

A Study on Validity of Lintner's Model of Dividend in Indian Companies

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Abstract

Dividend declaration is considered as one of the key focus areas of the firm's financial policy. It is generally accepted that the payment of dividends is the most widely used instrument for the distribution of value to shareholders. Shareholders also prefer to receive regular dividends. A well-known model that attempts to explain dividend policy is that of Lintner (1956). This study investigates whether Lintner's model can be used to explain Indian companies' dividend payments or not. 172 companies listed with BSE with continuous dividend payments from 2004-08 have been selected from four industrial sectors: Engineering, FMCG, IT and Textiles. The study brings forth that Lintner's model does have a good fit in the selected Indian companies.

Keywords: Dividend, Lintner's Model and Multiple Regression Analysis.

JEL Classification: G21

1. Introduction

Dividend declaration is considered to be one of the most imperative tools for the distribution of value to the shareholders. Shareholders also prefer to receive regular dividends rather than irregular cash payments. The core of dividend policy includes the decision like whether to distribute profits to the shareholders in the form of dividend or to retain it in the form of retained earnings or payout ratio. Dividend policy adopted by a firm has an inference in the practical life for all whether it is manager or the organization's stakeholders.

The dividend decision, one of the widely researched topics, yet named as dividend puzzle, has been a center of attraction for the past number of decades. The outcome of the past researches has resulted in development of number of models trying to explain the dividend behavior of the companies. Some of the well-known dividend models are: Lintner's model, Brittain's model, Pettit's model, Watt's model, Charest's model and Aharony's and Swary's model. The testing of these models has extensively been undertaken in foreign researches. Considering the importance of these models, an attempt has been made to study the applicability of well-known dividend models in Indian conditions. The present paper deals with one of the most important, well-known and acceptable models of dividend viz., Lintner's model. This can be attributed to the recognition of the model by various researchers. To quote, Benartzi, Michaely, and Thaler (1997, p. 1032) concluded that

“. . . Lintner's model of dividends remains the best description of the dividend setting process available.”

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1.1. Lintner's Dividend Model

Lintner's model provides a good intuitive explanation of dividend payments. The essence of Lintner's dividend model is that, if a firm persisted with its target payout ratio, then the dividend payment in the ensuing year (Div1) would equal a constant proportion of earnings per share (EPS1), or

$$\text{Div1} = \text{target ratio} * \text{EPS1}$$

If a firm adhered to its target payout ratio, it would change its dividend whenever its earnings changed. However, the managers of the companies believed that shareholders prefer a steady progression in dividends.

As per Lintner (1956), the historical rate of dividend is generally considered for the determination of current dividends by many companies. In addition current earnings are invariably the starting point in considering the change in dividend policy. Thus, dividend payout is a function of net current earnings after tax and dividend paid in the previous year (lagged dividend). This can be expressed as:

$$D_t = a + b_1 P_t + b_2 D_{t-1} + u_t$$

Where,

D_t = total equity dividend in period 't'

D_{t-1} = total equity dividend in period 't-1'

P_t = net current earnings after tax in period 't'

u_t = error term

The net current earnings after tax, P_t , represent the capacity of a firm to pay dividends. Lagged dividend, indicates a possible reluctance on the part of the management to reduce the dividends already declared. The rationale of this dividend function is that firms try to achieve a certain desired payout norm in the long run. It is this preference for stability in the rate of dividend that the firms make only a partial adjustment to the rate of dividend each year in response to any change in net current earnings. The rate of dividend is thus stabilized with reference to the target level of dividends. The absolute amount of dividend in a given year is changed by a function known as speed-of-adjustment coefficient. It is the difference between the target amount and actual dividend payment. Thus, the model suggests that the dividend policy is related to a target level of dividends and to the speed of adjustment of change in dividends.

Lintner's model till date is considered as widely acknowledged and suitable model to study the dividend decision even today. In the words of Myers (1984)

"John Lintner's model of how firms set dividends dates back to 1956 and it still seems to work..."

2. Literature Review

Dividend is considered as an important facet of organisation's financing decision and has attracted the researchers all over the world to find its underlying secrets. A lot many researchers had contributed in the dividend arena.

Lintner (1956) undertook one of the classic studies on how managers in USA made dividend decisions. For conducting the study, he constructed a model comprising of variables like size of firm, expenditure on plant and equipment, willingness to use external financing, use of stock dividends, earnings stability and ownership by control groups. A sample of 600 industrial listed companies was taken. In his study, he uncovered the fact for the first time that firms in USA maintained a target dividend payout ratio and adjusted their dividend policy to this target. The long-term sustainable investment and growth objectives determined the firms' target payout ratios. Further, he also found that firms pursued a stable dividend policy and gradually increased dividends given the target payout ratio.

Mahapatra and Sahu (1993) analysed the determinants of dividend policy using the models developed by Lintner (1956), Darling (1957) and Brittain (1966). The sample size for the study was 90 companies covering the period from 1977-78 to 1988-89. The study exposed the fact that cash flow was the major determinant followed by net earnings. Further, the study concluded that only past dividend was a major factor in influencing the dividend decision of a firm.

Kaur (1997) conducted the doctoral research on determinants of corporate dividend policy in India. The sample for the study consisted of total 100 companies — 29 companies in Chemical industry, 20 companies in Metals and Alloys, 17 companies in Electrical industry, and 34 in Engineering industry. The data was analysed using multiple linear regression model. The validity of known dividend models was also examined. The study concluded that Lintner's model is well applicable in the selected companies.

Ben et al. (2002) conducted a study on the determinants and dynamics of dividend policy. The study was conducted on 48 firms listed on Tunisian Stock Exchange during 1996-2002. The study was carried out with a view to find out whether the managers smooth out the dividends or not along with finding out the determinants that drives the dividend policy. In order to study the former, Lintner's model was applied and for the latter, panel regression was performed. The study demonstrated that Tunisian firms relied on both the current earnings and past dividends but the weightage was more for current earnings.

Olatundun (nd) conducted 882 firm-year study by empirically analyzing the determinants of dividend policy on a sample of 63 quoted firms in Nigeria over a period from 1984 to 1997. Dividend behavior was tested using the Lintner/ Brittain model through the Ordinary Least Square (OLS) method. The result showed that there was no significant interaction between the conventional Lintner / Brittain model and dividend decisions of Nigerian firms. However, the validity of the Lintner/ Brittain's model and its variant on dividend policy of Nigerian firms, which was somehow remote, partly depended on the growth prospect, firm size and level of gearing of corporate firms.

Kumar (2003) conducted a study to explore the association between the corporate governance and the dividend payout policy for a panel of Indian corporate firms over the period 1994-2000. The study made an attempt to explain the observed behavior with the help of well-established dividend models of Linter (1956) and Fama and Babiak (1968). The study brought out the existence of a positive association of dividends with earnings and dividends trend.

Pandey (2003) conducted a study on corporate dividend policy and behavior of Malaysian companies. The study was conducted using financial data of 248 companies listed on the KLSE (Kuala Lumpur Stock Exchange) Main Board as at 31 December 2000. The results showed the influence of industry on payout ratios. Further, using Lintner's framework and panel regression methodology, he found evidence of less stable dividend policies being pursued by the Malaysian companies.

Anand (2004) undertook a study to analyze the factors influencing the dividend policy decisions of corporates in India. For conducting the study, the results of 2001 survey of 81 CFOs of bt-500 companies had been used. The study concluded that most of the firms had target dividend

payout ratio and dividend changes followed a shift in the long-term sustainable earnings. Further, the findings on dividend policy were in agreement with Lintner's study on dividend policy and concluded that it was used as a signaling mechanism to convey information on the present and future prospects of the firm and thus affect its market value.

Benzinho et al. (2004) made an attempt to study how the corporations that trade in the Lisbon Stock Exchange set their dividend policies in a different institutional environment and research empirically whether the corporations followed stable cash dividend policies as in developed markets where dividend smoothing is a management tendency. For this purpose, the dividend policy model of Lintner (1956) was used. The Lintner's model was estimated by using panel data regressions. The empirical results showed that the Euronext Lisbon corporations followed a relatively stable cash dividend policies and the main factors that determined the dividends was the earnings of the firm in that year and the lagged dividends.

Sarma and Kuin (2004) examined the corporate dividend behavior of Malaysian companies listed on Kuala Lumpur stock exchange through the application of Lintner's stock adjustment model from 1998-2001. The results of the study were found to be consistent with the Lintner's model. The empirical results showed that the main determinants of dividend policy were lagged dividends and current earnings. The study also concluded that the companies' dividend policy was guided by the twin concepts of target payout ratio and adjustment factor as enunciated by Lintner.

After a deep insight into the literature, it was found that ample research is required in the field of Dividends and the known dividend models with special emphasis on Lintner's model in Indian companies. The primary objective of the current study is to examine the extent to which Lintner's (1956) model can be used to explain Indian dividend payments.

3. Hypothesis

In order to empirically verify the above objectives the following null hypothesis was framed and tested.

Mookerjee (1992) in the study concluded that Lintner's model, a well-known dividend model, fits into Indian

conditions. The results were further supported by the study of Mahapatra and Sahu (1993). Kaur (1997) has examined the validity of some known dividend models like Lintner's model, Pettit model, Watts's model, Charest model and Aharony and Swary's model and has concluded that Lintner's model is the best among all the models and fits very well in Indian conditions. Besides these, the validity of Lintner's model has been made in context of foreign countries. After a deep perusal of literature, the following hypothesis has been framed.

H_0 : Number of studies has been conducted on Lintner's dividend model and its applicability. However, the validity of the said model varies in various researches. Thus, in order to examine the validity, the hypothesis has been framed that *Lintner's Dividend Model does not fit into Indian conditions.*

4. Data Base and Methodology

4.1. Data Base

This paper focuses on the applicability and validity of Lintner's model in Indian companies. For this purpose, the study was carried out on secondary data of 172 companies in Engineering, FMCG, IT and Textiles industry, listed on Bombay Stock Exchange. The data has been collected from Prowess database. The companies have been selected on the basis of the following criteria:

- i. The companies must be listed with Bombay Stock Exchange.
- ii. The companies must have paid dividend from 2004-08.

The secondary sampling was carried out in three stages. In the first stage, a list of 1513 companies was generated by Prowess data base in the selected four industrial sectors. The units for the study represented the industries in Engineering, FMCG, IT and Textiles sector. In the second stage, sampling units were screened on the basis of two criteria: one, the company must be listed with Bombay stock exchange and second, it must have paid dividend in years 2004-08. The companies not fulfilling the criteria (1271) were removed and thus, yielded 242 companies for the sample. In the third stage, the companies with missing data (70) were removed, thus yielding final data for 172 companies. The Table 1 gives the details of how the final sample for secondary data collection for the current

research has been selected. The final sample included 63 companies in the Engineering sector, 39 companies from the FMCG sector, 40 companies from IT sector and 30 companies in the Textiles sector.

Table 1 Data Cleaning Steps for Secondary Data

Step	Description	Number of Companies
1	Companies listed on BSE generated by Prowess for four selected industrial sectors	1513
2	Less: Companies not fulfilling the criteria of regular dividend payment for the years 2004-08	1271
3	Less: Companies with missing data	70
4	Final Sample	172
	–Engineering 63	
	–FMCG 39	
	–Information Technology 40	
	–Textiles 30	

4.2. Statistical Tools & Techniques

The present study had been analyzed using Multiple Regression Analysis. Multiple Regression analysis was used to test the validity of Lintner's model in Indian industries under study. The variance inflation factor (VIF) was used to assess the multi-collinearity. Threshold values of tolerance above .10 (Hair *et al.*, 1998) and VIF scores of less than 10 suggest minimal multi-collinearity and stability of the parameter estimates (Neter *et al.*, 1985; Dielman, 1991). For carrying out the analysis, SPSS software has been meticulously used.

5. Results & Discussions

The applicability and validity of Lintner's model in Indian industries under study has been carried out on individual industries viz., Engineering, FMCG, IT and Textile. The analysis and interpretations has been carried out as follows:

5.1. Engineering Industry

The variance inflation factor (VIF) was used to assess the multi-collinearity, as shown in Table 2 and the VIF scores ranged between 1.082 and 1.191.

The hypothesis was tested using regression analysis as shown in Table 3. In all the years under study, i.e., 2005-

08, the dividend per share was best explained by both of the variables—Lagged dividend and Earnings per share.

Table 2 Collinearity Diagnostics for Lintner's Model for Engineering Industry

Model	Year	Collinearity Statistics	
		Tolerance	VIF
Earnings Per Share	2005	.868	1.153
	2006	.839	1.191
	2007	.872	1.146
	2008	.924	1.082
Lagged Dividend	2005	.868	1.153
	2006	.839	1.191
	2007	.872	1.146
	2008	.924	1.082

Dependent Variable: Dividend Per Share

Table 3 Regression Results of Lintner's Model for Engineering Industry

Year	$D_t = a + b_1 P_t + b_2 D_{t-1} + u_t$					
	a	b_1 P_t	b_2 D_{t-1}	R^2	\bar{R}^2	F
		*	**			
2005	1.448 (3.009)	.070 (2.106)	.202 (26.55)	.935	.933	432.391
		**	**			
2006	2.687 (2.563)	.112 (1.959)	.109 (2.344)	.205	.179	7.752

2007	1.883 (.6553)	.654 (1.926)	.064 (.609)	.086	.055	2.818
		*	**			
2008	.683 (1.227)	.055 (1.980)	.186 (10.045)	.676	.665	62.652

Note: Figures in the bracket show t-values of the coefficient
 *Sig at 1% level
 **Sig at 5% level
 ***Sig at 10% level

The perusal of the Table 3 revealed that the values of P_t in all the years were significant at 1% in the year 2005 and 2008 and 5% level in the year 2006. In the year 2007, it showed insignificant results and hence, did not offer much variation in the dependent variable. The values of D_{t-1} in all the years were significant at 5% level except in 2007.

5.2. FMCG Industry

The variance inflation factor (VIF) was used to assess the multi-collinearity, as shown in Table 4 and the VIF scores ranged between 1.197 and 2.248.

Table 4 Collinearity Diagnostics for Lintner's Model for FMCG Industry

Model	Year	Collinearity Statistics	
		Tolerance	VIF
Earnings Per Share	2005	.445	2.248
	2006	.835	1.197
	2007	.715	1.398
	2008	.424	2.356
Lagged Dividend	2005	.445	2.248
	2006	.835	1.197
	2007	.715	1.398
	2008	.424	2.356

Dependent Variable: Dividend Per Share

The hypothesis was tested using regression analysis as shown in Table 5. In all the years under study, i.e., 2005-08, the dividend per share was best explained by both of the variables: Lagged dividend and Earnings per share under study except for earnings per share in the year 2008.

Table 5 Regression Results of Lintner's Model for FMCG Industry

Model	$D_t = a + b_1 P_t + b_2 D_{t-1} + u_t$					
	a	b_1 P_t	b_2 D_{t-1}	R^2	\bar{R}^2	F
		***	*			
2005	-.727 (-1.498)	1.112 (12.484)	.079 (2.760)	.931	.927	241.460
		*	*			
2006	-3.19 (-.368)	.450 (5.618)	.178 (4.582)	.710	.693	43.971
		**	*			
2007	-.790 (-1.284)	.923 (11.408)	.080 (3.117)	.873	.866	124.281
			*			
2008	-.302 (-.387)	1.336 (10.888)	-.038 (-.959)	.872	.864	122.092

Note: Figures in the bracket show t-values of the coefficient
 *Sig at 1% level
 **Sig at 5% level
 ***Sig at 10% level

Examining the Table 5 revealed that the values of P_t in all the years were significant at 10% in the year 2004, 1% level in the year 2006 and 5% in the year 2007. In the year 2008, it showed insignificant results and hence, did not offer much variation in the dependent variable. The values of D_{t-1} in all the years were significant at 1% level.

5.3. IT Industry

The variance inflation factor (VIF) was used to assess the multi-collinearity, as shown in Table 6 and the VIF scores ranged between 1.159 and 2.138.

Table 6 Collinearity Diagnostics for Lintner’s Model for IT Industry

Model	Year	Collinearity Statistics	
		Tolerance	VIF
Earnings Per Share	2005	.468	2.138
	2006	.548	1.826
	2007	.863	1.159
	2008	.835	1.197
Lagged Dividend	2005	.468	2.138
	2006	.548	1.826
	2007	.863	1.159
	2008	.835	1.197
Dependent Variable: Dividend Per Share			

The hypothesis was tested using regression analysis as shown in Table 7. In all the years under study, i.e., 2005-08, the dividend per share was best explained by both of the variables—Lagged dividend and Earnings per share under study.

Table 7 Regression Results of Lintner’s Model for IT Industry

Model	a	$D_t = a + b_1 P_t + b_2 D_{t-1} + u_t$		R^2	\bar{R}^2	F
		b_1 P_t	b_2 D_{t-1}			
Year						
2005	2.299	.046	.072	.447	.413	13.332
	(3.696)	(2.033)	(1.763)			
2006	-3.640	.849	.353	.812	.801	79.654
	(-3.840)	(3.308)	(6.788)			
2007	1.113	.147	.155	.778	.766	64.824
	(2.112)	(2.720)	(9.265)			
2008	-2.026	.563	.231	.723	.708	48.363
	(-2.234)	(4.649)	(6.033)			

Note: Figures in the bracket show t-values of the coefficient
 *Sig at 1% level
 **Sig at 5% level
 ***Sig at 10% level

The detailed examination of the Table 7 bring forth the fact that the values of P_t in all the years were significant at 10% in the year 2005 and 1% level in the year 2006, 2007 and 2008. The values of D_{t-1} in all the years were significant at 5% level in the year 2005 and 2006, 10% level in the year 2007 and at 1% in the year 2008.

5.4. Textile Industry

The variance inflation factor (VIF) was used to assess the multi-collinearity, as shown in Table 8 and the VIF scores ranged between 1.236 and 2.090.

Table 8 Collinearity Diagnostics for Lintner’s Model for Textile Industry

Model	Year	Collinearity Statistics	
		Tolerance	VIF
Earnings Per Share	2005	.604	1.656
	2006	.622	1.609
	2007	.809	1.236
	2008	.479	2.090
Lagged Dividend	2005	.604	1.656
	2006	.622	1.609
	2007	.809	1.236
	2008	.479	2.090
Dependent Variable: Dividend Per Share			

The hypothesis was tested using regression analysis as shown in Table 9. In all the years under study, i.e., 2005-08, the dividend per share was best explained by both of the variables—lagged dividend and Earnings per share under study.

Perusal of Table 9 revealed that the values of P_t in all the years were significant at 1% in all the years from 2005 to 2008. The values of D_{t-1} in all the years were also significant at 1% level in all the years under study.

The examination of the results of the regression coefficients indicates that values of R^2 (coefficient of multiple determination), \bar{R}^2 (adjusted coefficient of determination) and F value of the coefficients, all signified the influence of explanatory variables P_t (Earnings per share) and

D_{t-1} (lagged dividend per share) on the dependent variable DPS_t in all the years under study.

Table 9 Regression Results of Lintner's Model For Textile Industry

Model	$D_t = a + b_1 P_t + b_2 D_{t-1} + u_t$					
	a	b_1 P_t	b_2 D_{t-1}	R_2	\bar{R}^2	F
Year		*	*			
2005	.289 (1.659)	.715 (12.732)	.060 (5.490)	.945	.941	231.989
2006	.478 (1.232)	.489 (4.022)	.084 (4.138)	.762	.744	43.249
2007	.275 (.664)	.443 (4.051)	.091 (4.176)	.690	.667	30.066
2008	-.292 (-1.263)	.646 (7.094)	.092 (4.848)	.905	.898	129.034

Note: Figures in the bracket show t-values of the coefficient

*Sig. at 1% level

**Sig. at 5% level

***Sig. at 10% level

The perusal of the above results led to the rejection of the hypothesis and it can be concluded that Lintner's model is well applicable and do explains the dividend payments by the Indian companies.

6. Conclusion

Dividend declaration is considered as one of the key focus areas of the firm's financial policy and is considered to be one of the most important tools for the distribution of value to shareholders. Dividend policy adopted by a firm has inference in the practical life for all whether is a manager or it is an organization's stakeholders. A well-known model that attempts to explain dividend policy is that of Lintner (1956). The analysis brings forth the fact that Lintner's model of dividend is the best as the dividend behavior of Indian industries under study has well been explained by the model for the study period 2004-08. The model states that dividend is governed by two financial variables viz.,

current earnings and lagged dividends that holds true for the companies in the Engineering sector under study.

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