

## VALIDITY OF BEHAVIOURAL MODELS ON DIVIDEND PAYOUT: A CASE OF INDIAN BANKING SECTOR

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### Abstract

The present study would like to review different famous behavioural models of dividend policy in Indian banking sector. Accordingly, panel data regression technique has been applied on twenty two listed banking companies from banking sector for banking sector for period 2003-04 to 2012-13. The study reveals that in banking industry, dividend policy is best explained by explicit depreciation model proposed by Brittain and Indian banks are regular dividend payers and avoid dividend reduction.

### Introduction

In order to frame an effective and satisfying payout policy managers have to consider the desires of different stakeholders of the organization and the need of the organization. The desires of the stakeholders are of paramount importance in framing dividend policy. Managers put forward their response to these desires as well as to financial considerations of the organization through the dividend policy. So framing of dividend policy is a kind of managerial behaviour because this policy is nothing but a reaction to various factors put forward by different but related interested groups. Researchers ascribed different terms like dividend puzzle, dividend tangle etc. to present the problems in decision making related to this area. The present study would like to review different famous behavioural models of dividend policy in Indian banking sector.

### **Empirical Exposure on Corporate Dividend Policy**

There exist a number of empirical studies in the field of dividend policy in both the developed countries and emerging economies like India. Few notable contributions in this arena are mentioned below.

Michaelsen (1961) has criticized Dobrolyvosky's hypothesis. According to him Dobrolyvosky's hypothesis has been constructed by emphasizing on determinants on consumer savings. However, consumer savings and corporate retention are not same. Thompson and Walsh (1963) have conducted a study where they have taken a poll of management personnel covering as many as one hundred and ninety five large industrial organizations. The study has thrown ample light on managerial attitude on different aspects of dividend decision making. The study has provided evidences in support of Lintner's and Darling's findings. This study has concluded in favour of the belief that firms maintain a stable dividend policy. The study of Sastry (1966) over the period 1955-60 on Indian corporate sector has pointed out that Lintner's findings are important in Indian corporate sector. However, the study reveals that gross profit after tax is better than net profit after tax as explanatory variable. Fama & Babiak (1968) has conducted an empirical study on partial adjustment model of Lintner and the extended work by Brittain by considering 392 industrial firms over the period of 1946-1964. Lintner's model has remained superior in explaining the dividend behaviour of the companies than other models. Krishnamurthy and Sastry (1974) have studied dividend behavior of public limited companies in India consisting of firms belonging to cotton and textile, jute, sugar, paper and paper board, chemicals, engineering and cement sector. The study has clearly showed that investment expenditure and external finance have negligible impact on dividend policy of the firms taken up for the study. In their study, Lintner's hypothesis significantly explains the dividend behaviour of the firms under study. Dhameja (1978) has examined the dividend policy of Indian companies according to different groups with respect to size, industry, growth and control. It has been found that the decision variables used in Lintner's model are better predictors of dividend policy than other decision variables. However Growth of firm has been found as a significant determinant of dividend policy and has a negative correlation to dividend payout. Ojha (1978) has tried to analyse dividend behaviour of Indian firms under cotton textile industry. The study supports Lintner's hypothesis in explaining the dividend behaviour of the said companies. The study has also showed that dividend payout had got a significant bearing on stock prices. Djarrya & Lee

(1981) have provided an integration model instead of accepting Lintner's partial adjustment model and Britain's cash flow model. They have suggested a more generalized model of dividend behaviour and their study has established a relationship between dividend payments, earnings and some other firm specific factors. Khurana's study (1985) has inferred that Lintner's model explains dividend behaviour more precisely as compared to other available models. The study has also analysed and indentified the significance of economic predictors viz. stock prices, liquidity position of the firm, investment need etc. on the dividend decision to be taken by corporate management and it has been found that these variables have a direct and significant impact on dividend setting process. This study has considered 68 companies listed in Bombay Stock Exchange belonging to different sectors over a fifteen year period (1962-63 to 1976 - 77). Sharma (1986) has studied the dividend policy of Indian companies and the findings of the study have revealed that Lintner's model fairly explains the dividend behaviour of half of the firms studied both for short and long time horizon. The study has also found support for signalling effect of dividend decisions. In this empirical study dividend policy has been considered as a primary decision variable and it has significantly influenced the investment & financing decisions taken by the management. Agarwal (1987) has conducted a study on Indian automobile sector over two decades (1959-60 to 1978-79) and it has been found that Lintner's Model can not provide a satisfactory explanation of the dividend behaviour for Indian automobile industry. In this study level of sales and profit have come out as prime predictors for explaining dividend decisions. Lang and Litzenberger (1989) have conducted an empirical study to investigate the impact of free cash flow, as described by Jensen, on dividend payouts and they have concluded that dividend payouts can significantly be explained by free cash flow. However, they have extended Jensen's hypothesis and renamed it as "The overinvestment hypothesis". Jaidev (1992) has conducted an empirical study on manmade fibre sector over the database of a decade(1978-79 to 1987-88). The study has experienced the relevance of Lintner's model in dividend policies followed by the companies. Here current profit has become a significant factor in deciding dividend payments. However, preceding year's dividend has been found as an insignificant estimator of current dividend payout. The study has also found relevance of Brittain's hypothesis and findings of the study has substantiated that cash flow is a more stable and consistent predictor of dividend payments than book profits.

Dempsey, labor & Rozeff (1993) have conducted a study on US firms and they have found only modest support for Lintner's model. Their study has revealed dividend policy varies across industries. The study conducted by Mahapatra and Sahu (1993) has experienced that Britain's cash flow model explains the dividend policies of 90 companies considered for the study over a period of 1977-78 to 1988-89. However, the study has also reported that neither Lintner model nor Darling model can provide a satisfactory explanation of dividend decisions taken by the management of the sample companies. Mishra and Narender (1996) have tried to explain the dividend behaviour of Indian state owned enterprises (SOEs) belonging to Manufacturing, petroleum and service sectors over a ten year period including both pre and post liberalisation era. (1984-85 to 1993-94), based on the data published by DPE (Department of Public Enterprises). The findings have supported Lintner's model and lagged dividend has emerged out as the most significant predictor of dividend decisions. Jain and Kumar (1997) have conducted a study on 96 listed companies on BSE over the period 1984-1995 and their study discloses that even in the post-liberalization era Lintner's model explains the dividend behavior of the firms quite well. Benartzi *et al.* (1997) have commented that Lintner's model remained the best description of the dividend setting process available. Baker & Powell (1999) have conducted an empirical study and their study has supported validity of Lintner's model in USA. Anand (2004) has conducted a survey on 81 chief financial officers' (CFOs) from a broad cross section of 474 private sector and top 51 public sector firms to analyze the factors influencing dividend decisions of corporate India. The findings of the study are also in tune with the findings of Lintner's study. The study has also found support in favour of signalling potential of dividend policy decisions. Pandey & Bhat (2004) have conducted the first study on dividend behaviour of Indian companies under monetary policy restrictions. The study has revealed that macroeconomic policies have an impact on corporate financing decisions. Their findings disclose that restricted monetary policies have caused about a 5%-6% reduction in dividend payout ratios. According to their study, monetary policy restrictions have affected the availability and cost of external fund relative to internal fund. They have extended Lintner's framework to examine the impact of these restrictions on dividend payout. George and Kumudha (2006) have conducted a study on dividend policy of Hindustan Constructions Company Ltd. with special reference to Lintner's model and has analyzed seventy-eight years (from 1926-27 to 2003-04) dividend history of the company. The study has revealed that dividend decision of a firm always get influenced by the

requirement of future capital and the amount of equity capital. The analysis of dividend history of the company has showed the applicability of Lintner's model. However, it has also been found that Lintner's argument regarding a tendency to increase their dividend rate over a period of time has not been supported by the study. This study has mentioned the importance for a firm to maintain steadily growing dividend rate. Bodla *et al.* (2007) have made an attempt to explain the dividend behaviour of Indian Banking industry by examining the Lintner's model and Brittain's model along with the Brittain's segregated cash flow model including capital expenditure as a variate. In this study a cross sectional analysis has been done for the period 1996-2006. Lintner's model has performed best in explaining the dividend behaviour of banks. The study also revealed Public sector banks follow a more stable dividend policy than private sector banks. Kaushik (2009) has examined all the major theoretical frameworks of dividend behaviour in Indian context in an empirical study after economic liberalization over a period of fifteen years (1989-90 to 2003-04). The findings suggest that even in the liberalised era Lintner's model and Brittain's model provides fair explanation to Indian corporate dividend behaviour. However Dobrovolosky's and Darling's model have not performed well in explaining the dividend decisions of the sample firms considered under the study. Das *et al.* (2010) have conducted an empirical study on Indian mining and minerals sector over a decade (1999-2009) and the findings of the study has substantiated the findings of Lintner's version and Brittain's version even in the matured phase of economic liberalization in India. Sudhakar and Saroja (2010) have examined the dividend policy of Indian banking industry over a period of ten years (1997-98 to 2006-07). This study is divided into two parts. In the former part of the study the researchers tested the applicability of Lintner's model, Brittain's model and Darling's model. The findings of the study suggest that Brittain's explicit depreciation model provides best explanation of dividend behaviour of Indian banking industry. In the later part of the study they have tried to develop a model considering nine predictors such as firm size in terms of sales volume, previous year dividend payout ratio, return on investment, current ratio, dividend tax, corporate tax etc. of current dividend payout ratio. From the results of this regression model the researchers concluded that previous year dividend payout ratio, firm size in terms of sales volume and return on investment are important predictors of dividend payments by Indian banks. Acharya and Mahapatra (2012) have assessed the validity of Lintner's model on the dividend behaviour of selected commercial banks of India included in the SENSEX. The study has disclosed that

Lintner's econometric model finds its suitability only in case of ICICI bank.

### Objectives

The present work has the following objectives:

1. To test empirically different theoretical models viz. Dobrolyosky Model, Lintner's Model, Darling's Model, Brittain's Cash Flow Model, Brittain's explicit depreciation model / Segregated Cash Flow Model related to dividend behaviour of select Indian banks
2. To estimate the target payout ratios and adjustment factors for different Indian banking sector.

### Hypotheses

The testable hypotheses are

1. Indian bank management follows Dobrolyosky's model for dividend setting process.
2. Lintner's Model explains the dividend behaviour of Indian banking sector.
3. Darling's Model of dividend policy is valid in the context of banking sector in India.
4. Brittain's cash flow model successfully predicts the dividend behaviour of Indian banks
5. Brittain's explicit depreciation model is relevant for analysing dividend behaviour of Indian banks.

### Database

In order to examine the well known behavioural models of dividend policy in Indian context panel data have been used for banking sector as this sector consists of some banks which pay regular and high dividends to their shareholders. However, we have excluded such companies that either do not have financial data for period of study i.e., from the year 2003-04 to 2012-13 or have not declared any dividend for more than three years under reference of this study. So the final data set comprises of 22 listed banking companies from banking sector.

Data have been collected for these sample banks on total cash dividends paid to equity shareholders in a particular financial year which is inclusive of interim, final and any other special cash dividends, equity dividends paid in the preceding year, earnings after tax and depreciation, earnings after tax and depreciation for the previous year, net worth of the bank at the commencement of each year, net worth of the company at the end of each year, capital

employed of the at the beginning of each year, capital employed of the bank at the close of each year, depreciation and amortizations made in each year, net sales for the current year, net sales of the company during last two years, cash flow (profit after tax + depreciation & amortization).

For the purpose of our study all the data taken on the variables mentioned in the above section have been scaled to avoid heteroskedasticity and outlier problems. After scaling of variables finally our database contains data on the following variables which have been used for the estimation of different models

(i) Equity dividend in a particular year / Average net worth

where average net worth has been calculated by using simple arithmetic mean of opening net worth and closing net worth of that particular year,

(ii) Profit after tax in a particular year / Average net worth ,

(iii) Equity dividend in a particular year / Average net worth,

(iv) Closing Operating asset - Opening Operating asset / Opening Operating asset

where operating asset has been represented by the capital employed,

(v) Equity dividend in a particular year / Net sales in that particular year,

(vi) Profit after tax in a particular year / Net sales in that particular year,

(vii) Equity dividend in previous year / Net sales in a particular year,

(viii) Profit after tax in previous year/ Net sales in a particular year,

(ix) Depreciation and amortizations in a particular year / Net sales in that particular year ,

(x) Net sales in a particular year - Net sales before two years / Net sales in that particular year, and

(xi) Cash flow in a particular year/ Net sales in that particular year.

where Cash flow = (profit after tax + depreciation)

### **Methodology**

To check the applicability of different behavioural models of dividend policy in banking sector we have considered the five famous models *viz.* Dobrolvosky Model, Lintner's Model, Darling's model, Brittain's cash flow model and Brittain's segregated cash flow model that explain the dividend behaviour of corporate world across the globe. After scaling of variables the following modified versions of the said well-known models have been used for the present study.

#### ❖ DOBROLVOSKY'S MODEL (1951)

$$(DA)_{it} = \alpha_i + \beta_1 (PAT/ANW)_{it} + \beta_2 (D/ANW)_{i,t-1} + \beta_3 ((OA_t - OA_{t-1})/OA_{t-1})_{it} + \mu_{it} \dots \dots (1)$$

❖ LINTNER'S MODEL (1956)

$$(DS)_{it} = \alpha_i + \beta_1 (PS)_{it} + \beta_2 (DS)_{i,t-1} + \mu_{it} \dots \dots \dots (2)$$

❖ DARLING'S MODEL (1957)

$$(DS)_{it} = \alpha_i + \beta_1 (PS)_{it} + \beta_2 (PS)_{i,t-1} + \beta_3 (DPS)_{it} + \beta_4 (\Delta S_{t-2S})_{it} + \mu_{it} \dots \dots \dots (3)$$

❖ BRITAIN'S CASH FLOW MODEL(1964)

$$(DS)_{it} = \alpha_i + \beta_1 (CFS)_{it} + \beta_2 (DS)_{i,t-1} + \mu_{it} \dots \dots \dots (4)$$

❖ BRITAIN'S SEGREGATED CASH FLOW MODEL(1966)

$$(DS)_{it} = \alpha_i + \beta_1 (PS)_{it} + \beta_2 (DS)_{i,t-1} + \beta_3 (DPS)_{it} + \mu_{it} \dots \dots \dots (5)$$

where

$(DA)_{it}$  = (Equity dividend in period t/ Average net worth in period t)<sub>it</sub> where *i* is the company and *t* is the time,

$(PAT/ANW)_{it}$  = (Profit after tax in period t/ Average net worth in period t)<sub>it</sub> where *i* is the company and *t* is the time,

$(D/ANW)_{i,t-1}$  = [Equity dividend in period (t-1) / Average net worth in period (t-1)]<sub>i,t-1</sub> where *i* is the company and *t-1* is the time,

$((OA_t - OA_{t-1})/OA_{t-1})_{it}$  = [Operating asset (capital employed) expansion in period t/ Operating asset (capital employed) in period (t-1)]<sub>it</sub> where *i* is the company and *t* is the time,

$(DS)_{it}$  = (Equity dividend in period t/ Net sales in period t)<sub>it</sub> where *i* is the company and *t* is the time,

$(PS)_{it}$  = (Profit after tax in period t/ Net sales in period t)<sub>it</sub> where *i* is the company and *t* is the time,

$(DS)_{i,t-1}$  = [Equity dividend in period (t-1) / Net sales in period (t-1)]<sub>it</sub> where *i* is the company and *t* is the time,

$(P_{t-1}S)_{it}$  = [Profit after tax in period (t-1)/ Net sales in period (t-1)]<sub>it</sub> where *i* is the company and *t* is the time,

$(DPS)_{it}$  = (Depreciation in period t/ Net sales in period t)<sub>it</sub> where *i* is the company and *t* is the time,

$(\Delta S_{t-2S})_{it}$  = (Change in sales in period t over the preceding two years/ Net sales in period t)<sub>it</sub> where *i* is the company and *t* is the time,

$(CFS)_{it}$  = (Cash flow in period t/ Net sales in period t)<sub>it</sub> where *i* is the company and *t* is the time; where Cash flow = Profit after tax + Depreciation,



$\beta_1, \beta_2, \beta_3,$  and  $\beta_4$  are the coefficients of the independent variables,

$\mu_{it}$  = The error term.

To test the suitability of the above mentioned methods, parameters of the models have been estimated first by pooled OLS method. Then the same parameters have been estimated by using fixed effect model. F- test has also been used for the fixed effect model. After that the parameters of the same model have been estimated with a random effect model and Breusch Pagan Lagrange multiplier test has been used to choose between random effect model and pooled OLS method. Besides, we have compared the outcomes of the random effect model with the fixed effect model by employing Hausman specification test. To check stationarity in the panel data unit - root test has also been applied.

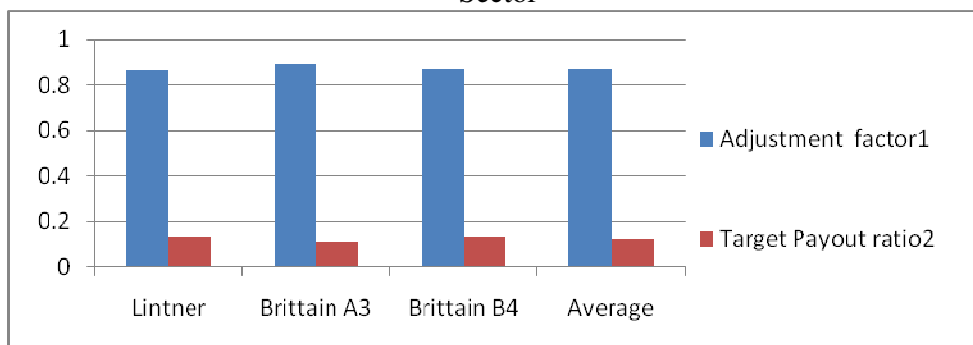
### **Analysis and Interpretation**

To make a comparative analysis of the outcomes of different models for Indian Banking sector panel data regression equations for different theoretical frameworks have been presented in Table 1. From the Table 1 it can be reported that none of the dividend policy models considered for the purpose of study explains dividend policy of Banking sector with very high satisfaction. However, the industry's dividend policy is best explained by explicit depreciation model proposed by Brittain. The predictors considered under this model can explain about 59% variation in dividend payment of Indian Banking industry. Lintner's Model and Dobrovolosky's model have also explained the dividend behaviour of Indian Banking sector approximately equally. Lintner's model has explained about 58% and Dobrovolosky's model has explained about 57% variation of dividend payout for this industry. The regressors of Darling's model explain about 48% variation in dividend payment for the sector. Brittain's cash flow model has turned out to be the least satisfactory model for explaining the dividend policy of Indian banking sector. It explains only 21% variation in dividend payout for this sector. Fixed effect model has remained best suited for regression analysis under all the behavioural models that have been used under this study. So there is a lack of homogeneity in dividend payments by different banking companies under this industry.

Current profit and lagged dividend have remained the most important determinant of dividend policy followed by the current cash flow of the organisation. Operating asset expansion and capital consumption during current period have also significantly affected the dividend decisions

of the organisation. However, these variables affected dividend decisions of the companies by a lower magnitude. The analysis finds negative correlation between dividend payments and operating asset expansion implying that the industry prefer dependence on own funds needed for further expansion. change in the level of sales as an individual determinant has not become relevant for analysing the dividend behaviour of this banking industry. Fixed effect model has become the best selection for carrying regression analysis in this industry irrespective of the dividend policy models used for this study. So the management decisions regarding dividend policy significantly differed across different companies of the industry. Though the constant term is positive and significant but the values of these terms are very low. It signifies that Indian banks are regular dividend payers and avoid dividend reduction.

Figure 1: Graphical Representation of Adjustment Factors and Target Payout Ratios for Banking Sector



Notes: (1) Adjustment factor =  $[1 - \text{coefficient of } (DS)_{i,t-1}]$

(2) Target Payout ratio =  $\frac{\text{Coefficient of } (PS)_{it}}{\text{Adjustment factor}}$

(3) Brittain A  $\longrightarrow$  Brittain's Cash Flow Model

(4) Brittain B  $\longrightarrow$  Brittain's Explicit Depreciation /Segregated Cash Flow Model

From the Figure 1 and Table 2 it can be clearly noticed that the average target payout ratio i.e., percentage of net profit to be distributed in the form of dividend, is 12% and dividend payments by Indian banks are highly fluctuating which is revealed by the high average adjustment factor (0.87 on an average).

Table 1: Different Behavioural Models of Dividend Policy for Banking Sector

Name of the Model	Adjusted R <sup>2</sup>	Estimated Panel Data Regression Model	Type of Model
Dobrovolosky	0.5742* [18.33]	$(DA)_{it} = 0.04* + .05** (PAT/ANW)_{it} + 0.35* (D/ANW)_{i,t-1} - .05** ((Oa_t - OA_{t-1}) / OA_{t-1})_{it}$ (10.28) (2.84) (5.88) (-2.82)	Fixed Effect
Lintner	0.5870* [53.92]	$(DS)_{it} = .013* + .12* (PS)_{it} + .14* (DS)_{i,t-1}$ (3.79) (8.93) (3.96)	Fixed Effect
Darling	0.4817* [23.35]	$(DS)_{it} = .013* + .12* (PS)_{it} + .001 (PS)_{i,t-1} + .083** (DPS)_{it} + .001 (\Delta S_{t-2S})_{it}$ (3.62) (8.86) (1.39) (2.06) (0.11)	Fixed Effect
Brittain A <sup>3</sup>	0.21* [21.11]	$(DS)_{it} = .013* + .097* (CFS)_{it} + .113* (DS)_{i,t-1}$ (3.96) (9.40) (3.26)	Fixed Effect
Brittain B <sup>4</sup>	0.5937* [37.12]	$(DS)_{it} = .01* + .11* (PS)_{it} + .13* (DS)_{i,t-1} + .06* (DPS)_{it}$ 3.23) (8.99) (3.63) (1.59)	Fixed Effect

Notes: Notes: Terms within square bracket denote F values and terms within parentheses denote t-values. \* implies significant at 1% level, \*\* implies significant at 5% level and \*\*\* implies significant at 10% level.

Table 2: Target Payout Ratio and Adjustment Factors for Banking Sector as Estimated by Different Behavioural Models and Their Average

Name of the Model	Adjustment factor <sup>1</sup>	Target Payout ratio <sup>2</sup>
Lintner	0.86	0.13
Brittain A <sup>3</sup>	0.89	0.11
Brittain B <sup>4</sup>	0.87	0.13
Average	0.87	0.12

Notes: (1) Adjustment factor =  $[1 - \text{coefficient of } (DS)_{i,t-1}]$

(2) Target Payout ratio =  $\frac{\text{Coefficient of } (PS)_{it}}{\text{Adjustment factor}}$

(3) Brittain A → Brittain's Cash Flow Model

(4) Brittain B → Brittain's Explicit Depreciation / Segregated Cash Flow Model

## Conclusion

It may be concluded from the study that in banking industry, dividend policy is best explained by explicit depreciation model proposed by Brittain. Lintner's Model, Darling's model and Dobrovolosky's model have explained the dividend behaviour of Indian Banking sector moderately. Brittain's cash flow model has turned out to be the least satisfactory model for

explaining the dividend policy of Indian banking sector. The management decisions regarding dividend policy significantly differed across different banks of the industry and Indian banks are regular dividend payers and avoid dividend reduction.

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