

Impact of Macro-economic Variables : Dividend Policy of Indian Companies

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Abstract

This paper made an attempt to investigate the impact of macro-economic variables on dividend policy of 319 Indian companies listed on Bombay Stock Exchange for the period of 10 years i.e. 2005-2015. Multiple Linear Regression is performed to know the significant variables affecting dividend decisions. For the purpose of the study, independent variables include inflation, interest rates, Index of industrial production and wholesale price index. The results indicates that only two variables affect dividend payout ratio i.e. Inflation and interest rates. Index of industrial production and wholesale price index are found to be insignificant in the Indian scenario.

Keywords: Dividend payout ratio, inflation, interest rates, macro-economic



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Almost all companies earn income. This income can be used to purchase operating assets, acquire securities, payoff the debt, or distributed to shareholders. The income distributed to shareholders is the dividend. Four decades ago, Black (1976) wrote, “*The harder we look at the dividend picture, the more it seems like a puzzle, with pieces that just don’t fit together.*” Till now, dividend payout policy had remained the puzzle. Many questions are still unsolved or these answers are controversial: why do firms pay dividends and why do shareholders pay attention to dividend? What are the factors which impact the dividend decision in a company? Whether the dividend policy affects the value of a firm. In spite of many descriptions in this area, the mystery still shrouds the dividend. The “dividend irrelevance” theory still mount large and not even a single explanation had provided an overwhelming support. It is one of the ten important unsolved problems in finance (Brealey and Myers, 2002). Allen and Michaely (1995) concluded that “*much more empirical and theoretical research on the subject of*

dividends is required before a consensus can be reached.” Frankfurter and Wood Jr. (2002) examined that no dividend model, either separately or jointly with other models, is supported invariably.

The seminal work of Modigliani and Miller theory postulated that given the perfect market assumptions, value of the company is not pertinent to its capital structure and dividend policy. Investors receive less in capital appreciation with the increase in dividends. Continuing studies Modigliani and Miller (1963) countermanded one of perfect capital market’s assumptions and explained that by taking corporate taxes into account, capital structure and the value of the firm are related to each other. This leads to optimal capital structure of the firm. They established that as the debt level increases, the value of firm also increases. Miller and Scholes (1982) argue that in the real world, rather than capital gains and imperfections in the market, higher taxes on dividends inspire dividend decision more. Lintner (1962) and Gordon (1963) proposed the theory that price of shares of company (or its cost of capital) is dependent on the dividend rate. They proved that dividend policy is relevant, since the capital gains are least important than dividends and by paying more dividend, it becomes more valuable. This theory, known as “bird in hand theory,” states that the money reinvested is less valuable than money paid to shareholders. Litzenberger and Ramaswamy (1979) talked differently. He argued that paying cash dividends would not give any advantage to investors. The researchers claim that due to tax reasons lower payout companies are preferred by investors. Therefore in order to increase the share prices, companies have to reduce their dividends. Along with those other prevailing theories for explaining dividend policies include lifecycle theory, signaling theory, agency theory and catering theory. The lifecycle theory posits that dividend policy is a function of firms’ maturities. As the firm grows, due to accumulated cash balances and lesser growth opportunities, such firms pay more dividends as compared to less mature firms. The signaling theory maintains that if the financial managers are expecting future cash flows, this information is conveyed to financial managers by paying more dividends. Increase in dividends signal increase in future cash flows whereas decrease in dividends signals decrease in future cash flows. The catering theory depicts that firms cater to their investors when determining dividend distribution policies. Agency theory is polished by Rozeff

(1982) and Easterbrook (1984) to ground the role of dividends in controlling agency relationships between shareholders and managers. It is argued that by paying dividend firms are forced to raise additional funds from the capital market, thereby uncovering the firm to the discipline of the market and reducing the scope for agency conflicts. Jensen (1986) further generated the free cash flow hypothesis, which predicts that shareholders have preference for dividends because of no profitable investment opportunities managers may squander retained cash, especially when the firm faces a high level of information asymmetry. Indeed, La Porta, et al. (2000) proved that due to pressure by minority shareholders, corporate insiders are forced to disgorge cash by paying dividends. In the Indian context, a few studies have evaluated the dividend behaviour of corporate firms. To summarize, there are plenty of theories explaining the determinants of dividend policy and there is no consensus on which theory should guide the corporate dividend decisions. Clear guidelines for an ‘optimal dividend policy’ have not yet emerged despite the voluminous literature. The aim of this study is to find the validity of different views on determinants of dividend policy in the Indian perspective and empirically prove their significance using regression modelling.

Literature Review

Many studies have been carried out to know the determinants of dividend policy. An extensive review over the last 15 years was attempted to comprehend the same. The prime source of the studies reviewed herein includes various websites, selected refereed national and international journals such as *Journal of Finance*, *Journal of Risk Finance*, *Managerial Finance*, *IUP Journal of Bank Management*, *Journal of Financial Economics*, *International Review of Financial Analysis*, *International Journal of Economics and finance*, *American Economic Review*, *Emerging Markets Review*, *Decision*, *Journal of Applied Accounting Research*, *Pacific Basin Finance Journal*, *Journal of Portfolio Management*. Lot many studies have been conducted in U.S., Australia, Japan, Ghana, Malaysia, Greece, Iran, Saudi Arabia, Pakistan, Indonesia, UAE, Bangladesh, Thailand, Canada, Poland, Turkey and little work in India.

Some prominent studies which deserve mention here include Amidu M. and Abor J. (2006), Naceur S.B. et al. (2006), Aldin

H and Malkawi A.(2008), Gupta A.(2010), Perretti G.F. et al. (2013), Baker H.K. et al. (2013), Arko A.C. (2014) who regarded profitability as significant variable. Ho H. (2003), Gupta A.(2010), Khan N.U.(2011), Abu S.T.(2012), Zameer H. et al.(2013) regarded liquidity as significant determinant of dividend policy. Pandey and Bhatt (2007), Pal K. and Goyal P. (2007), Basse T. and Reddemann (2011), Bokpin G.A.(2011), Singhania M.(2012), Pourheydari O. (2009), Denis

D.J.and Osobov I.(2008), Ajmi J.A. and Hussain H.A.(2011), Chazi A. et al. (2011), Baker and Powell (2012), Maladjian C. and Khoury R.E.(2014) regarded monetary policies, interest, inflation, foreign state ownership, market capitalization, industry type, firm size and growth, cash flows and life cycle, merger and acquisition strategy, the stability of earnings and the level of current and expected future earnings, risk as significant variables respectively.

Name of Author	Year of Study	Country of Study	Significant Variable
H. Kent Baker, Gary H. Powell	1999	US	The level of current earnings, expected future earnings and the pattern of past dividends
H. Kent Baker and Gary E. Powell	2000	NYSE listed firms	Previous year dividends, current profits, future prospects, stability of earnings
Klaus Gugler	2003	Austria	Ownership and control structure
Horace Ho	2003	Australia, Japan	Australia -Size, Industry effect ; Japan -Liquidity, Risk, Industry effect
I.M.Pandey	2003	Malaysia	changes in earnings, Past dividends
Mohammed Amidu and Joshua Abor	2006	Ghana	Positive -Profitability, cash flow and Tax; Negative -risk, institutional holding, growth, market to book value
Samy Ben Naceur, Mohamed goaied and Amel Belanes	2006	Tunisia	Profitability, size, growth, stock market liquidity
Karam Pal and Puja Goyal	2007	India	lagged dividend, profit after tax, interest, change in sales
Thomas A. Anastassiou	2007	Greece	Company's Income
I.M.Pandey and Ramesh Bhatt	2007	India	Monetary policies restrictions (macro-economic policies)
David J. Denis and Igor Osobov	2008	US, Canada, UK, Germany, France, Japan	Firm size, profitability, growth, earned / contributed equity mix
Husam-Aldin Nizar Al-Malkawi	2008	Jordan	size, profitability, and age -positive; leverage-negative
Omid Pourheydari	2009	Iran	the stability of cash flow, the availability of profitable investment opportunities, and stability of profitability, industry type
Amitabh Gupta	2010	India	leverage, liquidity, profitability, ownership structure and growth

M.Sudhaharand T.Saroja	2010	India	Previous year dividends, current depreciation, profit after tax, Volume of sales, return on investment, last year DPO
Tobias Basse and Sebastian Reddemann	2011	US	Inflation
Jasim Al-Ajmi and Hameeda Abo Hussain	2011	Saudi Arabia	Lagged Dividend Payments, Profitability, Cash flows, and Life cycle.
Godfred A. Bokpin	2011	Ghana	Age, income volatility, foreign state ownership, board size, highly leverage firms
N.U. Khan, B.M. Burton and D.M. Power	2011	Pakistan	Current earnings and liquidity of company
AbdelazizChazi , NarjessBoubakri , and Fernando Zanella	2011	UAE	Stability of future earnings, market price of stock, availability of extra cash, merger and acquisition strategy
N.U. Khan, B.M. Burton and D.M. Power	2011	Pakistan	Current earnings and liquidity of company
Monica Singhanian	2012	India	Market capitalization, Market to book value ratio
Sheikh Taher Abu	2012	Bangladesh	Current earnings and liquidity
H. Kent Baker and Gary E. Powell	2012	Indonesia	The stability of earnings and the level of current and expected future earnings, effect of dividends on stock prices and needs of current shareholders
Gizelle F. Perretti, Marcus T. Allen and H. Shelton	2013	US-ADR firms	Profitability and macro economic conditions,
JinhoJeong	2013	Korea	size, risk, growth and large shareholder ownership,(tax and interest rates)-macroeconomic factors, institutional factors
H. Kent Baker Bin Chang ShantanuDutta Samir Saadi	2013	Canada	Firm size, profitability, investment opportunities,and catering incentives
HashimZameer, ShahidRasool, SajidIqbal and UmairArshad	2013	Pakistan	Profitability, last year dividend and ownership structure-positive;negative-liquidity

Richard Fairchild, YilmazGüney , YordyingThanatawee	2014	Thailand	Free cash Flow, life cycle
Anastacia C. Arko and Joshua Abor; Charles K.D. Adjasi and Mohammed Amidu	2014	Sub-Sahara Africa	Profitability level, investment opportunity sets, taxation, leverage, institutional shareholding and risk.
Christopher Maladjian and Rim El Khoury	2014	Lebanese banks	positive-firm size, risk and previous year's dividends; negative - growth & profitability
Arindam Banerjee and Anupam De	2015	India	size of the firm and debt service capacity ratio
Joonho Moon, Won Seok Lee , John Dattilo	2015	Airline industry	firm size, cash holdings, financial leverage, and life-cycle
Bogna Kaźmierska-Jóźwiak	2015	Poland	profitability & leverage
Basil Al-Najjar Erhan Kilincarslan	2016	Turkey	Foreign ownership and state ownership, Domestic financial institutions, family involvement and minority shareholders

Need of the Study

A large body of research has investigated the determinants of dividend policy; however there are visible gaps on impact of macro-economic variables on dividend payout policy in India. It has already been established that various Macro economic variables have affected dividend Policy (Basse T. and Reddemann S., 2011; Perretti G., 2013; Jeong J., 2013) and study pertinent to know whether dividend policy decisions are affected by macro-economic variables in India has not been found. One of crucial reason for failure of empirical test to support dividend determinants can be negligence of macro-economic variables. Therefore, it has become imperative to consider the macro-economic variables to know the exact determinants of dividend policy. (Basse T. and Reddemann S., 2011) The call of the hour is to undertake research on the impact of macro-economic variables on dividend policy in India.

Objective of the Study

Via this study an attempt has been made to know whether the dividend policy is impacted by macro-economic variables. The dependent variable taken into consideration is the "Dividend payout ratio" and independent variables, which might have some affect on dividend policy, are "Inflation," "Interest Rates," "Index of Industrial Production," and "Wholesale Price Index."

Research Methods

Data and sample selection

The necessary data has been drawn from Reserve Bank of India, World bank and websites of respective companies. The sample companies have been drawn from broad based BSE 500 Index. The period of study is ten years i.e. 1st April, 2005 to 31st March, 2015. Only those companies have been included in the sample whose complete data was available. This process gave us the sample of 319 companies out of 500. It is a Time series data.

Description of variables

Dependent variable

In line with previous studies that examined the main determinants of dividend payment, the dependent variable used in this study is the dividend payout ratio (DPR), defined as the dividend per share divided by earnings per share (D'Souza J. and Saxena A.K., 1999; Amidu M. and Abor J., 2006; Patra T. et al., 2012)

Independent variables

Over the years researchers have employed numerous macro economic variables on stock market and capital structure. Out of these, only four macro economic variables which have significant impact on stock market, capital structure and

dividend policy are taken into consideration. The justification for choosing these variables is as follows:

Inflation has positive significant impact on stock prices (Pal and Mittal R., 2011; Kalra R., 2012; Liu M.H. and Shrestha K.M., 2008) whereas Coleman A. K. and Tetey K.F.A, (2008) found that inflation has negative significant impact on stock prices and it takes time for this to take effect due to the presence of lag period. Chinese stock markets are not impacted by inflation rate (Soenen and Johnson, 2001). Bokpin G.A. (2009) supports the impact of inflation on capital structure decisions of firms. Basse T. and Sebastian R. (2011), Basse T. (2009) gave the indication of a positive relationship between inflation and dividend payments as inflation may increase the nominal value of corporate earnings and therefore the dividends paid.

Interest rates have positive significant impact on stock prices (Pal and Mittal, 2011; Srivastava A., 2010) whereas Japanese stock prices are not impacted by interest rates (Kurihara Y. and Nezu E., 2006). Adjasi, C.K.D. (2009) results show that higher volatility in interest rates increases volatility of the stock prices, Bokpin G.A. (2009) supports the impact of interest rates on capital structure decisions of firms. Jeong J. (2013) shows that the dividend smoothing decision is influenced by interest rates.

Kwon C.S. and Shin T.S. (1999) found that stock prices indices are cointegrated with industrial production index. Industrial production index have positive significant impact on stock prices (Srivastava A., 2010; Humpe and Macmillan, 2009). Pretti G.F.etal. (2013), Serflinga M. A. and Miljkonic D. (2011) indicate that macro-economic conditions i.e. industrial production index affect dividend payment. Wholesale price index have significant impact on stock prices. (Srivastava A., 2010).

We measure interest rates as 364 days Treasury bill rate. We employed general numbers as measure of Index of Industrial production. We used WPI of all commodities. Finally, as a measure of inflation, we used annual averages of consumer price index. In our analysis, we use the natural logarithm of the Wholesale price index and Index of Industrial Production, after that they are differenced to calculate their percentage change. (Serflinga M. A. and Miljkonic D. 2011).

Methodology

Statistical analysis was carried out taking the help of Statistical Software package SPSS 20. The data has been analyzed using a multiple linear regression.

Multiple regression Analysis:

The following multiple regression model has been used to test the theoretical relation between the dividend payout ratio and other independent variables of the companies.

$$y = \beta + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4$$

Where,

y= Dividend payout ratio

x1= Inflation

x2= Interest rates

x3= % age change in Index of Industrial Production(IIP)

x4= % age change in Wholesale price Index(WPI)

á = constant term of the model

β1, β2, β3, β4= are the coefficients to be estimated.

ANALYSIS AND INTERPRETATION

This section explains the analysis and interpretation of the study.

Table-1 : Descriptive Statistics

	Mean	Std. Deviation	N
dividend payout ratio	40.2276	12.98027	10
Inflation	8.4000	2.36643	10
interest rates	7.3095	1.23204	10
% age change in IIP	1.1572	1.04558	10
%age change in WPI	1.2224	.46428	10

Source-SPSS

Table-1 shows the descriptive statistics i.e. mean and standard deviation of all the variables taken under the study. The total number of observations taken under the study is 10. The mean value of dividend payout ratio, inflation, interest rates, percentage change in IIP and percentage change in

WPI is 40.2276, 8.4, 7.3095, 1.1572, and 1.2224. The value of standard deviation of dividend payout ratio, inflation, interest rates, percentage change in IIP and percentage change in WPI is 12.98, 2.366, 1.23, 1.04 and 0.464.

Table-2: Results of Pearson Correlation

	Dividend payout ratio	Inflation	Interest Rates	% age change in IIP	%age change in WPI
Dividend payout ratio	1.000	-.220	-.306	-.157	-.112
Inflation	-.220	1.000	-.582	-.250	.324
Interest Rates	-.306	-.582	1.000	-.125	.138
% age change in IIP	-.157	-.250	-.125	1.000	-.009
%age change in WPI	-.112	.324	.138	-.009	1.000

Source-SPSS

Table 2 indicates the results of correlation analysis. Karl Pearson Coefficient of correlation has been employed to find out the correlation between variables. The results indicate that all the variables taken under study have negative correlation with Dividend Payout ratio i.e. inflation (-0.220), interest rates (-0.306), percentage change in IIP (-0.157), and percentage change in WPI (-0.112). We can observe that Inflation has negative correlation with all

variables except percentage change in WPI (0.324). Interest rates has negative correlation with all except percentage change in WPI (0.138) variables. percentage change in IIP has negative correlation with all the variables. percentage change in WPI has positive correlation with inflation (0.324) and Interest rates (.138) and negative correlation with Dividend payout ratio, percentage change in IIP.

Table-3: Regression results and Collinearity statistics

Model	R	R Square	Adjusted R Square	Std. Error	Durbin Watson		
	0.791	0.626	0.327	10.64935	2.490		
		Unstandardized coefficients	Standardized coefficients				Collinearity Statistics
	B	Std. error	Beta	t	Sig	Tolerance	VIF
Constant	170.601	45.637		3.738	0.13		
Inflation	-6.184	2.417	-1.127	-2.558	0.051	0.385	2.597
Interest rates	-11.473	4.314	-1.089	-2.659	0.045	0.446	2.242
% change in IIP	-7.102	3.875	-0.572	-1.833	0.126	0.768	1.303
% change in WPI	11.169	9.266	0.400	1.205	0.282	0.681	1.469

Source: SPSS

Table 3 shows that the value of R square is 0.626 in the model. It means that 62.6 % of the variation in the dividend payout ratio is collectively explained by Inflation, Interest rates, percentage change in IIP and percentage change in WPI. In other words, 37.4% of the variation in dividend payout ratio prices is accounted for by other factors not taken in the study. The value of adjusted R square is 0.327. Durbin Watson test has been used to measure the assumption of auto-correlation. In the present study, the result of Durbin-Watson test showed that the value is 2.490 which is between 1.5 to 2.5 indicates that there is no first order linear auto-correlation in our multiple linear regression data. The assumption of multicollinearity is measured through Variance Inflation Factor(VIF). If this value is less than 10, researcher can conclude that there is no problem of multicollinearity exists in the data (Andy Field, 2005). In the present study, VIF values are all less than 10, it indicates that there is no collinearity in the data. The value of constant indicates that the value of Dividend payout ratio would be 170.601, even in the absence of the value of Inflation, Interest rates, percentage change in IIP and percentage change in WPI.

It is further observed from the regression analysis in Table 3 that "Inflation" (having P value of 0.051 and t value of -2.558) and Interest Rates (having p value 0.045 and t value of -2.659) are negative and significant variables determining "Dividend payout ratio" of BSE 500 index. That variable whose p-value is not less than 0.05 and t- values are within the range of -2 to + 2 seems not to be important enough in the model. Percentage change in IIP (having t-value of 0.126 and p-value of -1.833) and percentage change in WPI (having t-value of 0.282 and p-value of 1.205) is not significant variable influencing Dividend Payout ratio.

Discussion

We undertook this research ensuing present day research calls for further research on dividend policy. Our extensive review in the literature on impact of variables on dividend policy include profitability, liquidity, leverage, size of firm, risk, growth, cash flows, life cycle, merger and acquisition strategy, the stability of earnings and the level of current and expected future earnings, market capitalization institutional factors (Pandey and Bhatt, 2007; Pal K. and Goyal P., 2007; Basse T. and Reddemann, 2011; Bokpin

GA.,2011;Singhania M.,2012;Pourheydari O.,2009; Denis D.J and Osobov I.,2008;, Ajmi J.A. and Hussain H.A., 2011; Chazi A. et al.,2011; Baker and Powell, 2012; Maladjian C. and Houry R.E.,2014). We realized after a extensive literature review that there are few studies related to impact of macro-economic variables on dividend policy (Basse T. and Reddemann S.,2011; Basse T.,2009; Abor J. and Bobkin G. A.,2010;Jeong J.,2013) but study pertinent to know whether dividend policy decisions are affected by macro-economic variables in India has not been found. Therefore driven by the endorsement of researchers to know the impact of macro-economic variables on dividend policy, we made an attempt to know the same in India. The macro-economic factors included in the study were inflation, interest rates, percentage change in IIP and age change in WPI.

While testing the impact of four macro-economic variables on dividend payout ratio, we concluded that only two can explain dividend policy. Firstly, inflation is negative and significant, supporting the idea that increase in inflation may lead to decrease in real value of dividend payments. The findings are consistent with Basse T. and Reddemann S.(2011) and Basse T. (2009). Secondly interest rates are also negative and significant, supporting the idea that when firms face a costly financing environment, they may not increase dividends even if there are increased earnings to maintain adequate internal funds for future investments. The results are inconsistent with the findings of Abor J. and Bobkin G. A. (2010) and consistent with the findings of Jeong J. (2013).

Two variables found to be statistically insignificant: Index of industrial Production and wholesale price index. This suggests that these variables do not have a direct influence on the dividend payments.

Conclusion

The main purpose of the study was to ponder the impact of macro-economic factors on dividend payout over ratio. Multiple Linear Regression was run on the sample of 319 companies listed on Bombay Stock Exchange between 2005 and 2015. Out of four variables taken under the study, only two can explain dividend policy i.e. inflation and interest rates. Two variables found to be statistically insignificant: Index of industrial Production and wholesale price index.

Understanding the determinants of dividend policy has significant implication on investors and portfolio analysts.

Investors who want to select the dividend paying firms might have to look into the two mentioned factors before selecting the bank. Furthermore, the board of directors of the Indian Companies should give consideration to Inflation and interest rates when they set the dividend policy as they are found to be the most significant variables that affect the dividend policy of Indian companies. This will help them to make an efficient, effective, and reasonable dividend payout decision which in the long run will help them to achieve their objective of maximizing profit and satisfying employees and shareholders' needs.

Limitations

The data taken for the study is secondary data. Therefore, it includes all the limitations of the secondary data. It includes only four macro-economic variables. It is limited to 10 years only. As the data are historical in nature, they lose forecasting ability. The compilation of dividend data differs from person to person depending upon its purpose and availability. However, the researcher has adopted a balanced approach in the compilation of the data. Based on the aforesaid limitations, due care has been taken in deriving the result from regression model.

Future Research Directions

The present study has taken into consideration only 4 macro economic variables. Various other macro economic variables like exchange rates, GDP, money supply and corporate governance can also be taken as independent variables to study its influence on dividend payout ratio.

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