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DETERMINANTS OF DIVIDEND POLICY WITH SEM APPROACH: STUDY ON NON-FINANCIAL SECTOR OF BANGLADESH

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Abstract

A firm considers various factors when approaching a dividend policy decision to analyze the determinants of dividend policy in the context of Bangladesh; it is taken data of various financial indicators of sample companies. The structural equation modeling is used for inferring the result. The result shows that the SG is negatively related to DPR and LIQ, RISK, OWNSP, ROA, lagged DPR are positively related to DPR. The decision maker, investors and other stakeholders should follow these findings.

Key Words: Structural Equation Modeling (SEM), EPS, MM Model, Lintner model.

Introduction

Dividend may be defined as the distribution of created value to the shareholders. It may be a form of 'Cash Dividend' or through distribution of stocks of the company which is known as 'Stock Dividend'. Dividend policy may be defined as the trade-off between the magnitude of retained earnings and distributed cash or securities. Dividend decision should not merely be taken to be a decision of appropriation of profits to the shareholders. There are several complex issues in it. As such, the factors influencing the dividend decisions have always been put under scanner by the experts and researchers in the field of financial management. Dividend payment of a company is looked upon differently by different sets of people associated with the company. For the investors, dividends are not merely means of regular earnings but also an important input for determining the worth and credential of the firm. For managers, dividend payment might well determine the level of investment in profitable investment projects. Lenders look at it carefully because they feel that the more the dividend payment, the less will be the amount available for servicing and redemption of their claims.

Corporate dividend behavior is looked upon in many ways by the experts in the area of financial literature. Several theories evolved explaining corporate dividend behavior. One such theory is known as 'Signaling Theory'. According to this theory, a firm uses dividend policy as a mechanism to signal outsiders regarding the stability and growth prospect of the firm. Aharony & Swary (1980), Asquith and Mullins (1983) are the proponents of the signaling theory of dividend decision. However, recent studies have not supported this hypothesized relationship between dividend changes and future earnings (DeAngelo & Skinner, 1996); (Benartzi *et al*.,1997). Another theory in respect of corporate

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dividend policy goes by the name of 'Incumbency Rent Theory'. Fudenberg & Tirole (1995) are the proponents of this theory. According to this theory, if managers enjoy private benefit from being in control, they individually and rationally, smooth dividends. So, in bad times, they pay out too much dividends to lengthen their tenure and in good times, the managers are not to be worried about their tenure in office and naturally opt for lower dividend payment. Again, there is the 'Agency Theory' of dividend payment. According to this theory, dividend policies address agency problems between corporate insiders and outside shareholders. This theory suggests that, unless profits are paid out to shareholders, they may be diverted by the insiders for personal use or committed to unprofitable projects that provide private benefits for the insiders. As a consequence, outside shareholders have a preference of dividends over retained earnings. There is still another theory in the name of 'Tax Clientele Theory'. This theory is based on comparative tax treatment associated with cash received on account of current dividend and cash to be received in the future as capital gains arising out of change in share price. This theory uses the relative tax advantage of paying dividend now or retaining the excess cash for future capital gains in explaining the dividend behavior of firms. This theory suggests that the tax on dividend (& tax on current income) is greater than or equal to the tax on capital gains (& tax on future income). Again, tax on dividend is to be paid now while tax on capital gains is to be paid in future. Thus, according to this theory. the optimal dividend policy is no or very low dividend payment. Brennan (1970), De Angelo (1991) and some others are the proponents of this theory of dividend decision. Even after such a long period of time, since corporate dividend behavior emerged as one of the well-researched areas in financial management, dividend decision is still one of the tho rniest puzzle in corporate finance.

Hedensted & Raaballe (2007) found that the characteristics of dividend payers are: positive earnings, high ROE (net earnings to book equity), low volatility in ROE, high retained earnings, large firm size, and whether the firm paid out dividends in the previous year. MV/BV, leverage and owner structure play no role in whether a firm pays dividends or not.

Anil & Kapoor (2008) attempted to empirically analyze the determinants of dividend payout ratio of Indian Information Technology sector. The paper also focuses on identifying whether various factors available as per literature influence dividend payout ratio in IT sector in India in existing scenario or not. Statistical techniques of correlation and regression have been used to explore the relationship between key variables. Thus, the main theme of this study is to identify the various factors that influence the dividend payout policy decisions of IT firms in India.

Gupta and Banga (2009) studied on the determinants of corporate dividend policy. A dividend decision of a firm is an outcome of various considerations. These considerations differ across time and industry. The study re-examines various factors that have a bearing on the dividend decision of a firm by using a two-step multivariate procedures. First, factor analysis is performed on the data to extract prominent factors from various variables and then multiple regressions is conducted

such factors. Results of factor analysis indicate that leverage, liquidity, profitability, growth and ownership structure are the major factors. Regression on these factors shows leverage and liquidity to be the determinants of the dividend policy for Indian companies.

Mehdi Moradi *et al.* (2010) studied on Dividend Policy that involves extremely important financial decisions which serve as a basis of numerous theories. However, these theories have been developed in different fields, and according to some evidence, this policy remains a kind of dilemma in the financial cycles of corporations. Thus they deal with them as one of the ten most crucial problems of corporations. The aim of this study is to elaborate a model which would enable us to examine the effects of dividends in relation to profitability, size, beta rate, the rate of retained earnings, P/E, and debt ratio. In other words, their aim is to find an answer to this question: Do these above mentioned factors affect the dividend policy in Iran or not? This research covers all listed companies in the Tehran Stock Exchange between 2000 and 2008. According to the results of the study, there is a direct relationship between dividend and profitability. However, the results also reveal that there is a reverse relationship of these factors with P/E, beta rate and debt ratio. Furthermore, the results of the study show that there is no meaningful relationship between the dividend policy and a company's size and rate of retained earnings.

Huda & Farah (2011) explored the determinants of the dividend policy of firms in the banking industry of Bangladesh. Dividend decision of a bank basically depends on its size, profitability, liquidity and retained earnings. The study is an attempt to find out the key dividend determinant variables and their impact over cash, stock, and total payout ratio. Statistical techniques of simple and multiple regressions have been used to explore the relationships between variables. The investigation results show the predictor variables have a significant relationship with stock payout and an apparent relationship with cash payout. Among all the independent variables, net income turns out to be most influential indicator in elucidating dividend payouts.

Sumaiya (2013) studied to determine factors that had statistically significant impacts on the dividend policy of banks with multiple regression analysis and it was found that bank profitability, growth, and size were not significant in explaining bank dividend policy in 2006. However, their role in explaining dividend strengthens with time till 2010.

Ahmed and Mukit (2014) identified the impact of various factors determining the firm's dividend paying behavior in the capital market of Bangladesh. They found that in Bangladesh, profitability, corporate tax, and market to book value ratios are the significant determinants of dividend payout ratio and operating cash flow per share, current ratio, and debt to equity ratio are the insignificant determinants of dividend payout ratio.

Factors affecting such a decision remain to be one of the areas where academicians and researchers are introspecting and have to do a lot. It is observed that the research work in this field is not sufficient in Bangladesh. This issue motivates us to conduct the study in this field. Previous results also show that dividend rate is more or less explained by a good number of explanatory variables. But the explanatory power of these variables comes down considerably in the matter of their relation with dividend

payout or dividend yield. The purpose of the study is to identify the determinants of dividend policy decision and its nature of influence on dividend decision in the capital market of Bangladesh.

Materials and Methods

Sample

The study has been carried out based on secondary data obtained from published annual reports of sample firms, monthly review of Dhaka stock exchange and website of DSE. The sample includes listed financial firms of DSE. Eighty six companies from manufacturing sector have been taken as sample. The sample period is 20 years from 1994 to 2013 for the study.

Hypothesis: H_0

Dividend payout is not influenced by the factors: Lagged dividend payout ratio, earnings per share, cash flow, sale growth, liquidity, institutional ownership, sponsor ownership, individual ownership, leverage, risk, age, size, relative tax, return on assets, investment opportunity, retained earnings to equity.

Variables used in study

Dependent Variable (Dividend Payout Ratio (DPR) - Independent Variables) : Lagged dividend payout ratio, earnings per share, cash flow, sale growth liquidity, Institutional ownership, sponsor ownership, individual ownership, leverage, risk, age, size, relative tax, return on assets, investment opportunity, retained earnings to equity.

Model

We have identified the dependent and independent variables and have chosen the proxies for the variables depending on the previous empirical evidences in this case. The study has run the structural equation modeling approach based on these selected proxies. In this approach, more emphasis is given to the previous studies for identifying variables. Michaelsen (1961), Gerber (1988), Holder *et al.* (1998), and Saxena (1999) adopted this approach in their empirical studies.
This theoretical statement could be framed as:

$$DPR_{it} = \alpha + \beta_1 DPR_{it-1} + \beta_2 EPS_{it} + \beta_3 LEV_{it} + \beta_4 CF_{it} + \beta_5 SG_{it} + \beta_6 SIZE_{it} + \beta_7 LIQ_{it} + \beta_8 OWN(SPONSOR)_{it} + \beta_9 OWN(INST)_{it} + \beta_{10} OWN(IND)_{it} + \beta_{11} RISK_{it} + \beta_{12} AGEit + \beta_{13} RELATAX_{it} + \beta_{14} RE/TE_{it} + \beta_{15} ROA_{it} + \beta_{16} INVEST\ OPPORT_{it} + u_{it}$$

Where,

Dependent Variable

Dividend Payout Ratio=Cash dividend per share/Earning per share*100

Independent Variables

DPR_{t-1}=Lagged dividend payout ratio

EPS (Earnings per share) =Net Profit/Total Shares

CF (Cash flow) = Net cash flow/ total number of share

SG (Sale growth) = ($Sales_t$-$Sales_{t-1}$)/ $Sales_{t-1}$*100

SIZE (Size) = Log of Total Assets

LIQ(Liquidity)= Quick Ratio ((current assets-inventory)/current liabilities)

OWNIST (Institutional ownership)= No. of Share held by institution/total no. of share

OWNSPONSOR(Sponsor ownership)= No. of share held by sponsor/ total no. of shares

OWNIND(Individual ownership)= No. of share held by individual/ total no. of shares

LEV (Leverage)= Total liabilities/ total assets

Risk= standard deviation of daily stock return over 365 days (Volatility)

RELATAX (Relative tax) = Capital gain tax rate/ Dividend tax rate

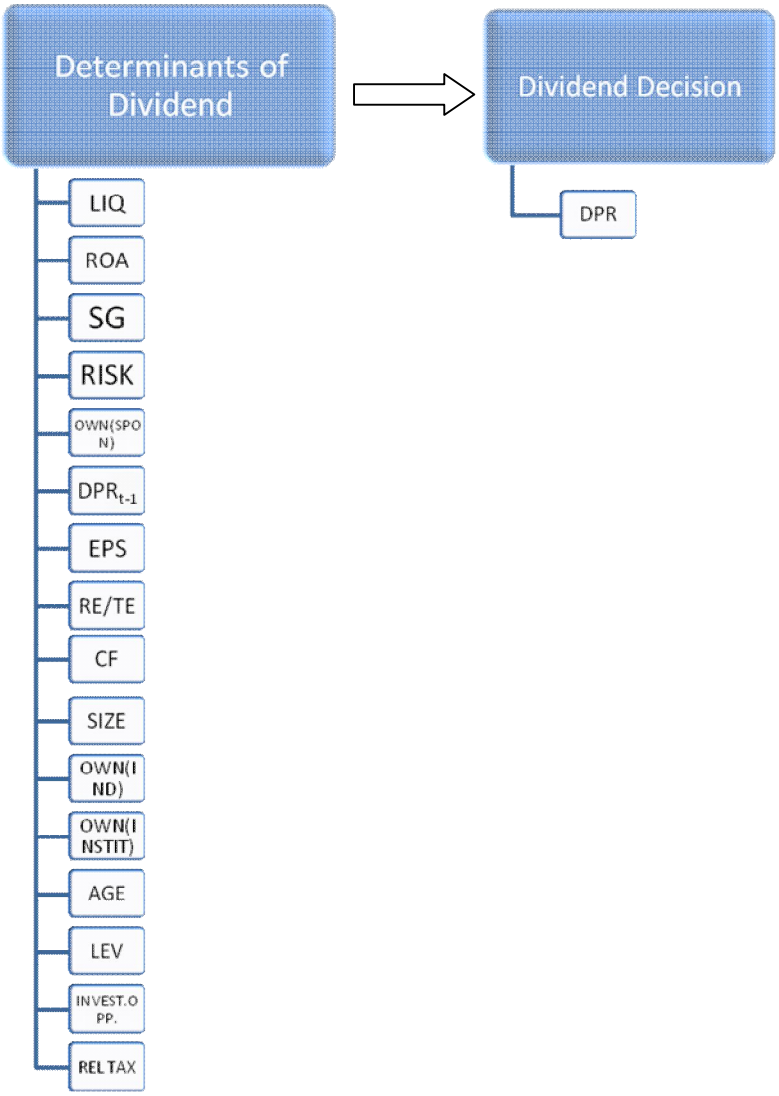
ROA (Return on assets) = Net income/ Total asset

INVESTOPP (Investment Opportunity) = (Net fixed $asset_t$-net fixed $asset_{t-1}$)/ net fixed $asset_{t-1}$*100

RE/TE (Retained earnings to total equity ratio)= (Retained earnings/total shareholders' equity)*100

Firm age (Age)= Natural log of number. of years of listing on the stock exchange

Conceptual Framework



Results and Discussion

Structural Equation Modeling used to **s**how how models that better match the theoretical relationship among variables can enhance interpretability and help draw different conclusions. 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 have shown the impact of determinants on dividend policy along with other variables with regression model. Now, we want to develop an optimum model by using structural equation modeling techniques.

Significant Variables: We have run the existing model ($DPR_{it}= \alpha + \beta_1 DPR_{it-1}+ \beta_2 EPS_{it}+ \beta_3 LEV_{it}+ \beta_4 CF_{it}+ \beta_5 SG_{it}+ \beta_6 SIZE_{it}+ \beta_7 LIQ_{it}+ \beta_8$ $OWN(SPONSOR)_{it}+ \beta_9 OWN(INST)_{it}+ \beta_{10} OWN(IND)_{it} + \beta_{11} RISK_{it}+ \beta_{12} AGE_{it}+ \beta_{13} RELATAX_{it}+ \beta_{14}$ $RE/TE_{it}+ \beta_{15} ROA_{it} + \beta_{16}$ INVEST $OPPORT_{it} + u_{it}$) with structural equation modeling.

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

	Estimate	S.E.	C.R.	P	Label
DPS	21.008	1.810	11.609	***	
EPS	32.714	2.318	14.112	***	
RE	17.957	15.403	1.166	.244	
PE	88.758	39.067	2.272	.023	
CF	11.018	8.784	1.254	.210	
SG	95.202	72.476	1.314	.189	
SIZE	6.432	.134	48.127	***	
OWNSP	41.745	.525	79.452	***	
OWNIND	31.322	.795	39.402	***	
OWNINST	15.395	.405	38.056	***	
LEV	2.063	1.057	1.953	.051	
RISK	5.325	.956	5.568	***	
AGE	2.581	.048	53.225	***	
INVTOPP	33.616	11.464	2.932	.003	
ROA	5.463	1.410	3.873	***	
LIQ	1.834	.094	19.517	***	

In the Table 1, it is seen that the C. R.(critical ratio) of lagged DPR, EPS, SIZE, OWNSP, OWNIND, OWNINST RISK, AGE, ROA, LIQ, INTOP are 11.6, 14.11, 48.12, 79.45, 39.4, 38.05, 5.5, 53.22, 3.87, 19.517, 2.29, respectively, that have significant impact on the dividend payout.

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 $\chi 2$ variate) between the model implied covariance and the observed sample covariance 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 covariance and the actual observed sample covariance is not rejected. This test has become known among SEM users as the $\chi 2$ ‘‘exact- fit’’ test.

Table 2. Result (Default model)

Minimum was achieved
Chi-square =240.09
Degrees of freedom = 137
Probability level = .000

Here, the chi-square value is 240.09 and p- value is 0.0 which indicate 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 not significant. So, the null hypothesis accepts that the model fit the data. So, it indicates the modified model is an accepted model. Since the minimum was achieved, we have proceeded further for calculation and interpretation.

Table 3. Notes for Model (Default model) Computation of degrees of freedom (Default model)

Number of distinct sample moments:	170
Number of distinct parameters to be estimated:	50
Degrees of freedom (170 - 50):	120
Result (Default model)	
Minimum was achieved	
Chi-square = 50.34	
Degrees of freedom = 120	
Probability level = .92	

Optimum Model: Figure 1 indicates the optimum model which influences the factors on the dividend payout ratio.

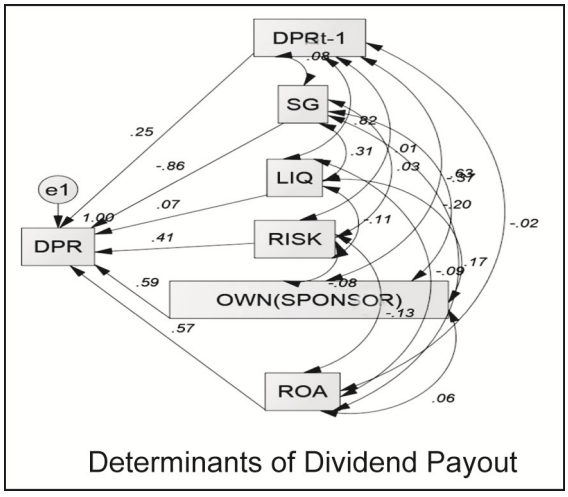


Figure 1. Determinants of dividned payout: Non-financial

The standardized regression weights and the correlations are independent of the units in which all variables are measured. The number 1.0 is the squared multiple correlation of Dividend payout ratio with lagged DPR, SG, LIQ, RISK, OWN (SPONSOR), ROA.

Regression weights: In table 4, it is seen that the C.R of SG, LIQ, RISK, OWNSP, ROA, lagged DPR are -31.81, 2.9, 24.07, 23.31, 33.183 and 8.00 which are statistically significant. So, it is certain that the SG, LIQ, RISK, OWNSP, ROA, lagged DPR have impact on dividend payout ratio.

The entries -.861, .066, .409, .589, .574, and .247 are standardized regression weights of SG, LIQ, RISK, OWNSP, ROA, and LAGGED DPR respectively. This result infers that the SG is negatively related to DPR and RISK, OWNSP, ROA, lagged DPR, LIQ are positively related to DPR.

Table 4 . Maximum Likelihood Estimates
Regression weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
DPR	<---	SG	-.034	.001	-31.810	***	
DPR	<---	LIQ	2.417	1.268	2.907	.050	
DPR	<---	RISK	1.479	.061	24.079	***	
DPR	<---	OWNSP	3.885	.167	23.313	***	
DPR	<---	ROA	1.410	.042	33.973	***	
DPR	<---	DPR_{it-1}	.461	.058	8.003	***	

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
DPR	<---	SG	-.861
DPR	<---	LIQ	.066
DPR	<---	RISK	.409
DPR	<---	OWNSP	.589
DPR	<---	ROA	.574
DPR	<---	DPR_{it-1}	.247

Correlations: (Group number 1 - Default model)

			Estimate
SG	<-->	DPR_{it-}	.076
LIQ	<-->	DPR_{it-}	.825
RISK	<-->	DPR_{it-}	.011
OWNSP	<-->	DPR_{it-}	-.374
ROA	<-->	DPR_{it-}	-.024
SG	<-->	LIQ	.314
SG	<-->	RISK	.032
SG	<-->	OWNSP	.628
SG	<-->	ROA	.173

Cont'd.

LIQ	<-->	RISK	-.113
LIQ	<-->	OWNSP	-.203
LIQ	<-->	ROA	-.087
RISK	<-->	OWNSP	-.081
OWNSP	<-->	ROA	.058
RISK	<-->	ROA	-.127

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
DPR	.996

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, lagged DPR, SG, LIQ, RISK, OWN (SPONSOR), ROA account for 99.6% of the variance of DPR.

Model Fit Summary

Table 5 . Model fit summary

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	34	33.288	1	.50	93.288
Saturated model	35	.000	0		

Model	NCP	LO 90	HI 90
Default model	12.288	64.218	127.767
Saturated model	.000	.000	.000

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	2.148	1.792	2.528	.000

- CMIN – minimum value of the discrepancy between the model and the data. This is the same as the chi-square statistic. Here, CMIN is not significant which indicates the model fit.
- NCP – the non-centrality 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 12.288 which indicate the support of model fitness.

Optimum Model:

$DPR_{it} = \alpha + \beta_1 SG_{it} + \beta_2 LIQ_{it} + \beta_3 RISK_{it} + \beta_4 OWN(SPONSOR)_{it} + \beta_5 ROA_{it} + \beta_6 DPR_{it-1} + u_{it}$

Conclusion

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 sector. The dividend decision makers should consider the liquidity and earnings of the company for giving dividend to the shareholders. The decision maker, investors and other stakeholders should follow these findings. The results show that the SG negatively related to DPR and LIQ, RISK, OWNSP, ROA, lagged DPR are positively related to DPR. These results have justified the earlier studies. These findings will help the investors, dividend decision makers and other stakeholders in the capital market of Bangladesh.

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