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Impact of Dividend Policy on Variation of Stock Prices: Empirical Study of Vietnam

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Abstract

This research is conducted to investigate the impact levels of dividend policy on stock prices variation in the case of the stock exchange of an emerging country − Vietnam. Data were collected from 248 listed firms on the Vietnamese stock market for the period from 2014 to 2017. By employing ordinary least squares (OLS) and quantile regression (QR), we found that there is a negative relationship between dividend policy and variation of stock prices. Some variables including income variation, long term liabilities and growth have positive relationships with stock price variation whereas firm size has no impact on it. We also found that firms using low dividend yields influence stock prices variation in a clearer way. The results of this study are important for management in emerging countries, and in this case Vietnam, to have a proper dividend policy because dividend policy is crucial information for stakeholders to make economic decisions.

Keywords: Dividend policy; quantile regression; variation of stock prices; Vietnam.

JEL code: O16, G30.

1. Introduction

The relationship between dividend policy and firm value has been investigated by many researchers such as Miller and Modigliani (1961). Under the theory of Miller and Modigliani (1961), there is no relationship between dividend policy and firm value in the circumstance of an ineffective market. However, in the studies conducted by Gordon (1963), Lintner (1956), Black and Scholes (1974) and Jensen et al. (1992), dividend policy does have impact on stock prices.

In the eyes of firm management, investors are interested in dividends and risks of investment that can affect stock pricing in the long term. This shows that variations of stock prices are very important for firm management and investors as well. Dividends are not only an income of stockholders but also an indicator for stakeholders in considering to buy stocks of other firms. That is why a proper dividend policy is one of the most important pieces of financial information for both firm management and stockholders.

Variation of stock prices is understood to be the increase or decrease of stock prices in a period of time and is also a risk faced by investors in stock investment. In the case of no variation of stock prices in a stock market, potential investors have no motivation to attend the stock market. Therefore, investors, brokers, agencies, scientists, and management are interested in variation of stock prices. Stock price variation is an indicator for risk measurement and affects a firm's value.

The topic of the relationship between dividend policy and stock price changes causes controversy around the world and in Vietnam as well. There are many studies investigating this relationship in this topic but results are diversified. Dividend policy has a positive relationship with stock price changes (Baskin, 1989; Allen and Rachim, 1996; Nazir et al., 2010; Hashemeijoo et al., 2012 and Suliman et al., 2013). In contrast, dividend policy has a negative relationship with stock price variations (Asghar et al., 2011; Khan et al., 2011; Dang and Pham, 2016). Besides a negative relationship, a positive relationship is shown in the studies conducted by Okafor and Chijoke-Mgbame (2011), Ngoc and Cuong (2016).

In the context of emerging countries like Vietnam, listed firms hardly ever understand the importance of the impact levels of dividend policy on stock price variation and dividend payment is not a part of the financial strategy in the long term. This study is conducted to answer the questions of the impact levels of dividend policy on the variation of stock prices and firms using high (or low) dividend yields on stock price variation.

This research is structured as follows. Section 2 reviews the relevant literature on the relationship between dividend policy and stock price change. Section 3 describes the models and methodology employed in the conduct of the research. Section 4 sets out a discussion of key results, while section 5 shows some key conclusions and some suggestions for stakeholders and potential further research.

2. Literature review

The relationship between dividend policy and stock price variation is important for management. It is important that management knows the reason why different firms have different dividend policies. Many studies in the

world have investigated the impact levels of dividend policy on stock price variation.

2.1. Negative relationship between dividend policy and stock price variations

Baskin (1989) investigated the relationship between dividend policy and stock price variation based on the data of 2,344 American firms for the period from 1967 to 1986. The results show that there is a negative impact of dividend policy on variation of stock prices and dividend policy can be used for controlling stock prices. If dividend yield increases 1%, the annual standard deviation of stock price variation decreases 2.5%.

Allen and Rachim (1996) collected data of 173 Australian listed firms for the period from 1972 to 1985 and employed OLS. The results show that dividend payout associates negatively with stock price variation. Contrary to the study of Baskin (1989), the coefficient between dividend yield and stock price variation is very low. Dividend yield is removed from the model because of multicollinearity. Other variables of income and long-term liabilities are the two main variables affecting variation of stock prices.

Nishat and Irfan (2004) used 160 listed firms on the Karachi stock exchange for the period from 1981 to 2000 for investigating the impact levels of dividend policy on risk of stock prices in Pakistan. The results show that dividend policy, including dividend yield and dividend payout, significantly influences the variation of stock price.

Nazir et al. (2010) used a sample of 73 listed firms on the Karachi stock exchange for the period from 2003 to 2008. By employing a random effect model (REM) and fixed effect model (FEM), they found contrary results to those in the study conducted by Rashid and Rahman (2008). The results showed that there is a negative relationship between stock price variation and dividend yield and payout. Besides, market and leverage impact insignificantly on variations in stock price.

Hashemijoo et al. (2012) used 84 listed firms in the consumer goods' field in the Malaysian stock exchange for the period from 2005 to 2010. By adding some variables such as market size, income variation, financial leverage, long-term debts and growth, the results show a negative relationship between stock price variation and dividend yield and payout. Besides, a negative association between stock price changes and market capitalization was detected in this study.

Suliman et al. (2013) analyzed stock price changes by using data of 35 listed firms on the Karachi stock exchange for the period from 2001 to 2011.

The results show that a negative relationship between stock price changes and dividend yield existed. Besides, there is a positive relationship between stock price variation and firm size and asset growth but no association between stock price changes and changes of income in this study.

2.2. Positive relationship between dividend policy and stock price change

Rashid and Rahman (2008) used 104 non-financial listed firms on the Dhaka stock exchange for the period from 1999 to 2006 and concluded that there is an insignificantly positive relationship between stock price changes and dividend yield. Long-term liabilities and growth have an insignificantly positive asso-

ciation with stock price variation. Dividend payment ratio and firm size have significant impacts on stock price variation. This result disagrees with the result concluded by Baskin (1989) based on data of American listed firms where dividend yield has no relationship with variation in stock prices.

Asghar et al. (2011) investigated the relationship between stock price variation and the dividend policy of listed firms on the Karachi stock exchange for the period from 2005 to 2009. Contrary to the results of Baskin (1989), their results show that there is a statistically positive relationship between stock price variation and dividend yield. Besides, stock price variation has a negative impact on growth.

Khan et al. (2011) used data of 55 listed firms on the Karachi stock exchange for the period from 2001 to 2010. The results concluded that variables of dividend yield, return on equity, profit after tax had a positive association with stock price variation, whereas retained earnings have a negative relationship with stock price variation.

Dang and Pham (2016) used data of 165 listed firms on the Vietnam stock exchange for the period from 2009 to 2013. By using a regression model and a fixed effect model together with descriptive analysis, there is a positive relationship between dividend ratios, dividend payments and stock price variation.

2.3. Both negative and positive association between dividend policy and variation of stock prices

Okafor and Chijoke-Mgbame (2011) investigated the association between dividend policy and stock price variation of Nigerian listed firms for the period from 1988 to 2005 and concluded that dividend policy has an impact on stock price variation. Even though this study employed a different methodology, this result partly agrees with the result conducted by Baskin (1999). Dividend yield has a significantly negative relationship with stock price variation whereas dividend payout has a low positive relationship. In the short term, dividend policy itself influences stock price changes because, more or less, variables of firm size, income changes and growth impact on stock price variation.

Vo (2014), Ngoc and Cuong (2016) used data of listed firms on the Vietnam stock exchange in a different period and concluded that a positive relationship exists between dividend yield and stock price variation, but earnings per share has a negative relationship.

In short, the relationship between dividend policy and stock price variation is measured based on stock market nature, the situation of each country, the global economy and other factors. Moreover, empirical studies need to make a deep investigation, for example, by employing quantile regression. This research continues, investigating the relationship between dividend policy and stock price variation and investigating the impact levels of listed firms using high dividend yields and low dividend yields on the variation of stock prices.

3. Research models and methodology

Ordinary least squares is much employed in analyzing the variation of the relationship between stock price variation and dividend policy.

Based on the theory of Baskin (1989), Model 1 is designed and dividend policy includes dividend yield and dividend payout. Some con-

Table 1: Measurement and expectation of variables

Variables	Codes	Measurement	Expectation	Explanations
Stock price variation	Pvol	$P_{vol} = \sqrt{\frac{\sum_{i=1}^{4}\left(\frac{H_i - L_i}{\frac{H_i + L_i}{2}}\right)^2}{4}}$		- Hi: Highest price of stock in year i. - Li: Lowest price of stock in year i. - i (from 1 to 4): from 2014 to 2017.
Dividend yield	Dyield	$D\_yield = \sum_{i=1}^{4}\frac{\frac{D_i}{MV_i}}{4}$	(-)	- Di: Annual cash dividend in year i. - MVi: Market value of a firm at the end of year i.
Dividend payout	Payout	$Payout = \sum_{i=1}^{4}\frac{\frac{D_i}{E_i}}{4}$	(-)	- Di: Annual cash dividends in year i. - Ei: Net profit of year i.
Dividend yield per par value	Dpsr	$Dpsr = \sum_{i=1}^{4}\frac{\frac{DEPS_i}{M_i}}{4}$	(-)	- DEPSi: Dividend paid in year i. - Mi: Par value i (unit: 1,000 Vietnamese dong)
Firm size	Size	$Size = \ln(\sum_{i=1}^{4}\frac{\frac{D_i}{E_i}}{4})$	(+)	- MVi: Market value of a firm at the end of year i. - Ei: Net profit of year i.
Earnings variation	Evol	$Evol = \sqrt{\frac{\sum_{i=1}^{4}(R_i - \bar{R})^2}{4}}$ $\bar{R} = \frac{\sum_{i=1}^{4}(R_i)}{4}$	(+)	- Ri: Operating income divided by total asset in year i. $\bar{R}$: Average earnings
Long term debts	Debt	$Debt = \sum_{i=1}^{4}\frac{\frac{LD_i}{Asset_i}}{4}$	(+)	- LDi: Long term debts at the end of year i. - ASSETi: Total assets at the end of year i.
Growth	Growth	$Growth = \frac{\sum_{i=1}^{4}\frac{\Delta Asset_i}{Asset_i}}{4}$	(+)	- △ASSETi: Asset change in year i. - ASSETi: Total assets at the opening of year i.

Source: Designed by the authors.

trolled variables are included in the model such as firm size, earnings change, long term debts and asset growth. In Model 1, the dependent variable is stock price variation and the independent variables are proxied by dividend yield and dividend payout. In Model 2, we add one variable of dividend yield per par value.

Based on prior researches, we propose two models as below:

Model 1:

$$Pvol_i = \beta_0 + \beta_1 Dyield_i + \beta_2 Dpayout_I + \beta_4 SIZE_i + \beta_5 Earnings_i + \beta_6 Debt_i + \beta_7 Growth_i + \varepsilon_{it}$$

Model 2:

$$Pvol_i = \beta_0 + \beta_1 Dyield_i + \beta_2 Dpayout_i + \beta_3 Dpsr_i + \beta_4 SIZE_i + \beta_5 Earnings_i + \beta_6 Debt_i + \beta_7 Growth_i + \varepsilon_{it}$$

Ordinary least squares is a type of linear

least squares method for estimating the unknown parameters in a linear regression model. By using OLS, we get only linear regression showing mean values of dependent and independent variables, whereas using quantile regression, regression functions corresponding to the quantile of the dependent variable are shown.

Koenker and Bassette (1982) are the first researchers to employ quantile regression instead of using OLS. They propose this method for estimating parameters on each quantile of a dependent variable. In other words, instead of investigating the impact of independent variables, on mean value of a dependent variable, quantile regression, shows the impact of independent variables on each quantile of the dependent variable. Quantile regression outweighs OLS. Quantile regression helps researchers to know the overall variation of yi based on the changes of the quantile $\theta \in (0;1)$. According to Hao and Naiman (2007), assumptions in quantile regression are not as strict as assumptions in OLS, for example a normal distribution is not important.

4. Results and discussions

Data in Table 2 show that the mean of stock price variation is 0.819. The mean of Dyield is 18.1%, meaning that the stock return is 18.1%. A mean of 53.2% is showing that more than a half of the earnings are used for conducting cash dividends. The mean of Dpsr is 27.5% for the period from 2014 to 2017.

Based on Figure 1, the variation of stock prices (Pvol) is not a normal distribution. The results of Shapiro - Whik and Shapiro - Francia tests also show that Pvol is abnormal distribution. So it is not reliable and comprehensive if using OLS. So using quantile regression is necessary in this circumstance.

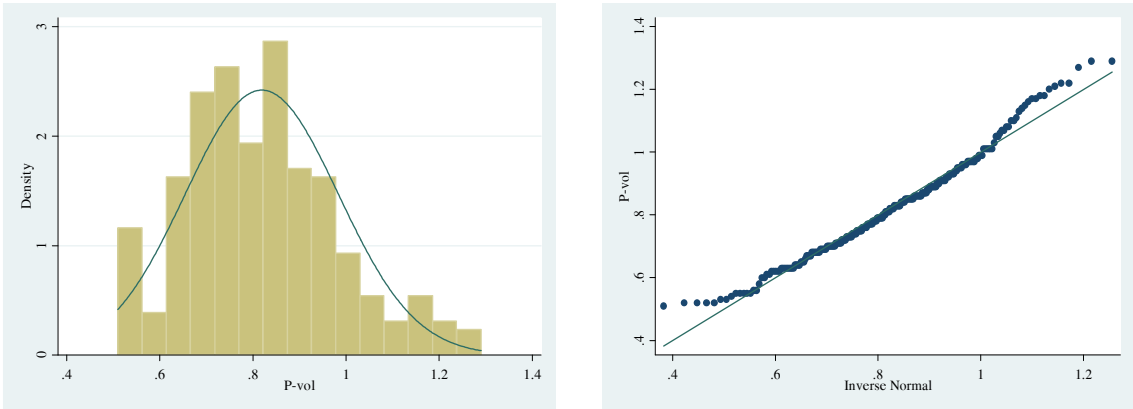
In investigating the dividend policy levels among sectors for the period from 2014 to 2017, data in Table 3 illustrate that consumer goods have the highest Dpsr of 43.2% and Dyield of 28.5%. The highest payout of 69.0% belongs to energy.

Table 4 shows the coefficient matrix among variables with the aim of testing the close relationship between variables in order to remove variables that can cause multilinearity in the models. No coefficient of variables is less than 0.6, so there is less possibility for multilinear-

Table 2: Descriptive analysis of variables

Variables	Observation	Mean	Std. Dev.	Min	Max
Pvol	248	0.819	0.165	0.51	1.29
Dyield	248	0.181	0.148	0	1.52
Payout	248	0.532	0.348	0	1.57
Dpsr	248	0.275	0.204	0	0.96
Size	248	20.510	1.615	17.55	25.98
Evol	248	0.058	0.098	0	0.86
Debt	248	0.677	0.174	0.15	0.98
Growth	248	0.226	0.225	-0.55	0.69

Figure 1: Distribution of dependent variable of stock price variation (Pvol)



ity to exist between existing independent variables. We use a variance inflation factor (VIF) coefficient less than 2.0, so multilinearity does not exist in the models.

Table 5 shows the results of Model 1. Data in Table 5 reflect coefficients of quantile regression and ordinary least squares. For reducing multilinearity and heteroscedasticity, we run a robust OLS. Based on OLS running, Dyield is negative and not statistical but has a negative relationship with Pvol at the quantile of 10 and quantile of 25. The Payout variable has a negative relationship with Pvol at the quantiles of 50, 75 and 90 when running OLS robust.

The variable of firm size (size) has a negative association with the variable of stock price variation (Pvol) and has no significant level at the point of average and quantiles. Earning variation (Evol) has a positive relationship with Pvol in the OLS running and is significant at

Table 3: Dividend policies among sectors

No.	Sectors	No. of firms	Dpsr	Dyield	Payout
1	Real estate and construction	77	20.5%	14.7%	41.1%
2	Industry	36	34.5%	21.9%	65.1%
3	Technology	7	20.7%	12.4%	39.1%
4	Services	24	26.0%	14.5%	45.8%
5	Consumer goods	19	43.2%	28.5%	65.4%
6	Energy	18	35.5%	22.7%	69.0%
7	Agriculture	28	29.3%	19.7%	60.7%
8	Materials	22	22.1%	17.8%	52.0%
9	Finance and insurance	9	15.9%	9.8%	49.4%
10	Health	8	39.5%	19.5%	66.1%

Table 4: Coefficient matrix

	Pvol	Dyield	Payout	Dpsr	Size	Evol	Debt	Growth
Pvol	1							
Dyield	-0.3797*	1						
Payout	-0.5031*	0.7308*	1					
Dps	-0.4515*	0.7072*	0.7784*	1				
Size	-0.093	0.0337	0.1665*	0.2855*	1			
Evol	0.2942*	-0.0714	-0.1671*	-0.0572	-0.0775	1		
Debt	0.062	-0.1027	-0.1247*	-0.2265*	0.055	-0.1164	1	
Growth	0.079	0.0235	-0.0244	0.0893	0.3044*	-0.2919*	0.0297	1

*Note: * p<0.05.*

all quantiles. The variable of revenue growth (growth) has a positive relationship with Pvol and significance at all quantiles except the quantile of 75.

Data in Table 6 show the results of Model 2. The variable of Dpsv has a negative relationship with Pvol with a significant level of 10% at quantiles of 25 and 90.

For investigating the impact of dividend policy on stock price variation, we divided the sample into two groups based on the median. The first group belongs to listed firms using high stock returns. The second group sticks to listed firms employing low stock returns.

Data in Table 7 show that Dyield, a proxy of dividend policy, has a negative relationship with Pvol at the significance level of 1% in the firms using low stock returns. Whereas in the firms using high stock returns, Dyield has a negative relationship with Pvol and no significance. This result also agrees with results conducted by Baskin (1989), Hashemijoo et

Table 5: Results of model 1

	OLS Robust	Quantile regressions				
		QR10	QR25	QR50	QR75	QR90
Dyield	-0.09	-0.405*	-0.233+	-0.083	-0.101	-0.063
Payout	-0.180**	0.002	-0.083	-0.185**	-0.181**	-0.255**
Size	-0.006	0.001	-0.001	-0.005	-0.011	-0.015
Evol	0.463**	0.405*	0.509**	0.497**	0.553**	0.626**
Debt	0.035	0.132	0.103	0.128*	0.051	-0.083
Growth	0.124**	0.133+	0.123*	0.103*	0.075	0.177*
_cons	0.977**	0.570**	0.704**	0.887**	1.149**	1.444**
n	248	248	248	248	248	248
R2/Pseudo R2	0.3236	0.1344	0.168	0.2115	0.2088	0.2598

*Note: + p<0.1, * p<0.05, ** p<0.01.*

Table 6: Results of Model 2

	OLS Robust	Quantile regressions				
		QR10	QR25	QR50	QR75	QR90
Dyield	-0.003	-0.091	0.03	-0.031	0.058	0.009
Payout	-0.119**	0.001	-0.063	-0.143**	-0.145+	-0.149+
Dpsr	-0.201*	-0.178	-0.214*	-0.117	-0.199	-0.331*
Size	-0.001	0.007	0.006	-0.002	-0.007	-0.011
Evol	0.491**	0.455**	0.565**	0.514**	0.579**	0.604**
Debt	0.003	0.088	0.089	0.127*	0.006	-0.082
Growth	0.135**	0.177*	0.139*	0.124*	0.097	0.188*
_cons	0.906**	0.445*	0.566**	0.821**	1.102**	1.373**
n	248	248	248	248	248	248
R2/Pseudo R2	0.3417	0.1449	0.1731	0.2162	0.2287	0.2847

*Note: + p<0.1, * p<0.05, ** p<0.01.*

al. (2012), and Vo (2014), but disagrees with the results of Dang and Pham (2016), Allen and Rachim (1996) and Rashid and Rahman (2008).

Payout, a proxy of dividend policy, has a negative relationship in two cases of high and low stock returns adopted by listed firms at the significance levels of 1% and 5%. This result agrees with results conducted by Baskin (1989), Allen and Rachim (1996) and Nazir et al. (2010) but disagrees with studies conducted by Hashemijoo et al. (2012), Vo (2014) and Dang and Pham (2016).

Dividend yield per par value (Dpsr), anoth-

Table 7: Results of robust OLS by dividend policy

	Dividend yield (Dyield)		Dividend payout (Payout)		Dividend yield per par value (Dpsr)	
	Less than median	Above median	Less than median	Above median	Less than median	Above median
Dyield	-0.626***	-0.113				
Payout			-0.197***	-0.166**		
Dpsr					-0.407***	-0.191**
Size	-0.00911	-0.00881	-0.00303	-0.00591	-0.0126	0.0113
Evol	0.467***	0.513**	0.439***	0.488**	0.469***	0.574***
Debt	-0.102	0.173**	-0.128	0.174***	-0.133	0.114+
Growth	0.109+	0.178***	0.0989	0.1	0.141**	0.160***
_cons	1.134***	0.791***	1.034***	0.849***	1.218***	0.460***
N	118	130	124	124	116	132
R-sq	0.243	0.145	0.212	0.177	0.237	0.196

*Note: + p<0.1, * p<0.05, ** p<0.01.*

er surrogate of dividend policy, has a negative association with stock price variation (Pvol) at significance levels of 1% and 5%. This means that dividend policy associates negatively with stock price variation.

For the controlled variable of firm size (size), there is no relationship between size and Pvol. This result disagrees with studies conducted by Baskin (1989), Allen and Rachim (1996), Rashid and Rahman (2008), and Vo (2014).

Earnings change (Evol) has a positive relationship with stock price variation (Pvol) at 1% and 5% significance levels. This means that the higher earnings are, the higher the stock price variation is. This result agrees with studies undertaken by Hashemijoo et al. (2012) and Ngoc and Cuong (2016), but disagrees with studies conducted by Rashid and Rahman (2008), Vo (2014) and Dang and Pham (2016). This implies that stockholders focus more on earnings when trading securities in the context of the Vietnam stock exchange, so the higher the stock return variation, the higher the stock price variation also.

The variable of long-term debt (debt) has a negative relationship with Pvol and no statistical significance with listed firms using low stock returns. In the case of listed firms using high stock returns, debt has a positive association with Pvol at a significance of 5% and 10%. This result matches with results conducted by Baskin (1989), Allen and Rachim (1996) and Vo (2014), but disagrees with the study done by Hashemijoo et al. (2012).

The variable of growth and stock price variation has a positive relationship at a statistical significance of 1%, 5% and 10% when Dyield and Dpsr are proxied. This result is consistent with the results of Baskin (1989), Allen and Rachim (1996), El Shamy and Al-Qenae (2005) and Vo (2014).

5. Conclusion

The result of this paper shows that management can interfere in stock price variation by employing different dividend policies in the context of an emerging country like Vietnam. The result shows that dividend policy is regarded as an instrument for controlling stock price variation based on the management's perspective. So, stock prices that can be increased or decreased depend on decreases or increases of dividend yield per par value (Dpsr). The stock price variation is directly influenced by dividend policy, so this relationship can be employed for adjusting stock risks in order to attract investors.

On the side of investors, this result helps investors have real insights into stock held and dividend policies adopted by listed firms, and to then have a specific investment strategy. If they are afraid of risk, they can choose to buy stocks issued by firms having high stock returns because the stock price variation is low. In contrast, if they like to encounter risk, they can buy stocks issued by firms employing low stock returns because the variation of stock price is high, so having high profit and opportunity. The situation of Vietnam, being a case study of an emerging country, may be happening in other emerging countries. So this research is very important and can be generalized for emerging countries in which Vietnam is a specific example. Further research on the relationship between dividend policy and stock price variation with longer time series is identified and discussed.

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