

Dividend Policy and Stock Price Volatility: Evidence from Bangladesh

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Corporate dividend policy is mysterious and one of the puzzles in corporate finance. This study seeks to examine the relationship between dividend policy and stock price volatility. By using the cross-sectional regression analysis after controlling for earning volatility, payout ratio, debt, firm size and growth in assets, this paper identifies that there is an evidence of positive, but non-significant relationship between stock price volatility and dividend yield. An important implication of this study is that, the share price reaction to the earnings announcement is not similar to that of other developed countries. Therefore, the managers may not employ the dividend policy to influence their stock's risk. The influence of stock price risk through dividend may be also ambiguous due to the inefficient capital market in Bangladesh. This paper contributes to the reducing the dearth of studies on dividend and stock price volatility in emerging economies.

INTRODUCTION

The corporate dividend policy debate was ignited following the work of Nobel Laureate Modigliani and Miller (1958) and Miller and Modigliani (1961) hereinafter referred to as MM. This school of thought assumes that in a perfect world of capital market, the value of the firm is unaffected by the distribution of dividends; the firm value is determined solely by the earning power of the firm and the firm's earnings stream distributed between dividend and internally retained funds does not affect its value. According to MM (1961) propositions on dividend the ex-dividend price of the stock at the end of the period would go down by exactly same amount as the increase in the dividend or the value of the firm will remain independent in the ex and post dividend period. Due to such proposition, an individual dissatisfied investor can undo or alter the corporate dividend policy by reinvesting dividend (buying) or selling shares. As a result there is no particular advantage of one dividend policy that the firm might choose and the investors are indifferent of dividends and capital gain.

Another school of thought criticized the MM (1961) dividend irrelevance propositions and argued that the corporate dividend policy is highly relevant even the MM (1961) dividend

irrelevance theorem is irrelevant, as the company's dividend policy is not independent of its investment policy (Krainer, 1971; DeAngelo and De Angelo, 2006); the MM dividend irrelevance proposition is valid only for large class of models with asymmetric information (Dybvig and Zender, 1991). From the investors points of view, some investors prefer the current dividend (commonly known as 'bird in the hand' view) over the future dividends or capital gains, even if the promised dividend is larger (Gordon, 1959; Ross, 1977; Bhattacharya, 1979); the signalling or the information-content of dividends conveys relevant information to the shareholders or the investors (Pettit, 1976; Watts, 1973; Hakansson, 1982; Asquith and Mullins, 1983; Denis *et al*, 1994; Kao and Wu, 1994; Yoon and Starks, 1995; Nissim and Ziv, 2001); changes in dividend policy convey information about future earnings (Healy and Palepu, 1998; Benartzi *et al*, 1997).

However, certain shareholders may not prefer the current dividends as they are already in high tax brackets (Miller and Scholes, 1982; Asquith and Mullins, 1983). Retention of funds may defer the potential tax obligation or the retention of earnings in the form of stock dividend would result in a future capital gain in the form of increase in share price. The capital gain taxes are usually lower than that of personal marginal income tax and thereby there would be a clientele effect (Elton and Gruber, 1970; Bhattacharya, 1979; Kalay, 1982).

From the agency theory perspective, the declaration of dividend may be viewed as the means of resolving agency problem as outsiders will prefer the current dividends over retained earnings. If dividend is not distributed in the form of cash, it will give an opportunity to the insiders to use the fund for their personal use or to invest the fund to a non-profitable venture for the benefit of the insiders (Easterbrook, 1984; Jahera, *et al*, 1986; LLSV, 2000). Due to Jensen's (1986) 'Free Cash Flow Hypothesis' managers with free cash flow may increase the dividends that would otherwise be invested in low return projects or wasted. Payout to shareholders in the form of dividends reduces the resources under manager's control and thereby reduces the manager's power. The declaration of dividends informs to the investors that the managers are working in the best interest of the shareholders. Alternatively, the presence of taxable dividends may attract more institutional shareholders, who may directly or indirectly involved in the firm's corporate governance process and may in turn enable to run the firm well (Allen *et al*, 2000). However, there is a concern that the directors may manipulate the stock price by declaring the stock dividend (Matherly, 1923).

Therefore, there are controversies in both the dividend relevance and irrelevance arguments. Due to such controversy the corporate dividend policy remained mysterious and one of the puzzles in corporate finance (Easterbrook, 1984; Allen, *et al*, 2000).

DIVIDENDS AND SHARE PRICE

Although the MM proposition argues that the investors are indifferent of receiving dividend and price appreciation, the share price is not independent of the dividend announcement. Due to information content and signalling effect, dividend may influence the return and share prices (Walter, 1956; Gordon, 1959; Gordon, 1962; Lintner, 1962; Gordon, 1963; Friend and Puckett, 1964; Kalay, 1982; Asquith and Mullins, 1983; Ambrish *et al*, 1987; Baskin, 1989; Born *et al*, 1988). The dividend announcement provides information about the flow of funds and allows the market to estimate the firm's current earnings (Miller and Rock, 1985). Due to signalling effect, the increase in the stock price is not equal to that of the expected dividends. Due to discounted

value of dividend the stock price may even exceed the market value, which is known as the undervaluation in the market or overstatement of investor's assessment (Downs, 1991).

REVIEW OF LITERATURES

The earlier work on dividend-yield and stock price-volatility was conducted by Harkavy (1953); Friend and Puckett, (1964); Litzenberger and Ramaswamy (1982); Fama and French (1988); Baskin (1989) and Ohlson (1995) in the context of United States. These studies are largely non-conclusive. Although Friend and Puckett, (1964) for example found a positive effect of dividend on share price, Baskin (1989) found an inverse relationship between dividend yield and stock price volatility in United States. Outside the United States, such study was conducted by Ball *et al* (1979) and Allen and Rachim (1996) in Australian context. Although Ball *et al* (1979) found the positive impact of dividend yield on post announcement rates of return, Allen and Rachim (1996) failed to find any evidence that dividend yield influence the stock price volatility in Australia. Nishat (1992) in a study on Pakistan found that the share price reactions are significant following the earnings announcements. Conroy *et al* (2000) in a study found that earnings announcement has no material impact on stock price in Japan.

Although a numerous studies are conducted in the area of dividend policy, the study of dividend and stock price volatility on the emerging market is almost absent. This study seeks to examine if the earnings announcement in the form of dividend influence the future market value of shares in the emerging economy by considering Bangladesh as a case study. This study is an extension of Baskin (1989) study in the United States context and Allen and Rachim (1996) in Australian context. It may contribute to the finance literatures by reducing the dearth of studies on dividend and stock price volatility in the emerging economies.

THE HYPOTHESIS:

Based on the above discussion, the following null hypothesis can be proposed,

H₀: *There is no significant difference in stock price during the ex and post announcement of earnings in the form of dividend and that inter-industry variation will have no impact on stock prices.*

STUDY PERIOD, SAMPLE SIZE AND DATA

This study considers the data for the period of 1999-2006. The sample consisted of 104 non-financial firms listed in Dhaka Stock Exchange. Depending on the availability of company annual reports a total of 554 observations was made. The dividend, earnings and related accounting data was collected from company annual reports. The company share price was collected from the 'Monthly Review' of Dhaka Stock Exchange. The sample consisted of varieties of industries, such as, Cement, Ceramic, Engineering, Food and Allied, Fuel and Power, Jute, Paper and Printing, Pharmaceuticals and Chemicals, Service and Real Estate, Tannery, Textile and Miscellaneous industries. For simplicity and on the basis of market capitalization, these are reclassified into five broad categories, such as Engineering, Food and Allied, Pharmaceuticals and Chemicals, Textile and Miscellaneous industries.

VARIABLES DEFINITION

The variables of this study is derived from the earlier studies (such as, Gordon, 1959; Lintner, 1962; Fama and French, 1988; Baskin, 1989; Nishat, 1992; Allen and Rachim, 1996), linking the stock price, dividend, retained earnings and some other control variables. These are discussed below.

Price Volatility (P-Vol)

The price volatility is derived from Parkinson (1980) extreme value estimation of the variability of return. In this case, for each year, the annual range of stock prices is divided by the average of the high and low stock prices and then raised to the second power. These average measures of variance for all available years are transformed to a standard deviation by using a square root transformation. Parkinson (1980) method is known to be far superior to the traditional method of estimation, which uses closing and opening prices only.

Dividend Yield (D-YIELD)

The dividend yield is calculated as the ratio of cash dividend paid to common shareholders and the market value of common stock at the beginning of the year.

Earnings Volatility (E-VOL)

It is the standard deviation of the ratio of company's operating earnings before interest and tax (EBIT) to total assets.

Payout Ratio (P-OUT)

It is the ratio of company's total dividend to total earnings. To do so total dividend and total cumulative earnings are calculated for each year.

Long Term Debt (DEBT)

It is the ratio of company's long term debt (excluding the liabilities which are due within one year) to total assets.

Firm Size (SIZE)

Firm size is defined as the natural logarithm of market value of equity at the beginning of the year.

Growth in Assets (GROWTH)

The growth is calculated as the changes in assets from the beginning to the end.

REGRESSION MODEL SPECIFICATION

The model used in this study is similar to that of Baskin (1989); Nishat (1992); Allen and Rachim (1996), which can be specified as,

$$\text{P-VOL} = \alpha + \beta_1 \text{D-YIELD} + \beta_2 \text{E-VOL} + \beta_3 \text{P-OUT} + \beta_4 \text{DEBT} + \beta_5 \text{SIZE} + \beta_6 \text{GROWTH} + \epsilon$$

Where, α is the intercept, β is the regression coefficient and ϵ is the error term.

RESULTS

The descriptive statistics in table 1 provides the mean, median, minimum and maximum value of the variables. Although, the normality assumptions are required to be met in case of statistical analysis, the result of the study is not heavily dependent on the normality assumption as this study involves large samples (Kleinbaum *et al*, 1998) and it can be assumed that the stock prices follow a normal distribution.

Table 1
Descriptive Statistics of the Sample (N=554)

Variable	Mean	Median	Minimum	Maximum	Standard Deviation
Price Volatility (P-VOL)	0.802	0.413	0.000	8.513	1.145
Dividend Yield (D-YIELD)	0.224	0.042	0.000	6.258	0.695
Earnings Volatility (E-VOL)	0.037	0.025	0.001	0.495	0.052
Payout Ratio (PAYOUT)	0.447	0.419	0.000	1.947	0.355
Long Term Debt (DEBT)	0.222	0.103	0.000	3.027	0.378
Firm Size (SIZE)	4.553	4.364	0.534	9.342	1.794
Growth in Assets (GROWTH)	0.061	0.049	-0.274	0.896	0.132

The regression model developed above is regressed by using both the Ordinary Least Square (OLS) and 2 Stage Least Square Regression (2SLS). The regression results of the Dividend Yield (D-YIELD) and Price Volatility (P-VOL) is presented in table 2. The regression coefficients suggest that Dividend Yield (D-YIELD), DEBT and GROWTH are positive, but none of these are significant. The coefficients E-VOL, PAYOUT and SIZE are negative; however, only PAYOUT and SIZE are significant.

Table 2
Results of regression

	Coefficients	Beta	t-statistic	t-probability
(Constant)	1.606 **		3.921	0.000
D-YIELD	0.054	0.033	0.294	0.769
E-VOL	-0.269	-0.012	-0.116	0.908
PAYOUT	-0.600 *	-0.186	-1.807	0.074
DEBT	0.241	0.080	0.760	0.449
SIZE	-0.150 *	-0.235	-1.920	0.058
GROWTH	1.481	0.170	1.630	0.106

* At 5% level of significance and ** at 1% level of significance respectively.

From this analysis it is found that there is a positive, but non-significant relationship between dividend and stock price. The result of this study is consistent with earlier studies, such as, Allen and Rachim (1996) and Conroy *et al* (2000), but contradicts with Baskin (1989) studies, suggesting that the dividend does not have significant impact on share price.

Table 3
Correlation matrix of the variables

	1	2	3	4	5	6
1 D-YIELD	-0.097					
2 E-VOL	0.081	0.014				
3 PAYOUT	-0.222 *	0.139	-0.279 **			
4 DEBT	0.147	-0.083	0.275 **	-0.227 *		
5 SIZE	-0.230 *	0.478 **	-0.251 *	0.252 *	-0.309 **	
6 GROWTH	0.041	0.087	-0.232 *	0.193 *	-0.242 *	0.340 **

* At 5% level of significance and ** at 1% level of significance respectively.

The Pearson's correlations among the variables in table 3 suggest that there is a significant negative correlation between payout and price volatility implying that lower payout influence the price; significant negative correlation between earnings volatility and payout implying that companies with volatile earnings pay less; significant negative correlation between payout and debt implying that firms with higher level of debt pay less, as the firm may have other commitment, such as interest payment; significant positive relationship between dividend yield and size implying that larger firms have the ability and pay higher dividends; significant positive correlation between the payout and growth implying that firms with high growth make larger payout.

Further, it is assumed that the relationship between dividend policy and price volatility is due to broad industry patterns rather than individual differences among firms (Baskin, 1989). Therefore to represent the industry characteristics on dividend and stock price, the industry dummy variables are added to the model developed above. For simplicity the industry classified into the five broad categories, such as, Engineering (DUM1), Food and Allied (DUM2), Pharmaceuticals and Chemicals (DUM3), Textile (DUM4) and Miscellaneous (DUM5). Therefore the new regression model is as follows,

$$P-VOL = \alpha + \beta_1 D-YIELD + \beta_2 E-VOL + \beta_3 P-OUT + \beta_4 DEBT + \beta_5 SIZE + \beta_6 GROWTH + \beta_7 DUM1 + \beta_8 DUM2 + \beta_9 DUM3 + \beta_{10} DUM4 + \beta_{11} DUM5 + \varepsilon$$

The regression results of the Dividend Yield (D-YIELD) and Price Volatility (P-VOL) with other control variables and industry dummies are presented in table 4. Due to high multicollinearity the statistical software removed the Textile Dummy from the analysis. The regression coefficients confirm the similar results; the D-YIELD, DEBT and GROWTH are positive, but none of these are significant. The coefficients E-VOL, PAYOUT and SIZE are negative; however, only PAYOUT and SIZE are significant.

Table 4
Results of regression (with industry dummies)

	Coefficients	Beta	<i>t</i> -statistic	<i>t</i> -probability
(Constant)	1.614 **		3.736	0.000
D-Yield	0.156	0.094	0.847	0.399
E-Vol	-1.922	-0.088	-0.830	0.408
PAYOUT	-0.801 *	-0.249	-2.368	0.020
DEBT	0.230	0.076	0.734	0.465
SIZE	-0.208 *	-0.326	-2.612	0.010
GROWTH	1.636 *	0.188	1.846	0.068
EngrDum	0.883 *	0.265	2.426	0.017
FoodDum	0.066	0.044	0.404	0.687
PharmDum	0.275 *	0.274	2.458	0.016
MiscDum	0.085	0.154	1.384	0.170

* At 5% level of significance and ** at 1% level of significance respectively.

The regression coefficients of the industry classification suggest that, some of the industries have significant influence on dividend policy and stock price volatility in Bangladesh. Based on this analysis the null hypothesis is accepted with little modification.

There is no material impact on stock price during the ex and post announcement of earnings in the form of dividend and that inter-industry variation will have little impact on stock prices.

CONCLUSION

This study presented the evidence of relationship between the stock price volatility and dividend policy in Bangladesh, by using the cross-sectional regression analysis after controlling for earning volatility, payout ratio, debt, firm size and growth in assets. Our finding is not consistent with MM (1961) original dividend irrelevance proposition.

The differences of our findings are probably due the differences in institutional settings of Bangladesh with other countries. Shares of the listed public limited companies in Bangladesh are not widely held and the control of the companies remains in the hands of dominant shareholder groups. Representatives of these concentrated owners hold the position on the company board; therefore the dividend payment found not to be necessary as a signalling device or to reduce the manager's discretion over free cash flow. The finding of this study suggests that the managers may not employ the dividend policy to influence their stock's risk (Baskin, 1989). The influence of stock price risk through dividend may be also ambiguous due to the inefficient capital market in Bangladesh.

This study may have some limitations. For example the accounting standards are very poor in developing countries and therefore it may not reflect the true firm performance. Moreover the data mainly derived from the corporate annual report. The annual report may not be truly representing the company's state of the affairs. Moreover, the data are collected from the large number of observation of different corporate entities ignoring the underlying differences in organizations as in no way two organizations are same (Deegan, 2006). The extreme value of

few firm years may severely impact this study. These extreme values of some variables such as, net profits, retained earnings may have an impact on this study.

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