

# Determinants of dividend behaviour in select indian companies - an empirical analysis

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**ABSTRACT:** This study examines the Corporate Dividend Behaviour in the Indian context through Lintner's dividend model, Brittain's Cash Flow Model and Brittain's explicit Dividend Model. Results of this study will be useful for designing dividend policies at the firm level and to analyze the saving behaviour at the macro level. The high dividend paying companies listed in NSE constitute the sample for the present study carried out as cross-sectional analysis for the year 2001-02 to 2011-12. The empirical result shows that the main determinants of current dividends are the Lagged Dividend and Current Earnings.

**Keywords:** Dividend Pay-out; Lagged Dividend; Cash Flow; Depreciation and Net Profit after Tax.

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## INTRODUCTION

Dividends are payments made by a corporation to its shareholder members. It is the portion of corporate profits paid out to stockholders. When a corporation earns a profit or surplus, that money can be put to two uses: it can either be re-invested in the business or it can be distributed to shareholders. Dividend policy has been an issue of interest in financial literature since Joint Stock Companies came into existence. Dividends are commonly defined as the distribution of earnings (past or present) in real assets among the shareholders of the firm in proportion to their ownership. Dividend policy connotes to the payout policy, which managers pursue in deciding the size and pattern of cash distribution to shareholders over time. Managements' primary goal is shareholders' wealth maximization, which translates into maximizing the value of the company as measured by the price of the company's common stock. This goal can be achieved by giving the shareholders a fair payment on their investments. However, the impact of firm's dividend policy on shareholders wealth is still unresolved. Thus, dividend policy is one of the most complex aspects in finance. Hence in this study we focus on the determinants of dividend behaviour in Indian companies.

## STATEMENT OF THE PROBLEM

There are many researches done on the subject of dividend policy for many countries but the actual motivation of dividend decision still remains unsolved in corporate finance and there is no consensus solution for the subject of dividend policy, however many researchers are continuing to conduct study on this field in order to obtain a strong theoretical and empirical analysis on dividend and solve this finance puzzle. When referring to the prior empirical studies on dividend policy, most of the researches have been conducted mainly on U.S. firms. According to Chay and Suh (2005), firms outside the U.S. are operating under different economic and legal environments and thus may exhibit a different set of behavior in their financial activities. Therefore, examining dividend policies of firms outside the U.S. will offer further insights for us into the factors that influence corporate financial decision. As stated by Chay and Suh, different country will have their own culture, rules and regulations restricted on the dividend policy and the different country based corporate also practicing different policy. Against this background, this study makes an attempt to identify the major determinants of dividend policy and their relative significance in the Indian context.

## REVIEW OF LITERATURE

**Sudhakar (2010)** concluded that paying dividend to the shareholders was decided based on the status of profitability and depreciation in the current year as well as dividend policy in the past. **Sabur Mollah Asma(2007)** Conducted a study to identify the dividend policy of Dhaka Stock Exchange. The empirical results suggested that cash flow as the better measure of the company ability to pay dividends and also Brittain model is most satisfied than other model. **George and Kumudha (2006)** in their study on dividend policy of Hindustan Constructions Company Ltd with special reference to Lintner's Model have analyzed the dividend behaviour of HCL. He concluded that, a firm should maintain a steady growing dividend rate, which would as a signal for investors and market. **LVLN Sarma and Kok Lee Kuin (2004)** analysed the corporate dividend behaviour in the Malaysian Context through John Lintner's Stock Adjustment Model. He concluded that the dividend policy is guided to a significant extent by the twin concepts of target payout ratio and adjustment factor enunciated by Lintner. **Kent Baker, Veit, Powell (2001)** has conducted a survey of Nasdaq listed firms to determine the factors influencing the Dividend Policy. They have found that the Managers of Nasdaq firms generally take dividend decisions consistent with the Lintner's Model. **Mishra , Narendar (1996)** studied the dividend behaviour of SOEs in India. It indicates that the previous year DPS play a significant role than the current year EPS. Hence, Lintner,s argument goes, majority of SOEs can be said to have tendency to increase their dividend rate over a period of time. **R.P.Mahapatra and P.K.Sahu(1993)** examine the determinants of Dividend policy using the models developed by Lintner, Darling and Brittain. The authors conclude that the Brittain's Model explains the movement in dividend better than those of Lintner's Model and Darling Model. **Agarwal(1987)** carried out a study to examine the dividend behaviour of the automobile industry. He added four more variables to the basic Lintner model. He concluded that current year profit is the most important factor in determining the payment of dividend. **Dhameja (1978)** in his study tested the dividend behaviour of Indian Companies. The main conclusion was that dividend decisions are better explained by Lintner's Model with current profit and lagged dividend as explanatory variable. **Krishnamurthy and Sastry(1974)** examined the dividend behavior of the Chemical Industry and they concluded that Lintner,s Model was more appropriate in examining the dividend behavior of the Chemical Industry.

## RESEARCH OBJECTIVES:

The study is focused on achievement of following objectives:

1. To analyze the dividend policy of select companies.
2. To empirically examine the determinants of dividend decision of the select companies.

## METHODOLOGY

The study is analytical and empirical in nature and makes use of secondary data. The data has been sourced from CAPITALINE database of Centre for Monitoring Indian Economy (CMIE). The sample period undertaken for study is from the year 2002 to 2011. Top 10 dividend paying companies of NSE are selected as sample. The sample units are

1. Oil and Natural Gas Commission Limited (ONGC)
2. Punjab National Bank Limited (PNB)
3. Bharath Heavy Electrical Limited (BHEL)
4. Sterlite India Limited (SIL)
5. Tata Steels Limited (TSL)
6. Coal India Limited (CIL)
7. National Thermal Power Corporation Limited (NTPCL)
8. Gas Authority of India Limited (GAIL)
9. Mahendra & Mahendra Motors Limited (M&M)
10. Tata Motors Limited. (TML)

The dividend determinants are estimated with the use of some known dividend models.

**HYPOTHESIS**

In course of analysis, it is proposed to test the following hypotheses with help of the sample data

1. Dividend payout is a function of net current earnings after tax and dividends paid in the previous year.
2. Cash flow, rather than net current earnings after tax is a better measure of a company’s capacity to pay dividend.
3. Decomposition of cash flow into earnings after tax and depreciation as separate variables helps in explaining better, the dividend behavior of the companies.

**EMPIRICAL RESULTS**

**LINTNER’S MODEL**

Lintner’s model establishing the relationship between the current year dividend with current year profit and previous year dividend is as follows:

$$D_t = a_0 + a_1 P_t + a_2 D_{t-1} + U_t$$

Where,

- $D_t$  = Equity Dividend in period ‘t’
- $D_{t-1}$  = Equity Dividend in period ‘t-1’
- $P_t$  = Net Profit in a period ‘t’
- $U_t$  = Error term

Regression results of Lintner’s Model are shown in Table-1

**Table – 1**  
**Regression results of Lintner’s Dividend Model**

Name of the company	$a_0$	$P_t$	$D_{t-1}$	$R^2$	$\overline{R^2}$	F	DW Stat
<b>ONGC</b>	-428.93	-0.997 (7.494)*	-0.010 (-0.075)	0.976	0.969	142.565*	1.076
<b>PNB</b>	-25.269	0.777 (1.209)	0.195 (0.304)	0.942	0.926	56.945*	1.019
<b>BHEL</b>	-23.723	0.767 (10.261)*	0.236 (3.153)**	0.998	0.998	2293.201*	2.598
<b>SIL</b>	0.156	0.560 (1.797)	0.408 (1.308)	0.901	0.873	31.862*	2.885
<b>TSL</b>	125.817	0.825 (3.408)**	0.119 (0.489)	0.852	0.810	20.165*	1.568
<b>CIL</b>	-3.217	0.468 (1.262)	0.499 (1.345)	0.910	0.881	30.510*	2.420
<b>NTPC</b>	-290.739	0.449 (1.723)	0.539 (2.070)***	0.947	0.932	63.141*	0.964

<b>GAIL</b>	182.451	0.463 (1.558)	0.511 (1.719)	0.914	0.889	36.989*	2.058
<b>M &amp; M</b>	21.015	0.935 (14.586)*	0.067 (1.052)	0.996	0.994	800.267*	2.181
<b>TML</b>	-22.317	0.505 (1.836)***	0.426 (1.550)	0.746	0.673	10.274*	0.739

\*significant at 1% level, \*\* significant at 1% level. \*\*\* significant at 1% level

Figures in parenthesis indicates  $t$  values.

Table 1 discloses that, the adjusted  $R^2$  is statistically significant in all the sample companies. The significant value of  $F$  proves that the relationship between the dividend payout, Last year Dividend and Current year net profit are linear. The result of the study also shows that there is positive significant association between net profit and dividend payout were found in the case of ONGC, BHEL, Tata Steel, M&M and Tata Motors at 1%, 5% and 10% level of significance. The explanatory variable dividend paid in the previous year is found statistically significant in the case of BHEL and NTPC companies. The result also show that, net profit and lagged dividend are does not have any impact to determine the dividend payout ratio of other companies like Punjab National Bank, Sterlite Industries, India Limited, GAIL. The constant term is found to be Negative in most of the sample companies, which is violating the specifications of the model.

#### BRITTAIN'S CASH FLOW MODEL

Brittain's cash flow model used in this study is a variant of Lintner's model by use of Cash Flow, instead of profit after tax, as a measure of income. It can be expressed as

$$D_t = a_0 + a_1 C_t + a_2 D_{t-1} + U_t$$

Where,

$D_t$  = Equity Dividend in period  $t$

$D_{t-1}$  = Equity Dividend in period  $t-1$

$C_t$  = Cash Flow in a period of  $t$

$U_t$  = Error term

Regression results of Brittain's Cash Flow Model are shown in Table-2

**Table – 2**

**Regression results of Brittain's Cash Flow Model**

Name of the company	$a_0$	$C_t$	$D_{t-1}$	$R^2$	$\frac{R^2}{R^2}$	F	DW Stat
<b>ONGC</b>	-343.587	-1.008 (6.225)*	-0.027 (-0.168)	0.967	0.957	102.305*	1.486
<b>PNB</b>	-30.448	0.673 (1.096)	0.299 (0.487)	0.940	0.923	55.097*	1.090

<b>BHEL</b>	-50.460	0.764 (10.162)*	0.239 (3.174)**	0.998	0.998	2251.769*	2.359
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<b>SIL</b>	-14.459	0.559 (1.798)	0.408 (1.313)	0.901	0.873	31.883*	2.871
<b>TSL</b>	72.909	0.814 (3.127)**	0.121 (0.464)	0.836	0.789	17.831*	1.595
<b>CIL</b>	-6.031	0.465 (1.255)	0.502 (1.355)	0.910	0.880	30.432*	2.416
<b>NTPC</b>	-400.820	0.419 (1.724)	0.570 (2.348)**	0.948	0.933	63.170*	1.036
<b>GAIL</b>	129.582	0.314 (0.977)	0.649 (2.023)***	0.898	0.868	30.662*	2.547
<b>M &amp; M</b>	-7.380	0.958 (20.249)*	0.044 (0.941)	0.998	0.997	1521.837*	2.489
<b>TML</b>	-131.751	0.773 (2.940)**	0.166 (0.631)	0.832	0.783	17.282*	0.827

\*significant at 1% level, \*\* significant at 1% level. \*\*\* significant at 1% level

Figures in parenthesis indicates  $t'$  values.

Table 2 explains satisfactorily the dividend behavior of the total sample, because the value of adjusted  $R^2$  is statistically significant in all the sample companies. The co-efficient of cash flow and lagged dividend are found to be significant in the case of ONGC, BHEL, Tata Steel, NTPC, GAIL, M&M and Tata Motors at 1%,5% and 10% level of significance. The constant term is found to be negative in all the companies except Tata Steel. The analysis further reveals that the explanatory variables, cash flow and lagged dividend are not playing significant role in determining the dividend pay out of Punjab National Bank, Sterlite Industries, Coal India Limited

#### BRITTAIN'S EXPLICIT DEPRECIATION MODEL

Brittain's Explicit Depreciation Model incorporates depreciation as an additional explanatory variable in the basic Lintner's Model.

$$D_t = a_0 + a_1 P_t + a_2 D_{t-1} + a_3 A_t + U_t$$

Where,

$D_t$  = Equity Dividend in period  $t$

$D_{t-1}$  = Equity Dividend in period  $t-1$

$P_t$  = Net Profit in a period of  $t$

$A_t$  = Amount of Depreciation in period  $t$

$U_t$  = Error term

Regression results of Brittain's Explicit Depreciation Model are shown in Table-3

**Table – 3**  
**Regression results of Britain’s Explicit Depreciation Model**

Name of the company	$a_0$	$P_t$	$A_t$	$D_{t-1}$	$R^2$	$\overline{R^2}$	F	DW Stat
<b>ONGC</b>	-427.673	0.998 (6.824)*	-0.005 (-0.054)	-0.008 (-0.052)	0.976	0.964	81.506*	1.076
<b>PNB</b>	40.877	1.101 (1.365)	-0.131 (-0.713)	-0.023 (-0.031)	0.947	0.920	35.469*	0.870
<b>BHEL</b>	-31.233	0.753 (5.967)*	0.013 (0.140)	0.236 (2.927)**	0.998	0.998	1314.68*	2.539
<b>SIL</b>	-9.381	0.542 (1.309)	0.020 (0.072)	0.407 (1.212)	0.901	0.852	18.224*	2.878
<b>TSL</b>	750.002	1.437 (5.125)*	-0.856 (-2.774)	0.347 (1.810)	0.935	0.903	28.865*	1.939
<b>CIL</b>	1197.25 9	0.484 (1.465)	-0.376 (-1.608)	0.152 (0.386)	0.941	0.906	26.583*	3.002
<b>NTPC</b>	-352.376	0.398 (0.675)	0.038 (0.098)	0.555 (1.715)	0.948	0.921	36.142*	1.000
<b>GAIL</b>	291.035	0.394 (1.245)	-0.096 (-0.800)	0.556 (1.793)	0.922	0.883	23.604*	1.784
<b>M &amp; M</b>	-29.878	0.802 (12.607)*	0.172 (2.927)**	0.034 (0.733)	0.998	0.997	1112.936*	2.300
<b>TML</b>	-207.680	0.436 (2.134)***	0.595 (2.623)**	0.010 (0.039)	0.882	0.822	14.897*	1.181

\*significant at 1% level. \*\* significant at 1% level. \*\*\*significant at 1% level

Figures in parenthesis indicates ‘t’ values.

Table-3 reveals that the explanatory powers of Brittain's Explicit Depreciation Model for all the sample companies are high and statistically significant. But the co-efficient of the Lagged dividend variable in all cases except BHEL Company, is statistically insignificant. The co-efficient of the depreciation and net profit are found statistically significant in BHEL, M&M and Tata motors companies only. In the case of other companies, they found to be statistically insignificant. Constant term also negative in maximum cases. It is a model of good fit in M&M only. In this company, the adjusted  $R^2$  is very high (99.7%), as compared to the other companies. Therefore the results imply that the net profit, depreciation and lagged dividend as separate explanatory variable fails to explain better the dividend behaviour of the sample companies.

### **TESTING OF HYPOTHESES**

#### **Ho1: Dividend payout is a function of net current earnings after tax and dividend paid in the previous year.**

This hypothesis was examined using Linter's regression model. In the process of analyzing the regression results, it was found that, the co-efficient of determination ( $R^2$ ) and adjusted  $R^2$  is good for all the firms. The significant value of F proves that the relationship between the dividend pay out and independent variable net current earnings and previous year dividend are linear. Hence, the hypothesis Dividend payout is a function of net current earnings after tax and dividend paid in the previous year is valid.

#### **Ho2: Cash flow rather than net current earnings after tax is a better measure of a company's capacity to pay dividend.**

This hypothesis was examined by using the Brittain's cash flow model. It was evident from the analysis that the cash flow is not a better measure of the company's capacity to pay dividend in the sample companies except ONGC, BHEL, TATA Steels, M&M and Tata Motors. Thus this hypothesis stands invalid.

#### **Ho3: Decomposition of cash flow into earnings after tax and depreciation as separate variables helps in explaining better the dividend behavior of the company's.**

This hypothesis was tested using Brittain's explicit depreciation model. It suggested that the decomposition of cash flow into earnings after tax and depreciation as separate variables, explain better the dividend behavior of the sample firms results support the hypothesis.

### **CONCLUSION**

This paper summarized the determinants of dividend policy. The explanatory variables (i.e., Net profit, Lagged Dividend, Cash Flow and Depreciation) are statistically significant in the case of all the models. However, in maximum cases, the separate explanatory variables do not have any significant bearing on the dividend decision of the sample companies. This implies that most companies cannot treat these variables as a 'benchmark' for making changes in the current year's dividend. Net profit has positive link with dividend decisions in maximum companies but cash flow and depreciation shows mixed results.

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