

Applicability Of Lintner's Dividend Model: An Empirical Analysis Of Firms Listed On National Stock Exchange

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Abstract:

The question on the determinants of corporate dividend behavior is unsettled puzzle in the field of corporate finance. There are large number of studies have been conducted to examine the determinants of dividend payout. These studies have come up with different determinants of dividend payout; those are vary based on various parameters. Lintner's dividend model is milestone in the field of corporate finance. The Lintner's model famously knows as two factor model, Lintner found that current year's earnings and previous year's dividend (lagged dividend) are the two factors mainly influence on the dividend payout. Later John Brittain (1964, 1966) extended the model by incorporating certain other variables. In the present study, the applicability of Lintner's basic dividend model and its extended models (John Brittain's 1964, 1966) are examined on sample of Nifty-100 index constituent firms. It is found that, the lagged dividend is the key variable that significantly influence on the dividend payout in all the models across all the periods. While, current year's earnings and capital expenditure significantly influence on dividend payout in certain years.

Key Words:

Dividend payout, lagged dividend, current year's earnings, capital expenditure, depreciation and amortization, Durbin Watson.

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I. Introduction

The dividend decision deals with the retention or distribution of net earnings of a firm. As, the shareholders wealth maximization is core objective of a firm. Gordon, (1959) and Walter, (1963) have argued that, dividend payout of a firm influences on the value of the firm. Whereas, Miller and Modigliani, (1961) in their seminal paper argued that, the dividend payout does not influence on the value of a firm. After these landmark works on the dividend policies there are large number of researches have been carried out to examine the impact of dividend payout on the value of the firm and dividend determinants in different countries on various industries (Anton, n.d.; Lumapow and Tumiwa, 2017; Odum et al., 2019; Sondakh, 2019). In the previous studies it is proved that, the dividend policies influence on the value of the firm. Further, the manager of a firm has to ensure that, such dividend decision results in higher shareholders wealth and they have to take into account the stable dividend and capital appreciation demands of shareholders.

As, the dividend policies influence on the value of the firm, the important question is- 'what determines the dividend payout of a firm?' In other words, what are the determinants of dividend payout a firm? To address this particular question, one of the landmark researches conducted on the dividend is Lintner's dividend model.

As an emerging market India plays crucial role in world trade. The present study conducted to examine the applicability of Lintner's basic and extended dividend models in Indian market, with the sample of Nifty-100 index constituent firms. National Stock Exchanges Nifty-100 index firm represents about 77% percent of the free-float market capitalization of the stock listed on NSE as March 31, 2016 (NSE, 2021). Thus, the findings of the study can be generalized.

The present study organized as follows: In the section one introduction to the topic is given, that is followed by review of literature in the section two and problem statement and objectives in the section three. While in the section four research methodologies are presented, section five deals with results and discussion and in the section six concludes the topic.

II. Review of literature:

There are large number of studies have been conducted on the determinants of dividend payout. Lintner (1956) found that current year's earnings and previous year's dividend payout influence on the current year's dividend payout. Whereas, Darling (1957) is of the view that previous year profit better explains the

current year's dividend than the previous year dividend and thus he substitutes previous year's profit in place of previous year dividend in Lintner's model. This model uses current year's profit after tax (PAT), lagged PAT, depreciation and amortization expenses and change in sales over two previous two years as independent variables.

John Brittain (1966) studied the major industries over a period of 1919-1960. Results of the study indicated that: Current year's cash profits and previous year's dividend influences on the dividend policy of a firm. This model uses current year's PAT and depreciation and amortization expenses as separate variables and previous year's dividends as independent variables.

Pandey and Bhat, (2007) conducted their research in Indian market with monetary restrictions. It is found that, 'Indian firms have lower target ratios and higher adjustment factors. The finding suggests that the restricted monetary policies have a significant influence on the dividend payout behaviour of Indian firms'.

Parasuraman and Ramudu (2012) conducted their study with the sample of BSE Sensex 30 stocks to empirically examine basic and extended Lintner's models. They found that, 'basic earnings, cash earnings and lagged dividends' are the significant predictors of current year's dividend payout. Further, they also found that the, 'depreciation and capital expenditures do not have any impact on the dividend payout of the sample firms'.

Arko et al., (2014) made an attempt to identify the determinants of dividend payout of the firms of Sub-Saharan African firms. In the study it is found that, 'profitability level, investment opportunity, taxation, leverage, institutional shareholding and risk' significantly influence on the dividend payout of the sample firms.

Al-Malkawi et al., (2014) conducted a study to find the dividend determinants of firms listed on Muscat Securities Market. The results of the study show that, 'the profitability and lagged dividend' are the important determinants of dividend payout. Further they also validate the signaling factor of dividend.

Persson, (2014) made an attempt to study the simultaneous determination of debt, dividend, and inside ownership policies in Sweden. In the research it is identified that, 'positive two-way causal relationship between debt and dividend policies.' Further is also found that, two-way causal relationship between inside ownership and dividend policies, but dividends affect inside ownership in a positive way while inside ownership affects dividends in a negative way'.

Chhatoi, (2015) conducted a study to examine the relationship between the profitability and dividend payout in Indian iron and steel industry. The results of the study show, 'profitability influences on the dividend payout of the sample firms'.

Misra, (2015) conducted a study to identify the determinants of dividend payout of the Indian banking sector. The findings of the reveal, 'growth rate of real GDP affecting dividend payout ratio and return on assets and total deposits to total assets ratio of Indian banks affecting their payout ratio negatively'. While, the results of the determinants of dividend payout reveals none of the variables found as significant determinant, indicating the fact that Indian banks consider dividend payout ratio to be a better measure of their dividend policy'.

AnjanaRaju and Rane, (2018) conducted their study with the sample of BSE listed metal sector firms. It is found that, dividend smoothing prevails in Indian Auto Sector. Further it is also found that 'lagged dividend and the profit after tax are the two important determinants of dividend payout'.

Garg and Bhargaw, (2019) made an attempt to study the applicability of Lintner's dividend model in Indian capital goods companies. In the study it is found that, 'current year profits after tax and lagged dividends are the most important factors those affect positively on the current dividend. Further, they also made an attempt to examine the Lintner's dividend model by incorporating Brittain's explicit cash flow model as well as its variants. In their study it is found that, 'the Britain's cash flow model holds good in Indian capital good firms'.

Meng, (n.d.) study found that 'corporate tax rate and profitability are the two factors significantly influence on the dividend payout of the electronic companies listed on Shanghai Stock Exchange'.

Lintner's Dividend Model

John Lintner (1956) developed a model to address the question on determinants of dividend payout of a firm. In the study it is found that, dividend policy is an active variable because managers believe that stable dividends mitigate investors' negative reactions. According to Lintner's analysis firms have three important concerns. First, firms have target dividend pay ratios, based on which the firm decide to distribute part of their earnings to their shareholders in the long run. Second, firms change the dividend payout to match long term and sustainable shift in earnings; further, such changes only possible when the managers feel that they can maintain these higher dividends pay out in the long run; because, markets put premium on the stocks of firms which pay stable dividends. Thus, stability of dividend pay-out is one of the important concerns. Finally, managers are more concerned about the change in the level of dividend rather than about the levels of dividends payout. After mass interview of chief finance officers and top level authorities of different firms in the US market. Lintner and team concluded that, 'current year's net earnings and lagged dividend are the two important determinants significantly influence on the dividend decision of firms'.

The literature review on the dividend payout behavior of the firms' well support the Lintner's two factor model.

III. Statement of the Problem and Objectives of the study

There are large number of studies have been conducted to examine the determinants of dividend payout and applicability of Lintner's dividend model for different industries across the world(see Al-Malkawi et al., 2014; Arko et al., 2014; Meng, n.d.; Persson, 2014 etc.,). In Indian perspective also there are numerous studies have been conducted(AnjanaRaju and Rane, 2018; Chhatoi, 2015; Garg and Bhargaw, n.d.; Misra, 2015; Parasuraman and Ramudu, 2012 etc.,). Each of these studies comes with their own findings on the determinants of dividend payout. In these studies the determinants of dividend payout based on the country, industry and time. While, these studies could not find what exactly drive the dividend behavior of a firm. As mentioned earlier dividend determinants depend upon various things. Upon the careful survey of the literature on the issue it is found that, there are few studies focused on the dividend payout behavior of the firms listed on Indian stock markets. Therefore, it is recognized that there is a need to identify as to what are the determinants of dividend payout of Indian firms (particularly the Nifty-100 constituent firms) over the last six years. The present study has the following specific objectives:

1. To examine the applicability of Lintner's dividend model and other extended models(Daling and Briatin) on the dividend behavior of National Stock Exchange's Nifty-100 index firms.
2. To identify the extent of influence of the determinants of dividend behavior.

Hypotheses

Based on the literature review on the determinants of dividend payout of the firms the present study state following hypotheses

H1: Current year's earnings and previous year's dividend significantly influence on the current year's dividend payout of the Nifty-100 firms.

H2: Current year's cash profits and previous year's dividend significantly influence on the current year's dividend payout of the Nifty-100 firms.

H3: Current year's earnings, previous year's dividend payout, current year's depreciation and capital expenditure significantly influence on the dividend payout of the Nifty-100 firms.

H4: Time factor significantly influence on the dividend decision of Nifty-100 firms.

IV. Research Methodology

In the present section, sample, data source, research model, explanation of variables, normality and autocorrelation are discussed.

4.1 Sample and Data Source:

As National Stock Exchange's Nifty-100 index constituent firms represent about 77 percent of the free-float market capitalization of the stock listed on NSE as March 31, 2016(NSE, 2021). This shows, the sample of Nifty-100 constituent firms can be true representative of population and findings of the study can be generalized in Indian context. Thus, in the present study the samples of Nifty-100 index constituent firms have been selected from March, 2015 to March, 2020 are included in the final sample. The following criteria are followed to select the final sample:

- i. From the Nifty-100 firms banking and financial firms are excluded because of their nature of data different from non-financial firms.
- ii. From the non-financial firms, those are consistently be not part of Nifty-100 index from March, 2015 to March, 2020 are eliminated.
- iii. The firms those are not paid dividend during the study period are eliminated.

After following the above criteria our final sample reached to 44 non-financial Nifty-100 index constituent firms.

The reference period for the present study is from 31 March, 2015 to 31 March, 2020. The data for the present study has been collected from Capitaline data based. The validity of the data has been cross-checked with the randomly selected firms annual reports of the sample and found no difference, thus it is decided that the data is valid.

Table-1: Sample Profile

| Sl No | Firm | Sector |
|-------|--|---------------------------------------|
| 1 | ACC Ltd. | Cement |
| 2 | Adani Ports and Special Economic Zone Ltd. | Infrastructure Developers & Operators |
| 3 | Ambuja Cement Ltd. | Cement |
| 4 | Asian Paints Ltd. | Paints/Varnish |

| | | |
|-----|---|--|
| 5 | Aurobindo Pharma Ltd. | Pharmaceuticals |
| 6 | Bajaj Auto Ltd | Automobile |
| 7 | Bharti Airtel Ltd | Telecomm-Service |
| 8 | Bharat Petroleum Corporation Ltd | Refineries |
| 9 | Coal India Ltd | Mining & Mineral products |
| 10 | Container Corporation of India | Logistics |
| 11 | Cummins India Ltd | Capital Goods-Non Electrical Equipment |
| 12 | Dabur India Ltd | FMCG |
| 13 | Divis Laboratories Ltd | Pharmaceuticals |
| 14 | DR Reddy's Laboratories' Ltd. | Pharmaceuticals |
| 15 | Godrej Consumer Products Ltd. | FMCG |
| 16 | Grasim Industries Ltd. | Textiles |
| 17 | HCL Technologies Ltd. | IT - Software |
| 18 | JSW Steel Ltd. | Steel |
| 19 | Larsen & Toubro Ltd | Infrastructure Developers & Operators |
| 20 | GlaxoSmithkline Consumer Healthcare Ltd | FMCG |
| 21 | Lupin Ltd | Pharmaceuticals |
| 22 | Mahindra & Mahindra Ltd. | Automobile |
| 23 | Marico Ltd. | FMCG |
| 24 | Maruti Suzuki India Ltd. | Automobile |
| 25 | NMDC Ltd. | Mining & Mineral products |
| 26 | NTPC Ltd. | Power Generation & Distribution |
| 27 | Oil & Natural Gas Corpn Ltd | Crude Oil & Natural Gas |
| 28 | Oracle Financial Services Software Ltd. | IT - Software |
| 29 | Petronet LNG Ltd. | Gas Distribution |
| 30 | Power Grid Corporation of India Ltd. | Power Generation & Distribution |
| 31 | Reliance Industries Ltd. | Refineries |
| 32 | Siemens Ltd. | Capital Goods - Electrical Equipment |
| 33 | Tata Consultancy Services | IT - Software |
| 34 | Tata Motors Ltd. | Automobile |
| 35 | TaTa Steel Ltd | Steel |
| 36 | Tech Mahindra Ltd. | IT - Software |
| 37 | Titan Company Ltd. | Diamond, Gems and Jewellery |
| 38 | Torrent Pharmaceuticals | Pharmaceuticals |
| 39 | UltraTech Cement Ltd. | Cement |
| 40 | United Breweries Ltd | Alcoholic Beverages |
| 441 | UPL Ltd. | Agro Chemicals |
| 42 | Vedanta Ltd | Mining & Mineral products |
| 43 | Wipro ltd | IT - Software |
| 44 | Zee Entertainment Enterprises Ltd | Entertainment |

4.2 Model

Basic Lintner model (1956) and its extended versions(Cash Flow Model and Segregated Cash Flow Model) adopted to examine the dividend behavior of NSE's Nifty-100 constituent firms. The below model equations are followed in the study:

Model-1: Lintner's Basic Model: $D_t = \alpha + \beta_1 CE_t + \beta_2 D_{t-1} + \mu$

Model-2: Cash Flow Model: $D_t = \alpha + \beta_1 CPT + \beta_2 D_{t-1} + \mu$

Model-3: Explicit depreciation model: $D_t = \alpha + \beta_1 CE_t + \beta_2 D_{t-1} + \beta_3 DPR_t + \beta_4 CAPEXP_t + \mu$

Where,

D_t = Current year's Dividend payout

D_{t-1} = Lagged Dividend

CE_t = Current year's earnings

CPT = Cash Profit per share in the current year

DPR_t = Depreciation in the year t

$CAPEXP_t$ = Capital expenditure in the year t, and

μ = Error term.

In the present study continuous cross-section regression analysis is carried out from 2015 to 2020 for over six years. The advantages associated with cross-section analysis are- it does take into account the large sample, it elevates the accuracy of slope of regression line and also it decreases year on year volatility (Fama and French, 1997). The multiple regression analysis is carried out with the help of SPSS 21 version.

There are two important factors embedded in the Lintner dividend model about a firm's dividend behavior, they are - kr and $(1-k)$ these terms are impounded in β_1 and β_2 of the regression model respectively (Parasuraman and Ramudu, 2012). These parameters are as follows:

Target Payout Ratio (r): It is a firm's long run dividend to earnings ratio. The target dividend helps the management in dividend declaration, it acts as a guide while declaring dividend. It is a policy decision of a management about certain percentage of profits it distributes as sated or stable payout and adjusts it to the target as base line increases in earnings. The target payout ratio can be computed from the regression coefficients by the following identity:

$$r = \beta_1 / (1 - \beta_2).$$

Adjustment factor (k): As the management avoids dividend cuts in the future. Therefore, if there are any increases in the earnings they are not immediately translated into dividends rather gradually increase to avoid future down adjustment. The delay in the adjustment of dividend to the increasing profits is a sort of safety device to make dividends as perpetual returns rather than short-run returns (Bodla et al., 2007). Adjustment factor (k) can be derived as follows:

$$k = 1 - \beta_2$$

The present study is based on the basic model of Lintner (1956) and its extended versions by Brittain (1966, 1964) i.e., cash flow model and explicit depreciation model. In the cash flow model Brittain simply replaced the cash flows for profits and in the explicit depreciation model he splits the cash flows into depreciation and profits. Further, in the model-3 capital expenditure has been incorporated to identify whether dividend payout of a firm influenced by the new investment decision. For the present study the certain input has been taken from the studies conducted by Bodla et al., (2007); and Parasuraman and Ramudu, (2012).

4.3 Measurement of Variables

Measurement of the variables used in the models is as follows:

Dependent Variable

1. Dividend Payout (D_t)

The researches on the dividend determinants used the Dividend Payout ratio (DPR) or Dividend per Share (DPS) or Dividend Yield (DY) as dependent variable. The issue related with DPS is- the face value of shares varies across firms or it may also vary for different period for a same firm. Further the use of Dividend payout ratio has the problem 'when the company has negative profits and paying dividends' (Mallikarjunappa, 2012). While, DY depends on the market price of the share at the end of the year. Therefore, we have used *Total Cash Dividends Paid scaled to Total paid up share capital*. The measure gives dividend paid per rupee of investment made by the shareholder. Therefore, it is treated as the ideal measure of dividend.

Independent Variables:

2. Current year's Earnings (CE_t)

Current year's earnings or profit is one of the important determinants of dividend policies of a firm (Ghosh, 2008). Lintner found current year's earnings significantly influence on the dividend payout. Either positive or negative relationship between the current year's profit and dividend can be expected.

The variable Current year's profit is measure as Net Profit to Net worth(Ghosh, 2008), *This is also known as the Return on Equity (ROE).*

3. Lagged Dividend(Dt-1)

It is the cash dividend payout in the last year. As Lintner(1956) found the dividend paid in the previous year significantly influence on the current year's dividend payout. This is because, the firms intend to maintain constant dividend or increase their dividend gradually. However, firms are generally reluctant to cut the dividend.

4. Cash Profits(CPt)

As Brittain(1966) states if a firm has higher cash profits it increases the dividend payout capacity. Thus, positive relationship between the dividend and cash profits can be expected. Since, the depreciation and amortization are the non-cash deductions from the earnings of a firm. Thus, the net profit plus depreciation and amortization would be appropriate measures of a firm's payout capacity(Brittain, 1966, 1964).

Cash Profit is measured as Net Profit Plus Depreciation and Amortization divided by total assets_t.

5. Capital Expenditure (CAPEXPt)

Capital expenditure results in huge cash outflow. In any given year, if a firm increases its investment on its fixed assets, higher would be the cash outflow. Such cash outflow leads to less available funds for the distribution of dividend. Thus, negative relationship between the capital expenditure and dividend payout can be expected.

The net investment includes- Total Net investment in PP&E plus total net investment in intangible assets plus net investment in financial assets plus net firm acquisitions. To make the investment variable comparable and suitable for statistical analysis, this variable is divided by total assets.

Our definition of Investment includes – (Change in the gross fixed assets)/ Total assets_{t-1}

6. Depreciation and amortization expenses (DPrt)

Depreciation and amortization are the non-cash expenses. Higher the depreciation and amortization lesser will be the taxable income, the extent of tax saved due to these non-cash expenses can be distributed as dividend. Further, there is an alternative argument, which argues that, higher depreciation and amortization results in lesser profits after taxes therefore the firms will pay lesser dividend.

The depreciation and amortization expenses are scaled as Total depreciation and amortization expenses_t / Total Fixed assets_t.

V. Results and Discussion

The extract of the important results of SPSS are presented for all the three models.

Table -2(a): Summary of Model-1 Regression Results

| Results of model-1 ($D_t = \alpha + \beta_1 CE_t + \beta_2 Dt-1 + \mu$) | | | | | | | |
|---|--------|------|------|---------|---------------------|------------|--------|
| Year | A | R | R 2 | Adj. R2 | Std. Error(μ) | R 2 Change | Sig. F |
| 2015 | .511 | .847 | .718 | .704 | 1.26 | .718 | .000 |
| 2016 | -1.687 | .749 | .561 | .540 | 2.41 | .561 | .000 |
| 2017 | -.314 | .659 | .435 | .407 | 2.17 | .435 | .000 |
| 2018 | 1.836 | .681 | .464 | .438 | 1.99 | .464 | .000 |
| 2019 | .670 | .867 | .751 | .739 | 1.55 | .751 | .000 |
| 2020 | .593 | .694 | .482 | .457 | 2.67 | .482 | .000 |

Table-2(b): Beta coefficients and 't' values of independent variables (earnings and lagged dividends) and Durbin Watson' coefficient of in model-1

| Year | Earnings (CEt) | | Lagged Dividends (Dt-1) | | Durbin Watson |
|------|----------------|---------|-------------------------|---------|---------------|
| | β_1 | t-value | β_2 | t-value | |
| 2015 | -.005 | -.054 | .850** | 9.807 | 1.837 |
| 2016 | .380** | 3.571 | .560** | 5.302 | 2.136 |
| 2017 | .200* | 1.694 | .607** | 5.135 | 2.030 |
| 2018 | 0.1 | -.854 | 0.68** | 5.946 | 2.147 |
| 2019 | -.050 | -.641 | .860** | 11.108 | 2.143 |
| 2020 | .083 | .734 | .690** | 6.154 | 2.373 |

*Significance at 10% level and **Significance at 5% level

The above table-2(a) shows the test results of model-1. The sig. F value is 0.00 for all the years, this shows that, the independent variables i.e., Current year's earnings and lagged dividend significantly influence on the dividend payout of the Nifty-100 index constituent firms. Thus based on the result, as the sig F-value is lesser than 0.05 therefore, we do not accept the null hypothesis(H1). It proves, the independent variables i.e., current year's earnings and lagged dividend significantly influence on the dividend payout of the sample firms.

The R² shows the portion of relationship explained by the independent variables, it is higher in all the years, particularly it is highest in the year 2019 followed by 2015. The table-2(b) reveals the beta coefficient of the model-1, lagged dividend proves it is significantly influence on the dividend payout of the sample firms in all the years. The beta coefficient of current year's earnings (CE_t) is significant in the years 2016 and 2017. However, the 't' statistic of beta coefficient of lagged dividend is higher unlike current year's earnings indicating the impact of lagged dividend is higher. Further, the table-2(b) also indicates the Durbin Watson statistic which is almost 2 in all the years. The results of Durbin Watson statistic indicate there is no autocorrelation problem in the model. Thus, the results obtain here are reliable. Hence, it can be conclude that, the lagged dividend significantly influence on the dividend payout of the sample firms in all the years. While, the current year's earnings significantly influence on the dividend payout of the Nifty-100 index constituent firms in the year 2016 and 2017.

Table-3(a): Summary of Model-2 Regression Results

| Results of model-2: $D_t = \alpha + \beta_1 C P_t + \beta_2 D_{t-1} + \mu$ | | | | | | | |
|--|-------|------|----------------|---------------------|---------------------|-----------------------|--------|
| Year | A | R | R ² | Adj. R ² | Std. Error(μ) | R ² Change | Sig. F |
| 2015 | 1.925 | .851 | .725 | .711 | 1.24 | .725 | .000 |
| 2016 | 3.278 | .657 | .431 | .404 | 2.74 | .431 | .000 |
| 2017 | 3.516 | .640 | .410 | .381 | 2.22 | .410 | .000 |
| 2018 | 5.302 | .695 | .483 | .458 | 1.95 | .483 | .000 |
| 2019 | 2.872 | .870 | .756 | .745 | 1.53 | .756 | .000 |
| 2020 | 4.109 | .695 | .484 | .459 | 2.66 | .484 | .000 |

Table 3(b): Beta coefficients and 't' values of independent variables (cash earnings and lagged dividends) and Durbin Watson' coefficient of in model-2

| Year | Cash profit (CPt) | | Lagged Dividends (Dt-1) | | |
|------|-------------------|---------|-------------------------|---------|---------------|
| | β_1 | t-value | β_2 | t-value | Durbin Watson |
| 2015 | -0.084 | -1.006 | 0.83** | 9.904 | 1.685 |
| 2016 | -.085 | -.713 | .640** | 5.381 | 2.112 |
| 2017 | -.126 | -1.023 | .600** | 4.903 | 2.025 |
| 2018 | -.185 | -1.503 | .600** | 4.846 | 2.272 |
| 2019 | -.098 | -1.144 | .820** | 9.572 | 2.059 |
| 2020 | -.106 | -.820 | .640** | 4.934 | 2.236 |

*Significance at 10% level and **Significance at 5% level

The summary results of model-2 is present in the tables 3(a) and 3(b). The table 3(a) depicts that, the sig. F value is 0.00 which is lesser than 0.05, thus, we do not accept the null hypothesis(H2). This indicates, the independent variables collectively and significantly influence on the dividend payout of the Nifty-100 index constituent firms. The R² is higher for all the years, which specifies the independent variables strongly explain variation in the independent variables. The table 3(b) represent the beta coefficients and 't' statistic of independent variables. The lagged dividend is significant in all the years. Whereas, the cash earnings are not significant in any of the year, these result in contrast to the finding of Britain model. Further, the results obtained for lagged dividend is same like in the model-1 wherein the lagged dividend significantly influenced on the dividend payout of the Nifty-100 firms in all the years. However, the Durbin Watson statistic is almost 2 in all the years except for the year 2015. Thus, the model can be justified in all the years except 2015. Therefore, it can be concluded that, the lagged dividend significantly influence on the dividend payout of the Nifty-100 in all the years except 2015.

Table-4(a): Summary of Model-3 Regression Results

| Results of model-3: $D_t = \alpha + \beta_1 CE_t + \beta_2 Dt-1 + \beta_3 DPR_t + \beta_4 CAPEX_t + \mu$ | | | | | | | |
|--|--------|-------|----------------|---------------------|---------------------|-----------------------|--------|
| Year | A | R | R ² | Adj. R ² | Std. Error(μ) | R ² Change | Sig. F |
| 2015 | .503 | .857 | .735 | .708 | 1.25 | .735 | .000 |
| 2016 | -2.613 | .844 | .713 | .684 | 2.00 | .713 | .000 |
| 2017 | -0.48 | 0.674 | 0.454 | 0.398 | 2.19 | 0.454 | .000 |
| 2018 | 1.935 | .694 | .482 | .429 | 2.00 | .482 | .000 |
| 2019 | .514 | .870 | .757 | .732 | 1.57 | .757 | .000 |
| 2020 | .015 | .702 | .492 | .440 | 2.71 | .492 | .000 |

Table 4(b): Beta coefficients and 't' values of independent variables (earnings, lagged dividends, depreciation and capital expenditure) and Durbin Watson' coefficient of model -3

| Year | Earnings (CE _t) | | Lagged Dividends (Dt-1) | | Depreciation (DPR _t) | | Capital Expenditure (CAPEX _t) | | Durbin Watson |
|------|-----------------------------|---------|-------------------------|---------|----------------------------------|---------|---|---------|---------------|
| | β_1 | t-value | β_2 | t-value | β_3 | t-value | β_4 | t-value | |
| 2015 | .048 | .510 | .850** | 9.702 | -.137 | -1.491 | .043 | .507 | 1.902 |
| 2016 | .380** | 4.257 | .470** | 4.984 | -.134 | -1.474 | .390** | 4.319 | 2.340 |
| 2017 | .210* | 1.773 | .600** | 4.820 | -.099 | -.806 | .113 | .925 | 1.906 |
| 2018 | 0.003 | .020 | 0.67** | 5.676 | -0.171 | -1.121 | 0.049 | .409 | 2.071 |
| 2019 | -.025 | -.286 | .850** | 10.702 | -.066 | -.748 | .053 | .664 | 2.098 |
| 2020 | .081 | .699 | .680** | 5.866 | .040 | .347 | .094 | .820 | 2.367 |

*Significance at 10% level and **Significance at 5% level

The result out of regression model-3 is presented in the tables4 (a) and 4(b). The table –4(a) shows the Sig. F value of lesser than 0.05 in all the years. Thus, we do not accept the null hypothesis(H3), it explains that, the independent variables significantly influence on the dividend payout of the Nifty-100 firms. The independent variables in the model-3 are current year's earnings, lagged dividend, depreciation and capital expenditure. The R² is higher for all the years that specify the model fit is strong enough to conclude the explained portion of the relationship.

The beta coefficients and t' values of the independent variables are presented in the table-4(b). The tables reveal that, as in the previous two models the lagged dividend significantly influence the dividend payout in all the years. Further, the beta coefficient of Current year's Earnings (CE_t) is significant in the year 2016 and 2017. However, the beta coefficient of capital expenditure significant in the year 2016. The, t' statistic of all the significant beta values in those periods are higher, indicating higher influence. The Durbin Watson Statistic is almost 2 in all the years. Thus, it can be concluded that, the lagged dividend is the significant determinant of dividend payout of the Nifty-100 firms in all the years. However, the current year's earnings are significant in the year 2016 and 2017; the capital expenditure is significant determinant in the year 2016.

Table 5: Target Ratios and Adjustment Factors of model 1, model 2 and model 3

| Year | Target Payout Ratio $r = \beta_1 / (1 - \beta_2)$ | | | Adjustment Factor $k = 1 - \beta_2$ | | |
|--------------------|---|----------|-----------|-------------------------------------|----------|-----------|
| | Model-I | Model-II | Model-III | Model-I | Model-II | Model-III |
| 2015 | -0.03 | -0.49 | 0.32 | 0.15 | 0.17 | 0.15 |
| 2016 | 0.86 | -0.24 | 0.72 | 0.44 | 0.36 | 0.53 |
| 2017 | 0.44 | -0.31 | 0.53 | 0.45 | 0.4 | 0.4 |
| 2018 | 0.31 | -0.46 | 0.01 | 0.32 | 0.4 | 0.33 |
| 2019 | -0.36 | -0.55 | -0.16 | 0.14 | 0.18 | 0.15 |
| 2020 | 0.27 | -0.29 | 0.25 | 0.31 | 0.36 | 0.32 |
| Mean | 2.46 | -0.39 | 0.28 | 0.30 | 0.31 | 0.31 |
| Variance | 30.54 | 0.016 | 0.105 | 0.018 | 0.011 | 0.022 |
| Standard Deviation | 5.045 | 0.115 | 0.296 | 0.123 | 0.098 | 0.134 |
| t' value | 1.091 | -7.604 | 2.089 | 5.487 | 7.108 | 5.219 |

In the above table-5 the results of target payout ratios and adjustment factors presented for all the years. The table reveals that, both are ratios are different for each year because the beta coefficients of current year's earnings, beta coefficient of lagged dividend vary from year to year. A firm's target payout ratio indicates the management's decision or policy towards the distribution of the earnings to shareholders. The ratio indicates the portion of amount to be distributed from the earnings of the firm. The table-5 shows that, in the model-1 the target payout is negative in the year 2015 and 2019, this is due to negative beta coefficient of CE; the as per model-1 the Nifty-100 firms have a target ratio of 86 percent in the year 2016 and lowest of 27 percent in the year 2020. Whereas, as per the model-2 the target ratio is negative in all the years, this is because the beta coefficient of current year's earnings is negative in all these years. As per model-3 the target ratio varies from 72 percent in the year 2016 to 1 percent in the year 2018. On the whole it can be interpreted that, the Nifty-100 constituent firms do not follow same target payout.

The adjustment factor shows a firm's aggressiveness or diplomacy in the dividend payout. The above table-5 confirms the adjustment factor is almost same for all the Nifty-100 firms with small variations. The year on year adjustment factor shows more volatility. The mean adjustment ratio of Nifty-100 firms is 30-31 percent according to all the three models. This indicates the conservative approach of the Nifty-100 firms in the speed of adjustment for dividend distribution.

Table-6: ANOVA Results of Dividend Payout Ratio of Nifty-100 firms

| Source of Variation | SS | df | MS | F | P-value | F crit |
|---------------------|----------|-----|----------|----------|---------|----------|
| Between Groups | 45.93128 | 5 | 9.186256 | 0.997771 | 0.41957 | 2.249008 |
| Within Groups | 2375.348 | 258 | 9.206774 | | | |
| Total | 2421.279 | 263 | | | | |

The above table-6 presents the results of ANOVA for the dividend payout of the Nifty-100 firms from 2015 to 2020. The p-value is greater than 0.05 therefore, we do not reject the null hypothesis (H4). It reveals that, there is no significance difference in the dividend payment of Nifty-100 firms.

VI. Conclusion:

There are large number of studies have been conducted to examine the determinants of dividend payout. There is no clear consensus on 'what determines the corporate dividend payout of a firm?'. The dividend determinants vary from industry to industry, time to time, and country to country. Therefore, the research and debate on the determinants of dividend should be continuous(Parasuraman and Ramudu, 2012). In the present study the authors made an attempt to study the determinants of dividend payout with the help of Lintern's basic model and extended models by John Brittain. In the study it is found that, the lagged dividend is the most important variable that is consistently significant across all the models in all the time periods in the Nifty-100 firms. This expresses that, the Nifty-100 firms dividend decision influenced by the previous year's dividend payout, the reason may be the management prefer to maintain consistency in the dividend payout policy. While, the Current year's earnings is significant determinant in the year 2016 and 2017; the capital expenditure is significantly influence the dividend payout in the year 2016. The result of ANOVA reveals that, the time factor has no effect on the dividend payout of the Nifty-100 firms. Thus, it can be concluded that, of the two variables (i.e., current year's earnings and lagged dividend) lagged dividend is the key variable that determines dividend payout of the Nifty-100 firms.

References:

- [1]. Al-Malkawi, H.-A.N., Bhatti, M.I., Magableh, S.I., 2014. On the dividend smoothing, signaling and the global financial crisis. *Econ. Model.* 42, 159–165.
- [2]. AnjanaRaju, G., Rane, A., 2018. Dividend smoothing and implications of Lintner's model: An empirical analysis of Indian metal sector.
- [3]. Anton, S.G., n.d. The Impact Of Dividend Policy On Firm Value. A Panel Data Analysis Of Romanian Listed Firms 6.
- [4]. Arko, A.C., Abor, J., Adjasi, C.K., Amidu, M., 2014. What influence dividend decisions of firms in Sub-Saharan African? *J. Account. Emerg. Econ.*
- [5]. Bodla, B., Pal, K., Sura, J.S., 2007. Examining application of Lintner's dividend model in Indian banking industry. *ICFAI J. Bank Manag.* 6, 40–59.
- [6]. Brittain, J.A., 1966. Corporate dividend policy. Brookings institution.
- [7]. Brittain, J.A., 1964. The tax structure and corporate dividend policy. *Am. Econ. Rev.* 54, 272–287.
- [8]. Chhatoi, B.P., 2015. A Study on relationship between profitability and dividend Payment in Iron & Steel Industries in India. *Pac. Bus. Rev. Int.* 8, 70–78.
- [9]. Darling, P.G. (1957), The Influence of Expectation and Liquidity on Dividend Policy, *Journal of Political Economy*, pp. 201-224. Garg, M., Bhargaw, V., n.d. Application of Dividend Models in Indian Capital Goods Sector. *INDRAPRASTHA J. Manag.* 30.
- [10]. Ghosh, S., 2008. Do leverage, dividend policy and profitability influence future value of firm? Evidence from India. *Evid. India* July 11 2008.
- [11]. Gordon, M.J., 1959. Dividends, earnings, and stock prices. *Rev. Econ. Stat.* 99–105.

- [12]. Linter, J (1956), Distributions of incomes of corporations among dividends, retained earnings and taxes, American economic Review, 46 (1), pp. 97-113.
- [13]. Lumapow, L.S., Tumiwa, R.A.F., 2017. The effect of dividend policy, firm size, and productivity to the firm value. Res. J. Finance Account. 8, 20–24.
- [14]. Mallikarjunappa, T., n.d. Corporate dividend policy and the value of Firm-A study of companies in selected industries in India.
- [15]. Meng, W., n.d. A case study of the determinants of the dividend policy of 24 electronic companies listed on the Shanghai Stock Exchange.
- [16]. Miller, M.H., Modigliani, F., 1961. Dividend policy, growth, and the valuation of shares. J. Bus. 34, 411–433.
- [17]. Misra, S.D., 2015. Determinants of dividend policy: a study of the Indian banking sector. Int. J. Indian Cult. Bus. Manag. 11, 440–456.
- [18]. NSE(2021) is retrieved from <https://www.niftyindices.com>
- [19]. Odum, A.N., Odum, C.G., Omeziri, R.I., Egbunike, C.F., 2019. Impact of dividend payout ratio on the value of firm: A study of companies listed on the Nigerian Stock Exchange. Indones. J. Contemp. Manag. Res. 1, 25–34.
- [20]. Pandey, I.M., Bhat, R., 2007. Dividend behaviour of Indian companies under monetary policy restrictions. Manag. Finance.
- [21]. Parasuraman, N.R., Ramudu, P.J., 2012. Does Lintner model of dividend payout hold good? An empirical evidence from BSE SENSEX firms. SDMIMD J. Manag. 3, 63–76.
- [22]. Persson, R., 2014. Simultaneous determination of Debt, Dividend, and Inside Ownership policies: Evidence from Sweden.
- [23]. Sondakh, R., 2019. The Effect of Dividend Policy, Liquidity, Profitability and Firm Size on Firm Value in Financial Service Sector Industries Listed in Indonesia Stock Exchange 2015-2018 Period. Accountability 8, 91–101.
- [24]. Walter, J.E., 1963. Dividend policy: its influence on the value of the enterprise. J. Finance 18, 280–291.

DR. CHINNAIAH.P.M, et. al. "Applicability Of Lintner's Dividend Model: An Empirical Analysis Of Firms Listed On National Stock Exchange." *International Journal of Business and Management Invention (IJBMI)*, vol. 11(09), 2022, pp. 102-111. Journal DOI- 10.35629/8028