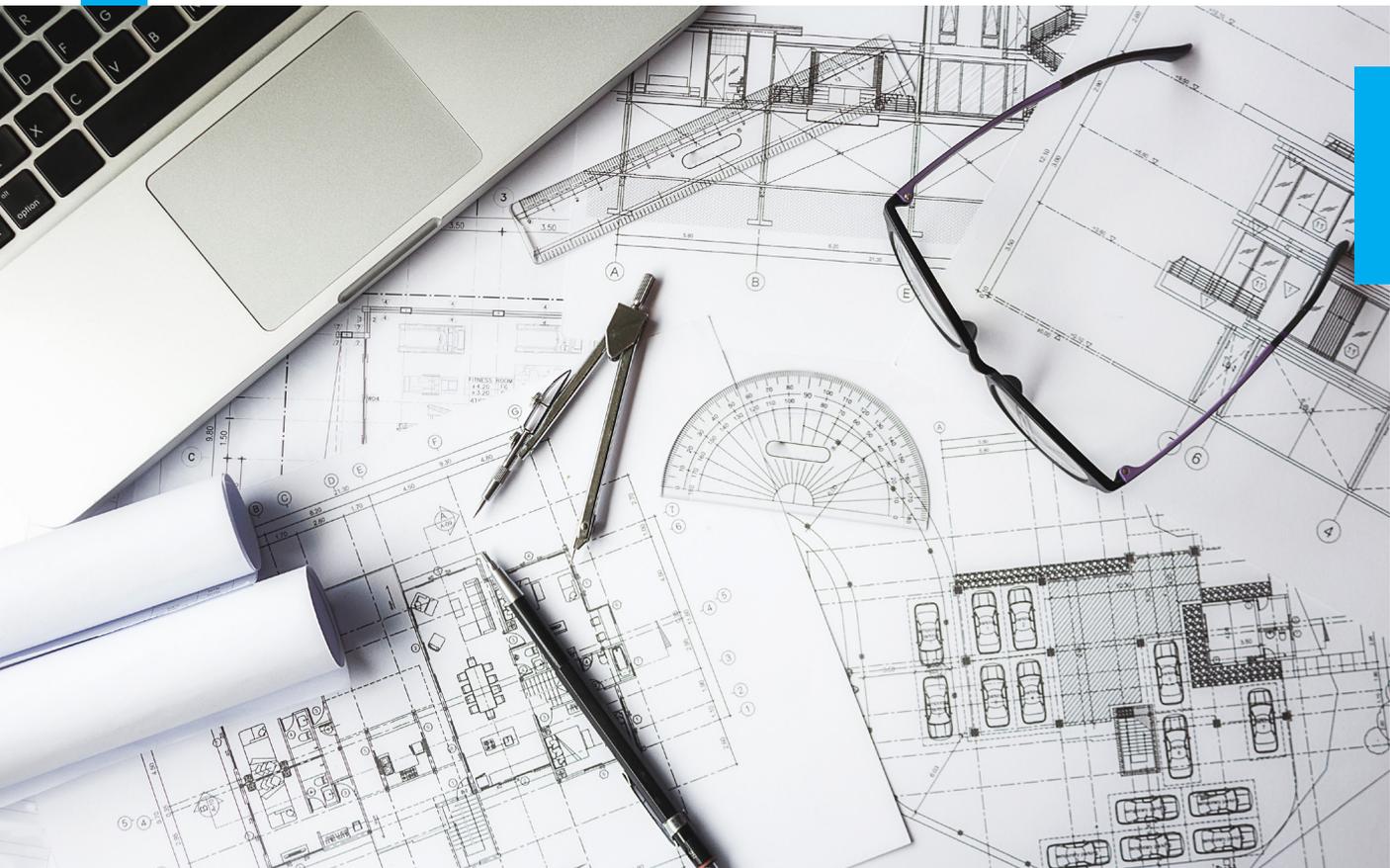


Structural Equation Modeling of Dividend Effect on Market Price of Shares: A Study on the Banking Sector of Bangladesh

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Abstract:

The impact of dividend on market price of share is a controversial issue. In order to better understand this issue with particular focus on the banking sector, a study has been conducted to determine the impact of Dividend per Share (DPS) on Market Price per Share (MPS). The structural equation modeling technique is used to analyze the data and it is found that the DPS has impact on MPS in the banking sector of Bangladesh. The finding supports the relevance theory of dividend on shareholder wealth. This finding will help the dividend decision maker for taking corrective dividend decision in banking sector of Bangladesh.

Keywords: Dividend, Market price, Regression model, Structural equation modeling (SEM)

1. Introduction

Dividend policy is one of the most widely researched topics in the field of finance but the question whether dividend policy affects stock prices still remains debatable among managers, policy makers and researchers for many years. Dividend policy is important for investors, managers, lenders and for other stakeholders. It is important for investors because investors consider dividends not only the source of income but also a way to assess company from investment point of view. It is the way of assessing whether the company is cash generative or not. Selecting a suitable dividend policy is an important decision for the company because flexibility to invest in future projects depends on the number of dividends that they pay to their shareholders. If company pay more dividends then fewer funds available for investment in future projects. Lenders are also interested in the amount of dividend that a company declares, as more amount is paid as dividend means less amount would be available to the company for servicing and redemption of their claims and finally it is important for other stakeholders especially for claimholders to help them in reducing agency cost. The basic objective of shareholder is to maximize their return and this return may be in the form of dividends or capital gain. Investors' decision regarding the return on investment is affected by dividend policy of the company. Arnold (2008) explains the main objective of dividend policy is to maximize shareholders' wealth by maximizing their purchasing power. So, maximizing shareholders' wealth depends on the dividend policy of the company because of this shareholder would satisfy their purchasing and consumption patterns.

Management of a company wants to maximize shareholders' wealth. This is possible when the price of the company's common stock is maximum value. Shareholders like cash dividends and they also like the growth in earning per share that result from investing the earning of business back into it. The best dividend policy is the one that maximizes the company's stock price which leads to maximization of shareholders' wealth and also ensures more quick economic growth. The present study is aimed to study how far the dividend payout has impact on shareholders' wealth in general and in particular to study that market value of common stock has strong relationship with cash dividend paid or with

the growth in earning per share. And to study that how much importance the shareholders give to the lagged market price of a stock when taking decision to buy a stock.

Managements' primary goal is shareholders' wealth maximization and this can be achieved by giving the shareholders payment on their investments. However, the effect of firm's dividend policy on shareholders wealth is still unresolved. Dividend policy is one of the most complex aspects in finance. There are mainly two schools of thoughts available in the field of finance that presented two different opinions about the dividend policy. One school of thought followed the opinion of Miller and Modigliani (1961) and considered dividend policy irrelevant while the second school of thought followed the point of view of Gordon (1963) and considered dividend policy relevant. Since the half century passed, the question still remains i.e. whether dividend policy is relevant or not. This dilemma yet exists, which theory the companies should apply for making their dividend decisions. For this reason, I want to study the impact of dividend on market value of shares and to identify the degree of influence of dividend on market value of firm.

2. Literature Review

Dividend payment policy is one of the most discussed topics and an essential theory of corporate finance which still has its significance. Many researchers presented numerous theories and pragmatic evidences, however the problem is quite unsettled and open for further debate. It is among the top ten unsettled issues in economic literature that does not have satisfactory clarification for the observed dividend behavior of the firms (Allen and Michaely, 2003; Black, 1976). Discussion of dividend policy cannot be completed without including the work of Linter (1956). Linter (1956) raised the question, which is still important, "what choices made by managers do affect the size, shape and timing of dividend payments?" After the contribution of Linter (1956), Miller & Modigliani (1961) introduced the concept of Dividend Irrelevance theory in which they explain that dividend policy does not affect the stock prices. Many researchers like Chen, Firth, & Gao (2002), Uddin & Chowdhury (2005), Denis & Osobov (2008) and Adesola & Okwong (2009) provide the strong evidence in the favor of dividend irrelevance theory and does not consider its relevance to the

stock prices. Gordon (1963) gave another view about the dividend policy by presenting the concept of dividend relevance theory. They said that the dividend policy affects the value of firm and market price of shares. Investors always prefer secure and current income in the form of dividends over capital gains. Studies conducted by Travlos, Trigeorgis, & Vafeas (2001), Baker, Powell & Veit (2002), Myers & Frank (2004), Dong, Robinson & Veld (2005) and Maditinos, Sevic, Theriou, & Tsinani (2007) support dividend relevance theory. Black & Scholes (1974) found no relationship between dividend policy and stock prices. Their results further explain that dividend policy does not affect the stock prices and it depends on investors' decision to keep either high or low yielding securities.

Uddin(2009)analyzed to identify what determines the share prices and there is a significant linear relationship between market price of stock and net asset value per share; dividend percentage; earning per share. Ali (2011) examines the long-run equilibrium relationship and the direction of causality between stocks. He found that the all share price index (DSI), in anyway, do not granger cause dividend yield; but all share price index (DSI) has bi-directional causal relation with market price earnings multiples and the first lag of the monthly average trading volume. On the other hand, unidirectional causality is found from all share price index (DSI)to the first lag of monthly average market capitalization but no causality is found from the opposite direction.

Kabir, Bhuiyan and Chowdhury (2013) attempt to identify the economic and psychological factors that impact the market price of shares of the listed Pharmaceutical companies in Dhaka Stock Exchange (DSE).They found that the percentage of shares held by public, and bad news about a particular company negatively influence the market prices of shares of that particular company. Masum (2014) analyzed to find the relation between the shares market price and the dividend policy of the banks. He found that the Model shows significant negative relation between Dividend Yield and Stock Price while Retention Ratio has a negative but statistically insignificant relationship with Stock Market Prices. He further shows that Return on Equity and Earnings per share have statistically significant positive impact on stock price and Profit after Tax has a significant negative impact on Stock Market Prices of the commercial banks of Bangladesh.

3. Research Gap

It is observed that the dividends policy implications on shareholders wealth carry diverse arguments from the previous researchers. One school of thought hold the notion that dividend policy does help maximizing the shareholders' wealth, however, the other argues that there is no such impact can be arguably supported. The very few papers are found in the context of Bangladesh which motivates us to study the impact of dividend on share prices and to justify the relevance of dividend of financial decision making in banking sector of Bangladesh.

4. Research Objective

To analyze the impact of dividend on market prices of shares in banking sector of Bangladesh

5. Research Design

5.1 Sample

We have taken the companies from banking sector which are enlisted before 2010 in DSE as population. From the population (30), it is taken 22 banks as a sample through the following sample size determination techniques.

$$n = \frac{N}{1+N(e)^2}$$

n = Sample size, N= Population size, e= level of precision)

The study period is 20 years from 1994 to 2013. This research is an analytical research based on secondary data. The data is taken from the sources: published annual reports of sample firms, monthly review of Dhaka stock exchange and website of DSE. The data is collected and tabulated for analysis. The stratified random sampling procedure is followed for data collection.

5.2 Hypothesis

H0: There is no association between dividend and Market price of share.

Variables used in study:

Dependent Variable: Shareholders' wealth is dependent variable which is measured with market price per share (MPS).

Independent Variables: Independent variables are Dividend Per Share (DPS), Earning Per Share (EPS), Retained Earnings Ratio (RER), Price Earnings Ratio (PE), Return on Equity (ROE), Dividend Yield (DY)

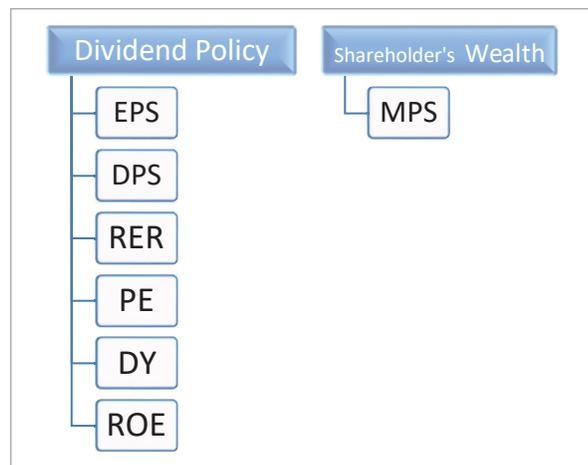
5.3 Model & Method

This theoretical statement could be framed as:

$$MPS_t = \alpha + \beta_1 DPS_t + \beta_2 RER_t + \beta_3 PE_t + \beta_4 EPS_t + \beta_5 ROE_t + \beta_6 DY_t + u_{it}$$

Structural Equation Modeling technique is also used to identify the optimum model and to verify the impact of dividend on Market price of share.

5.4 Conceptual Framework



6. Analytical Result

Structural Equation Modeling is used to show how models that better match the theoretical relationship among variables can enhance interpretability and different conclusion. Structural equation modeling (SEM), also known as path analysis with latent variables, is now a regularly used method for representing dependency (arguably “causal”) relations in multivariate data in the behavioral and social sciences.

We want to develop an optimum model by using structural equation modeling techniques.

Significant Variables

We have run the test of existing model ($MPS_t = \alpha + \beta_1 DPS_t + \beta_2 RER_t + \beta_3 PE_t + \beta_4 EPS_t + \beta_5 ROE_t + \beta_6 DY_t + u_{it}$) and have found the result in table 1 that the DPS, and DY are the significant variables which have the impact on the market price of share.

Table-1: Regression Weights: (Group number I - Default model)

			Estimate	S.E.	C.R.	P	Label
MPS	<--	DPS	28.425	5.344	5.319	***	
MPS	<--	EPS	3.262	1.769	1.844	.065	
MPS	<--	RE	-9.168	16.042	-.572	.568	
MPS	<--	ROE	-5.153	2.670	-1.930	.054	
MPS	<--	PE	4.203	11.913	.353	.724	

MPS	<--	DY	-42.720	11.721	-3.645	***	
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From the table 1, it is seen that the C.R.(critical ratio) of DPS, DY are 5.31, -3.64 respectively which have significant impact on the market price of shares.

Model Fit

This is a conventional null hypothesis significance test (NHST) for the goodness of fit test, albeit with the “hoped for” decision reversed so that the aim is now to “accept” the null hypothesis, and not reject it. If the discrepancy (expressed as a χ^2 variate) between the model implied covariances and the observed sample covariances is larger than the expected distribution value by a probability usually adjudged at a 0.05 threshold (as per convention in NHST), then the model is rejected as “not-fitting”. Conversely, if the fit statistic is less than the value expected, with a probability of occurrence >0.05 , then the model is accepted as “fitting”; that is, the null hypothesis of “no difference” between the model-implied population covariances and the actual observed sample covariances is not rejected. This test has become known amongst SEM users as the χ^2 “exact- fit” test.

Table-2 : Result (Default model)

Minimum was achieved
 Chi-square = 40.797
 Degrees of freedom = 15
 Probability level = .000

Here (table 2), the chi-square value is 40.79 and p- value is 0.0 which indicates the rejection of null hypothesis. So, this model does not fit and the modification is required to get the optimum model.

Modifying the model to obtain the Optimum model

Evaluating Model fit

From the modified model, it is seen that the chi-square value is zero(table 3). So, the null hypothesis is accepted that the model fit the data. So, it indicates that the modified model is an accepted model. Since the minimum was achieved, we can proceed further for calculation and interpretation.

Table-3 : Notes for Model (Default model)

Computation of degrees of freedom (Default model)

Number of distinct sample moments: 9
 Number of distinct parameters to be estimated: 9
 Degrees of freedom (9 - 9): 0

Result (Default model)

Minimum was achieved
 Chi-square = .000
 Degrees of freedom = 0
 Probability level cannot be computed

Optimum Model

Figure -1, indicates the optimum model which mentions the impact of the dividend along with DY on the market price of share.

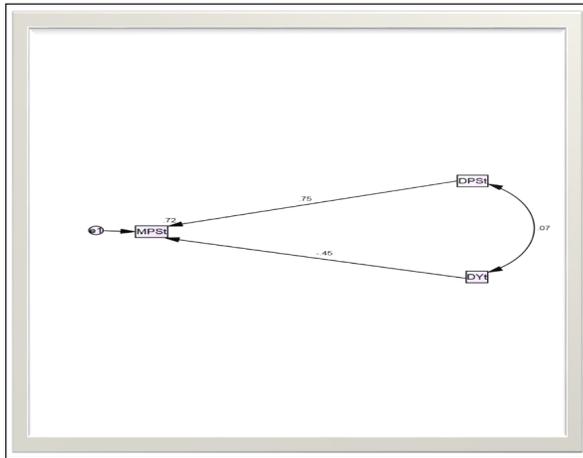


Figure-1: Optimum Model of impact of DPS on MPS

The standardized regression weights and the correlations are independent of the units in which all variables are measured; therefore, they are not affected by the choice of identification constraints. The correlation between DPS & DY is .07. The entries 0.75 and -.45 are standardized regression weights of DPS, DY respectively. The number .72 is the squared multiple correlation of MPS with DPS, DY.

Significant of the variables (Regression Weights)

From the table 4, it is seen that the C.R of DPS and DY are 6.183 and -3.71 which are statistically significant. So, it is certain that the DPS and DY have impact on the market price of share.

	Estimate	S.E.	C.R.	P	Label
MPS <--> DPS	37.920	6.133	6.183	***	par_1
MPS <--> DY	-50.022	13.451	-3.719	***	par_2

	Estimate
MPS <--> DPS	.751
MPS <--> DY	-.451

	Estimate	S.E.	C.R.	P	Label
DPS	21.306	2.455	8.680	***	par_5
DY	3.483	1.119	3.112	.002	par_6

	Estimate	S.E.	C.R.	P	Label
DPS	59.143	150.733	.392	.695	par_4

	Estimate	S.E.	C.R.	P	Label
DPS <--> DY	3.605	12.017	.300	.764	par_3

	Estimate
DPS <--> DY	.069

	Estimate	S.E.	C.R.	P	Label
DPS	114.762	37.187	3.086	.002	par_7
DY	23.855	7.730	3.086	.002	par_8
e1	81824.004	26514.008	3.086	.002	par_9

	Estimate
MPS	.721

Squared Multiple Correlations:

Squared multiple correlations are also independent of units of measurement. The squared multiple correlation of a variable is the proportion of its variance that is accounted for by its predictors. In the present study, DPS, DY account for 72% of the variance of MPS.

Model Fit Summary:

Table- 5 :Model fit summary

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	9	.000	0		
Saturated model	9	.000	0		
Independence model	3	24.378	6	.000	4.063

Model	NFI Delta 1	CMIN rho 1	IFI Delta2	TLI rho2	CFI
Default model	1.000		1.000		1.000
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Model	PRATIO	PNFI	PCFI
Default model	.000	.000	.000
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

Model	NCP	LO 90	HI 90
Default model	.000	.000	.000
Saturated model	.000	.000	.000
Independence model	18.378	6.773	37.526

- CMIN – minimum value of the discrepancy between the model and the data. This is the same as the chi-square statistic. Here, CMIN is 0 which indicates the model fit.
- Baseline Comparisons – NFI [Normed Fit Index] shows how far between the (terribly fitting) independence model and the (perfectly fitting) saturated model the default model is. In this case, it's 100% of the way to perfect fit.
- Parsimony-Adjusted Measures – The PRATIO [Parsimony Ratio] is an overall measure of how parsimonious the model is.
- NCP – the noncentrality parameter. The columns labeled “LO 90” and “HI 90” gives the 90% confidence interval for this statistic. This statistic can also be interpreted as a chi-square, with the same degrees of freedom as in CMIN. Here, this value is 0 which indicates the support of model fitness.

Optimum Model:

$$MPS_t = \alpha + \beta_1 DPS_t + \beta_2 DY_t + e_{it}$$

7. Summary of Findings

The correlation between DPS & DY is .07. The entries 0.75 and 0.45 are standardized regression weights of DPS, DY respectively. The number 0.72 is the squared multiple correlation of MPS with DPS, DY. The C.R of DPS and DY are 6.183 and -3.71 which are statistically significant. So, it is certain that the DPS and DY have impact on the market price of share. So, Structural equation modeling reveals that the DPS has positive impact on the market price of share which supports the relevance theory of dividend policy.

8. Recommendations

The DPS is the significant factor for market price determination which supports the relevance theory and against the irrelevance theory. The pioneer of irrelevance theory, Miller and Modigliani (1961) assumed that the market should be perfect, there will be no tax, no floatation cost which are absent in our market. So, the dividend relevance theory is

present in emerging market. The companies should follow continuous dividend policy practices with a view to boosting investor morale as well as keeping stock market as safe harbor for investment and financing.

9. Conclusion

The impact of dividend on market price of share is a controversial issue. To solve this issue in our market perspective in banking sector, this study is done whether there is impact of DPS on MPS or not. The study is conducted on financial sector and is found that the DPS has impact on MPS. The finding supports the relevance theory of dividend on shareholder wealth. This finding will help the dividend decision maker for taking corrective dividend decision. 

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