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Determinants of Capital Structure of Indian Pharmaceutical Industry

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Abstract

In finance, capital structure decisions are vital financial decisions and indecisiveness on the capital structure may lead to financial distress and eventually to bankruptcy. This study examines the factors that determine the capital structure of Indian Pharmaceutical industry. Sample of the study consists of ten companies of Indian pharmaceutical industry. The companies have been selected on the basis of debt-equity ratio and the availability of data for the period of study. The data used are secondary in nature and it has been collected from ACE Equity database for a period of sixteen years from 1998-1999 to 2013-2014. Correlation, Regression and Step wise regression were the statistical tools used for the analysis of the data. The results of the study indicate that among the sixteen variables, two variables namely Solvency ratio and liquidity are the prominent variables which determine the capital structure of Indian Pharmaceutical industry.

Keywords: Capital structure, Debt-equity ratio, Solvency ratio, liquidity, financial decisions

Introduction

The Liberalisation, Privatisation and Globalisation (LPG) policies that started in the early 1980s in India, and strengthened in the 1990s opened the Indian manufacturing sector to greater competition from within as well as from outside (Manonmani, 2014). Indian industrial sector contributes 28 per cent of the Gross Domestic Product (GDP), and it accounts for 22 per cent share in employment (Datt and Sundharam, 2015). As a result, steady industrial growth helps to compliment and sustain continued economic development. Finance, Purchase, Production, and Marketing are the core areas of a company, among those areas, categorically, management of finance plays a crucial role in any company. In finance, capital structure decisions are vital financial decisions, and indecisiveness on the capital structure may lead to financial distress and eventually to bankruptcy (Narayana Baser, Mamta Brahmabhatt, Beteshwar Singh, 2012).

The corporate capital structure remains a conflicting issue in modern corporate finance. Since the seminal work by Modigliani and Miller (1958), a plethora of research have been undertaken in attempting to identify the determinants of Capital structure (Shumi Akthar and Barry Oliver 2009). In addition, the decision on the capital structure not only influences the wealth of shareholders but also affects the market value of the share. Any change in the capital structure will affect the debt-equity mix primarily and the Weighted Average Cost of Capital consequently, it affects the value of the firm (Karam Pal and Monika Verma, 2009).

The use of debt may be financially advantageous to the firm as interest on the debt is tax deductible, apart from financial benefits, the use of debt has also other advantages like non-dilution of control, low transaction cost, easy to raise fund from financial institutions and so on. The benefits that a firm derive from debt are enjoyed by equity shareholders, at the same time, when firm suffers loss, equity shareholders are the one who have to bear the loss. If the firm is not able to pay debts, it affects equity shareholders adversely. However, debt cannot be completely washed off from the capital structure as debt can favour to the basic objective of the firm that is to maximise the wealth of shareholders. Thus, capital structure decisions are the most important corporate financial decisions.

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Statement of the Problem

Indian industry has grown rapidly following Liberalization, Privatisation and Globalisation (LPG) of the economy, which was initiated in 1991. In addition, changes in industrial policies and improvements in the financial markets over the past decades of liberalization have made an impact on the financial structure of industries in India. Consequently, it raises one question that, Is there any change in the factors that affects the capital structure decision of the company in the post liberalized era?

Literature Review

Ronald Wippen (1966) analysed the relationship between capital structure and the value of the firm and supported the traditional view that shareholder wealth is enhanced by the firm's judicious use of fixed commitment financing. Michael Ferri and Wesley Jones (1979) studied the determinants of financial structure and concluded that firm's leverage is related to its industry class, size and operating leverage. Allen D.E and H. Mizlno (1989) analysed the determinants of capital structure of Japanese companies and concluded that profitability is the most significant determinant of capital structure. Sheriden Titman and Roberto Wessels (1988) studied the determinants of capital structure and reported that debt levels are negatively related to the 'uniqueness' of a firm's line of business. Arvin Ghosh, Francis Cai and Wenhui li (2000) analysed the important determinants of capital structure in the U.S. manufacturing industries. The study exhibits that the relationship between business risk and leverage is quadratic and it is first increasing and then decreasing, the results of the study is more close to the trading theory. Jianchen and Roger Strange (2005) analysed the determinants of the capital structure of Chinese listed companies and reported that profitability is negatively related to the capital structure, the size and risk of the firms are positively related to the debt ratio. Mitalisen and Pattanayak (2005) empirically tested the determinants of capital structure choice for the Indian Banking sector and concluded that liquidity, size, efficiency, growth, quality of assets, profitability and service diversification are the most important factors influencing the capital structure of the Indian banking firms. Neha Mittal (2011) examined the factors that determine the corporate capital structure of Indian industries and concluded that agency cost, asset structure, Non Debt Tax Shield and size are the variables determining the capital structure of industries in India. Anushu Handoo and Kapil Sharma (2014) identified the most important determinants of Capital Structure of Indian companies. The study identified the profitability, growth, asset tangibility, size, cost of debt, tax rate and debt servicing capacity have significant impact on the leverage structure of the Indian companies. In the post liberalized era many changes have taken place in the Government policies, competition and environment which influence the performance of a company. This study is an attempt to study the corporate capital structure in the post liberalization period.

Objective of the Study

The objective of the study is to identify the factors that determine the capital structure of the select companies in the Indian Pharmaceutical industry.

Significance of the Study

Wise capital structure decisions helps a company to accelerate its performance, ensure the sustainability of its operations and eventually accomplish its strategic goals. The results of the study may help the finance managers of the company to take vital decisions regarding capital structure. The findings may also helpful to the investors to choose the company which gives them a higher return.

Limitations of the Study

As the study is based on secondary data, the limitations of the secondary data will influence the study.

Methodology

This study has been carried out with a sample of ten companies selected from Indian Pharmaceutical industry. The companies have been selected on the basis of debt equity ratio and the availability of data for the period of study. The data used are secondary in nature and it has been collected from ACE Equity database for a period of sixteen years from 1998-1999 to

2013-2014. Correlation, Regression and Step wise regression were the statistical tools used for the analysis of the data. Dependent variable is debt-equity ratio, sixteen variables are independent they are Size, Profitability, Non-Debt Tax Shield, Liquidity, Dividend Pay Out Ratio, Growth, Age, Effective Tax Rate, Interest Coverage Ratio, Selling And Distribution Expenses Ratio, Return On Equity, Solvency Ratio, Bank Rate, Inflation Rate, Cost Of Equity And Cost Of Debt.

Hypotheses

There exists no association between selected independent variables and the capital structure of the select company.

NATURE AND STRENGTH OF RELATIONSHIP BETWEEN SELECT INDEPENDENT VARIABLES AND DEBT-EQUITY RATIO – CORRELATION ANALYSIS

The correlation analysis which has been used to ascertain the relationship between selected variables and debt-equity ratio shows that eight out of sixteen variables are not correlated with debt-equity ratio. The other variables which are correlated with debt-equity ratio are presented in the following paragraphs.

*i)Size:*The variable size is found to have significant association with debt-equity ratio. It is inferred from the correlation analysis that this variable which is natural log of gross tangible assets is negatively associated with debt-equity ratio implying that an increase in size would decrease the debt level in the capital mix. The co-efficient of determination (r^2) shows that the size accounts for 10.9 per cent of the variation in the level of debt-equity ratio.

*ii)Profitability:*The results of the correlation exhibits that Profitability is significantly associated with debt-equity ratio. It is further observed from the correlation analysis that the variable Profitability which as a measure of earnings before interest and tax to total assets is negatively associated with debt-equity ratio. The coefficient of determination (r^2) shows that the profitability accounts for 18 per cent of the variation in the level of debt-equity ratio.

iii) Liquidity: The variable liquidity is identified to have significant association with debt-equity ratio. The variable liquidity which is measured as a ratio between current assets and current liabilities is positively correlated with debt equity ratio, implying that a change in this ratio would positively influence the debt-equity ratio. The co-efficient of determination (r^2) shows that the variable liquidity accounts for 7.3 per cent of the variation in the level of debt-equity ratio.

iv) Dividend Payout Ratio: The Dividend Payout Ratio is identified to have significant association with debt-equity ratio. It is revealed from the correlation analysis that this variable as a measure of total ordinary dividend paid to profit reported is negatively associated with debt-equity ratio indicating that an increase in this ratio would decrease the level of debt-equity ratio. The coefficient of determination (r^2) shows that the dividend payout ratio accounts for 22.3 per cent of the variation in debt-equity ratio.

v) Age: The results of correlation analysis opined that the variable age is significantly associated with debt-equity ratio. It is clear from the correlation analysis that this variable is negatively associated with debt-equity ratio indicating that an increase in this ratio would decrease the level of debt-equity ratio. The coefficient of determination (r^2) shows that the age accounts for 5.3 per cent of the variation in the debt-equity ratio.

Table 1: Correlation Analysis – Pharmaceutical Industry

Variables	R	r^2
Size	-0.330**	0.109
Profitability	-0.425**	0.180
NDTS	-0.117	0.014
Liquidity	0.270**	0.073
DPR	-0.473**	0.223
Growth	-0.009	0.000
Age	-0.230**	0.053
ETR	0.021	0.000
ICR	-0.148	0.022
SDR	-0.368**	0.136
ROE	-0.324**	0.105
SOL	-0.613**	0.375
Inflation Rate	-0.022	0.000
Bank Rate	-0.067	0.004
Cost of Equity	0.091	0.008
Cost of Debt	0.122	0.015

* Significant at five per cent level

** Significant at one per cent level

vi) Selling and Distribution expenses ratio: Selling and distribution expenses ratio is associated with debt-equity ratio. It is clear from correlation analysis that this variable which is measured as selling and distribution cost to total asset is found to have negatively correlated with debt-equity ratio indicating that selling and distribution expenses increases, the level of debt-equity ratio decreases. The coefficient of determination (r^2) shows that the selling and distribution expenses ratio accounts for 13.6 per cent of the variation in debt-equity ratio.

vii) Return on Equity: The return on equity of the companies is found to have significant association with the

debt-equity ratio. It is clear from the analysis that this variable which is measured as the ratio of profit after tax and net worth is negatively associated with debt-equity ratio indicating that an increase in this ratio would decrease the debt level in the capital mix. The coefficient of determination (r^2) shows that return on equity accounts for 10.5 per cent of the variation in the level of debt-equity ratio.

viii) Solvency Ratio: The solvency ratio of the companies is significantly associated with the debt-equity ratio. It is revealed from the analysis that this variable which is measured as the ratio of total assets and total borrowings plus current liabilities minus advance payment of tax is negatively associated with debt-equity ratio indicating that an increase in this ratio would decrease the debt level in the capital mix. The coefficient of determination (r^2) shows that solvency ratio accounts for 37.5 per cent of the variation in the level of capital structure.

Determinants of Capital Structure – Multiple Regression

The independent variables that do not significantly influence the debt-equity ratio are size, profitability, dividend payout ratio, growth, age, effective tax rate, selling and distribution expenses ratio, inflation rate, cost of equity and cost of debt. The other six independent variables which contribute significantly to debt-equity ratio are elaborated in the following paragraphs

i) Non-Debt Tax Shield: The regression coefficient between non-debt tax shield and debt-equity ratio is -14.500. It reveals that, non-debt tax shield is negatively associated with debt-equity ratio which implies when non-debt tax shield is increased by one unit it brings down debt by 14.500 units.

ii) Liquidity: The influence of liquidity on debt-equity ratio is positively significant at one per cent level. The contribution of liquidity to debt-equity ratio is 0.143 which means that an increase in liquidity by one unit will increase the debt-equity ratio by 0.143 units.

iii) Interest coverage ratio: The interest coverage ratio as a measure of Earnings before Interest and Taxes to interest has positive impact on debt-equity ratio at five per cent level of significance. The regression coefficient is 0.001. This implies that the increase of one unit in interest coverage ratio increases debt-equity ratio by 0.001 units.

iv) Return on Equity: The regression coefficient between return on equity and debt-equity ratio is -0.817 which implies a negative relationship between two variables. This further reveals that, an increase of one unit in return on equity will have a negative impact on debt-equity ratio by 0.817 units.

v) Solvency Ratio: It is clear from the regression analysis that, the influence of solvency ratio on debt-equity ratio is negative and significant at one per cent level. It reveals that an increase of one unit of solvency ratio will reduce debt equity ratio by 0.367 units, as the regression coefficient is -0.367.

Table 2: Determinants of Capital Structure – Multiple Regression Analysis.

Variables	Regression coefficient	Standard error	T
Size	-0.075	0.041	-1.832
Profitability	0.024	0.848	0.028
NDTS	-14.500*	7.121	-2.036
Liquidity	0.143**	0.025	5.625
DPR	-0.001	0.001	-1.533
Growth	-0.229	0.205	-1.116
Age	-0.004	0.002	-1.701
ETR	0.443	0.350	1.267
ICR	0.001*	0.000	2.432
SDR	-1.480	1.765	-0.839
ROE	-0.817**	0.201	-4.067
SOL	-0.367**	0.039	-9.510
Inflation	0.018	0.015	1.199

Bank Rate	-0.077*	0.034	-2.284
Cost of Equity	0.002	0.001	1.105
Cost of Debt	0.112	0.058	1.934

* Significant at five per cent level

** Significant at one per cent level

Constant : 2.770

Std. Error of Estimate : 0.360

R² : 0.642

R² : 0.678**

vi) Bank rate: It can be seen from the table 2 that the regression coefficient of bank rate is -0.077. This implies that the variable bank rate has negative impact on debt-equity ratio at five per cent level. It can be inferred from the regression results that an increase on one unit in bank rate will depress the debt-equity ratio by 0.077 units.

Regression Equation

$$\text{Debt-Equity Ratio} = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7 + b_8x_8 + b_9x_9 + b_{10}x_{10} + b_{11}x_{11} + b_{12}x_{12} + b_{13}x_{13} + b_{14}x_{14} + b_{15}x_{15} + b_{16}x_{16} + e$$

where,

A	: intercept form	x ₉	: Interest Coverage Ratio
b ₁ ...b ₁₆	: Regression coefficients	x ₁₀	: Selling and Distribution expenses ratio
x ₁	: Size	x ₁₁	: Return on Equity
x ₂	: Profitability	x ₁₂	: Solvency ratio
x ₃	: Non Debt Tax Shield	x ₁₃	: Inflation rate
x ₄	: Liquidity	x ₁₄	: Bank rate
x ₅	: Dividend Payout Ratio	x ₁₅	: Cost of Equity
x ₆	: Growth	x ₁₆	: Cost of Debt
x ₇	: Age	e	: Error term
x ₈	: Effective Tax Rate		

Sixteen independent variables have been regressed on the dependent variable, Debt-Equity ratio. The significance of the regression coefficient is tested through 't' statistics. R² value calculated to ascertain the goodness of fit of the regression equation has been tested for its significance through 'F' statistic. The levels of confidence chosen for 't' and 'F' statistics are five and one per cent.

Factors Prominently Associated With Capital Structure
'Solvency ratio' has been introduced in the first step. This variable contributes 37.5 per cent. In the second step

'liquidity' is introduced. 'Liquidity' a second variable increases the contribution from 37.5 per cent to 48.9 per cent. The contribution increases to 57 per cent with the introduction of 'return on equity' in the third step. 'selling and distribution expenses ratio' is introduced in the fourth step which increases the contribution to 60.4 per cent. In the next step variable 'age' is introduced and increased the contribution to 61.8 per cent. Finally when 'non-debt tax shield' has been introduced the contribution is 62.8 per cent.

Table 3: Factors Prominently Associated With Capital Structure Stepwise Regression Analysis.

Step	Constant	SOL	LIQ	ROE	SDR	Age	NDTS	R ²
1	1.731	-0.385						0.375
2	1.296	-0.409	0.160					0.489
3	1.328	-0.383	0.179	-0.998				0.570
4	1.574	-0.370	0.164	-0.832	-5.062			0.604
5	1.749	-0.374	0.151	-0.873	-3.908	-0.006		0.618
6	2.043	-0.391	0.144	-0.858	-2.971	-0.005	-14.254	0.628

The total contribution of the six variables 'Solvency ratio', 'liquidity', 'return on equity', 'selling and distribution expenses ratio', 'age', and 'non-debt tax shield' to debt-equity ratio is 62.8 per cent. In the regression equation, the contribution of all the sixteen variables is 67.8 per cent. Hence the contribution of remaining ten variables is 5 per cent.

Findings and Suggestions

Capital structure decisions are vital for the financial soundness of the company. This study identified the determinants that affect the capital structure of the Indian Pharmaceutical industry. It is concluded that the variable 'Solvency ratio' is the most prominent variable that determines the capital structure of the Indian pharmaceutical industry. Next to solvency ratio, liquidity is the variable which determines the capital structure of the

Indian Pharmaceutical industry. Arriving at Optimum capital structure is a challenging task of a finance manager, the findings of this study may help finance manager to take such vital decisions. There is a wide scope to do further research, a study may be conducted to identify the determinants of capital structure of Indian Service Sector.

References

1. Allen.D.E and H.Mizlno (1989), "*The determinants of corporate capital structure*", Applied Economics, Vol.21, pp. 569-585.
2. Anushu Handoo and Kapil Sharma (2014), "*A study on determinants of capital structure in India*". IIMB Management Review, Vol.26. No.3.
3. Arvin Ghosh, Francis Cai and Wenhui Li (2000), "*The determinants of capital structure*", American Business Review, Vol.18, No.2 pp.129-133.
4. Jian Chen and Roger Strange (2005), "*The determinants of capital structure: Evidence from Chinese listed companies*", Economic change and Restructuring, Vol.38, Issue.1, pp. 11-35.
5. Karampal, Monika Verma (2009), "*Corporate capital structure: The case of Indian Textile firms*" JIMS, Vol.14, No. 1, pp. 18-25.
6. Manonmani.M (2014), "*Impact of economic reforms on productivity performance of manufacturing sector in south India*", The Indian Journal of Industrial Relations, Vol.50, No.2, October, pp. 232-242.
7. Michael G.Ferri and Wesley H.Jones (1979), "*Determinants of financial structure: a new methodological approach*", The Journal of Finance, Vol.XXXIV, No.3. pp. 1346-1351.
8. Mitalisen and J.K.Pattanayak (2005), "*An empirical study of the factors influencing the capital structure of Indian commercial banks*", The ICFAI Journal of Applied Finance, pp. 52-65.
9. Modigliani. F and M.H.Miller (1958), '*The cost of capital, corporation finance and the theory of investment*', American Economic Review, Vol. XLVII, pp. 261-297.
10. Narayana Baser, MamtaBrahmbhatt, Bateshwar Singh (2012), "*Capital structure decisions: A study on leverage and profitability of infrastructure companies in India*", Journal of Commerce and Accounting Research, Volume 1, Issue 1, January, pp. 18-25.
11. Neha Mittal (2011), "*Determinants of corporate capital structure of Indian industries* ", Journal of Accounting and Finance, Vol.25, No.1, pp. 32-43.
12. Ronald F. Wippen (1966), "*Financial structure and the value of the firm*", The Journal of Finance, Vol.XXI, No.4. Pp.615-633.
13. Sheridan Titman and Roberto wessels (1988), "*The determinants of capital structure choice*", The Journal of Finance, Vol.XLIII, No.1, pp. 1-19.
14. Shumi Akhtar and Barry Oliver (2009), "*Determinants of capital structure for Japanese multinational and domestic corporations*", International Review of Finance, Vol.9, No.1, pp. 1-20.