

## THE IMPACT OF DIVIDEND ON THE MARKET PRICE OF SHARE: A STUDY WITH STRUCTURAL EQUATION MODELING APPROACH

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### Abstract

The impact of dividend on market price of share is a controversial issue. To solve this issue in our market perspective, this study is conducted whether there is impact of DPS on MPS or not. The structural equation modeling is used to find out the impact of dividend on market price of share. The study is conducted on manufacturing sector and is found the DPS has impact on MPS. There are other co-factors such as EPS, PE, which have also impact on market price of share. So, the findings support the relevance theory of dividend on shareholders' wealth. This finding will help the dividend decision maker for taking corrective dividend decision.

**Keywords:** Dividend, Market price, Regression, Structural Equation Modeling (SEM)

### 1 Introduction

The dividend policy has the significant importance in the financial decisions of the corporation. The dividend policy is guidelines for financial managers, how to pay dividend to the shareholders. Net earnings are divided into two parts. One is retained earnings and the other is dividends. The retained earnings of the business may be reinvested in business and used for growth of the business. The dividend is distributed to the shareholders in order to meet their expectation of being made better off financially. So the problem is to take decision that how much earning should be given in the form of dividend payout and how much earning should be kept as retained earnings.

In the modern and complex environment, globalization and privatization have brought deep competition in every field of activity. It is very difficult for the companies to compete in the markets of stunning nature. To cope with this competitiveness and to add value to the companies, today's finance managers have to

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make critical financial decisions. The primary objective of any organization is to maximize the wealth of shareholders. Financial manager's aim is to take a decision in such a way that shareholders receive the high contribution of dividend which leads to increase the price of share. Dividend policy plays a vital role in financial markets and it directly affects the stock price of the company. If a company pays handsome return to its shareholders it will attract to the new investors to invest their money in the company and vice versa. Dividend decision has great impact on firm financial decision and stock price. The stock price increases when there is smooth payment of dividend exist. Investors do not prefer to purchase the shares of such type of companies which cannot make payment regularly. Simians (1995) argued that shareholders' wealth is largely influenced by the organization's dividend policy.

The dividend decisions can denote to the value of firm or not which is a controversial issue. 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. If there is impact of dividend, the company should aware for dividend payment. For this reason, we want to study the relationship between dividend and market value of shares and to identify the degree of influence of dividend on market value of firm.

## **2. Prior Theoretical and Empirical Evidences**

### **2.1 Prior Theoretical and Empirical Evidence of Foreign Context**

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 quiet 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)

provided the strong evidence in the favor of dividend irrelevance theory and did 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.

Barclay and Smith (1995) in their article "The Maturity Structure of Corporate Debt" found that high growth companies have lower Dividend Payouts and Debt Ratios than the low growth companies, which have higher Dividend Payouts and Debt Ratios. So investors prefer higher Dividend Payouts and consider it less risky than capital gain. Allen & Rachim (1996) found no relationship between the dividend yield and stock market price even after studying Australian listed stocks but it shows positive relation between stock prices and size, earnings and leverage and negative relation stock prices and payout ratio while Baskin (1989) examined 2344 U.S common stocks from the period of 1967 to 1986 and found a significant negative relationship between dividend yield and stock price. Another study conducted by Ho (2002) relevant to the dividend policy in which he used the panel data approach and fixed effect regression model. Results of his study show the positive relation between dividend policy and size of Australian firm and liquidity of Japanese firms. He found the negative relation between dividend policy and risk in case of only Japanese firms. The overall industrial effect of Australia and Japan is found to be significant. Baker, Powell & Veit (2002) in their article "Reinvesting Managerial Perspectives on Dividend Policy" provided new evidence of managers' decision about dividend policy. They conducted a survey of managers of NASDAQ firms that are consistently paying cash dividends. Their survey result shows that managers are mostly aware of historical pattern of dividends and earnings. So, they design their dividend policies after considering it.

Pradhan (2003) also explained the effect of dividend payment and retained earnings on stock market price of the Nepalese companies. Results of his study show that dividend payment has strong relation with stock price while retained earning has very weak relation with stock market price. His results further explain that Nepalese stockholders give more importance to dividend income than capital gains. Nishat & Irfan (2003) studied 160 companies listed at Karachi Stock Exchange for the period

of 1981-2000. Their results were based on cross sectional regression analysis and showed that dividend yield and payout ratio is positively related to the share price volatility. Adefila, Oladipo & Adeoti (2004) studied the factors affecting the dividend policy of Nigerian firms. Results of their study show that Nigerian firms prefer regular dividend payouts that can be in accordance with the expectations of their shareholders. Their results also conclude that there is no relation between Dividend Payments, Net Earnings and Stock Prices. Nigerian firms pay dividends to their shareholders regardless of their level of profits for satisfaction of their shareholders. Myers & Frank (2004) conducted a study by using the data of 483 firms from Multex Investor Database concluded that there is a positive relationship between the price Earnings Ratio and Dividend Payout Ratio. Their results further show that there is a significant positive relation between Debt to Equity Ratio and Dividend Payout.

Hussainey, Mgbame, & Chijoke-Mgbame (2011) studied the impact of Dividend Policy on Stock Prices. The results of their study show the positive relation between Dividend Yield and Stock Price Changes and negative relation between Dividend Payout Ratio and Stock Price Changes. Their results further indicate that the Firms' Earnings, Growth Rate, Level of Debt and Size also cause the change in Stock Price of UK. Friend & Puckett (1964), John & Williams (1985), Asquith & Mullins (1986), Richardson, Sefcik, & Thompson (1986), Ambarish, Williams, & John (1987) and Liaonly (2009) also found the positive association between dividends and stock market prices.

The academicians also engaged in finding out the facts and issues relating to dividend policy and they made different theories on this topic. According to Hayn (1995), dividend payments reduce the earning of any corporation if there are low earnings are realized, it makes the decision uneven which enables managers to take strong decision for dividend and earning in future. Whereas, DeAngeb et al. (1992) & Charitou (2000) described the changing in dividend policy that makes the managers informative about the cost of dividend payment. Spencer (1973) argued that dividends payout increases the investors' confidence in the company. Thus, the company can make future decisions of dividends payout on the basis of the past dividends policies. The study conducted by Farley and Baker (1989) suggests that dividends policy has a significant impact on stock prices. Dividend payout ratio is based on current and last year earnings, the changes in year wise earning and increasing rate of earnings. The past year dividend payments have great influence on current policy (Pruitt and Gitman 1991).

A significant stream of prior research in the United States has empirically documented that unexpected increases (decreases) in regular cash dividends generally elicit a significantly positive (negative) stock market reaction (Fama et al., 1969 &

Petit; 1972). Moreover, this finding persists even after controlling for contemporaneous earnings announcements (Aharony and Sway (1980). In the same vein, Asquith and Mullins (1983) found that, like dividend increases, dividend initiations have a significant positive impact on shareholder wealth. Much subsequent researches have focused on explaining the dividend increase induced positive stock market reaction. The predominant explanation, by far, has been the information signaling hypothesis. According to Rozeff (1982) there is a negative relationship between dividend policy and stock price. Previous studies have identified major contributing factors in shareholder's wealth such as: current and past year profit, year wise changing in earnings and earnings growth rate and dividend policy.

Moreover, DeAngelo, and Skinner (1992), Bernartzi, Michaely, and Thaler (1997), and Jensen and Johnson (1995) documented that dividend cuts are followed by earnings increases, consistent with dividend cuts marking the end of a firm's financial decline and the beginning of its restructuring. In sum, the empirical evidence by prior research on the signaling value of dividend changes has been mixed. An alternative explanation for changes in corporate dividend policy stems from agency theory. Lang and Lichtenberger (1989) attempted to disentangle between signaling and agency explanations by separating firms that are presumably over investing from all other value-maximizing firms. They found higher abnormal returns for over investing firms for which the agency-related benefits of a dividend payout increase are higher compared to value-maximizing firms.

## **2.2 Prior Theoretical and Empirical Evidence of Bangladeshi Context**

Studies related to dividends impact on share price in the context of Bangladesh are mentioned below.

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 DSI, in anyway, do not granger cause dividend yield. Kabir, Bhuiyan and Chowdhury (2013) attempted 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.

So, 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.

### 3. Research Objectives

To analyze the impact of dividend policies on market prices of shares in manufacturing sector of Bangladesh.

### 4. Research Design

#### 4.1 Sample

We have taken companies from manufacturing sectors, which are enlisted before 2010 in DSE as population. From the population (117), it is taken 86 companies as sample through 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 secondary data is taken from following sources: published annual reports of sample firms, monthly review of Dhaka stock exchange and website of DSE. The stratified random sampling procedure is followed for data collection.

#### 4.2 Hypothesis

**H<sub>0</sub>:** There is no association between wealth of shareholders and dividend policy.

### 4.3 Model & Method

#### 4.3.1 Model

The studies conducted by Miller and Modigliani (1961), Friend and Puckett's (1964) and Chawla and Srinivasan (1987) have influenced this paper. The Friend and Puckett's (1964) model can be taken as the key elements for determining the relationships of market price per share with concerned financial indicators such as retained earnings, price earnings ratio, dividend per share, earning per share, return on equity, and dividend yield in this study. This theoretical statement could be framed as:

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

#### Variables used in study :

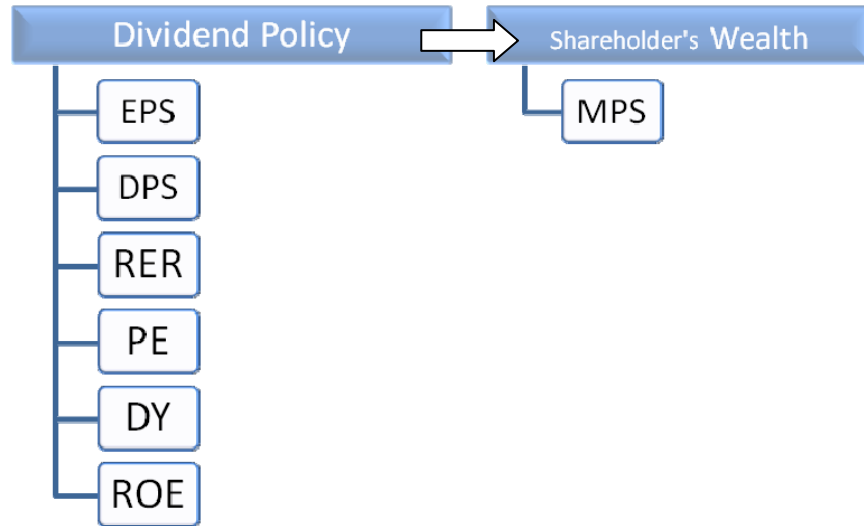
Dependent Variable: Shareholders' wealth is dependent variable which is measured with market price per share (MPS).

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)

#### 4.3.2 Method

In this study Structural Equation Modeling technique is used to analyze the relationship between dividend policies on shareholder's wealth. 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. Following the seminal work of Jořreskog (1973), a number of models for linear structural relations have been developed (Bentler & Weeks, 1980; Lohmoller, 1981; McDonald, 1978), and work continues on these. Commercial statistical packages include LISREL (Jořreskog & Sořrbom, 1989, 1996), EQS (Bentler, 1985, 1995), CALIS (Hartmann, 1992), MPLUS (Muthe'n & Muthe'n, 1998), RAMONA (Browne, Mels, & Cowan, 1994), SEPATH (Steiger, 1995), and AMOS (Arbuckle, 1997). Available freeware includes COSAN (Fraser & McDonald, 1988) and Mx (Neale, 1997). Generally, a structural equation model is a complex composite statistical hypothesis. It consists of two main parts: The *measurement model* represents a set of  $p$  observable variables as multiple indicators of a smaller set of  $m$  latent variables, which are usually common factors. The *path model* describes relations of dependency—usually accepted to be in some sense causal—between the latent variables.

#### 4.4 Conceptual Framework



#### 5. Structural Equation Modeling of Dividend Effect on Market Price of Share

We have shown the impact of dividend on market value 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 model ( $MPS_t = \alpha + \beta_1 DPS_t + \beta_2 RER_t + \beta_3 PE_t + \beta_4 EPS_t + \beta_5 ROE_t + \beta_6 DY_t + e_{it}$ ) with structural equation modeling. The regression result is shown in table-1.

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

			Estimate	S.E.	C.R.	P-Value
MPS	<---	EPS	23.337	3.759	6.208	***
MPS	<---	RE	-.235	.205	-1.148	.251
MPS	<---	ROE	1.025	2.060	.498	.619
MPS	<---	DPS	24.357	4.689	5.194	***
MPS	<---	PE	.735	.223	3.296	***
MPS	<---	DY	-11.514	18.989	-.606	.544



From the table 1, it is seen that the DPS, EPS and PE are the significant variables because of significant p value (\*star). These indicate that the dividend has impact on the market price of share. It is also seen that the C.R. (critical ratio) of EPS, DPS, PE are 6.2, 5.19, and 3.29 respectively which indicate the significance impact of dividend on the market price of shares.

Now, we shall see the  $\chi^2$  result for model fit. This  $\chi^2$  result will tell us about the model fitness or not. If the model is not fit, we have to modify the present model.

### Model Fit

When modeling data using structural equation modeling (SEM), one or more models may be fit to the same covariance matrix. Statistically appraising the fit of a model to the covariance matrix is accomplished using a “goodness of fit” test referenced against the  $\chi^2$  distribution, which takes as its argument, the discrepancy between the model-implied population covariance and the actual observed sample covariance. Given the degrees of freedom associated with a particular model, model fit is a matter of testing whether the discrepancies (or residuals) are greater than would be expected by chance alone. Put another way, the  $\chi^2$  test is a simultaneous test that all residuals (calculated by taking the difference between all model implied covariance and the observed sample covariance) are zero. Bollen (1989) provides the actual fit equations.

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 amongst SEM users as the  $\chi^2$  ‘exact- fit’ test.

**Table-2 : Notes for Model (Default model)**

<b>Computation of degrees of freedom (Default model)</b>	
Number of distinct sample moments:	35
Number of distinct parameters to be estimated:	20
Degrees of freedom (35 - 20):	15

**Result (Default model)**

Minimum was achieved

Chi-square = 48.427

Degrees of freedom = 15 and

Probability level = .000

Here, (table 2) the chi-square value is 48.42 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. So, the null hypothesis is accepted that the model fit the data. So, it indicates the modified model is an accepted model. Since the minimum was achieved, we can proceed further for calculation and interpretation.

**Table-3 : 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 the dividend along with EPS and PE on the market price of share.

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 &PE, PE& EPS, DPS& EPS are .08, .25, .88 respectively. The entries .4, .27, .48 are standardized regression weights of DPS, PE, EPS respectively. The number .88 is the squared multiple correlation of MPS with DPS, PE, EPS.

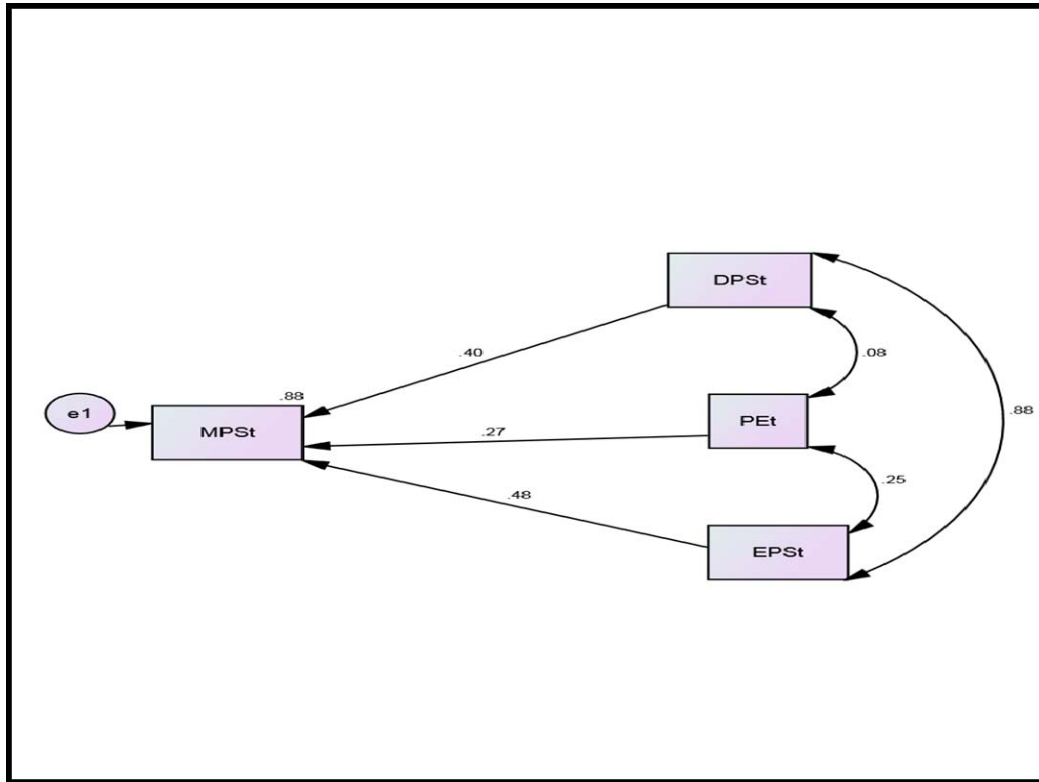


Figure-1: Optimum Model of dividend impact on Market price of Shares

**Significant Variables (Regression Weight):**

From the table 4, it is seen that the C.R of DPS EPS and PE are 3.26, 2.76 and 2.35 which are statistically significant. So, it is certain that the DPS and EPS, PE have impact on the market price of share.

**Table-4 : Maximum Likelihood Estimates**

Regression Weights: (Group number 1 - Default model)					
		Estimate	S.E.	C.R.	P-Value
MPS	<--- PE	.820	.251	3.267	.001
MPS	<--- EPS	24.310	8.782	2.768	.006
MPS	<--- DPS	25.068	10.648	2.354	.019

<b>Squared Multiple Correlations: (Group number 1 - Default model)</b>	
	Estimate
MPS	.885

<b>Standardized Regression Weights: (Group number 1 - Default model)</b>	
	Estimate
MPS <--- PE	.274
MPS <--- EPS	.481
MPS <--- DPS	.398

### 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, PE, and EPS account for 88% of the variance of MPS.

### Model Fit Summary:

**Table- 5 : Model Fit Summary**

<b>CMIN</b>					
Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	14	.000	0		
Saturated model	14	.000	0		
Independence model	4	72.001	10	.000	7.200

<b>Baseline Comparisons</b>					
Model	NFI Delta1	RFI rho1	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

<b>Parsimony-Adjusted Measures</b>			
Model	PRATIO	PNFI	PCFI
Default model	.000	.000	.000
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

<b>NCP</b>			
Model	NCP	LO 90	HI 90
Default model	.000	.000	.000
Saturated model	.000	.000	.000
Independence model	62.001	38.720	92.768

From the table 5, following interpretations are described.

- 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.

<b>Optimum Model:</b>
$\text{MPS}_t = \alpha + \beta_1 \text{DPS}_t + \beta_2 \text{PE}_t + \beta_3 \text{EPS}_t + e_{it}$

## 6. Summary of Findings

The correlation between DPS & PE, PE & EPS, DPS & EPS are .08, .25, .88 respectively. The entries .4, .27, .48 are standardized regression weights of DPS, PE, EPS respectively. The number .88 is the squared multiple correlation of MPS with

DPS, PE, EPS. The C.R of DPS EPS and PE are 3.26, 2.76 and 2.35 which are statistically significant. So, it is certain that the DPS and EPS, PE have impact on the market price of share. Structural equation modeling shows that the DPS has the positive impact on the market price of share which support the relevancy theory of dividend policy.

## 7. 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. We have developed a model based on analysis.

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.

## 8. Conclusion

The impact of dividend on market price of share is a controversial issue. To solve this issue in our market perspective, this study is done whether there is impact of DPS on MPS or not. Our findings support the relevance theory of dividend on shareholder wealth. The study is conducted on manufacturing financial sector and is found the DPS has impact on MPS. There are other co-factors such as EPS, PE, which have also impact on market price share. This finding will help the dividend decision maker for taking corrective dividend decision.

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