A Study on Determinants of Capital Structure in Select IT Firms in India

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I. INTRODUCTION

Financial economics has made a significant progress in explaining the incentives that led large public companies to choose a particular type of financing policy. In the last few decades, a number of theories have been proposed to explain the variation in the debt –equity ratio across the firms. The debate on cost of capital and optimal capital structure started by Modigliani and miller resulted in added importance being assigned to the association between a firm's financial structure and operating characteristics. Having assumed the existence of an optimal capital structure, studies on determinants of a structure seem to be but logical extensions. The researchers have mainly identifies a set of exogenous variables and empirically tested the relationships of these variables with financial structures for their significance. Some of them have presented affirmative evidences in respect of a particular factor or, a group of factors as determinant of corporate financial structure; others have p[resented dissenting evidences in respect of the same factor or, factors to be a clear determinant of financial structure.

Neither theory nor research has been able to provide satisfactory agreement as to which factors affect the capital structure decision. In this study an attempt has been made to explore the relationship of certain defined exogenous variables empirically, with financial leverage. In establishing the variables, an attempt has been made to include those variables which have previously been the subject of controversy, either in true form or, in a modified fashion and also, to identify some new ones which might have probable impact on a firm's debt ratio.

II. REVIEW OF LITERATURE

Donaldson[11] reported that practically the corporate behaved as if they followed some sort of a pecking order while designing the capital structure of the companies. In a field of survey of corporate debt policies, Donaldson met finance managers who acknowledged that, " it was their long-term objective to hold to a rate of growth which was consistent with their capacity to generate funds internally".

Gordon [12] found that gearing increased with size and that the return on investments was negatively related to debt ratio. He confirmed the negative association between operating risk and debt ratio.

The study made by Sastry[13] on the basis of individual balance sheets of public limited companies (for the period 1955-60) was a major attempt to analyze investments, dividends and external financing and their interdependence. Sastry's model, which explaining external financing in relation to gross retained earnings, investment and stock of net debt, indicated " external finance to be negatively sloped function of stock of net debt and gross retained earnings and a positively sloped functions of investment outlays".

Baxter[14] reported that leverage depended on the variance of net operating earnings. Since business units with relatively stable income streams are less subject to the possibility of ruin, they may find it desirable to rely relatively heavily on debt financing. On the other hand, firms with risky income streams are reluctant to assume fixed charges sources of finance. Hence, he concluded that there was negative association between variance of net operating earnings and leverage.

Bray[15] observed that risky firms were likely to have lower debt ratio. He observed that there was no simple linear relationship between size and debt ratio. Further, he found a negative association between total debt and the proportion of fixed assets. Apart from the factors mentioned above, he also concluded negative relationship between return on investment and debt ratio, finally debt ratio being positively related to assets turnover and negatively related to payout.

Schwartz and Aronson[16] investigated the effect of one factor viz., industry on the firm's financial structure. They examined the hypothesis that financial structure measured by book values did not vary significantly with in an industry but did vary significantly among industries. The statistical technique employed was the one way ANOVA, which used the 'F' ratio test of statistical significance. Their results were significant and they concluded that industries had developed optimal financial structure conditioned by their interacting business risk. The rationale for this is that, firms in the same industry face the same kinds of environment and economic conditions and therefore, tend to cycle together.

Gupta[17] conducted a study on the financial structure of American manufacturing enterprises. The focus of the study was an analysis of the effects of industry, its size and growth on the financial structure relationship of American manufacturing enterprises. The study confirmed that total debt ratios were positively related to growth and negatively related to size. He also found significant industry-effect in debt ratio. He further observed that family pattern of ownership is an important determinant of leverage in the paper and allied product industry.

Lev[18] concluded that there was a significant relationship between industry class and debt ratio.

Baxter and Cragg[19] have analyzed 230 security issues made in 1950-65 using logit and prohit analysis and the explanatory variables were selected partly on prior grounds and partly by trial error. Their final model, for example, contained 11 independent variables, but at least 79 others were examined. Their study revealed two aspects: first, companies raising large sums in relative terms favored debt. Possibly this reflects concern over control. Secondly, companies with high ratios of market capitalization to total assets favored equity. This could reflect timing considerations.

Krishnamoorthy and Sastry[20] estimated the external finance equation to be very similar to the one estimated by Sastry in capital goods industry. The main findings of this study were that, "retained earnings extend their influence on investment when the supply of funds is limited on account of past profit" and " the impact of external finance is felt on investment when money and capital markets are tight.

Scott[21] presented an article on the importance of financial structure. The objective of his study was to present evidence on whether financial structure of the firm had, in practice, been confirmed by corporate decision makers. It was found that the financial structure of firms in the various classes was significantly different, underlining the importance of the financial structure of the firm.

Remmers et al[22] look up a study on "Industry and size as debt ratio determinants in manufacturing internationally". They examined a sample of four manufacturing industries in five developed countries, namely France, Japan, Netherlands, Norway and United States. They observed that two determinants, namely, industry and size, believed to influence corporate financial structures, probably did not warrant the credence they received. Thus, while they accepted that industry and size did influence capital structure, it was the case not always, they concluded that certain other variables such as earnings rate, growth rate, etc., seemed to be more important determinants of debt ratios internationally.

Toy et al[23] reported that higher operating risk companies showed some tendency towards higher debt ratio. They found that debt ratios were positively related to growth typically measured as slaes growth and return on investment to be negatively correlated with debt ratio. They were also of the view that the corporation size and the industry class did not appear to be determinants of debt ratio.

Stonehill et al[24] conducted a survey of financial executives in 87 firms of manufacturing corporations in France, Japan, Netherlands, Norway and the United States on the corporate financial goals and the debt ratio determinants. They concluded that financial risk appeared to be the most important debt ratio determinants. Coverage of fixed charges under various cash flow forecasts ranked first in the Netherlands, Norway, and the United States, third in Japan and seventh in France. Almost equally important was the availability of capital. Capital market conditions during the survey period (1966-70) were the most important debt ratio determinants in France. Historical capital market opportunities tom issue either debt or equity ranked first in Japan, second in France and third in Norway. Rate of growth and variance in earnings were second most important in Japan and third most important in the Netherlands. Finally, according to them, the industry norm did not appear to be an important debt ratio determinant in any of the countries surveyed.

Taub[25] used logit analysis to examine 172 issues of equity and bonds made in 1960-69 with the help of certain explanatory variables. He concluded that uncertainty of earning variable was negative, although not significant. The size of the firm had a positive impact on the desired debt equity ratio. The tax rate was found to be negatively associated with debt-equity ratio. The estimated co-efficient of the period of solvency variable was negative. Finally, the co-efficient of debt-equity ratio was negative but not significant.

Swamy and Rao[26] in their study observed that 'availability' rather than the 'cost' of funds determines the [pattern of corporate finance.

Krishnamoorthy and Sastry[27] tried to measure the relationships between net flow of debt and gross fixed assets. The explanatory variables they used were gross retained earnings representing internal sources, investment outlays representing the demand for funds and the stock of net debt representing the risk factor. It was found in this study, that co-efficient of the stock of net debt was negative for all the seven sample industries studied and was significant for five industries, namely, Jute, sugar, Paper, chemicals and engineering. The study further revealed that the impact of retained earnings on the flow of external finance was negatively and significant in all the industries.

Brealey et al[28] reached the conclusion that higher operating risk companies tended to avoid long-term debt issues. They found that larger UK companies had more long term debt.

Schmidt[29] observed that there was a significant industry effect on debt ratio and that the return on investment was negatively associated with the debt ratio. He looked at the composition of debt and found that large companies had more long-term debt than small companies. Finally, Schmidt found a negative correlation between total debt and the proportion of fixed assets.

Melicher et al[30] had shown that firms operating in the most highly concentrated industries were able to achieve substantially higher rates of return on book equity capital. While linear relationships between equity returns and concentration ratios are tenuous, the results support the existence of an 85percent 'threshold' concentration level above which there may be certain operating advantages. Higher equity returns were found to be primarily the result of higher operating profitability and not a result of differences in financing characteristics. Financial structures were not significantly different when examined across concentration ratio groups.

Carleton and Silberman[31] have concluded that the higher the variability in rate of return on invested capital is, the lower will be the degree of financial leverage adopted. Hence it is the variance not the rate of return that is the ultimate determinant of leverage. They have also found the return on investment to be negatively correlated with the debt ratios.

III. DETERMINANTS OF CORPORATE DEBT – EQUITY STRUCTURE

The present study has taken into account the following variables which affect the firm's debt-equity choice.

(1)Age of the Firm, (2) Corporate Size, (3) Business Risk, (4) growth Rate, (5) Earnings Rate , and (6)Asset structure

3.1 Age of the firm

Age of the firm is a standard measure of reputation in capital structure models. From the life cycle perspective, over time, the firm establishes itself as a continuing business and it therefore increases its capacity to take on more debt. Before granting a loan, banks tend to evaluate the creditworthiness of entrepreneurs as these are generally believed to pin high hopes on very risky projects promising high profitability rates. To overcome problems associated with the evaluation of creditworthiness, Diamond (1989) suggests the use of firm reputation. He considers reputation as the good name a firm has built up over the years, which is understood by the market and which has observed its ability to meet its obligations in a timely manner. Directors concerned with a firm's reputation tend to act more prudently and avoid riskier projects in favour of safer projects, even when the latter have not been approved by shareholders, thus reducing debt agency costs (by reducing the "temptation" to gamble at creditors' cost). This perspective is also seconded within the context of small

businesses (see Ang,1991). Petersen and Rajan (1994) found that older firms have higher debt ratios since they should be higher quality firms. Hall et al. (2004) confirmed that age is positively related to long term-debt but negatively related to short-term debt. Esperança et al. (2003) however found that age is negatively related to both long-term and short-term debt. Based on this reasoning, the following hypotheses are formulated:

H1a. Age of the firm is positively related to long-term debt ratio.

H1b. Age of the firm is negatively related to short-term debt ratio.

3.2 Firm size

Size has been viewed as a determinant of a firm's capital structure. Larger firms tend to be more diversified and hence have lower variance of earnings, making them able to tolerate high debt ratios (Castanias, 1983; Titman and Wessels, 1988; Wald, 1999).Smaller firms on the other hand may find it relatively more costly to resolve information asymmetries with lenders, thus, may present lower debt ratios (Castanias,1983). Ugİurlu (2000) also argues that large firms have higher leverage since the bankruptcy costs of debt are smaller for large firms. He agrees on a positive effect of firm size on debt. Empirical evidence on the relationship between size and capital structure of SMEs supports a positive relationship (see Barton et al., 1989; Sogorb-Mira,(2005). They argue that smaller firms are more likely to depend on equity while larger firms are more likely to use debt. Cassar and Holmes (2003), Esperança et al. (2003) and Hall et al. (2004) found a positive association between firm size and long-term debt but a negative relationship with short-term debt. Some studies also support a negative relationship between short-term debt and firm size (see Chittenden et al., 1996; Michaelas et al., 1999). According to Titman and Wessels (1988), small firms tend to use more short-term finance than their larger counterparts because smaller firms have higher transactions costs when they issue long-term debt or equity. Based on these assertions, we can hypothesis that:

H2a. Firm size should be positively related to long-term debt ratio.

H2b. Firm size should be negatively related to short-term debt ratio.

3.3 Asset Structure

Asset structure is also an important determinant of firm's capital structure. Firms with more tangible assets exhibit greater liquidation value (Harris and Raviv, 1991; Titmanand Wessels, 1988). Such firms have higher financial leverage since they borrow at lower interest rates and their debt is secured with the assets (Bradley et al., 1984). Debt may be more readily used if there are durable assets to serve as collateral (Wedig et al.,1988).

The costs associated with adverse selection and moral hazards are reduced provided the firm's assets are used as collateral. The restriction of maturity length of credit offered by lenders may explain partially debt structure in SMEs. In this sense, small firms may use less long-term debt, but probably more short-term debt, than large firms (Sogorb-Mira, 2005). The empirical evidence suggests evidence of a positive relationship between asset structure and long-term debt, and a negative relationship with short-term debt (see Chittenden et al., 1996; Jordan et al., 1998; Michaelas et al.,1999; Cassar and Holmes, 2003; Hall et al., 2004; Sogorb-Mira, 2005). Esperança et al. (2003) found positive relationship between asset structure and both long-term and short-term debt. From the above, it can be hypothesized that:

H3a. Asset structure is positively related to long-term debt ratio.

H3b. Asset structure is negatively related to short-term debt ratio.

3.4 Profitability

Profitability is assumed to have a positive relationship with debt. This is clearly explained by the POT, where firms prefer internal sources of finance to external sources. Profitable firms, which have access to retained profits, can rely on it as opposed to depending on outside sources (debt) (Titman and Wessels, 1988; Barton et al., 1989). The POT can readily be applied to SMEs (Cosh and Hughes, 1994). In fact SMEs seem to face a more extreme version of the POT described as a "constrained" POT by Holmes and Kent (1991) and a "modified" POT by Ang (1991) because they have less access to external funds, debt as well as equity than do large enterprises. The POT suggests that the use of external funds is very much related to profitability on the basis that SMEs, particularly if they are not listed, will make use of internally generated funds as a first resort. In relation to the owner-manager's control over operations and assets, if the POT holds, then internal equity finance will be preferred, because this form of finance does not surrender control. Cressy and Olofsson (1997) found that SMEs exhibit control aversion, as demonstrated by a preference to sell the firm rather than relinquish equity, and that owners prefer to use internally generated funds to finance further investment. If they are unable to do this, they seek debt financing. Empirical evidence seems to be consistent with the POT (see Friend and Lang, 1988; Barton et al. 1989; Shyam-Sunder and Myers, 1999; Chittenden et al., 1996; Jordan et al., 1998; Mishra and McConaughy, 1999 Michaelas et al., 1999). Cassar and Holmes (2003), Esperança et al. (2003), Hall et al. (2004) and Sogorb-Mira (2005) suggest a negative effect of profitability on both long-term and short-term debt. Based on the POT, the following hypotheses are formulated:

H4a. Profitability is negatively related to long-term debt ratio

H4b. Profitability is negatively related to short-term debt ratio

3.5 Firm growth

Growth is likely to place greater demand on internally generated funds and push the firm into borrowing (Hall et al., 2004). In the case of small firms with more concentrated ownership, it is expected that high growth firms will require more external financing and therefore would display higher leverage (Heshmati, 2001). There is also a relationship between the degree of previous growth and future growth. Michaelas et al. (1999) argue that future opportunities will be positively related to leverage, in particular short-term leverage. They argue that the agency problem and consequentially the cost of financing are reduced if the firm issues short term rather than long-term debt. Myers (1977) however, holds the view that firms with growth opportunities will have smaller proportion of debt in their capital structure. This is due to the fact that conflicts between debt and equity holders are especially serious for assets that give the firm the option to undertake such growth opportunities in the future. Empirical evidence seems inconclusive. Michaelas et al. (1999) found future growth to be positively related to leverage and long-term debt. Cassar and Holmes (2003), Hall et al. (2004) and Sogorb-Mira (2005) also showed positive association between growth and both long-term and short-term debt, while Chittenden et al. (1996), Jordan et al. (1998) and Esperança et al., 2003 found mixed evidence. It is therefore hypothesized that:

H5a. Growth is positively associated with long-term debt ratio.

H5b. Growth is positively associated with short-term debt ratio.

3.6 Firm risk

The level of risk is said to be one of the primary determinants of a firm's capital structure (Kale et al., 1991). Kim and Sorensen (1986) observe that, firms with high degree of business risk have less capacity to sustain financial risks and thus, use less debt. Despite the broad consensus that firm risk is an important determinant of corporate debt policy, empirical investigation has led to contradictory results. Some studies have indicated an inverse relationship between risk and debt ratio (see Bradley et al., 1984; Titman and Wessels, 1988; Friend and Lang, 1988; Kale et al., 1991). Others suggest a positive relationship (Jordan et al., 1998; Michaelas et al., 1999). Esperança et al. (2003) also found positive associations between firm risk and both long-term and short-term debt. From the above discussion, we hypothesize that:

H6a. Risk is negatively related to long-term debt ratio.

H6b. Risk is negatively related to short-term debt ratio.

IV.   DATA AND METHODOLOGY

4.1 Data source

The sample has been drawn from companies listed on the BSE; only quoted public limited companies were considered for the study. Companies were selected from Information Technology Sector. The following parameters were used to identify the sample:

(i)   Companies with a turnover of more than or equal to Rs. 100 crores (2009-10)
(ii) Companies which were non-financial.
(iii) Companies which had positive net worth (as 31st march 2010)
(iv) Companies having continuous data for all the 10 years from 2000-01 to 2009-10.

A sample of 9 companies satisfying all the above criteria, were selected for the study. Using multi stage sampling, they were classified as under the table.

Table 1 Descriptive summary statistics

Table I presents the descriptive summary statistics of some important variables. The mean long-term leverage of the sample firms is 0.2674. This suggests that long-term leverage represents about 26.74 percent of the capital of firms. Short-term debt represents about 33.46 percent of total assets, highlighting the importance of short term debt over long-term debt in financing IT sector firms. This is consistent with existing empirical evidence (see Cassar and Holmes, 2003; Hall et al., 2004; Sogorb-Mira, 2005). The results from the study of Hall et al. (2004) indicate that in countries such as Belgium, Germany, Spain, Ireland, Italy, the Netherlands, Portugal and UK, short-term debt is about three times more than long-term debt. Since the mean long-term debt and mean short-term debt are given as 0.2674 and 0.3346 respectively, the mean total debt ratio should be 0.4200. Total assets of the firms are financed by 46 percent debt capital and 54 percent equity. Average age is approximately ten years.

Variables	Mean	SD	Min	Max	Observations
Long-term debt ratio	0.2674	0.1584	0	0.9578	N = 7 6
Short-term debt ratio	0.3346	0.2866	0.0004	0.8798	N = 76
Age	9.89589	6.8250	1.0000	29.0000	N = 76
Size	14.66E + 09	4.38E+ 10	87509706	8.96E + 11	N = 76
Asset structure	0.5670	0.2934	0.0006	0.9999	N = 76
Profitability	0.0944	0.1428	-0.5437	1.3524	N = 7 6
Growth	0.2055	1.1022	-0.9996	13.8240	N = 76
Risk	0.1044	0.4457	0	9.0000	N = 76
Sales	4.70E+ 10	1.21E + 11	72406593	6.67E + 12	N = 7 6
Number of employees	357.8796	27.1520	135.0000	478.0000	N = 76

The mean size of the firm is 14.66 + 09 (Rs. In crores) in term of total assets. Asset structure has a mean of 0.5670, suggesting that, on average, fixed assets account for 56.70 percent of total assets. In terms of profitability, the average return on assets over the period amounts to 9.44 percent. The average growth rate in sales is 20.55 percent. Firm risk shows a mean value of 0.1044. The average sales value is shown as 4.70+ 10 (Rs. In crores) and mean size of employees of the firms is approximately 358, ranging from 135 to 478 employees.

4.2 Variables

Capital structure, which is the dependent variable, is defined in terms of debt ratio. This is given as the ratio of debt divided by total capital of the firm. Debt contains both long-term and short-term debts. Measures of capital structure thus include; long-term debt ratio and short-term debt ratio. Short-term debt includes bank overdraft, bank loans payable within a year and other current liabilities. Long-term debt also includes long-term bank loans and other long-term liabilities repayable beyond one year, such as directors' loans, hire purchase and leasing obligations. The two dependent variables are:

LDR = long-term debt/ (total equity + total debt)

SDR = Short-term debt/ (total equity + total debt)

The independent variables include, age of the firm (AGE), Size of the firm (SIZE), Asset structure (AST),

Growth (GROW), profitability (PROF) and firm risk (RISK). These are defined as:

AGE = number of years in business

SIZE = log of total assets

AST = the ratio of fixed assets to total assets

PROF = the ratio of profit before tax to total assets

GROW = growth in sales

RISK= the standard deviation of the difference between the firm's profitability in time t and the mean profitability

These definitions follow those of previous studies (see Cassar and Holmes, 2003; Esperança et al., 2003; Hall et al., 2004; Sogorb-Mira, 2005). All the variables used in this study are based on book value in line with the argument by Myers (1984) that book values are proxies for the value of assets in place

4.3 Model

This study employs the Prais-Winsten regression model. This is an alternative panel specification method and it is useful for estimating linear cross-sectional time series models when the disturbances are assumed to be either heteroscedastic across panels or heteroscedastic and contemporaneously correlated across panels. The general form of the model can be written as:

$$Y_{it} = a + bX_{it} + m_{it}$$

with the subscript i denoting the cross-sectional dimension and t representing the time-series dimension. The left-hand variable Y_{it}, represents the dependent variable in the model, which is the firm's debt ratio. X_{it} contains the set of explanatory variables in the estimation

model, a is the constant, and b represents the coefficients. The m_{it} is a random term and $m_{it} = m_i + n_{it}$; where m_i is the firm specific effects and n_{it} is a random term. The regression model employed for this study is also in line with what was used by Cassar and Holmes (2003), and Hall et al. (2004) with some modifications for the analysis. This takes the following form:

$$LDR_{i;t} = b_0 + b_1 AGE_{i;t} + b_2 SIZE_{i;t} + b_3 AST_{i;t} + b_4 PROF_{i;t}$$

$$+ b_5 GROW_{i;t} + b_6 RISK_{i;t} + m_{i;t} \quad ------------------ (2)$$

$$SDR_{i;t} = b_0 + b_1 AGE_{i;t} + b_2 SIZE_{i;t} + b_3 AST_{i;t} + b_4 PROF_{i;t}$$

$$+ b_5 GROW_{i;t} + b_6 RISK_{i;t} + m_{i;t} \quad ------------------ (3)$$

V. EMPIRICAL RESULTS

5.1 Correlation analysis

In order to examine the possible degree of multi-collinearity among the regressors, a correlation matrix of the variables is included in Table II. Long-term debt ratio has significantly positive correlations with assets structure, and growth but has significantly negative correlation with profitability. Short-term debt ratio exhibits a significantly positive correlation with age but significantly negative correlations with both asset structure and profitability. The results show significantly positive correlation between size and age. Assets structure is also significant and negatively correlated with age. Profitability is significantly and negatively correlated with age and asset structure. Growth shows a significantly negative correlation with profitability. Firm risk and profitability are significantly and positively correlated

Table II. Correlation matrix

LDR	SDR	AGE	SIZE	AST	PROF	GROW	RISK
1.0000							
0.1282	1.0000						
(0.0008)							
0.0367	0.2318	1.0000					
(0.3758)	(0.0000)						
0.0170	0.0262	0.1444	1.0000				
(0.6574)	(0.4926)	(0.0003)					
0.2186	0.5352	0.2474	0.0240	1.0000			
(0.0000)	(0.0000)	(0.0000)	(0.5241)				
0.1784	0.2110	0.0883	0.0001	0.0620	1.0000		
(0.0000)	(0.0000)	(0.0291)	(0.9980)	(0.0997)			
0.1781	0.0576	0.0586	0.0088	0.0402	0.1086	1.0000	
(0.0000)	(0.1860)	(0.2021)	(0.8374)	(0.3504)	0.0111		
0.0224	0.0218	0.0295	0.0068	0.0186	0.3330	0.0298	1.0000
(0.5599)	(0.5689)	(0.4649)	(0.8562)	(0.6217)	(0.0000)	(0.4874)	

Note: P-values are in brackets

Overall, the magnitude of the correlation coefficients

indicates that multi-collinearity is not a potential problem

in the regression models.

5.2 Regression results

Generally, the results of this study show signs consistent with theoretical predictions. The regressions proved to be statistically significant at 1 per cent for both long-term debt and short-term debt models. The regression results are reported in Table III. The regression results however indicate that the effects of some of the parameters were marginal (that is age, size, and growth in the case of the long-term debt ratio and age, and size in the case of the short-term debt ratio). Therefore a Wald coefficient test

based on a chi-square distribution was carried out to further test whether each of these coefficients were different from zero. The results as shown in Table IV indicate that the null hypotheses, that the coefficients of the variables are equal to zero can be rejected in favour of the alternate hypotheses. Thus, the coefficients, though marginal could be used in explaining the capital structure of Indian IT firms.

The results of this study support the hypothesis of a positive relationship between long-term debt ratio and age of the firm (H1a) but contradict the negative relationship between short-term debt ratio and age of the firm (H1b).

Table III. Regression coefficients

	Model 1: long-term debt				Model 2: short-term debt			
Variable	b	Std-error	z	Sig.	b	Std-error	z	Sig
Age	0.0020	0.0008	2.4700	0.0130	0.0030	0.0017	1.7800	0.0750
Log (size)	0.0108	0.0034	3.1700	0.0020	0.0279	0.0060	4.6200	0.0000
Asset Structure	0.1342	0.0313	4.2800	0.0000	0.5028	0.0381	13.1900	0.0000
Profitability	0.1614	0.0434	3.7200	0.0000	0.2839	0.0959	2.9600	0.0030
Risk	0.0025	0.0049	0.5100	0.6110	0.0211	0.0134	1.5700	0.1170
Constant	0.2460	0.0784	3.1400	0.0020	0.0181	0.1339	0.1400	0.8920
R-squared		0.1392				0.3877		
Wald chi^2		249.35				412.39		
Prob _ chi^2		0.0000				0.0000		

This implies that older firms are believed to have good track records and as such are able to access debt more easily than newer firms which have no track record or credit history. As expected, the results show a positive and statistically significant relationship between long-term debt ratio and size of the firm. This could be explained by the fact that relatively bigger firms are more diversified and are perceived as having lower risk. Thus, they are capable of attracting more debt especially long-term debt. Smaller firms on the other hand have difficulty attracting long-term debt because of the severe information asymmetry problems between owner-managers of the small firms and potential lenders. Also long-term debt is likely to be proportionally more expensive for small firms because of the fixed transaction cost. The information asymmetries and transaction cost arguments therefore limit the attractiveness of debt, in particular long-term debt. The results also show a positive relationship between size and short-term debt ratio.

With respect to asset structure, the results show signs as hypothesized. There is a significantly positive relationship between asset structure and long-term debt. Since small firms are perceived as risky ventures, they are often required to provide more valuable collateral when applying for long-term debt financing. As the assets substitution effect is stronger within small firms, the owner has greater discretion, leading to higher

monitoring costs by banks and other suppliers of long-term debt financing. This leads these institutions to require for more valuable collateral rather than concentrating on accounting information. The statistically significant inverse relationship between asset structure and short-term debt is consistent with firms matching their duration of assets and liabilities.

Consistent with the pecking order arguments, in all two regressions, the coefficients for profitability are negative and significant. The significantly negative relation obtained between profitability and debt ratios (long-term and short-term) also confirms the hypothesis that less profitable firms are more likely to require external debt financing than more profitable ones. The relationship between growth and debt ratios prove to be positive for long-term debt and negative for short-term debt. The sign for the growth variable in terms of the relationship with long-term debt ratio is consistent with our H5a. But the short-term model lacks statistical significance. Finally, the risk variable indicates a negative relationship with long-term debt ratio but a negative relationship with short-term debt ratio. However, the results of both models appear not to be statistically significant.

VI.   DISCUSSION

The study shows very interesting results in terms of the capital structure of IT firms. Short-term debt constitutes

a relatively high proportion of total debt of IT firms. This represents a little over 36 percent of total financing. Indian IT firms are mostly capable of accessing short-term credit in financing their operations. This is because short-term debt tends to attract relatively lower interest compared to Long-term debt. Another possible explanation is the fact that these firms often have no option and are compelled to over rely on short-term credits because of the developing nature of the Indian long-term debt market. Our finding on age and long-term debt confirms the results of Petersen and Rajan (1994) that older firms have higher debt ratios since they should be higher quality firms. This result partly supports the findings of Hall et al. (2004) who found age to be positively related to long-term debt but negatively related to short-term debt. However, the result is contrary to that of Esperança et al. (2003) who maintained that age of the firm is rather negatively associated with both long-term and short-term debt. In this study, the results indicate that relatively mature firms in terms of their age in business are assumed to have good reputation with both long-term and short-term debt providers, thus increasing their chances of attracting more debt capital. For instance, firms with long business relationships with banks and suppliers could have easier access to bank loans at favourable terms and also trade credits at a reasonably longer period compared to their newer counterparts.

Contrary to theorizing, the results of this study show that size is also positively related to short-term debt. This finding suggests that relatively larger firms find it easier to attract both long-term and short-term credit (such as trade credits). Similar result was obtained by Cassar and Holmes (2003), Esperança et al. (2003) and Hall et al. (2004) in terms of the relationship between size and long-term debt ratio, but they had contrasting finding with respect to the short-term debt model. In terms of the contrasting finding between size and short-term debt, the result may seem to suggest that small businesses in developing countries have difficulty accessing short-term credit. Relatively smaller firms denote higher risk and this could cause not only banks but also short-term credit providers to shy away from lending to such firms. In developed countries, relatively bigger firms may have the option of relying more on long-term debt and less on short-term debt because of the developed nature of their long-term capital markets. This is very unlikely in a less developing market such as India, where firms continue to experience serious credit constraints.

Our results generally confirm the fact that firms in India and other countries try to finance their fixed assets with long-term debt, and their current assets with short-term debt. This result also supports the findings of previous empirical studies (see Chittenden et al., 1996; Jordan et al., 1998; Michaelas et al., 1999; Cassar and Holmes, 2003; Hall et al., 2004; Sogorb-Mira,2005). Since firms with low asset structure have greater difficulty accessing long-term debt, the only option is to fall on short-term debt finance.

The relationship between profitability and debt levels implies that higher profits increase the level of internal financing, thus, firms that generate internal funds generally tend to avoid external debt finance. While profitable firms may have better access to debt finance than less profitable ones, the need for debt finance may possibly be lower for highly profitable firms if the retained earnings are sufficient to fund new investments. In terms of the relationship between profitability and long-term debt, it could be explained that highly profitable firms tend to present more risk for banks, implying that both the firms and the banks may less likely prefer long-term debt for highly profitable firms. Banks prefer stable growth to high profitability. Another likely explanation is that profitable firms exhibit low bank debt ratio and may refuse to apply for bank loan because, unlike other firms they do not require external debt funding or may decide to let pass good projects instead of resorting to fresh bank loans. Therefore the more profitable the firm, the less need it has to borrow either long-term or short-term, confirming H4a and H4b. The findings from this study clearly provide support for results of studies by Cassar and Holmes, 2003; Esperança et al.,2003; Hall et al., 2004).

In terms of firm growth, our finding could be explained by the fact that growth is likely to put a strain on retained earnings and push the firms to borrow long-term. In other words, firms with high growth require more external financing to finance their growth. Financing growth opportunities often result in conflict between the owner-manager and outside lenders (moral hazard in the form of asset substitution). In order to avoid such conflict, small firms often resort to short-term debt. With respect to the long-term debt model, the same sign was obtained by Cassar and Holmes (2003), Hall et al. (2004) and Sogorb-Mira (2005). Clearly, it is expected that Indian IT firms with high growth potentials will seek more external finance especially long-term debt in financing their growth, supporting the position of Aryeetey et al. (1994) and Abor and Biekpe (2006).

VII. CONCLUSIONS

This study examined the determinants of capital structure of firms in India. This study specifically focused on It sector in India. First, the results show that short-term debt constitutes a relatively high proportion of total debt of Indian firms . Second, the positive relationships between the debt ratios and both age, and size suggest that age and size of the firms are very important in influencing firms access to debt finance. Newer and smaller firms are often discriminated against when applying for external debt finance. These confirm the life cycle. Third, the significantly positive relationship between asset structure and long-term debt ratio denotes the

fact that asset tangibility or collateral plays an important role in firms access to long-term debt finance. Firms with lower portions of fixed assets in their total assets are likely to encounter difficulty accessing long-term debt capital because of their inability to produce the required collateral. Thus, the ability to provide collateral still remains a determining factor for firm's access to long-term credit in India. The negative association found between asset structure and short-term debt ratio however implies that firms try to finance their fixed assets with long-term, and their current assets with short-term debt, thus, supporting the asset maturity matching principle in SMEs. Fourth, the results clearly support the pecking order theory that more profitable SMEs demand less debt. This is because profitable SMEs would have a preference for inside financing over outside debt financing, as the cost of outside financing is greater for the firm.

The results of this study have delivered some insights on the capital structure of firm.

Clearly, the issue of capital structure is an important strategic financing decision that firms have to make. However, the results have shown that firms are often discriminated against since age, size, and asset 'collateralbility' are used as measures for firms' access to long-term credit. This study contributes to the literature on small business finance in a number of respects. The findings of the study certainly provide a framework for understanding the capital structure and financing of firms, and have significant theoretical and practical implications.

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