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The effect of dividend policy on stock price volatility and investment decisions

Roza Irandoost[1], Rasoul Baradaran Hassanzadeh[2], Heydar Mohammadzadeh Salteh[3]

[1]Department of Accounting, Science and Research Branch, Islamic Azad university, Tabriz, Iran; [2]Department of Accounting, Tabriz Branch, Islamic Azad University, Tabriz, Iran; [3]Department of Accounting, Marand Branch, Islamic Azad University, Tabriz, Iran

Abstract

The allocation of a part of the profit as the dividends considered as one of the significant issues in financial management. Through applying this policy, the main purpose is the capital maximization of stockholders by receiving the dividend and increasing the stock price. The purpose of the present research is to assess the effect of dividend policy on stock price volatility and investment decisions. The statistical community of the present research includes the admitted firms into the Tehran Stock Exchange of which only 65 firms have been selected after the application of the considered criteria. The time of the research is three years from 2007 to 2012 and correlation analysis method and multiple regressions were used in order to analyze the data and test the hypotheses.The research results indicate that the dividend policy has a significant effect on stock price volatility in a short time. However, the dividend policy does not have a significant effect on stock price volatility in a long time. Moreover, the dividend policy does not have a significant effect on investment decisions in terms of cash and accrual.

Keywords: The dividend policy, stock price volatility, investment decisions.

Introduction

One of the important financial decisions is the allocation of earnings per share to two sections of dividend and retained earnings. Since the primary objective of financial management of firms, i.e. the wealth maximization of stockholders is possible by receiving the dividend and increasing the stock price (capital gains), the firm, in order to maximize its stockholders' wealth, should act in such a way that the sum of two numbers belonging to the dividend and the price increase in the market will result in the most favorable combination. Hence, the firms should decide about their dividend policy, i.e. the amount of cash dividends which should be distributed among stockholders.

In other words, distribution of profit should be discussed from two very important aspects. On one hand, it is a factor affecting the investments which the firms will face. Distribution ofprofitscauses reduction in internal resources and an increase in the need for external resources. On the other hand, many stockholders seek cash dividends. Thus, the managers with the aim of maximizing the profit should always maintain the balance between their different interests and profitable investment opportunities. Therefore, the dividend decisions taken by the managers are critical and significant (Mehrani&Talaneh,1998). According to the above, the questionis raised as how the effect of dividend policy on stock price volatility and investment decisions is.

Review of Related Literature

The theoretical basis

Dividend policy is one of the most important issues in financial management since the dividend is indicative of the cash payments of most firms and is one of the main optionsand decisions which the managers will face. The manager

Corresponding author: Roza Irandoost, Department of Accounting, Science and Research Branch, Islamic Azad university, Tabriz, Iran. Email: Roza_irandoost@yahoo.com

is to decide how much of the corporate income should be divided and how much, in the form of retained earnings should be reinvested in the firm. Although the payments of dividends directly benefit the stockholders,it affects the firm's ability in accumulating profits in order to take advantage of growth opportunities (Baker & Powell, 2005). In general, the relationship between dividends and earnings per share is indicative of the firm's dividend policy (Poormoqadam, 1998; Qalibafasl, 2007). In the field of studying the determinants of the dividend policy, two fundamental researches have also been conducted. According to Rozeff's research in 1982, the determinants of the dividend policy can be classified into the following: 1) transaction costs of financing from capital markets 2) financial constraints due to the increase in financial and operational leverage 3) agency costs of outside ownership of minority stockholders.In another research, Barclay after numerous studies introduced three factors as the potential determinants of corporate dividend policy which are: 1) the amount of investment opportunities 2) the signaling effects of cash dividend 3) the firm size (Barclay et al,1995). In the formulation of the dividend policy, in practice, firms often use policies such as the division of fixed and given amount, the division of a fixed percentage of profits, the distribution of fixed profits in addition to the variable margin and the division of excess profit(Baker, Powell, Jahankhani, &Parsaiyan, 2005).

Stock price volatility is a routine in all stock exchanges. Stock price is influenced by many factors by each of which it is subject to volatility and change. On the whole, it can be said that stock price changes by both external factors and internal factors (Amirkhani, 1997). The stock price trend is the regression of stock price volatility based on a specified period (Halstead, 2002). The purchase of a share whose price has an upward trend compared with a share whose price has a downward trendhas been strongly recommended by Blume (Blume *et al*, 1978). Moreover, it can be said that the share whose price has an upward trend is less risky. Gordon and Walter believe that the dividend policy affects the value of the firm and it is placed in growth conditions based on the position of institutions, but Miller and Modigliani believe that the dividend is as a substitute for future expected profits and itself are irrelevant.

Investment requires the management of investors' wealth. The wealth includes a total of current income and the future income value. Although each manager takes a different decision, most of them agree about the following steps in the decision-making process:

1) Defining the problem 2) identifying the solutions 3) collecting the related data 4) decision- making: the final decision-making usually depends on the decision-making model. The decision-making model might be simple or complex. However, regardless of the simplicity or complexity, using these models has no effect on the high quality of decisions. The quality of decisions, in its turn, affects the accomplishments of the organization in line with the targets set (Shabahang, 2010).

The research background

Puket and Friend (1964) studied the relationship between distribution of profits and stock price. By conducting their research, in addition to comparing the effects of dividend and retained earnings, they reached the conclusion that dividend payment does not cause an increase in the stock value of firms without growth and it causes a decrease in stock value in firms which have profitable investment opportunities. Ghosh (2008) conducted a research under the title of "Does the dividend policy and profitability leverage affect the future value of the firm?" Reached the conclusion that there is a nonlinear relationship between the leverage, profitability and the probability of an increase in the future value of the firm. In studying the determinants of dividend policy in New Zealand, found that distribution of profits has a positive relationship with the distribution of ownership and a negative relationship with the degree of internal ownership (Chen &Hinciery, 2009). They also concluded that the sales growth causes a decrease in distribution of profits. In a research as the effect of dividend on stock price of the firms, studied the effect of dividend on the stock price in the admitted firms into the Tehran Stock Exchange(Khoshtinat & Sarbanha, 2003). In this research, in which the models of Black and Scholes and capital asset pricing model (CAPM) have been used, the results indicate that without using the expected return intermediate variable in the capital asset valuation model, there is a direct relationship between the dividend and the stock

price(Khoshtinat & Sarbanha, 2003). However, without considering it, this relationship has been the subject for some years. In a research under the title of "the effect of dividend percent volatility on the stockholders' return of equity", studied the effect of dividend percent volatility of the stock return of firms (Shoorvarzi and Nikoomaram, 2010). The financial results of the research indicate that there is a significant relationship between dividend percent volatility and the stock return of firms (Shoorvarzi and Nikoomaram, 2010). Also, there is a relationship between the distribution of more cash dividends and stock price in a way that the distribution of cash dividend rate is, the higher stock price will be and conversely (Shoorvarzi and Nikoomaram, 2010).In a research, identified the factors affecting the dividend by using logic models demonstrated that uncertainty about the cash flow, the life stage of the firm, investment and profitable opportunities for the firm, among the considered factors, affect the payment of dividend (IzadiNia and Alinaghian, 2011).

The research hypotheses

In the present research, based on the knowledge which is gained from the research topic and recited by the literature and the theoretical basics provided regarding the dividend policy, stock price volatility and investment decisions, the following hypotheses have been formulated to study the effect of dividend policy on stock price volatility and investment decisions:

H01: The dividend policy has an effect on stock price volatility in a short time.

H02: The dividend policy has an effect on stock price volatility in a long time.

H03: The dividend policy has an effect on investment decisions in terms of cash.

H04: The dividend policy has effects on investment decisions in terms of accrual.

Methodology

The statistical population and sample

The admitted firms in different industries constitute the statistical community of the present research. Among the admitted firms in different industries, the firms to which the following terms apply have been selected:

- Their fiscal year end should be March.
- They should be admitted into the Tehran Stock Exchange at least since the beginning of the fiscal year 2006.
- During the study period, their stocks on the stock exchange should be transacted and the transactions should not be interrupted for more than 3 months.
- The firms whose fiscal year has not been changed.
- They should not be among the investment firms, leasing and financial credit institutions.

After applying the above-terms, 65 firms were selected as the statistical sample of the research.

Research methods and research variables

According to the fact that the date of this study relates to corporate information and the results could lead to decisions of capital market participants, it can be said that the present research aims at a specific problem or issue and hence is considered as an applied research. On the other hand, since the causal relationship between the variables, i.e. the dividend policy, stock price volatility and investment decisions will be examined, the present research has been conducted as a cause after the occurrence.

The research variables include general and theoretical concepts. And research hypotheses are developed by making hypothetical relations between them.

The independent variables

1. Earnings per Share (EPS): this ratio is one of the important variables affecting the stock price which has been used by dividing the amount of the firm's earnings after tax by its number of stocks.

2. Dividend Per Share (DPS): the amount of cash dividend which, after being approved in regular meetings, is granted to stockholders.

3. Dividend Policy: the policy which is adopted by the firm in determining the amount of payment to stockholders and it has been operated through DPS/EPS ratio.

4. Firm Size: the firm size is achieved through the logarithm of the number of stocks in the firm.

5. Firm Growth: the firm growth rate is achieved based on a percentage of the difference in sales of the current year from the previous year divided by the sales of the previous year.

6. Financial Leverage: this ratio is the total debt divided by the firm's total assets.

The dependent variables

1. Stock Price Volatility (Y_1):In this research, stock price volatility of the firms is achieved through

the standard deviation of annual stock price divided by the average annual stock price and it will be examined in the following two cases:

Short time (Y_1): in a short time from stock price volatility since the beginning of the fiscal year until the day before the meeting.

$$\text{Stock price volatility } (Y_1) \text{ (short time)} = \frac{\text{The standard deviation of annual stock price}}{\text{Average annual stock price}}$$

Long time (Y_1): in a short time from stock price volatility during a year after the reopening of the symbolafterthe annual meeting before holding the meeting in the next year.

$$\text{Stock price volatility } (Y_1) \text{ (long time)} = \frac{\text{The standard deviation of annual stock price}}{\text{Average annual stock price}}$$

2. Investment Decisions (Y_2): the managers' investment decisions in terms of cash is achieved by dividing the cash consumed in investment activities by total assets of the previous fiscal year. And in terms of accrual, it is achieved by dividing the changes in non-current assets by total assets of the previous fiscal year.

$$\text{Investment decisions } (Y_2) \text{ (cash)} = \frac{\text{The cash consumed in investment activities}}{\text{Total assets of the previous fiscal year}}$$

$$\text{Investment decisions } (Y_2) \text{ (accrual)} = \frac{\text{Changes in non} - \text{current assets}}{\text{Assets of the previous fiscal year}}$$

Results and discussion

Descriptive analysis

The firm's size variance with the standard deviation of 1.38 has the maximum dispersion and the investment decision variable has the minimum dispersion around the mean. Thus, the other variables are placed between these two variables. Moreover, the firm's size variable has the highest average and the stock price volatility variable has the lowest distribution center in a short time.

Table 1. Descriptive analysis of the research data

Variable	Sign	Number of observations	Average	Standard deviation	Minimum	Maximum
Dividend policy	DPS/EPS	390	.7068	.2384	.002	1
Stock price volatility in a short time	Y_1short time	390	.0477	.0818	.00	.460
Stock price volatility in a long time	Y_1long time	390	.1358	.0827	.00	.358
Investment decisions in terms of cash	Y_2 cash	390	.0861	.0699	.00	.331
Investment decisions in terms of accrual	Y_2 accrual	387	.0504	.08541	-.065	.328
Firm growth	Growth	386	.1915	.2709	-.736	1.42
Financial leverage	Lev	390	.5594	.1648	.096	.833
Firm size	Size	390	18.63	1.38	12.10	23.065

The study of the way of data distribution

The first step to begin the process of testing hypotheses is to study the normality of the datum. In order to study the normality of the datum, the following assumptions have been formulated:

The data distribution is normal: H0, data distribution is not normal: H1. In order to test the hypotheses, Kolmogorov-Smirnov Test has been used and the results have been presented in table 2.

The results of the test (K-S) indicate that the distribution of the dependent variable of the research and also some of the independent variables follow a normal distribution.

Table of correlation between variables

In this research, the Pearson correlation has been used in order to determine the correlation between the quantitative variables. And the correlation matrixes between the variables have been provided in table 3.

Table 2. The results of Kolmogorov-Smirnov Test

Variable	Sign	Z	P-Value
Dividend policy	DPS/EPS	1.383	.068
Stock price volatility in a short time	Y_1short time	1.220	.098
Stock price volatility in a long time	Y_1long time	1.083	.147
Investment decisions in terms of cash	Y_2 cash	1.476	.065
Investment decisions in terms of accrual	Y_2 accrual	1.312	.088
Firm growth	Growth	2.048	.000
Financial leverage	Lev	1.342	.055
Firm size	Size	1.181	.137

Table 3. Pearson correlation matrix

Variable	Sign	DPS/EPS	Y_1short time	Y_1long time	Y_2 cash	Y_2 accrual	Growth	Lev	Size
Dividend policy	DPS/EPS	1							
Stock price volatility in a short time	Y_1short time	.301**	1						
Stock price volatility in a long time	Y_1long time	-.067	.063	1					
Investment decisions in terms of cash	Y_2 cash	-.009	-.082	.086	1				
Investment decisions in terms of accrual	Y_2 accrual	-.063	-.094	.044	.615**	1			
Firm growth	Growth	.077	-.028	.089	.059	.069	1		
Financial leverage	Lev	.019	.069	-.111*	-.320**	-.151**	-.071	1	
Firm size	Size	.032	-.022	.079	.214**	.120*	-.002	-.138**	1

*Significant at 95% confidence level**Significant at 90% confidence level

The first hypothesis test results

The first hypothesis states that: The dividend policy has an effect on stock price volatility in a short time. In order to test the first hypothesis the following model has been used:

$$Y_1 Short_{time} = \alpha + \beta_1 (Dps/ Eps_{i,t}) + \beta_2 (Size_{i,t}) + + \beta_3 (Growth_{i,t}) + \beta_4 (Lev_{i,t}) + \varepsilon_{i,t}$$

The first hypothesis model test results have been provided in table 4.

According to the first hypothesis test results which have been presented in table 4, the significance level of statistic F (0.000) is less than the acceptable error level (5 percent) and the overall regression model is significant. Statistic Durbin-Watson (1.858) is 1.5 to 2.5. Hence, there is no correlation between error components of the model. The examination of correlation between the independent variable that shows the eigenvalueequal to (0.993) is the status index of (1.007) and is less than number 15, which confirms the use of regression. The test results, due to the lower level (P-Value) of statistic t than the acceptable error level for the coefficient of β_1, indicate that the dividend policy has a direct and significant effect on stock price volatility in a short time. Thus, the first research hypothesis

cannot be rejected at the 95 % confidence level. Moreover, the research results show that the control variables entered in the regression do not have a significant effect on stock price volatility in a short time. Also, the coefficient of determination and the coefficient of adjusted determination indicate that the variables entered in the regression were able to explain 15% of the changes in the dependent variable.

Table 4. The first hypothesis test results

Variable	Sign	Beta	t	P-Value	Collinearity Statistics	
					Tolerance	VIF
Constant	α		-.567	.571		
Dividend policy	(DPS/ EPS) β_1	.299	6.108	.000	.993	1.007
Firm size	(Size) β_2	-.011	-.228	.820	.982	1.018
Firm growth	(Growth) β_3	-.046	-.944	.346	.989	1.011
Financial leverage	(Lev) β_4	.069	1.392	.165	.977	1.024
Regression	F	P-Value	(D-W)	R Square& Adjusted R Square		
	10.035	.000	1.858	R^2=.150 AdjR²=.129		

The second hypothesis test results

The second hypothesis states: The dividend policy has an effect on stock price volatility in a long time. In order to test the second hypothesis, the following model has been used:

$$Y_1\ Long_{time} = \alpha + \beta_1\ (Dps/\ Eps_{i,t}) + \beta_2\ (Size_{i,t}) + + \beta_3\ (Growth_{i,t}) + \beta_4\ (Lev_{i,t}) + \varepsilon_{i,t}$$

The second hypothesis model test results have been provided in table 5.

Table 5. The second hypothesis test results

Variable	Sign	Beta	t	P-Value	Collinearity Statistics	
					Tolerance	VIF
Constant	α		1.580	.115		
Dividend policy	(DPS/EPS) β_1	-.070	-1.375	.170	.993	1.007
Firm size	(Size) β_2	.066	1.298	.195	.982	1.018
Firm growth	(Growth) β_3	.088	1.738	.083	.989	1.011
Financial leverage	(Lev) β_4	-.091	-1.781	.076	.977	1.024
Regression	F	P-Value	(D-W)	R Square& Adjusted R Square		
	2.653	.033	1.724	R^2=.027 AdjR²=.017		

According to the second hypothesis test results which have been presented in table 5, the significance level of statistic F (0.033) is less than the acceptable error level (5 percent) and the overall regression model is significant. The examination of correlation between the independent variable that shows the Eigen value equal to (0.993) is the status index of (1.007) and is less than number

15.The eigenvalue and the status index are in a status which confirms the use of regression. The test results, due to the higher level (P-Value) of statistic t than the acceptable error level for the coefficient of β_1, indicate that the dividend policy does not have a significant effect on stock price volatility in a long time. Thus, the second research hypothesis cannot be accepted at 95% confidence level. The control variables of growth and leverage at 90% confidence level have a significant effect on stock price volatility in a long time so that the firm growth has a direct effect and the leverage has an opposite effect on stock price volatility in a long time.

The third hypothesis test results

The third hypothesis states: The dividend policy has an effect on investment decisions in terms of cash. In order to test the third hypothesis, the following model has been used:

$$Y_2\ Cash = \alpha + \beta_1\ (Dps/Eps_{i,t}) + \beta_2\ (Size_{i,t}) + + \beta_3\ (Growth_{i,t}) + \beta_4\ (Lev_{i,t}) + \varepsilon_{i,t}$$

The third hypothesis model test results have been provided in table 6.

Table 6. The third hypothesis test results

Variable	Sign	Beta	t	P-Value	Collinearity Statistics	
					Tolerance	VIF
Constant	α		-.193	.847		
Dividend policy	(DPS/EPS) β_1	-.017	-.365	.716	.993	1.007
Firm size	(Size) β_2	.175	3.624	.000	.982	1.018
Firm growth	(Growth) β_3	.040	.839	.402	.989	1.011
Financial leverage	(Lev) β_4	-.291	-6.035	.000	.977	1.024
Regression	F	P-Value	(D-W)	R Square& Adjusted R Square		
	14.516	.000	2.035	R^2=.167 AdjR^2=.143		

According to the third hypothesis test results which have been presented in table 6, the significance level of statistic F (0.000) is less than the acceptable error level (5 percent) and the overall regression model is significant. Statistic Durbin-Wtason (2.035) is 1.5 to 2.5. Hence, there is no correlation between error components of the model. The examination of correlation between the independent variable that shows the Eigen value equal to (0.993) is the status index of (1.007) and is less than number 15, which confirms the use of regression. The test results, due to the higher level (P-Value) of statistic t than the acceptable error level for the coefficient of β_1, indicate that the dividend policy does not have a significant effect on investment decisions in terms of cash. Thus, the third research hypothesis cannot be accepted at 95% confidence level. On the other hand, the research results, due to the low significance level of statistic t for the coefficients of β_2 and β_4, indicate that the firm size and leverage, among the control variables entered in the regression, have a significant effect on investment decisions in terms of cash so that the firm size has a direct effect and the leverage has an opposite effect on investment decisions in terms of cash.

The fourth hypothesis test results

The fourth hypothesis states: The dividend policy has an effect on investment decisions in terms of accrual. In order totest the fourth hypothesis, the following model has been used:

$$Y_2\ Accrual = \alpha + \beta_1\ (Dps/Eps_{i,t}) + \beta_2\ (Size_{i,t}) + + \beta_3\ (Growth_{i,t}) + \beta_4\ (Lev_{i,t}) + \varepsilon_{i,t}$$

The fourth hypothesis model test results have been provided in table 7.

According to the fourth hypothesis test results, the test results, due to the higher level (P-Value) of statistic t than the acceptable error level for the coefficient of β_1, indicate that the dividend policy does not have a significant effect on investment decisions in terms of accrual. Thus, the third research hypothesis cannot be

accepted at 95% confidence level. On the other hand, the research results, due to the low significance level of statistic t for the coefficients of β_2 and β_4, indicate that the firm size and leverage, among the control variables entered in the regression, have a significant effect on investment decisions in terms of accrual so that the firm size has a direct effect and the leverage has an opposite effect on investment decisions in terms of accrual.

Table 7. The fourth hypothesis test results

Variable	Sign	Beta	t	P-Value	Collinearity Statistics	
					Tolerance	VIF
Constant	α		-.457	.648		
Dividend policy	(DPS/EPS) β_1	-.065	-1.288	.199	.993	1.007
Firm size	(Size) β_2	.115	2.276	.023	.983	1.018
Firm growth	(Growth) β_3	.065	1.282	.200	.989	1.011
Financial leverage	(Lev) β_4	-.141	-2.775	..006	.978	1.023
Regression	F	P-Value	(D-W)	R Square& Adjusted R Square		
	4.591	.000	1.983	R^2=.105 AdjR^2=.094		

Conclusions

After the first hypothesis test, the results suggest that the dividend policy has a direct and significant effect on stock price volatility in a short time. And the results obtained correspond to the results of the research conducted by Puket and Friend (1964), Ghosh (2008), Khosh Tinat and Sarbanha (2003) and Shorvarzi and Nikoomaram (2010) and with the signaling theory. The second hypothesis test results suggest that the dividend policy does not have a significant effect on stock price volatility in a long time. The second hypothesis results are not consistent with the model proposed by Walter and Gordon regarding the effect of dividend policy and (stock) value of the firm, but they correspond to the theory of the irrelevance of dividend policy and (stock) value of the firm which has been proposed by Miller and Modigliani. Moreover, the third and fourth hypothesis test results state that the dividend policy does not have a significant effect on investment decisions in terms of cash and accrual and the results achieved correspond to the results of the research do not conducted by Puket and Friend (1964), Chen and Dhiensiri (2009), IzadiNia and Alinaghian (2011).

Suggestions for further research

According to the importance of the research topic and the studies carried out and also with regard to the results achieved from this research, the following suggestions seem necessary:

1. Stockholders and investors: Information plays a great role in stockholders' and investors' investment decision-making. Accordingly, it will lead to better and more accurate decision-making for the stockholders.

2. The Tehran Stock Exchange: The stock exchange is the financial and economic institution of each country which provides funds for economic activities. Thus, awareness of their new researchand updated findings can assist the stock exchange in playing its role.

3. Research universities and institutes: They can apply the others' research findings, take up new research and thereby engage in the production of new science.

4. Managers: The managers can use the research results in order to make the right decision about the improvement in the firm's performance.

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