CHAPTER II

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Systematic research works comparing capital structure of companies based on their geographical location are not yet available. However there are research works on capital structure and the factors influencing the capital structure. To his best of knowledge, the present Researcher had gone through all such research works carried out in India and a few works done abroad. The methodology and findings of these research works had been carefully studied and analysed by the present Researcher. Useful hints were drawn from these studies which helped in putting the present research work in a proper perspective. The gist of some of the relevant research studies and research papers on capital structure are presented in this Chapter.

Research Studies

Pandey I.M.[1] The study titled, 'Capital Structure and the Cost of Capital' was undertaken by I.M. Pandey with the objective of testing the relationship between capital structure and cost of capital using data from the Indian corporate sector. The study was completed in the year 1981 and was submitted to the Delhi School of Economics, University of Delhi.

The data for the study was collected from Bombay Stock Exchange Directory. Samples of four industries which had different characteristic (viz.,

cotton, chemicals, engineering and electricity) had been used. The samples consisted of 47, 32, 32 and 20 respectively for cotton, chemical, engineering and electricity. Mr.Pandey concluded that the results of the study did not support the contention of Modigliani & Miller that the average cost of capital was not affected by the capital structure changes and also that the cost of equity increases linearly with leverage . The traditional view that the cost of capital declines with leverage even in the absence of tax advantage of debt financing was strengthened by the study. The study was either to approve or disapprove the Modigliani and Miller independent hypotheses and not to measure the cost of capital.

Daga.U.R.[2] The thesis entitled, "Analysis of Financial Statements of Aluminium Industry in India" carried out by U.R.Daga at Department of Commerce, University of Jodhpur in 1985, was aimed at analysing the complex financial situation in which the Indian aluminium industry had sailed during the period of study from 1973 to 1983. Mr.Daga had made an attempt to analyse the financial statements of aluminium companies in India which was hitherto been a neglected area of study. An attempt had been made to find out the financial problems of different units engaged in the industry. The study helped to arrive at useful solutions to the major problems associated with them.

He had collected data for the study from the published accounting reports of the aluminium companies. The information collected by him had been

supplemented with the facts obtained through correspondence from the Indian Aluminium Manufacturers Association. For interpreting data ratio, common size and trend techniques of financial analysis had been applied. The process of analysing the financial statements involved the compliation, comparison and study of financial data. The financial data of one concern had been compared with related data of other concern. Mr.Daga reported that the aluminium industry in India had a lot of financial problems and gave many suggestions as solutions to the problems.

Khandelwal R.S.[3] In his study entitled, "Analysis of Capital Structure in Paper Industry of India", Mr.Khandelwal had probed into the capital structure of small and large paper units in India. The research study which was submitted to Saurastra University, in 1987 had the objectives of a. examing the profitability in relation to the capital structure, b. evaluating the value of the sample units, c. making a comparative study of capital structure of large and small units and d. empirically testing various theories of capital structure.

The whole study was based on data collected for 14 large paper units and 24 small paper units. The relevant data were collected from annual reports of sample companies. The researcher also met some of the executives of the sample companies for collecting information. Analytical tools like ratio analysis, trend analysis, common size analysis, correlation, central tendency, etc., were used by

the researcher to analyse the collected data. The researcher had concluded that the value of a firm and its cost of capital were independent of each other. Large paper mills confirmed to Modigliani and Miller Theory while the small units supported traditional views of capital structure. The capital structure of large units was more efficient than small units. The study was based on a smaller sample size of only 38 units. The thrust of the study was to compare large sized paper mills with smaller sized units.

Sharma R.P.[4] The doctoral research work of Mr.R.P.Sharma at Department of Accountancy and Statistics, University of Rajasthan in 1988 had the objectives to a. analyse financial structure so as to assess the automobile companies in making sound financial decisions, b. suggest ways to increase profitability without additional financial obligations, c. suggest sources from which additional funds can be obtained and the uses which can maximise the welfare of the concern in particular and society in general and d. test the long term and short term solvency or financial position of the companies in order to suggest ways by which the financial solvency of the automobile companies under study can be improved.

Mr.Sharma had collected data of six automobile companies viz., Premier Automobiles Ltd. Ashok Leyland Ltd, Hindustan Motor Ltd, Tata Engineering and Locomotive Company Ltd, Standard Motor Products of India Ltd and Mahindra

and Mahindra Ltd from the annual reports and accounts of these companies for the financial years from 1975 to 1981. He had applied the techniques of ratio analysis, fund flow analysis, trend analysis and common size statement analysis for analysing the financial statements. Statistical techniques like index numbers, per centages, averages, graphs, diagrams 'F' test and chi square test etc. had been used.

Mr.Sharma concluded that the sample units followed the policy of trading on equity which benefitted shareholders. The important source of funds was profits from operation while the most important use of funds was the purchase of fixed assets. The automobile industry faced labour trouble, power cut, uncertainity in supply from the ancillary industries and demand recession. The industry utilised 82 per cent of its installed capacity.

Harish Hanoa[5] Mr. Harish Hanoa's study titled, "Capital Structure and Financing of Sugar Industry in India," submitted to the Department of Commerce, University of Delhi had the objective of examining the capital structure of both joint stock sector and the co-operative sector sugar mills. It also examined the equity-debt proportion in the two segments with a view to determining whether they have evolved the optimal capital structure.

Mr. Harish Hanoa collected data from the primary and secondary sources. The primary data were collected from the sample units. The secondary sources comprised Stock Exchange Official Directory, Indian Sugar Mills Association and IFCI. The sample consisted of 50 units from joint stock sector and 25 units from co-operative sector. He used ratios and statistical techniques such as correlation and regression to analyse the capital structure. Mr. Harish Hanoa concluded that the sample units had optimal capital structure and working capital requirements were met by short term finance provided by banks and financial institutions. The capital structure of co-operative sugar mills differed from joint stock sugar mills. The single industry study did not look into the effect of cost of capital on the capital structure.

Matta N.S.[6] The Ph.D. thesis titled, 'A Study of the Pattern of Corporate Financial Structure in India', which was submitted to Delhi School of Economics, University of Delhi in 1990 by Mr. Matta had been aimed at studying a. the pattern, if any, in the inter industries variation in financial structure, which are associated with the characteristics of different industries, b. the pattern of financial structure, if any, caused by the variation in corporate size, and c. the variation in the financial structure of companies caused by the different growth rates.

Mr. Matta collected data from the 75 companies included in his sample from the published annual reports of the companies, RBI Monthly Bulletin, Reports of Industrial Credit and Investment Corporation of India, Kothari Economics and Industrial Guide, and Bombay Stock Exchange Official Directory. Mr. Matta used various statistical tools and ratio analysis to study the financial structure of companies. The results of his analysis revealed that three variables, viz., industry, size and growth were the significant determinants of financial structure. The empirical findings of the study supported the researchers hypothesis of capital structure's dependency on growth, size and industry, though in some cases, the results were not as favourable as expected.

Yesoda Devi [7] Mrs. Yesoda Devi has, in the year 1992, studied cost of capital and capital structure of Indian industries with the objectives of a. analysing the components of capital structure of selected industries, b. studying the relationship between the capital structure and cost of capital and c. ascertaining the influence of selected ratios on cost of capital. The study was a doctoral research work submitted to Bharathiar University, Coimbatore. Mrs. Yesoda collected data from 87 sample units which were classified into 10 categories. The required data were collected from the Bombay Stock Exchange Directory. The capital structure of sample units were analysed by using debt equity ratio, price earning ratio, pay out ratio, etc. Simple statistical tools like mean and co-efficient of variation were used for analysis.

Mrs. Yesoda concluded that the extent of relationship between capital structure and cost of capital varied from company to company. The weighted average cost of capital was sensitive not only to the proportion of capital components but also to earnings per share, retaining ratios as well as market price of the shares. Debt equity ratio was one of the factors which affected the cost of capital.

Mrs. Subarna sarkar[8] Mrs. Subarna Sarkar's doctoral research work on capital structure and productivity of capital in Indian corporate sector submitted to Banaras Hindu University in 1993 had the objectives of a. analysing the pattern and distribution of capital structure, b. assessing the parameters revealing the productivity of capital, c. appraising factors that helps in ascertaining the optimum capital structure, d. evaluating the impact of such factors on the capital structure and its productive power, and e. ascertaining the capital structure that yields the maximum capital productivity under given circumstances in the corporate sector.

She had selected 15 companies from private sector and 14 from public sector in textile industry as sample for her study. The data for this study were collected from Bombay Stock Exchange Directory, Reports of Bureau of Public Enterprises Survey and Reports of the Textile Committees in India and other secondary sources.

Mrs. Subarna concluded that a greater debt oriented financing in public sector enterprises over all the period and the positive trends of private sector companies shows that such profits are retained in business for augmenting the resources. The level of leverage directly reflects the distribution of capital structure. The total coverage and structural ratio of private sector companies has been better than public sector which shows a better ability of the private sector to meet its fixed obligations while the negative trends of public sector enterprises shows that such enterprises had earned that has been eaten up by huge amount of debt to total capitalisation. Capital productivity measures indicate the changes in the use of capital per unit of output which was influenced by a large variety of factors many of whom are beyond the control of individual enterprises. Mrs.Subarna's study was based on a smaller sample base. Though the private sector and public sector were polls apart in terms of their approach to managerial problems, the study compared the capital structure of both the sectors.

Narayanasamy N.[9] The research work of Mr. N. Narayanasamy taken up for the doctoral degree of Gandhigram Rural Institute in 1994 had the objective of verifying whether the theories of capital structure were relevant to cooperative sector and to find the nature and extent of relationship between the capital structure and cost of capital in co-operatives.

Mr.Narayanasamy collected data from 22 co-operative enterprises and studied them by using structural ratios. The cost of share capital was worked out by simple average. The cost of debt and overall cost of capital were computed by weighted average method. Correlation technique was employed to find out the relationship between capital structure and cost of capital. He concluded that the theories of capital structure were not relevant to co-operatives and the financial leverage was detrimental to co-operative enterprises. Mr.Narayanasamy had made an attempt to study the relationship between cost of capital and capital structure in co-operatives.

Rajeshwari Rao[10] The study entitled, 'Impact of Capital Structure Decisions on Operating Performance of State Enterprises of Andhra Pradesh', was submitted to Kakatiya University in 1994 by Rajeswari Rao and had the objective to analyse the impact of capital structure decisions in public sector enterprises of Andhra Pradesh on their operating performance.

Ms. Rajeshwari Rao's study was based on data collected from 22 state enterprises. The data for the study were drawn from circulars, publications, consolidated annual reports published by the department of public undertakings of the Government of Andhra Pradesh. Ms. Rajeshwari Rao analysed the capital structure by using debt equity ratio, current ratio, turnover ratio, return on capital employed ratio, price earning ratio, proprietors ratio, etc. She also examined the

behaviour of all the above variables by computing index number for ten years.

Ms. Rajeshwari Rao concluded that the process of capital structure planning was not a one time job, but needs revision and monitoring through time in different situations. Her conclusion also clearly exhibit that finance executives of state enterprises are not paying adequate attention to the multi-dimentional implications of the capital structure decisions.

Research Papers

Barges, Alexander[11] Barges conducted the most comprehensive test of Modigliani-Miller hypothesis. Like Modigliani and Miller, he analysed the relationship between the average cost of capital and leverage, and between the stock yield and debt-equity ratio. For the purpose of his study, he utilised cross-section data from three different industries. rail road, departmental stores and cement industries. Unlike Modigliani-Miller's study, his observations have good distribution over the entire range of capital structure. Each sample has a significant number of observations with little or no debt. He made special efforts to introduce homogeneity into the sample firms so that it might not distort the relationships. Barges criticised Modigliani and Miller for using market value as it introduces bias in the estimate of leverage coefficient. He, therefore, used book value measure of leverage. He advanced three reasons to justify his choice of book value measures of leverage:

a. Heterogeneity in data will not result in a systematic variation in the yield,

b. Book value measure of leverages are controllable by management in the interest of the shareholders, and

c. Book value measures are the ones which are studied by investors in actual practice.

Barges employed two book value measures of leverage. The first measure considered preference share as part of debt, while the second included it under equity.

Barges supported the traditional concept of a saucer-shaped overall cost of capital curve which could be minimised. Using book values instead of market values for the weighing factors and ignoring any growth, he found that the average overall cost of capital in his regression, first rose and then declined as the ratio of long term debt to the total permanent capital increased for class I rail roads such that,

$$Y = 12.39 - 0.224\ X + 0.00258X^2$$

where,

Y = the average cost of capital

X = the ratio of long term debt to total permanent capital

The result is significant at 1 per cent and clearly suggests that the average cost of capital first tends to decline and then tends to rise as the proportion of debt capital increases in the capital structure.

Barges selected five sub samples in such a manner that one important variable was held constant. Barges used the following two models to test stock yield hypothesis.

$$Y = a + bx_1$$

$$Y = a + bx_2$$

Where,

Y = the stock yield

x_1 = long term debt/preferred stock plus common equity

x_2 = long term debt plus preferred stock/common equity

The following results were obtained from rail road industry.

MODEL I

$$Y = 11.36 + 0.0914\, x_1 \qquad R = 0.173$$

MODEL II

$$Y = 10.80 + \cdot 0\ 2386\, x_2 \qquad R = 0.293$$

According to Barges, co-efficient of correlation is not significant at five per cent level in case of Model I, while it is significant in case of Model II at that level. He also ran regression for those observations which had a moderate leverage ratio. The results were not significantly different from zero and did neither support nor contradict Modigliani-Miller hypothesis.

In his study of departmental stores, leverage ratios were computed in the same manner as in the rail road industry. The results obtained tend to support the traditional theory. Barges' final test was in cement industry. The sample consisted of thirty four companies and was of special interest because, there was a large number of observations with little or no debt. The results obtained by him lend support to the traditional view.

Wippern Ronald[12] Wippern improved upon the Barges study by incorporating into his regression more variables which, since they were left out of the Barges regression, might have biased the results in favour of the traditional approach. He concentrated on the cost of equity function instead of the overall cost of capital function. By doing this, he could show that the cost of equity function was significantly linear, and increased at an appropriate rate to exactly off-set the injection of debt into the capital structure and keep the overall cost of capital constant. However, while Wippern did find some indication that the cost of equity capital was more linear and the overall cost of capital was a little less

saucer-shaped than Barges had estimated, the cost of equity did not increase fast enough to keep the overall cost of capital constant.

Wippern's specific regression model used the earnings yield as the imputed cost of equity capital, such that

$$E/P = a + b_1 (FL) + b_2 (G) + b_3 (divid) + b_4 (S) + \ldots\ldots\ldots + b_{10} (Dt)$$

Where,

E/P = the earnings price ratio (earnings yield)

FL = financial leverage as measured by i/c - 2s where, i was the most recent years, reported fixed charges, c was the 10 year trend line average of cash inflow and 2s was twice the standard deviation around that trend line.

G = the growth

Divid = the payout ratio for the firm

S = the logarithm of the firms size as measured by its assets

Dt = dummy variables assigned to each industry to ensure that no bias because of business risk and operating environment distorts the relationship between financial leverage and the cost of equity.

Wippern has taken great pains to ensure that his financial leverage measure is not distorted by the book value or the market value weighings and to include almost all the other variables to be sure that the results are not biased by

the omission of an important factor.

Eugene F.Brigham and Myron J.Gordon[13] The study titled, 'Leverage, Dividend Policy and the Cost of Capital' reported by Brigham and Gordon has developed stock value models designed to test the alternative theorems on the cost of retention and debt capital and carried out the indicated tests. Two theorems, which had been advanced were (1) $\lambda(b)$, the cost of retention capital is independent of b (retention rate) and equal to k, the return investors would require on a share in the absence of leverage, and (2) $\lambda(h)$ (h = corporate debt per share/current price) is independent of the leverage rate and equal to k also. Estimates of co-efficients α_1 and α_2 were obtained for a sample of electric utility companies and these estimates provided no basis whatsover for accepting either theorem as true.

The conclusions that follow from the data may be described as follows. First, the rate of return investors require on a share increases with the corporation's retention rate. Hence λ (b) increases with the retention rate. Second, the rate of return investors require on a share increases with the corporation's leverage rate, but the increase is smaller than would be true if investors were indifferent between leverage in personal and corporate account. Hence λ (h) is neither i nor k but falls between them. With these two theorems true, the cost of capital depends on how the capital is financed, and the value of

a corporation's stock depends on its financing policy.

However problems in the measurement of the variables suggested that the confidence of authors in the above conclusions should be less than was indicated by mere examination of the co-efficients and their standard errors. The growth variable is subject to error in measurement for reasons indicated, and these errors in measurement bias the co-efficient estimates down ward on some degree.

Haim Ben Shahar[14] In his article, "The Capital Structure and the Cost of Capital - A Suggested Exposition", Haim Ben Shahar has examined the firm's capital structure in terms of two parameters, the expected rate of return on the firm's stocks and its standard deviation. The relationship between the firm's capital structure and the efficient opportunity curve of yield versus risk was presented and the range of efficient capital structure of the firm was derived. The capital structure theorem was then formulated, stating that the firm's cost of capital is constant along the range of efficient structure and rises at the inefficient range. Since the range of efficient capital structure was shown to depend on the market structure, of interest rates, it followed that the shape of the cost of capital curve is determined by the interest rate structure.

It was therefore concluded that, in a perfect capital market where the interest rate is constant, any capital structure is efficient and that the cost of

capital is therefore constant. When a firm's borrowing rate rises and the investors rate is constant, the range of efficient capital structure is limited. The highest efficient financial leverage is determined where the firm's marginal borrowing rate equals the investors rate. The cost of capital is therefore constant along the range of efficient capital structure and rises along the range of inefficient capital structure. For other interest rate structures, different ranges of efficient capital structure are deduced, affecting the shape of the cost of capital curve. The analysis was carried out under the constraint that the investors has the opportunity to invest his own capital with any borrowed capital either in one stock or in a mixed portion of that stock and riskless bonds.

Douglas Vickers[15] In his article, "The Cost of Capital and the Structure of the Firm," Douglas Vickers has concentrated on the narrow but important set of issues namely, the nature and relevance to a firm at different optimisation points of the cost of money capital. But it has been inferred throughout and is implicit in the general optimisation planning model they have proposed that, the entire question of money capital costs is intimately bound up with the other aspects of the optimisation decisions of the firm, and in particular with the optimum factor usage decision.

Sharma and Hanumantha Rao[16] The purpose of the study was to employ the Modigliani and Miller's model under Indian conditions to a non-regulated

industry and to test the influence of the debt on the value of the firm. They employed two stage least square method on the data of thirty Indian engineering firms for three years namely, 1962,1964 and 1965. In their estimate, the leverage variable has a co-efficient greater than the tax rate. Thus, agreeing with the traditional view they concluded that the cost of capital is affected by debt apart from its tax advantage.

Weston [17] Weston made one of the earlier attempts to refine the Modiglani and Miller empirical work by including the firm size and growth in order to determine the overall cost of capital. He developed the following model.

$k_o = A+B_1 (D/E)+ B_2 (A) + B_3 (g)$

k_o = the overall cost of capital after tax.

D/E = the firm's debt - equity ratio.

A = the firm's asset value.

g = the firm's growth rate.

Regressing the above equation on fifty nine utilities for the year 1959, Weston found that the financial leverage variable (D/E) had a significant negative sign which to him supported the traditional concept of a saucer-shaped overall cost of capital function. He also found similar results when he used the pre-tax ko and when he excluded the preferred stock from the debt equity ratio.

Weston's study also suffers from certain other important explanatory variables such as payout ratio and earnings variability.

Ronald W.Masulis[18] 'The impact of Capital Structure Change on Firm Value: Some Estimates,' published by Masulis studied the valuation effects of leverage altering capital structure changes. Issuer exchange offers and recapitalizations were analysed because they do not involve simultaneous asset structure changes (in the form of cash inflows/out flows). A linear model was developed to estimate firm valuation effects from stock announcement returns and actual capital structure changes and then was estimated using ordinary least squares. The result was a statistically significant regression equation having parameter estimates consistent with model predictions and explaining more than half the cross sectional variation in stock announcement returns.

Evidence was obtained indicating that (1) changes in stock prices are positively related to leverage changes, (2) changes in non-convertible senior security prices are negatively related to leverage changes, (3) the magnitude of leverage induced non-convertible senior security price changes is substantially greater when leverage changes involve senior securities of equal or greater seniority to those outstanding, (4) changes in firm value are positively related to changes in firm debt level, and (5) lower bound estimates of the firm valuation effect per dollar change in debt were found to be in the range of .23 to .45. This

evidence was shown to be consistent with tax based models of optimal capital structure and leverage induced wealth transfers across security classes as well as with information effects concerning firm value which are positively related to changes in firm debt level.

Sheridan Titman and Roberto Wessels[19] 'The Determinants of Capital Structure Choice', by Titman and Wessels introduced a factor-analytic technique for estimating the impact of unobservable attributes on the choice of corporate debt ratios. While the results were not conclusive, they served to document empirical regularities that were consistent with existing theory. In particular, they found that debt levels were negatively related to the uniqueness of a firm's line of business. This evidence is consistent with the earlier belief that firms that can potentially impose high costs on their customers, workers and suppliers in the event of liquidation have lower debt ratios.

The results also indicate that transaction costs may be an important determinant of capital structure choice. Short term debt ratios were shown to be negatively related to firm size, possibly reflecting the relatively high transaction costs small firms face when issuing long term financial instruments. Since transaction costs are generally assumed to be small relative to other determinants of capital structure, their importance in the study suggests that the various leverage related costs and benefits may not be particularly siginficant. In

this sense, although the results suggest that capital structures are chosen systematically, they are in line with Miller's argument that the costs and benefits associated with this decision are small. Additional evidence relating to the importance of transaction costs is provided by the negative relation between measures of past profitability and current debt levels scaled by the market value of equity.

Their results do not provide support for an effect on debt ratios arising from non-debt tax shields, volatility, collateral value, or future growth. However, it remains an open question whether their measurement model does indeed capture the relevant aspects of the attributes suggested by these theories. One could argue that the predicted effects were not uncovered because the indicators used in this study do not adequately reflect the nature of the attributes suggested by theory. If stronger linkages between observable indicator variables and the relevant attributes can be developed, then the methods suggested by Titman in his earlier paper can be used to test more precisely the theories of optimal capital structure.

J.Michael Pinegar and Lisa Wilbricht[20] The article, 'What Managers Think of Capital Structure Theory; A Survey', published by Pinegar and Lisa is a report on their survey about attitudes of executives towards capital structure. They found out that corporate managers are more likely to follow a financing

hierarchy than to maintain a target debt-equity ratio. Further, models based on corporate and/or personal taxes and bankruptcy and other leverage-related costs are not as useful in determining the financing mix as are other models. However, the importance managers attach to specific capital structure theories is not related to managerial perceptions of market efficiency. Thus most managers do not overly signal firm value through capital structure adjustments. In general, financial planning principles are more important in governing the financing decisions of the firm than are specific capital structure theories. Moreover, the capital structure decision, per se, is less binding than either the investment or the dividend decision of the firm.

The Available Literature and the Present Study

The systematic survey, undertaken by the researcher for the purpose of the present study, of available literature has revealed that no study had so far been undertaken to compare the capital structure of organisations based on their geographical location. The literature surveyed for the purpose of the present study were all concerned about the capital structure and influencing factors of either an industry or about organisations in a defined geographical area. Similarly no study had been undertaken so for to expose the attitude of managements (conservatism, dynamisms and the like) towards financial management.

The literature, relevant to the present study, surveyed by the Researcher were concerned with one or the other aspects of capital structure and with different corporate sectors. The present study significantly differs from the earlier studies as it compares organisations located in two different regions of the country, North and South and verifies the popular myth that the South Indian Enterprises are conservatives while their counterparts in the North are dynamic. The prime objective of the present study is to compare the capital structure of the two groups of organisations thereby exposing the attitude of the top management in designing the capital structure. It is believed that the results and findings of this study will help in understanding the attitude of the top management in choosing a particular structure for their capital. It is also hoped that the results of the study would add considerable knowledge about the capital structure decisions of Indian organisations to the already available limited literature.

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