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Capital Structure Practices- Industry wise Analysis of Companies

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Abstract:

Capital structure decisions are important for the financial soundness of the company. The main sectors covered under the study are Cement, Computer and Drugs and Pharmaceuticals for the purpose of analysis. An attempt has been made to analyze the various ratios like Debt-Equity ratio, Debt to total asset ratio and Current liability to total asset ratio which are related to capital structure. Each sector is analyzed with the help of last ten-year financial data. This study finds that the nature of industry influences the capital structure practices of corporate firms and all of the industry groups under study have marked inclination towards shareholder funds in their capital structure.

Keywords: capital structure, debt, equity, total assets, current liability.

1. Introduction

With the expansion of a firm, capital is required and it can come from debt, preference or equity. There are two advantages of debt (i) interest paid on debt is tax deductible which further lowers the debt's effective cost. (ii) Debt holders get a fixed return even if business is not extremely successful. Debt has disadvantages also, (i) with higher debt, financial risk of the company increases and thus, the cost of capital also increases. (ii) during recession if the operating income is not sufficient to cover the interest charges, it may entail bankruptcy.

The mix of debt, preference shares and equity shares with which the firm raises its capital is known as capital structure (Brigham and Houston, 2004). It is the proportion of debt, preference and equity shares on the firm's balance sheet. As the aim of the financial management is to maximize the wealth of equity shareholders, capital structure should also be examined from the viewpoint of its impact on the value of the firm. It is expected that, if the capital structure decision affects the value of the firm, then a firm should select that capital mix which will maximize the shareholder's wealth. Such a capital structure is known as optimum capital structure.

There are two schools of thoughts regarding capital structure and value of firm. The first school of thought supports that there is a relationship between the capital structure and the value of firm. According to another school of thought, combination of debt and equity has no impact on shareholder's wealth and thus, there is nothing such as optimal capital structure (Khan and Jain, 2012). This relationship is further explained with the help of prevalent capital structure theories.

2. Theories of Capital Structure

2.1. The Net Income Approach

The Net Income approach, suggested by Durand, assumes cost of debt and equity capital to be constant irrespective of the amount of debt employed in the firm. Thus, use of debt does not change the risk perception of the investors. As the firm increases the use of debt which is a cheaper source of finance, the overall cost of capital declines which, in turn, results in increase in the value of the firm.

2.2. The Net Operating Income (NOI) Approach

Under this approach, as suggested by Durand, the value of the firm is independent of the firm's capital structure. If the firm increases its use of financial leverage by employing more debt, its benefit is directly offset by an increase in the cost of equity capital as the use of cheap debt funds increases the risk perception of shareholders; evidently the shareholders would expect a higher rate of return on their investments.

2.3. The Modigliani – Miller (MM) Approach: No Tax Case

In the absence of taxes, cost of capital is independent of the degrees of leverage at any level of debt- equity ratio. Arbitrage process provides the operational justification to this. This theory is criticized on the basis of certain assumptions that do not hold in the real world.

2.4. The M-M Approach: Under Corporate Taxes

M-M agree that the value of the firm will increase and cost of capital will decline as new debt is added to its capital structure since interest payable on debt is tax deductible and it provides benefit to the firm. In concrete terms, the value of the levered firm would exceed that of the unlevered firm by an amount equal to levered firm's debt multiplied by the prevailing tax rate.

2.5. The Traditional Approach

This approach, also known as intermediate approach, implies that overall cost of capital decreases with use of debt as debt is a cheap source of finance compared to equity. In case, the firm makes further use of debt, it would be exposed to more financial risk and the equity-holders will penalize the firm by demanding higher returns. Thus, beyond a certain point, the issue of debt will adversely affect the value of the firm. As, the benefit of cheap debt is offset by the increased cost of equity.

3. Leverage

Financial leverage means employment of that source of capital which carries fixed return as distinguished by the source of capital carrying variable return. According to Van Horne, "Leverage may be defined as the employment of an asset or funds for which the firm pays a fixed cost or fixed return. The fixed cost or return may be thought of as the fulcrum of a lever." Earnings available to the ordinary shareholders get affected by the employment of an asset or sources of funds which carries fixed cost or fixed return. A high degree of leverage implies a high degree of variation in earnings of equity shareholders with small variation in sales.

There are two types of leverage – Operating leverage and Financial leverage. The leverage related to investment activities is referred as operating leverage and leverage associated with financing activities is called financial leverage.

Different industries are subject to different degrees of risk and therefore, nature of industry is likely to influence the capital structure decisions of corporate enterprises. The objective of this paper is to empirically ascertain whether such difference exists in the capital structure practices among cement, computer and drugs and pharmaceuticals sector in India.

4. Research Methodology

For the purpose of analyzing the industry-wise variations in the capital structure practices, three industry groups: cement, computer and drugs and pharmaceuticals have been taken based on the classification given in the Prowess 4.14 database. The sampling method was convenience sampling. These industrial groups, along with the number of firms is given in Table 1. The study has been carried out for the period 2005-2014.

The study is based on secondary data. Secondary data is taken from CAPITALINE database and published reports of the various companies under study. In addition, financial literature and published articles on the related aspects are also considered. The research approach is descriptive in nature.

In examining the industry-wise variations in debt-equity practices, we relied on financial ratios namely, i) total debt to shareholder fund ratio, ii) total debt to total asset ratio, iii) shareholder funds to total asset ratio, iv) current liability to total asset ratio.

Industrial group	Number of companies in the sample
Cement	11
Computer	20
Drugs and pharmaceuticals	36
Total	67

Table 1: Industry-wise classification of the sample companies

*It may be noted that sample size will vary on account of the year of incorporation of the sample firm and availability of data.

5. Review of Literature

Review of literature has been carried out to understand the available studies pertaining to the research in the area of capital structure.

1. Thomas and Mohideen (2010) examined the methods of raising finance and financial leverage practices of software companies located in Bangalore. The secondary data from the annual reports of the company for financial years from 1996-97 to 2008-09 was collected. The capital structure of the companies was analyzed. The impact of financial leverage on the earnings of the company was studied and the interrelationships between leverage, earnings and dividends were assessed. It was observed that degree of financial leverage was not positively correlated with dividend per share; earnings per share were observed to be positively correlated with Dividend per share.
2. Nawaz *et al.* (2011) investigated the relationship between capital structure and firm performance in the case of textile sector of Pakistan. It was examined if firm efficiency had an effect on capital structure and whether this effect was similar or not across different capital structure choices. In their study, regression analysis technique for examining the relationship between independent variable and dependent variables was used. Return on assets was used as a dependent variable and return on equity and debt to equity ratio as independent variables. The study noted that debt equity ratio has positive effect on return on assets and return on equity.
3. Salehi (2009) attempted to help the investors to recognize the link between capital structure and financial performance with relation to adjusted value, market value and book value of 117 corporates in Tehran Stock Exchange in a 5-year time horizon 2002-2007. The researcher tried to find the meaningful link between the capital structure and return on investment (ROI),

return on equity (ROE), return on stock (RET), earnings before tax to sales ratio (EBT/S), operational profit to sales ratio (OPR/S). Results of the study demonstrated that market value and adjusted value measures of capital structure in comparison with book value measures had stronger link with performance. It also showed that firm's profitability is negatively correlated with financial leverage.

4. Gill *et al.* (2011) examined the effect of capital structure on profitability of the American service and manufacturing firms. In their study, sample of 272 American firms listed on New York Stock Exchange for a period of 3 years from 2005-2007 was selected. The results of the study showed a positive relationship between (i) short-term debt to total assets and profitability and (ii) total debt to total assets and profitability in the service industry. For manufacturing firms, positive relationship was observed between (i) short-term debt to total assets and profitability (ii) total debt to total assets and profitability and (iii) long-term debt to total assets and profitability. Their study offered useful insights for the owners/operators, managers, and lending institutions based on empirical evidence.
5. Bevan and Danbolt (2002) attempted to extend the knowledge of capital structure and its determinants in listed UK companies by sub-dividing the debt element of the gearing measures in order to test the relation of each of the elements to the explanatory variables. Four different measures which were applied ranged from a broad measure of total liabilities to total assets, to a measure of gearing where cash and marketable securities were deducted from the debt measure. It was observed that gearing was significantly positively correlated with tangibility and logsales and significantly negatively correlated with the market-to-book ratio and the level of profitability. It was also found that the various short-term elements were negatively correlated with tangibility, while the long-term elements demonstrated a positive correlation. In addition to this, size was found to be significantly negatively correlated with short-term bank borrowings, and positively correlated with all long-term debt forms and short-term paper debt.
6. Lakshmi and Stewart (1999) tested traditional capital structure models against the alternative of a pecking order model of corporate financing. It was examined that basic pecking order model which predicted external debt financing driven by the internal financing deficit, had much greater time series explanatory power than a static tradeoff model, which predicted that each firm adjusted gradually toward an optimal debt ratio.
7. Negi *et al.* (2012) examined the effect of financial leverage on the shareholders' return and market value of 50 listed Indian companies listed on NSE and BSE- 10 each (five high leverage and five low leverage) from auto, cement, FMCG, oil and gas and pharmaceutical industries of India. Shareholders' return had been calculated through earnings per share and return on equity ratio, while market value was measured through dividend payout and price earnings ratio. Linear regressions were used to quantify the effect of financial leverage on shareholders' return and market value. It has been observed that there is no overall impact of financial leverage on earnings per share of high-leverage and low-leverage companies in India. It was also shown that financial leverage had an impact on return on equity of high-leverage companies of cement, oil and gas and pharma industries and low leverage companies of cement industry in India.
8. Cortez and Susanto (2012) determined the relations between the firm specific experience and debt level in Japanese firms. Panel data and multiple regression was used to analyze the relationships between the dependent variable, namely, leverage, and the independent variables, tangibility, profitability, non-debt tax shield, size, growth in fixed assets and growth in total assets. It was observed that size, growth in fixed assets and growth in total assets were not significant. However, it was also revealed that the variable tangibility, profitability, non-debt tax shield was statistically significant. Tangibility had a positive relation with debt level while profitability and non-debt tax shield had negative relation with debt level. These relationships were predicted in either static trade off theory and pecking order theory but none of the theories showed a more dominant predictive capability over the other. Thus, the Trade-off adjusted Order theory, which provided the possible explanation for this behavior, was proposed.
9. Bhayani (2009) examined the empirical effects of corporate capital structure (financial leverage) on cost of capital and the market value of selected firms of Indian Cement Industry for the period from 2000-01 to 2007-08. The study indicated no impact of financial leverage on cost of capital with reference to cement industry in India, i.e. no significant linear relationship between the financial leverage and cost of capital had been established. Also, findings did not suggest any correlation between the financial leverage and total valuation within the cement industry.
10. Mehar (2005) measured the impact of the profitability factors on the capital structure of a firm. Simulation analysis had been applied in the study and the impact of cost, revenue, profit, tax liability and dividend had been tested. The pooled data of 225 companies was applied for the period of 15 years, since 1981. It was found that capital growth of a firm did not depend on the profitability factors. This study measured the effect of the profit's factors on the capital structure of a firm.
11. Nedal and Bana (2009) examined empirically the effect of ownership structure on the corporate financing decision from the agency theory perspective. Their study contributed to the literature by examining the static and the dynamic effects of managerial insiders and large shareholder's ownership on the capital structure. It was based on the panel data analysis for a sample of Jordanian industrial firms during the period 2001 to 2005. The study provided empirical evidence indicating that the debt ratio is negatively related to individual block holder's ownership. It was also noted that there is no significant relationship between debt ratio and institutional ownership. This study also revealed that the capital structure is affected by firm's profitability, size and growth.
12. Krishnasami (2012) dealt with econometric analysis of financial risk on debt-equity mix /capital structure decisions. The incidence of fixed financial costs: interest, lease rent and their effect on the fluctuation of income that flowed to investors was reflected. The study covered sixty companies and the period of 10 years from 1999-2000 to 2008-09. The relationship

between financial risk factors and debt financing in capital structure among firms with low, medium and high financial risk using three regression models, with only control variables, with only financial risk variables and with both control and financial risk variables were evaluated. It was observed that financial risk variables, particularly interest risk followed by volatility in ROE had significant effect on determining the additional variation in use of debt financing in business through long- term sources.

13. Mukherjee and Mahakud (2012) examined whether the trade-off and pecking order theories were mutually exclusive or complimentary to each other in determining the optimal capital structure of the Indian manufacturing companies during the period 1993-94 to 2007-08. The behavior of leverage ratios of 891 manufacturing companies which had continuous data during the study period across the size of the companies was analyzed. It was found that trade-off and pecking order theories were complimentary to each other to determine the capital structure and companies' financing behavior was best explained by the modified pecking order theory. It was also concluded that Indian manufacturing companies had target leverage ratios and the adjustment speed towards the target had been around 40 percent.
14. Gahlon and Gentry (1982) suggested a model for calculating beta that includes DOL and DFL as explicit variables. The model demonstrated how the degrees of operating and financial leverage, along with the coefficient of variation of revenue and a cash flow correlation coefficient, affect a security's systematic risk, expected return and value. It provided a conceptualization of the sources of systematic risk: revenue variability, its magnification by operating and financial leverage, and the degree of sensitivity of the firm's cash flow to developments in the economic and financial environment.
15. Mulford (1985) examined the issues related to the debt market values computation during a period of historically high interest rates, when there were sizable differences between book and market values of debt. The tests were applied to individual security betas and to betas of two- and four- security portfolios. It was noted that financial leverage ratios computed using market- value-based measures of debt consistently exhibited a greater association with market beta than did their book-value-based counterparts. The findings were held across four regressions of market beta upon various explanatory variables, including financial leverage.
16. Pandey and Manjeet (1998) investigated Thai firm's capital structures to find their patterns over the period of the country's financial liberation and economic success. Data of 221 Thai manufacturing firm's listed on the Stock Exchange of Thailand for the period of 1990 to 1995 was taken. It was found that Thai firms have distinct preference for debt. Short term debt was more employed than long term debt by the firms. It was noted that there was a positive relationship between the debt ratio on the one hand and tangible assets, growth, and size, on the other hand. Negative relationship was also found between debt ratio and profitability, interest coverage, debt-service coverage and firm's uniqueness. The study concluded that survival of the firm was considered as main consideration in making financing decisions by the Thai managers. There were also reluctant in making public offer of debt or equity as they thought that Thai capital market was slow and raising funds could consume a lot of time.
17. Baser *et al.* (2012) examined the capital structure decisions of infrastructure companies in India with the help of leverage and profitability ratios. The main segments covered under the study were power, gas, construction, cement and telecommunication for the purpose of analysis. The results implied that sources of funds for these segments broadly comprise 30% to 40% of debt and rest of equity shares. It was seen that except real estate, the all other segment has mean debt-equity ratio of less than 1. The interest coverage ratio of infrastructure companies is fairly well around 15 to 20 times for all the segment except oil and gas where the mean interest coverage ratio was very high near to 57 times during the period of study 2006-2010. ANOVA was used to test the hypothesis, the study showed that debt equity ratio and return on equity differed significantly among the various segments of infrastructure industry over the years.

6. Role of Debt and Shareholder Funds

The objective of this section is to examine the role played by debt and equity in financing the assets of the various industrial groups during 2005-2014. Relevant data in terms of mean values of debt-equity ratio of three industrial groups has been presented in Table 2, for individual years. The available data states that there exists difference in the use of debt and equity by the corporate firms belonging to various industrial groups. Cement group has relatively higher debt-equity ratio than computer and drugs and pharmaceuticals sector. In contrast, computer industry has the lowest debt-equity ratio in comparison with other sectors throughout the period of the study. In the case of this group, the debt-equity ratio has shown a value below .2 in all the years covered by the study.

Industry	Cement	Computer	Drugs and Pharma
2014	0.62	0.11	0.62
2013	0.55	0.17	0.4
2012	0.54	0.17	0.44
2011	0.62	0.10	0.47
2010	0.63	0.14	0.57
2009	0.61	0.12	0.67
2008	0.77	0.11	0.58
2007	0.94	0.09	0.5
2006	1.18	0.09	0.56
2005	1.45	0.12	0.53

Table 2: debt to equity ratio

While debt constitutes an important source of financing for all industry groups, the relative share of outsiders funds in the assets of various industry groups (shown in Table 3) does suggest that there exists difference in the use of debt among industry groups. For instance, the debt to asset ratio for the cement industry varied in the range of .30 to .55 during period 2005-14, signifying that the Cement group is the only industry group for which the debt funds crossed more than half of their assets. Cement and Drugs and Pharmaceuticals groups use comparatively more debt in their capital structure than Computer industry.

Industry	Cement	Computer	Drugs and Pharma
2014	0.3	0.07	0.19
2013	0.3	0.1	0.2
2012	0.31	0.1	0.22
2011	0.33	0.07	0.24
2010	0.34	0.09	0.25
2009	0.3	0.09	0.29
2008	0.34	0.08	0.26
2007	0.41	0.07	0.26
2006	0.5	0.06	0.28
2005	0.55	0.09	0.27

Table 3: total debt to total asset ratio

The data given in Table 4 also supports the industry-wise variations in the use of equity funds in financing the assets of the corporate firms. Shareholder funds constitutes the major source of financing for all industry groups. The shareholder funds to total asset ratio for the sample industry groups varied in the range of .45 to .94 during 2005-14 signifying that at least more than half of the total assets have been financed by shareholder funds. Computer industry group earlier showing low debt to total asset ratio among sample groups, exhibits highest shareholder funds to total asset ratio than Cement and Drugs and pharmaceuticals group.

Industry	Cement	Computer	Drugs and Pharma
2014	0.66	0.91	0.77
2013	0.67	0.87	0.77
2012	0.67	0.87	0.75
2011	0.64	0.91	0.75
2010	0.66	0.91	0.75
2009	0.70	0.91	0.68
2008	0.66	0.92	0.72
2007	0.59	0.93	0.74
2006	0.51	0.94	0.72
2005	0.45	0.91	0.73

Table 4: Shareholder funds to total asset ratio

In this section we examine the extent of the use of current liability in financing the assets of various industry groups during the period of the study. Relevant data in terms of current liability to total asset ratio of the various industry groups during 2005-14 has been displayed in Table 5. The empirical evidence suggests that Computer and Drugs and pharmaceutical industry groups finance about one – fifth of their assets through current liability. Cement group uses the minimum current liability as compared to other industry groups. Drugs and pharmaceuticals uses the maximum current liability followed by Computer industry group.

Industry	Cement	Computer	Drugs and Pharma
2014	0.20	0.18	0.24
2013	0.19	0.17	0.24
2012	0.04	0.17	0.19
2011	0.22	0.16	0.16
2010	0.19	0.17	0.17
2009	0.18	0.30	0.18
2008	0.18	0.21	0.17
2007	0.20	0.20	0.58
2006	0.19	0.21	0.42
2005	0.17	0.19	0.30

Table 5: Current liability to total asset ratio

7. Hypothesis Testing

7.1. Null Hypothesis: Debt Equity Ratio Does Not Differ Significantly among the Various Industries over the Years

ANOVA					
Debt-equity ratio					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.278	2	1.139	33.560	.000
Within Groups	.916	27	.034		
Total	3.194	29			

Table 6

Above table states that the p-value is .000 which is less than .05 significance level. This lead to the rejection of null hypothesis at 5% significance level. It can be concluded that debt-equity ratio differs significantly among the various sectors over the years.

7.2. Null Hypothesis: Debt Asset Ratio Does Not Differ Significantly among the Various Industries over the Years

ANOVA					
Debt-asset ratio					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.412	2	.206	65.919	.000
Within Groups	.084	27	.003		
Total	.496	29			

Table 7

Above table states that the p-value is .000 which is less than .05 significance level. This lead to the rejection of null hypothesis at 5% significance level again. It can be concluded that debt to asset ratio differs significantly among the various sectors over the years.

7.3. Null Hypothesis: Current Liability to Total Asset Ratio Does Not Differ Significantly among the Various Industries over the Years

ANOVA					
Current liability to asset ratio					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.044	2	.022	2.875	.074
Within Groups	.205	27	.008		
Total	.248	29			

Table 8

Above table states that the p-value is .074 which is greater than .05 significance level. This lead to the acceptance of null hypothesis at 5% significance level. It can be concluded that current liability to total asset ratio does not differ significantly among the various sectors over the years.

7.4. Null Hypothesis: Equity to Total Asset Ratio Does Not Differ Significantly among the Various Industries over the Years

ANOVA					
Funds-asset ratio					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.417	2	.208	80.780	.000
Within Groups	.070	27	.003		
Total	.486	29			

Table 9

Above table states that the p-value is .000 which is less than .05 significance level. This lead to the rejection of null hypothesis at 5% significance level again. It can be said that equity to total asset ratio differs significantly among the various sectors over the years.

8. Limitations

There is a great chance of personal bias in the selection of sample companies in the research design of this paper. However, attempt has been made to obtain reliable and meaningful results from the final analysis. This paper is based on the secondary data taken from CAPITALINE database as such its findings depend entirely on the accuracy of such data. The analysis is largely based on the ratio analysis which has its own limitations that also applies to this paper.

9. Conclusions

Industry –wise empirical evidence suggests that the nature of industry influences the capital structure practices of the corporate firms. All of the industry groups under study have marked inclination towards shareholder funds in their capital structure. Computer and Drugs and Pharmaceuticals are having a highly equity dominated capital structure.

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