Journal of Management and Science, Vol.2. No 3.Sep 2012
ISSN 2250-1819 / EISSN 2249-1260

DOI:10.26524/jms.2012.26

Capital structure practices of the selected pharmaceutical companies in india.

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ABSTRACT: *The objective of this paper is to examine the capital structure practices of the selected pharmaceutical companies in India during 1991-92 to 2009-10. The econometric analysis shows that variables like Profitability, Size, Tangibility, Growth, Risk and Non-debt tax shield are the important determinants of capital structure of the selected pharmaceutical companies in India. The results indicate that most of the determinants of capital structure suggested by capital structure theories appear to be relevant for pharmaceutical firms. In this paper, Debt Equity Ratio has been used as the proxy for capital structure.*

Keywords: *Capital Structure; Debt-Equity Ratio.*

INTRODUCTION

Capital Structure is the mix of debt and equity funds that are used to finance a company‘s assets. Decisions on capital structure formulation are one of the important decisions made by firm managers. Questions related to the choice of financing have increasingly gained importance in the field of financial management. The study of capital structure has been carried out by researchers in the discipline of finance. Modigliani Miller (1958) was the first to raise the issue of capital structure relevance. They argued that, under certain conditions, the choice between debt and equity does not affect firm value, and hence, the decision is irrelevant. These conditions included, among others assumption about the absence of taxes, of negligible transactions costs in the capital market, and of no information asymmetry between various market players. Subsequent work by financial theorist is driven towards relaxing these assumptions to provide several hypotheses for the capital structure decision. Firms do differ in their capital structure and the theories based on perfect market are unable to provide satisfactory explanations. Financial economics has made a significant progress in explaining the incentives that make companies to choose particular financing policies. Increasingly, profession is moving beyond an examination of the basic leverage choice to more detailed aspect of the financing decisions. This paper examines the capital structure practices of pharmaceutical companies in India.

REVIEW OF LITERATURE

Chudson (1945) provides direct evidence on the companies with high properties of fixed assets tending to use more long term debt. The research also indicated that there is no simple linear relationship between corporate size and debt ratio. **Modigliani and Miller (1958, 1963)** found that target debt ratio may vary from firm to firm depending on size, growth, risk and profitability. **Gorden (1962)** found that gearing increased with size, return on investment is related with debt ratio and size confirmed the negative association between risk and debt ratio. **Bhat (1980)** found out the contribution of each characteristics size, growth, capital was found to be significant determinants of the leverage ratio. **Pandey (1984) s**tudied about the corporate manager attitude towards use of borrowings in India revealed that the practicing managers generally preferred to borrow instead of using other sources of funds because of low cost of debt due to the interest tax deductibility and the complicated procedures for raising the equity capital.

Harris and Raviv (1999) observe that leverage increases with fixed assets. Non-debt tax shield, investment opportunities and firm size, while it decreases with volatility, advertising expenditure, profitability and uniqueness of the product. **Kakani (1999)** concludes that profitability and capital intensity are negatively associated with leverage, but observe no significance of firm‘s diversification strategy and size in deciding the leverage level of the firm. **Mahesh Chand garg & Chander (2002)** in their study have selected cotton, chemical engineering and cement industries to analyze debt structure and their determinants, and they concluded that assets composition, collateral value, life corporate sizes are most significant factors in-deciding capital structure of those industries.

NEED FOR THE STUDY: In order to run and manage a company, funds are needed. Right from the promotional stage up to end, finances play an important role in a company‘s life. If funds are inadequate, the business suffers and if the funds are not properly managed, the entire organization suffers. So, the management of funds is necessary to all the business enterprises. But every organization facing the problem of selecting the various sources of finance, whether to raise debt or equity. There has been an inconclusive debate on the issue of the association between financing decision and the firm‘s valuation. Both theories and empirical studies conducted so far gave contrary results. The theories suggest that firms select capital structures depending on characteristics that determine various costs and benefits associated with debt and equity financing. The empirical work in this area has lagged behind the theoretical work, as the relevant firms characteristics are expressed in fairly abstract concept and are rarely directly observable. Moreover, the theories made in the developed countries need to be tested for their adoptability in developing counties like India. With this background, an attempt has been made in this study to examine various factors influencing capital structure decisions.

OBJECTIVES OF THE STUDY

The study is undertaken to study the following objectives:

- To analyze the trends in capital structure of the Selected Pharmaceutical Companies in India.
- To examine the factors determining the capital structure practices of the sample companies.

HYPOTHESIS

Keeping in view of the results of various related research studies on capital structure the following hypothesis is framed and tested.

- There is no significant relationship between debt equity ratio and select independent variable viz., Profitability, Sales, Tangibility, Growth, Liquidity and Non-debt tax shield.

METHODOLOGY

This study covers a period of ten years from 2000-2001 to 2009-2010. The study is based mainly on secondary data. The data relating to the study was obtained from CAPITALINE database. In addition, the annual report of the sample companies was also scanned to collect data. Various journals, magazine, newspaper, also have be used to collect the relevant information. There are 239 companies (both Indian and multinational companies) operating in India of which ten Indian listed companies in the pharmaceutical sector which were making profit consistently during last 10 years from 2000-2001 to 2009-2010 were selected as sample unit. The companies selected for the present study are:

1 Aurobindo Pharma Limited (APL)
2. Cipla Limited (CL)
3. DIL LIMITED (DIL)
4. FDC Limited (FDCL)
5. Glenmark Pharmaceuticals Limited (GPL)
6. IPCA Laboratories Limited (IPCAL)
7. Neuland Laboratories Limited (NLL)
8. Dr. Reddy's Laboratories Limited (DRRL)
9. Sun Pharmaceutical Industries Limited (SPIL)
10. Zandu Pharmaceutical Works Limited (ZPWL)

For analyzing the data in addition to financial ratios simple statistical technique mean, median standard deviation, co-efficient of variation Skewness, Kurtosis and Annual Compound Growth Rate were used. Multiple regressions technique is also used to determine the factors influencing capital structure decisions.

CAPITAL STRUCTURE ANALYSIS

A company can finance its investment projects either from debt or from equity. It is the means of financing which represent the Capital Structure of a company. Financial Leverage refers to the use of debt along with the equity of the owners, in the firm's Capital Structure. A business enterprise should have an efficient capital structure which can provide a definite rate of return on the marginal capital employed. In this present study, the following leverage ratios were used to analyze the capital structure decision of the selected pharmaceutical companies in India.

1. Debt-Equity Ratio
2. Total Debt Ratio

1. Debt-Equity Ratio

Debt Equity Ratio is an important tool to ascertain the soundness of the long-term financial policies of the company. The ratio indicates the proportion of owner's stake in the business. Excessive liabilities tend to cause insolvency. The ratio indicates the extent to which the firm depends upon outsiders for its existence. The ratio provides a margin of safety to the creditors. It tells the owners the extent to which they can gain the benefits or maintain control with a limited investment.

$$Debt\ \ Equity\ \ Ratio = \frac{Total\ \ Debt}{Total\ \ Share\ \ Holders\ \ Fund}$$

Debt Equity Ratio of Select Pharmaceutical Companies in India during 2000-2001 to 2009-2010 are presented in Table 1.

Table 1. Trends in Debt Equity Ratio of Select Pharmaceutical Companies in India

	APL	CL	DIL	FDCL	GPL	IPCAL	NLL	DRRL	SPIL	ZPWL
Mean (times)	1.11	0.10	0.02	0.04	0.91	0.66	1.10	0.21	0.41	0.22
Median (times)	0.97	0.08	0.00	0.03	0.60	0.63	0.93	0.11	0.17	0.03

SD	0.43	0.07	0.04	0.03	0.77	0.15	0.39	0.22	0.56	0.29
CV (%)	38.91	70.98	144.35	74.78	85.05	22.48	35.71	104.88	137.17	134.97
Skewness	3.73	3.74	3.74	3.74	3.74	3.74	3.73	3.74	3.74	3.74
Kurtosis	3.03	-0.15	-0.08	0.25	-0.47	0.14	1.34	0.43	1.78	0.11
ACGR (%)	9.63	14.00	0.00	-13.36	35.09	-4.44	2.37	-9.02	21.15	-52.74

Source: Compiled and Calculated from the annual reports of the companies

It is observed from the analysis that, among the sample companies Aurobindo Pharma and Newland has the optimum capital structure during the period under study. All other firms have equity based capital structure. The measures of dispersion showed that the variation in the Debt Equity Ratio was less consistent in the case of Aurobindo Pharma, Glenmark, Neuland Labs and Sun Pharmaceutical Industries and in all other cases the variation in the debt equity ratio was more consistent. The measures of skewness and kurtosis indicate an asymmetrical distribution of data in all the sample firms. Debt Equity Ratio showed a positive growth in the case of Aurobindo Pharma, CIPLA, Glenmark, Neuland and Zandu Pharmaceutical Works Limited.

2. Total Debt Ratio

The firm may be interested in knowing the proportion of the interest – bearing debt (also called funded debt) in the capital structure. Therefore, the total debt ratio may be computed by dividing total debt by capital employed or total net assets.It may be expressed as follows:

$$Total\ \ Debt\ \ Ratio\ \ = \frac{Total\ \ Debt}{Capital\ \ employed}$$

The Total Debt Ratio of select Pharmaceutical Companies for the period from 2000-2001 to 2009-2010 are given in Table 2.

Table 2. Trends in Total Debt Ratio of Select Pharmaceutical Companies in India

	APL	**CL**	**DIL**	**FDCL**	**GPL**	**IPCAL**	**NLL**	**DRRL**	**SPIL**	**ZPWL**
Mean (times)	0.51	0.12	0.08	0.03	0.41	0.39	0.51	0.15	0.21	0.14
Median (times)	0.49	0.10	0.00	0.03	0.38	0.39	0.48	0.10	0.15	0.03
SD	0.08	0.09	0.18	0.02	0.22	0.05	0.08	0.14	0.22	0.17
CV (%)	16.41	78.40	239.12	71.91	53.12	12.97	14.87	90.65	103.48	122.29
Skewness	3.74	3.74	3.74	3.74	3.74	3.74	3.73	3.74	3.74	3.74
Kurtosis	0.72	2.86	9.23	0.08	-0.44	-0.19	0.11	-0.91	-0.20	-1.00
ACGR (%)	4.43	2.22	-100	-12.86	23.56	-2.72	1	-6.89	16.25	-48.67

Source: Compiled and Calculated from the annual reports of the companies

The sample companies have an equal mean Total Debt Ratio of 0.51 times in Aurobindo Pharma and Neuland Labs where as in all other sample companies the composition of debt in capital employed is less i.e, they are having equity dominated capital structure. The measures of distribution showed greater consistency with high degree of uniformity. The test of normality reveals that the distribution was positively skewed and the moment is less peaked than normal. Glenmark Pharmaceutical Limited and Sun Pharmaceutical Industries have a positive growth of 23.56 and 16.25 per cent followed by Aurobindo Pharma (4.43%) and Cipla Limited (2.22%). All other sample firms have negative growth in their capital structure.

DETERMINANTS OF CAPITAL STRUCTURE

Capital structure of a firm is determined by various internal and external factors. The macro variables of the economy of a country like tax policy of government, inflation rate and capital market condition are the major external factors that affect the capital structure of a firm. The characteristics of an individual firm, which are termed here as micro factors (internal), also affect the capital structure of the enterprises. The present study focused on Profitability, Size, Tangibility, Growth opportunities, Risk and Non-debt Tax Shield as the determinants of capital structure.

MEASUREMENT OF VARIABLES

Profitability

Capital structure decisions have a direct influence on the profitability of a business enterprise. Neither financial theory nor research has been able to provide satisfactory agreement as to how profitability affects the capital structure of the firm. In the context of capital structure, profitability is examined by Return on Capital Employed (EBIT / Capital Employed ratio).

Size

The relationship between firm size and leverage is also unclear. Weston and Brigham (1981) have suggested that management of large firms may choose to use equity financing, since sale of additional stock has little influence on the control of the large firm. Hence, small firms may be more leveraged than larger firms. Thus, an inverse relationship is expected between si ze and total debt; and between size and long-term debt.. In this study the volume of sale has been taken as the proxy for size of the firm.

Tangibility

The forms of assets held by a company are important determinants of its capital structure. Tangible fixed assets serve as col lateral to debt. In the event of financial distress, the lenders can access these assets and liquidate them to realize funds lent by them. Companies with higher tangible fixed assets will have less expected costs of financial distress and they can use more debt finance. In order to estimate the econometric model, the proportion of fixed assets to total assets has been taken as a measure of tangibility.

Growth

Growth in sales represents the changes similar to capacity utilization in a manufacturing enterprise. Growth in sales is l ikely to generate more revenue and hence a direct bearing on profitability of the organization.

Risk

Risk refers to a set of unique outcomes for a given event which can be assigned probabilities, while uncertainty refers to the outcomes of a given event which are too unsure to be assigned probabilities. The firm‘s optimum level of debt is a decreasing function of the volatility in its earnings. The logic being, that, higher the earnings variation implies higher bankruptcy risk, especially to creditors. The standard deviation of return on capital employed has been considered as the measure of Risk.

Non-debt Tax shield

According to Modigliani and Miller (1958), interest tax shields create strong incentives for firms to increase leverage. But also the size of non-debt related corporate tax shields like tax deductions for depreciation and investment tax credits may affect leverage. Such non-debt tax shields are substitutes for the tax benefits of debt financing. Therefore, the tax advantage of leverage decreases when other tax deductions like depreciation increase. Hence, it is expected that an increase in non-debt tax shields will affect leverage negatively. In this present study the ratio of deprecation over total assets has been taken as a measure for non-debt tax shield.

SPECIFICATION OF THE MODEL

Following multiple regression models has been used to test the theoretical relation between the financial leverage and characteristics of the firm. The study employs debt equity ratio as the measures of financial leverage.

Debt Equity Ratio= *f* (Profitability, Size, Tangibility, Growth, Risk, Non-debt Tax Shield)

The econometric model of equation is specified as follows:

$$Y = b + b x + b x_1 + b x_2 \ldots_2 . b x + U_3 \quad {}_n \quad {}_n \quad {}_1$$

Where,

Y = dependent variable

X_1 ….X_6 = independent variables

A = regression constant value

b_1….b_n = regression co-efficient values of variables concerned

REGRESSION RESULTS

The above regression equation is run for all the sample companies and the regression results are presented in Table 3.

Table 3 - ESTIMATED REGRESSION FUNCTION FOR DER (2000-2001 to 2009-2010)

Company	Constant	Profitability	Size	Tangibility	Growth	Risk	NDTS	R^2	ADJ R^2	Significance F
AURBINDO	1.566 (0.001)	-0.936 (-1.238)	0.221 (0.578)	0.906 (1.493)	2.864 (0.910)	-1.66 (-0.86)	1.153 (0.190)	0.859	0.578	0.194
CIPLA	-479 (-0.396)	-0.421 (-.363)	0.406 (1.535)	0.387 (0.716)	6.48 (0.636)	-0.291 (-1.051)	0.535 (0.085)	0.558	-0.325	0.711
DIL	0.329 (1.769)	-4.147 (-0.139)	0.129 (1.674)	1.09 (0.148)	4.45** (2.112)	-1.51 (-0.253)	8.828 (0.109)	0.841	0.524	0.227
FDC	0.991 (0.744)	-9.14 (-0.282)	0.261 (1.707)	0.167 (0.332)	7.78 (.034)	7.590 (0.118)	-2.038 (-0.835)	0.622	-0.135	0.618
GLENMARK	5.804 (1.780)	-5.395** (-2.991)	0.228 (0.605)	1.754 (0.647)	1.37** (3.650)	-0.181 (-0.866)	-15.468 (-1.689)	0.957	0.870	0.038**
IPCA	2.596 (1.974)	-4.004 (-1.889)	3.16 (0.480)	2.758 (1.899)	4.116 (0.732)	-0.122 (0.801)	1.739 (0.489)	0.834	0.503	0.240
NEULAND	5.620 (3.086)	-2.533 (-1.659)	447 (0.599)	1.052 (0.509)	4.866 (1.068)	-1.282** (-3.826)	-3.783 (-2.984)	0.966	0.898	0.026**
Dr.REDDY'S	0.825 (0.702)	-0.584 (-0.605)	495* (2.089)	0.113 (0.180)	1.156 (1.953)	-0.138 (-1.592)	1.587 (0.945)	0.812	0.436	0.282
SUN	-2.220 (-7.725)	-0.824 (-1.391)	0.108 (1.300)	01.957* (6.549)	1.731** (3.828)	-0.290* (-15.639)	-0.260 (-0.180)	0.999	0.996	0.000*
ZANDU	2.250 (2.125)	-2.466** (-2.319)	1.694 (1.721)	2.605** (3.067)	1.420* (5.315)	-0.393** (-3.383)	-1.279* (-5.659)	0.991	0.972	0.004*

**Significantat5%level.*Significantat1%level.

It discloses that the regression equations estimated for all the ten sample companies, of which the regression equation estimated for four sample firms viz, Glenmark, Neuland, Sun and Zandu Pharma seem to satisfy all the specifications. This is because the co-efficient of determination adjusted for degree of freedom (R^2) is statistically significant for these four companies as is depicted from their F values. The value of R^2 is found to be very high ranging in between 0.87 and 0.99.6 per cent. This very high value of R^2 shows the significance of the estimated regression Model that explains the capital structure behavior of the sample industries.

Out of the six explanatory variables, the profitability is negatively correlated with leverage ratio, which is line with the pecking-order hypothesis; firms prefer using surplus generated by profits to finance investments but profitability were considered as important determinants of capital structure decision in the case of Glenmark and Zandu Pharma Ltd.

Though the model with all selected variables is fitted significantly, the explanatory variable size and non-debt tax shield does not have significant impact on the debt equity ratio except in case of Dr.Reddy's and Zandu Pharma. However these variables are used to identify the model of best fit. The explanatory variable Tangibility has positive and significant relationship with debt equity ratio of SUN and Zandu Pharma.

Based on the regression results it can be concluded that all the selected variables Viz., Profitability, Size, Tangibility, Growth, Risk and Non-debt tax shield together explain the variations in the Debt Equity Ratio of the select Pharmaceutical companies in India.

Testing of Hypothesis

The regression results show that the calculated value of F is greater than the table value at a given level of significance in the case of Glenmark, Neuland, Sun and Zandu Pharma. Hence, the null hypothesis that –there is no significant relationship between Debt Equity Ratio and selected independent variables viz., Profitability, Size, Tangibility, Growth, Risk and Non-debt Tax Shield‖ is rejected. Whereas, in all other cases the regression results are not significant and hence, the null hypothesis is accepted.

FINDINGS

- Among the sample firms, Aurobindo and Neuland have optimum level of debt in its capital structure but all other firms are having equity based capital structure.
- A positive correlation was inferred between debt usage and profitability. However, the finding of this study does not confirm statistically since the negative correlation between leverage and profitability was too weak to support this meaningful inference.
- Debt Equity Ratio positively related with Tangibility and Size and the size was statistically significant only in the case of SUN and ZANDU.
- The results indicated a unique but significantly positive correlation between debt financing and Growth of the firm.
- The results also indicated a significant negative correlation between debt financing and the business risk.

CONCLUSION

This paper has attempted to analyze the capital structure practices of Indian pharmaceutical companies and to find the determinants of capital structure as discussed in the financial literature. The Debt Equity Ratio results of the study revealed that Indian pharmaceutical companies are having equity based capital structure where as, Aurobindo and Neuland Pharma are employing optimum debt in their capital structure. The results of regression with six explanatory variables viz., Profitability, Size, Tangibility, Growth, Risk and Non-debt tax shield and a dependent variable Debt Equity Ratio revealed that there has been around 55.2 to 99.9 per cent of variation in financial leverage. It is also understood from the above results that these variables together play a major role in determination of the financial leverage in pharmaceutical companies in India. Hence it is suggested that the Indian pharmaceutical companies may go for debt financing as a cheaper source of finance at the same time the firms should consider all the explanatory variables used in this study while taking capital structure decision.

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