

# **Dividend policy and Price Volatility: A study on Dhaka Stock Exchange**

## **Introduction and Motivation**

Despite years of empirical and theoretical research, dividend policy still remains a mystery yet to be resolved, especially the aspects like dividend policy as determinants of the shareholders' wealth and share price risk. The motivation of this study is to establish an empirical relationship between the corporate dividend policy and the share price volatility. In the presence of dividend being taxed at higher rate than capital gain tax in many parts of the world and additional cost of initiating and administering the dividend payments and firms' internal rate of return on prospective investment being higher than the required rate of return of market in so many cases, the payment of a dividend by the firms is regarded something of puzzle. Black (1976 p. 5) epitomizes the lack of consensus by stating "The harder we look at the dividend picture, the more it seems like a puzzle, with pieces that just don't fit together."

Corporate Dividend Policy mainly attracted two schools of thoughts, the first one led Miller and Modigliani (1961) who proposed that under the premise of perfect capital market assumptions, dividend policy is irrelevant to the shareholder and stockholder wealth is unchanged when all aspects of investment policy are fixed and any increase in the current payout is financed by fairly priced stock sales. The proposition of dividend irrelevance is also supported by the empirical work of Black and Scholes (1974). However, alluding to an argument in the Miller-Modigliani paper, Black and Scholes emphasize the ability of firms to adjust dividends to appeal to tax-induced investor clienteles and argue that this supply effect may account for their finding of no significant relationship between dividend yields and stock returns. Using CAPM theory to test the association between dividend yield and expected return on an extended 30-year period data, Black and Scholes (1974) had concluded that different dividend policies might not lead to different stock prices. On the other hand, Hakansson (1982) concluded that under homogenous investor's belief and time additive utility assumption, dividends whether informative or not, is irrelevant to firm's value. M-M hypothesis can only be rejected if the principle of symmetric market rationality and the assumption of independence of irrelevant information are relaxed (Brennan, 1971).

Lintner (1956) showed in his study that dividend payout policy is an important determinant of the value of firm. Graham (1943), Gordon (1963) Linter (1962) have argued that even under the perfect capital market assumptions investors prefer a dollar of dividends to a dollar of potential capital gain from reinvested earnings because they view dividend as less risky. Gordon (1963) gives arguments in favor of Dividend relevance Theory and he supported the notion that a given amount of dividend is less risky than that of capital gain and company that pays dividend will have lower cost of capital than otherwise a similar company that does not pay dividend and the lower cost of capital should result in higher share price. Gordon also stated that paying large dividends reduces risk and thus influence stock price. Diamond (1967) was of the view that investors do prefer current dividends to future capital gain and the nature of association between growth of company and preference of dividend is negative.

The motivation of this study to assess the relevance of dividend policy by establishing an empirical relationship between dividend policy and share price volatility with particular focus on the Bangladesh Capital Market. The research is premised on the theoretical framework as created by Baskin (1989) in the US context and Allen and Rachim (1996) in Australian context.

However, this research is different from that of Baskin (1989) and Allen and Rachim (1996) in some ways; 1) it analyses Bangladeshi firms 2) it excludes firms in the finance sector because of their specialized regulatory nature 3) it makes use of more recent years where most economies have evolved greatly 4) it also incorporates the industry specific impacts on price volatility alongside the dividend policy 5) it thoroughly discusses the determinants of dividend policy as well as the theories of dividend policy.

## **Literature review**

Asquith and Mullins Jr, (1983) conducted research on relevance of dividend policy focusing on the information content of dividend. Asquith and Mullin (1983) suggested, “Initiating dividends increases shareholders' wealth”. The same is true for subsequent dividend increases. Incorporating the effects of the magnitude of dividends and investors' anticipation of subsequent increases, the wealth effect of subsequent dividend increases appears to be as large if not larger than the effect of initiation. A smaller initiation effect may result from the negative present value of taxes and/or financing costs. Dividend announcements provide the missing pieces of information about the firm and allow the market to estimate the firm's current earnings. Investors may have greater confidence that reported earnings reflect economic profits when announcements are accompanied by ample dividends (Miller and Rock, 1985). Healy and Palepu (1998) have suggested that dividend initiation/omission decisions reflect both past and future earnings performance and the market interprets the announcement of these decisions as managers' forecasts of future earnings changes. Al-Malkawi (2007) argued that to bridge this gap, management use dividend as a tool to convey private information to shareholders to bridge information gap between the management and the outside shareholders. Ross (1977) and Bhattacharya (1979) have argued that dividend policy could be employed as a signaling mechanism, whereby firms with profitable projects are able and willing to pay higher dividends in order to segregate themselves from firms with less profitable projects. They provide a rationale for value maximizing firms paying positive dividends when the risk premiums per unit of dividend yield are positive in equilibrium. Based on rigorous research conducted over 200 German firms, Amihud and Murgia (1997) established that dividend changes signal future prospect of the firm and these changes are associated with abnormal stock returns in the pre-announcement and post announcement phase. Based on rigorous research conducted over Cyprus based firms, it was established that dividend changes signal future prospect of the firm and these changes are associated with abnormal stock returns in the pre-announcement and post announcement phase (Travlos, Trigeorgis and Vafeas, 2001). Dividend policy changes do imply changes in future earnings trajectory (Benartzi et al, 1997).

Numerous studies have been conducted over relevance of dividend policy based on agency cost. Saxena (1999) postulated that agency cost is one of the key determinants of dividend policy. Jensen and Meckling (1976) proposed in their agency cost theory managers are not always perfect agents of the shareholders as opposed to MM (1961) and dividend payments reduce this agency costs and that is payment of dividends “motivates managers to disgorge cash rather than investing at below the cost of capital or wasting it on organizational inefficiencies”. It was evident that insider ownership and dividend payment had negative association; so firms with higher insider ownership opted out for lower dividend payment (Jensen, Solberg and Zorn, 1992). Chen and Dhiensiri (2009) postulated that insider ownership had negative impact over

dividend payment. Easterbrook (1984) believed that payment of dividend and subsequent additional debt issuance reduces agency cost by increasing the third-party screening. Easterbrook (1984) also supported this argument who identified two agency cost; the cost of monitoring of managers and the cost of risk aversion on the part of managers. Payment of higher dividend will eventually reduce manager's discretionary spending and it will reduce agency cost (Jenson, 1986). According to Holder, Langrehr and Hexter (1998) insider ownership and dividend payment had negative association thereby confirming the agency cost hypothesis.

Elton and Gruber (1970) researched on relevance of dividend policy based on clientele effects and concluded that since capital gain taxes are treated more favorably than dividend income taxes, there exists a tax-induced clientele. According to Dhaliwal, Erickson and Trezevant (1999) there exists tax-induced clientele even across institutional shareholders. As per Litzemberger and Ramaswamy (1982) stock price fluctuations can be explained by information asymmetry or tax effect of dividends. Managers try to cater the dividend distribution or earning retention need of shareholders (Baker and Wurgler, 2004).

Pruitt and Gitman (1991) found out that earnings volatility defines the nature of dividend payout. According to D'Souza (1999) there is a statistically significant and negative relationship between beta and dividend payout. There is a statistically significant and negative relationship between beta and the dividend payout; so it is expected that firms having a higher level of market risk will pay out dividends at lower rate (Rozeff, 1982; Lloyd, et al., 1985 and Collins et al., 1996). Baskin (1989) has showed that dividend policy do have effect on the risk of stock price, evidenced from his empirical results of significant and robust inverse association between dividend yield and share price risk which suggests that dividend policy per se affects stock price volatility in US contest. Allen and Rachim (1996) in the Australian context employed similar methodology put forward by Baskin (1989) and found significant negative relationship between the payout ratio and price volatility after controlling firm specific variables.

Research results related to dividend policy and stock price volatility relationship can be presented in the following table.

Authors' name and year of publication	Market studied	Sample size	Time frame	Research result
(Nazir et al., 2010)	Karachi Stock Exchange (KSE)	73	2003 -2008	Stock price volatility is negatively related with dividend yield and dividend payout.
(Hussainey et al., 2011)	London Stock Exchange (LSE)	123	1998-2007	Stock price volatility is significantly negatively related with dividend yield and dividend payout.
(Rashid and Rehman, 2008)	Dhaka Stock Exchange	104	1999-2006	They found a positive but non-significant relationship between dividend yield and stock price volatility.
(Amidu and Abor, 2006)	Ghana Stock Exchange	22	1998-2003	The association of dividend payout with risk is negative in nature.

Table – Research conducted on dividend policy and stock price volatility relationship

**The Linkage between Dividend and Price Risk**

In basic valuation process of a financial asset, price is expressed as a present value of cash flows expected from that financial assets discounted at a rate consistent with risk of the cash flows. If the relevant cash is expected dividend streams from a common stock, then price risk of common stock can be expressed as function of size, timing, and relevant risk of those dividends. Litzenberger and Ramaswamy (1982) showed that there is a positive and non-linear relationship between common stock returns and expected dividend yield. Gordon (1963) supported the notion that a given amount of dividend is less risky than that of capital gain and company that pays dividend will have lower cost of capital than otherwise a similar company that does not pay dividend and the lower cost of capital should result in higher share price. Gordon also stated that paying large dividends reduces risk and thus influence stock price. Fama and French (1988) examined the power of dividend yields to forecast the stock returns and concluded that high autocorrelation causes the variance of expected returns to grow faster than the return horizon and the growth of the variance of expected returns with the return horizon is attenuated by a discount-rate effect- shocks to expected returns generate opposite shocks to current prices. They concluded that on an average cumulative price effect of an expected return shock and the associated price shock is roughly zero.

Baskin (1989) and Allen and Rachim (1996) advanced four models which relate dividends to stock risk, these are the duration effect, the rate of return effect, the arbitrage pricing effect and the informational effect. The former two considered dividend as merely timing of cash flows of the underlying business whilst later two suggest that corporate managers can actively influence the share price volatility. However, as share price risk is also affected by many firm specific variables like leverage, earnings volatility, size and also industry effects, difficulty lies in setting adequate control variables to examine empirical relationship between dividend policy and share price risk.

**Duration Effect**

Baskin (1989) and Allen and Rachim (1996) used the duration effect to establish relationship between dividend yield and price volatility. In technical term, duration is the weighted average life of a financial asset using the present value of cash flows as the relevant weights. Baskin (1989) advocates that high dividend yield stocks will be less susceptible to discount rates because high dividend yields imply more near-term cash flow, resultantly are expected to show lower price volatility. To establish this fact mathematically, let's price, of *financial asset*

$$P = \sum_{t=1}^n CF_t / (1+r)^t \dots\dots\dots (1)$$

To express it more specifically, we can express equation 1 as

$$P = \sum_{t=1}^n CF_1 / (1+r)^1 + CF_2 / (1+r)^2 + \dots\dots\dots CF_n / (1+r)^n \dots\dots\dots (2)$$

We can also calculate the duration using the following equation

$$D = \sum_{t=1}^n \{CF_t \times DF_{1 \times t} / \}^* / P \dots\dots\dots(3)$$

Now for high yield common stocks, earlier cash flow like CF1 and CF2 will be higher, this will give lower duration, which in mathematical terms can be expressed as

$$\partial D / \partial CF < 0 \dots\dots\dots(4)$$

This lower duration of high dividend stocks mean less sensibility to changes in discount rate.

To demonstrate this, Gordon constant growth model can be used , which states that price of common stock , P<sub>0</sub> is

$$P_0 = D_1 / (r_e - g) \dots\dots\dots (5)$$

Where D<sub>1</sub> is dividend expected at the end of the 1<sup>st</sup> year, g is the constant growth in dividend and the r<sub>e</sub> is the cost of equity capital , now taking first derivative with respect to cost of equity from equation 5, we have

$$dP_0 / dr_e = -(D_1) / (r_e - g)^2 \dots\dots\dots(6)$$

By expressing the equation 6 with respect to discount rate as the ratio of r to dividend yield , we can analyze the effect of discount rate on dividend yield as follows

$$-(dP_0 / dr_e) / (P_0 / r_e) = r_e / (D_1 / P_0) \dots\dots\dots(7)$$

It is inferred from the above equation that given *cetiris paribus* , high dividend stocks will be less sensitive to changes in discount rates , hence will show low price volatility. Two points about the equations are worthwhile to mention , first , interest rate sensibility reflects mostly systematic risk and prediction of this model are apt to be more general than suggested under the restrictive assumptions like constant growth rate.

**Rate of Return Effect**

Walter (1963) showed the importance of the relationship between a firm’s internal rate of return, r and the cost of capital, k in determining the optimal dividend policy that will maximize the shareholder’s wealth. He showed that under some assumptions , price of a common stock can be expressed as

$$P_0 = D / K + \{r (E-D) / k\} / k \dots\dots\dots (8)$$

Where E = Infinite stream of Earnings and D = Infinite stream of Dividends

The equation clearly states that price of a stock is the sum of sources of income, 1) the present value of infinite stream of dividend and 2) the present value of infinite streams of earnings . As long as internal rate of return  $r$  is higher than  $k$ , the firms shows growth opportunities, and it is optimal for growth firm to maintain cent percent retention ratios ( zero payout or zero yield ) in the extreme case to maximize growth. This suggests that low dividend yields and low payout ratios may serve as proxies for growth opportunities. If forecasts of profits from growth opportunities are more subject to error than predictions of earnings from assets already in place, firms with low payouts and low yields may display more price volatility. Gordon ( 1963) suggested that a firm with a low payout and low dividend yield may be valued more in terms of its future investment opportunities than its `assets in place', resultantly stock price is expected to show higher sensibilities to changes in rate of return estimates over distant period and hence higher volatility of common stock price. Baskin ( 1989) and Allen and Rachim (1996), analytically demonstrated the point with the help of some simplifying assumptions . Assuming that firms employs a constant payout ratio  $(1 - b)$  where  $b$  is the amount of retained earnings and firm earns an internal rate of return  $r$  on all reinvested equity funds. Thus, the level of growth  $g$ , would be  $g = b \times r$ . Further assuming that there are no new common stock issues a constant discount rate  $Ke$  is used to discount future cash flows, recalling equation (5)

$$P_0 = D_1 / (r_e - g)$$

Substituting  $g = b \times r$  we get

$$P_0 = D_1 / (r_e - b \times r) \dots \dots \dots (9)$$

Now taking first derivative with respect to  $r$  we get

$$dP_0 / dr = bD_1 / (Ke - br)^2 \dots \dots \dots (10)$$

By multiplying the retention ratio by the internal rate of return and then dividing it by the dividend yield it is possible to express the equation price elasticity with respect to changes in the future internal rate of return

$$(dP_0 / D_1 k_e) / (P_0 / R) = br / (D_1 / P_0) \dots \dots \dots (11)$$

Essentially the equation 11 demonstrates that the sensitivities to projected future rates of return will vary inversely with both the dividend yield and payout ratio.

**Arbitrage realization effect**

Considerable literature shows that stock price may not only diverge from its intrinsic value, even it may take more time to converge market price close to intrinsic value of common stock in inefficient market. Baskin (1989) demonstrated a model which predicts that high dividend yield stock is less susceptible to under pricing (which shall contribute in reducing stock price volatility). To demonstrate model of Baskin in a situation a stock is being sold less than its intrinsic value, let's consider  $P$  be the stock price,  $P^*$  be the intrinsic value of the stock and  $D_1$  the expected dividend,  $r_e$  be the appropriate discount rate .

Also assume the discount of price from its intrinsic value is  $(1-A)$  so that  $P = (1-A) P^*$ . Now a fully informed investor who knows the extent of the underpricing and the value of the expected dividend in each period is assumed to be concerned with the return over the next investment period. This investor considers that others will not be aware of the underpricing and the stock will continue to sell at a discount of  $1 - A$  at the end of the period. If  $g$  is the rate of intrinsic capital gain, the expected rate of return by definition is

$$r_e = D_1 / P^* + g \dots\dots\dots(12)$$

Let  $r_a$  denote the expected return of the investor who is concerned with the mispricing. The informed investor buys at price  $P$  and receives an expected dividend yield  $D_1/P$ . If the expected capital gain is  $g$ , then the investor's expected return is

$$r_a = D_1 / P + g$$

$$\text{Or } r_a = r_e + A(D_1/P_0) \dots\dots\dots(13)$$

Equation (13) means that the excess return over the period is the product of the price discount  $A$  with the dividend yield  $D/P$ . More particularly a mispriced non dividend paying common stock which shows no tendency to return to its intrinsic value cannot provide an arbitrage profit. Alternatively an undervalued common stock that pays a liquidating dividend over the holding period provides a complete arbitrage profit irrespective of the efficiency or inefficiency of the market. The ability to earn excess return in between these above two mentioned scenarios is a linear function of dividend yield. Resultantly, the prediction of this model is that high dividend yield stock is less susceptible to under pricing.

**Information Effect**

The essence of information effect is that dividends convey information about the future earnings potential of the firms which in turn reduces the uncertainty of firms' future and hence should contribute in reducing the volatility of the stock price. Asquith and Mullin (1983) suggested from their study that "initiating dividends increases shareholders' wealth. The same is true of subsequent dividend increases. Miller and Rock (1985) Healy and Palepu (1998) are of the view that dividend announcements provide the missing pieces of information about the firm and allow the market to estimate the firm's current and future earnings. The implication of this information effect is that managers may impact the volatility of their firms' stock prices with dividend policy (e.g. higher payout may contribute in reducing the share price volatility) .

The duration effect and the arbitrage effect suggest that the dividend yield and not the payout ratio is the relevant measure of the influence of dividends. On the other hand, the rate of return effect implies that both the dividend yield and the payout ratio are relevant. Thus, both measures are included in this study. As a consequence, It is worthwhile to warrant an examination of dividend policy as determinants of the stock price volatility.

## **Control Variables**

A lot of firm specific and industry level variables are expected to impact the volatility of the stock price. Baskin (1989) , Allen and Rachim (1996), , Irfan and Nishat (2003), Rahman (2009) Hussainey and Mgbame (2011), Khan et al (2011) , Asghar (2011) used following control variables in testing the significance of the relationship between dividend yield and price volatility: operating earnings, the size of the firm, the level of debt, the payout ratio and the level of growth.

The underlying business risk (product risk) of a firm is expected to have significant impact on the operating earnings of the firms, which in turn impact the volatility of the stock price. So operating earnings of the firm is incorporated as the control variables in the study. Moreover , level of financial leverage used in the capital structure, holding operating risk constant will have direct bearing on the default probability on debt obligation and the earnings distributable to stockholders , and hence volatility of the stock price .

Financial leverages of firms are also taken into account in cross sectional study on the impact of dividend policy and stock price volatility. Size might affect the volatility of the stock's return as well. That is, the stock price of small firms when compared with prices of large firms will be more unstable as small firms tend to be less diversified than large firms. Besides this, there may be fewer market participants with the necessary knowledge for arbitraging price fluctuations. In addition, small firms are likely to have limited outlets of public information and their investors could be more likely to react irrationally to new events. A number of arguments suggest that the market in small stocks may be subject to illiquidity and high volatility, so the size of the firms may influence the choice of dividend policy of firms. Different industries are subject different types and extent of regulation and are also expected to face different level of operating risk, which shall cause a variation the dividend policy being followed across the industry. So, respective industry is taken as dummy variable as part of control variables.

## **Data and Methodology of the study**

### **Data**

The data set consists of all the non financial companies having continuously been listed with DSE from 2008-2012. Stocks, not being traded continuously or trade suspended or stocks delisted for considerable time due to non compliance, merger and acquisition, or transfer to OTC market are dropped from the study. Moreover, scripts of mutual funds are not included in the study. Stocks having not submitted their annual reports during the period under study and stocks of insurance companies are excluded from this study, thereby reducing the sample size for the period under study period. Certainly this selection process exposes the study to survivorship bias , but considering the sample size , number and size of companies dropped are not expected to affect the outcome of the study Monthly stock price are adjusted for stock dividend, right issue, cash dividend and stock splits to compute monthly stock return of the stocks. Moreover, because of unusual financial data, some companies have been eliminated from the study producing a sample of 101 companies each year and final sample observation of 505 companies over the 5 years period.

## **Methodology**

The methodology in this study is built upon the foundations put forward by Baskin (1989) and Allen and Rachim (1996). The relationship between ordinary stock price volatility and dividend policy has been analyzed utilizing regression method. The regression model developed basically relates price volatility with the two main measures of dividend policy – dividend yield and dividend payout ratio. In line with the recommendations by Baskin (1989), a number of control variables have been included to account for certain factors that affect both dividend policy and stock price volatility –Debt ratio Earnings Volatility and firm size.

### **Price Volatility (PV)**

Price Volatility may diversify for various firms; small firms may have different price volatility than larger firms. Keeping this view the varied size firms have been included in the study. 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 (DY).**

Dividend yield has been computed by taking the sum of annual cash dividends paid to stock holder's and then divided by the sum of average market value of stock in that year. The average of three years has been taken into account for this study.

### **Earning Volatility (EV)**

Earning volatility is calculated as the ratio of operating earnings to total assets. The deviation from average will be computed and thereafter standard deviation has been taken.

### **Dividend Payout Price Ratio (DP).**

The dividend payout price ratio for the year 2008-2012 will be calculated. This ratio has been computed as dividing the total cash dividends to the total earnings.

### **Firm Size (SIZE)**

Firm size is defined as the logarithm with a base of 10 of market value of equity at the beginning of the year.

### **Total Debt Ratio (DEBT)**

It is the ratio of company's total debt to total assets. Total debt has been taken instead of long term debt is because some companies under observation are highly dependent of short term debt financing. So, total debt has been taken instead of long term debt.

The multiple regression model using cross sectional time series data used in this study is similar to that of Baskin (1989); Nishat (1992); Allen and Rachim (1996), which can be specified as,

$$P-VOL = \alpha + \beta_1 D-YIELD + \beta_2 P-OUT R + \beta_3 E-VOL + \beta_4 DEBT R + \beta_5 \log SIZE + \epsilon \dots \dots \text{Equation 1}$$

$$P-VOL = \alpha + \beta_1 D-YIELD + \beta_2 P-OUT R + \beta_3 E-VOL + \beta_4 DEBT R + \beta_5 \log SIZE$$

N-1

$$+ \beta_6 \sum_{i=1}^{N-1} \text{Ind Dummy} + \epsilon \dots \dots \dots \text{Equation 2}$$

i =1

Where N is the number of industry dummy variables

P-VOL is a measure of price volatility

Where D-YEILD is dividend yield

E-VOL is a measure of earnings volatility

P-OUT is a measure of payout ratio

DEBT is a measure of total debt to total asset ratio

And the SIZE is a measure of size of the firm

Where,  $\alpha$  is the intercept,  $\beta$  is the regression coefficient and  $\epsilon$  is the error term.

### Empirical Results and Analysis

A broad description of the characteristics of the variables used in the study is given in table 1. The table showed that mean price volatility of the stocks is 0.68 with a standard deviation of 0.20, ranging from 0.34 to 1.22 for the period under consideration. As the study covers over a large pool of data set, the results of the study are not dependent on the normality assumptions (Kleinbaun et al, 1998) which is usually required for being met for the statistical analysis.

Table-1 Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Error	Std. Deviation	Variance
Price Volatility	99	0.34	1.22	0.68	0.02	0.2	0.04
Dividend Payout ratio	78	0.05	5.2	0.66	0.08	0.74	0.55
Dividend Yield	80	0	0.14	0.03	0	0.02	0
Total Debt ratio	99	0.33	4.64	0.53	0.05	0.49	0.24
Earnings	99	0	2.89	0.09	0.04	0.35	0.12

Volatility							
Firm Size	99	1.37	4.64	2.83	0.08	0.81	0.65

The mean dividend payout is 66 percent with standard deviation of 0.74, which showed that dividend payout is very volatile. Mean dividend yield for the companies under consideration has been found to be 3 percent ranging from 0 percent to 14 percent. It has been observed that firms under consideration for the study are highly leveraged on an average as mean total debt ratio is 53percent. Firm's size also varies significantly from log of market cap in million taka at the beginning of period of 1.37 to 4.64 with a mean value of 2.83.

Table 2 shows the correlation amongst the variables utilized for the study. From the table, it can be seen that the correlation between price volatility and dividend yield is positive (0.025) which is in contrast with that of Baskin(1989) which was -0.643, but it is in line with that of Allen and Rachim (1996) which was positive (0.006). Also the correlation between price volatility and dividend payout is positive 0.052 which is in contrast with both the Baskin's (1989) which was -0.542 and Allen and Rachim (1996) which was -0.210. The correlation table also shows a correlation between dividend yield and payout with values 0.269 which is quite below the 0.7. According to Drury (2008) multicollinerity problem exists when the correlation between two independent variables is equal to or greater than 70 percent (Drury, 2008). So here there is no multicollinerity problem in explaining the price volatility with both dividend yield and dividend payout ratios

Table-2 Cross-Correlations matrix between variables

Variable	Correlation and associated significance level	Price Volatility	Dividend Payout ratio	Dividend Yield	Total Debt ratio	Earnings Volatility
Price Volatility	Pearson Correlation	1	0.025	0.052	0.006	-0.058
	p value		0.828	0.649	0.952	0.571
Dividend Payout ratio	Pearson Correlation	0.025	1	0.269	-0.029	-0.037
	p value	0.828		0.017	0.801	0.75
Dividend Yield	Pearson Correlation	0.052	0.269	1	-0.154	-0.084
	p value	0.649	0.017		0.174	0.46
Total Debt ratio	Pearson Correlation	0.006	-0.029	-0.154	1	-0.127
	p value	0.952	0.801	0.174		0.21
Earnings Volatility	Pearson Correlation	-0.058	-0.037	-0.084	-0.127	1
	p value	0.571	0.75	0.46	0.21	
Size	Pearson Correlation	-0.574	-0.098	-0.061	-0.008	-0.086

	p value	0	0.392	0.593	0.941	0.399
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\*\* Correlation is significant at the 0.01 level (2-tailed) and

\*. Correlation is significant at the 0.05 level (2-tailed).

It has also being observed that size has a significant negative correlation on the price volatility which is in line with both Baskin's (1989) which was -0.542 and Allen and Rachim (1996). This observation confirms that as the size of the firms increases, price volatility decreases and vice versa given all the factors being held constant. Moreover, correlation matrix shows that total debt ratio has positive association with the price volatility which is statistically significant at 1 percent significance level. Negative correlation between dividend yield and earning volatility confirms our expectations that companies with volatile earnings are expected to pay lower dividends and to be regarded as more risky. The correlation between dividend yield (and payout ratio) and leverage are negative (-0.154) which implies that with higher levels of debt firms pay lower dividends (and has low payout ratio).

The results estimated from equation ( Table-3) having dividend yield and payout ratio as independent variables for overall period 2008 to 2012 over 100 companies in each year along with other control variables as recommended by Baskin's (1989) and Allen and Rachim are

The regression results show that dividend payout ratio has negative impact on the price volatility which is consistent with the study of Allen and Rachim (1996), Hussainey and Mgbame (2011), Rahman (2008) and Nishat and Irfan (2003) but contradicts with the study of Baskin (1989).

Table-3 Results of Regression

	Coefficients	Beta	t	Sig.
(Constant)	1.148		12.732	0
Dividend Payout ratio	-0.012	-0.044	-0.439	0.662
Dividend Yield	0.135	0.016	0.159	0.874
Earnings Volatility	-0.074	-0.142	-1.456	0.15
Size	-0.156	-0.592	-6.127	0
Total Debt ratio	-0.012	-0.031	-0.313	0.755
R square= 0.349				
F statistic = 7.67 and Sig of F value = 0.00				

The result showed that divided yield has positive impact on the price volatility and is statistically insignificant which is in contrast to the findings of Baskin (1989) , where he showed dividend yield has inverse and significant relationship with the 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. In Bangladesh contest, a

study conducted by the Rahman, found that dividend yield has positive (beta coefficient of 0.054) impact on the share price volatility and which is statistically insignificant (76.9 percent). The results of the Rahman in Bangladesh context for the study period from 1999-2006 is almost similar to my study where beta coefficient and its significance level has been found to 0.135 and 87 percent respectively.

Moreover, size of the firms has significant negative relationships on the price volatility which is in line with the literature and theoretical outcome. The results indicate that as the size of firms grows, its price volatility decreases. Leverage ratio of the firms has negative association with the price volatility which concludes that higher leverage leads to greater price risk and is in line the literature outcome. However, one conflicting results is that earnings volatility leads to lower price risk which is contrast to literature and theoretical outcome. One possible explanation for such conflicting outcome is that study period covered only the bullish cycle of the market; as a result, price of all the shares, on an average got positively affected during the bull run of the market irrespective of being exactly affected by earnings.

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 signs of all the coefficients remain same as being found in earlier regression output, only dividend yield has been found to have positive impact on the price volatility and other variables are found to have negative impact on the price volatility. Moreover, consistent with earlier results, here also it is found that size of the firm has negative and statistically significant impact on the price volatility, the results is consistent with the study of Hussainey and Mgbame (2011), Rahman (2008) and Nishat and Irfan (2003) and Baskin (1989).

Table-4 Results of Regression with Industry Dummy

	Coefficients	Beta	t	Sig.
(Constant)	1.236		11.499	0
Dividend Payout ratio	-0.024	-0.088	-0.753	0.455
Dividend Yield	0.111	0.013	0.116	0.908
Earnings Volatility	-0.055	-0.105	-1.039	0.303
Size	-0.158	-0.597	-5.094	0
Total Debt ratio	-0.027	-0.069	-0.622	0.536
Industry Dummy-Cement	-0.065	-0.062	-0.56	0.578
Industry Dummy-Pharmaceutical	-0.035	-0.067	-0.481	0.632
Industry Dummy-Engineering	-0.132	-0.242	-1.719	0.091
Industry Dummy-Miscellaneous	-0.065	-0.091	-0.74	0.462
Industry Dummy-Ceramics	0.135	0.105	0.884	0.38
Industry Dummy-Jute	-0.041	-0.032	-0.309	0.758
Industry Dummy-Tannery	-0.162	-0.176	-1.592	0.117
Industry Dummy-Food	-0.124	-0.205	-1.61	0.113
Industry Dummy-Power	-0.017	-0.028	-0.181	0.857
Industry Dummy-Information Technology	-0.172	-0.187	-1.649	0.104

R square 0.446			
F statistic 3.34 and Sig of F value = 0.00			

In the study after accounting the industry effects, it is observed that pharmaceutical, Jute and power sector have negative impact on the price volatility which is statistically significant at 5 percent level. Cement and Miscellaneous industry also have negative impact on the price volatility which is statistically significant at 10 percent level

### Conclusion

The key findings of this study are that dividend policy of firms has not any relevancy to price risk which is consistent with MM (1961) original dividend irrelevance proposition. The implications of these findings to the corporate managers are 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.

Another critical observation of this research is that irrespective of the dividend policy being followed by firms, size of the firms has significant negative influence on the volatility of the share price, which is consistent with the work of Baskin (1989), Allen and Rachim (1996), Hussainey and Mgbame (2011), Rahman (2008) and Nishat and Irfan (2003) and that of Rahman in Bangladesh contest. The implication of such findings to the investors who are desiring to have less risk when investing in share is that they can, irrespective of the size of the dividend policy, invest high market capitalization company to avoid price risk, at least to some extent.

It is being observed that though payout ratio as part of dividend policy has negative effect on the share price risk, which is the expectation to have relevance of dividend policy and consistent with the work of Allen and Rachim (1996), Hussainey and Mgbame (2011), Rahman (2008) and Nishat and Irfan (2003), but the results are not statistically significant. Moreover, dividend yield in this study is found to positive impact of share price volatility, though the study conforms to the work of Allen and Rachim (1996), Hussainey and Mgbame (2011), but the results are found to be statistically insignificant.

The different findings of this study is perhaps due to the unique characteristics of Bangladesh stock market which is deemed to largely inefficient and operates below weak form of market efficiency and investors are likely to be concerned with capital gain rather than dividend return. Furthermore, the presence of the institutional investors in holding the shares are quite low relative to the public shareholdings who does not mostly have, financial sophistications to understand such corporate matters. The domination of daily trade by the retail investors and the nature of the institutional and retail investors to trade on a very short term basis make up the unique characteristics of the capital market of Bangladesh. This uniqueness may be the answers as to why findings found in this study differ from others.

As the study are completely based on the data on the audited financial statements, and significant discretions of practicing accounting standards may fail to present the underlying performance of the firms and hence the findings of the study. Moreover, poor quality of accounting data provided on the financial statements and failure of the audit to track and report any

misstatements and misrepresentations in developing countries like Bangladesh are likely to hamper the findings of this study.

Since both management and investors are concerned about the volatility of stock price, this research has provided a light on the path way to discovering what moves stock price and important factors to be considered by investors before making investment decisions, and management in formulating dividend policies for their firms. This research also discussed some theories of dividend policy, determinants of dividend policy as well as theories of risk and dividends.

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