

Corporate Vulnerability, External Financing and Size as Determinants of Corporate Capital Structure: A study on select Indian Industries

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ABSTRACT: - Research studies have produced both affirmative and dissenting evidences in respect of a particular factor or group of factors as clear determinants of corporate capital structure. Scott (1972) and Scott and Martin (1976) have empirically established that industrial class has a bearing on the firm's capital structure. Scott and Martin (1976) also support the view that size might shape the firm's debt-equity mix. Remmers, Stonehill, Wright and Beekhuisen (1974) have presented contrary opinion that neither 'size' nor 'industry class' is a clear determinant of the firm's use of debt capital. The present study, conducted on 626 selected non government and non financial companies spread across industries in India reveals that 'corporate vulnerability', 'external financing' and 'size' have significant influence on the capital structure of the firms.

KEY WORDS: External financing, financial leverage, income gearing, operating leverage, profitability, size of the business.

I. INTRODUCTION

Financing decision of firms is a complex proposition as it involves choice of the sources of finance with great care. This is particularly true in case of financing the fixed assets than the current assets because financing the fixed assets warrants commitment of a large sum of long term resources which once invested becomes non-reversible (Kumar and Jain, 1989). Further, Industries differ from one another in view of their varied length and technical character production processes, rate of technological improvement, degree of vertical integration, product features, income elasticity of demand, trade customs, time shape of operations and sales, and customs as to the type of sources used (Singh, 1968). The variations in the nature of industries not only cause differences in the requirement of gross fixed assets but also in the use of various sources of long term finance among the industries (Kumar and Jain, 1989). This is particularly true when the firm has to choose between debt and equity as a source of finance. The particular combination of debt and equity maintained by the firm at a given point of time has significant implications for the stakeholders on the grounds of solvency and profitability. Debt, because of its fixed commitment as to income and repayment of principal is normally thought of as contributing at the same time to the opportunity for profit and possibility of loss (Donaldson, 1961). Although firms are generally inclined to taking the income advantage of debt, there ought to be an optimally designed capital structure for the firm in place. This is because a poor financial planning will limit the firm's ability to succeed in the long run due to high cost of debt, inadequate liquidity, and inability to raise funds in the capital market.

It is therefore imperative for the firms to design an optimal capital structure that will maximize value of the firms. Designing an optimal capital structure however is influenced by a number of macro and micro economic factors. Researchers in the past have tried to establish the factors that may be considered as clear determinants of firm's capital structure. Some of them have presented affirmative evidences in respect of a particular factor or a group of factors as the determinants of corporate capital structure; others have presented dissenting evidences in respect of the same factor or factors as clear determinant(s) of capital structure. Scott (1972) and Scott and Martin (1976) have presented empirical evidences claiming that industrial class has got influence on the firm's financial structure. Scott and Martin (1976) also support the view that size might shape the firm's debt-equity mix. Remmers, Stonehill, Wright and Beekhuisen (1974), on the other hand, have presented contrary opinion arguing that none of these factors - size or industry class - is a clear determinant of the firm's use of debt capital.

Against the above backdrop, the present paper endeavors to empirically establish if corporate vulnerability, external financing and size have influence on the firms' designing of capital structure in India.

II. DATA AND VARIABLES

To fulfill the above stated objectives, i.e., to check if corporate vulnerability, external financing and size have influence on the firms' designing of an optimal capital structure, that financial data of 626 non-government and non-financial companies with paid up capital of Rs one core and above, published by the

Reserve Bank of India, through its various issues of monthly bulletins over a period of 23 years from 1987-88 to 2009-10, divided into two time slots of 10 years and 13 years respectively from 1987-88 to 1996-1997 and from 1997-98 to 2009-10 have been collected and compiled.

The variables used are financial leverage (FL), profitability (Profit), operating leverage (OL), external financing (EF), income gearing (IG), and size of the industry (Size). Financial leverage, expressed as the ratio between total debts to total assets at book value has been taken as the measure of capital structure in this study which is in line with that of Remmers et al (1975). The average total assets, calculated by 'dividing the net value of total assets plus depreciation' by the number of companies in the industry, has been taken as the 'Size' of the industry. The profitability and operating leverage has been respectively taken as the 'pre-tax return on net assets' and the ratio between 'percentage change in average earnings before interest and taxes to the percentage change in average sales'. Similarly, the 'ratio of interest to EBIT' has been taken as the 'income gearing', and the 'sum total of share capital, borrowings, trade dues, other current liabilities and miscellaneous noncurrent liabilities' represent 'external financing'.

III. METHODOLOGY

The 626 companies as mentioned above included in the study have been clubbed into five groups, called the '*industry class*'. These groups are:

Group –I (coded as G_1) that includes 'Processing and Manufacturing Companies' engaged in the production of Foodstuffs, Textiles, Tobacco, Leather and Leather products thereof.

Group –II (coded as G_2) that includes 'Processing and Manufacturing Companies' engaged in the production of Metals, Chemicals and products thereof.

Group –III (coded as G_3) that 'Processing and Manufacturing Companies'-Not classified under Group-I and II above, and that includes companies like Cement, Paper and paper products, Rubber and rubber products, Mineral Oils, China earth ware and structural clay products.

Group-IV (coded as G_4) that includes 'Other industries', i.e., industries not included under Group-I, II, and III above, and includes companies like Construction, Shipping, Electricity, Hotels and Restaurants, Land and real estate.

The important techniques used for the analysis of data are correlation, analysis of variance (ANOVA), F-test and t-test.

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IV. ANALYSIS AND FINDINGS

Discussion on the possible association between a firm's financial structure and its size, class, profitability, income gearing, external financing, and a host of similar factors has gained considerable importance ever since Modigliani and Miller (1958) initiated the debate 'Cost of Capital and Optimal Capital Structure'. Subsequently, Scott (1972) and Scott and Martin (1976) have presented impressive evidences that industry class influences the firm's financial structure, and Remmers et. al.(1975) did not find any association between industry size and class as a clear determinant of a firm's financial structure. Keeping this in view, *three* distinct hypotheses, such as (i) "financial leverage is independent of corporate vulnerability", (ii) 'financial leverage is independent of external financing' and (iii) 'financial leverage is independent of industry size' were formulated and tested for determining if corporate vulnerability, external financing and industry size could be taken as deterministic variables affecting the corporate capital structure in India.

Financial leverage and corporate vulnerability

Income gearing is considered to be a measure of corporate vulnerability to fluctuations in general economic conditions (Scott, et.al, 1976). Since firms operate under different economic conditions, and economic conditions have bearings on capital and debt markets, there is likelihood that the firm’s capital structure is influenced by its income gearing. However, assuming that there is no relationship between firm’s capital structure and corporate vulnerability, Table 1.1 has been constructed by calculating the correlation coefficients and t-value.

Table 1.1: Correlation Coefficients(r-values), t-values and level of significance of corporate vulnerability and financial leverage

Industry Class	Period	Correlation between	r-value	t-value	Table value of t at	
					1%	5%
G ₁	Period 1	FL and IG	0.662	16.210	3.169	2.228
	Period 2	FL and IG	0.376	1.143	3.250	2.262
G ₂	Period 1	FL and IG	0.230	0.748	3.169	2.228
	Period 2	FL and IG	0.469	1.590	3.250	2.262
G ₃	Period 1	FL and IG	0.736	2.327	3.169	2.228
	Period 2	FL and IG	0.054	0.168	3.250	2.262
G ₄	Period 1	FL and IG	0.470	1.685	3.169	2.228
	Period 2	FL and IG	0.423	1.400	3.250	2.262

EF = External financing, IG = Income gearing

It can be seen from Table 1.1 that that there exists a statistically significant positive correlation between income gearing and corporate financial structure. The table further shows that the correlation between income gearing and financial leverage of G₁ in period 1 has been positive and also significant at 1 percent and 5 percent levels. In case of G₃, the relation has also been positive and significant at 5 percent level in period 1. In case of G₂ and G₄, the relations though positive are found to be statistically insignificant. In period 2 the relations could not be found to be significant though both positive and negative correlations apparently exist. Thus, while rejecting the null hypothesis that there is no association between income gearing and financial leverage, we may conclude that income gearing and financial leverage are positively correlated.

Financial leverage and external financing

So far as the pecking order theory is concerned, firms prefer internal to external financing, and they will prefer the safest security first, i.e., they will choose debt before equity financing, in case they seek external financing to finance real investments with a positive net present value. This implies that when external financing will increase, the proportion of debt in the total financing will also increase. Hence there should exist, a positive relation between external financing and firm’s financial leverage. This logic should also be valid for inter-industry comparisons. Keeping this in view and assuming that financial leverage is independent of external financing, table 1.2 has been constructed.

Table 1.2: Correlation Coefficients(r-values), t-values and level of significance of financial leverage and external financing

Industry Class	Period	Correlation between	r-value	t-value	Table value of t at	
					1%	5%
G ₁	Period 1	FL and EF	0.877	5.771	3.169	2.228
	Period 2	FL and EF	0.497	1.717	3.250	2.262
G ₂	Period 1	FL and EF	0.963	11.300	3.169	2.228
	Period 2	FL and EF	0.678	2.727	3.250	2.262
G ₃	Period 1	FL and EF	0.915	7.159	3.169	2.228
	Period 2	FL and EF	0.171	0.521	3.250	2.262
G ₄	Period 1	FL and EF	0.688	2.998	3.169	2.228
	Period 2	FL and EF	0.388	1.263	3.250	2.262

EF = External financing , FL= Financial leverage

Empirical evidence shows that there exists a strong and statistically significant positive relation between financial leverage and external financing. Table 1.2 which contains the correlation coefficients and their corresponding t-values, in fact shows that the correlations between financial leverages and external financing of G₁, G₂, G₃, and G₄ are significant at 5 percent level in period 1. The table further shows that the relation is significant at 1 percent level in period 1 in for G₁, G₂, and G₃. As far as period 2 is concerned, the relationship is found to be significant at 5 percent level only in case of G₂. The declining percentage of external funds in the total financing of the sample companies may be attributed to this insignificant correlations between external financing and financial leverages in period 2. Thus, the null hypothesis that financial leverage and external financing are independent of each other is rejected and we conclude that there exists a positive relationship between financial leverage and external financing.

Financial leverage and industry size

The third hypothesis relates to the association between size and the financial leverage. Large firms are generally more diversified, and they enjoy easier access to capital markets, receive higher credit ratings, and pay lower rates of interest on borrowed capital. Moreover, as the level of activity increases with size, more debt is expected in the financial structure of large corporations. Hence, size of the firm should be positively related to its financial structure (Mohapatra, 2012). The same logic should also hold good for inter-industry variations.

In order to test the validity of the null hypothesis that financial leverage and industry class are independent, correlation coefficients between financial leverage and industry size has been calculated for all the four groups of industries-G₁, G₂, G₃, and G₄ for the period 1987-88 to 1996-1997 and from 1997-98 to 2009-10. To test the significance of the correlation coefficients, t-values have also been computed. Table 1.3 exhibits details of the empirical results found in respect of the hypothesis concerning financial leverage and industry size.

Table 1.3: Correlation Coefficients(r-values), t-values and level of significance of financial leverage and industry size

Industry Class	Period	Correlation between	r-value	t-value	Table value of t at	
					1%	5%
G ₁	Period 1	FL and Size	0.325	1.085	3.169	2.228
	Period 2	FL and Size	0.880	5.547	3.250	2.262
G ₂	Period 1	FL and Size	0.481	1.736	3.169	2.228
	Period 2	FL and Size	0.972	12.392	3.250	2.262
G ₃	Period 1	FL and Size	0.719	3.271	3.169	2.228
	Period 2	FL and Size	0.628	0.420	3.250	2.262
G ₄	Period 1	FL and Size	0.669	2.845	3.169	2.228
	Period 2	FL and Size	0.924	7.251	3.250	2.262

FL = Financial leverage

It is apparent from Table 1.3 that not only there exists positive correlations between industry size and financial leverages but also the relations are statistically significant at 5 percent level in period 2 in case of all the industry groups, i.e., G₁, G₂, G₃, and G₄, and at 1 percent level in case of G₁, G₂, G₃, and G₄. As far as period 1 is concerned, the relation is found to be significant at 5 percent level only in case of G₃ and G₄ and at 1 percent level in case of G₃. The null hypothesis that financial leverage is independent of industry size is therefore rejected. It may therefore be concluded that size has a positive bearing on the corporate capital structure.

V. CONCLUSION

The current study leads to the findings that capital structure of Indian industries gets significantly influenced by the industry size and class. Profitability, operating leverage, external financing and income gearing too have bearings on the capital structure in Indian industries. Profit earning capacity of the firms, an indicator of the firms' ability to serve debt, too determines the firms' ability to attract debt capital in the total capital structure. The study further reveals that Indian firms depend more on debt financing as they grow in size.

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