

## **Determinants of Dividend Payout Ratio: A Firm Level Study of Major Pharma Players in India**

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### **Introduction**

Dividend policy involves the decision to payout earnings or to retain them for reinvestment in the firm. The payment of dividend results in the reduction of cash, and therefore, in total assets. The dividend policy affects both shareholders' wealth and the long-term growth of the firm. The firm which pays higher dividend has a higher value (Pandey 2006). Moreover, the shareholders are interested in the return of the fund invested by them and investors are also tempted to invest in such firms that pay a higher current dividend by paying a higher premium for such shares and discounting the shares of the firm retaining its earnings (Graham and Dodd 1951). Moreover, the stock market is overwhelmingly in favour of liberal dividends as against niggardly dividends (Prasanna 2006). Certain rebates and penalties depend on certain appropriations from profits and the amount of dividend (Walter 1963). It is a very crucial decision for a firm because it is relevant and active variable that has a bearing on valuation of share as well as firm (Gordon 1959). The present value of dividend to be received by the shareholders affects the market value of a share so as to make it at par with the amount of the dividend (Miller and Modigliani 1961). However, some of the researchers are of the opinion that the value of a firm is determined solely by the earning power of the firm and is not influenced by the manner in which its earnings are split between dividends and retained earnings.

The dividend payout should be determined with reference to maximising the wealth of the firm's owners and providing sufficient funds to finance growth (Sharma 2006). Given the objective of wealth maximisation, the firm's dividend payout should be one which can maximise the wealth of its owners in the long run. A low dividend payout may cause decline in share price in short run but it enables the company to increase earning per share (EPS) in the long run (Rao 2004). A company having low payout ratio need not

necessarily be a bad company because it may like to utilise its income to finance expansion of the firm (Shukla *et.al.* 2005). Therefore, the management has to strike a balance between short-term interests of the equity shareholders and long-term interests of the company while deciding dividend policy and one of the most important factors which determines the dividend policy is dividend payout. It may be defined as the percentage share of net earning distributed to the shareholders as dividends.

Indian pharmaceutical industry is now well positioned for sustainable growth because of strong underlying growth drivers like increase in healthcare expenditure, increase in penetration of health insurance and changing disease profile. As a result, this industry has grown at a CAGR of 13% from 2002-07 and it is expected to grow at a cumulative annual growth rate of 16% over 2007-11.

The prime objective of this study is to check determinants of profitability in selected pharmaceutical units in India during the period 2001-02 to 2008-09. For the purpose of analyzing the determinants of dividend payout ratio of pharmaceutical industry in India, selection of variables has been made on the basis of empirical works and existing theory. It is hypothesized for the study that independent variables (i.e., profitability, operating activities, taxation, turnover, capital market activities, and liquidity) are statistically significant in explaining dependent variable (Dividend Pay out Ratio) of the companies under the study. This study is organised as follows: the next section following the introduction discusses the relevant literature. The third section describes methodology of the study. The fourth section provides details of the results and analysis of the available data and the final section presents the main conclusions.

### **Literature Review**

Lintner (1956) in his study titled "Distribution of incomes of corporate among dividends, retained earnings and taxes" deals with corporate dividend behaviour. His study of corporate dividend behaviour shows that firms set long-run target payout ratios, managers are concerned more about change in the dividend than in the absolute level, and dividends have the tendency to follow earnings and are sticky in nature.

Brittain (1966) has conducted an extensive study of corporate dividend behaviour with the help of Lintner model by substituting cash flow for profit and dividing cash flow into profit and depreciation. His study shows substantial support for the Lintner argument, particularly in the modified forms adopted

by him. Fama and Babik (1968) also find the Lintner model useful.

Agarwal (1978) has examined relationship between profitability and size expressed as total sales (measuring profit/net worth and net profit/net assets) for seven Indian manufacturing industries viz., cotton spinning and weaving, cotton, ginning, jute textiles, paper and pulp, sugar and aluminium for the period 1962-1972 in his study entitled "Size, Profitability and Growth of Some Manufacturing Industries". At the end of his study he comes across the existence of relationship between size and profitability in cotton spinning industry, jute textiles industry, sugar and brewing industry and aluminium industry. However, he found non-existence of such relationship in case of cement industry.

Bothwell and Hall (1982), in their research entitled "A New View of Market Structure – Performance Debate", try to determine the relationship between profit rate and other variables like seller concentration, advertising intensity, economics of scale, absolute capital requirements, leverage, profit variability, firm growth, firm size and market share for a sample of 156 large U.S. manufacturing firms during 1960-67. A positive correlation between seller concentration, market stock and growth of demand, business risk, advertisement expenses and profit rate is revealed. However, negative relation is observed between profit rates and extent of economics & capital requirement.

Farrelly *et.al.* (1986) in their study entitled "Corporate Dividends: Views of Policy Makers" survey 318 New York stock exchange firms and conclude that the major determinants of dividend payments are anticipated level of future earnings and pattern of past dividends. Narayanan and Burthwal (1990) have also examined the relationship between profitability and structure, using a sample of 38 pharmaceutical firms in India for the period 1970-1982 in their study entitled "Profitability and Structure: A Firm Level Study of Indian Pharmaceutical Industry". With a view to finding out the determination of profitability, two measures of profitability, i.e., net profit to total sales revenue ratio and net profit to total assets have been used by them to carry out the study. The outcome of the study is that the vertical integration is the most significant determinant of the profitability of the firms in the pharma industry under the condition of price controls. The analysis also demonstrates that size of the firm and advertising intensity are not found to be major determinants of profitability due to the inability of the firms to translate their market power into prices because of controls. It is also demonstrated by the

study that the coefficient of growth rate of sales are positive and significant because factors on the demand side of a firm have a greater impact on profitability than on the supply side.

Pruitt and Gitman (1991) in their study entitled "The interactions between the investment, financing, and dividend decisions of major US firms" ask financial managers of the 1000 largest U.S. firms and report that current and past year profits are important factors influencing dividend payments.

Agarwal (1999) in his study entitled "Profitability and Growth in Indian Automobile Manufacturing Industry" has tried to examine whether or not the firms have been making super normal profits since 1975 when price controls were removed. Besides, the study has also focussed on the impact of policy changes since 1981-82 on profitability and growth of firms in the industry using Tobin's square as a measure of profitability. The upshot of the study is that no firms have made super normal profits. The study also reveals that profitability is explained by the age of the firms, vertical integration, diversification and industry policy dummy variable. Moreover, diversification, industrial policy dummy variables, gross retained profits and expansion of capacities are divulged as significant determinants of the growth. Findings of the study also reveal differences between car and non-car sectors as well as within the sectors of the industry.

D'Souza (1999) in his study entitled "Agency cost, market risk, investment opportunities and dividend policy- an international perspective" has found that dividend payout ratio has a positive but insignificant relationship in the case of growth and negative but insignificant relationship in case of market to book value.

Baker and Powell (2000) in their study entitled "Determinants of Corporate Dividend Policy: A Survey of NYSE firms" conclude that dividend determinants are industry specific and anticipated level of future earnings is a major determinant.

Ho (2003) in his study entitled "Dividend Policies of Australia and Japan" shows that dividend policies are positively affected by size in Australia but their counterparts in Japan have been positively affected by liquidity, while risk has a negative effect. The dominant favourable tax effect of dividends in Australia and the positive size effect suggest that transactions cost is a key determinant of distributing payments to shareholders in Australia but not in Japan, possibly because of its relatively small sized firms.

Vijayakumar and Kadirvel (2003) in their study entitled "The Profitability and Size of Firm in Indian Minerals and Metals Industry" suggest that as compared to smaller firm, the larger firm is in a position to earn a higher rate of return on its investment. However, it is also revealed by the study that size results in inefficiency and hence profitability may decline with size of the firms.

Omran and Pointon (2004) in their study entitled "Dividend Policy, Trading characteristics and Share Prices: Empirical Evidence from Egyptian Firms" find that for non-actively traded firms, the accounting book value is important determinant for dividend policy. But for actively traded firms gearing ratio and the market to book value are more important determinants of dividend policy than accounting book value.

Hu and Liu (2005) in their study entitled "Empirical Analysis of Cash Dividend Payment in Chinese Listed Companies" conclude that there is a positive relationship between the current earnings of a company and the cash dividend they pay, and a significant negative relationship between the debt to total assets and dividends.

Baker and Dutta Gandhi (2007) in their study entitled "The Perception of Dividend by Canadian Managers: New Evidence" report that Canadian dividend paying firms are significantly larger and more profitable, having greater cash flows, ownership structure and growth opportunities.

### **Research Methodology**

On the basis of the above literature review, it can be surmised that no in-depth study has ever been conducted on Indian pharmaceutical industry as far as determinants of dividend payout ratio is concerned. The main contribution of this study is to ascertain determinants of dividend payout ratio of major private pharmaceutical players in India involved in production of bulk drugs<sup>1</sup> and formulation<sup>2</sup>. It includes top seven pharmaceutical companies of India, which are selected on the basis of performance, position, sales and paid up capital for the period 2001-02 to 2008-2009, as the patent regime was introduced in 2005.

1. Cipla
2. Lupin
3. Unichem
4. Ranbaxy
5. Orchid

6. Piramal
7. Dr. Reddy's

With a view to accomplishing the aforementioned objectives, the data for the study was gathered from various sources. The study is mainly based on secondary data collected from annual reports of different companies under the study. This study uses a descriptive analysis to ascertain determinants affecting dividend payout ratio of the entities. The number of the selected entities should not be considered as a limitation of the study because the sample accounts for the major contribution in the sales of the Indian pharma industry.

Though a number of factors affect dividend payout ratio of the business, the following dependent and independent variables which determine dividend payout ratio of selected pharmaceutical units during the period of the study i.e. 2001-02 to 2008-09 have been selected:

#### **Dependent Variable**

An investor primarily should invest in equity shares of a company with high payout ratio. It does not mean that a company having low payout ratio is financially weak because it may like to finance expansion and diversification out of the income earned and thus low payout ratio. An investor interested in stock-price appreciation may well invest in such a company even though the payout ratio is low. Therefore, the dividend payout ratio has been used as dependent variable in this study. The following formula has been used:  $\text{Dividend payout ratio} = \text{Dividend Per Share} / \text{Earning Per Share}$ .

#### **Independent Variables**

1. **Profitability** In order to measure profitability of the enterprise, general and overall profitability ratios are used as measures. This has also emerged from the review of literature in previous section of the study. General profitability ratios are also known as return on sales/turnover, while overall profitability ratios are also known as return on assets. General profitability or return on sales focuses on short-term perspective of profitability because sales are annual flows, while overall profitability or return on assets focuses on long-term perspective of profitability. Return on Total Assets (ROTA) has been used as independent variable in this study. The following formula has been used:  $\text{ROTA} = \text{EBIT} / \text{Total Assets}$ .
2. **Operating Activities** The net profit or loss of a business is determined by the operating activities thereof. The business operations

result in cash receipts and cash payments. The amount of cash flows arising from operating activities is a key indicator of the extent to which operations of the enterprise have generated sufficient cash flows to maintain the operating capability of the enterprise, pay dividends, repay loans and make new investments without recourse to external sources of financing. Therefore, cash from operating activities has been used as independent variable in this study. Data of cash from operating activities has been gathered from cash flow statements published in the annual reports of the companies under the study.

3. **Taxation** Residual of profit available for the distribution among the shareholders decisively depends on the taxation apart from the turnover and efficiency of the management in controlling the expenses. Taxation also reveals whether the government policy is favourable or unfavourable for a particular industry. As a result, the relationship between the corporate tax and profit has a greater impact on the dividend paying capacity of the enterprise. The corporate tax profit before tax ratio has therefore been used in this study.
4. **Turnover** Revenue receipts are important both for income determination and taxation purposes. Amount from sale of goods and amount received from rendering services to the other parties or interest received or commission received are most common revenue receipts found in any category of business concern. The trend and growth of revenue receipts play significant role in determining the trend of profits and payment of dividend to the shareholders. Therefore, annual sales growth has been taken as one of the vital variables to determine the dividend payout ratio in this study.
5. **Capital Market Activities** As people invest for a long period of time, they are interested in knowing whether their investment will be safe or not and whether the market value of the shares in which they have invested their funds will have uptrend or downtrend. However, it is not possible for the investors to understand the capital market activities straight way. They have to rely upon the capital market ratios that aid in understanding the strength of a company in the capital market. The market to book value ratio, the price-earning ratio and the dividend - yield ratio are the most commonly used ratios with a view to judge potency of the company in the capital market. The market to book value ratio has been used in this study.

6. **Liquidity** The management of the company is required to manage not only the fixed capital but working capital as well. The management of the working capital is significant to maintain liquidity in the enterprise. To get an idea about liquidity of various firms, current ratio of each firm is compared with one another. On one hand, the firm having higher current ratio is considered to be having better liquidity position while on the other it also indicates poor credit management and thus indicates loose or liberal management practices. The firm having lower current ratio is considered to be having inadequate margin of safety and thus poor liquidity. Trade off between solvency and profitability is outcome of properly managed working capital because it takes care of not only composition of the current assets but funds invested in obtaining current assets too. On the basis of review of empirical work, current ratio has been employed as independent variable for determining payout ratio in this study. The following formula has been used: Current Ratio = Current Assets/Current Liabilities.

### Specification of Model

Initially, above variables have been calculated/abstracted from the annual reports of the companies under the study and converted into percentage taking total of all the years as the base. Then variables have been taken together as determinants of the Dividend payout ratio and the model has been developed in order to analyse whether the Dividend payout ratio (dependent variable) of the selected pharmaceutical units under the study have significant relationship with them (independent variables) or not. It has been based on Multiple Linear Regression consisting of six variables as shown below:

$$x_1 = a_{1.234567} + b_{12.34567}x_2 + b_{13.24567}x_3 + b_{14.23567}x_4 + b_{15.23467}x_5 + b_{16.23457}x_6 + b_{17.23456}x_7 + e$$

Where,

- $x_1$  - Dependent Variable (Dividend Payout Ratio – denoted by D),  
 $x_2$  - Independent Variable (Profitability, i.e., EBIT/Total Assets Ratio –denoted by P)  
 $x_3$  - Independent Variable (Operating Activities, i.e., Cash Flow from Operating Activities – denoted by OA)  
 $x_4$  - Independent Variable (Taxation, i.e., Corporate Tax/PBT Ratio – denoted by TAX)

$x_5$  - Independent Variable (Turnover, i.e., Annual Sales Growth – denoted by T)

$x_6$  - Independent Variable (Capital Market Activities, i.e., The Market to Book Value ratio – denoted by CPM)

$x_7$  - Independent Variable (Liquidity, i.e., Current ratio– denoted by LIQ)

$b_{12.234567}, b_{13.24567}, b_{14.23567}, b_{15.23467}, b_{16.23457}, b_{17.23456}$  - The Regression Coefficients

e - Error

Therefore,

$$D = a_{1.234567} + b_{12.234567}P + b_{13.24567}OA + b_{14.23567}TAX + b_{15.23467}T + b_{16.23457}CPM + b_{17.23456}LIQ + e$$

Where,

D - Dividend Payout Ratio

P - Profitability (EBIT/Total Assets Ratio)

OA - Operating Activities (Cash Flow from Operating Activities)

TAX - Taxation (Corporate Tax/PBT Ratio)

T - Turnover (Annual Sales Growth)

CPM - Capital Market Activities (The Market to Book Value ratio)

LIQ - Liquidity (Current Ratio)

To test the significance of independent variables (Profitability, Operating Activities, Taxation, Turnover, Capital Market Activities and Liquidity) in determining dependent variable (the Dividend Payout Ratio), the statistical techniques of correlation and regression have been used to explore the relationship between these variables.

For the analysis of data for eight years, i.e., 2001-02 to 2008-09 correlation matrix is constructed and the technique of multiple linear regression analysis is used. An attempt is made to develop a multiple regression equation using identified key variables. The dividend payout ( $x_1$ ) is used as dependent variable and other variables ( $x_2 + x_3 + x_4 + x_5 + x_6 + x_7$ ) are used as independent

variables. On this basis under mentioned multiple linear regression equation is developed.

The regression coefficient indicates the amount of change in the value of dependent variable for a unit change in independent variable.  $R^2$  the coefficient of determination, gives an estimate of the proportion of variance of dependent variable accounted for by independent variable. It suggests the covariance between changes in dividend rate and earnings rate. The value of  $R^2$  varies between 0 and 1. An  $R^2$  of zero means that the predictor accounts for none of the variability of ' $x_1$ ' by ' $x_2/x_3/x_4/x_5/x_6/x_7$ '. An  $R^2$  of 1 means perfect prediction of  $x_1$  by  $x_2/x_3/x_4/x_5/x_6/x_7$  and that 100% of variability of ' $x_1$ ' is accounted for by  $x_2/x_3/x_4/x_5/x_6/x_7$ . The higher the value of  $R^2$  the closer is the relationship between the variables. The following hypothesis has been framed and tested:

$H_0$  – There is no relationship between the dependent and the independent variables.

$H_1$  – There is relationship between the dependent and the independent variables.

$H_2$  – The model best describes the behaviour of dependent variable against suitable alternatives.

## Result and Analysis

### *Cipla*

**Table 1. Correlation Matrix of Cipla**

	Dividend Payout Ratio	Profitability	Operating Activities	Taxation	Turnover	Capital Market Activities	Liquidity
Dividend Payout Ratio	1						
Profitability	0.06504	1					
Operating Activities	0.11545	-0.73398	1				
Taxation	0.13178	0.702315	-0.68098	1			
Turnover	-0.1329	0.553641	-0.11583	0.39628	1		
Capital Market Activities	0.11202	0.679998	-0.07681	0.09426	0.69136	1	
Liquidity	-0.0582	-0.08804	0.440579	0.26765	-0.26129	0.183551	1

Table 1 depicts correlation matrix of Cipla during the study period between dependent and independent variables. The correlation matrix shows that there is positive correlation between dividend payout ratio and profitability, operating

activities, taxation and capital market activities while negative correlation with the other independent variables. Therefore, null hypothesis is rejected and the first alternate hypothesis is accepted.

**Table 2. Regression Result of Empirical Model of Cipla**

Group	DF	SS	MS	F	Significance F
Regression	6	27.02462	4.504103	6.393946	0.293827
Residual	1	0.704432	0.704432		
Total	7	27.72905			
R = 0.987216 R <sup>2</sup> = 0.974596					
Determinants of Dividend Payout Ratio in Cipla (Multiple Linear Regression) (2001-02 to 2008-09) (Dependent Variable – Dividend Payout Ratio) D = -1.88648 + (4.887981 *P) + (1.465615 *OA) - (0.42791*TAX) – (0.85019* T) - (0.95964*CPM) – (2.96494*LIQ) + e					
				Co-efficient	
Intercept				-1.88648	
Profitability				4.887981	
Operating Activities				1.465615	
Taxation				-0.42791	
Turnover				-0.85019	
Capital Market Activities				-0.95964	
Liquidity				-2.96494	

Table 2 reveals that the regression results confirm the results obtained from correlation matrix. From Multiple Linear Regression model it is clear that the model has a coefficient of determination of 0.974596 which explains 97.4596% of variation in dividend payment pattern of Cipla for the period of the study. Coefficients of profitability and operating activities suggest that 1 percent change therein leads to 4.887981 percent and 1.465615 increase in dividend payout ratio respectively. It is also apparent that the coefficients of taxation, turnover, capital market activities and liquidity show 0.42791 percent, 0.85019 percent, 0.95964 percent and 2.96494 percent respectively decrease in dividend payout ratio as a result of 1 percent change therein. The calculated value of F is 6.393946, while the table value with six degrees of freedom in the numerator and one degree of freedom in denominator at 5% significant level is 233.99. As tabulated value is more than the calculated value, the model best describes the behaviour of dependent variable against suitable alternatives. Therefore, second alternate hypothesis is accepted.

## Lupin

Table 3. Correlation Matrix of Lupin

	Dividend Payout Ratio	Profitability	Operating Activities	Taxation	Turnover	Capital Market Activities	Liquidity
Dividend Payout Ratio	1						
Profitability	-0.78101	1					
Operating Activities	0.25210	0.272045	1				
Taxation	0.38756	-0.38498	0.505224	1			
Turnover	-0.06985	0.151921	-0.27597	-0.7502	1		
Capital Market Activities	0.43058	-0.01382	0.725728	0.37276	0.14473	1	
Liquidity	0.70652	-0.79098	-0.00903	0.39984	-0.2117	-0.10104	1

Table 3 describes correlation matrix of Lupin during the study period between dependent and independent variables. The correlation matrix shows that there is positive correlation between dividend payout ratio and operating activities, taxation and capital market activities while negative correlation with the other independent variables. Therefore, null hypothesis is rejected and the first alternate hypothesis is accepted.

Table 4. Regression Result of Empirical Model of Lupin

Group	DF	SS	MS	F	Significance F
Regression	6	214.3243	35.72071	6.166696	0.29887
Residual	1	5.79252	5.79252		
Total	7	220.1168			
R = 0.986754 R <sup>2</sup> = 0.973684					
Determinants of Dividend Payout Ratio in Lupin (Multiple Linear Regression) (2001-02 to 2008-09) (Dependent Variable – Dividend Payout Ratio) D = 130.8338 - (5.24719 *P) + (0.390874 *OA) + (0.049611*TAX) + (0.31779 * T) - (0.8151*CPM) – (4.16269*LIQ) + e					
				Co-efficient	
Intercept				130.8338	
Profitability				-5.24719	
Operating Activities				0.390874	
Taxation				0.049611	
Turnover				0.31779	
Capital Market Activities				-0.8151	
Liquidity				-4.16269	

Table 4 reveals that the regression results confirm the results obtained from correlation matrix. From Multiple Linear Regression model, it is clear

that the model has a coefficient of determination of 0.973684 which explains 97.3684% of variation in dividend payment pattern of Lupin for the period of the study. Coefficients of operating activities, taxation and turnover suggest that 1 percent change therein leads to 0.390874 percent, 0.049611 percent and 0.31779 increase in dividend payout ratio respectively. It is also apparent that the coefficients of profitability, capital market activities and liquidity show 5.24719 percent, 0.8151 percent and 4.16269 percent respectively decrease in dividend payout ratio as a result of 1 percent change therein. The calculated value of F is 6.166696, while the table value with six degrees of freedom in the numerator and one degree of freedom in denominator at 5% significant level is 233.99. As tabulated value is more than the calculated value, the model best describes the behaviour of dependent variable against suitable alternatives. Therefore, second alternate hypothesis is accepted.

#### *Unichem*

**Table 5. Correlation Matrix of Unichem**

	Dividend Payout Ratio	Profitability	Operating Activities	Taxation	Turnover	Capital Market Activities	Liquidity
Dividend Payout Ratio	1						
Profitability	-0.07113	1					
Operating Activities	-0.19622	-0.37976	1				
Taxation	0.65241	0.332244	-0.65254	1			
Turnover	-0.59815	0.751247	-0.22023	-0.0362	1		
Capital Market Activities	0.02545	0.605084	-0.25827	0.01921	0.30174	1	
Liquidity	-0.90365	-0.11162	0.508855	-0.7789	0.35334	-0.02205	1

Table 5 describes correlation matrix of Unichem during the study period between dependent and independent variables. The correlation matrix shows that there is positive correlation between dividend pay-out ratio and taxation and capital market activities while negative correlation with the other independent variables. Therefore, null hypothesis is rejected and the first alternate hypothesis is accepted.

**Table 6. Regression Result of Empirical Model of Unichem**

<i>Group</i>	<i>DF</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	6	9.803287	1.633881	10.71776	0.229661
Residual	1	0.152446	0.152446		
Total	7	9.955733			
R = 0.992314 R <sup>2</sup> = 0.984688					
Determinants of Dividend Pay-out Ratio in Unichem (Multiple Linear Regression) (2001-02 to 2008-09) (Dependent Variable – Dividend Payout Ratio) $D = 21.88661 - (0.07241 * P) + (0.065652 * OA) + (0.068817 * TAX) - (0.05673 * T) + (0.044742 * CPM) - (0.80101 * LIQ) + e$					
				Co-efficient	
Intercept				21.88661	
Profitability				-0.07241	
Operating Activities				0.065652	
Taxation				0.068817	
Turnover				-0.05673	
Capital Market Activities				0.044742	
Liquidity				-0.80101	

Table 6 reveals that the regression results confirm the results obtained from correlation matrix. From Multiple Linear Regression model it is clear that the model has a coefficient of determination of 0.984688 which explains 98.4688% of variation in dividend payment pattern of Unichem for the period of the study. Coefficients of operating activities, taxation and capital market activities suggest that 1 percent change therein leads to 0.065652 percent, 0.068817 percent and 0.044742 increase in dividend payout ratio respectively. It is also apparent that the coefficients of profitability, turnover and liquidity show 0.07241 percent, 0.05673 percent and 0.80101 percent respectively decrease in dividend payout ratio as a result of 1 percent change therein. The calculated value of F is 10.71776, while the table value with six degrees of freedom in the numerator and one degree of freedom in denominator at 5% significant level is 233.99. As tabulated value is more than the calculated value, the model best describes the behaviour of dependent variable against suitable alternatives. Therefore, second alternate hypothesis is accepted.

## Ranbaxy

**Table 7. Correlation Matrix of Ranbaxy**

	Dividend Payout Ratio	Profitability	Operating Activities	Taxation	Turnover	Capital Market Activities	Liquidity
Dividend Payout Ratio	1						
Profitability	-0.26431	1					
Operating Activities	0.11087	0.721695	1				
Taxation	-0.34052	0.928175	0.606521	1			
Turnover	-0.46719	0.720464	0.235624	0.60419	1		
Capital Market Activities	0.16633	0.643762	0.806394	0.68915	-0.0143	1	
Liquidity	-0.24489	0.830802	0.424181	0.93031	0.65685	0.482364	1

Table 7 portrays correlation matrix of Ranbaxy during the study period between dependent and independent variables. The correlation matrix shows that there is positive correlation between dividend payout ratio and operating activities and capital market activities while negative correlation with the other independent variables. Therefore, null hypothesis is rejected and the first alternate hypothesis is accepted.

**Table 8. Regression Result of Empirical Model of Ranbaxy**

Group	DF	SS	MS	F	Significance F
Regression	6	698.6375	116.4396	19.72496	0.170673
Residual	1	5.90316	5.90316		
Total	7	704.5407			
R = 0.995802 R <sup>2</sup> = 0.991621					
Determinants of Dividend Payout Ratio in Ranbaxy (Multiple Linear Regression) (2001-02 to 2008-09) (Dependent Variable – Dividend Payout Ratio)					
D = -116.229 + (1.288268 *P) - (0.21223 *OA) - (3.45935*TAX) + (0.065579* T) + (4.799546*CPM) + (7.816548*LIQ) + e					
				Co-efficient	
Intercept				-116.229	
Profitability				1.288268	
Operating Activities				-0.21223	
Taxation				-3.45935	
Turnover				0.065579	
Capital Market Activities				4.799546	
Liquidity				7.816548	

Table 8 shows that the regression results confirm the results obtained from correlation matrix. From Multiple Linear Regression model it is clear that the model has a coefficient of determination of 0.991621 which explains 99.1621% of variation in dividend payment pattern of Ranbaxy for the period of the study. Coefficients of profitability, turnover, capital market activities and liquidity suggest that 1 percent change therein leads to 1.288268 percent, 0.065579 percent, 4.799546 percent, and 7.816548 percent increase in dividend payout ratio respectively. It is also apparent that the coefficients of operating activities and taxation show 0.21223 percent and 3.45935 respectively decrease in dividend payout ratio as a result of 1 percent change therein. The calculated value of F is 19.72496, while the table value with six degrees of freedom in the numerator and one degree of freedom in denominator at 5% significant level is 233.99. As tabulated value is more than the calculated value, the model best describes the behaviour of dependent variable against suitable alternatives. Therefore, second alternate hypothesis is accepted.

### *Orchid*

**Table 9. Correlation Matrix of Orchid**

	Dividend Payout Ratio	Profitability	Operating Activities	Taxation	Turnover	Capital Market Activities	Liquidity
Dividend Payout Ratio	1						
Profitability	-0.23275	1					
Operating Activities	-0.2164	0.610442	1				
Taxation	-0.23798	0.535005	0.755666	1			
Turnover	0.09830	0.599319	0.188447	0.30745	1		
Capital Market Activities	-0.35229	0.572442	0.032877	0.00978	-0.09576	1	
Liquidity	0.81114	-0.20081	-0.24128	-0.4899	-0.01254	-0.23833	1

Table 9 portrays correlation matrix of Orchid during the study period between dependent and independent variables. The correlation matrix shows that there is positive correlation between dividend payout ratio and turnover and liquidity while negative correlation with the other independent variables. Therefore, null hypothesis is rejected and the first alternate hypothesis is accepted.

**Table 10. Regression Result of Empirical Model of Orchid**

Group	DF	SS	MS	F	Significance F
Regression	6	1252.371	208.7285	0.891485	0.669689
Residual	1	234.1356	234.1356		
Total	7	1486.507			
R = 0.917874 R <sup>2</sup> = 0.842493					
Determinants of Dividend Payout Ratio in Orchid (Multiple Linear Regression) (2001-02 to 2008-09) (Dependent Variable – Dividend Payout Ratio) $D = -116.229 + (1.288268 * P) - (0.21223 * OA) - (3.45935 * TAX) + (0.065579 * T)$ $+ (4.799546 * CPM) + (7.816548 * LIQ) + e$					
				Co-efficient	
Intercept				-37.8318	
Profitability				-9.71669	
Operating Activities				1.391295	
Taxation				0.480846	
Turnover				2.004951	
Capital Market Activities				3.009715	
Liquidity				6.856424	

Table 10 shows that the regression results confirm the results obtained from correlation matrix. From Multiple Linear Regression model it is clear that the model has a coefficient of determination of 0.842493 which explains 84.2493% of variation in dividend payment pattern of Orchid for the period of the study. Coefficients of all independent variables except profitability suggest that 1 percent change operating activities, taxation, turnover, capital market activities and liquidity leads to 1.391295 percent, 0.480846 percent, 2.004951 percent, 3.009715 percent, and 6.856424 percent increase in dividend payout ratio respectively. It is also apparent that the coefficient of profitability shows 9.71669 percent decrease in dividend payout ratio as a result of 1 percent change therein. The calculated value of F is 0.891485, while the table value with six degrees of freedom in the numerator and one degree of freedom in denominator at 5% significant level is 233.99. As tabulated value is more than the calculated value, the model best describes the behaviour of dependent variable against suitable alternatives. Therefore, second alternate hypothesis is accepted.

*Piramal***Table 11. Correlation Matrix of Piramal**

	Dividend Payout Ratio	Profitability	Operating Activities	Taxation	Turnover	Capital Market Activities	Liquidity
Dividend Payout Ratio	1						
Profitability	0.05340	1					
Operating Activities	0.41662	-0.04105	1				
Taxation	0.00563	0.326565	0.485473	1			
Turnover	0.77878	0.58464	0.217958	-0.0010	1		
Capital Market Activities	-0.32572	-0.51589	0.514921	0.09880	-0.51816	1	
Liquidity	-0.0709	0.559626	-0.5991	-0.0716	0.36275	-0.48878	1

Table 11 represents correlation matrix of Piramal during the study period between dependent and independent variables. The correlation matrix shows that there is positive correlation between dividend payout ratio and profitability, operating activities, taxation and turnover while negative correlation with the other independent variables. Therefore, null hypothesis is rejected and the first alternate hypothesis is accepted.

**Table 12. Regression Result of Empirical Model of Piramal**

Group	DF	SS	MS	F	Significance F
Regression	6	90.87366	15.14561	3.14991	0.406451
Residual	1	4.808267	4.808267		
Total	7	95.68193			
$R = 0.97455$ $R^2 = 0.949747$					
Determinants of Dividend Pay-out Ratio in Piramal (Multiple Linear Regression) (2001-02 to 2008-09) (Dependent Variable – Dividend Payout Ratio) $D = 18.77792 - (0.88931 * P) + (0.27126 * OA) - (0.00753 * TAX) + (0.193955 * T) - (0.44883 * CPM) + (3.7822 * LIQ) + e$					
				Co-efficient	
Intercept				18.77792	
Profitability				-0.88931	
Operating Activities				0.27126	
Taxation				-0.00753	
Turnover				0.193955	
Capital Market Activities				-0.44883	
Liquidity				0.37822	

Table 12 shows that the regression results confirm the results obtained from correlation matrix. From Multiple Linear Regression model it is clear

that the model has a coefficient of determination of 0.949747 which explains 94.9747% of variation in dividend payment pattern of Piramal for the period of the study. Coefficients of profitability, taxation, capital market activities suggest that 1 percent change therein leads to 0.88931 percent, 0.00753 percent, and 0.44883 percent decrease in dividend payout ratio respectively. It is also apparent that the coefficients of operating activities, turnover and liquidity show 0.27126 percent, 0.193955 percent and 0.37822 percent increase respectively in dividend payout ratio as a result of 1 percent change therein. The calculated value of F is 3.14991, while the table value with six degrees of freedom in the numerator and one degree of freedom in denominator at 5% significant level is 233.99. As tabulated value is more than the calculated value, the model best describes the behaviour of dependent variable against suitable alternatives. Therefore, second alternate hypothesis is accepted.

*Dr. Reddy's*

**Table 13. Correlation Matrix of Dr. Reddy's**

	Dividend Payout Ratio	Profitability	Operating Activities	Taxation	Turnover	Capital Market Activities	Liquidity
Dividend Payout Ratio	1						
Profitability	-0.64338	1					
Operating Activities	-0.47251	0.603266	1				
Taxation	-0.56231	0.28329	0.548242	1			
Turnover	-0.43946	0.743755	0.55144	0.28190	1		
Capital Market Activities	-0.20202	0.466654	-0.37544	0.46063	0.30683	1	
Liquidity	-0.27658	0.201983	0.027469	0.16485	-0.40201	0.013567	1

Table 13 reveals correlation matrix of Dr. Reddy's during the study period between dependent and independent variables. The correlation matrix shows that there is negative correlation between dividend payout ratio and all independent variables. Therefore, null hypothesis is rejected and the first alternate hypothesis is accepted.

**Table 14. Regression Result of Empirical Model of Dr. Reddy's**

Group	DF	SS	MS	F	Significance F
Regression	6	919.7039	153.284	4.06943	0.362274
Residual	1	37.66719	37.66719		
Total	7	957.3711			
R = 0.98013 R <sup>2</sup> = 0.960656					
Determinants of Dividend Payout Ratio in Dr. Reddy's (Multiple Linear Regression) (2001-02 to 2008-09) (Dependent Variable – Dividend Payout Ratio) $D = 185.6434 + (5.8183104 * P) - (5.80507 * OA) - (1.99674 * TAX) - (0.14122 * T)$ $- (8.7317 * CPM) - (2.35985 * LIQ) + e$					
				Co-efficient	
Intercept				185.6434	
Profitability				5.183104	
Operating Activities				-5.80507	
Taxation				-1.99674	
Turnover				-0.14122	
Capital Market Activities				-8.7317	
Liquidity				-2.35985	

Table 14 depicts that the regression results confirm the results obtained from correlation matrix. From Multiple Linear Regression model it is clear that the model has a coefficient of determination of 0.960656 which explains 96.0656% of variation in dividend payment pattern of Dr. Reddy's for the period of the study. Coefficients of all independent variables except profitability suggest that 1 percent change in operating activities: taxation, turnover, capital market activities and liquidity leads to 5.80507 percent, 1.99674 percent, 0.14122 percent, 8.7317 percent and 2.35985 percent decrease in dividend payout ratio respectively. It is also apparent that the coefficient of profitability shows 5.183104 percent increase in dividend payout ratio as a result of 1 percent change in taxation and capital market activities. The calculated value of F is 4.06943, while the table value with six degrees of freedom in the numerator and one degree of freedom in denominator at 5% significant level is 233.99. As tabulated value is more than the calculated value, the model best describes the behaviour of dependent variable against suitable alternatives. Therefore, second alternate hypothesis is accepted.

## Conclusion

**Table 15. Summary of Correlation between Dividend Payout Ratio and Independent Variables**

Independent Variables	Cipla	Lupin	Unichem	Ranbaxy	Orchid	Piramal	Dr Reddy's
Profitability	+ <sup>ve</sup>	- <sup>ve</sup>	- <sup>ve</sup>	- <sup>ve</sup>	- <sup>ve</sup>	+ <sup>ve</sup>	- <sup>ve</sup>
Operating Activities	+ <sup>ve</sup>	+ <sup>ve</sup>	- <sup>ve</sup>	+ <sup>ve</sup>	- <sup>ve</sup>	+ <sup>ve</sup>	- <sup>ve</sup>
Taxation	+ <sup>ve</sup>	+ <sup>ve</sup>	+ <sup>ve</sup>	- <sup>ve</sup>	- <sup>ve</sup>	+ <sup>ve</sup>	- <sup>ve</sup>
Turnover	- <sup>ve</sup>	- <sup>ve</sup>	- <sup>ve</sup>	- <sup>ve</sup>	+ <sup>ve</sup>	+ <sup>ve</sup>	- <sup>ve</sup>
Capital Market Activities	+ <sup>ve</sup>	+ <sup>ve</sup>	+ <sup>ve</sup>	+ <sup>ve</sup>	- <sup>ve</sup>	- <sup>ve</sup>	- <sup>ve</sup>
Liquidity	- <sup>ve</sup>	+ <sup>ve</sup>	- <sup>ve</sup>	- <sup>ve</sup>	+ <sup>ve</sup>	- <sup>ve</sup>	- <sup>ve</sup>

From Table 15 it can be concluded that as far as correlation with dividend payout ratio and profitability is concerned, only two companies under the study have positive correlation between dividend payout ratio and profitability and hence it suggests that payment of dividend depends upon the willingness of the management rather the earning capacity of the entity. As correlation between dividend payout ratio and operating activities is found to be positive in majority of the companies under the study, it suggests that cash flow from operating activities can positively influence the management to distribute the dividend among the shareholders but the negative correlation between dividend payout ratio and liquidity in majority of the companies reveals that the distribution of the dividend among the shareholders has something to do with the management's desire in that respect despite the higher quantum of cash generated from the operating activities with a view to maintaining liquidity. Positive correlation between dividend payout ratio and taxation in majority of the companies under the study suggest that low tax as compared to the profit results in availability of higher amount of profit for the owners and thus possibility of a higher dividend payment to them. Negative correlation between dividend payout ratio and turnover is observed in most of the companies under the study. It divulges that though the companies have positive annual sales growth almost throughout the study period, payment of dividend to shareholders is not much positively influenced. Positive correlation between dividend payout ratio and capital market activities in 4 companies under the study shows that increasing or higher market to book value ratio can result in higher payment of dividend to the shareholders.

**Table 16. Summary of Multiple Regression Model  
(Determinants of Dividend Payout Ratio)**

	Cipla	Lupin	Unichem	Ranbaxy	Orchid	Piramal	Dr Reddy's
Profitability	+ve	-ve	-ve	+ve	-ve	-ve	+ve
Operating Activities	+ve	+ve	+ve	-ve	+ve	+ve	-ve
Taxation	-ve	+ve	+ve	-ve	+ve	-ve	-ve
Turnover	-ve	+ve	-ve	+ve	+ve	+ve	-ve
Capital Market Activities	-ve	-ve	+ve	+ve	+ve	-ve	-ve
Liquidity	-ve	-ve	-ve	+ve	+ve	+ve	-ve

From Table 16, it can be concluded that change (i.e., increase) in operating activities has tendency to increase the dividend payout ratio because in five out of seven companies under the study the coefficient of operating activities is found positive. The change in taxation (i.e., decrease) has inclination to increase the dividend payout ratio for the companies (four out of seven) with the positive coefficients of taxation under the study. Similarly the change in turnover (i.e., increase) has affinity to increase the dividend payout the ratio for the companies (four out of seven) having the positive coefficients of the turnover. As far as capital market activities are concerned, coefficients thereof are found negative in four out of seven companies under the study. It suggests that the change in capital market activities (i.e., decrease or lower) has negative impact on the dividend payout ratio. Similarly, coefficients of liquidity are found negative in the companies having increasing or higher liquidity. It suggests that the change in liquidity (i.e., increase) has adverse impact on the dividend payout ratio. Finally, the companies having decreasing profitability are found to have negative coefficients. It shows that the change in profitability (i.e., decrease) has tendency to decrease the dividend payout ratio.

### End Notes

1. Under DPCO, 'bulk drugs' means any pharmaceutical-chemical, biological or plant product including its salts, derivatives etc. used as such or as an ingredient in any formulation.
2. Under DPCO, 'formulation' means any medicines processed out of or containing one or more bulk drug or drugs for internal or external use or for diagnosis, treatment, mitigation or prevention of diseases in human beings or animals, but shall not include any medicine included in any bonafide Ayurvedic, Homeopathic or Unani system of medicine.

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