

Examination of Lintner's and Brittain's Dividend Models: Evidence from Indian Public Manufacturing Companies**Dr. Jasvir S. Sura**

Associate Professor, Department of Management, Chaudhary Ranbir Singh University, Jind (Haryana), 126102, India.
e-mail: jasvir.sura@crsu.ac.in

Gourav

Senior Research Fellow, Department of Management, Chaudhary Ranbir Singh University, Jind (Haryana), 126102, India.
e-mail: gauravmittal1026@gmail.com

***Dr. Anju Lather, Assistant Professor,**
Department of Commerce, Chottu Ram Kisan College, Jind (Haryana), 126102, India.
e-mail: dr.anju.lather.sura@gmail.com

Published: 31/03/2023

*Corresponding Author

About the Authors

Dr Jasvir S Sura is working as an Associate Professor in the Department of Management at Chaudhary Ranbir Singh University; Jind (Haryana) has 20 years of teaching and research experience at the Postgraduate level in different universities. Dr. Sura specializes in Finance, Investment Management, Quantitative Techniques, and Operations Research. He authored three books and published more than three dozen research articles in various journals of national and international repute.

Gourav is presently working as a Senior Research Fellow in the Department of Management at Chaudhary Ranbir Singh University; Jind (Haryana) has 4 years of research experience in finance, particularly in Corporate Financial Practices (CFP), Investment, and Behavioral Finance. He has published two research articles in journals of national and international repute.

Dr. Anju Lather is an Assistant Professor in the Department of Commerce at Chottu Ram Kisan College, Jind (Haryana). She has 12 years of teaching and research experience at the Graduate and postgraduate levels. Dr. Lather specializes in E-Commerce, Research Methodology, Accounting, and Income Tax. She has authored one book and published dozens of research articles in various journals of national and international repute.



ABSTRACT

Dividend policy determines whether earnings are paid to stockholders or reinvested in the company, and it has always been a topic of discussion among shareholders and researchers. Companies' Management also prefers to maintain a consistent dividend policy because any change in dividend policy signals a change in the company's future earnings. As a result, an attempt has been made to justify whether Lintner's (1956) and Brittain's (1964) cash flow models and their extension of dividend behaviour are suitable for Indian corporations. Therefore, the prime objective of the paper is to test the validity of the models; panel data analysis was performed on Indian public manufacturing companies from 2001 to 2020. The results were found to be similar to the Linter model as well as the Britain cash flow model. However, the extended Model's findings differ from those of the two models. The study also revealed that Indian companies primarily base their dividend policies on previous dividends and that sample Indian manufacturing companies adhere to a consistent and smooth dividend policy.

Keywords: Dividend Policy, Lintner Model, Brittain model, Manufacturing firms, Management.

INTRODUCTION

Dividend policy is one of the most important and perplexing issues in corporate finance; it is a contentious topic in which finance scholars engage and theorize whether firms should pay dividends. It has been listed as a puzzle in corporate finance (Brealey & Myers, 2002). Dividend decisions come to blow between the distribution of earnings and the retention of earnings and involve two attributes: long-term payout ratio and stability of dividends. Dividend stability means an anticipated dividend policy assures shareholders and Management that dividends are paid invariably because shareholders regard it as a regular source of income. Management prefers to keep dividend policies relatively stable because any change in dividend policy could signal information about the company's future earnings. The dividend policy decision is a source of income for investors and depicts the firm's performance. Dividend decisions of a firm affect both long-term financing and shareholders' wealth. The payout ratio is duly affected by several factors, such as profits, size, firm age, leverage, liquidity position, growth, investment opportunities, and corporate tax. Therefore, developing an optimal dividend policy is a critical area for Management.

The present study examines the validity of famous dividend behavioural models in the Indian context. Nevertheless, before testing the empirical validity of available dividend behavioural models on Indian corporates, the following sections provide a brief account of the famous models and some empirical studies on those models.

THEORETICAL AND EMPIRICAL EXPOSURE OF CORPORATE DIVIDEND POLICY

Numerous theoretical and empirical research studies have been conducted by researchers and academicians worldwide on dividend models and their determinants; dividend policy research has become more advanced and continuously increasing, demonstrating evidence of growth. Many articles have been published in different countries in recent decades; rapid growth in the area is attracting the attention of researchers. Some well-known theoretical frameworks of dividend policy and their behavioural implications have been discussed in this section.

Theoretical Exposure

Lintner (1956) pioneered the study field that analyzed the significance of the target payout ratio and dividend stability. Surveyed Management of 28 U.S. companies from 1947-1953 and identified that managers of firms focused on two essential aspects of dividend policy while the dividend-setting process was focused on the long-run target dividend payout ratio and the stability of corporate earnings. Furthermore, the study observed that:



- American firms' Management maintains a target-dividend payout ratio and adjusts its dividend payout to this target.
- Managers usually follow a stable dividend policy and consider the dividend payout ratio needing change.
- Dividend policy remained unaltered until managers saw that new earnings levels were sustainable.
- Current earnings and lagged dividends are the most critical determinant of any variation in the present dividend.
- The firms estimate the adjustment factor level and adjust the dividend payout.

Consequently, based on the observations, Lintner has propounded the following econometric Model to illuminate the corporate world's dividend behaviour.

Model I: Lintner Dividend Model

$$Div_{it} = \alpha + \beta_1 EAT_{it} + \beta_2 Div_{it-1} + u_{it} \dots\dots\dots (i)$$

Whereas,

- Div_{it} = Equity dividend of firm *i* during period *t*
- EAT_{it} = Current earnings after tax of firm *i* during period *t*
- β₁ = regression coefficient of EAT (Current earnings after tax)
- Div_{it-1} = Equity dividend of firm *i* during period *t-1*
- β₂ = regression coefficient of equity dividend paid during period *t-1*
- α = Constant
- u_{it} = error term

Lintner (1956) further reported the dividend payout ratio and level of adjustment factor, 60 per cent and 25 per cent, respectively, and concluded that current earnings and the previous year's dividend largely determine the dividend for the present year.

Brittain (1964 & 1966) conducted two studies to analyze consecutively corporate dividend behaviour. The first study was conducted to study the dividend payout behaviour of firms belonging to all major industries from 1919 to 1960 and found that current earnings cannot dictate the firm's ability regarding dividend payment; instead, cash flow would be an improved basis for elucidating the dividend policy. In 1966, he extended his study by including two variables: Depreciation and capital expenditure. He propounded the following models.

Model II: Cash Flow Model

$$Div_{it} = \alpha + \beta_1 cashflow_{it} + \beta_2 Div_{it-1} + u_{it} \dots\dots\dots (ii)$$

Model III: Segregated Cash Flow Model with CAPEX

$$Div_{it} = \alpha + \beta_1 EAT_{it} + \beta_2 Div_{it-1} + \beta_3 Dep_{it} + \beta_4 CAPEX_{it} + u_{it} \dots\dots\dots (iii)$$

Whereas,

- Div_{it} = Equity dividend of firm *i* during period *t*
- Cash flow_{it} = Cash Flow of firm *i* during period *t*
- β₁ = regression coefficient of cash flow during period *t*
- Div_{it-1} = Equity dividend of firm *i* during period *t-1*
- β₂ = regression coefficient of equity dividend paid during period *t-1*
- EAT_{it} = Current earnings after tax of firm *i* during period *t*
- Dep_{it} = Depreciation of firm *i* during period *t*



β_3 = regression coefficient of Depreciation during period t

Cap_{acit}y = capital expenditure if firm i during period t

β_4 = regression coefficient of capital expenditure during period t

α = Constant

u_{it} = error term

Adjustment factor = $(1 - \beta_2)$

Target payout ratio = $\beta_1 / (1 - \beta_2)$

Empirical Exposure

Brittain (1966) and Fama and Babiak (1968) tested the modified version of Linter's Model in the context of the USA. They reported that their results were in line with Lintner's Model. Baker, Farrelly, and Edelman (1985), DeAngelo and DeAngelo (1990), Fama and French (1997), Buchman (2000), and Pruitt and Gitman (1991) have also examined Lintner's Model critically in developed economies and observed that lagged dividend and current earnings were the most critical dividend determinants. Further, the study carried out by Hu and Chen (2012) in China, Lasfer (1996) in the U.K., and McDonald, Jacquilland, and Nussenbaum (1975) in France found the validity of the Lintner's Model in their research as well.

In addition to research carried out in developed nations, research conducted in the context of developing countries includes studies by Aivazian, Booth, and Cleary (2006), Adoglu (2000), Al-Ajmi and Hussain (2011), and Wolmarans (2003) examined the applicability of Linter's Model on dividend payments and observed that lagged dividend is the most significant factor that can better explain the dividend payout in construction companies, banks, and financial institutions followed by Omet (2004) who conducted a research study on 44 Jordanian companies from 1985 to 1999. Shevlin (1982) also found the same results in the Australian context. However, a survey study by Pandey (2003) on the corporate dividend behaviour of 248 Malaysian companies does not consistently follow the findings of Lintner's Model.

Sura, Pal, and Bodla (2006) studied dividend payout decisions of NSE-listed 33 Indian commercial banks over the period 1996-2006 and found positive results in the context of the application of the Linter model. Britain's Model in Indian banks reported that current earnings and past dividends are the critical determinants of present-year dividends, and Indian commercial banks follow a stable dividend policy. In addition, George and Kumudha (2006) pointed out that the level of current earnings and lagged dividends play a crucial role in making payout decisions.

Samanta and Das (2017) examined the application of various behavioural models of dividend policy on 22 Indian banks from 2003-04 to 2012-13. The results of their study highlighted that Brittain's depreciation model is the best Model for dividend payment decisions, whereas Lintner's Model moderately describes dividend behaviour. Several other researchers like Rao and Sharma (1971), Swamy and Rao (1975), and Mookerjee (1992), highlighted the application of Lintner's (1956) model as well as Brittain's model (1964 and 1966) in the Indian context.

Kanwal and Kapoor (2008) indicated that profits after tax, lagged dividends, and cash flow position are the critical determinants of dividend payout in the service sector. A study by Bhat (2004) on the dividend behaviour of 571 manufacturing firms during 1989-1997 concluded that current-year profits and lagged dividends are critical factors in dividend payment decisions, and firms follow a target payout ratio strategy. They also supported their study's relevancy of the smoothing and signalling hypothesis, followed by Tripathy (1999).

However, some studies, like Bhole (1980), Pandey (2003), and Bose & Husain (2011), identified that Lintner's Model could have performed better in India. After a thorough survey of the existing literature



on the dividend behaviour of the corporate sector of different countries, we find the following research gaps:

1. All the empirical studies conducted earlier related to the dividend behaviour of Indian firms are primarily based on cross-sectional data. However, empirical studies based on panel data are minimal.
2. Earlier empirical studies considered the sample of only a limited number of Indian firms, not particularly public manufacturing companies. Thus, the studies' results could not address the dividend policy issues of Indian firms. Hence, the present study concentrates on removing the research gaps in the Indian context because more theoretical and empirical work is required before a consensus can be reached (Allen & Michaely, 1995).

OBJECTIVES

The present study has the following objectives:

1. To examine the validity of different dividend behavioural models, i.e., Lintner's Model, Brittain's Cash Flow Model, and Extended Cash Flow Model.
2. To estimate sample public manufacturing companies' target payout ratio and adjustment factor.

RESEARCH HYPOTHESES

The testable hypotheses are

1. Lintner's Model is well applicable in Indian public manufacturing companies.
2. Indian corporate Management follows Brittain's cash flow model for the dividend-setting process.
3. The extended Cash Flow Model explains the dividend behaviour of Indian companies.

SAMPLING AND DATABASE

The study has used secondary data to achieve the stated objectives. The sample consists of BSE-listed public manufacturing companies using the convenience sampling method for twenty years, i.e., April 2000 to March 2020, excluding the banking and financial services companies from the data set. Our study sample consists of a total of 33 companies, as listed in Table 1, based on the following criteria:

1. Selected companies had consistent operating incomes during the study period.
2. Firms consistently declared a cash dividend for the period under the reference of the present study.
3. The study is based on secondary data from the PROWESS IQ database maintained by the Centre for Monitoring Indian Economy (CMIE) and other sources such as www.bse.com and in.finance.yahoo.com.

Table 1 Select Sample Companies

Name of Company	
B E M L Ltd.	K I O C L Ltd.
Balmer Lawrie & Co. Ltd.	M M T C Ltd.
Bharat Dynamics Ltd.	M O I L Ltd.
Bharat Electronics Ltd.	Mishra Dhatu Nigam Ltd.
Bharat Petroleum Corporation. Ltd.	N B C C (India) Ltd.
Bridge & Roof Co. (India) Ltd.	N H P C Ltd.
Coal India Ltd.	N L C India Ltd.
Cochin Shipyard Ltd.	N M D C Ltd.
Container Corporation. Of India Ltd.	N T P C Ltd.
Engineers India Ltd.	National Aluminum Co. Ltd.
G A I L (India) Ltd.	North Eastern Electric Power Corporation. Ltd.
Garden Reach Shipbuilders & Engineers Ltd.	Oil & Natural Gas Corporation. Ltd.



Hindustan Aeronautics Ltd.

Hindustan Petroleum Corporation. Ltd.

Indian Oil Corporation. Ltd.

Indian Rare Earths Ltd.

Ircon International Ltd.

Oil India Ltd.

Power Grid Corporation. Of India Ltd.

Rashtriya Chemicals & Fertilizers Ltd.

Steel Authority Of India Ltd.

RESEARCH METHODOLOGY

The present study tested the empirical validity of behavioural models of dividend policy proposed by eminent researchers in this field. The original versions of behavioural models of dividends as proposed by them are as follows:

Linter (1956) studied the determinants of corporate dividend behaviour based on his survey of American corporations. He found that dividend payout is a function of current earnings after tax and last year's dividend. Based on his study's results, Lintner developed an econometric model to explain the corporate dividend behaviour, as in equation (i).

Brittain (1964 and 1966) conducted two studies to analyze corporate dividend behaviour. The first study was conducted in 1964 to study the dividend payout behaviour of firms belonging to all major industries from 1919 to 1960. He found that current earnings cannot dictate the firm's ability regarding dividend payment, and cash flow would be an improved basis for elucidating the dividends. In 1966, he extended his study by including two variables: Depreciation and capital expenditure. He propounded two models in equations (ii) and (iii).

MEASUREMENT OF VARIABLES

Lintner (1956) and Brittain (1964 & 1966) used aggregate data of variables in their empirical research, which is further followed by most studies. So, the present study has applied panel data of all variables the models mentioned above used. A brief explanation of these variables is given below:

- 1) Equity Dividend (Div_{it}): An Equity Dividend is the distribution of a portion of a company's current earnings after settling all commitments during period t . It includes all cash dividends, including interim, final, and unique dividends.
- 2) Lagged Dividends (Div_{it-1}): Lagged dividends refer to the dividend paid by the company one year before the year under consideration. The trend of lagged dividends helps the management frame policies and maintain stability regarding dividend payments.
- 3) Current Earnings (EAT_{it}): Current earnings refer to earnings after tax duly adjusted after distribution to minority interest, extraordinary items, and the preference dividends paid to preference shareholders if any preference capital appeared in the firm's capital structure. In the present study, current earnings after tax are equivalent to earnings available for equity shareholders.
- 4) Cash Flow ($Cashflow_{it}$): Cash flow is an essential variable in dividend payout decisions. It is derived from the equation earnings after tax plus depreciation expense of the concerned financial year.
- 5) Depreciation (Dep_{it}): Depreciation is a gradual loss in the value of fixed assets and is treated as an expense in a firm's profit and loss account. Although Depreciation is a non-cash expense and does not involve any cash outflow, Brittain (1966) considers it an independent variable in his Model to analyze its effects on dividend payments. The variable is estimated by the summation of Depreciation and amortizations made for the present year.
- 6) Capital Expenditure ($Capex_{it}$): Capital expenditures are the expenses firms incur only during the year in fixed assets. They are derived from the cash flow statement for each financial year.



FINDINGS OF DIFFERENT BEHAVIORAL MODELS OF DIVIDEND POLICY

Panel data analysis was carried out while examining the study models. Panel data consist of observations on the same cross-sectional or individual units over several periods (Gujarati, 2003). In this section, the findings on the behavioural models of dividend policy, viz. For sample public manufacturing companies, Lintner's, Brittain's, and extended cash flow models have been reported. Lintner's Model: Panel regression analysis has been performed to examine the application of Lintner's Model in selected manufacturing companies. Before performing panel regression, it is imperative to investigate the stationarity level of all variables used in the study.

Table 2 Panel Unit Root Test

Variables	Levin, Lin & Chu	Im, Pesaran & Shin W-Stat	Augmented Dickey-Fuller–Fisher Chi-square	Result
Equity dividend	-5.509 (0.000)	-11.099 (0.000)	261.100 (0.000)	Stationary
Current earnings	-4.316 (0.000)	-8.296 (0.000)	199.327 (0.000)	Stationary
Lagged dividend	-5.227 (0.000)	-9.386 (0.000)	235.439 (0.000)	Stationary
Cash flow	-4.287 (0.000)	-8.576 (0.000)	205.870 (0.000)	Stationary
Depreciation	-4.564 (0.000)	-6.633 (0.000)	167.962 (0.000)	Stationary
Capital expenditure	34.682 (0.000)	3.674 (0.000)	706.154 (0.000)	Stationary

A panel unit root test was conducted with the help of three tests, namely Levin-Lin-Chu, Im-Pesaran-Shin Pesaran, and Fisher-Augmented Dickey-Fuller (ADF) test in Table 2, and it is found that all variables are found stationary at their level or first difference and strongly reject the null hypothesis that all the panels contain unit-roots. Table 3 shows that Hausman's test, which is statistically significant at a five per cent significance level, indicates that the fixed effect model is the most appropriate over the random effect model.

Table 3 Model Specification

Models	Fixed Effect (F-value)	Random Effect (F-value)	Hausman Test (Chi-Sq. statistics)	Type of Model
Lintner's Model	172.000 (0.000)	2395.884 (0.000)	131.864 (0.000)	Fixed effects
Brittain's Cash Flow Model	139.465 (0.000)	2008.573 (0.000)	109.804 (0.000)	Fixed effects
Extended Cash Flow Model	166.545 (0.000)	1340.693 (0.000)	75.625 (0.000)	Fixed effects

Note: 1. Figures in parentheses are 'p' values.



Table 4 Heteroscedasticity, Autocorrelation, and Multicollinearity

Model	BPG test	D-W test	VIF
Lintner's Model	72.013 (0.356)	2.015	3.07- 3.17
Brittain's Cash Flow Model	79.059 (0.313)	1.970	3.03-3.27
Extended Cash Flow Model	118.393 (0.204)	2.077	1.24-7.03

The level of multicollinearity is examined with the help of the variance inflation factor (VIF). VIF scores of less than 10 suggest that data is free from multicollinearity. As it is clear from Table 4, VIF scores lie between 3.07 and 3.17, suggesting that multicollinearity does not exist. The value of the Durbin-Watson test lies around two, indicating that our study's variables are not auto-correlated. The result of the Brush-Pagan Godfrey (BPG) Test (1979) from Table 4 reported that all regression models are homoscedastic and are free from the problem of heteroskedasticity.

Table 5 Model I: Lintner Model

$$Div_{it} = \alpha_{it} + \beta_{1it}E_{it} + \beta_{2it} Div_{it-1} + \mu_{it}$$

Adjusted R ²	F-statistic	Constant (α_{it})	Regression Coefficient			
			Earning (E_{dit})	Lagged Dividend (Div_{it-1})	Target Payout ratio (%)	Adjustment Factor
0.903	172.004	-159.462 (-4.444)	0.295 (17.597)	0.513 (19.528)	0.605	0.487

Note: 1. Figures in parentheses are 't' values.

It is observed from Table 5 that the value of adjusted R² is 0.903, which indicates the high explanatory power of the regression model and means that current earnings and lagged dividends both explain more than 90 per cent variations in dividend payments in public manufacturing companies and those independent variables used in the Model are proving to be crucial determinant for dividend payments. Management should take these two variables cautiously when making dividend decisions.

A higher value of F- statistics in the Table provides evidence that current earnings and lagged dividends are the benchmarks for deciding the dividend payout ratio. The positive value of regression coefficients of current earnings and lagged dividends highlighted a positive relationship between dividend payments and independent variables. The regression coefficient value of lagged dividends implied that lagged dividends play a crucial role in setting out dividend payment decisions in public manufacturing firms. According to Lintner (1956), current earnings and the previous year's dividend represent Management's desire for a stable dividend policy. Table 5 shows the estimates of the target payout ratio and adjustment factor. Interestingly, the target payout ratio is 60 per cent, highlighting that public manufacturing companies distribute around 60 per cent of their earnings as dividends to shareholders. Hence, the study's findings support Lintner's (1956) claim that firms frequently have a target payout ratio to guide their dividend policy.

The adjustment factor is 0.48, which is significantly higher and provides evidence that public companies support Lintner's Model findings and follow stability in their dividend payout behaviour.



Brittain's Cash Flow Model can be described as a modified version of Lintner's Model. Before carrying out panel regression analysis, a panel unit root test was conducted by using a different test, i.e., Levin-Lin-Chu, Im-Pesaran-Shin, and Fisher-Augmented Dickey-Fuller test, to assess the level of stationary for all variables and Table 2 clearly show that all variables are found stationary at their level or first difference and strongly reject the null hypothesis that all the panels contain unit-roots. The findings in Table 3 depicted that the results of Hausman's test are statistically significant at a five per cent significance level, and the fixed effect model is preferred over the random effect model. In Table 4, the level of multicollinearity was examined with the help of the variance inflation factor, and a score of the variance inflation factor indicated that the data is free from the multicollinearity problem. Further, the value of the Durbin-Watson test lies around two, indicating that the variables of our study are not auto-correlated with each other, and the results of the Brush-Pagan Godfrey (BPG) heteroskedasticity Test (1979) reported that all regression models are homoscedastic and do not have the problem of heteroskedasticity.

Table 6 Model II: Cash Flow Model

$\text{Div}_{it} = \alpha_{it} + \beta_{1it}\text{CF}_{it} + \beta_{2it}\text{Div}_{it-1} + \mu_{it}$						
Adjusted R ²	F-statistic	Constant (α_{it})	Regression Coefficient Cash Flow (CF _{it})	Lagged Dividend (Div _{it-1})	Target Payout ratio (%)	Adjustment Factor
0.883	139.465	-75.956 (-1.922)	0.151 (12.244)	0.585 (21.495)	0.363	0.415

Note: 1. Figures in parentheses are 't' values.

The findings of Brittain's cash flow model are shown in Table 6, which reported that the value of adjusted R² is 0.883, which is statistically significant at a five per cent significance level and indicates a very high explanatory regression model in public manufacturing companies. The adjusted value of R² revealed that cash flow and lagged dividends explain around 88 per cent of variations in dividend payouts. The findings of the Brittain cash flow model are satisfactory in explaining the dividend behaviour of public companies.

The value of F- statistics is also significant at a five per cent level of significance and indicates the overall applicability of the Model in Indian public manufacturing companies. Positive values of cash flow and lagged dividend coefficients confirmed a positive relationship between independent variables and dividend payments. Table 6 shows that it is a crucial determinant of the dividend payment behaviour of said companies and serves as a significant predictor of the Model in the study.

The estimates of the target payout ratio and adjustment factor under Brittain's cash flow are shown in Table 6. The target payout ratio under the cash flow model is 36 per cent, which somewhat conforms to the study's findings of Lintner's Model. Similarly, the value of the adjustment factor (0.41) is more or less similar to the results of Lintner's study. It indicates that said companies follow a moderate managerial approach to maintain smooth and stable dividends in their dividend payment behaviour.

Extended Lintner Model with Capital Expenditure: Brittain (1966) studied the extended version of the cash flow model. In this Model, along with current earnings and lagged dividends, Depreciation and capital expenditure are also considered independent variables in the study to analyze their effects on dividend payments. Before carrying out panel regression, a panel unit root test was conducted by using



different tests, i.e., Levin-Lin-Chu, Im-Pesaran-Shin, and Fisher-Augmented Dickey-Fuller test, to assess the level of stationary for all variables and results of the Table 2 clearly show that all variables are found stationary at their level or first difference and strongly reject the null hypothesis that all the panels contain unit-roots.

According to Hausman's test findings, table 3 shows that the fixed effect model is suitable over the random effect model. The level of multicollinearity was also examined using the variance inflation factor, and the variance inflation factor score indicated that the multicollinearity problem does not exist in our study.

Further, the value of the Durbin-Watson test lies around two, indicating that our study's variables are not auto-correlated. The results of the Brush-Pagan Godfrey (BPG) heteroskedasticity Test (1979) reported that all regression models are homoscedastic and free from the problem of heteroskedasticity. The regression model results in Table 7 report that the adjusted R² value is 0.906, which is comparatively high compared to those given by earlier discussed models. The extended cash flow model explains that around 90 per cent of dividend payment behaviour variations occur with capital expenditure.

Table 7 Model II: Extended Cash Flow Model with CAPEX

$$\text{Div}_{it} = \alpha_{it} + \beta_{1it}E_{it} + \beta_{2it}\text{Div}_{it-1} + \beta_{3it}\text{Dep}_{it} + \beta_{4it}\text{CAPEX}_{it} + \mu_{it}$$

Adjusted R ²	F-statistic	Constant (α_{it})	Regression Coefficient			Target Payout ratio (%)	Adjustment Factor	
			Earning (E_{dit})	Lagged Dividend (Div_{it-1})	Depreciation (Dep_{it})			Capital Expenditure (CAPEX_{it})
0.906	166.545	-137.291 (-3.815)	0.332 (17.046)	0.485 (18.691)	-0.099 (-4.083)	-0.003 (-1.488)	0.644	0.515

Note: 1. Figures in parentheses are 't' values.

The value of F-statistics is significantly high and indicates that all independent variables are crucial determinants for dividend payment decisions. Positive coefficients of current earnings and lagged dividends convey a significant positive relationship with dividend payments. The extended cash flow model revealed that Depreciation and capital expenditure are negatively significant at a five per cent level and negatively influence the current year dividend of the sample companies, followed by the pecking order theory of capital structure. Table 7 indicated that the Model's different independent variables, lagged dividends, emerged as a critical determinant for dividend payout decisions.

The target payout ratio for the study period is quietly high and dictates that public manufacturing companies distribute around 65 per cent of current earnings as dividends. As far as the level of adjustment factor is concerned, it is around 0.52, which is different from other applied models and indicates that firms do not follow stability in their dividend payout ratio. Hence, the extended cash flow model with capital expenditure needs to support the findings of Lintner and the cash flow model.

CONCLUSION

The present paper has tried to examine the applicability of different dividend behavioural models given by Lintner (1956) and Brittain (1964 & 1966) concerning Indian public manufacturing companies. The results indicated Lintner's Model's very high explanatory power and provided that current earnings and lagged dividends are the most significant determinants of dividend payout decisions. Brittain's cash



flow model (1964) also gave the same results as Lintner's Model and dictated that cash flow has also turned out to be a key variable in the payout decisions of sample companies. Along with the models mentioned above, the study also examined the extended version of the segregated cash flow model. Its adjusted R^2 is significantly high at a five per cent significance level. The negative coefficient of Depreciation and capital expenditure implied their antagonistic relationship with dividend payments. The sample firms following the target payout ratio and level of adjustment factor revealed that public manufacturing companies are following stability in their dividend payment decisions, as explained by Lintner's and Brittain's cash flow model. However, the extended cash flow model's findings contradict this, highlighting Instability in payout patterns and not supporting the signalling hypotheses.

REFERENCES

- Adaoglu, C. (2000). Instability in the dividend policy of the Istanbul Stock Exchange (ISE) corporations: evidence from an emerging market. *Emerging Markets Review*, 1(3), 252–270.
- Aivazian, V., Booth, L., & Cleary, S. (2006). 'Dividend Smoothing and Debt Ratings', *Journal of Financial and Quantitative Analysis*, 41(2), 439–453.
- Al-Ajmi, J. & Hussain, H.A. (2011). 'Corporate dividends decisions: evidence from Saudi Arabia', *The Journal of Risk Finance*, 12(1), 41-56.
- Allen, F., & Michaely, R. (1995). Dividend policy. *Handbooks in operations research and management science*, pp. 9, 793–837.
- Anil, K., & Kapoor, S. (2008). Relevance of signalling and smoothing approaches to the dividend: A study of Indian I.T. sector. *Asia Pacific Business Review*, 4(4), 104–123.
- Baker, H. Kent; Gail, Farrelly and Richard, B.E. (1985). A Survey of Management Views on Dividend Policy. *Financial Management*, 14: 78–84.
- Bhat, R. (2004). Dividend behaviour of Indian companies under monetary policy restrictions. *Managerial Finance*.
- Bhole, L. M. (1980). Retained Earnings, Dividends and Share Prices of Indian Joint-Stock Companies. *Economic and Political Weekly*, 15(35), 93–100.
- Bose, S., & Husain, Z. (2011). Asymmetric dividend policy of Indian Firms: An econometric analysis. *International Journal of Applied Economics and Finance*, 5(3), 200-212.
- Bowerman, B. L., & O'Connell, R. T. (1990). *Linear statistical models: An applied approach*.
- Brealey, R.A. & Myers, S.C., (2002). "Principles of corporate finance", (7th ed.), New York, NY: McGraw-Hill.
- Breusch, T. S., & Pagan, A. R. (1979). A simple test for heteroscedasticity and random coefficient variation. *Econometrica: Journal of the econometric society*, 1287-1294.
- Brittain, J. A. (1964). The tax structure and corporate dividend policy. *The American Economic Review*, 54(3), 272-287.
- Brittain, J. A. (1966). *Corporate dividend policy*. Brookings institution.
- Buchanan, B. G. (2000). *Dividend smoothing, institutions and agency issues: A group of seven country comparison*—University of Georgia.
- DeAngelo, H., & DeAngelo, L. (1990). Dividend policy and financial distress: An empirical investigation of troubled NYSE firms. *The Journal of Finance*, 45(5), 1415-1431.
- Dewenter, K. L., & Warther, V. A. (1998). Dividends, asymmetric information, and agency conflicts: Evidence from a comparison of the dividend policies of Japanese and U.S. firms. *The Journal of Finance*, 53(3), 879-904.



- Fama, E F, & Blahak, H (1968). Dividend policy: An empirical analysis. *Journal of the American Statistical Association*, 63 (324), 1132-1161.
- Fama, E. F., & French, K. R. (1997). *Dividends, debt, investment, and earnings*. Center for Research in Security Prices, Graduate School of Business, University of Chicago.
- Field, A. (2015). *Discovering Statistics Using IBM SPSS Statistics*. Fourth edition, London: Sage publication Ltd.
- George, R. and Kumudha, A. (2006). A study on Hindustan Construction Co. Ltd. dividend policy with special reference to Lintner model, *Synergy*, 4(1): 86-96.
- Gujarati, D. N., Porter, D. C., & Gunasekar, S. (2012). *Basic econometrics*. Tata McGraw-Hill education.
- Hu, F., & Chen, X. (2012). Dividend smoothing and firm value: Evidence from Chinese firms. In *2012 International Conference on Information Management, Innovation Management and Industrial Engineering*, 3, 98-101.
- Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, 115(1), 53-74.
- Kanwal, A. & Kapoor, S. (2008). Relevance of signalling and smoothing approaches to dividend: A study of Indian I.T. sector. *Asia Pacific Business Review*, 4(4), 104–123.
- Lasfer, M. A. (1996). Taxes and dividends: The U.K. evidence. *Journal of Banking & Finance*, 20(3), 455-472.
- Levin, A., Lin, C.F. & Chu, C.J. (2002). Unit root tests in panel data: asymptotic and finite sample properties. *Journal of Econometrics*, 108(1), 1-24.
- Lintner, J. (1956). Distribution of Income of Corporation among Dividends, Retained Earnings, and Taxes, *American Economic Review*, 46: 97–113.
- Maddala, G.S. & Wu, S. (1999). A comparative study of unit root tests with panel data and a new simple test. *Oxford Bulletin of Economics and Statistics*, 61, 631-651.
- McDonald, J. G., Jacquillat, B., & Nussenbaum, M. (1975). Dividend, investment and financing decisions: empirical evidence on French firms. *Journal of Financial and Quantitative Analysis*, 10(5), 741-755.
- Mookerjee, R. (1992). An empirical investigation of corporate dividend payout behaviour in an emerging market. *Applied Financial Economics*, 2(4), 243–246.
- Neter, J., Wasserman, W., & Kutner, M. H. (1985). *Applied Linear Regression Models*. Homewood: Irwin Inc.
- Omet, G. (2004). Dividend policy behaviour in the Jordanian capital market, *International Journal of Business*, 9(3), 287–299.
- Pandey, I. M. (2003). “Corporate Dividend Policy and Behaviour: The Malaysian Evidence.” *Asian Academy of Management Journal*, 8(1), 17-32.
- Pruitt, S. W., & Gitman, L. J. (1991). The interactions between major US firms' investment, financing, and dividend decisions. *Financial Review*, 26(3), 409-430.
- Rao, G. N., & Sharma, Y. S. R. (1971). Dividends and Retained Earnings of Public and Private Limited Companies in India, 1955-56 to 1965-66: An Econometric Analysis. *Reserve Bank of India Bulletin*, 25(6), 860–873.
- Samanta & Das (2017). ‘Validity Of Behavioural Models On Dividend Payout: A Case of Indian Banking Sector’, *Business Spectrum*, 7(2), 27-40.



- Shevlin, T. (1982). Australian corporate dividend policy: Empirical evidence. *Accounting & Finance*, 22(1), 1–22.
- Sura, Jasvir, S., Pal, K., & Bodla, B. S. (2006). Factors influencing dividend policy decisions in banking sector: Indian evidence. *Amity Business Review*, 7(2), 64-76.
- Swamy, D.S. & Rao, V.G. (1975). The Flow of Funds in Indian Manufacturing Sector, *Sankhya*, 37.
- Tripathy, N. P. (1999). Stock Market Efficiency-Testing of Lintner's Model of Dividend Behaviour in Sensex Firms of India. *Vision*, 3(2), 47–50.
- Wolmarans, H.P. (2003), "Does Lintner's dividend model explain South African dividend payments?" *Meditari Accountancy Research*, Vol. 11 No. 1, pp. 243-254. <https://doi.org/10.1108/10222529200300015>.

