

THE IMPACT OF DIVIDEND POLICY ON STOCK PRICE VOLATILITY IN THE TEHRAN STOCK EXCHANGE

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Abstract

The main purpose of this study is to examine the impact of dividend policy on share price volatility in Tehran Stock Exchange. The numbers of statistic community are 470 companies in Tehran Stock Exchange. We select 51 companies from these statistic communities during 2007 to 2012 by restricting the companies that meet some Criteria for doing the research. In this study to evaluate the changes in stock used Parkinson's stock price volatility. The statistical model used was multivariable regression model and for testing compound data (panel) were used. Before analyzing the data, Unit root test, Chaw test and Hausman test for Stationary tests of the variables, Select panel data in pooling data and the fixed effects model was chosen. Then the fixed effects model to test the research hypotheses. The result indicated at the error level on 5%, Dividend payout ratio has a significantly negative effect on stock price volatility and asset growth rate has a significantly positive effect on stock price volatility. Also variables leverage, earning volatility and company size on stock price volatility is not significant effect.

Keywords: stock price volatility, dividend policy, dividend payout ratio, panel data

1. Introduction

Dividend payment is a major component of stock return to shareholders, and dividend payment could provide a signal to the investors that the company is complying with good corporate governance practices. The volatility of share price on the other hand is the systemic risk faced by investors who possess ordinary shares investment. Investors are by nature risk averse, and the volatility of their investments is of importance to them because it is a measure of the level of risk they are exposed to. We in this paper examine the impact of firm's dividend payout ratio (DPR) on the share price of the Tehran Stock Exchange listed con of six year (2005 to 2009), and the main

purpose of this study is to examine the impact of dividend policy on share price volatility in Tehran Stock Exchange.

2. Theoretical Framework

Dividend policy is a firm's policy with regards to paying out earnings as dividend versus retaining them for reinvestment in the firm. It is the division of profit between payments to shareholders and reinvestment in the firm. Dividend policy is thus an important part of the firm's long-run financing strategies.

2-1. Irrelevance of dividend policy

(Miller & Modigliani, 1961)¹² proposed irrelevance of dividend policy theory suggesting that the wealth of the shareholders is not affected by dividend policy. It is argued in their theory that the value of the firm is subjected to the firm's earning, which comes from company's investment policy. The literature proposed that dividend does not affect the shareholders' value in the world without taxes and market imperfections. They argued that dividend and capital gain is two main ways that can contribute profits of firm to shareholders. When a firm chooses to distribute its profits as dividends to its shareholders, then the stock price will be reduced automatically by the amount of a dividend per share on the ex-dividend date. So, they proposed that in a perfect market, dividend policy does not affect the shareholder's return. (Brennan, 1971)⁴ supported the irrelevancy theory of Miller and Modigliani and concluded that any rejection of this theory must be based on the denying of the principle of symmetric market rationality and the assumption of independence of irrelevant information. He suggested that for rejection of latter assumption, one of these following conditions must exist: firstly, Investors do not behave rationally. Secondly, Stock price must be subordinate of past events and expected future prospect.

(Black & Scholes, 1974)³ created 25 portfolios of common stock in New York Stock Exchange for studying the impact of dividend policy on share price from 1936 to 1966. They used capital asset pricing model for testing the association between dividend yield and expected return. Their findings showed no significant association between dividend yield and expected return. They reported that there is no evidence that difference dividend policies will lead to different stock prices. Their findings were consistent with dividend irrelevance hypothesis.

2-2. Relevance of dividend policy

(Gordon, 1962)⁷ suggested a valuation models relating the market value of the stock with dividend policy. Gordon studied dividend policy and market price of the shares and proposed that the dividend policy of firms affects the market value of stocks even in the perfect capital market. He stated that investors may prefer present dividend instead of future capital gains because the future situation is uncertain even if in perfect capital market. Indeed, he explained that many investors may prefer dividend in hand in order to avoid risk related to future capital gain. He also proposed that there is a direct relationship between dividend policy and market value of share even if the internal rate of return and the required rate of return will be the same.

(Diamond, 1967)⁵ selected 255 US based firms as a sample and studied the association of firm's value with dividends and retained earnings in 1961 and 1962. (Diamond, 1967) reported that there is only weak evidence that investors prefer dividends to future capital gain. His findings also showed a negative association between growth of company and preference of dividend.

(Jensen, Solberg, & Zorn, 1992)¹¹ studied the determinants of cross-sectional differences in insider ownership, debt and dividend policy by using three-stage least squares. They considered 565 companies as sample for the year 1982 and used 632 companies as sample for the year 1987. They reported that high insider ownership companies adopt lower dividend payment and proposed that insider ownership and dividend payment have negative association. Their findings supported agency cost theory.

3. Literature review

(Baskin, 1989)² used a different method and examined the association between dividend policy and stock price volatility rather than returns. He added some control variables for examining the association between share price volatility and dividend policy. These control variables are earning volatility, firm's size, debt and growth.

(Baskin, 1989) studied the 2344 U.S. firms over a period of 1967 to 1986 and he reported a significant negative correlation between dividend yield and stock price volatility. He suggested that dividend policy can be used for controlling the share price volatility. He reported that if dividend yield increases by 1 %, the annual standard deviation of stock price movement decreases by 2.5 %.

(Allen and Rachim, 1996)¹ found that there is positive relationship between share price volatility and earnings volatility and leverage in the Australian listed companies during 1972 to 1985.

(Hussainey et al, 2011)⁹ examined the relationship between share price volatility and dividend policy in UK. Their work was based on (Baskin, 1989). Consistent to (Allen & Rachim, 1996) Australia results, (Hussainey et al, 2011) found a significant negative relationship between share price volatility and payout ratio. They also found a negative relationship between share price volatility and dividend yield, also showed that a firm's size has significant negative impact on volatility of stock price, and debt has significant positive impact on share price volatility. (Suleman et al, 2013)²¹ studied the association of dividend policy with share price volatility in Pakistan. They extracted data from Karachi Stock Exchange regarding five important sectors for the period of 2005 to 2009, and they used multiple regressions model for their analysis. Contrary to (Baskin, 1989)'s results, their findings showed that share price volatility has significant positive relationship with dividend yield. They also reported that share price volatility has significant negative relationship with growth. (Zakaria et al., 2012)²² examine the impact of firm's dividend yield (DY) and dividend payout ratio (DPR) on the share price of the Malaysian listed construction and material companies. These study covers for a period of six year (2005 to 2009). They reported that there is a significant positive relationship between the dividend payout ratio with share price volatility, and dividend yield is insignificant and negatively related to the movement of stock prices. (Nazir et al., 2010)¹³ used 73 firms listed in Karachi Stock Exchange (KSE) as sample and studied the relationship between share price volatility and dividend policy for the period of 2003 to 2008. They applied fixed effect and random effect models on panel data. They reported that share price volatility has significant negative association with dividend yield and dividend payout. They also reported that size and leverage have non-significant negative effect on share price volatility. (Rashid and Anisur Rahman, 2008)¹⁹ found that there is positive but insignificant relationship between share price volatility and dividend yield for 104 nonfinancial firms listed in the Dhaka Stock exchange during the period of 1999 – 2006. Only payout ratio and size are negative and significantly related to share price volatility. (Hashemijoo et al, 2012)⁸ examined the relationship between share price volatility and dividend policy in the Malaysian stock market. The empirical results of this study showed significant negative relationship between share price volatility with two main measurements of

dividend policy which are dividend yield and dividend payout. Moreover, a significant negative relationship between share price volatility and size is found. Based on findings of this study, dividend yield and size have most impact on share price volatility amongst predictor variables. (Okafor et al, 2011)¹⁶ also studied the dividend policy and stock price volatility on the Nigerian stock market. This study applied the time-series least square regression model. The sample data of a8-year period from 1998 to 2005 was regressed for each year. Therefore, 8 regression tables were obtained. From these tables, they could get the annual effect of dividend policy on the volatility of stock price and dividend yield had a significant negative relationship with stock price volatility, whereas dividend payout ratio had a positive relationship with stock price volatility at a low significance level. In short, dividend policy itself could influence the stock price volatility. As to other variables, firm size, earnings volatility and assets growth would more or less affect the volatility of stock price. (song, 2012)²⁰ examined the relationship between the stock price volatility and dividend policy for the Canadian stock .The objective of this study is to explore the relationship between the stock price volatility and dividend policy (dividend yield and dividend payout ratio) for the Canadian stock market. According to the study of Baskin (1989), the multiple least squares regression model is applied in this paper. The sample of data is composed of 100 public firms which are listed on the Toronto Stock Exchange from 2001 to 2011. The results indicate that the dividend yield and the dividend payout ratio both have significantly negative relationship with the stock price volatility. (Nishat & Irfan, 2004)¹⁵ and (Jecheche, 2012)¹⁰ did the same research in Pakistan and Zimbabwe respectively using the same method (Baskin model). According to their studies, both dividend yield and dividend payout ratio had a significant relationship with stock price volatility. (Ngunjiri, 2010)¹⁴ examined the relationship between dividend payment policies and stock price volatility for companies quoted at the NSE. The empirical results of this study showed, Both dividend policy measures (dividend yield and payout ratio) were found not to have significant impact on the share price volatility at Nairobi Securities Exchange for the period 2004 to 2008. (Farooq et al, 2012)⁶ studied the Dividend Policy as a Signaling Mechanism under different market conditions: Evidence from the Casablanca Stock. They find a significantly negative relationship between dividend payout ratio and stock price volatility during the stable growth period. (Orfanos & Evripiotis, 2009)¹⁷ examined of companies dividend and economic of FTSE/ASE-20 indicator in the configuration of their stock. They found dividend yield has negative impact with the stock price volatility and dividend payout ratio has positive impact with the stock price volatility.

4. The hypothesis

According to main research question, on whether dividend policy effects stock price volatility or not. As well as the impact of dividend policy on stock price volatility is In this study, the effect of dividend policy on stock price volatility were investigated in Tehran Stock Exchange. Hypothesis is stated as follows.

Hypothesis: The dividend payout ratio effect on stock price volatility

5. The model

Statistical model used was multivariable regression model and for testing compound data (panel) were used. The model considered is as follows.

$$price\ volatility_{it} = \beta_0 + \beta_1 Payout\ ratio_{it} + \beta_2 E.vol_{it} + \beta_3 Leverage_{it} + \beta_4 Size_{it} + \beta_5 Growth_{it} + \varepsilon_{it}$$

β_0 is the intercept, $\beta_1 - \beta_5$ are the regression coefficient and ε is the error term.

6. Description of variables used in the study

6-1. Stock price volatility

This variable is the dependent variable in this study, which is calculated by using (Parkinson, 1980)¹⁸ method of extreme values. This variable, it is calculated by dividing the annual range of prices with the average of high and low stock prices. The formula for computing the share price volatility is as follows:

$$(H_{it} - L_{it}) / \left(\frac{H_{it} + L_{it}}{2} \right)$$

H_{it} = highest stock price for firm i in year t

L_{it} = Lowest stock price for firm i in year t

t (from 1 to 6) indicates years from 2007 to 2012

6-2. Dividend payout ratio

This variable is the main independent variable of this study, and this paper uses dividend payout ratio (POR) as a proxy for dividend policy. For computing this variable, the sum of cash dividend paid to common share holders is divided by the net income after tax for each year. It is calculated based on following formula:

$$\text{Payout ratio}_{it} = \frac{\text{DPS}_{it}}{\text{EPS}_{it}}$$

Payout ratio_{it} = dividend payout ratio for firm i in year t

EPS_{it} = Earning Per Share for firm i in year t

DPS_{it} = dividend per share for firm i in year t

6-3. Earning volatility

This variable is one of the control variables of this study. For calculation of earnings volatility, firstly, the ratio of operating income to total asset is calculated for each year and then the results are geometric mean for six years. For earning volatility calculation taking the standard deviation of ratio earnings before interest and taxes or operating profit to total asset is calculated and consider as earnings volatility.

$$E. vol_{it} = \sqrt{\frac{\sum (R_{it} - \bar{R}_i)^2}{n - 1}}$$

$E. vol_{it}$ = Earnings volatility for firm i in year t

R_{it} = the ratio of operating income to total asset for firm i in year t

\bar{R}_i = geometric mean ratio of operating income to total asset for firm i the entire study period

6 - 4. Leverage

This variable is one of the control variables of this study. For calculating this variable, the ratio of total long-term debt (obligations of firm with maturity greater than one year) to total asset is computed for each year.

$$\text{Leverage}_{it} = \frac{LD_{it}}{ASSET_{it}}$$

Leverage_{it} = Financial leverage for firm i at the end of year t

LD_{it} = Long-term debt for firm i at the end of year t

$ASSET_{it}$ = Total asset for firm i at the end of year i

6-5. Size

Size is one of the control variable measured by using the natural logarithm of total asset.

$$\text{Size}_{it} = \ln(ASSET_{it})$$

Size_{it} = Company size for firm i at the end of year i

$ASSET_{it}$ = Total asset for firm i at the end of year i

6-6. Growth

This variable is one of the control variables of this study. For calculation, the ratio of change in total asset at the end of the year to total asset at the beginning of the year is computed for each year.

$$\text{Growth}_{it} = \frac{\Delta ASSET_{it}}{ASSET_{it-1}}$$

$$\Delta ASSET_{it} = ASSET_{it} - ASSET_{it-1}$$

Growth_{it} = Growth rate for firm i in year t

$\Delta ASSET_{it}$ = Change of total asset for firm i in year t

$ASSET_{it}$ = Total asset for firm i at the end of year i

$ASSET_{it-1}$ = Total asset for firm i in year t-1

7. Research methodology

For collecting data from firms accepted in Tehran Stock Exchange (TSE). we put the following conditions:

- 1- Firms should have been accepted in TSE since 2006
- 2- Firms should not be in a financial or investing industry.
- 3- In terms of increase comparability, their fiscal year ends to march.
- 4- Firms should not have changed their year-ends.
- 5- During the research period their stock trading has not stopped
- 6- They have at least one cash dividend payment during 2007 to 2012.
- 7- Frequency of transactions per year should not be less than 70
- 8- There is a need for availability of data.

Upon above conditions, 51 companies from 469 companies listed in Tehran Stock Exchange from 2007 to 2012 have been selected as samples for this study. We collect data from database of Tehran Stock Exchange. Then we analyze these data by EViews 7 software. This study combines data are used to test hypotheses. To select the methods pooling and panel we use Chaw test. If the selection panel, we do Hausman test to select the random effects, fixed effects method. Moreover, unit root test variables, as has been done.

8. The empirical results

8-1. Results of Panel unit root test

Before analyzing research data, are examine the stationary of variables. To evaluate the stationary of the variables we use unit root tests. For this purpose, the Levin, Lin, and Chu test for the common unit root and Philips – Prawn test for cross- section were used. From table (1), the results showed that the significance level (p- value) PP– Fisher (Phillips, P.C.B and P. Perron) and Levin, Lin & Chu , for all variables Less than 5 percent.

Table (1): Results of Panel unit root test

Variable	Method	Statistic	Prob
PRICE VOLATILITY	Levin, Lin & Chu	-11.64557	0.000
	PP - Fisher	213.513	0.000
PAYOUT RATIO	Levin, Lin & Chu	-9.68517	0.000
	PP - Fisher	197.809	0.000
EARNING VOLATILITY	Levin, Lin & Chu	-13.5419	0.000
	PP - Fisher	204.905	0.000
LEVERAGE	Levin, Lin & Chu	-22.0530	0.000
	PP - Fisher	260.062	0.000
GROWTH	Levin, Lin & Chu	-19.5655	0.000
	PP - Fisher	238.475	0.000
SIZE	Levin, Lin & Chu	-14.1311	0.000
	PP - Fisher	203.185	0.000

Therefore, all variables are stationary during the period studied.

8-2. Results of F-statistic test

The first test is the F-statistic test or the Chow test for panel data. Chow test for using the fixed effects model in front combination of data is done. The null hypothesis is based on the lack of individual and group effects, and the H_1 hypothesis is based on individual and group effects. The hypothesis of this test is as follows:

H_0 : Pooled model

H_1 : Fixed Effect Modle

As shown in the table (2), the significance level (p- value) for F-statistic, less than 5 percent. Therefore, the null hypothesis is rejected and the H_1 hypothesis is accepted.

Table (2): Results of F-statistic test

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test		Statistic	d.f. Prob.

Cross-section F	2.316840	(50,250)	0.0000
Cross-section Chi-square	116.506635	50	0.0000

Therefore, to test the hypothesis we use a panel data approach.

8-3. Results of Hausman Test

After reject pooled model, to determine the type of panel data (random effect model or fixed effect model), we use the Hausman test. The Hausman statistic tests the null hypothesis that random effects model is appropriated for the particular sample compared to the fixed effects model. The hypothesis of this test is as follows:

H_0 : Random Effect Model

H_1 : Fixed Effect Model

As shown in the table (3), the significance level (p- value), less than 5 percent. Therefore, the null hypothesis is rejected and the H_1 hypothesis is accepted.

Table (3): Results of Hausman Test

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	19.083944	5	0.0019

Therefore, to test the hypothesis we use a fixed effect model.

8-4. Results of the hypothesis test

H_0 : Dividend payout ratio does not effect on the stock price volatility

H_1 : Dividend payout ratio will effect on the stock price volatility

The results of the fixed effects regression model is presented in the table (4), and These results indicate that the payout ratio, leverage, and firm size effects adversely affect stock price volatility and in front of growth rate and earning volatility have a direct effect on stock prices.

The significance level (p- value) for payout ratio is .037, less than 5 percent. Therefore, the null hypothesis is rejected and the H_1 hypothesis is accepted.

Table (4): Results of fixed effects regression model

Dependent Variable: PRICE VOLATILITY

Method: Panel Least Squares				
Sample: 2007 2012				
Periods included: 6				
Cross-sections included: 51				
Total panel (balanced) observations: 306				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.223968	0.584573	2.093781	0.0373
PAYOUT RATIO	-0.242273	0.081007	-2.990749	0.0031
EARNING VOLATILITY	0.118958	0.173903	0.684047	0.4946
LEVERAGE	-0.274405	0.317113	-0.865322	0.3877
GROWTH	0.133368	0.056816	2.347358	0.0197
SIZE	-0.037724	0.041890	-0.900543	0.3687
R-squared 0.379470	Durbin-Watson stat 2.343568	F-statistic 2.779663	Prob (F- statistic) 0.000000	

According to this model, only 37.94% of the firm's stock price volatility during the course of the study, by the independent variables of payout ratio, financial leverage, growth rate and earning volatility can be explained.

In answer to the main question, the results show that, payout ratio has an adverse effect on price volatility, and also has a statistically significant effect on stock price volatility.

Earnings volatility, size and leverage effect on the stock price volatility is not statistically significant, and direct impact on the company's asset growth rate of stock price volatility is statistically significant.

9. Conclusion

The main objective of this study is to examine the impact of dividend payout ratio on the share price volatility in Tehran Stock Exchange. For this purpose some controlling variables like, size, leverage, growth rate and earning volatility are used. Stock price volatility is the dependent variable in this study; also dividend payout ratio is the main independent variable of this study. The study covers for a period of six years (2007 to 2012). However there is only 37.94 percent of the variation in the changes in the share price explained by the model.

The empirical result suggests there is a significant negative effect between the dividend payout ratio of a firm and share price volatility. The findings of this study are that the payout ratio, leverage, and firm size effects adversely affect stock price volatility, and in front of growth rate and earning volatility have a direct effect on stock prices. The result indicates at the error level on 5%, dividend payout ratio has a significantly negative effect on stock price volatility and asset growth rate has a significantly positive effect on stock price volatility. At the end, in answer to the main question, the results show that, payout ratio has an adverse effect on price volatility, and also has a statistically significant effect on stock price volatility.

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