

THE DETERMINANTS OF CAPITAL STRUCTURE OF INDIAN INDUSTRIES : AN EMPIRICAL INVESTIGATION

Bidyut Jyoti Bhattacharjee

The author is Assistant Professor of Commerce at B.H.College, Howly, Assam

Abstract

The capital structure of a firm consists of debt and equity and the firms try to maintain appropriate financing mix to attain target capital structure. Modern capital structure theory stems from influential finance article in 1958 by Nobel laureates Professor Franco Modigliani and Merton H. Miller. Many theories hence developed over the years emphasizing on the determinants of capital structure decisions. The trade-off theory and signaling theory in particular play a crucial role in identifying and testing the various properties of the leverage decisions. This paper briefly tries to evaluate whether some a priori assumed macroeconomic determinants can be related to the leverage. For this purpose, an empirical study was undertaken on Indian industries covering 151 selected firms categorised 13 industrial sector. Following the developments in the contemporaneous estimation techniques that allow us to use time series and cross section data concurrently, the panel data methodology has been applied to the actual data to compute the leverage ratios for each firm within the time period 2003-04 to 2007-08 to determine to what extent the macroeconomic determinants affect the leverage ratios under various groupings such as, size, growth opportunities, profitability, liquidity and dividend payout. A major findings on the attribute of various explanatory variable used in the regression model is that the variables like liquidity and growth in terms of performance of the firm have significant influence on debt-equity ratio. In other words, sustainable growth along with credit worthiness of the firm influences debt-equity ratio i.e., degree of financial leverage. Further, the results from econometrical analysis reveal that determinants are industry specific, which implies that the weight of the explanatory variables varies from sector to sector. The paper finally highlights creditor rights, maintenance of legal reserves and law enforcement, directors rights on borrowing, risk assessment are essential determinants of capital structure decision of a firm.

Capital structure decision: an empirical investigation.

1. Introduction

Capital structure, the mix of long term debts and equity securities, is generally used to finance long term assets of companies. It consists of permanent short-term debt, preferred stock, and common equity. The financial structure is sometimes used as synonymous with capital structure. However, financial structure is more comprehensive than that of capital structure in the sense that the former refers to aggregate amount of total current liabilities,

long-term debt, preferred stock, and common equity i.e. total of liability side of the balance sheet (source of funds). Therefore, capital structure is only a part of financial structure and refers mainly to the permanent sources of the firm's financing. This necessitates firm's obligation for a well designed capital structure policies to lessen the hurdles of raising finance for its project.

An appropriate capital structure decision improves bottom line as well as solvency position and rescued the firm from its

impending threat of bankruptcy. On the other hand, it brings synergy effect pertaining to boasting shareholders value with mixing debt and equity. The overall cost of capital is reduced with increase in significant proportion of debt in the capital structure because of fixed contractual obligations. At the same time financial risk of the firm is augmented in the event of firms' inability to leverage its operation. Here lies the essence of optimum capital structure concept in firm's financing decision relating to determining an appropriate ratio of debt and equity at which weighted average cost of capital (WACC) would be the least and the market value of the firm would be the high. Generally in the firm's growth trajectory it is difficult to find an optimum capital structure as it is influenced by host of factors.

2. Literature Review

Gorden (1962) observed that with the increase of size, return on investment was negatively related to debt ratio. He also confirmed the negative association between operating risk and debt ratio. Baxter (1967) articulated that the degree of degree of financial leverage would depend on the variance of net operating earnings, since; business with relatively stable income streams is comparatively least prone to bankruptcy. Hence, a negative association exists between variance of net operating earnings and degree of financial leverage. A cross sectional study, Gupta (1969), on the financial structure of American Manufacturing Enterprises during 1961-62 confirmed that total debt ratios were positively related to growth and negatively related to size. Toy *et al* (1974) found higher level of operating risk is associated with higher debt ratio and growth, typically

measured in terms of sales, is negatively related to debt ratio while financial leverage is indirectly tied with *return on investment (ROI)*. Ferri and Jones (1979) investigated the relationship between firm's financial structure and its industrial class, size, variability of income and operating leverage. They found that the industry class was linked to the firm's leverage, but not in a direct manner as was suggested in other researches. Secondly, a firm's use of debt is related to its size. Finally, operating leverage does influence the percentage of debt in a firm's financial structure. In the same manner, Venkatesan (1983) analysed the relationship between seven variables; industry categorization, size, operating leverage, debt coverage, cash flow coverage, business risk, growth ratio and financial structure of firms. It was observed that, only debt coverage ratio was found to be important variable significantly affecting the financial structure of the firm. Carelton and Siberman (1997) concluded that higher the *variability in ROI* lower will be the degree of financial leverage in firms. Bradley, Jarroll and Kim (2002) found that debt to asset ratio is negatively related to both volatility of annual operating earnings and advertising and Research and Development expenses. Mohanty (2003) found that financial leverage is negatively related to profitability and value of the firm within an industry in Indian context. Evidently, literature on capital structure and its determinants in Indian context is in nascent stage. The study therefore attempts to address the determinants of capital structure in the field of Indian Industries.

3. Objectives of the study

The major objective of the study is to

examine the pattern (debt-equity mix) of asset financing by Indian companies and the influence of the various factor affecting there capital structure decisions. More specifically, the study focused on the following objectives.

1. To see the existence or non existence of intra and inter sectoral differences in the debt structure of various industrial sectors in India represented by selected large representative companies.
2. To examine the influence of various factors affecting the capital structure decisions of Indian companies.
3. To examine whether or not determinants of capital structure of different industry in India are similar

4. Hypotheses framed

Hypothesis 1

- H_o : Debt- equity ratios in various industrial sectors in India are similar.
- H_1 : Debt equity ratios among various industrial sectors in India defer significantly.

Hypothesis 2

- H_o : Debt-equity ratios of firms in an industrial sector are similar.
- H_1 : Debt equity ratios in an industrial sector do defer significantly among firms.

Hypothesis 3

- H_o : Debt- equity ratios of firms in an industrial sector are not influenced by financial variables such as size, growth, liquidity, profitability, and dividend.
- H_1 : Debt equity ratios of firms in an

industrial sector are influenced by the underlying financial variables.

Hypothesis 4

- H_o : Determinants of debt- equity ratio (capital structure) of different industrial sector are similar
- H_1 : Determinants of debt- equity ratio (capital structure) of different industrial sector are not similar

5. Research Methodology

To attain the aforesaid objective top 151 companies were selected on the basis of rank of market capitalization as on March 2007. The analysis is based on data collected from secondary sources; Capitalline Database, Bombay Stock Exchange Directory and Financial Statement of Indian Companies, covering five years period from 2003-04 to 2007-08. Further variables considered in the analysis include; financial leverage, growth (percentage change of sales over previous year), size (capital employed), profitability (percentage change of RONW over the previous year), liquidity (current ratio) and finally dividend pay out ratio. Both financial and statistical tools and techniques were used to evaluate the determinants of capital structure of Indian information technology sector. It includes; financial tools like ratio analysis and statistical tools such as correlation and regression analysis.

Tools & Techniques: To analyse the data financial as well as statistical tools has been used. The financial tools like ratio analysis and statistical tools such as average, ANOVA, correlation coefficient and multiple regressions were used. The statistical results were verified by applying t-test, F-

test, Z-test in appropriate cases.

6. Findings and Analysis:

6.1. Nature of Capital Structure of Indian Companies

To determine the nature of capital structure of the sample companies we have calculated debt equity ratios. We have

considered average value of debt equity ratio for both the respective years and all five years period. The following table exhibits average value of debt equity ratio for all the period highlighting the extent of leverage of the industry. The following tables exhibit the extent of debt equity ratio of the sample companies

Table 1 : Nature of Capital Structure of Sample Industries

D/E Ratio	Industry	Extent of leverage
Below 0.5	IT (0.295), Engineering, (0.40), Personal Care (0.361)	Low
0.5 to 0.99	Energy (0.836), Pharmaceutical(0.671), Chemical (0.867)	Medium
1.0 to 1.49	Electricity (1.04), Autogroup (1.484), Diversified (1.08)	Average
1.5 & above	Construction (1.537), Cement (1.578), Steel (2.161), Finance & Inv. (4.079)	High

Source: Self compiled; Figures in parenthesis indicate debt to equity ratio.

The table exhibits that, the *debt equity* ratios of the industrial sectors covered in the study lie within the range of 0.295-4.079. The *lowest* ratio (0.295) observed in the case of IT industry and the *highest* in Finance & Investment (4.079) sector. However in the Finance & Investment industry, significant variations in debt-equity ratio were noticed among the firms. High debt ratios were seen in Sriram Transport Finance Company Limited and Shriram City Union Finance Limited. The Cement industry is also subject to large variations in the debt ratios. But it was found that much of this is attributed to JK Lashmi Cement Ltd having very high debt ratios.

The Personal Care industry is one with *least borrowing*; the mean ratios were 0.361. As related to individual classification a slightly high ratio was seen for Emami Ltd industries with 0.782. The IT industry is one of the cash

rich industries with *low borrowings*. Most of the project in this industry is financed through equity which has resulted in low debt ratio. The Wipro Ltd, for example has comparatively low borrowings with average value of 0.018 indicating its rigidity in capital structure decision may be due to strong internal fund generating capacity that met the capital requirements of its needed expansion.

The Electricity and Auto industries sectors witnessed uniform leverage across the firms. The firms in both the sectors are maintaining the standard norms of debt-equity ratio as the average value of the sectors are 1.040 and 1.484 respectively. It implies that the equity capital as well as debt capital in designing capital structure holds more or less equal importance throughout the period under study.

The average value of debt-equity ratio of Construction sector is 1.537 which signifies borrowed capital is 1.5 times of equity capital. The DLF Ltd., Jaiprakash Associates Ltd and Simples Ltd industries witnessed high debt ratios; where debts are double to the equity capital in the capital structure.

The average value of debt-equity ratio of engineering industry is 0.40. Except Reliance Industrial Infrastructure Ltd and Sanghvi Movers Ltd, all other firms under this group have witnessed low debt equity ratio.

The average debt equity ratio in the Energy industry is 0.836 which is well below than 1.00. High leverage has been seen in Mangalore Refinery and Petrochemical Ltd, Chennai Petroleum Corporation Ltd and Gugrat Ltd.

High debt ratios were seen in the Steel sectors. Essar Steel Ltd is the only company which is using high value of debt ratio of 13.712 indicating that the company is heavily relying on borrowed capital, although during study period there has been a declining trend of the ratio. In the diversified sector, the leverage ratios were found to be high and significant differences were noticed among the sample firms.

Pharmaceutical and chemical industries have witnessed a *low debt ratio* over the period under study. Except a few firms, the companies under this industry are maintaining *low debt ratios*. The chemical sector in this respect is not an exception.

The debt-equity ratio of the sample companies was classified and exhibited in the following table.

Table 2: DE Ratio: Industry wise and firm wise distribution

Industry	1.5 and above	From 1 to 1.5	Below 1.0
Energy	1(8%)	2(17%)	9(75%)
IT	Nil	Nil	12(100%)
Construction	5(42%)	3(25%)	4(33%)
Pharmaceutical	1(6%)	4(25%)	11(69%)
Cement	2(20%)	4(40%)	4(40%)
Electricity	2(17%)	1(8%)	9(75%)
Engineering	Nil	2(20%)	8(80%)
Steel	8(53%)	3(20%)	4(27%)
Auto	1(8%)	2(15%)	10(77%)
Chemical	3(27%)	1(9%)	7(64%)
Personal Care	Nil	Nil	8(100%)
Finance & Investment	9(90%)	Nil	1(10%)
Diversified	2(20%)	3(30%)	5(50%)
Aggregate	34(23%)	25(17%)	92(60%)

Source: Self Compiled

It is manifested from the table that 60% of the sample companies accounted *debt-equity ratio* below one which means maximum numbers of companies of the sample are equity capital oriented. The companies under IT and Personal Care sector depend on internal source of funds. The industries like *Energy, Pharmaceutical, Electricity, Engineering, Auto, and Chemical* are mostly using equity capital and also depending on internal source of funds. The companies under *finance and investment* sector are depending on borrowed capital rather than issuing more equity capital. Reliance Capital Ltd. is the only financing company of the sample which accounted lower amount of borrowed capital in its capital structure. Thus, it is seen that *debt-equity ratio* of 60 percent of sample companies across the industry falls below 1.0, 17 percent are within the range of 1-1.5 and rest are categorized under the group of debt-equity ratio of 1.5 and above. This clearly shows that, companies are mostly

depending on their internal source of fund. Further the industry emerged in the recent years; IT, and Personal Care are equity oriented than that of the others. Besides, the market regulations, SEBI & MOF have boosted the primary issue market by introducing host of incentives and investors protection measures which ultimately led to increasing in the pace of growth of industrial finance in the country. The corporate sectors rushed to capital market and used IPO mode of raising finance.

6.2. Inter company variation of firm within different industrial sector

To study the inter companies variation in respect of *debt-equity ratio* within the industry we used ANOVA technique. We considered the null hypothesis that *there is no significant difference between the leverages of companies within a particular industry*. The analyses were performed for each of industry separately and the results are demonstrated in the following table.

Table 3: Result of ANOVA analysis

Industry	F value	F critical value	df (k-1, N-k)	No. of companies in the sample
Energy	6.012717	1.994579	(11,48)	12
IT	40.87752	2.053902	(11,48)	12
Construction	2.671943	2.053902	(11,48)	12
Pharmaceutical	8.12077	1.825587	(15,64)	16
Cement	20.91047	2.124029	(09,40)	10
Electricity	1.209985	1.994579	(11,48)	12
Engineering	15.59859	2.124029	(09,40)	10
Steel	1.869915	1.860244	(14,60)	15
Auto	1.050634	1.943619	(12,52)	13
Chemical	11.0565	2.053902	(10,44)	11
Personal Care	2.941075	2.312738	(07,32)	8
Finance & Inv.	22.43942	2.124029	(09,40)	10
Diversified	2.946772	2.124029	(09,40)	10

Figures in bold indicate significant at 5% level, N = Number of years, k = Number of companies

It has been observed that the F -values for the selected industrial sectors except Electricity and Automobile were found to be greater than the table values. Therefore the *null hypothesis that the debt equity ratios of firm in an industrial sector are similar* was rejected. A significant variation was noticed among firms in case of Finance & Investment, Cement and I T industry as the calculated value of F -statistic is higher than the table value. In other words, *capital structure* of Indian industries is not similar.

The firms within the industry have employed capital of different magnitude based on their nature and growth over the years.

6.3. Inter industry variation in India

To study the *inter industry variation* in respect of financial leverage we used ANOVA technique to examine that whether *debt-equity* ratios are varying from industry to industry. The results are exhibited in the following table.

Table 4: Result of ANOVA analysis

Source of Variation	SS	df	MS	F	$F_{.05}$
Between Companies	61.1228	12	5.093567	7.809338	1.943619
Within years	33.91651	52	0.652241		
Total	95.03931	64			

It is observed that $F > F_{.05}$ which implies that the *debt-equity* ratios of different industry are not similar. Therefore the *null hypothesis was rejected* and it is concluded that debt ratios differ significantly across industrial sectors in India. The reasons for the differences may be attributed to the inherent characteristics of the firms particularly in the context of their financing pattern i.e, *debt equity mix*. Thus financing structure differs *firm wise* as well as *industry wise*. This implies that single jacket does not fit to all and capital structure differs in industry as well as companies wise due to *host of several factors*.

6.4. Determinants of Capital Structure

To determine the factors influencing the leverage we conducted correlation matrix analysis to see the existence of interrelationship between leverage and the intervening variables. In this respect we

have considered variables CR (*Current Ratio*), Sales volume, Capital employed, Ent. Value (*Enterprises Value*), Book value of share, growth in PAT (growth in profit after tax), growth in Mcap (growth in market capitalization), EPS (*earning per share*), RONW (*return on net worth*), ROC (*return on capital*), DPR (*dividend payout ratio*). Further, *multiple regression analysis* was used to assess the determinants of companies' performance on the capital structure of companies. But because of *collinearly* problem we used *leverage (debt-equity)* as dependent variable and the variables like size (*capital employed*), growth (*profit after tax*), and liquidity (CR), profitability (RONW), dividend (DPR), as independent variable. The correlation results are displayed as under.

Table 5 : Correlation Coefficient: DE ratio vs. Other Variable

Variables	Value of r	P value
CR	.295**	.001
Sales Volume	-.070	.393
Capital employed	-.012	.888
Book value per share	-.126	.122
Enterprises. value	-.106	.195
EPS	-.173*	.034
ROC	-.311**	.000
RONW	-.142	.082
DPR	-.170*	.037
Grw. Mcap.	.151	.065
Grw. PAT	.197*	.016

Source: Self Compiled, ** Significant at 1%, *Significant at 5%

It is found that variables like liquidity ratio (CR), Earning per Share (EPS), ROC, DPR and Growth of PAT have emerged as significant variables affecting debt-equity ratio of the firm. It implies that leverage of the firm is affected by companies' solvency, profitability and size. The following paragraphs are devoted to analyse how far these findings pertaining to selected variables are similar to the findings of the previous studies.

Size: We defined size of the firm by *capital employed*. The controversy in capital structure as to the relationship of *size to leverage* was confirmed. The correlation value between capital employed and debt-equity ratio was found to be -0.012 and not statistically significant. This refutes the earlier assumptions that size has a positive correlation with the debt ratio. However the findings of *Fisher, Heinkel and Zechner (1989)* and *Kim and Sorenson (1986)* suggest that firm's size is significant

predictor of leverage. However, *the size of the firm has no significant impact on the financial leverage of the firms* as per the sample is concerned.

Growth: Growth defined in terms of *change of profit after tax over the years*. It was found the 'r' is positive and statistically significant. This implies that growing firm with proven profitability, rely more on debt than that of less growing firms which have better access to equity sources. *Titman Wesseb (1988)* argued that equity-controlled firms have a tendency to invest sub optimally to expropriate wealth from a firm's bondholders. The cost associated with this agency relationship is likely to be higher for firms in growing industries which have more flexible in their choice of new investments. Expected future growth should thus be negatively related to long term debt levels. *Myers (1977)* suggested that the agency problem could be tackled if the firm issued short term debts rather than long term debts.

Jensen and Meckling (1976) and several others also established that agency cost be reduced if firm adopt the issue convertible debts.

Profitability: We measure profitability by RONW defined earlier. The correlation value for RONW and debt-equity is -0.142 and is not statistically significant either at 1% or 5% level. It suggests that there is no relationship between degree of *leverage and financial profitability* of the firm. Similar findings were obtained in the *Packing order* hypothesis of *Myers and Majluf (1984)*.

Liquidity: The correlation coefficient between liquidity (CR) and DE ratio is found to be 0.295 and statistically significant at 1% level. This indicates a positive impact of the *leverage on liquidity* of sample companies. The existence of relationship implies *less risky firms* having high liquidity ratio always prefer long-term debt rather than financing from equity sources.

Dividend: The correlation coefficient

between DPR (dividend) and debt-equity ratio is -0.170 and statistically significant. This indicates that the *dividend* is an influential factor for designing *capital structure* of a firm. It suggests the companies with maximum long term debt capital are distributing more amount of dividend among the shareholders as compared to companies emphasizing internal source of funds.

To identify the influence of each or such intervening variables relating to the performance of the firm *regression line* has been fitted considering *debt-equity* ratio as dependent variable while others (only a those are significantly correlated to debt-equity ratio) i.e, *liquidity (CR)*, *dividend (DPR)*, and *growth (PAT)* as independent variable.

The following model has been fitted for the analysis.

$$Y_i = \alpha + \beta_1 X_1 + u_i$$

Here, $H_0: \beta_1 = 0$ and $H_1: \beta_1 \neq 0$

Table 6 - Regression Summary: Leverage (D/E ratio) as dependent variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	P value
1	(Constant)	.378	.293		1.292	.198
	CR	.366	.108	.265	3.398	.001
	DPR	-.007	.005	-.105	-1.323	.188
	PAT	.004	.001	.196	2.480	.014

$R^2 = 0.245$, $F = 6.996^{**}$, (.000), ** Significant at 1%, * Significant at 5%

The R squared for the equation was found to be 0.245 that is explanatory variables explains hardly 25% of variation in

dependent variable. This indicates a very weak prediction for the variables. *Prima facie* the result of the regression analysis on

various determinants of the coefficient of capital structure, in majority, was found to be consistent with the various research findings. However, there were certain exceptions, which need to be explored further. A major findings on the attribute of various explanatory variable used in the regression model is that the variables like *liquidity and growth* in terms of performance of the firm have significant influence on *debt-equity ratio*. In other words, *sustainable growth along with credit worthiness of the firm influences debt-equity ratio* i.e., degree of financial leverage. The firms generally look forward for more debts in its capital structure when it has been attaining a sustainable growth with higher

degree of liquidity and proven profitability. It could contain risks of debts in the capital structure.

6.5. Determinants of Capital Structure of Different Industry

To see if the findings of aggregate analysis tally with the result of different individual industry, it is necessary to identify the impact of all aforesaid variables on the leverage of individual industry. We in this respect fitted regression line among the variables states above. The industry wise regression result is exhibits in the following table. D/E ratio taken as dependent variable and others variable are taken as independent variable.

Table 7: Regression Result: Leverage (D/E Ratio) as dependent variable

Industry	Size	Growth	Liquidity	Profitability	Dividend	R ²	F
Energy	-.167 (-.612) [.563]	-.236 (-.821) [.443]	-.665* (-2.366) [.048]	-.157 (-.534) [.612]	.011 (.036) [.972]	.634	2.081* [.046]
IT	-.073 (-.212) [.839]	-.293 (-.813) [.448]	-.187 (-.500) [.635]	-.543 (-1.510) [.182]	.058 (.510) [.886]	.262	.682 [.654]
Construction	-.334 (-.975) [.367]	-.338 (-1.040) [.338]	-.406 (-1.344) [.228]	.686 (1.885) [.108]	-.783* (-2.403) [.043]	.571	1.981* [.049]
Pharmaceutical	.214 (.584) [.572]	.096 (.275) [.789]	-.791* (-2.464) [.033]	.427 (1.177) [.266]	-.271 (-.825) [.428]	.483	1.871* [.047]
Cement	.180 (.356) [.740]	.422 (.904) [.417]	-.228 (-.474) [.660]	.280 (.525) [.627]	.317 (.491) [.649]	.460	.682 [.463]
Electricity	.533 (1.015) [.349]	-.031 (-.048) [.863]	-.077 (-.162) [.877]	.119 (.318) [.761]	.095 (.158) [.880]	.302	.519 [.656]

Industry	Size	Growth	Liquidity	Profitability	Dividend	R ²	F
Engineering	-.557* (-1.64) [.046]	.495 (.976) [.384]	.253 (.579) [.593]	-.095 (-.251) [.814]	-.331 (-.829) [.454]	.659	1.548* [.046]
Steel	.633* (2.057) [.040]	.594* (2.598) [.029]	.288 (1.239) [.247]	-.352 (-1.254) [.241]	.200 (.919) [.382]	.632	3.093* [.047]
Auto	.076 (.168) [.872]	.072 (.118) [.909]	.812* (1.495) [.049]	.056 (.111) [.914]	.596 (.811) [.444]	.317	.651* [.047]
Chemical	-.592* (-1.40) [.039]	.072 (.168) [.873]	-.076 (-.200) [.850]	-.368 (-.968) [.377]	-.105 (-.239) [.821]	.414	.705* [.044]
Personal care	.493* (1.314) [.043]	-.003 (-.009) [.994]	.558* (1.200) [.049]	.089 (.231) [.838]	-.573 (-1.278) [.030]	.802	1.625* [.040]
Finance & Inv.	.281 (.527) [.626]	-.051 (-.124) [.908]	.223 (.453) [.674]	.580* (1.458) [.018]	.170 (.419) [.697]	.516	.854* [.045]
Diversified	-.072 (-.155) [.884]	.253 (.592) [.586]	.432 (.841) [.447]	-.454 (-.938) [.401]	-.221 (-.465) [.666]	.431	.607 [.704]

Figures in () indicate t value and figures in [] indicate value at t₀₅

The regression coefficient of size expressed in terms of capital employed is found to be negative in case of engineering (-.557) and in chemical (-.592) sectors. The negative relationship is statistically significant at 5% level. It implies comparative larger companies fall in the industry of engineering and chemical are using less amount of borrowed capital. Where as a positive relationship found in the sector of steel (.633) and personal care (.493) and statistically significant, signifying that comparatively larger companies of those sector are using more borrowed capital. A statistically significant positive relationship between Profitability (RONW) and financial

leverage found in the sector of finance and investment industries implying that comparatively more profitable companies dependent on borrowed capital.

In case of personal care sector and automobile sector liquidity is positively related with leverage and in case of energy and pharmaceuticals sector liquidity is negatively related with leverage and also statistically significant which suggest that liquidity is determinant for leverage for those sectors. The positive relationship explains that having high liquidity i.e less risky companies are using more debt capital in their capital structure. On the other hand

negative relationship implies comparatively risky companies are using internal source of funds.

DPR has negative impact on leverage in construction sector and also statistically significant which signifies that paying high dividend companies are using internal source of funds rather to use of debt capital. In case of other sectors, DPR is not an influential factor of capital structure.

The regression coefficient of growth of profit after tax is positively related with leverage only in steel sector which suggest that growing companies are relying on external source of funds rather to internal source of funds. However in case of other industries growth have no impact on their capital structure.

7. Conclusion

Thus in the context of determination of appropriate constituents of capital structure most of the findings of the study are consistent with those of the earlier studies. However a few, are diametrically opposite, especially in the Indian context. From the foregoing analysis a significant variations has been observed in the debt ratio in the industrial sector selected for the purpose of the study. The Finance sector showed the highest in terms of financial leverage and the IT, engineering and personal sector, the lowest. The regression model for the respective industrial sectors depicted in the table-5 indicated that the determinants are industry specific, which implies that the weight of the explanatory variables varies from sector to sector. The intervening factors are not significant or determinants for the sector of IT, cement, electricity and diversified as F values are not statistically

significant which describes the model it self is not applicable. The size of the firm was found not related with the leverage. This refuses the earlier research findings, which established a positive relationship between size and leverage ratios. It was found that increase in the total assets might not necessarily be financed by debt as it is used to be in earlier research studies. To support this argument, the behaviour of the indicator of growth can provide some evidence. It implies that the proportion of debt finance goes down when the total assets increase. The profitability of the firm was also found not related with leverage and this is inconsistent with the findings of the earlier research studies. Our study support that the growth of firm is significant factor to influence the capital structure of firm. The regression coefficient of growth in profit after tax is .196 and statistically significant at 5% level. This implies that growing firm in respect to growth in profit rely more on debt then less growing firms which have better access to equity sources. The existence of relationship between leverage and liquidity implies less risky firms having high liquidity ratio always prefer long-term debt rather than financing from equity sources. The theoretical foundations of capital structure decisions are undoubtedly useful, but its practical application, especially country like India suffers from serious limitations. In India, legal determinants play a significant role in shaping the capital structure of corporate. Important ones are creditor rights, maintenance of legal reserves and law enforcement. Some studies have shown that debt structure is also determined by how right are enforced by creditors. Debentures in India are, by definition, secured loans having a floating charge on all the aspect of the company compared to the working

capital finance by commercial bank, which generally have a second or inferior charge on assets. Therefore it becomes sometime important to consider this factor before choosing between short term and long-term debts or choosing debts at all. The companies Act 1956, requires the companies to maintain reserve before distributing profits and also there are provisions, which impose restrictions on the borrowings by the Board of Directors of a company beyond certain limits. Further the quality of law enforcement and risk assessment also influences capital structure decisions.

It is therefore argued that the financial manager must consider the factors and carefully analyze sector specific attributes before attempting to achieve the so-called optimal capital structure, as they are vital in the Indian context. It has been found in the case of some Indian firms that the capital structure is too rigid to offer any scope for adjustment. A capital structure of course is based on multiple considerations, which have to be undertaken before trying to achieve an optimal capital structure. The speed adjustment in India is conventionally low compared to it in developed countries like the U. K and the U.S.

References

1. Baxter, N.D (1967), Leverage, Risk of ruin and the cost of capital, *Journal of Finance*, Vol.22, pp. 395-403
2. Bhalla. V.K. (1999), Contemporary issues in Finance, Anmal Publications, New Delhi
3. Bhattacharyya, S.K (1970), "A cost of Capital Framework for Management Control," *Economic and Political Weekly*, Vol- 35, No-29
4. Bradely, R and Myers, S (1991), Principles of corporate finance. McGraw Hill. New York.
5. Bradley, Jarell and Kim (2002), A Review of Research on the practices of corporate finance, *South Asian Journal of Management*, Vol. 9, No. 4, pp. 29
6. Carelton. W.T. and Siberman. I.H (1977), joint determination of rate of return and capital structure, An econometric analysis, *Journal of Finance*, Vol- 32 No-4, pp. 811-821
7. Copeland, T.E and Weston, J.F (1988): Financial theory and corporate policy. Addison Wesley.
8. Davenport. Michael (1971), Leverage and the Cost of Capital, Some Test Using British Data, *Economica*, XXXVIII, pp-136-162.
9. Famulu. D (1995), Capital Structure Planning in Public Enterprises, *Anmal Publications Pvt. Ltd.*, New Delhi
10. Ferri.M.G. and Jones W.H (1979), Determinants of Financial Structure; A new methodological approach, *Journal of Finance*, Vol- 34, No-3, pp. 631-644
11. Fischer, Edwin with Robert Heinkel and Josef, Zechner (1989), " Dynamic Capital Structure Choice: Theory and Tests," *Journal of Finance*, Vol- 44 No- 1
12. Gorden. M. J(1962), The Investment, financing and valuation of corporation, Homewood III, Irwin
13. Gupta, M.C (1969), the effect of size, growth and industry on financial structure of manufacturing companies, *Journal of Finance*, Vol-24, No.-3, pp. 517-529
14. Gupta, P.K (2004), "An empirical investigation into the determinants of capital structure- a case study of Indian companies", *Journal of Accounting and Finance*, Vol-18, No-1
15. Kakani R.K (1999), The Determinants of capital structure- An econometric analysis, *Finance India*, Vol-XII, No-1, pp. 51-69
16. Kim wi saeng and Eric and Eric Sorenson (1986), "Evidence on the impact of the Agency cost of debt on corporate finance," *Journal of Financial and Quantitative Analysis*, Vol-21, No- 2

17. Kuchhal, S.C (1961), Financial Management: An Analytical and Conceptual Approach; Chaitanya Publishing House; Allahabad
18. Kulkarni, P.V (1981), Financial Management, (A Conceptual Approach), Himalaya Publishing House; New Delhi
19. Kulshrestha, N.K (1996), Management Accounting Concepts and Cases, Tata Mc. Graw- Hill Publishing Company Ltd., New Delhi
20. Mayers, S.C. and N.S. Majluf (1984) "corporate financing and investment decisions when firms have information that investors do not have," *Journal of Financial Economics*, Vol-13, pp. 187-221.
21. Modigliani, Franco and Miller, Merton. H (1958), The Cost of Capital, Corporate Finance and Theory of Investment, *American Economic Review*, 48, pp-261-297
22. Mohanty (2003), A Review of Research on the practices of corporate finance, *South Asian Journal of Management*, Vol- 9, No- 4, pp. 35
23. Pandey, I.M (1999), Financial Management, Vikas Publishing House Pvt. Ltd., New Delhi, 1999
24. Rao, Mahanta. P (1989), Debt Equity Analysis In Chemical Industry, *Mital Publications*, New Delhi
25. Sarma and Hanumanta. Rao (1969), Leverage and The Value of The Firm, *Journal of Finance*, XXIV, pp-673-677.
26. Srivastava, R.M (1997), Financial Management and Policy: *Himalaya Publishing House*, Mumbai
27. TASMAR Management Review, Vol, 1. Issue (1st October 2003)
28. Toy. N., Stonehill A (1974), Rammers. L. and Beekhuisen T., A Comparative International Study of growth, profitability and Risk as determinants of corporate debt ratio in the manufacturing sector, *Journal of Financial and Quantitative Analysis*, Vol-9, pp. 875-886
29. Van Horne. J.C (1979), Financial Management and Policy, Prentice Hall of India Pvt. Ltd.
30. Venketesan. S (1983), Determinants of financial leverage: An empirical extension, *The Chartered Accountant*, Vol-5, No-3 pp. 519-527

