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Dividend Smoothing &Implications of Lintner Model – A Study of Indian Consumer Goods Sector using Panel Data

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ABSTRACT

Dividend smoothing is the strategy used by the managers to target net earnings in the payout ratio as shareholders prefer stable dividend over volatile payments (Lintner 1956). In this paper, we investigate whether implications dividend smoothing model of Lintner holds good for Indian Consumer Goods sector. Using 15 years of panel data with 465 and 815 observations of Consumer durable goods sector and FMCG sector respectively, we find robust relationship between the smoothness of a firm's dividends with independent variable PAT and lagged dividend. Fixed effect firm model, time effect model and pooled data model has been used for the study. Results reveals high target payout ratio coupled with adequate speed of adjustment factor indicating the high presence of dividend smoothing and dividend signaling. Thus, Findings of the study support relevance of the Lintner model and finds that earnings (PAT) and lagged dividend are considered by managers while framing the dividend policy.

Keywords: Dividend Smoothing, Lintner Model, Consumer Goods Sector, Panel Data, .target payout, adjustment factor, lagged dividend, Profit after Tax(PAT).

INTRODUCTION:

Dividend smoothing can be described as strategy used by the managers to avoid adverse reaction of market participant or shareholders while setting dividend level. John Lintner (1956), in his study on dividend policy found that managers target a long-term dividend payout ratio and concluded that dividends are sticky, connected to long-term sustainable earnings, paid by mature firms, and are smoothed from year to year. As per him, investors considering change in the net earning are sole factor behind change in the dividend policy and hence it is the reason for managers to target net earnings in the payout ratio. Management avoids erratic changes and follows conservative dividend policy as the stockholders prefer stable dividend over volatile payments. Lintner(1956) findings have been further confirmed with more recent empirical evidence examining association of dividend with net profits, cash flow and other variables by Fama and Babiak (1968), De Anogelo H & De Angelo L (1990), Baker and Powell (2000), Omran and Pointon (2004) Brav et al. (2005), etc. This chapter is the effort to find the truth behind these arguments and it demonstrates application of Classic Lintner Model for Indian capital market, in specifically, applicability of dividend smoothing in BSE Consumer Goods Sector firms.
Across the globe,in various countries we find numerous studies on dividend payout behaviour of companies but still fail to find specific factors driving the payout behavior in corporate firms. Various studies have focused on broad set of independent factors on which dividend is dependent but it may vary across different industrial sectors and countries. Also, size of the company and time horizon may affects dividend payment pattern. After careful review of the literature, it was found that very few studies have focused in depth and majority of aspects of dynamic patterns in dividends payout areunderstudied on the dividend payout behavior of Indian firms sector wise. This research gap recognizes the need for investigatinginto as to what Indian corporate sector firms'

dividend payoutdecision depended on during the last fifteen yearsperiod.Thus, the purpose of this study is to examine the implications of basic Lintner model on dividend behavior of BSE Consumer Goods Sectoral Indices.

LITERATURE REVIEW:

John Lintner in 1956 being first to apply regression analysis showed that firms adopted and tended to adhere to optimal long-term dividend payout ratios which were relatively stable, suggested that managers would only raise a firm's dividend if they were confident that the firm's future earnings could be maintained at a consistently higher level in the future. An implication of this was that the announcement of a dividend increase might convey useful information about future earnings. Modigliani & Miller (1961) suggest thatdividend announcements may be seen to convey implicit information about the firm's future earnings potential. In other words,when markets are imperfect share prices may respond to changes in dividends. This proposition has since become known as the "information content of dividends" or signaling hypothesis.
Fama and Babiak (1968) in USA found an average speed of adjustment of approximately 0.37, slightly higher 190 than Lintner finding of 0.30, and a target payout ratio of 50%, almost equal to onefound by Lintner. Miller and Rock (1985) picked up the concept of costliness and argued that the relative cost of signaling any particular level of earnings would increase as the level of actual earnings achieved by a firm decreased. Noting that information asymmetry gave managers latitude to signal either correctly or duplicitously, Miller and Rock maintained that signaling would be worthwhile for profitable firms since the costs would be worth the effort of ensuring the market did not undervalue their shares. Conversely, the relatively higher cost of duplicitous signaling would be counter-productive for companies whose profitability was under threat. They modeled a net dividend concept – the unexpected net dividend is determined by subtracting external financing from the total dividend paid to signal the expected earnings information that implies future earnings level. The model combines dividends and external financing that are stylized as different sides of the same coin.Behm and Zimmermann (1993) tested the partial adjustment model for a sample of 32 German listed firms. They found the speed of adjustment between 0.13 and .58, and a target payout ratio of between 25and 58%.Varouj Aivazian , Laurence Booth , Sean Cleary (2003) also found Lintner model works remarkably well for US markets. John and Nachman (1986) have addressed the problem of dividend smoothing in their theoretical model. The firm's dividend policy may not change over a period of time, even though earnings may change substantially and used a dynamic version of John and Williams (1985) Model which provided rationale for firms paying a smooth series of cash dividends even though such dividends have some tax disadvantage over alternative methods of distributing cash. A corporation's prospects can only be partially revealed using dividend policy because managers routinely smooth the payment stream; changes in dividend policy are only a rough signal of future expected earnings. Kanwal and Kapoor (2008) conducted study using panel data on Indian IT sector and found high presence of dividend smoothing. Petit(1972), Wooldridge (1982) and Rozeff(1982) study also further supported Lintner's model of dividend smoothing.The weekly governed managers exhibit more dividend smoothing and less likely to omit dividends and changes in the dividend level following large cash flow increases are decreasing in governance quality(Knyazeva, 2008). Empirical study conducted by Michaely et al (2002) exhibits that the market punishes dividends reduction way more severely than the dividend increase. Brav et al (2005) argue over reaction of the market for dividend cuts is the reason is to why dividends are sticky. On the other hand, Ogden et al. (2002) argue that since a firm's financing needs vary over time, so should its dividends. Manos (2002), Kanwal and Kapoor(2009), Michaley and Leary (2008), Michaley & Mark(2009), Parashuraman and Nusrathuunisa (2012), Jeong (2013) further supported Lintner study and found that firms smooth dividend in order to avoid negative market reaction.

METHODOLOGY OF THE STUDY:

Methodology of the study consists of formulating hypotheses, data sampling and observations, a brief discussion of tools of analysis, model development, analysis and interpretation.

Hypotheses:

Keeping in view the implications and the factors influencing pay out decision, as revealed in literature survey, the study proposes to test the following hypotheses.
H_1: BSE Sectoral Indices firms take dividend payout decision independent of current year's earnings position and the dividends paid in the preceding year.
H_2: Time factor does not have any impact on the dividend payout decision of BSE Sectoral Indices firms.

Model development:
Basic Lintner model is used for investigating the dividend payment behavior of BSE Sectoral Indices firms. The following are the model equations used in the study.

Lintner's Basic Model

$D^*t = \mathbf{(TD/P)}^*Et$ ……(5.1)
$Dt - D(t-1) = â + \mathbf{SOA}\{D^*t - D(t-1)\} + \mu_t$ ……(5.2)
$D_t - D(t-1) = â + \mathbf{SOA}\{D^*t - D(t-1)\} + \mu_t$ (5.3) ……(5.3)
$D_t - D(t-1) = â + \mathbf{SOA}\ \{\mathbf{(TD/P)}(Et) - D(t-1)\} + \mu_t$ ……(5.4)
$D_t = â + \mathbf{(TD/P)\ SOA}\ Et + (1-\mathbf{SOA})\ D(t-1) + \mu_t$ ……(5.5)

Where,
D*t = Desired Dividend in the current year
Dt= Actual dividend payment in the current year
TD/P= Target Dividend Payout Ratio
Et = Earnings per share in the current year
Dt-1= Lagged dividend (Dividend in the previous year)
SOA= Partial adjustment factor
â = Intercept related to dividend growth
μ= Standard Error term.

In Lintner Model two parameters embedded in the firm's dividend behavior, i.e. '**(SOA)*(TD/P)**' and (1-k) are included in β1 and β2 (regression coefficients) respectively. These parameters are as follows:

Target Dividend Payout Ratio (TD/P):
Target payout ratio is a firm's long-run dividend-to earnings ratio. The company's dividend policy is targeted to pay out a certain percentage of earnings, but it pays a stated and stable dividend and adjusts dividend to the target as base line increases in earnings. The target payout ratio is computed using regression coefficients, i.e.

$$\mathbf{(TD/P) = \beta 1 / (1-\beta 2)}$$

Adjustment factor (k) or Speed of Adjustment (SOA):
It considers the quantity (1-β2) as a safety factor that firm uses to avoid giving the dividend payment to a level which cannot be maintained in the later years.

$$\mathbf{(SOA) = 1 - \beta 2}$$

Simplified version of Multiple Regression Equation of Lintner Model:

$$\mathbf{Dt = â + \beta_1 Et + \beta_2\, Dt\text{-}1 + \mu}$$ ……(5.5)

Sample and data source:
The study constitutes BSE Sectoral Indices of two sectors chosen as the sample. Specifically, the study is conducted in Consumer durable goods and FMCG Sector. The reference period for the present study is from the year 2001 to 2015, i.e., period of 15 years. However, due to information constraints the sample size differed in few years, throughout out the sampling period. The list of specific companies could not be presented due to space and constraint. Prowess database maintained by Centre for Monitoring Indian Economy (CMIE) is the prime source of data for the study purpose.The total good observations considered for the study is 465 for Consumer durable goods sector and 815 for FMCG Sector respectively. Thus, the total observations considered for the study is **1280.**The Statistical Tools Used in the Modelare multiple regression to test independent variable, R square and adjusted R square to find goodness of fit of model,**beta** coefficient of PAT and lagged dividend, ANOVA or analysis of variance, t test and DW value for testing auto correlation.

ANALYSIS AND INTERPRETATION OF RESULTS:

Statistical Model Developed to Test the Applicability of Lintner Model:
In order to test the hypotheses, to explain the implications of the study, multiple regression analysis (OLS) has

been performed using SPSS 21.0 version and R for 11 BSE sectoral Indices firm to understand the linkage between earnings and lagged dividend on the dividend payout. The model for a multiple regression takes the following form:

Y = â + ß1X1+ ß2X2+ μ

Where
Y is the criterion variable, i.e, Dividend for the current year
â is the intercept,
β1, β2…are regression co-efficient, for Profit after Tax (PAT) and Lagged dividend respectively.
X1 and X2…are predictor variables, namely PAT and Lagged Dividend, μ is the standard error.

Our data analysis of empirical evidences reveals the following insights on dividend smoothing and Lintner's (1956) behavioral model of dividend policy While R output gave many figures, only the most important statistical outcomes are taken into account and have summarized in the below tables accordingly.

Data analysis and Interpretation of Consumer Durable Goods Sector:

Table No 1: Regression results of pooled data, Fixed effect one way and Fixed effect two model in Consumer Durable GoodsSector

	Pooled data Model		Fixed effect firm model		Fixed effect -time model	
Regressors	**Regression Coefficient**	**P value**	**Regression Coefficient**	**P value**	**Regression Coefficient**	**P value**
Intercept	5.4933	0.1286				
PAT	0.0163	2.165e-05 ***	0.0287	8.443e-09 ***	0.0294	9.818e-09 ***
Div (t-1)	0.9951	< 2.2e-16 ***	0.8786	< 2.2e-16 ***	0.8590	< 2.2e-16 ***
2002					0.1168	0.9952
2003					9.6053	0.6134
2004					9.7485	0.6021
2005					27.5672	0.1386
2006					16.2022	0.3772
2007					15.1098	0.4089
2008					5.6300	0.7550
2009					13.8036	0.4427
2010					24.6382	0.1650
2011					22.7359	0.2030
2012					-5.5030	0.7578
2013					34.3275	0.06462 *
2014					38.3958	0.04050 *
2015					29.8278	0.1146
Adjusted R2	0.8873		0.7648		0.7444	
F statistics	1925.1100	<2.22e-16***	1129.6800	< 2.22e-16***	142.5850	<2.22e-16***
Hausman Statistics			3.3222	0.1899	4.8988	0.0863
LM test			1.6617	0.1974	1.6617	0.1974
F Test			1.9899	0.0005***	1.0897	0.3649
Durbin-Watson	1.9277					
Target payout ratio	3.7906		0.2364		0.2085	
Adjustment factor	.0049		0.1214		.141	

*, **, ***indicates values significant at10%, 5% & at 1% level of significance respectively.

The results of pooled data, One-way and two way Fixed effect model of Consumer Goods Sector are shown in Table No.1. As depicted in pooled data results, regression coefficient both PAT during the current year as well as regression coefficient of dividend paid during the previous year is significant at 1%e level of significance.The F statistics tests the validity of the Lintner model in the Consumer durable goods sector. To examine the existence of autocorrelationDurbin Watson test has been applied. The DW statistics is 1.9277 indicating that there is no problem of serial autocorrelation in the data. The adjusted R square for pooled data analysis is 88.73%.

The results fixed effect time model shows that both the independent variables PAT and dividend paid during previous year are statistically significant at 1% level of significance. The value of adjusted R square is 76% and 74 % under fixed effect firm model and fixed effect time model respectively.The time dummy is found to be significant at 1% level of significance portraying that there are time effects in the year 2013 and 2014.Hausman statistics is insignificant in both fixed effect firm model and time effect model.The results highlight that classical linear regression model or Pooled OLS should be preferred to fixed effects and random effect models as LM test results reported above are statistically insignificant. Hence, the results of pooled data should be used for interpretation of the study conducted on Lintner model. F test results are significant at 1% level in firm model depicting that firm effects are present and time effects are absent.

The regression results of one-way fixed effect model as presented in the Table No.1 shows that regression coefficient of dividend paid during previous year and PAT is significant at 1% level of significance. The Adjusted R square is 76.48%. The results demonstrate overall validity of the model as F statistics is significant at 1% level of significance. We found low dividend smoothing in FMCG sector as results indicate low target payout ratio and high speed of adjustment coefficient.

FMCG SECTOR:

Table No 2: Regression results of pooled data, Fixed effect one way and Fixed effect two model in FMCG sector

	Pooled data Model		Fixed effect firm model		Fixed effect -time model	
Regressors	**Regression Coefficient**	**P value**	**Regression Coefficient**	**P value**	**Regression Coefficient**	**P value**
Intercept	-22.3353	0.6153				
PAT	0.1975	<2e-16 ***	0.2102	< 2.2e-16 ***	0.2071	< 2e-16 ***
Div (t-1)	0.7270	<2e-16 ***	0.6190	< 2.2e-16 ***	0.6186	< 2e-16 ***
2002					-9.0140	0.9717
2003					-26.5508	0.9173
2004					66.4760	0.7914
2005					-40.3496	0.8704
2006					-26.9532	0.9124
2007					-19.1798	0.9369
2008					66.6107	0.7845
2009					-58.5234	0.8092
2010					269.5652	0.2598
2011					-49.5183	0.8351
2012					-11.2272	0.9625
2013					427.3321	0.07498***
2014					114.1148	0.6384
2015					114.3559	0.6390
Adjusted R2	0.9229		0.7356		0.7241	
F statistics	5097.0800	<2.22e16***	1508.5200	< 2.22e-16***	188.0400	<2.22e16***
Hausman Statistics			99.3337	< 2.2e-16***	87.7436	<2.2e-16***
LM test			0.5290	0.4670	0.5290	0.4670
F Test			0.9880	0.5054	0.6824	0.7930
Durbin-Watson	2.0210					

	Pooled data Model		Fixed effect firm model		Fixed effect -time model	
Regressors	**Regression Coefficient**	**P value**	**Regression Coefficient**	**P value**	**Regression Coefficient**	**P value**
Target payout ratio	0.723		0.5517		0.5429	
Adjustment factor	0.273		0.381		0.3814	

***indicates values significant at1% level of significance.

Interpretation of Data:

The results of pooled data, One-way and two way Fixed effect model of FMCG Sector are shown in Table No.2. The pooled data results indicateregression coefficient both PAT during the current year as well as regression coefficient of dividend paid during the previous year is significant at 1%e level of significance.The F statistics tests the validity of the Lintner model in the Consumer durable goods sector. To examine the existence of autocorrelationDurbin Watson test has been applied. The DW statistics is 2.02 indicating that there is no problem of serial autocorrelation in the data. The adjusted R square for pooled data analysis is 92.29%.

The results fixed effect time model shows that both the independent variables PAT and lagged dividend are statistically significant at 1% level of significance. The value of adjusted R square is 72 % under fixed effect time model.The time dummy is found to be significant at 1% level of significance portraying that there are time effects in the year 2013.LM test results reported above are statistically insignificant. Hence, the results of pooled data should be preferred for interpretation. Haussmann statistic values are 9.33 and 87.74 in fixed effect one way and two ways model respectively which is significant at 1% level in both the cases indicating that fixed effect models can be used over random effect models. F test results are insignificant at 1% depicting that both firm and time effects are absent. Though the LM test and F test results are reported, they lose significance in interpretation as Haussmann test results are significant.

Results of one-way fixed effect firm model as presented in the Table No.2 shows that the regression coefficient of dividend paid during previous year and PAT is significant at 1% level of significance. The Adjusted R square is 76.48%. The results demonstrate overall validity of the model as F statistics is significant at 1% level of significance. We found low dividend smoothing in consumer durable goods sector as results indicate low target payout ratio and high speed of adjustment coefficient.

CONCLUSION:

The analysis of Indian consumer goods sector, pooled data shows that earnings of the present year and equity dividend of the preceding year are significant factors affecting the dividend to be distributed during the current year. Since the regression coefficients of both independent variables are found to be significant at 1% level of significance, this fact is statistically validated by the findings. The results conclude that the companies ensure the current dividend signals their performance and the desire of management to maintain a stable dividend.

The study has confirmed BSE Sectoral firms follow Lintner's description of dividend policy as they firstly, smooth dividends, secondly, they are reluctant to cut dividends even in case of fewer earnings (PAT), and they increase dividends by small percentages with increase in the earnings. The results uses Lintner model to examine difference in dividend smoothing in various BSE Sectoral segments in India. The dependent variable, dividend is regressed on PAT and lagged dividend. Higher coefficient of on PAT and lagged dividend reflects a higher level of dividend smoothing.

In Indian consumer durable goods sector, the target dividend payout ratio derived from beta lies between the broad range of 2% to 05% and in FMCG sector between 15 to 16 %. It is relatively very low target payout ratio as compared to what was suggested by Lintner. The partial adjustment factor is found to be within the range of 1.10% to 1.25%.This is similar as highlighted by Lintner in his findings. The choice of a particular speed of adjustment factor depends upon possible variations in net earnings after tax and stability of dividends required. Stable net earnings after tax would induce a management to choose a higher adjustment coefficient.But if net earnings are subject to wide fluctuations, a desire to have stable dividend would lead to choosing lower adjustment coefficient. It may be stated that the principal determinant of dividend policy is profitability. The results signify that consumer goods sector, specifically, durable goods sector as well as FMCG sector score high on dividend stability.

Thus, through the analysis and the discussions presented an endeavor has been made to empirically test the Lintner model in Indian consumer goods sector. Our study unearths the applicability of dividend smoothing and

signaling approaches and relevance of information asymmetry models consumer durable goods sector and FMCG sector. Our study contributes as an addition to the finance literature and holds statistical significance similar to many other studies in the developed countries on dividend signaling and smoothing approach used by the management. The future research in the area of dividend smoothing can be focused on exploring other sectors to test validity of Lintner model.

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