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Dividend Policy and Share Price Volatility: Empirical Evidence from Industrial Companies in Vietnam

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ABSTRACT

This study investigates the relationship between share price volatility and two key features of dividend policy, dividend yield and payout ratio, in the emerging country of Vietnam by applying correlation analysis and linear regressions based on Ordinary Least Square model and robust model. The sample of the research included 67 industrial companies, which are listed publicly on the Ho Chi Minh Stock Exchange in the 5-year period, starting from 2015 to 2019. The original regression model was combined with some control variables like size, debt, growth and earning volatility. The empirical outcomes show that two key features of dividend policy, dividend yield and dividend payout ratio, and share price volatility were significantly negatively correlated. Moreover, a positive correlation between share price volatility and earning volatility was found. Growth, size and debt are three factors that had negligible impact on changes in a firm's share prices.

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KEYWORDS: share price volatility, dividend policy, dividend payout, dividend yield.

1. INTRODUCTION

Dividend policy provides guidance on how companies can maximize the wealth of its shareholder, improve their market value, and draw investors in various tax brackets. In recent years, there have been many concerns about dividend policy, similar to the questions identified by (Lintner, 1956). For example, is it better to maintain current dividend payments rate or alter it? What kind of investor should be attracted by dividend policy? Hence, the dividend policy has been a popular financial research topic for over 50 years.

The volatility of common stock is a benchmark measure of systemic risk that investors face (Guo, 2002). It shows changes in stock price over a specified time. As a result, the price of share would fluctuate dramatically over time, which makes it hard to forecast the future price of this share. Many investors are inherently risk averse and usually intend to select low-risk investments (Kinder, 2002). To deal with this issue, they can choose shares that have dividend policy commensurate with their portfolio strategies and risk preference.

Many researchers have investigated the relationship between the share price fluctuation of the firm and its dividend policy, but they had conflicting findings. Since 1989, the research of Baskin's has indicated that there was a notable inverse relation between the volatility in share price and dividend policy, basing on dividend yield and payout ratio. It is in line with the findings of Hashemijoo et al. (2012)**,** and Nazir et al. (2010). Allen & Rachim (1996), on the other hand, did not support the analysis of Baskin (1989). They pointed out that dividend yield and the volatility in share price had a positive correlation.

Because of this disagreement above, this study tests the influence of two key characteristics of dividend policy on the volatility share price in the Vietnam stock market based upon the theoretical framework of (Baskin, 1989). Because most previous papers studying this impact were conducted on developed stock markets, this paper would like to focus on an emerging market, namely Vietnam. Specifically, the analytical purpose is to consider the association between dividend policy, particular in dividend yield and payout ratio, and the fluctuation in share price.

2. LITERATURE REVIEW

As mentioned by Marsh & Merton, (1987**)**, corporate dividend policy is a conundrum to study. It has been strongly debated in the financial sector. Many researchers reference select significant studies on dividend policy, such as those by

Fama & French (2001), Modigliani & Miller (1961), Lintner (1956), etc. There are five theories about dividend policy.

2.1 Relevance of dividend policy based upon Uncertainty of future dividends

Gordon (1962)) suggested that in the perfect capital market, the market value of stocks is influenced by dividend policy of companies. According to his constant growth model, the share price of company depends on the future discounted flow of dividends.

Diamond (1967) conducted a study on 255 American companies to test the relationship between value of the firm and its dividends as well as retained earnings from 1961 to 1962. He concluded that preference of dividend and growth of company are negatively correlated.

2.2 Relevance of dividend policy based upon information content of dividend

Modigliani & Miller (1961) proposed that the share price of firms may be impacted by its dividend in an imperfect market. Hence, announcement of dividend can indicate a firm's future profitability. Amihud & Murgia (1997) conducted a study with 200 German companies to determine the response of stock price to the growth of dividend and dividend announcement from 1988 to 1992. Their findings reinforced the finding of Modigliani & Miller (1961). Amihud & Murgia (1997) and Travlos et al. (2001) also conducted similar studies but on the Cyprus Stock Exchange over 11 years, from 1985 to 1995. Their results strongly supported the signaling theories. They found noticeable excess in earnings for both cash dividend growth and announcement of cash dividend.

2.3 Dividend irrelevance theory

Modigliani & Miller (1961) theorized that in a perfect market, dividend policy does not affect the shareholders' wealth. According to them, the stock price of the firm will decrease automatically by an amount equals to dividend per one share on the ex-dividend date when it decided to divide profits for the shareholders in the form of dividends. Consistent with Miller and Modigliani's study, Hakansson & Introduction (1982) claimed that dividends and value of firm are not related when investors have the same time additive utility and belief and there exists a completely efficient market.

Black & Scholes(1974) studied the New York Stock Exchange with 25 portfolios of common stock to examine the correlation between expected return and dividend policy from 1936-1966. His finding indicates that there is no significant connection between dividend yield and expected return. Black & Scholes (1974) also claimed that different dividend policies will not result in different stock prices. Their results are consistent with dividend irrelevance theory.

However, some empirical findings challenge the dividend irrelevance theory. Ball et al., n.d. (1979) conducted a study on the association between share price and dividends. In contrast to irrelevance dividend theory, they found that stock return relates to dividend yield in the following year after paying dividend. Baker et al. (1985) and H. KentBaker (1999) surveyed Chief Financial Officers of American companies listed on the NYSE , who strongly agreed that stock prices as well as firm's cost of capital are impacted by dividend policy.

2.4 Agency cost

"Agency cost" is the internal cost incurred because of the conflict between interests of shareholders and management of the firms (Ross et al., 2008). This occurs when management team acts on their own interests instead of the shareholders' interests. This assumption contrasts with Modigliani & Miller (1961), who claimed that managers are great representatives of shareholders and conflict in interest does not exist between them.

Jensen et al. (1992) conducted a research on the factors of cross-sectional differences in dividend policy, debt, and insider ownership by applying three-stage least squares. The authors carried out the study with 565 firms in 1982 and 632 firms in 1987. They found that dividend payment had a negative correlation with insider ownership, which is in the line with the findings of Holder et al. (1998) and Saxena (1999). This result supports the agency cost theory.

2.5 Clientele effect

"Clientele effect" refers to the fluctuation of a company's stock price due to on the demands and target of its investors. These demands of investors result from changes in dividend, tax or other policy, which affect the shares of the firms. When trading securities, investors have to face various tax treatments for capital gains, dividends, as well as face transaction costs. Modigliani & Miller (1961) indicated that to reduce these burdens, investors tend to invest in firms that would give the benefits that they desire. Accordingly, companies use their dividend policies to attract various clientele.

Pettit (1977) researched how taxes and transaction costs affect 914 portfolios of investors in the USA. His results provided empirical evidence that supports the clientele effect theory. He pointed out that dividend yield is negatively related to investors' incomes. He also proved that stocks having high dividend are preferred by investors with low un-diversifiable risk in their portfolios. In addition, investors also prefer investing in high-payout stocks to avoid paying the costs of transactions when trading stock.

In a similar research, (Scholz, 1992) pointed out that the disparity in tax rate of dividends and capital gains cause traders to prefer stocks that have high-payout or low-payout in their portfolio.

2.6 Empirical Research and Hypothesis Development

2.6.1. Share price volatility and Dividend policy

In a prior research on the nature of dividend policy, Brav et al. (2005) showed that payout ratio and dividend yield should be two main characteristics to consider the measurement of dividend policy. This study and a number of previous studies concluded that these characteristics are key to analyzing the volatility in share price and dividend policy.

Baskin (1989) proposed that since high dividend yield implicit near-term cash flow, firm's share price that has high dividend yield is expected less reactive with fluctuation in discount rate. Baskin (1989) proposed an inverse relationship between share price fluctuation and dividend yield, also called the duration effect. Additionally, according to the arbitrage effect, greater dividend yield will result in greater arbitrage profit since excess return depends on discount rate and dividend yield. Therefore, dividend yield is expected to be negative related to share price fluctuation.

Baskin, (1989) examined the correlation between stock price fluctuation and dividend policy by using a method that is combined with some control variables such as growth in assets, earnings volatility, debt and firm's size. The findings showed that these factors not only affect the volatility of share price but also impact the optimal dividend yield of companies. For example, earnings volatility impacts both the optimal dividend policy for firms and share price volatility. Moreover, if the operating risk does not change, the level of debt and dividend yield can have a positive relationship. Baskin (1989) theorized that the bigger firm will be more stable in share price because the big firm tends to be more diversified. Additionally, small companies often limit disclosure of their information, which leads to an irrational reaction of investors. By conducting a study with a data from 2344 U.S. companies from 1967-1986, Baskin (1989) found a significant negative correlation between share price fluctuation and dividend yield, which is stronger than the correlation between share price fluctuation and any other factors. This finding is supported by applying the growth model Gordon. Additionally, based on the rate of return effect, companies that have low payout and low dividend yield may be possibly more valuable than their current assets by reason of their opportunities for growth. Since predictions of returns from current assets tend to have less error than prediction of returns from opportunity in growth, firms that have low dividend yield and low dividend payout usually have more fluctuation in share price. According to the information effect, high payout ratio may predict the stability of a company and decrease the stock price volatility. Therefore, the firm's managers might use dividend policy to reduce the volatility in its share price and stock risk.

Nazir et al. (2010) researched 73 firms that are listed on Stock Exchange of Pakistan to study the dividend policy's role in determining share price volatility along with control variables from 2003- 2008 by applying fixed-effect models and random effect. They also used dividend yield and payout ratio as two main measurements of dividend policy. Nazir et al. (2010) showed that the fluctuation in share price has a significant negative correlation with both these measurements, which is consistent with the results of Baskin (1989). However, they also reported that leverage and size have no effect on share price volatility.

Hussainey et al. (2011) studied this relationship with data collected from 123 English firms in a 10-year period, starting from 1998. They used the same analysis method with Baskin (1989). They found that both payout ratio and dividend yield negatively impact the volatility in share price. Specifically, dividend payout ratio is the key factor that affects stock price volatility. Among the control variables, the authors reported that debt and firm size had the highest association with the stock price fluctuation. The bigger the company the less volatile its stock price, but debt and share price volatility are positively correlated, suggesting that the larger the company's debt the more its stock price will fluctuate.

Consistent with the three studies above, Hashemijoo et al. (2012) reported that both dividend yield and payout ratio have a significant negative correlation to the volatility of share price. However, this finding failed to support Allen & Rachim (1996)'s findings, which indicated that dividend yield and stock price fluctuation are not related. The study of Hashemijoo et al. (2012) investigated 84 consumer product firms that are listed in Kuala Lumpur Stock Exchange in a 6-year period, starting from 2005. The authors used Baskin (1989)'s framework and multiple regression to conduct the study. In terms of control variables, after running the model, Hashemijoo et al. (2012) found that firm's size has the greatest effect on the volatility of share price. Specifically, there was a notable negative correlation between the fluctuation of share price and size. Earnings volatility also has a positive influence on share price fluctuation. The results of this paper indicate that the managers of firms may be able to minimize the share price fluctuation by rising payout ratio and dividend yield.

Suleman et al., (2011)) studied the correlation between dividend policy of the firms and its share price volatility in four important sectors (Chemical, Cement, Sugar, and Engineering) in the Karachi Stock Exchange from 2005 to 2009 by applying multiple regressions model. In contrast to (Baskin, 1989)'s findings, their outcomes indicated that share price fluctuation and dividend yield have a notable positive correlation. They also found that share price fluctuation has a strong negative correlation with growth in assets.

2.6.2. Hypothesis

Based on existing body of evidence, dividend policy is possibly related to share price volatility in the context of

Vietnam. Based on predictions, expectations of the rate of return effect, duration effect, information effect, arbitrage effect (Baskin, 1989), which is about the relationship between two key features of dividend policy and share price volatility, the hypothesis of the paper is as follows:

- *Hypothesis 1:* There is a significant relationship between dividend yield and share price volatility.
- *Hypothesis 2:* There is a significant relationship between payout ratio and share price volatility.

3. RESEARCH METHODOLOGY

The goal of this study is to test the relationship between stock price fluctuation and dividend policy of the firm. The sample is collected manually from annually published financial statements of the firm and the reliable website: www.cafef.vn. Variables are calculated by formulas based on collected data.

To get a valid data set, the data must satisfy following conditions. First, the companies must have at least one dividend payment in cash from 2015 to 2019. Second, companies must have annually published financial statements during this period. Third, the companies must be listed publicly on the Ho Chi Minh Stock Exchange from 2015 to 2019 and belong to the industrial sector.

The final sample size consists of 67 industrial companies listed from 2015 to 2019.

3.1.1. Model Specification

Analysis and linear regressions based on the Ordinary Least Square model and robust model were applied. The theoretical framework is based on that of Baskin (1989). The developed regression model basically relates to the relationship between dividend payout or dividend yield and stock price volatility.

First, share price volatility (a dependent variable), was regressed against the two independent variables, payout ratio and dividend yield, by the regression equation:

$$\boldsymbol{P.vol_x = a * D.yield_x + b * Payout_x + c + \epsilon_x} \quad (*)$$

(Model 1)

Where,

$P.vol_x$= Share price volatility of company x

$Payout_x$ = Payout ratio of company x

$D.yield_x$= Dividend yield of company x

ϵ_x= error

According to prior papers by Allen & Rachim (1996), Baskin (1989), Shah & Noreen (2016), Zainudin et al. (2018), Hussainey et al. (2011), and Camilleri et al. (2019), there are some characteristics of the firm that impact both share price movement and dividend policy. These are firm's size, earning volatility, and debt. Because the possible market risk can influence both share price volatility and dividend policy, earning volatility is a control variable in the equation (**). Moreover, firm's size can influence the share price fluctuation because small companies are usually less diversified in their business activities and have less available information for investors about their stock market, which is also proposed by Baskin (1989). Therefore Size is a control variable in the equation (**).

In addition, it is possible that dividend policy has a negative correlation with growth because growing companies usually reserve their income for investing. According to the information effect and the arbitrage effect, the level of growth could be inversely proportional to the volatility of stock prices. Therefore, Growth is added to the regression equation (**). Furthermore, firms that have higher risk of financial distress or higher financial leverage have a greater fluctuation in share price. Therefore, leverage (DEBT) is added to the equation (**) as a control variable.

Ultimately, there are four control variables - firm's size, growth, debt, and earning volatility - added to the regression model:

$$\boldsymbol{P.vol_x = a * D.yield_x + b * Payout_x + c * Size_x + d * E.vol_x + e * Debt_x + h * Growth_x + g + \epsilon_x} \quad (**)$$

(Model 2)

Where,

$P.vol_x$= Share price volatility of company x

$Payout_x$ = Payout ratio of company x

$D.yield_x$= Dividend yield of company x

$E.vol_x$ = Earnings volatility for company x

$Size_x$ = Market value of company x

$Growth_x$ = Total asset growth for company x

$Debt_x$ = Long term debt of company x

ϵ_x = error

In addition to the two regression models above, two more were ran. In model 3, the dividend payout is removed from (**) because of its strong correlation with dividend yield. Hence, the final regression model is as follows:

$$\boldsymbol{P.vol_x = a * D.yield_x + c * Size_x + d * E.vol_x + e * Debt_x + h * Growth_x + g + \epsilon_x} \quad (***)$$

(Model 3)

$P.vol_x$= Share price volatility of company x

$D.yield_x$= Dividend yield of company x

$E.vol_x$ = Earnings volatility for company x

$Size_x$ = Market value of company x

$Growth_x$ = Total asset growth for company x

$Debt_x$ = Long term debt of company x
ϵ_x = error

For the last stage, in model 4, the dividend yield is removed from (***) and regression became:

$$\boldsymbol{P.vol_x = b * Payout_x + c * Size_x + d * E.vol_x + e * Debt_x + h * Growth_x + g + \epsilon_x} \quad \textit{(****)}$$

(Model 4)

Where,
$P.vol_x$= Share price volatility of company x
$Payout_x$ = Payout ratio of company x
$E.vol_x$ = Earnings volatility for company x
$Size_x$ = Market value of company x
$Growth_x$ = Total asset growth for company x
$Debt_x$ = Long term debt of company x
ϵ_x = error

3.1.2. Variable Measurement

Variables used in these models above are defined and calculated in Table 1.

Table 1: Summary of variables.

Variables	Calculation	Description	Source
Dependent Variable			
P.vol	$P.vol = \sqrt[2]{\frac{\sum_{i=1}^{6}(H_i - L_i)/(\frac{H_i+L_i}{2}))\text{^}2}{6}}$ *Where,* *P.vol* = share price volatility $L_i = lowest\ stock\ price\ in\ year\ i$ $H_i = highest\ stock\ price\ in\ year\ i$	Based on the data gathered from www.cafef.vn., the difference between yearly lowest and highest prices is calculated. The result was divided by the midpoint and then squared. This was averaged over five years (from 2015 to 2019) and became a dependent variable by appying square root.	(Hussainey et al., 2011); (Baskin, 1989), (Zainudin et al., 2018), (Allen & Rachim, 1996), , (Shah & Noreen, 2016), (Camilleri et al., 2019),
Independent Varibles			
D.yield	D.yield=$\sum_{i=1}^{6}(\frac{D_i/MV_i}{6})$ Where, D_i = the total amount of dividends paid out in cash to shareholders in year i MV_i = Firm's market value at ending of year i *D.yield*= Dividend yield	This variable shows the amount of dividend a firm paid out in cash for its shareholder each year relative to its market cap.	As above
Payout	Payout=$\sum_{i=1}^{6}\frac{D_i/E_i}{6}$ Where, D_i = the total amount of dividends paid out in cash to shareholders in year i E_i = net income after deducting tax (NIAT) of year i	Average of the ratio between the total amount of dividends paid out in cash to shareholders and the NIAT of the firm in fives years (starting from 2015) is used to conduct the model.	As above

Control Variables			
Size	$\text{Size}=\ln(\sum_{i=1}^{6}(MV_i/6)$ Where, MV_i = the firm's market value at ending of year i i	This variable indicates the logarithmic of the median of the firm's market value in 5 years with base 10. Market value is calculated by multiplying the quatity of outstanding shares by the current share price.	As above
E.vol	$\text{E. vol} = \sqrt[2]{\frac{\sum_{i=1}^{6}(R_i - \bar{R})\text{^}2}{6}}$ Where, R_i = the ratio between total asset *and* operating income of year i $\bar{R} = \sum_{i=2006}^{2010} R_i/6$	The figures for this control variable, according to Baskin (1989), indicate the ratio between the operating earnings of the firm before taxes and interest and its total asset of each year from 2015-2019.	As above
Debt	$\text{Debt}=\sum_{i=1}^{6}\frac{LD_i/ASSET_i}{6}$ Where, LD_i = Long − term debt of the company at ending of year i $\Delta ASSET_i$ = Total asset of the firm at ending of year i	Figures represent the long-term debt and total assets of the company during the study period. It is the median of the ratio of annual long-term debt and annual total assets over 5 years.	As above
Growth	$\text{Growth} = \frac{\sum_{i=1}^{6}(\frac{\Delta ASSET_i}{\Delta ASSET_i})}{6}$ Where, $\Delta ASSET_i$= different in total assets betwen early and end of year i $\Delta ASSET_i$= total asset at early year i	Data for this variable were taken directly from the annually published financial statement of the company. This control variable was obtained from the difference between the total assets at ending of the year and the one at the early of the year.	As above

**i (from 1 to 5) shows the year from 2015 to 2019*

4. Data Analysis and Finding

4.1. Descriptive statistics

Table 2: Summary statistics

	N	Mean	P50	Ad	Min	max	skewness
P.vol	67	.050347	.4953934	.1404769	.2561159	.887717	.5763243
Debt	67	.1288373	.0748633	.145837	0	.661333	1.624261
Dyield	67	.070914	.0716065	.0351962	.0108255	.201841	.7585888
Payout	67	.5090997	.43893	.27637	.0298898	1.40887	.7415837
Evol	67	.1561147	.0561378	.0461378	.0296075	.423315	1.123658
Growth	67	.1568491	.0905605	.2626752	-.1167316	1.87053	4.427208
Size	67	27.18336	26.92785	1.290705	24.82405	29.9870	.4393918

Descriptive statistics give an overall look of the sample data. Table 2 gives a summary of all variables in the paper, which is calculated using on data from 67 listed industrial firms from 2015 to 2019.

First, regarding share price volatility, this statistic may indicate that there are medium risks or share price volatility between the maximum price and the minimum prices of firms in five years with the mean value of nearly 0.50347. The maximum value is nearly 0.888, which can indicate the high volatility risks or differences in the changing stock prices of firms. However, the minimum value is nearly 0.256, demonstrating the low volatility prices between the prices of stocks over five years. There seems to be a notable disparity between the maximum and minimum value of share price volatility.

Second, regarding dividend yield, Table 2 shows that the average of this factor is relatively low at nearly 7.09%. This shows that if an investor buys stocks with the expectation of receiving dividends, the expected return for them is only 7.09% per year. The maximum value is nearly 20.2%, while 1.083% of the lowest reported.

Finally, dividend payout is relatively high, which is reflected in the average annual dividend payment of companies at 50.9%. This indicates that there is about 50.9% of net income after taxes of the firm are used to pay to shareholders and investors in term of dividend.

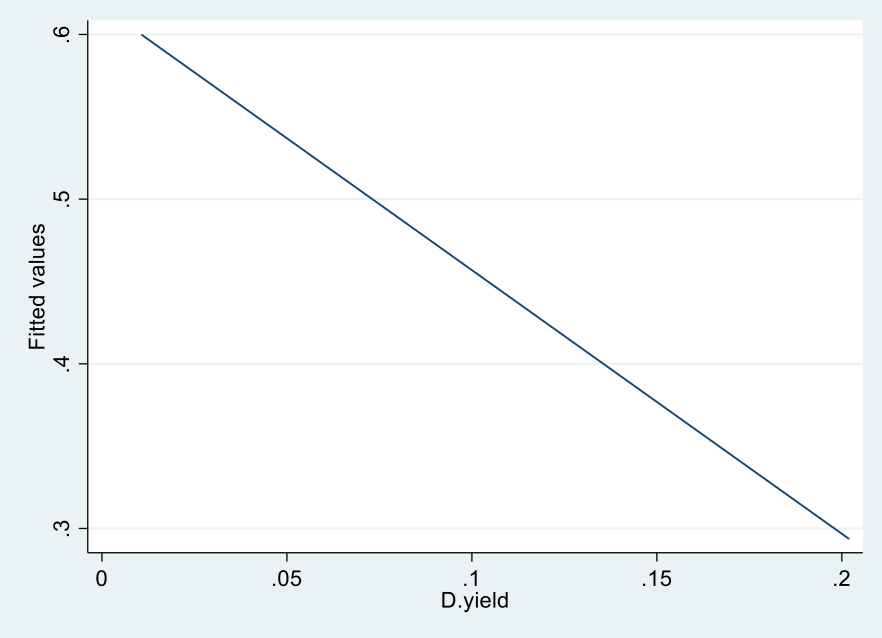
For control variables, Debt and Size have positive result with the average mean of nearly 0.219 and 27.18, respectively. Our two remaining control variables are earning volatility (Evol) and Growh, which have average means of 0.156 and 0.157, in ascending order.

After having the information of variables, the prediction plot is constructed to construct the prediction between dividend yield, payout ratio and volatility of share price.

4.2. Prediction plot

4.2.1. Relationship between share price volatility and dividend yield

Figure 1: Prediction of the relationship between share price volatility and dividend yield



The relationship between the volatility of share price and dividend yield depend on the duration effect and arbitrage effect. Dividend yield and the volatility of share price likely have a negative correlation based on the negative slope of the trend line. In short, when the dividend yield ratio increases, the price volatility decreases.

4.2.2. Relationship between share price volatility and dividend payout

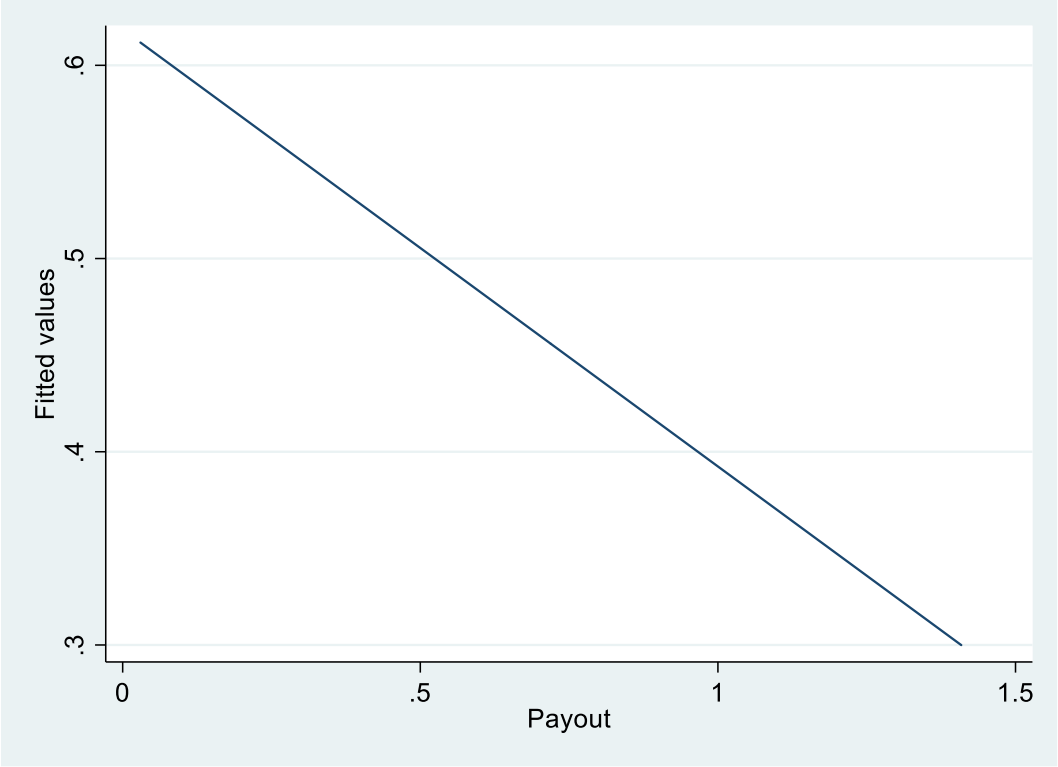


Figure 2: Prediction of the relationship between share price volatility and dividend payout

The prediction association between the volatility of share price and payout ratio is based on the rate of return and information effect. The volatility of share price and dividend payout likely has a negative correlation with payout ratio because the trend line has a negative slope. In short, the higher payout ratio the less share price fluctuates.

4.2.3. Correlation Analysis amongst Variables

Table 3: Pearson correlation between variables

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Pvol	1.000						
(2) Debt	-0.1103	1.000					
(3) Dyield	-0.4012*	-0.1283	1.000				
(4) Payout	-0.4449*	0.0925	0.4856*	1.000			
(5) Evol	0.0957*	0.1584	0.1596	0.2448*	1.000		
(6) Growth	0.1466	0.1059	-0.1816	-0.0284	-0.1023	1.000	
(7) Size	0.0412	0.1369	0.3417*	-0.0801	-0.2137	0.4226*	-1.000

** p<0.1, ** p<0.05, *** p<0.01*

Pearson's correlation for each pair of variables as shown in the above table verifies the phenomenon of multicollinearity. Based on the result dividend yield and payout ratio likely have a notably negative relationship with the volatility of share with the Pearson correlations of about -0.44 for payout ratio and -0.40 for dividend yield. Both of the two relationships will be accepted with the significant level p-value = 0.1.

4.2.4. Variable Inflation Factors (VIF) results

Table 4: VIF Test

Variable	VIF	1/VIF
Dyield	1.53	0.653358
Payout	1.41	0.707561
Size	1.40	0.714670
Growth	1.22	0.816879
Evol	1.14	0.873901
Debt	1.09	0.914912
Mean VIF	1.30	

The regression model can have a multicollinearity issue since it cannot separate the individual effects of the dependent variables from the independent. Variable Inflation Factors (VIF) is used as a solution. According to the mean value of VIF, all independent variables are kept in the regression model result. Table 4 shows that dividend yield has the highest VIF value of nearly 1.53 and debt ratio has the lowest VIF value of nearly 1.09. This demonstrates that the correlation between the independent factors is negligible. Thus, the multicollinearity problem in this model does not exist.

4.3. Heteroskedasticity examination

Table 5: Heteroskedasticity examination

Model	Model1	Model2	Model3	Model4
Chi-square	0.01	1.03	4.47	0.77
p-value	0.934	0.3111	0.0344	0.3794

To choose the appropriate effect model, the Hausman test is used. The assumption is also constructed in this method:

H0: The variances between regression models are not different. Therefore, it is true that the Pooled Ordinary Least Square is kept for the final result.

H1: The variances between regression models are different. Therefore, it is true that the final robust regression model is kept for the final result.

Based on the result in Table 5, with p-value is lower than 0.05, only model 3 can accept the robust model as the final regression result. On the other hand, with p-value is higher than 0.1, Pooled Ordinary Least Square is most effective for model 1, model 2, and model 4 to get the final result.

4.4. Model result

4.4.1. Model 1

The results of this model based on $\boldsymbol{P.vol_j = a * D.yield_j + b * Payout_j + g + \epsilon_j}$

Table 6: Results of model 1

Pvol	Coefficient	Beta	p-value (P>T)
Dyield	-0.9667757	-0.242224	0.056
Payout	-0.1663803	-0.3273317	0.011
_cons	0.6567128	.	0.000

F-test	10.26
p-value	0.0001
R-square	0.2428

In Table 6, the F-test is nearly 10.26 and p-value is lower than 0.1, with 0.0001. Therefore, at least one factor in dividend features, dividend yield or payout ratio, can affect the volatility of share price. Although the R-square is nearly 0.2428, the regression model result is accepted. For model details, payout ratio and dividend yield have a significant negative correlation with the fluctuation of stock price with the Beta of two factors lower than 0 and p-value for both factors lower than 0.1. In short, payout ratio has a more significant negative correlation with the volatility of share price than dividend yields with beta of dividend payout is nearly -0.327 and nearly -0.24 for dividend yields

4.4.2. Model 2

The results of this model based on $\boldsymbol{P.vol_j = a * D.yield_j + b * Payout_j + c * Size_j + d * E.vol_j + e * Debt_j + h * Growth + g + \epsilon_j}$

Table 7: Results of model 2

Pvol	Coefficient	Beta	p-value
Debt	-0.1558769	-0.1610998	0.148
Dyield	-1.14765	-0.2875417	0.031
Payout	-0.180008	-0.3541423	0.006
Evol	0.6349243	0.2537304	0.028
Evol	0.0853842	0.1596585	0.176
Size	-0.008338	-0.0766095	0.541
Constant	0.8106993	.	0.038

F-test	5.04
p-value	0.0003
R-square	0.3352

In table 7, the p-value is still lower than 0.1, at 0.0003 and the F-test is nearly 5.04. This means that at least one main factor in dividend policy or control variables can affect the volatility in share price. Although the R-square is nearly 0.3352, the regression model result is accepted. The result from Table 7 show that payout ratio and dividend yield have a significantly negative correlation with the fluctuation of share price; Beta values of both factors is -0.35 and -0.2875, respectively and p values for both factors is lower than 0.1. Thus, payout ratio has a more significant negative correlation with the volatility of share price than dividend yields. Regarding the control variables, Table 7 shows that only earning volatility has a significantly positive correlation with the fluctuation of share price with the p-value lower than 0.1 and the beta of nearly 0.2537.

4.4.3. Model 3

The results of this model based on $\boldsymbol{P.vol_j = a * D.yield_j + c * Size_j + d * E.vol_j + e * Debt_j + h * Growth + g + \epsilon_j}$

Table 8: Results of model 3

Pvol	Coefficient	p-value		
Debt	-0.1950607	0.020		
Dyield	-1.873828	0.000		
Evol	0.4844387	0.076	F-test	4.04
Growth	0.0804193	0.177	p-value	0.0031
Size	-0.0123942	0.410	R-square	0.2465
Constant	0.9101392	0.039		

Based on the outcomes in Table 8, at least one factor, dividend yield, dividend payout, or control variables, can influence the volatility of stock price. F-test is nearly 4.04 and p-value is nearly 0.0031. Although the R-square is nearly 0.2465, the regression model result is accepted. Dividend yield has notably inverse relationship with the volatility of share price with the coefficient of factor lower than 0 (nearly -1.87) and p-value lower than 0.1. Finally, for control variables, Table 8 shows that earning volatility has significantly positive relationship with the volatility of share price with the p-value lower than 0.1 and the coefficient of nearly 0.48. Debt is the only factor that has significant negative correlation with the volatility of share price with the coefficient of nearly -0.195 and p-value lower than 0.1.

4.4.4. Model 4

The results of this model based on $\boldsymbol{P.vol_j = b * Payout_j + c * Size_j + d * E.vol_j + e * Debt_j + h * Growth + g + \epsilon_j}$

Table 9: Results of model 4

Pvol	Coefficient	Beta	p-value		
Debt	-0.1192568	-0.1232526	0.276		
Payout	-0.249344	-0.490552	0.000		
Evol	0.6328492	0.2529012	0.033		
Growth	0.0916452	0.1713657	0.158	F-test	4.77
Size	0.0000461	0.0004238	0.997	p-value	0.001
Constant	0.5313225	0	0.159	R-square	0.2812

Table 9 shows the outcomes of this model. The F-test is nearly 4.77 and p-value is lower than 0.1, nearly 0.001. At least one factor, dividend payout or control variables, can impact the volatility of stock price. Although the R-square is nearly 0.2812, the regression model result is accepted. In short, for dividend policy, dividend payout ratio has a significant negative correlation with the volatility of share price with the beta lower than 0, at -0.49 and p-value lower than 0.1. Regarding control variables, only one factor, earning volatility, has a significant positive correlation with the fluctuation of share price with the p-value of nearly 0.03, lower than 0.1, and the beta of approximately 0.2529.

4.5. Discussion

Table 10: Hypothesis conclusion

Hypothesis	Model1	Model2	Model3	Model4
There is significant relationship between dividend yield and share price volatility	Negative (*)	Negative (*)	Negative (*)	Negative (*)
There is significant relationship between dividend payout and share price volatility	Negative (*)	Negative (*)	Negative (*)	Negative (*)

Table 11: The results of model 1+ model 2

	(1) Pvol	(2) Pvol
Dyield	-0.967* [-1.95]	-1.148** [-2.21]
Payout	-0.166** [-2.63]	-0.180*** [-2.21]
Dept		-0.156 [-1.46]
Evol		0.635** [2.25]
Growth		0.0854 [1.37]
Size		-0.00834 [-0.62]
_cons	0.657*** [17.52]	0.811** [2.21]
N R-sq	67 0.243	67 0.335

t statistics in brackets

** p<0.1, ** p<0.05, *** p<0.01*

Table 12: The results of model 3+ model 4

	(1) Pvol	(2) Pvol
Dept	-0.195** [-2.39]	-1.119 [-1.10]
Dyield	-1.874*** [-3.79]	

Evol	0.484* [1.81]	0.633** [2.18]
Growth	0.0805 [1.36]	0.0916 [1.43]
Size	-0.0124 [-0.83]	0.0000461 [0.00]
Payout		-0.249*** [-4.37]
_cons	0.910** [2.10]	0.531 [1.43]
N R-sq	67 0.246	67 0.281

t statistics in brackets
** p<0.1, ** p<0.05, *** p<0.01*

Based on these results, two main features of dividend policy have a significant inverse relationship with the volatility of share price. Dividend can predict the differences between prices of firms during five years. When companies share the dividend for shareholders and other investors to get the bonus and advantages for shareholders, it can make the share price change.

Based on results in Tables 10, 11, and 12, the volatility of share price is positively correlated with dividend yields. This means companies with high dividend yields have low stock price volatility. In (Baskin, 1989)'s study, also called the duration effect, it is predicted that there exists an inverse linkage between stock price fluctuation and dividend yield. Additionally, according to the arbitrage effect, dividend yield has a negative correlation with share price fluctuation. The result shown in the tables above is similar with the findings from the case study of (Nazir et al., 2010) and (Baskin, 1989), demonstrating the negative correlation between share price volatility and dividend yield. The results from all four models show that there exists a negative relationship between payout ratio and share price volatility. More specifically, the firms with high payout ratio will have higher stock price volatility than other companies, which was explained by (Baskin, 1989) based on the rate of return. According to information effect, he explained that high payout ratio may predict the stability of a company and decrease the stock price volatility. The results above also suggest that the firm's managers might use dividend policy to reduce the volatility in its share price and stock risk. This evidence is consistent with case evidence of (Suleman et al., 2011), (Baskin, 1989) and (Nazir et al., 2010).

Regarding the control variables, results show that earning volatility is the only factor that has a positive association with share price fluctuation. Specifically, the companies with more fluctuation in their earnings will have more fluctuaion in their stock price. This finding is also consistent with the outcomes of (Hashemijoo et al., 2012).

5. CONCLUSIONS

To summarize, the paper's objective is to test the linkage between the volatility of share price and dividend policy in an emerging country – Vietnam. Data is collected from 67 industrial firms listed in HOSE over the 5-year period, from 2015 to 2019. It also examines the impacts of some financial factors such as debt, earnings volatility, firm's size and growth in assets on share price volatility and dividend policy.

The empirical outcomes show that there exists an inverted relation between the volatility of share and dividend yield, which is consistent with the studies of Baskin (1989) and Hashemijoo et al. (2012) but not consistent with Suleman et al., (2011). This study also gives empirical evidence for the duration effect and arbitrage effect. In addition, the results of paper also show a considerable negative impact of the dividend payout of a company on its stock price fluctuation. This study does not support the (Allen & Rachim, 1996)'s findings that payout ratio and the volatility of share price are not related. However, this supports the findings of Hussainey et al. (2011), Nazir et al. (2010), Baskin (1989), and Hashemijoo et al. (2012). The rate of return and the information effect are also supported by this finding.

Regarding the control variables, earning volatility is the only factor that has a positive association with share price fluctuation. For variables that do not have significantly direct effects on the volatility of share like debt, size and growth, it begets the question if these factors have indirect influences on share price movement by using other samples or different research periods.

Not only does the study provide highly valid and reliable analysis of the relationship between share price volatility and dividend policy of industrial sector of the Vietnamese market, it also shows that managers can formulate and adjust dividend

policy to control the volatility in the firm's share price based on the study's findings. Moreover, this research also discovers the impact of other financial factors that move share price, important determinants that should be considered by investors before they make appropriate decisions in investment.

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