

Determinants of dividend payout policy: Evidence from Bangladesh

by

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Abstract. Dividend payout policy has potential roles to be considered as part of the firm's strength to operate smoothly in the corporate world. Profitability along with other essential factors has significant impact on dividend decisions of a corporation. Thus, it becomes an important issue for firm's to identify the factors determining dividend payout policy. Considering the existing literatures on dividend determinants, the paper attempts to construct an empirical model for selected commercial banks in Bangladesh and provide recommendations which will further develop the dividend payout policy for banks and other industry listed in Dhaka and Chittagong Stock Exchange (DSE & CSE). The empirical findings reveal that current earnings and liquidity has potential roles for firms to determine payout policy.

Key words: Dividend policy; Econometric model; DSE & CSE; Commercial banks

JEL classification: G32, G35

1 Introduction

The board of directors decides how much should pay as dividend to the stock holders of a firm (Ross et al. 2010). In general, growing firm retains income for its internal financing and pay less dividend since return on investment (ROI) is high in this regard. Therefore, it becomes an essential issue of interest in financial literatures to determine how much to pay to the stock holders either in cash or in stock. The former, that is, the cash dividends are two ways to disburse cash to stockholders: stock repurchases or dividends. Such dividends are paid out in currency and are usually taxable to the recipient in the year they are paid. The latter, that is, the stock dividends are those paid out in the form of additional stock/stocks of the issuing firm. Generally, stock dividends are issued in proportion to shares owned. To support and to have perfect measure of the factors identifying dividend payout policy, the study considers both cash and stock dividend. Several scholarly publications have attempted to develop theoretical models that managers should consider while making dividend payout decisions. Only few literatures, especially for dividend determinants in Bangladesh have focused on empirical estimations.

Particularly, dividend policy defines the payout policy that managers follow in deciding the size and pattern of cash distribution to stockholders during time. The potential contribution on dividend policy has been identified at Modigliani and Miller model (1961). Prior to their contribution, financial analysts believed that the more dividends a firm paid the more valuable the firm would be. But the M-M model defines dividend policies are irrelevant under perfect capital markets. Their findings suggest that dividend policy has no effect on either price of corporation's stock or its cost of capital. The view was imply derived from an extension of the discounted dividends approach to firm valuation, such as, V_0 of the firm at date 0, if the first dividends are paid one period from now at date 1, can be expressed as follows:

$$V_0 = \sum_{t=1}^n \frac{D_t}{(1+r_t)^t}$$

where

D_t = the dividends paid by the firm at the end of period t

r_t = the investors' opportunity cost of capital for period t

But, financial markets, in general, do not satisfy the strict conditions of perfect capital markets. This is because the presence of market imperfections, such as taxes, agency costs,

asymmetric information, and transaction costs that are unable to deduct from firm's value affects dividend irrelevance theory. Therefore, literatures suggest that the existence of market imperfections lead to develop several dividend theories, such as signaling theory, tax clientele theory, agency theory, residual theory and stability theory.

At the same time, investors' required rate of return r_t would increase with retention of earnings and increased investments (Gordon, 1959). This is because the future dividend stream would presumably be larger as a result of the increase in investment (i.e., D_t would grow faster). Higher r_t would overshadow this effect that Gordon identified. The reason for the increase in r_t would be the greater uncertainty associated with the increased investment relative to the safety of the dividends.

Several theoretical literatures on dividend payout policy have reconciled the indisputable logic of their dividend irrelevance theorem with the notion that both managers and markets consider payouts either in stock or cash as dividend from. The theoretical work on this issue suggests five possible imperfection that management should consider, such as, taxes, asymmetric information, incomplete contracts, institutional constraints, and transaction costs (Allen, Bernardo and Welch, 2000).

Previous empirical literatures have identified several factors that are important for dividend payout policy. Lintner (1956) identified the dividend payment pattern of a corporation is substantially attributed to current year earnings (E_0) and previous year dividends (D_{t-1}). Michel (1979) examined the extent to which industry dividend figures affect determination of a particular corporation's dividend policy. Followed by M-M model, the effect of tax on dividend payout policy has been observed to several literatures. However, major empirical investigations have been observed through related variables that are essential to identify and conclude what factors have significant impact on dividend payout policy (Black and Scholes, 1974; Miller and Rock, 1985; Fama and French, 1993; Baker and Powell, 2000).

2 Literature review

Large number of studies focuses on dividend payment patterns on firms. However, the main determinants of dividend payout that brought high attention are still in doubt among policy makers and researchers. For example, Black (1976) concluded that "it is difficult for firms to determine what factors are essential for dividend payout and what roles they can play to pay dividend to the stockholders." Findings from several empirical studies suggest that published earnings, agency cost, risk, size, taxes have more influence than others to determine dividend payout for firms. Among the factors indicated, published earnings/profits have long been identified as the primary factor of the firm's capacity to pay dividends.

Lintner's (1956) empirical observation that firms gradually adjust dividends in response to changes in earnings, has acquired the status of a stylized fact that on firm dividend policy. His study on US listed firms suggests that managers change dividends primarily in response to unanticipated and non-transitory changes in their firm's earnings, and they have reasonably well-defined policies in terms of the speed with which they adjust dividends towards a long run target payout ratio. Fama and Babiak's (1968) study has confirmed Lintner's original findings.

Modigliani and Miller's (1961) theory suggests that dividend are irrelevant to the firm's value under perfect capital markets. In general, financial markets do not satisfy the strict conditions of perfect capital markets. This is because that the existence of market imperfections has led to the development of a number of dividend theories such as signaling theory, tax clientele theory, agency theory, residual theory and stability theories of dividends.

Among new studies on dividend payout policy, Farrelly, Baker and Edelman (1986) conducted a study on 318 New York Stock Exchange (NYSE) listed firms and determined that dividend payments are substantially attributed to the level of future earnings and pattern of

past dividends. In line with the findings of Baker, Farrelly and Edelman (1986), Baker and Powell (2000) concluded that dividend determinants are industry specific and anticipated level of future earnings.

Income volatility (i.e., variability of year to year earnings) is identified as determinant for firm's dividend policy by Pruitt and Gitman (1991). They mentioned that a firm with relatively stable income is able to predict how much of its earning can be distributed to the stockholders. In line with this, they also indicate that a firm with stable income has higher chances of paying dividend than a firm with volatile income.

In order to Alli et al (1993), dividend payment policy is positively correlated with cash flows. Thus, the firms with higher cash flows have more ability to pay dividend to its stockholders than the firms with lower cash flows. Also, they find that current earnings do not have much impact on dividend payout policy.

Another study by Ho (2003) analyses the importance of liquidity on dividend payout policy. He argues that firms with higher liquidity pay more dividend than the firms with insufficient liquidity. Thus, this positive relationship is substantially supported by the signaling theory of dividend policy.

Several studies explain the firms dividend policy are more likely depend on their size since large firms are mature enough to have easier access to capital markets and be able to pay more dividends. Their study indicates that large firms can afford to pay higher dividends than the smaller ones and the relationship is supported by the transaction cost explanation of dividend policy (Ho, 2003 and Aivazian et al., 2003).

Based on the literature surveyed, the paper aims to identify the factors determine the dividend payout policy for banking sector in Bangladesh. By studying dividend payout of several banks using three econometric models, it is hoped to create a basis for future study of dividend determinants of other industry in Bangladesh

too. The empirical findings have significant roles for operators and policy makers to apply the same methodology to determine the dividend payout factors of other industries in Bangladesh.

3 Sample and data description

The study includes 11 commercial banks that are listed either in DSE or in CSE (Table 1). The rationale for choosing those banks because of the availability of data to determine factors affecting dividend payout policy, and for which there are at least 8 years period from 2003 to 2010 are covered. Overall, the sample consists of a balanced panel data of 11 banks with 88 total observations.

Related data are collected from DSE, an annual publication which provides information on consolidated balance sheet and profit and loss account items. The following data are collected from the sources indicated for the 8 years period 2003-2010 to support our statistical models as; percentage of stock dividend (DivStock), cash dividend (DivCash) and total dividend (DivTotal) as dependent variables and revenue (Sales), earning per share (EPS), net income (NI), cash and equivalents (CA), retained earnings (RE), and price-earning ratio (P/E) as its natural logarithmic figures. The dividends per share figures are adjusted into three categories for a good fit. The rationale for selecting consolidated data are; first, the use of consolidated data does not create a sample exclusion bias, and second, the selected bank's dividend policy is determined, in practice, after consideration of the annual consolidated accounts.

3.1 Descriptive statistics

The study explores three variables as dependent and six variables as independent (Section 3) variables for the accuracy of the empirical findings. Some descriptive statistics of the selected variables for the whole period are illustrated in Table 2. The first striking point is that the published NI, EPS, Sales, CA, RE and

P-E ratio covers all observations. But for the dividend payout (both for cash and stock) has zero value for several years. This means the firms were either unable to pay dividend or the data were unpublished in order to the annual report.

Therefore, the study includes total dividend as dependent variable too. Where N indicates the total number of observations for selected variables, n indicates the number of groups, and T indicates time-period.

Table 1: Banks used in the study

Arab Bangladesh Bank	Islami Bank
Bank Asia	National Credit and Commerce Bank
Brac Bank	Prime Bank
City Bank	Pubali Bank
Dutch-Bangla Bank	Ultra Bank
Eastern Bank	

Table 2: Summary statistics

Variable		Mean	Std. Dev.	Min	Max	Observations
DivStock	overall		168	0	823	N = 88
	between	96	64	19	200	n = 11
	within		157	-104	798	T = 8
DivCash	overall		42	0	342	N = 88
	between	16	21	0	69	n = 11
	within		37	-54	288	T = 8
DivTotal	overall		177	0	823	N = 88
	between	112	67	32	221	n = 11
	within		165	-109	801	T = 8
Sales	overall		5043698	462249	25400000	N = 88
	between	7040313	2587284	4796510	13500000	n = 11
	within		4391293	-	18900000	T = 8
EPS	overall		94	4	519	N = 88
	between	81	61	39	237	n = 11
	within		74	-118	363	T = 8
NI	overall		988973	13459	4485479	N = 88
	between	1050170	599803	483511	2556167	n = 11
	within		804518	-379529	3529874	T = 8
CA	overall		6769501	982144	39100000	N = 88
	between	7029673	6067529	2556786	24200000	n = 11
	within		3460254	-	21900000	T = 8
RE	overall		887077	-9096	4979826	N = 88
	between	702476	464605	291011	1633136	n = 11
	within		767083	-830413	4049166	T = 8
P-E	overall		15	3	106	N = 87
	between	18	6	11	27	n = 11
	within		14	-3	97	T = 8

Source: Author calculation

4 Empirical model and methodology

Lintner (1956) formalizes corporate dividend behavior as a partial adjustment model. His study conducted interviews with 28 carefully selected US firms to investigate the rational behind the dividend policy. For any year t , the target level for dividends, D^*_{it} for firm I , is related to current earnings, E_{it} , by desired payout ration r_i :

$$D^*_{it} = r_i E_{it}$$

In any given year the firm will only partially adjust towards the target dividend level. Thus, the formula is:

$$D_{it} - D_{i,t-1} = a_i + c_i (D^*_{it} - D_{i,t-1}) + u_{it}$$

Where a_i is a constant; c_i is the speed-of adjustment coefficient, with $0 \leq c_i \leq 1$; $D_{it} - D_{i,t-1} = \Delta D_{it}$ is the actual change in the dividend and $(D^*_{it} - D_{i,t-1})$ is the change in the dividend. Where, Fama and Babiak (1968) extend

the partial adjustment model using a lagged earnings variable. Their model is as follows:

$$E_{it} = (1 + \lambda_i)E_{i,t-1} + v_{it}$$

Where V_{it} is serially uncorrelated error term. A further assumption is that there is full adjustment of dividends to the expected earnings change $\lambda_i E_{i,t-1}$, and partial adjustment to the remainder.

The paper reports the results of each group of the three estimation techniques described as: OLS in levels, fixed-effects and random effects. This procedure shows that how much size of the speed adjustment coefficient and the one of the estimated target payout determinants vary across the different estimation techniques. The findings have several limitations due to the availability of data, but the estimations have attempted to compare results with those of previous studies which have mainly used basic OLS estimation.

Table 3: Estimation results (OLS model)

	Model 1			Model 2			Model 3		
	Dependent variable: stock dividend			Dependent variable: cash dividend			Dependent variable: total dividend		
	Coef.	t-value	P> t	Coef.	t-value	P> t	Coef.	t-value	P> t
Sales	0.0045	0.08	0.937	-0.0050	-0.68	0.503	0.0054	0.09	0.928
EPS	-0.2740	-1.32	0.191	-0.0062	-4.06	0.000***	-0.3314	-1.54	0.128
NI	0.0107	1.99	0.050**	-0.0278	-0.70	0.489	0.0012	2.18	0.033**
CA	-0.0049	-1.14	0.259	-0.0035	-1.04	0.309	-0.0062	-1.39	0.169
RE	-0.0048	-1.03	0.307	0.0078	2.31	0.030**	-0.0502	-1.04	0.301
P-E	1.4726	1.19	0.238	0.0126	0.88	0.387	1.2407	0.96	0.338
_cons	44.6521	1.04	0.300	3.6993	10.32	0.000***	64.0569	1.44	0.153
Number of obs	=	87		Number of obs	=	87	Number of obs	=	87
	R-squared	=	0.4109	R-squared	=	0.6549	R-squared	=	0.6173
	Adj R-squared	=	0.7064	Adj R-squared	=	0.5686	Adj R-squared	=	0.7148

***, **, and * represent 1%, 5%, and 10% significance levels, respectively

4.1 OLS model

Based on the literatures, the study explores Operating Least Squares (OLS) method at its first stage, and then panel data estimations (both fixed

and random-effects) at its second phase, to identify factors affecting dividend payout in Bangladesh. The following OLS equations can be tested as:

$$D_{it} = \alpha + \beta X_{it} + \varepsilon_{it} \quad , \quad \text{with} \quad D_{it} = \alpha + \varepsilon_{it} \quad \dots\dots\dots (1)$$

Taking the logarithm in both sides, the equation (2) can be written more specifically as:

$$\ln(D_{it}) = \alpha + \ln \beta^{Sales} + \ln \beta^{EPS} + \ln \beta^{NI} + \ln \beta^{CA} + \ln \beta^{RE} + \ln \beta^{P-E} + \varepsilon_{it} \dots\dots\dots (2)$$

where D_{it} is the measure of the dividend payment (cash, stock and total) of bank i in time period t . The disturbance term is denoted by ε_{it} . The definitions of other variables are discussed in

section 3. To meet assumptions made for dividend payout policy, Table 3 provides empirical results of OLS model.

The fitted model indicates that except NI with coefficient (0.0107) other variables have insignificant effect on stock dividend payout (model 1) while it identifies RE at 5% significant level with coefficient (0.030) an EPS with negative sign on cash dividend in order to the empirical estimations. As such, for firm’s total dividend is substantially depend on NI in order to the empirical estimations (model 3).

Table 4: Estimation results (fixed-effect model)

Model 1			Model 2			Model 3			
Dependent variable: stock dividend			Dependent variable: cash dividend			Dependent variable: total dividend			
	Coef.	t-value	P> t	Coef.	t-value	P> t	Coef.	t-value	P> t
Sales	-0.3158	-1.34	0.188	0.0402	0.12	0.904	0.0796	0.36	0.723
EPS	-0.7262	-6.76	0.000***	-0.0068	-2.96	0.010**	-0.0047	-3.21	0.002***
NI	0.1791	0.84	0.406	0.0047	1.98	0.067*	0.0039	1.75	0.085*
CA	0.1170	0.33	0.742	-0.0092	-1.46	0.165	0.0024	0.06	0.949
RE	0.1666	1.85	0.070*	0.1192	1.98	0.067*	0.0314	0.46	0.646
PE	-0.0763	-0.38	0.703	-0.4452	-1.62	0.125	0.2065	1.01	0.316
_cons	5.5794	1.25	0.219	3.1520	0.67	0.514	1.7993	0.55	0.585
R-sq:	within		0.6492	R-sq:	within	0.6727	R-sq:	within	0.4133
	between		0.4194		between	0.4194		between	0.4146
	overall		0.4673		overall	0.5598		overall	0.3831
Observations			81	Observations			81	Observations	81
Groups			11	Groups			11	Groups	11

***, **, and * represent 1%, 5%, and 10% significance levels, respectively

4.2 Fixed and random effect models

The empirical analysis focuses both fixed and random effect models as a special case of OLS model. It assumes that dataset being analyzed consists of a hierarchy of different banks used in the study whose differences relate to that hierarchy. Simply, the panel data estimations can be written as follows:

$$D_{it} = \alpha_i + \beta X_{it} + u_{it} \quad , \quad \text{with} \quad v_{it} = \alpha_{it} + u_{it} \quad \dots\dots\dots (3)$$

where D and X represents independent and dependent variables respectively. Or more specifically the model can be written in log form as

$$\ln(D_{it}) = \alpha + \sum \ln \beta_{it} X_{it} + u_{it} \quad \dots\dots\dots (4)$$

where D_{it} is dividend payment of the i th bank at time t , X_{it} is the vector of regressors, β_{it} is the vector of coefficients, $\alpha_i = \alpha$ are the fixed effects, and u_{it} is the error term, then α_i assumes a normal distribution with mean zero and a constant variance that allows to estimate the model representing u_{it} for the standard

error. The result of fixed and random effect model is illustrated in Table 4 and 5.

Table 5: Estimation results (random-effect model)

	Model 1			Model 2			Model 3		
	Dependent variable: stock dividend			Dependent variable: cash dividend			Dependent variable: total dividend		
	Coef.	z-value	P> z	Coef.	z-value	P> z	Coef.	z-value	P> z
Sales	-0.3050	-1.29	0.196	-0.0649	-0.23	0.818	0.0832	0.39	0.693
EPS	-0.7126	-6.90	0.000***	-0.0057	-4.53	0.000***	-0.0061	-5.44	0.000***
NI	0.2301	1.10	0.270	0.0037	1.76	0.078*	0.0048	2.35	0.019**
CA	0.1891	0.65	0.519	-0.0049	-1.84	0.066	-0.0036	-1.57	0.117
RE	0.1042	1.22	0.224	0.0854	1.61	0.101*	0.0110	0.18	0.860
PE	0.0368	0.19	0.847	-0.2433	-1.07	0.285	0.1322	0.75	0.452
_cons	4.0633	1.06	0.288	4.2265	1.02	0.308	2.4986	0.82	0.413
R-sq:	within		0.6492	R-sq:	within	0.6481	R-sq:	within	0.3972
	between		0.4194		between	0.5154		between	0.7564
	overall		0.4673		overall	0.5921		overall	0.481
Observations	81			Observations	81			Observations	81
Groups	11			Groups	11			Groups	11

***, **, and * represent 1%, 5%, and 10% significance levels, respectively

4.3 Results

Thus, the paper discusses three sets of results with three sets of models. The parameters estimates obtained from the empirical findings reported in Table 4 and 5 have important recommendations for banks and stakeholders to identify whether the selected variables have significant effect on dividend payout or not. In order to the estimations (both fixed and random effect model) EPS has identified negatively significant for dividend payout policy. While EPS is a great way to compare earnings across firms, but it does not provide anything about how the market values the stock. Thus, the fundamental analysis use the P/E ratio to figure out how much the market is willing to pay for a firm's earnings. For instance, it is assumed that firm's EPS is high will be lower dividend payout ratio and therefore, will have negative sign as determined from the estimation. So, it is calculated by taking the firm's annual dividends per share and dividing by its EPS. Thus, the higher the payout ration, the less confidence the company has that it would have been able to find better uses for the money it earned. Also, it has identified NI has positive effect on dividend payout with 5% to 10% significance at different estimations. NI provides

important recommendations for investors and policy makers because they give an indication of the company's expected dividends and potential for growth and capital appreciation.

In order to the estimations, the striking point is that banks revenue (Sales) has no effect on dividend payout for the selected samples. Thus, higher revenue always not an essential factor to determine dividend payout for banks. At the same time, P-E ration does not have any effect on dividend payout policy.

5 Conclusion

The extensive literature on dividend payout policy focuses the US or European listed firms. But this study attempts to examine whether the selected variables have significant roles to identify dividend payout policy for banks in Bangladesh or not. The findings can be applied to other industries and have proper recommendations for the operators. The banks with high liquidity or cash and equivalents (CA) may have significant role for dividend payout but the published bottom line CA figure may not correctly reflect the banks performance in order to the findings. The estimated payout ratio is much reflected to firm's performance on NI

rather than CA. It concludes that dividend payout of commercial banks is based upon NI rather than other variables selected in the analysis.

Although the paper applies a rigorous panel data analysis for determining the factors effect dividend payout, the existing variables and the number of samples cover only a small percentage of the overall analysis. The same analysis can be extended to other industries listed in the DSE and CSE in Bangladesh and can have fresh outlook to measure what are the key factors that determine dividend payout policy. Also, examining the influence of other factors such as size of the firm, degree of leverage (both operating and financial), market risk and regulation may have interesting recommendations for policy makers. Therefore, it requires a proprietary in-depth study of DSE and CSE listed companies to determine what factors, in particular, have significant roles and can be extended for future research.

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