

FINANCING PATTERNS OF INDIAN PUBLIC LTD COMPANIES

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Abstract

The current study has two main objectives: Firstly, to identify important determinants of capital structure and secondly to verify for the applicability of trade-off and pecking order theory. Data for the present study for a period from 1977-78 to 2010-2011 comprise consolidated sources and uses of funds of Indian Public Limited companies. Capital structure, the dependent variable is total debt to total assets. Six explanatory variables are firm size, asset structure, non-debt tax shield (NDTS), cash, growth opportunities and profitability. The explanatory power of the model measured in terms of R^2 in the total time period is 64% which suggests that the model chosen is appropriate. The regression analysis suggests applicability of both the theories.

Key words: Capital structure , liberalization, Pecking order theory and trade-off theory.

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I. Introduction

The term 'Capital structure' is generally used to refer to the proportion of debt and equity deployed by a company to finance its assets. The mix of debt and equity in a company is likely to have an impact on the value of the company. Companies prefer to choose that financing mix which can enhance or maximize their value. Alternative theories have been developed on optimal capital structure although none of the theories has been conclusively established by empirical evidence. It is, therefore, preferable to know whether the relative proportions of debt and equity have changed over the years or are relatively stable in order to assess stability, if not optimality, of capital structure.

In the Indian context, a number of reforms in the financial sector took place after liberalisation. Privatisation followed liberalisation and foreign investment is also made less restrictive. An assessment of the patterns of capital structure prior to and following liberalisation is likely to throw further light on the subject of capital structure.

Damodaran (2004) analysed the patterns of financing for G7 countries, Rajan and Zingales (1995), Boyle and Eckhold (1997) worked on capital structure of developed countries like US, UK, New Zealand etc. The researchers for developing countries have mostly found the results contrasting to the developed ones. This can be seen from the works of Bhole and Mahakud (2004) and Sahoo & Omkarnath (2005). The reason may be attributed to less developed capital markets in developing countries like India. The theories of capital structure verified in context of developed countries need an empirical testing for assessment of their applicability in the Indian context.

1.1 THEORIES

Modigliani and Miller's (1958) epoch making study on capital structure evoked great interest in researchers all over the world that led to the emergence of two broad theories viz trade off theory and pecking order theory.

1.1.1 Trade-off Theory: This theory says that there is a trade-off between interest tax shields and financial distress cost. This trade-off gives a target debt ratio for each firm.

Value of the levered firm

=Value if all equity financed + PV of interest Tax shield -PV of financial distress cost

1.1.2 Pecking Order Theory: Myers and Majluf (1984) have given this theory. It is mainly based

on the information asymmetry. It says that the managers (insiders) have more information than investors (outsiders) about their company's future prospects and value. The companies use this information as an indicator to signal the outsiders about a company's future prospects. For e.g. a company may increase its dividend from that of previous year. It indicates that the company has good future prospects. It has an impact on the selection of sources of financing the business. On the basis of preference for sources of financing this theory suggests an order followed by companies, which is as under:

Internal Sources: - Companies prefer first to have financing through internal sources because it can be accessed easily.

Debt Financing: Companies go for debt as it helps them to retain control in their hands. Further it is usually not mis-priced.

Hybrid Securities: This includes convertible debentures, convertible preference shares etc.

New issue of Equity shares: This is considered to be the least preferred source of financing by the companies. The reason is that it dilutes the control and the cost involved is also high. Mispricing (under-pricing/over-pricing) is also a common problem with new issue of equity.

According to this theory firms which are more profitable, and therefore generate high earnings, are expected to use less debt capital than those that do not generate high earnings. This theory says that there is no optimal debt equity ratio (in the conventional sense of the term) because the first and the last positions are occupied only by equity - one internal and the other external.

II. Literature review

Ghosh, Cai and Le (2000) studied the determinants of capital structure in US for 362 firms divided into 19 manufacturing industries using both the data sets of Compustat and Fortune 500. For cross sectional studies two years 1982 and 1992 have been taken and for panel data the period of 1982-1992 has been taken. Regression analysis has been done by having long term debt to total assets as dependent variable and asset size, growth of assets, non debt tax shield, fixed asset to total asset ratio, net profit margin, research and development expenditure, advertising expenditure, selling expenses and business risk as explanatory variables. The results show that advertising expenditure, growth of assets, fixed assets to total assets and R & D expenditure have been found to be important variables and the relationship between leverage and business risk is quadratic.

Ogden, Jen and Connor (2003) have analysed the financial characteristics of publicly traded U.S. non financial firms for the period of 1980-2000. They have taken assets and liabilities for analysis and found that in these firms throughout the period of study, net fixed assets constituted the largest single variable of total assets. However percentage wise decline has come in the use of this component as it ranges from 55.7% in 1980 to 32.5% in 2000. Similarly inventories decreased from 14.3% in 1980 to 7.2 in 2000. But the aggregate of fixed assets has increased significantly from 8.3% in 1980 to 34.2% in 2000. For financing these business activities the sources considered by these firms are common stock, debt and other noncurrent liabilities. Out of all these alternatives the most preferred ones are common stock and debt. Common stock first declined from 41.7% in 1980 to 28.4% in 1993 and again rose to 33.5% in 2000 while debt and other noncurrent liabilities from 26.8% in 1980 increased to 32.3% in 2000. This again confirms that firms in US rely heavily on debt borrowing.

Damodaran (2004) presents an analysis of patterns of financing in G7 countries by taking the data from Organization for Economic Cooperation and Development for a period of 1984-91. The study has taken net equity (difference between new equity issue and share buyback), internal financing and net debt as the sources of financing. The analysis found that US firms depend heavily on debt (by issuing bonds) than equity for external financing. The reason behind is that the US firms are mostly in maturity stage of their life cycle in contrast to the emerging market. So they have easy access to the corporate bond market. The firms in Japan, Germany and Europe mostly finance through bank borrowings. But this places some constraints on the use of new debt. So now firms in these companies also started accessing more to bond market.

The study on Indian firms done by Singh and Hamid (1992) says that the Indian firms rely heavily on external financing than internal financing because the capital markets in India are not yet fully developed, so they fail to raise equity. These results are just opposite to the results of the developed countries. Singh (1995) after comparing the pattern and structure of corporate finance of developing countries with those of developed countries says that the cost of debt and cost of equity financing are very high for developing countries.

Kakani (1999) worked on the determinants of capital structure. The objectives of the study were to analyse the debt structure of large private manufacturing firms in India, to identify the variables affecting the corporate debt maturities for short term and long term debt and to compare the

determinants of capital structure between the pre and post liberalization periods. The sample in the study consisted of 100 firms out of top 400 (by sales) firms listed on BSE in the year 1985 and existed till 1995. Pre liberalization period has been taken from 1985-1989 and post liberalization period from 1992-95. The independent variables considered for the study are collateral value of assets, capital intensity, non debt tax shield, growth, uniqueness, firm size, earnings risk, net exports, regulation, corporate strategy and profitability. The dependent variables are long term and short term debt divided by book values of equity and also the ratio of total debt to total assets. Correlation analysis followed by multiple regression shows that profitability, non debt tax shield and capital intensity are significant determinants of capital structure during pre liberalization whereas net exports has been found to be significant in post liberalization period and trade off theory seems to be more applicable.

Bhole and Mahakud (2004) have done a study on trends and determinants of corporate capital structure in India by studying the trends in respect to Public Limited Companies and Private Limited companies by using panel data of balance sheets. To see the trend in the capital structure of the corporates, they have taken four ratios i.e. long term borrowing to equity, total borrowings to equity, total borrowings to total liabilities and long term borrowings to short term borrowings. The data have been taken from various issues of RBI bulletin. The trend analysis gave the result that there is a significant increase in the dependency on borrowed capital vis a vis equity capital by all types of companies. Debt to equity and total borrowings to equity ratios have also increased. Total borrowings to total liabilities have increased but in comparison to other ratios, there is less change. The study has used five year annual averages of thirteen industries for a period of 1966 to 2000 for private Ltd. and public Ltd companies. It reveals that the leverage ratios (debt to equity ratio) generally have increased during 1966-2000 for both types of companies. Public Limited companies depend more on debt than the private limited companies. The huge difference can be seen in long term borrowing to short term borrowing over the period of 1971-1999 in public and private limited companies.

They have given the model for determinants by breaking up the study period into three segments namely 1984-99, 1984-1991, and 1992-99. The analysis shows that except profitability and growth rate all other variables are significant at 1% which suggests their importance in the financing decision of any company.

Sahoo and Omkarnath (2005) in their study on the capital structure analysed the financing pattern of Indian private corporate sector and checked whether any shift has occurred due to liberalisation. They have also tested pecking order theory of capital structure in Indian context. The annual data on sources and uses of funds from various issues of RBI bulletin and Report on Currency and Finance have been taken for analysis for a period of 1980-81 to 2003-04. The results of the study suggest that non debt tax shield, asset structure and profitability are the major determinants of long term capital structure. The averages show that large public limited companies depend more on external rather than internal sources. They reason may be liberalisation in early 1991 due to which the dependence on external source of financing increased but in later years it declined. It means there is a change in the composition of external source of financing due to liberalisation. The internal sources of financing increased due to provisions. They have given ranking to various sources of financing on the basis of proportionate percentage of each source to the total sources and the results there from are completely against the pecking order theory.

Kaur and Rao (2009) have studied the determinants of capital structure in Indian cotton textile industry. The objectives of the study are to identify the important variables that affect the debt - equity choice of these companies and to test for their (determinants) significance through regression analysis. The second objective of the study is to test for the applicability of pecking order theory or trade-off theory on the basis of the signs of regression coefficients. They have taken a sample of 78 profit making cotton textile companies for a period of 2003-04 to 2007-08 from CMIE database. The result of the study suggests that profitability and growth opportunity, liquidity and business risk are the most important determinants of debt-equity choice in Indian cotton textile industry at 1% level and uniqueness at 7.2%. The result also shows that trade-off theory seems to be more applicable on the basis of the signs of coefficients in regression equation.

III. Research Objectives and Methodology

3.1 Objectives: The study has following objectives:

- ❖ To identify determinants of capital structure (from literature) of Indian Public Ltd. Companies.

- ❖ To verify for the applicability of Pecking order theory and trade-off theory.

3.2 Methodology

The sources of financing have been classified as internal sources and external sources. Six independent variables have been identified from literature. Pair wise correlations have been done with a view to identifying important variables closely related to the dependent variable. A logarithmic transformation of the dependent variable and many of the independent variables will be contemplated in case problem of multi-collinearity crops up due to significant correlation among independent variables. After regression analysis, Jarque-Bera (JB) test has been done to see if ordinary least square (OLS) model is efficient. In this study the null hypothesis of JB test is that residuals follow normal distribution.

3.2 Period of Study: The period of study is from 1977-78 to 2010-11.

3.4 Sample and Sources of Data: The data for this analysis have been drawn from various issues of RBI bulletin and RBI data warehouse for the period of 1977-78 to 2010-11. The balance sheet data have been used to devise the statement of sources and uses of fund. The tax rates to calculate non-debt tax shield have been taken from Sucharita (1994) up to 1991 and after that taken from tax ready reckoner (2000).

IV. Choice of variables, their operational definitions and formulation of Hypotheses

4.1.1. Capital structure: In the present study capital structure has been treated as dependent variable. It has been measured by taking natural logarithm of total debt to total assets .

4.1.2. Asset structure: In the present study asset structure has been measured as gross fixed assets to total assets. Companies having more tangible assets can afford large amount of debt as tangible assets can provide better collateral. Thus a positive relationship is expected between debt ratios and asset structure according to trade-off theory but pecking order theory suggests no particular relationship.

4.1.3. Profitability: A profitable firm can afford to have more debt in its capital structure as it has the potential to absorb a large sum of interest and gain a tax shield arising out of a high debt ratio. This means that there is a positive relationship between profitability and debt ratios according to trade-off theory. But pecking order theory says that a profitable firm has more retained earnings, given dividend policy which is mostly sticky, and therefore places less reliance on borrowings to finance its projects. Consequently a negative relationship is expected between profitability and debt. In the present study it has been measured as natural logarithm of PBIT/ (D+E) i.e. return on capital employed (ROCE).

4.1.4. Growth Opportunities: According to Myers(1977), a firm with more growth opportunities may not rely on debt for financing as high risk is involved in new investments (growth opportunities) . It means that if the investment doesn't give desired results it will be difficult for the company to service its debt .So, according to trade off theory there exists a negative relationship between debt and growth opportunities. On the other hand, pecking order theory says that firms with more growth opportunities need more funds for investments. So a positive relationship is expected between debt and growth opportunity as per pecking order theory. Growth has been measured as natural logarithm of compounded annual average growth rate of sales.

4.1.5. Firm Size: Firm's debt taking capacity is influenced by its size. Titman and Wessels (1988) argued that larger firms have diversified business, so the chances of their bankruptcy are less. Large firms can afford to have more debt in their capital structure as they can earn profits from any of the business lines it will have in its portfolio. It means there is a positive relationship between firm size and debt according to trade off theory. But the pecking order theory says that information asymmetry is less in larger firms so they can take the benefit of external equity. So according to this theory there is negative relationship between debt and size of the firm. Firm size has been measured as the ratio of total assets to the number of companies in the particular year in the present study.

4.1.6. Non debt tax shield (NDTS): Interest expenses associated with debt can be charged to the profit and loss account as one can obtain tax shield. There are also items other than interest that

serve the same purpose. These are depreciation, depletion, research and development expenditure, preliminary and preoperative expenses that are written off (De Angelo and Masulis 1980). When a firm has large number of items that provide non debt tax shield, it will tend to have less motivation to derive tax benefit arising out of interest cost and hence will tend to have low debt in its capital structure for financing the assets. It means there is a negative relationship between NDTs and debt under trade off theory. Pecking order theory does not suggest any particular relationship between debt and NDTs. It has been also taken as natural logarithm form. The measure of NDTs¹ in the study is

4.2.7. Liquidity: According to pecking order theory firms with high liquidity are not likely to have high debt ratios as they have sufficient cash with them. So as per this theory there is a negative relationship between debt and liquidity. But trade off theory suggests that a firm with high liquidity can meet its debt obligation easily so these firms should have high debt in capital structure. It means as per trade off theory there is a positive relationship between debt and liquidity. The measure of liquidity in the present study is natural logarithm of the ratio of cash and cash equivalent to current liabilities and provisions

¹ $NDTS = \frac{PBDIT - I - T}{\text{average tax rate}}$ { PBDIT = operating profit; I= Interest paid; T= amount of tax paid }

V. Data Analysis: Firstly the trend has been shown for all the variables of sources of financing

Table 5.1

Three yearly average ratios of sources of financing

Years	1978-80	81-83	84-86	87-89	90-92	93-95	96-98	99-2001	02-04	05-07	08-11
TD/TS	0.3368	0.4121	0.3845	0.5075	0.4407	0.2613	0.4696	0.3398	0.1942	0.3107	0.3456
LTD/TS	0.1558	0.3027	0.2548	0.5890	0.7359	-1.078	0.3615	0.2795	0.0246	0.2016	0.2865
Int.sources/TS	0.2114	0.1908	0.3336	0.1427	0.3006	0.5583	0.3238	0.2212	0.4072	0.4352	0.2312
Ext.sources/TS	0.7886	0.8080	0.6647	0.8572	0.7000	0.4387	0.6758	0.7740	0.6031	0.5648	0.6940

Table 5.2 Correlation Matrix

	Ln cash	Ln NDTs	Ln Prof	AS	lnGO	Ln TD	FS
Incash	1	.601** (.000)	-.002 (.990)	-.189 (.318)	.415* (.023)	-.612** (.000)	.616** (.000)
Ln NDTs		1	.448* (.013)	-.540** (.002)	.447* (.013)	-.523** (.003)	.649** (.000)
Ln Prof.			1	-.487** (.006)	.357 (.053)	-.413* (.023)	.103 (.588)
Asset structure				1	-.324 (.081)	.234 (.214)	-.484** (.007)
lnGO					1	-.542** (.002)	.627** (.000)
Ln TD						1	-.544** (.002)
FS							1
P-values are indicated in brackets.			**Significant at 1% & *Significant at 5% level.				

Multiple Regression analysis: The regression models used in the study are:

$$\ln(TD/TA) = \beta_0 + \beta_1 FS + \beta_2 AS + \beta_3 \ln NDTs + \beta_4 \ln Cash + \beta_5 \ln GO + \beta_6 \ln Prof. + u$$

Ln (TD/ TA) = Natural logarithm of total debt to total assets

FS= Firm size

AS= Asset Structure

Ln NDTs = Natural logarithm of non debt tax shield

Ln cash= Natural logarithm of cash ratio

Ln GO= Natural logarithm of growth opportunity.

Ln Prof=Profitability

Table 5.3 Total time period

Variables	Expected Relationship		Actual Relationship and β Coefficients
	Trade-off theory	Pecking order theory	Total Debt
Asset structure	Positive	No relationship is specified.	-.635 (0.211)
Profitability	Positive	Negative	-.161*** (0.009)
Growth Opportunity	Negative	Positive	-.008 (0.716)
Firm size	Positive	Negative	.000 (0.165)
Non debt tax shield	Negative	No relationship is specified.	.039 (0.509)
Liquidity	Positive	Negative	-.113** (0.013)
P values are indicated in brackets for all the time periods.		***Significant at 1% level.	
		**Significant at 5% level.	

Regression analysis for total time period has been done by using backward entry method for both the debt ratios. The first model, including all the variables was found suitable as the VIF was considerably low.

Table 5.4 Model summary

Ratios	R ² values	D-W	F-value
Total debt ratio	0.622	1.950	6.299 (.001)
P values are indicated in brackets.			

The Jarque Bera test of normality has been done for normality assumption of residuals. It shows that in spite of being some variables in logarithm form, the residuals are following normal distribution and the model is significant. This is true for total debt to total assets.

Table 5.5 Tests Results

Ratios	J-B test ²
	Total period
Total debt	1.578(0.454)
P values are indicated in brackets.	

VI. Finding and Conclusions

The correlation matrix shows sign of negative correlation between total debt and cash ratio as a measure of liquidity, at 5% and 1% levels of significance. Similarly firm size and non debt tax shield are also correlated at 5% and 1% level of significance. Non debt tax shield is also negatively correlated with total debt at 1% level of significance. Profitability is negatively correlated with asset structure at same the level of significance. The regression analysis for total period of 1977-78 to 2010-11 shows cash ratio and firm size to be the only significant variables at 5% level. But cash is having negative coefficient. It means increase in cash decreases the debt ratio which is again true according to pecking order theory. Ogden, Jen and Connor' (2003) analysis of publicly traded US non financial firms during 1980-2000 shows that use of debt and other current liabilities has increased in the late 2000. Common stocks usage has declined and again increased. The present study also finds similar results that borrowing through trade dues and other current liabilities have declined but it is dominating the other alternatives of financing. Damodaran (2004)

² $JB = n \left[\frac{S^2 + (K-3)^2}{6} \right]$

after analysing patterns of financing, mentioned that countries like Brazil and India utilize internal and external equity more. But various researchers in India such as Sahoo and Omkarnath (2005) have found that Indian firms rely more on debt due to less developed capital market. The reason can be availability of finances from external sources or less developed capital market in a developing country. The present study also concludes that Indian Public Ltd companies depend on borrowing more than the equity. The empirical analysis also shows that net change in paid up capital is not significant while borrowings were found to be significant.

As there has been an argument on the applicability of trade off theory or pecking order theory, the results of the analysis show both the theories are applicable. The results of previous studies like Sahoo and Omkarnath (2005), Mahakud (2006) and Kaur and Rao (2009) found trade off theory to be more applicable in Indian context. But the results of the present study provide no conclusive evidence.

VII. Limitations

The present study has a few limitations which are summarized below:

- ❖ The study has considered the consolidated data of all the Public Ltd. companies and therefore suffers from the problem of consolidation. The behaviour of individual industries/companies will not get revealed.

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