Nexus between Dividend Policy and Stock Price Volatility: Evidence from Dhaka Stock Exchange

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Abstract:

The study investigates whether dividend policy is a major predictor of stock price volatility for the firms listed on the Dhaka Stock Exchange excluding the financial institutions. The research has been conducted with the Dividend Payout Ratio serving as the explanatory variable and Earnings Volatility, Long-term Debt, Firm Size and Asset Growth serving as the control variables. Panel regression analysis has been used while conducting the analysis. The model with the ordinary standard error does not fit well, suggesting that the significant variable is long-term debt. However, after integrating time-fixed variables it is found that firm size is significantly linked with stock price volatility. In addition, the model with robust standard error and no time-fixed effect implies that dividend payout, earnings volatility and long-term debt are significant, whereas the model with time-fixed effect suggests that earnings volatility and firm size are significant. To account for endogeneity, lags are introduced in the model. Changes in the significance of explanatory and control variables are rarely noticeable with lags being introduced in the models. The output of the model with robust standard error and time-fixed effect is comparable to that of the model with no lag. Finally, tests are conducted to account for heteroscedasticity and time-fixed effect. The results of the tests indicate that the data is heteroscedastic, necessitating the use of temporal fixed effects in fixed effects panel regression. Some of the models incorporated robust standard error to correct for heteroscedasticity and a year dummy to account for the time-fixed effect.

Keywords: Dividend policy, Volatility, Dividend yield

DOI: https://www.doi.org/10.61607/JFB.V20N1-2.A7

Article Info: Submission Date: February 03, 2023; Acceptance Date: December 04, 2023.

1.0 Introduction

Dividend policy refers to a company's decision to distribute its profits to shareholders or retain them. The dividend can be paid in either cash or stock. The choice to pay

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dividends has numerous implications on investors, but the impact of dividend policy on the firm and financial market is controversial (Ilaboya and Aggreh, 2013). The dividend policy of a company also affects its capital structure; by not paying dividends on earnings, a company can build retained earnings, which improves its liquidity position. Numerous dividend-related ideas, such as the Dividend irrelevancy hypothesis, Information content or Signaling theory, and Clientele impact, have been produced by researchers from around the globe. These theories served as the basis for analysis, but empirical evidence has led to their criticism and modification over time. Dividend policy theories continue to be a hot topic in corporate finance, as policy makers, scholars, and finance managers continue to debate whether dividend yield or payout impacts share price volatility (Masum, 2014). The dividend yield is the return computed by dividing the dividend per share by the share's closing price. It indicates the amount of return a stock generated relative to its current market price. The dividend payout ratio is an important measure of a company's ability to pay its investors, and a continuous dividend payment implies that the company is performing well and is likely to continue to do so. However, dividends can also be used to conceal a company's bad performance, with corporations delivering dividends even when they lack the financial resources to do so, diverting funds from future reinvestments for growth and expansion. Firms with a short-term perspective use such an aggressive strategy to please investors and send the wrong signal to the market in order to manipulate the stock price; such an aggressive effort will, of course, reduce slack in the future and may harm investors. Aware and knowledgeable investors of the financial market cannot be readily misled by such manipulation; thus, they consider the firm's other financial conditions, including asset growth, debt level, earnings, and market capitalization. Such investors determine whether to buy, hold, or sell their stocks depending on considerations other than dividend alone. Volatility in stock prices is a systematic risk encountered by investors who own common shares of a publicly traded company. Investors pay close attention to the fluctuations in their stock price since it influences their total return and their exposure to risk. The Bangladeshi stock market is highly volatile, and investors lack confidence in the market as a result of inadequate regulation, that encourage few important corporations and people to manipulate prices artificially (Masum, 2014). Bangladeshi investors are concerned about the volatility of their stock holdings. The majority of long-term investors pay close attention to dividend policy and the riskiness of their investments when deciding whether to acquire or sell holdings. This study will examine whether dividend policy has any effect on the volatility of share prices for companies listed on the Dhaka Stock Exchange, along with other relevant variables such as long-term debt level, firm's asset growth, earnings volatility, and firm size, which also influence price volatility. These variables were chosen based on empirical research conducted in the United States by Baskin (1989) and in Australia by Allen and Rachim (1996). In contrast to the other two studies, this one examines the firms

listed on the Dhaka Stock Exchange for the period ranging from 2014 to 2018 and excludes financial institutions such as banks, insurance companies, and non-bank financial institutions.

This study aims at exploring the effect of dividend policy on the volatility of share prices of the firms evidenced from the Dhaka Stock Exchange. There are more specific purposes, including evaluating how well dividend payout can predict price volatility as well as analyzing the influence of other control factors (i.e. profit growth, debt, size and asset growth) on stock price volatility.

2.0 Literature Review

The effect of dividend policy on the volatility of stock prices has been subject to a great deal of research, although the findings of many studies are very conflicting. While the Dividend Irrelevance Theory by Miller and Modigliani (1961) posits that dividend policy has no effect on a company's stock price, empirical research has provided conflicting evidence. For instance, studies from developing markets, such as the Dhaka Stock Exchange, indicate that dividend payout ratios do have a tangible impact on stock price volatility.

According to Petit (1972), dividend payments include information about a firm's prospects, which can be detected by analyzing fluctuations in the stock price. However, Lintner (1956) presented that leadership does not want to reduce dividend payouts even though it is essential and that management will only raise dividends when they perceive that the company's profit prospects have grown permanently.

Research on the Pakistan stock market was carried out by Nazir et al. (2011), and the authors found that the dividend payout ratio and stock prices are positively associated with one another. In Pakistan, the share price fluctuation may be affected by dividend policy, and this study also proposed that the signaling impact may play a crucial role in deciding the share price fluctuations. Based on the consumer product companies that are listed on the Malaysian stock market, Hashemijoo et al. (2012) investigated the impact of dividend policy and share price volatility. The empirical findings of this study showed a strong negative relation between share price volatility and two main factors (dividend yield and payout). In addition to this, a large inverse link may be established between the stock price volatility and the size of the company. Research findings from studies such as Hashemijoo et al. (2012) and Baskin (1989) suggest that company size plays a significant role in influencing share price volatility, alongside dividend yield. Consistent with these results, the Dhaka Stock Exchange data also highlight that firm size is a critical control variable impacting the volatility of stock prices. Empirical estimates of excess market returns were provided by Masum (2014) for each of the thirty banks that were listed on the Dhaka Market for the period 2007 to 2011. The purpose of this study was to investigate whether or not a relationship exists between earnings and stock market returns of commercial banks in Bangladesh,

and if it does, to what extent that correlation may explain the level of returns on equities over the same period. According to the findings of this study, dividend policy has a strong favorable impact on stock prices.

Another study was conducted with evidence collected from the United States by Friend and Puckett (1964) to determine whether or not there was a correlation between dividends and share prices. They incorporated, in addition to their primary variables, other controlling variables that could potentially affect a company. According to the findings of the study, the value of a company's retained earnings was significantly impacted by the payment of one dollar in dividends. According to the findings of the study, a positive association exists between dividends and share prices in companies that have little to no possibility for future growth.

According to Allen and Rachim (1996), there is a positive correlation between the volatility of share prices and dividend yield, while there is a negative correlation between stock market performance and dividend payout. However, the authors also found that the close association between the rate of return and payout ratio may present a modest challenge because several factors influence dividend policy as well as price volatility.

Hussainey (2011) reported a negative connection between dividend payment and stock market performance, but they found a significant negative correlation between dividend yield and price fluctuations. These findings are consistent with the findings from Australia reported in (Allen & Rachim, 1996); however, they reported a negative relationship between payout ratio and price volatility. According to their research, the variable that has the largest correlation with share price volatility is Dividend Payout, whereas the control variables that have the strongest correlation with share price volatility are Business Size and Long-Term Debt.

Furthermore, long-term debt, as identified in both global and Dhaka Stock Exchange-specific studies, is another key control variable. Higher levels of debt tend to increase the risk profile of a company, contributing to stock price volatility. The relationship between leverage and stock volatility is evident when analyzing companies with varying levels of debt. If stockholders are willing to increase their shareholdings at the same rate of stock returns, they should also be prepared to give up current dividend payments if the additional equity stake yields a higher return.

The impact of earnings retention on stock prices ought to be a function of the earnings of corporate investment options, ceteris paribus since external equity financing is generally not a suitable alternative to internal financing. While this corporate rate of profit is higher than the minimum rate required by stockholders, the price of the company's shares should go up because a greater proportion of earnings will be kept.

Neither of these hypotheses is consistent with the conduct that has been observed on the market. Contrary to what might be expected from both of these assumptions, we do not typically observe perceptible drops in the market price level when the aggregate supply of corporate stock is increased by new issues, requiring for their absorption the substitution of current for future income and potentially raising the risk premium demanded by investors; nor do we typically observe sharp drops in the per-share price when the supply of an individual company's shares is increased.

The first two assumptions can both be called into question based on the behavior of the market as well as the logical content of the argument.

Considering all of this, we think that those statistical studies that purport to show a strong market choice for dividends are in error. This is especially the case considering that the analysis that is typically utilized (described in the following section) includes as a component of the market's valuation of retained earnings the amount charged for the reasonably high internal rates of return that might be anticipated to be associated with high preservation. Nevertheless, we do not anticipate that there will be a consensus on the preference.

The internal rates of return were maintained at the same level across the board for the companies in the sample that was being analyzed. However, we do not exclude the possibility that there are situations wherein retained earnings are evaluated at a lower amount than dividends. Some organizations can be governed by management that is aware it is not acting in the best interest of the shareholders. Alternatively, there may be a significant disagreement between management and shareholders regarding how that interest is articulated. On the other hand, we have the impression that occurrences such as these are more likely to be an exception than the rule. Moreover, we would anticipate that, for the typical company, payout policies are designed in such a way that, at the margin, a dollar of retained earnings should have approximately the same value in the market as a dollar of foregone dividends. This is true regardless of whether investors prefer dividends or capital gains.

Contrary to the Dividend Irrelevance Theory, evidence from multiple studies suggests that dividend policy can significantly affect stock prices, particularly in environments with higher information asymmetry and market inefficiencies, as seen in emerging markets like Bangladesh. In an environment characterized by ambiguity and gaps in knowledge, dividends are assigned a value that is distinct from that of retained earnings. Investors would rather have the "bird in the hand" in the form of cash dividends than the "two in the bush" in the form of potential financial gains in the future. When all other factors are held constant, an increase in dividend payments may be associated with an increase in the value of the company. A dividend payout ratio will decrease, which will increase share value. This is because a higher output dividend will lessen the amount of uncertainty over future cash flows.

Therefore, as per the so-called "bird-in-the-hand" hypothesis, high dividend payment ratios cause a company's value to increase to its maximum potential. Graham and Dodd, for example, contended that the influence of a dollar's worth of dividends on stock prices is on average four times greater than the impact of a dollar's worth of retained earnings on stock prices. Studies such as Gordon and Shapiro's (1956), Gordon's (1959, 1963), Lintner's (1962), and Walter's (1962) are examples of research that lend credence to the bird-in-the-hand hypothesis (1963).

M&M (1961) has criticized the bird-in-the-hand hypothesis and claimed that the risk of the company is not defined by how it divides its earnings but rather by the riskiness of the operating cash flows that the company generates. As a direct result of this, M&M referred to this type of argument as the bird-in-the-hand fallacy. In addition, Bhattacharya (1979) proposed that the line of thinking that underpins the BIHH is flawed. In addition, he claimed that the level of the firm's payout is affected by the risk of the company instead of the other way over.

That is to say, the risk involved in a company's cash flow affects the dividend payments that the company makes, but an increase in payouts will not make the company less risky. It is possible, at least in principle, that businesses that are exposed to a higher level of risk about their future cash flow will choose to implement lower payout ratios. According to Rozeff's (1982) empirical research, there is an inverse correlation between dividends and corporate risk. To put it another way, dividend payments tend to go smaller whenever there is a rise in the operational risk of a company.

In general, there is frequently a discrepancy in the tax treatment of capital gains and dividends. When managers aim to maximize the wealth of shareholders (firm value) in response to this tax preference, they may increase the retention ratio of earnings to decrease the number of earnings that are distributed as dividends. This can affect the supply of dividends. A table has been included in the following section to summarize the overall literature overview.

Table-1 : Summary of the Literature Review

Author	**Variables**	**Application on Dividend Policy**
Miller and Modigliani	Shareholders' value	The Homemade Dividend Strategy can be used to assist shareholders in meeting their cash flow needs if they are interested in pursuing this option (No impact on the share value).
Al-Malkawi, Gordon and Shapiro (1956), Lintner (1962), and Walter (1963) (Bird-in-hand)	Dividend	In uncertain environments with knowledge asymmetry, retained gains are used to value dividends.

Petit (1972)	Firm's prospects	Stock price variations might reveal information about a company's future from dividend payments.
Nazir (2011)	Positive correlation	Stock prices and dividend payout ratio are correlated.
Empirical Findings	Negative Correlation	Two key reasons negatively affect share price volatility (dividend yield and payout).

Source: Authors' Compilation

3.0 Methodology of the Study

Some researchers have found a negative relationship between dividend payout and share price volatility while others have found a positive relationship. Some studies also concluded that dividend payout explains the price volatility most among the predictor variables. Based on these contradictory findings this study provides the following proposition for companies listed in the Dhaka Stock Exchange:

The Proposition: *Dividend payout has a significant inverse relationship with share price volatility for companies listed in the Dhaka Stock Exchange.*

3.1 The Empirical Model:

We have used the Panel Regression Model, using Stata 16, in order to determine the relationship between stock price volatility and dividend policy. The main predictor variable is Dividend Policy measured in terms of Dividend Payout, and in line with the recommendation by Baskin (1989), we used other control variables such as Asset Growth, Earnings Volatility, Long Term Debt, and Firm Size.

The following regression equation can be developed:

$$\mathbf{PVOL = \alpha + \beta 1 DPAYOUT + \beta 2\ EVOL + \beta 3 LDEBT + \beta 4\ SIZE + \beta 5 GROWTH + \varepsilon}$$

Here, α is the intercept, β is the regression coefficient, DPAYOUT= Dividend Payout, EVOL= Earnings Volatility, LDEBT= Long-term Debt, SIZE= Size of the Firm, GROWTH= Asset Growth Rate, and ε = Stochastic Error Term.

3.2 Diagnostic Tests:

The study involves the following diagnostic tests which were conducted using Stata 16:

i. **Testing for Time-Fixed Effects:** When running a Fixed Effects Model, we need to see if time-fixed effects are needed. It tests if dummies for all the years are equal to zero (0), and if they are then the FE model does not need time-fixed effects. The null hypothesis is that all year's coefficients are jointly equal to zero. If the p-value is not less than the level of significance then we can reject the null hypothesis.

ii. **Testing for Heteroskedasticity:** If data are heteroskedastic, it means that the variance of the error terms is not constant. For example: Error terms associated with very large firms such as Power Grid Company might have larger variances than error terms associated with smaller firms such as Monno Jute Stafflers Ltd. The presence of heteroskedasticity can lead to biased standard error terms. The null hypothesis is that variances of the error terms are constant (homoskedasticity). If the p-value is less than the level of significance then we reject the null hypothesis and conclude that data is heteroskedastic. We can deal with heteroskedasticity in the FE and RE models by using Robust as the Standard error term in the regression. The use of robust standard errors gives more accurate p values even though it does not change coefficient estimates.

iii. **Testing for Serial Correlation:** If data has serial correlation it results in standard errors of the coefficients to be smaller than they actually are and higher R-squared. Lagram-Multiplier test for serial correlation is done to check if error terms are autocorrelated. If the value of the P-value of F Statistic is greater than the level of significance then the dataset does not have serial correlation.

3.3 Choosing among the Panel Regression Models:

There are three Panel regression models such as Pooled OLS Model, Fixed Effects Model, and Random Effects Model. First, we choose between Random Effects a Model and Pooled OLS model using the ***Breusch-Pagan Lagrange multiplier test.*** This test specifically determines whether we should run simple OLS regression or Random effects regression. The null is that variance across units is zero which means that there is no significant difference across units or there are no panel effects. If the p-value is less than the level of significance we can say that the null hypothesis is rejected and thereby, the random effects model is appropriate because there are significant variances across the units. Then we choose between the Random Effects Model and the Fixed Effects Model using the ***Hausman test***. The hypotheses are:

H_0: Random effects model generates a consistent coefficient

H_A: Random effects model generates a consistent coefficient

The result of this depends on the p-value; if the p-value is higher than the significance level the null hypothesis is accepted, and if it is lower then the fixed effects model is appropriate for the data set.

3.4 Data and Variables:

The study is conducted using 75 dividend-paying firms listed in the Dhaka Stock Exchange from the seven industries. Data has been collected from the DSE Library and Financial Statements of the companies within the time frame from 2012 to 2018. The sample consists of seven industries including Food and Allied, Pharmaceuticals

and chemicals, Engineering, Cement, Fuel and Power, Textile, and Miscellaneous. The following two criteria will be used for selecting the companies:

1. At least one dividend payment during the period from 2012 to 2018
2. No stock split from 2012 to 2018.

Daily price data and dividend data were collected from the DSE library for the 7 years (2012-2018). Other data such as Earnings per share, Total assets, and Long-term debt were collected from individual company's annual reports.

The following variables are used in the model and the formulas are used for measuring the variables:

Table-2 : List of Variables and their Measurement

No.	Variables	Type	Measurement
1	Stock price volatility (P-VOL)	Dependent	$\sqrt{\frac{\sum_{t=1}^{3} \{(H_{it} - L_{it})/(\frac{H_{it} + L_{it}}{2})\}^2}{3}}$
2	Dividend payout (D-PAYOUT)	Independent	DPS_{it}/EPS_{it}
3	Earnings volatility (E-VOL)	Control	$\sqrt{\frac{\sum_{t=1}^{3}(EPS_{it} - \overline{EPS})^2}{3}}$
4	Long term debt (L-DEBT)	Control	$LD_{it}/Asset_{it}$
5	Size of the firm (SIZE)	Control	$\ln MV_{it}$
6	Asset growth rate (GROWTH)	Control	$= \frac{\Delta Asset_{it}}{Asset_{it}}$

Source: Authors' Compilation

Here,

H_{it}= Yearly adjusted high price of the ith company for the year t.

L_{it}= Yearly adjusted low price of the ith company for the year t.

DPS_{it}= Cash dividend per share of the ith company for the year t.

MV_{it} = Market capitalization of the ith company for the year t.

EPS_{it}= Earnings per share of the ith company for the year t.

$\overline{EPS}$ = 3 years moving average of EPS

LD_{it} = Long-term debt of the ith company for the year t.

$Asset_{it}$= Total asset of the ith company for the year t.

$\Delta Asset_{it}$= Change in the total asset of the ith company for the year t.

Price Volatility (**P-VOL):** The yearly range of adjusted stock prices is calculated by dividing the average highest and lowest prices for the year and then squared. A 3-year moving average is calculated, and a transformation based on the square root is applied to provide the 3-year moving standard deviation. We utilized information from 2012 to 2018 to calculate the moving standard deviation. An example of a price-adjusted price for Mozaffar Hossain Spinning Mills Ltd. is shown in Appendix 1. (Trading code: MHSML). The dividend record date for the corporation in 2012 was September 24, and the next trading date is September 29. All the daily prices before September 29 were adjusted by dividing them by 1.25; the firm's stock dividend was 25%, and therefore the prices were divided by 1.25. This adjustment is necessary because the total number of outstanding shares increases after the record date. All price data for dividend-paying stocks were modified using the same manner.

Payout Ratio (D-PAYOUT): It is expressed as the ratio of dividend per share to earnings per share. It was obtained by dividing cash dividend per share (DPS) by earnings per share.

Size of the Firm (SIZE): This is the year-end share price multiplied by the number of ordinary shares outstanding. A transformation using the base 10 logarithm was then applied to obtain a variable to represent orders of magnitude.

Earnings Volatility (E-VOL): It represents the Coefficient of Variation (CV) of EPS. It was calculated by taking a 3-year moving standard deviation for each year and each company, and then the standard deviation was divided by the average of EPS to obtain the CV. For example: for the year 2014 TOSRIFA's CV is 0.089 and the Standard deviation is 0.24. To obtain these two data we took the average EPS for the year 2012, 2013 and 2014 which is 2.69.

Long-term Debt (L-DEBT): This is the ratio of long-term interest-bearing debt to total assets. Long-term debt does not include current obligations of term loans, debentures, and mortgages. Data on long-term debt and total assets were obtained from company financial statements.

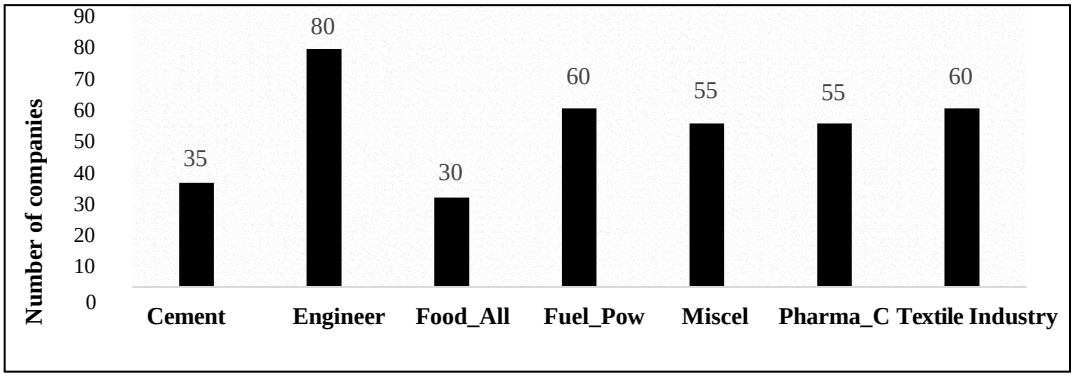
Growth in Assets (GROWTH): This is the rate of change in a firm's total asset from one year to another. For example: In 2013, Active Chemical's total asset was BDT 1,740,088,768, and in 2012, it increased to BDT 3,159,028,645 indicating a growth rate of 81.54% for the years of 2012. For the year 2015, the total asset was BDT 4,143,876,395; total asset increased from 2012 to 2013. So, the growth rate for 2013 is 31.18%. The same method was applied for all the years.

4.0 Empirical Analysis

For the objective of the analysis, 75 companies from seven different industries were chosen. Most samples are from the engineering industry, while the fewest are from

the Food and Allied industry. The financial industry is not taken since it is a highly regulated sector that varies from other industries in various ways.

Graph-1 : Number of Companies per Industry

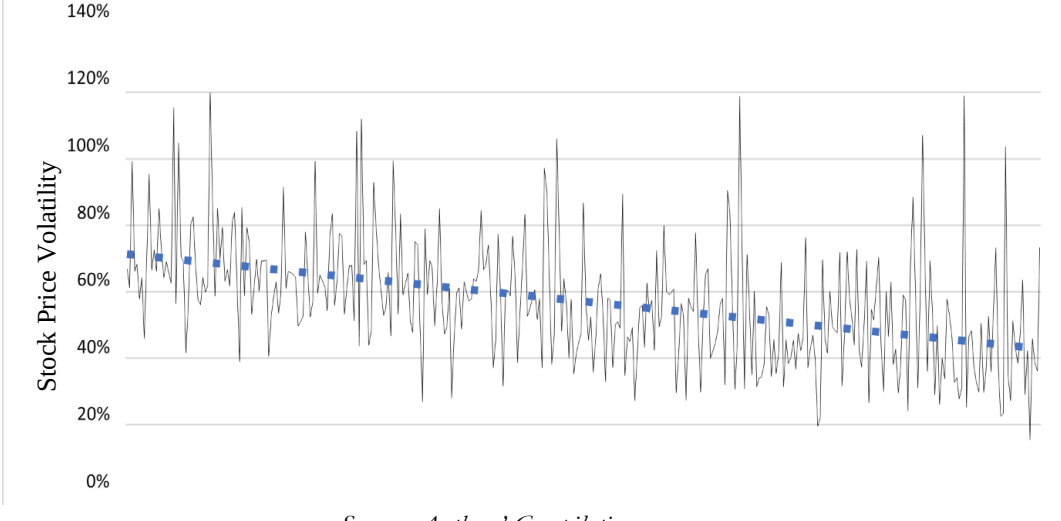


Source: Authors' Compilation

Price Volatility of the 75 Companies from 2012 to 2018:

Graph 2 illustrates the Stock Price Volatility of the Sample of Listed Companies from 2012 to 2018 The considerable volatility of the sample firms' stock prices is illustrated here. Nonetheless, the decreasing slope of the blue dashed line implies that volatility in the stock market has lessened over time.

Graph-2 : Stock Price Volatility from 2012 to 2018



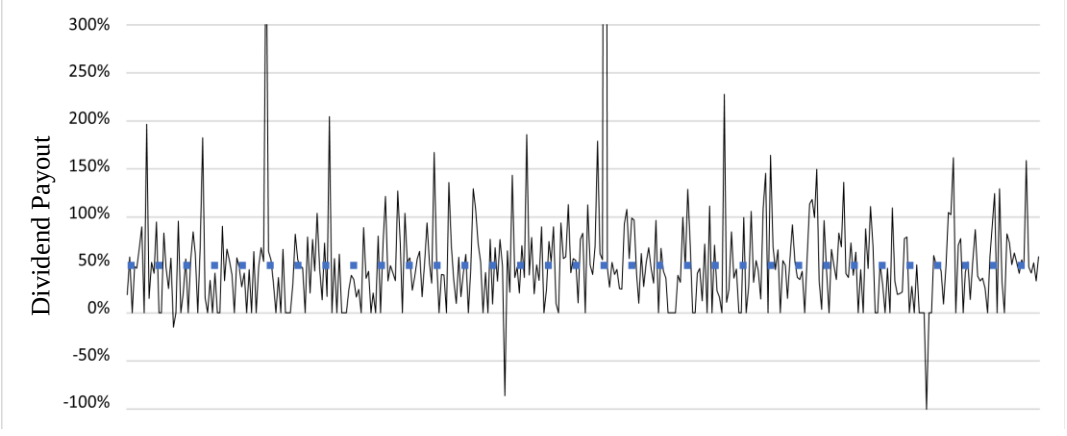
Source: Authors' Compilation

Dividend Pay-out of the 75 companies from year 2012 to 2018:

Graph 3 depicts the constant behavior of dividend payouts by DSE-listed firms. The majority of companies have continuously paid dividends over the years. However, the

dividend growth rate can be considered zero or close to zero because the history is nearly straight line. The majority of companies did not boost their dividend payments.

Graph-3 : Dividend Payout from year 2012 to 2018



Source: Authors' Compilation

4.1 Descriptive Statistics:

Table-3 : Descriptive Statistics of the Variables

Variables	Mean	Min.	Max.	Std. Dev.
Stock Price Volatility	0.57	0.15	1.2	0.18
Dividend Payout	0.52	-1.00	13.04	0.80
Earnings Volatility	0.87	0.01	127.05	6.74
Firm Size	22.27	18.37	26.10	1.48

Source: Authors' Compilation

The average stock price volatility of the companies listed in DSE is 0.57, and the overall standard deviation is 0.18. The minimum price volatility that a firm faced is 0.15 while the maximum is 1.20. Overall firms paid an average of 0.52% dividend, and it significantly varies across time and companies. The maximum dividend payout by any company is 13%. Earnings volatility varies across firms and time significantly. The average earnings volatility is pretty low. However, some firms faced significantly higher earnings volatility than most others. Firm size has a mean of 22.17, and its standard deviation is not significant which means that market capitalization from firm to firm and year to year does not vary significantly. Firm at a certain time point had the lowest size of 18.37 overall, and a maximum of 26.10.

4.2 Diagnostic Tests:

Table-4 : Outcomes of the Diagnostic Tests

Testing for Heteroskedasticity	Testing for Time-fixed Effects	Testing for Serial Correlation
Prob>chi2= 0.000	Prob>F= 0.000	Prob>F= 0.000
Less than 0.05	Less than 0.05	Less than 0.05
Null rejected	Null rejected	Null rejected
So, there is heteroskedasticity.	No time-fixed effects. So, dummies for all the years are equal to 0.	There is a serial correlation in the dataset.

Source: Authors' Compilation

The value of Prob>chi2 in Table-4 for the test for heteroskedasticity indicates that the null hypothesis is rejected, and the model accounts for heteroskedasticity. It indicates that the expected variables' standard deviations are not constant and there is the existence of heteroskedasticity in the dataset. Huber (1967) and White (1980, 1982) independently examined that the presence of model misspecifications such as heteroskedasticity and serial correlation might provide invalid inferences. Both of them proposed to use robust estimates to account for the model misspecifications and get valid inferences. Baum (2006) also proposed to utilize clustered robust standard errors if the dataset suffers from heteroskedasticity and serial correlation. As suggested by the previous literature, due to the presence of heteroskedasticity and serial correlation in our dataset, the Robust Standard Errors in the panel regression model are the most valid estimates for adjusting the standard error among the 75 company clusters. Thus, all the panel regression analyses in our study are performed using the clustered robust standard errors.

In addition, the time-fixed effects test yields an F test result less than 0.05, indicating that the null hypothesis that dummies for all years equal 0 is not rejected. Consequently, we have incorporated time-fixed effects when running the panel models.

Based on the results of the diagnostic tests, we conclude that the models employing Robust Standard Error and Year Fixed Effects are best suitable for interpreting our data.

4.3 Selection of the Appropriate Panel Regression Models:

The analysis is expanded using statistical models to determine, if any, the relationship between the dependent and independent variables. To pick between the Random Effects model and the Pooled OLS model, an initial Test for Random Effects using

the B- P/LM test is undertaken. The test result indicates that Prob > chibar2 is less than 0.05, hence we reject the null hypothesis that the Pooled OLS model is suitable for the data set. Therefore, the Random Effects model is superior to OLS.

On the basis of this finding, a Random Effects Panel Regression is performed, yielding a Wald chi2 (12) value of 50.93. This value of the F test is more than the 5 percent level of significance; consequently, we can conclude that the model does not well represent the data. Therefore, if a Random Effects model is utilized, coefficients and p-values will be altered.

Next, we choose between the Fixed Effects Model and the Random Effects Model, as the latter does not provide a satisfactory fit. To evaluate the validity of the model, a Fixed Effects regression is conducted with all variables and the industry dummy. The F statistic produces a value of 0.0448, which is statistically significant at the 5 percent level. Therefore, the Fixed Effects model is a good fit. Nonetheless, industry dummy variables exhibit multicollinearity and are therefore excluded from the model.

The Hausman test is utilized to choose between the Random Effects Model and the Fixed Effects Model. The result of the test, Prob>chi2=0.0208, is significant at the 5 percent level. Thus, the null hypothesis that a random effects model is suitable is rejected, and an alternative hypothesis is accepted. Therefore, Fixed Effects is the suitable model for our investigation.

4.4 Panel Regression Analysis:

The following models are performed using the Fixed Effects Model to determine the relationship between the dependent variable and the independent Variables.

Table-5 : Outcome of the Fixed Effect Model

	Model 1 (Conventional)	**Model 2 (Conventional)**	**Model 3 (Robust)**	**Model 4 (Robust)**
DPAYOUT	**-0.0127** *(0.123)*	**-0.0065** *(0.2145)*	**-0.0127*** *(0.086)*	**-0.0065** *(0.114)*
EVOL	**0.0015** *(0.224)*	**0.00122** *(0.203)*	**0.0015** ** *(0.011)*	**0.00122***** *(0.01)*
LDEBT	**-0.3808** ** *(0.042)*	**-0.146** *(0.305)*	**-0.3808** ** *(0.037)*	**-0.146** *(0.464)*
SIZE	**0.0052** *(0.821)*	**0.1164***** *(0.00)*	**0.0052** *(0.883)*	**0.1164***** *(0.004)*
GROWTH	**0.0647** *(0.165)*	**0.038** *(0.281)*	**0.0647** *(0.141)*	**0.038** *(0.289)*
CONSTANT	**0.4748** *(0.363)*	**-1.892** *(0.00)*	**0.4748** *(0.552)*	**-1.892** *(0.03)*

Prob>F	0.1583	0.0000	0.0575	0.0000
Rho	0.4577	0.8452	0.4577	0.8452
Firm Fixed Effects	YES	YES	YES	YES
Year Fixed Effects	NO	YES	NO	YES

Note: (*) implies significance at 10%, (**) implies significance at 5%, and (***) implies significance at 1%.

Source: Authors' Compilation

The results of four models with Dividend Payout (DPAYOUT) as the explanatory variable are summarized in Table-5. Model 1, which employs Conventional standard error and no temporal fixed effects, has an F statistic of 0.1583, which is not significant at the 5% and 10% levels, indicating that the model does not adequately fit the data. In Model 3, which employs robust standard error with no temporal fixed effects, identical results are seen; the model does not fit at the 5% and 10% levels of significance. Significant variables in the model are dividend payout, earnings volatility, and long-term debt.

Models 2 and 4 incorporate Year fixed effects, resulting in improved model fitness (P-value of 0.00). 84.52 percent of the variance between the two models is attributable to panel differences. In Model 2, Firm Size (SIZE) is the sole significant independent variable (P-value = 0), however in Model 4, which uses Robust Standard Error, Earnings volatility (EVOL) is also significant at the 1% level and Dividend payout is not significant at the 10% level. Both EVOL and SIZE are positively associated with the volatility of stock prices.

4.5 Panel Regression Analysis with Lagged Indicators:

Our regression models are expanded by adding the Lag Indicator to the explanatory variable Dividend Payout. The Lag is employed to generate robust estimates of the impacts of the independent variable Dividend Payout, resulting in more precise parameter estimates. The models in Table-6 are identical to those in Table-5, with the exception of the addition of Lag.

Table-6 : Outcome of the Fixed Effect Model with Lagged Indicators

	Model 1 (Conventional)	**Model 2 (Conventional)**	**Model 3 (Robust)**	**Model 4 (Robust)**
L.DPAYOUT	**-0.0057** *(0.294)*	**0.0053** *(0.261)*	**-0.0057** *(0.2385)*	**0.0053*** *(0.0785)*
EVOL	**0.0013** *(0.264)*	**0.0009** *(0.314)*	**0.0013***** *(0.00)*	**0.0009***** *(0.003)*

LDEBT	**-0.198** *(0.338)*	**-0.1555** *(0.336)*	**-0.198** *(0.385)*	**-0.1555** *(0.5)*
SIZE	**0.008** *(0.758)*	**0.1307***** *(0.00)*	**0.008** *(0.859)*	**0.1307***** *(0.005)*
GROWTH	**-0.027** *(0.585)*	**0.0113** *(0.774)*	**-0.027** *(0.53)*	**0.0113** *(0.796)*
CONSTANT	**0.374** *(0.536)*	**-2.249** *(0.00)*	**0.374** *(0.719)*	**-2.249** *(0.028)*
Prob>F	0.6591	0.0000	0.0000	0.0000
Rho	0.5543	0.8862	0.5543	0.8862
Firm Fixed Effects	YES	YES	YES	YES
Year Fixed Effects	NO	YES	NO	YES

Notes: (*) implies significance at 10%, (**) implies significance at 5% (***) implies significance at 1%.

Source: Authors' Compilation

Similar to Table-5, Dividend Payout is the explanatory variable in Table-6. Model 1 is not a good fit; the F statistic's P-value is 0.6591. In addition, there are no independent variables that are significant at the 1%, 5%, or 10% level. When year impact is included in Model 2, however, the F statistic becomes significant at the 1% level and the interclass correlation (Rho) improves. In this instance, Dividend Payout is not a significant variable, however, Firm Size (SIZE) is significant at the 1% level and is positively connected to stock price volatility.

In Model 3, the robust standard error is utilized and there is no time-fixed effect. The model fits the data well, although only 43% of the model's variations are due to differences across the panel. Earnings volatility is the only significant independent variable identified by the model, and it is positively associated with stock prices.

Price fluctuation Model 4 incorporates time effects and provides superior results over Model 3. The model has an 88.62% greater interclass correlation, and it is statistically significant at the 1% level. The model indicates that Dividend Payout is significant at the 10% level, whereas earnings volatility and business size are individually significant at the 1% level. Dividend Payout and stock price volatility are positively correlated, as are earnings volatility and firm size.

In Model 4 of Table-5, dividend payment is the explanatory variable. In this model, Earnings Volatility and Firm Size are positively related to Stock Price volatility, with coefficients of 0.0012 and 0.1164, respectively. The dividend payment coefficient of -0.0065 appears to have a negative connection with the dependent variable, but it is not statistically significant at the 10% level. Only Earnings Volatility and Firm Size have a more significant relationship with Price Volatility.

In Model 4 of Table-6, however, Dividend Payout was found to be positively linked with Price Volatility at the 10% significance level; the coefficient is 0.0053. This is in contrast to the model's output in the absence of Lag. However, at the 1% level, Earnings Volatility and Firm Size are still significant variables with positive coefficients.

Thus, it can be inferred that our models hold Earnings Volatility and Firm Size to be statistically significant in explaining Stock Price Volatility and that both variables contributed to the rise in stock price volatility.

5.0 Conclusion

The study examined if dividend policy measured in terms of dividend payout has any bearing on determining stock price volatility. From 2012 to 2018, the price volatility of the 75 selected companies reduced with time. We investigated the causes of the observed decrease in price volatility. We discovered a negative association between Dividend Payout and Price Volatility although the association is not statistically significant. Earnings volatility and business size are the control factors that contribute most to the explanation of stock price volatility. Earnings volatility is positively correlated with stock price volatility, meaning that the more erratic a company's earnings, the more volatile its stock price will be. This result accords with empirical findings such as those of Allen & Rachim (1996). Nonetheless, size shows a positive correlation with price volatility, contrary to the findings of the vast majority of empirical investigations. Thus, we may conclude that the Dividend Policy does not have a significant relationship with share price volatility for the Dhaka Stock Exchange-listed companies.

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