert that dividend announcements are dependent on information and can boost firm reputation and share price. Studies by Hussoiney et al. ([2012](#)), Arslan et al. ([2014](#)), Hussain et al. ([2019](#)), demonstrate varying correlations between dividend strategies and volatility in stock prices within international markets, indicating the factors such as earnings per share and stock charge volatility are influential. Further research is required to define these relationships across various sectors and contexts, like the analysis conducted about the companies (Man et al., [2011](#)).

2.1 Fluctuations in Stock Prices:

Fluctuations in Stock Prices pose an increased risk. This volatility is measured statistically, often as standard deviation or variance, relative to market index or security values (Widyanti, [2019](#)). Factors contributing to these shifts include asset growth, firm size, leverage, debts, and external influences such as political or technological changes (Rafique et al., [2012](#)). Specifically, dividend policy and payout ratios significantly impact share price volatility. For this research, fluctuation in prices is the dependent variable, calculated yearly using the annual series of prices of shares, and divided with the maximum or minimum share prices. Daily volatility is further refined using the square root of 252, a convention in financial studies that accounts for trading days in a year (Ali, [2015](#)).

Annualized Volatility = (high price - low price) / average price

2.2 Payout Ratios

The distribution of dividends to shareholders as a part of a company's net income is known as payout ratio, often utilized as a guide for investment decisions. High dividend payout ratios (DPR) may suggest a company's lack of investment plans, while low DPR indicates significant investment strategies. However, the DPR alone cannot conclusively inform good or bad investment decisions; an average DPR is typically desirable across industries (Bokhari, [2019](#)). Dividend policy, essentially a company's approach towards distributing profits to shareholders, can impact share values (Sadaf et al., [2019](#)). Dividend policies can fluctuate, with companies sometimes providing stable dividends and at other times, unstable or variable dividends. Various theories have been proposed regarding dividend policies, including Constant Dividend Ratio Policy, M&M relevance and irrelevance theory (Ngoc et al., [2019](#)). The Payout ratio measures the proportion which a business pays to shareholders in relation to its earnings. It can be calculated using the following formulas:

1. DPR = total dividends / Net Profit
2. DPR = 1 - Retention ratio
3. DPR = dividends per share / earnings per share

2.3 Earnings per Share

Earnings per share refers to a metric that measures a company's profitability by dividing company's net income with the total number of common shares outstanding. This calculation uses data from the income statement and financial position, excluding preferred stock dividends from net income (Shah, [2016](#)). The price by earnings ratio is used to measure stock valuation, relies heavily on EPS. High EPS often translates to higher stock value, enticing investors willing to pay more for higher profits. EPS calculation can vary, including on a diluted basis, extraordinary items, and discontinued operations. Lastly, EPS is an indicator of company growth and financial strength, serving as an attractive signal for potential investors (Khan et al., [2016](#)).

2.4 Effects of Dividend on Stock Prices

The impacts of payout ratios on investment decisions has been a topic of extensive research, examining how they impact stock price's volatility. Dividend basically refers to company profit distribution, affecting share price volatility. Despite factors like Earnings per Share (EPS), asset growth, and earning volatility, dividend policy significantly impacts stock prices. A study conducted by Raza and Abrar ul Haq, non-financial companies of Pakistan, found that the dividend policy does not contribute to the fluctuations in stock prices according to the Modigliani-Miller (MM) theory (Raza et al., [2018](#)). A similar study by Nazir et al. ([2012](#)) identified a negative correlation within dividends, payout ratio, and stock price's volatility.

Some researchers found that high leverage reduces the likelihood of dividends (Shahid et al., [2018](#)), while others observed a positive correlation between institutional holdings and dividend payout (Shah et al., [2016](#)). Investors often perceive large dividend payouts as safer than capital gains (Scholar et al., [2016](#)). Meanwhile, studies on the Nigerian market showed that shareholders favored frequent dividends, with positive correlations observed between Dividend Payout Ratio (DPR), Price-to- Earnings Ratio (P/E ratio), and Debt-to-Equity Ratio (D/E ratio) (Rafique et al., [2012](#)). Dividend policies not only affect stock prices but also have considerable impacts on organizational performance and growth (Ahmad et al., [2012](#)). These effects vary with factors like company size, earning volatility, and financial leverage. For example, fluctuations in Stock Prices are negatively impacted by dividend and asset growth (Hamid et al., [2011](#)), and the dividend payout ratio was observed to predict income growth in Australian enterprises (Lashagro et al., [2014](#)).

Dividend policies can also significantly influence investor behavior. For instance, studies on the Malaysian market found that dividend payout proportion had less effect on share price instability but greater impact for larger organizations (Zakaria et al., [2012](#)). Similarly, in the UK market, a direct relationship was found between stock prices and dividends, and a negative one with payout ratios (Hussainey et al., [2011](#)). Some research discovered an inverse relationship between dividend payouts and the volatility of share prices, while a minor positive connection was identified between dividend yield and stock price instability (Ahmadi & Lashgari, [2014](#)). Findings from studies in the Jordanian stock market indicated that managers adept their dividend policies to impact the instability of stock prices. Other studies indicated that dividend distribution is a critical factor for firm financial health (Afzal, [2019](#)), with dividends playing a crucial role in affecting stock price volatility (Iqbal et al., [2014](#)). Nevertheless, the link between dividends and stock price is not universal across all markets and companies. For instance, a study on the Indonesian stock exchange suggested that real estate and property firms have the lowest share price change compared to other sectors (Neelan, [2019](#)). Similarly, Hussainey et al. ([2011](#)) discovered that dividends and payout ratios negatively correlate.

2.5 The Correlation between Earnings per Share and Volatility of Stock Prices

Earnings per share is calculated by dividing the company's net income assigned for common shareholders with total number of outstanding common shares during a specific time period. Earning per shares is an indicator of company's current and future earnings. (Dividenet et al., [2019](#)). Earnings per share contributes positively towards dividends policy and dividend payout, whereas profitability and Debt to Equity ratio exhibit an adverse relation with dividend payout (Islam, [2019](#)). Slaman et al. ([2019](#)) found a direct impact of accounting information, such as EPS, on stock prices of Nigerian companies, supporting the value of EPS in predicting a company's progress. Similarly, Yusra et al. ([2019](#)) identified a significant correlation between accounting information, including EPS, and stock prices volatility in their study of banks in the Colombo Stock Exchange.

Sheikh et al. (2012) analyzed 19 banks listed in Karachi Stock Exchange and found that stock prices were influenced by EPS, with a strong negative correlation existing between EPS and book value of a share. Likewise, Vijitha and Nimalathasan (2014) found a significant correlation between EPS and stock prices in Sri Lanka. Studies in Shanghai Stock Exchange by Singh et al., (2019) showed a positive correlation between accounting information, such as EPS, and stock prices. Similarly, Sharma et al. (2016) in Turkey found that Earning per share had a significant impact on stock price's volatility. Khan et al. (2012) also demonstrated a direct positive relationship between financial ratios such as EPS and stock returns in Pakistan. Setiwan et al. (2019) revealed a positive influence of EPS on stock prices in Sri Lanka. In Nigeria, Mgbame and Ikhatua found that EPS significantly impacts stock prices. Finally, Mehmood et al. (2019) concluded that accounting information, including EPS, has a significant role in stock return consistency in Malaysia.

2.6 Dividend Theories

Dividend Signaling Theory proposes that if there's increase in dividend payout by the company then it indicates company's positive future potential. A clear indication to investors regarding the strong future cash flows and profitability of the respective company. It is linked to investment theory where managers with higher funding capacity are more likely to signal. Although challenged, dividend signaling remains a useful tool for investors. Key points of the signaling theory include: a company's dividend increase announcement being a sign of positive future outcomes; increases in dividend payouts typically indicating a strong future profitability of the company's stock; and companies paying higher dividends are, or should be, more profitable than those paying lesser dividends. Testing of the signaling theory by Poterba and Summers (1983-1985) at MIT revealed that stock prices typically rise when a company announces a dividend increase and drop when dividends are set to decrease. They concluded that a rise in payout ratio is a positive signal to investors.

According to the profitability of signaling theory, companies that pay the highest dividends should be more profitable than others. However, this supposition can be challenged if one examines how accurately current dividends indicate future earnings. Dividend relevance theory states that the dividend decision is of paramount importance to the finance manager as it determines the portion of net income to shareholders and the retention of the remaining for business financing. As retaining the earnings is crucial for a company's development and also the shareholders often expect higher dividends, this puts the two in conflict. The decision, therefore, should strike a balance between dividends and earnings retention. In terms of decisions for wealth maximization, the existing of dividend paid out impacts the stock price positively. Therefore, to maximize the share's value, the company should pay more dividends.

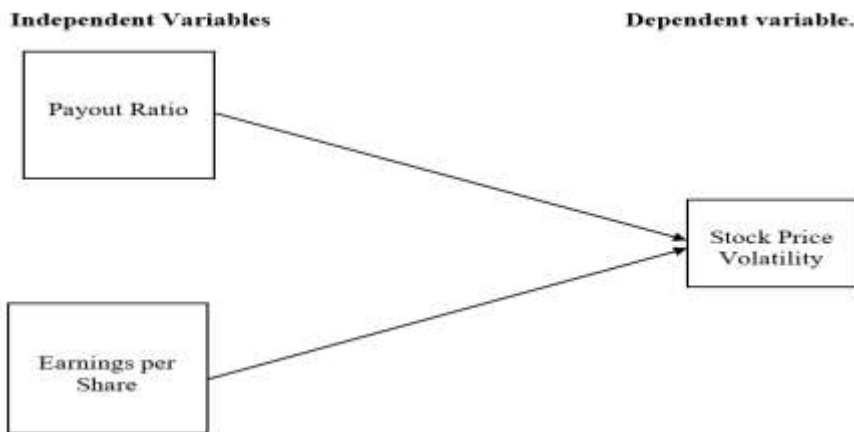
Lastly, dividend and valuation theories have conflicting views on the impact of dividend decisions towards company's financial position. While some believe that dividends are relevant to the company's financial position, others propose that dividends do not affect the company's financial position or market share prices. The dividend strategy impacts on a firm's value. The stock market rate is influenced by the company's payout proportion (disbursement), with the optimal payout percentage making the dividend relevant and providing the highest market value.

Walter's Model, a relevant theory, argues that the dividend payout rate consistently impacts a firm's value, particularly considering the significance of cost of capital (K) and rate of return (R) in establishing the ideal dividend distribution strategies (Walter, J. E.). According to this theory, if $R > K$, the company must keep all earnings with it, whereas when $R < K$, retained earnings should be distributed among shareholders. Depending on whether the firm is growing ($R > K$, 0% payout), normal ($R = K$, all payout ratios are best), or declining ($R < K$, 100% payout), an optimal payout ratio emerges. Contrastingly, the Modigliani-Miller (MM) Model deems the dividend policy

irrelevant to the stockholder's value. It is proposed that the financial health of any company is measured by its ability to generate profits from its investment decisions, irrespective of how earnings are allocated as retained earnings and dividends. This is under assumptions of taking perfect capital markets, unchanged investment strategies, and non-varying risk of the firm. Similarly, Gordon's Model argues dividends are relevant and affect the firm's worth. This model suggests that the price of a share increases with increased dividend payout when $R < K$ and decreases when $R > K$. Optimal payout ratios mirror those of Walter's Model given similarities in their assumptions.

The Clientele Effect hypothesis suggests investors (or the 'dividend clientele') are attracted to specific kinds of stocks, affecting stock prices when policies change. Companies can appeal to new investors by adjusting dividend policies according to investor preference groups. However, in the long term, market equilibrium is maintained due to the stability of the dividend policy. Finally, the "Bird in Hand Argument" revisits Gordon's model considering uncertainty and risk, stating investors prefer certain returns and avoid uncertain ones, making them favor current income (dividends) over future earnings (retained earnings). This preference can negatively affect the price per share if income is retained. Consequently, investors will pay a higher price for a stock if they expect higher dividends in the future, thereby increasing the reduction rate (K) along with the retention rate.

2.7 Theoretical Framework



The theoretical framework for this study is grounded in several recognized theories and models in the field of financial economics. Specifically, these theories address dividend's role in the fluctuations of stock prices. In this framework, the dependent variable, or the factor we seek to understand or predict, is stock price volatility. The term 'volatility' represents how much there is a change in prices of stock over time. At the same time, factors such as dividend policy and payout ratio play a role in influencing this volatility. These factors stem from various theories, including Walter's Model, Modigliani-Miller Model, Gordon's Model, Clientele Effect Hypothesis, and the Bird in Hand Argument.

Walter's Model suggests that the value of a company is deeply affected by its payout ratio. This theory highlights the need of maintaining a balance between cost of capital and rate of return. In contrast, Modigliani-Miller Model argues that company's financial health is not determined by the dividends it pays but by its ability to generate profits from investment. It posits that how a company allocates its earnings between retained earnings and dividends does not influence its stock price. It demonstrates the utility of Walter's Model, Gordon's Model in indicating the importance of

dividends. Most importantly whenever the rate of return exceeds the cost of capital, the share's prices rise. The Clientele Effect Hypothesis suggests that different types of investors are attracted to specific stocks, meaning changes in policies, like dividend decisions, can impact stock prices by drawing in or pushing away varying investor groups. Additionally, the Bird in Hand Argument, an extension of Gordon's model, highlights that investors generally favor certain returns over uncertain ones. This suggests that investors may prioritize current higher dividend payouts—a bird in hand—over potentially greater future dividends. Collectively, this theoretical framework forms a strong basis for exploring the relationships between these variables, aiding in the formulation of hypotheses and the interpretation of empirical results to enhance our comprehension of how dividends and payout ratios decide the fluctuations in share prices.

Following this theoretical foundation, the hypotheses investigating the relationships among the variables are proposed as follows:

Hypothesis 1:

H0: No any correlation exists between earnings per share and the volatility in stock price.

H1: Earnings per share has a significant impact on the volatility in stock prices.

Hypothesis 2:

H0: Earnings per share has no effect on the volatility in stock prices.

H1: Earnings per share significantly influence the volatility in stock prices.

3 Methodology

This study provides the understandings about the correlation of dividend policy and payout ratio by conducting ratio regressions and correlation analysis among the variables.

3.1 Research Design

This research employs a panel data approach, which is used when multiple data points are collected over different time periods and observations. Specifically, this study uses cross-sectional data, capturing information from multiple companies over various time periods. In essence, this study is a causality examination, determining cause-and-effect correlation between dependent and independent variables.

3.2 Population with Sample

This research sample consists of data from 20 companies – both non-financial (cements, textiles) and financial (insurance, banks, investment firms). These firms are part of the 154 registered companies on the Pakistan Stock Exchange, including 56 textile companies, 20 banks, 28 investment banks, 29 insurance companies, and 21 cement companies. The sampled companies include, among others, Allied Bank Limited, Arif Habib Insurance Ltd., Attock Cement, and DG Khan Cement.

3.3 Data Collection Method and Sources

The data is collected from the financial and non-financial sectors of past 10 years. The information includes balance sheets, income statements, and financial and market ratios. Our causal study is evaluating 20 financial and non-financial, using their secondary data.

3.4 Econometric Model and Variables Specification

The proposed econometric model of this study is:

$$SPV = \beta_0 + \beta_1(DPR) + \beta_2(EPS) + \varepsilon$$

Where:

SPV stands for Stock Price Volatility, taken as dependent variable, signifies the extent of fluctuation in a stock's price over a given period.

β_0 represents the intercept, which captures the baseline level of Stock Price Volatility when the Payout Ratio and earnings per share are zero.

β_1 and β_2 denote the coefficients associated with independent variables, that are payout ratio and earnings per share respectively. These coefficients indicate the degree to which stock price volatility is expected to change for a unit change in these variables, assuming all other variables in the model are constant.

Lastly, ε denotes the error term, which accounts for other factors not explicitly included in the model that may affect stock price volatility. This term also captures random variability in stock prices that cannot be explained by this model.

3.5 Data Analysis

To assess the influence of dividend policy and payout ratio on the volatility of stock prices, we apply regression models addressing multicollinearity, correlation analysis, and unit root tests. We employ the fixed or random effect Model for panel data analysis. EViews 11 software is used for these analyses, ensuring comprehensive, accurate data processing and interpretation.

4 Results and Discussion

The subsequent part of this paper elaborates the results with the discussions of finding the analysis. The null hypothesis stated that each variable earning per share, payout ratio, and stock price volatility possessed a unit root, indicating non-stationarity. However, the test results exhibited t-statistics of -4.65, -5.51, and -7.29, respectively, all with a probability value of 0.000, that is less than the conventional 0.05 level of significance. This led to the rejection of the null hypotheses, demonstrating that the series is stationary. Further, the descriptive statistics provide essential insights into the variables, highlighting the dispersion and skewness of the data. Furthermore, the multicollinearity test suggested no significant correlation between the independent variables, indicating that there is no any use of multicollinearity in the data. The Breusch-Pagan-Godfrey test was applied to identify heteroscedasticity in the regression model, with the results indicating homoskedasticity in the data. This comprehensive analysis underpins the subsequent regression analysis, further explored in the following sections.

Table 1: Descriptive statistics

	Earnings per share	stock price volatility	Payout ratio (%)
Mean	1.840967	3.810642	46.52760
Median	2.077560	3.812588	43.05000
Max	3.745732	5.713733	138.2000
Min	-2.040221	1.510722	-37.80000
S.D	1.138536	0.767233	23.21430
Ske	-0.843135	-0.261387	0.272554
Kurtosis	3.564150	3.451222	3.890338
Jarque-Bera	25.55765	3.974112	9.082037
Pro	0.000003	0.137098	0.010663
Sum	357.1476	762.1284	9305.520
Sum Sq. Dev.	250.1790	117.1407	107241.9
Obs	194	200	200

The descriptive statistics for the three variables - Earnings per Share (EPS), Stock Price Volatility

(SPV), and Payout Ratio measured in percentage are summarized in table 1 above. For Earnings Per Share (EPS), the average value is approximately 1.84, with a median value of around 2.08, indicating a slightly skewed distribution. The maximum and minimum values recorded for EPS are 3.75 and -2.04 respectively. The standard deviation which is a measure of the dispersion or spread of the data points, stands at 1.14, suggesting some degree of variability in EPS values among the companies. The negative skewness (-0.84) implies that the EPS data is skewed to the left, and the kurtosis of 3.56 shows a relatively leptokurtic distribution, suggesting heavier tails and more outliers than a normal distribution. The Jarque-Bera test provides p-value of approximately 0.000003, which means the null hypothesis is rejected.

The average Stock Price Volatility (SPV) stands at around 3.81, with a median almost identical to the mean, suggesting a symmetric distribution. The maximum and minimum values of SPV are 5.71 and 1.51, respectively, with a standard deviation of 0.77, indicating a moderate level of variability. The slight negative skewness (-0.26) suggests a minor leftward skew, and the kurtosis of 3.45 implies a slightly leptokurtic distribution. The Jarque-Bera test gives a p-value of approximately 0.137, which is not significant at the conventional levels, indicating that we cannot reject the null hypothesis of normal distribution for SPV. Finally, for the Payout Ratio in Percentage, the mean and median values are approximately 46.53% and 43.05% respectively. The maximum value for PR is 138.20%, while the minimum value is -37.80%. The standard deviation stands at 23.21, showing a high degree of variability in the payout ratios across the companies. The skewness is slightly positive at 0.27, indicating a modest skew to the right. The kurtosis of 3.89 suggests a leptokurtic distribution, while the Jarque-Bera test provides a p-value of 0.0106, which leads to the rejection of null hypothesis of normal distribution. In summary, these statistics outlines the key principles of EPS, SPV and the payout ratio, highlighting their average values, dispersion and distribution pattern.

Table 2: Unit Root Test of Earning Per Share.

	t-Stat	Prob.*
Augmented Dickey-Fuller test statistic	-4.653333	0.0001
Test critical values:		
1% level	-3.463235	
5% level	-2.875898	
10% level	-2.574501	

Null Hypothesis: Earning Per Share has a unit root.

Table 3: Unit Root Test of payout ratio

	t-Stat	Prob.*
Augmented Dickey-Fuller test statistic	-5.508331	0.0000
Test critical values:		
1% level	-3.463405	
5% level	-2.875972	
10% level	-2.574541	

Null Hypothesis: payout ratio has a unit root.

Table 4: Unit Root Test of Stock Price Volatility.

	t-St	Prob.*
Augmented Dickey-Fuller test statistic	-7.291583	0.0000
Test critical values:		
1% level	-3.463235	
5% level	-2.875898	

10% level	-2.574501
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Null Hypothesis: Stock Price Volatility has a unit root.

Table 2, Table 3, and Table 4 each presents the results of the Augmented Dickey-Fuller (ADF), a unit root test for the variables including Earning Per Share, Payout Ratio, and Stock Price Volatility. The ADF test provides a common statistical method to evaluate whether a given time series variable is stationary or not.

Table 2 shows that the null hypothesis has a unit root for EPS indicating non-stationary. The ADF test statistic is -4.65, which is more negative than the test critical values at 1%, 5%, and 10% significance levels. The p-value (Prob.*) of 0.0001 is statistically significant indicating strong evidence to reject the null hypothesis and leads to the conclusion that the Earning Per Share series is stationary.

According to the EPS test, Table 3 on the base of ADF test statistic (-5.51) and highly significant p-value (0.0000) again contradicts the null hypothesis of a unit root, indicating strong evidence of its stationarity.

Finally, in Table 4, we examine the Stock Price Volatility series. The ADF test statistic is -7.29, and the p-value is 0.0000, which is more extreme than the values in the previous tables. Therefore, the null hypothesis is rejected with the fact that the Stock Price Volatility series is stationary.

In all three cases, the ADF test statistics exhibits more negative values compared to the critical values at the 1%, 5%, and 10% significance levels, with the p-values falling below these standards. Thus, we can reject the null hypotheses and reached to the conclusion that all three series are stationary, with no any unit root. This stationarity is a crucial assumption in time series analysis, allowing us to apply various statistical models to the series.

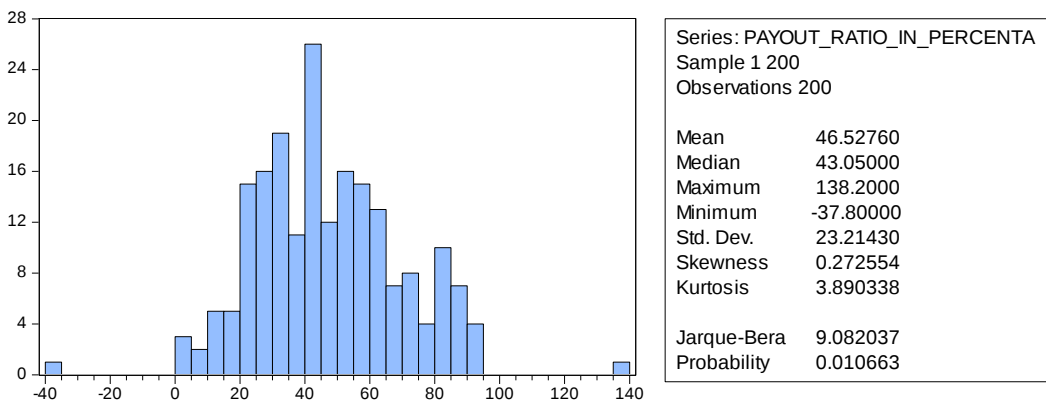


Figure 2: Normality test of dividend payout ratio.

Figure 2 shows that in the test that is skewed more towards right side i.e. positively skewed indicates mean is greater than mode.

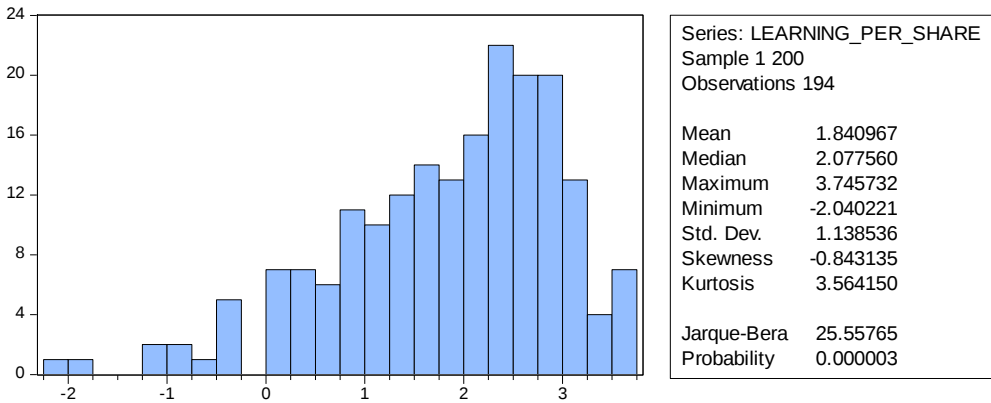


Figure 3: Normality test of earnings per share.

Figure 3 demonstrates that earning per share test skewed more towards left side representing negative distribution, indicates mean is less than mode.

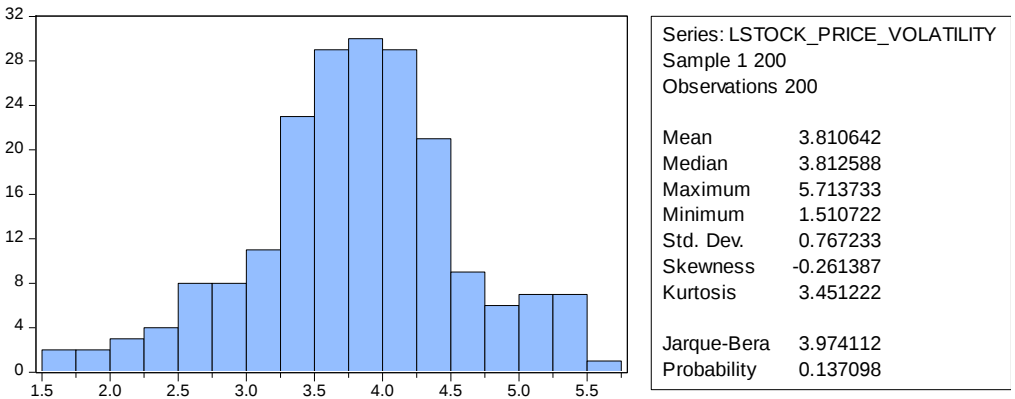


Figure 4: Normality test for stock price volatility.

Figure 4 shows that normality distribution is skewed more towards left representing negatively skewed leads to the result that is mean is less than mode.

Table 5: Multicollinearity Test

	Dividend payout ratio	earning_per_share
Dividend payout ratio	1.000000	0.033309
earning_per_share	0.033309	1.000000

Table 5 suggests that the data does not corresponds to multicollinearity problem. This problem exists when both the independent variables highly correlate with each other. As in this study, one independent variable is significant while other is insignificant, making the study free of collinearity problem.

Table 6: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.331512	Prob. F(2,191)	0.0999
Obs*R-squared	4.623390	Prob. Chi-Square(2)	0.0991
Scaled explained SS	3.951860	Prob. Chi-Square(2)	0.1386

This study involves the use of Breusch-Pagan-Godfrey test to check for heteroskedasticity. This situation occurs when the error term's variability or the 'noise' is uneven across all levels of the independent variables in a regression model. Table 6 shows the F-statistic for the test is approximately 2.33, with a corresponding p-value (Prob. F(2,191)) of 0.0999. Typically, if this p-value is less than the significant level (often 0.05), then the null hypothesis of homoskedasticity (constant variance) is contradicted indicating the strong evidence in the favor of heteroskedasticity. However, in this case, the p-value is greater than 0.05, which concludes that we fail to reject the null hypothesis and hence we cannot prove that there is evidence of heteroskedasticity.

The Obs*R-squared statistic is 4.62, with a p-value (Prob. Chi-Square(2)) of 0.0991. This statistic and its p-value provide another way to evaluate for heteroskedasticity. Like the F-statistic, this p-value is also greater than 0.05, leading us to the same conclusion of no evidence for heteroskedasticity. Finally, the scaled explained SS value is 3.95, with a p-value (Prob. Chi-Square(2)) of 0.1386. Once again, this p-value exceeds the typical 0.05 threshold, implying no evidence of heteroskedasticity. Overall, the Breusch-Pagan-Godfrey test suggests that heteroskedasticity is not a concern in this regression model, as all p-values are above the conventional threshold of 0.05. This is a positive indication as heteroskedasticity can violate the assumptions of ordinary least squares regression, resulting a biased and inefficient estimator.

Table 7: Correlated Random Effects - Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	5.845713	2	0.0538

During panel analysis, the Hausman test serves as statistical tool in deciding of the fixed and random effect models. According to the Hausman Test, the random effects model is preferred, unless the alternative hypothesis favors the fixed effects model. In the provided test results in table 7, the chi-square statistic for the test is approximately 5.85 with 2 degrees of freedom. The corresponding p-value for this statistic is 0.0538. Typically, if the p-value falls below significant level of 0.05, then the null hypothesis is rejected leading to the conclusion that fixed effects model is preferred. However, in this case, the p-value is slightly more than 0.05, so it favors the null hypothesis. This means that test results do not provide strong proof to favor the fixed effects model, over the random effects model. That said, the p-value is remarkably close to 0.05, which might suggest some degree of uncertainty in the choice of model. Other factors, such as the specific research question and the nature of the data, might be considered in deciding the most appropriate model.

Table 8: Regression Analysis

Variable	Coeff	Std. Er	t-Stat	Prob.
C	3.53759	0.18404	19.2221	0
dividend payout ratio	-0.0012	0.00259	-0.4777	0.6334
earnings per share	0.17566	0.05213	3.37001	0.0009
Dependent Variable: stock_price_volatility				
Effects Specification				
			S.D.	Rho

Cross-section random		0.38891	0.3076
Idiosyncratic random		0.58353	0.6924
Weighted Statistics			
R-squ	0.05683	Mean dep var	1.64565
Adj R-squ	0.04696	S.D. dep var	0.60692
S.E. of reg	0.587	Sum squ resid	65.8127
F-statistic	5.75459	Durbin-Watson stat	0.85417
Prob(F-statistic)	0.00374		
Unweighted Statistics			
R-squ	0.12845	Mean dep var	3.79256
Sum squ resid	95.8586	Durbin-Watson stat	0.58644

The regression analysis table 8 demonstrates the outcome of the panel regression model, using Cross-section Random Effects, taking stock price volatility as dependent variable. The predictors in this model include the payout ratio and Earnings per share. The coefficient (Coeff) for the Dividend Payout Ratio is -0.001239, indicating an inverse correlation with Stock Price Volatility. However, the corresponding p-value (Prob.) 0.6334 proves that this effect is not statistically significant at common significance levels (like 0.05), suggesting that changes in the Dividend Payout Ratio might not have a meaningful impact on Stock Price Volatility, based on the data in this sample.

Contrary to this, earnings per share has a positive coefficient of 0.175661, implying that with the increase in earnings per share, fluctuations in stock prices also increases. The p-value of 0.0009 concludes a statistically significant relation between the variables. The adjusted R-squared value is 0.046957, suggesting that approximately 4.7% of the variation in stock prices can be determined by the variation in the payout ratio and earnings per share, according to this model. This is relatively low, implying that other factors not included in the model might be driving Stock Price Volatility. The Durbin-Watson statistic is 0.854165, which is less than 2, indicating the presence of positive autocorrelation in the residuals of the model. This may violate the assumption of no autocorrelation in the errors, which is a common assumption in linear regression models. The F-statistic of 5.754585, with a corresponding p-value (Prob. F-statistic) of 0.003743, suggests that the overall model is statistically significant.

Given the previous Hausman test results, these findings align with the decision to use a random effects model, as there was not strong evidence to prefer a fixed effects model based on that test. However, given the identified autocorrelation issue and the limited explanatory power of the model (as indicated by the low adjusted R-squared value), additional diagnostic checks or modifications to the model might be needed to improve the accuracy of the predictions. The findings from the regression analysis can be compared with the hypotheses developed earlier to assess their validity. Hypothesis 1 stated that there is no relation between the payout ratio and stock price's volatility. However, the results of regression give the fact that the coefficient for the Dividend Payout Ratio is negative, although it is not statistically significant. This suggests that there might be some weak association among the dividend payout ratio and stock price volatility, but it is not strong enough to be considered significant in this sample. Hypothesis 2 implied a relationship between each share's price and the variance of stock prices. The regression results confirm this hypothesis since the Earnings Per Share coefficient is positive and significant. As such, there is a positive relationship between earnings per share and the volatility of prices, suggesting that a high EPS is associated with a high level of price volatility. Overall, the findings only partly support the research hypothesis. There was weak evidence of correlation between Dividend Payout Ratio and price volatility and was not supported by the data as it is not statistically significant. However, the increased level of EPS is highly associated with price volatility. These conclusions suggest that factors other than payout ratio might significantly influence the stock prices.

5 Conclusion and Recommendations

The conclusion suggests how the dividends and earnings per share effect fluctuations in stock prices across financial and non-financial sectors within Pakistan, including insurance companies, banking, textile, and cement industries. Conversely, earnings per share helps the companies to maintain stability in stock price volatility. These results suggest earnings per share play a vital role in determining the fluctuations in stock prices compared to payout ratios. The study used a sample of 20 entities and analyzed secondary data obtained from financial statements over a 10-year period from 2009 to 2018. Various analytical techniques, such as multicollinearity regression, correlation analysis, and unit root tests, were employed using EViews 11 software. However, most importantly, this study focused on only four industries and a limited number of companies within those industries. Other sectors, such as government savings institutions, modaraba companies, leasing companies, power generation, fertilizers, oil & gas, pharmaceuticals, automobiles, and technology companies, were excluded from the analysis.

Overall, this research significantly assists in demonstrating the link between dividend policy and stock price's volatility, providing insights into the specific context within Pakistan's financial and non-financial sectors. Future studies might also include a broader range of industries, and consider other factors that may influence stock price volatility to further enhance our understandings about the relation between dividends, earnings per share, and stock exchange dynamics.

5.1 Primary contributions of the research

This research contributes in understanding how the independent variables (payout ratios and earnings per share) are interlinked with the dependent variable (fluctuations in stock prices). This study adds more knowledge towards the existing research. Referring to this association, the main purpose is to investigate the dividend theories, earnings per shares and their combined effects on stock price volatility. Consequently, these understandings are helpful for the companies to manage the variations in stock prices because of payout ratios and earnings per share.

This study provides insights into the impacts of dividends and earnings per share on stock prices in financial and non-financial sector of Pakistan. Dividends are distributed among the shareholders, which is a portion of company's net income while earnings per share is a profit a company distributes to its shareholders. A significant number of researches are done by the researchers in financial and non-financial sector of different countries to study how dividend policy and earnings per share changes the stock price. This study focuses the South Asian regions by taking 20 companies of Pakistan from the financial and non-financial sectors of time period year 2009 to 2018 to examine the impact of payout ratios and earnings per shares to fluctuate the stock prices.

This study associates with the literature reviewed and the theories discussed. The analysis has demonstrated the negative or insignificant impact of the payout ratios on stock prices, which aligns with the Modigliani-Miller (MM) irrelevance theory. According to MM, dividend policy does not affect stock prices as they are determined solely by the earning capacity and investment policy of the company (Modigliani & Miller, [1961](#)).

Despite of that, the study proves the positive impact of Earnings per share on stock price's volatility. This supports already proposed theories by Walter ([1963](#)), which suggest that earnings are a crucial determinant of fluctuations in stock prices. Walter's model emphasizes the association among the internal rate of return and the cost of capital in planning the optimal dividend policy (Walter, [1963](#)). Gordon's model focuses on the relevance of dividends, with higher earnings leading to increased stock prices. Furthermore, the findings are in line with the research conducted by Kirago et al. ([2012](#)) and Olugbenga and Atanda ([2014](#)), who reported a direct relation between earnings per share and dividends distribution policy. These research studies highlight the

importance of profitability and earnings capacity when determining dividend distributions.

The study contributes to various aspects including theory, management, and practical applications. From a theoretical viewpoint, this study adds to the current literature on dividend policies and stock price variability by investigating these connections in both financial and non-financial sectors of Pakistan. The results validate theories like Modigliani-Miller, Walter, and Gordon, offering empirical proof of the importance of earnings per share in influencing stock prices. This advances our comprehension of the factors impacting stock price volatility and provides deeper insights into dividend policy dynamics.

Concerning policy implications, the study suggests that policymakers and regulatory bodies should consider the impact of earnings per share on stock price's volatility while creating dividend policies. Recognizing the strong correlation between earnings per share and stock prices, businesses may need to concentrate on improving their profitability and earnings capacity to boost shareholder value. It is also suggested that policymakers advocate for transparency and disclosure practices to ensure that investors have access to accurate and reliable information regarding a company's earnings performance.

At the managerial level, the findings stress the importance of efficient financial management and strategic decision-making. Managers should prioritize actions that maximizes the earnings per share and profitability so that the stock prices varies significantly. This could involve optimizing capital distribution, implementing effective cost management techniques, and making well-informed investment choices that lead to sustainable earnings growth. Additionally, managers can utilize this study to assess and adjust their dividend policies according to the company's financial health and investor expectations.

With practical applications, the research offers valuable insights for investors and stakeholders. Understanding how payout ratios, earnings per share, and stock prices are interconnected can aid in making profitable investment decisions and managing investment portfolios effectively. Investors should take into consideration the earnings performance and dividend strategies of companies when evaluating investment prospects and assessing risks. Furthermore, the findings stress the importance of adopting a long-term perspective and considering sustainability implications in investment decision-making. Companies that prioritize sustainable earnings growth are more likely to attract investors who value consistent and predictable returns.

Regarding sustainability implications, the study indirectly emphasizes the relevance of financial sustainability in influencing stock price variability. Companies that focus on enhancing their earnings per share and profitability are more likely to exhibit financial resilience and long-term viability. By emphasizing sustainable financial practices, businesses can improve their ability to attract investors, access capital markets, and contribute to economic expansion. Moreover, sustainable earnings growth aligns with broader objectives of corporate sustainability, encompassing social and environmental responsibilities.

Overall, by recognizing the connections between dividend policy, earnings per share, and stock prices, stakeholders are empowered in making informed decisions that support financial sustainability and long-term value creation.

5.2 Limitation and future research

Precisely, results of this study are specific to the financial and non-financial sectors within Pakistan. This limited sample size and exclusion of certain industries may restrict the generalizability of the findings. Future research should consider expanding the sample and including a broader range of industries to get a comprehensive understanding about the association of dividend policy, earnings per share, and stock prices.

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