

Identifying Factors Affecting Capital Structure of Indian Banks

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Abstract

Capital Structure is treated as one of the most important areas of study in the modern finance. The source of long term capital for any organization is very crucial element for its future growth and prospectus. Modigliani and Miller (1958) concluded in their research that the value of the firm is independent of its capital structure. Ever since then the debate on capital structure has not stopped and a number of studies have been conducted. But most of the studies have been conducted in developed markets and a very few studies are available in Indian context (in terms of period and number of firms). Moreover all whatever is available is confined mostly on manufacturing sector and very little empirical research is done in the context of Indian Banking sector. This necessitates the importance of an in-depth study of capital structure of Indian banks. Banking prior to 80's and banking now, present a perfect study of contrast. Yesterday's compulsions no more appear in today's priority. What was important in those days has lost its significance today. Study of capital structure of Indian banks has also taken importance in recent years. The paper aims to study the factors that affect of capital structure of Indian banks.

Introduction

The word Capital Structure (CS) reflects the way in which an organization makes its financing decisions but it is not complete in fact it also indicated the way it makes its investment decisions. Financing and investment decisions are interrelated to each other and are strategic in nature. It was a long standing belief that the value of a firm depends upon its capital structure i.e. financing decisions and thus firms should use that type of financing mix that maximizes not only the value of the firm but also shareholders profits. But this argument was challenged by Modigliani and Miller (1958), they by their research concluded that the value of the firm is independent of its financing decisions under certain condition. Once these conditions phase out firms will try to select new balance between debt and equity so as to maintain an optimum capital structure. Ever since then the debate on capital structure and its determinants has intensified with different researchers using data of different periods, different methods trying to explain their set of views. Another fact to be noted is that these studies have been primarily conducted in the developed markets and very less is known about organizations of developing markets.

Since the opening of economy in India the country has become one of the fastest growing economies in the world. Reforms in India have brought about rapid changes in the structure of financial markets and also in banking sector. Banking prior to 80's and banking now, presents a perfect study of contrast. Yesterday's compulsions no more appear in today's priority. What was important in those days has lost its significance today. Unfortunately very little studies are available in terms of period and number of firms on what is the factors that determine the capital structure of the Indian banking sector. Information about capital structure of Indian banking sector is very less. This study concentrates on identifying the factors that determine the capital structure of Indian banking sector.

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Literature Review

Modigliani and Miller (1958) in their research concluded that the value of the firm is independent of capital structure and that the value of an unlevered firm is equal to that of levered firm. This research was based on a number of assumptions considered to be assumption of perfect capital market, one of the assumptions was absence of taxes. These assumptions which were highly unrealistic attracted heavy criticism towards the findings of the research.

Modigliani and Miller (1963) took tax aspect into consideration and came up with a conclusion that because of tax shield on debt the value of levered firm is more than the value of an unlevered firm and this value is equal to the value of the tax shield. Modigliani and Miller (1977) modified earlier research of 1963 and incorporated effect of personal taxes.

Jensen and Meckling (1976), optimal capital structure is obtained by trading off the agency cost of debt against the benefit of debt. In agency, theory, Jensen and Meckling firstly identify conflicts between shareholders and managers because of management's ownership of less than 100% of the equity. Agency models have predicted a positive association between leverage and firm value, default probability, extent of regulation, free cash flow, liquidation value, and the importance of managerial reputation. Leverage is expected to be negatively associated with growth opportunities, interest coverage, and probability of reorganization following default. It has been argued that firm value and leverage are positively associated because these two endogenous variables move together in response to some exogenous factors (Hirschleifer and Thakor, 1989).

Harris and Raviv (1990) conclude that high leverage can be associated with large firm value, higher debt level, and lower probability of reorganization following default. For Stulz, the optimal capital structure is obtained by a trade-off between the benefit of debt (avoiding investing in value decreasing projects) and cost of debt (avoiding investing in value decreasing projects). Stulz (1990) argues that managers are reluctant to issue debt but if there is a threat of a takeover, they are likely to issue debt.

Myers and Majluf (1984) showed that if investors are less well informed than company insiders and equity is issued, it will be mis-priced. Mis-pricing can be avoided if the firm uses external funds, then low risky debt, and finally equity (in that order) to finance new investment. This is called the "pecking order theory" of financing. Several empirical implications of this theory have been identified.

Korajczyk et al. (1990) argue that the underinvestment problem is less severe after information releases such as annual reports. Finally, firms with less tangible assets in relation to the total firm value will have more information asymmetries.

Haugen and Senbet (1978) argued that if market prices are determined by rational investors then bankruptcy cost will be nonexistent.

Demirguc-Kunt and Maksimovic (1996) found a negative relationship between level of stock market development and leverage and a positive relationship between bank development and leverage.

Titman and Wessels (1988), among others, find that leverage increases with fixed assets, non-debt tax shields, growth opportunities, and the size of the firm, and decreases with advertising expenditures, profitability, volatility, research and development expenditures, and uniqueness of the product.

Amihud et al, (1990) Empirical research on corporate considerations finds that capital structure is an anti-takeover device. Leverage is found to be positively correlated with the level of managerial ownership and negatively correlated with the probability of being successfully taken over (Palepu, 1986). Gonedes et al (1988) find lower leverage in firms with dispersed ownership.

Objectives of the Study

- To identify the factors that affects the capital structure of Indian banks.
- To identify relationship if any between the various factors affecting the capital structure of Indian banks.

Research Methodology

Data Collection

For the purpose of this study a total of ten commercial banks were selected on the basis of their past performance for the last six years. Five banks were public and five banks were private. The data was collected for a period of six years i.e. 2005 to 2011.

Variables

Previous studies have identified profitability, growth, ownership structure, probability of financial distress (business risk), presence of financial distress costs as measured by asset tangibility, and taxes, among others, as determinants of capital structure. These independent variables and others have been used to test capital structure of Indian manufacturing firms. Booth et al (2001) it is difficult to delineate variables for testing under individual theories of capital structure however some variables to be tested are described below.

- **Profitability (PR):** Titman and Wessels (1988) used operating profit rate of return (EBIT /ASSETS) as a measure of profitability. Other measures include return on assets and return on sales (profit margin). For this study ROA i.e Return of Assets is used as proxy for profitability.
- **Liquidity (LI):** Mayers and Rajan (1998) argue that when agency costs of liquidity are high, outside creditors limit the amount of debt financing at the disposal of the company and therefore a negative relationship emerges between liquidity and leverage. Hence a firm's liquidity position should have an impact on its leverage. For this study ratio of current assets to current liabilities is used a proxy for the liquidity of the firm's assets.
- **Size (SI):** A large number of researches showed that the size of firm plays an important role in the capital structure decisions. Size is measured by the natural logarithm of sales or the natural logarithm of total sales. For the purpose of this study

natural logarithm of assets is used as proxy of firm size.

- **Probability of Financial Distress / Risk (RI):** Firms with high debt component commit themselves to large amount of interest payments, though they receive tax benefits on it but are subjected to higher degree of financial distress in conditions of adverse markets. Probability of financial distress is the variability of the return on assets and this is the business risk proxy.
- **Tangibility (TAN):** Theories state that tangibility is positively related to leverage. The proxy for agency costs and the costs of financial distress is tangibility of a firm's assets, which is defined as total assets less current assets, a definition used by Rajan and Zingales (1995). In this study the ratio of net fixed assets to total assets is used as a measure of the firms asset structure.
- **Non Debt Tax Shield (NDT):** It includes items like depreciation and investment tax credits. Pecking order theories and trade off theories both imply that non debt tax shields and leverage are negatively related. This study uses ratio of depreciation plus amortization to total assets as proxy for non debt tax shield.
- **Free Cash Flows (FC):** There are different researches showing different patterns of relationship between free cash flows and firms leverage. In this study for free cash flows EBDIT is used.
- **Growth (GR):** The growth factor is measured by the percentage change of assets or market-to-book ratio, which is the market value of equity divided by the book value of equity or equity market value divided by net worth Titman and Wessel (1988).

Regression Analysis

For the purpose of analysis of data the research has used regression analysis. Since the assumptions of regression analysis and that of the research work are in line with each other regression analysis has been

used for the analysis. Capital Structure is the dependent variable whereas Profitability, Liquidity, Size, Risk, Tangibility, Non- Debt Tax Shield, Free Cash Flows, Growth are independent variables. The variables used in the study are based on book value (Myers 1984). Normalization of the data was done before using the regression model. Ordinary Least Square Method is better suited for this purpose (Shah and Hijari, 2004) hence the same has been used for this research. Further it has been observed that no autocorrelation exists among the various variables. The regression equation used is as follows.

$$CS_{it} = \hat{\alpha}_0 + \hat{\alpha}_1 SI_{it} + \hat{\alpha}_2 TAN_{it} + \hat{\alpha}_3 PR_{it} + \hat{\alpha}_4 GR_{it} + \hat{\alpha}_5 NDT_{it} + \hat{\alpha}_6 FC_{it} + \hat{\alpha}_7 LI_{it} + \hat{\alpha}_8 RI_{it} + \epsilon_{it} \dots \dots \dots (2)$$

From the values given in Table I we can infer that

- Since the mean of Leverage is 0.3785 it can be said that approximately 37% banks considered in this study use debt as a source for their financing need and a majority of them i.e. 63% use equity as a source for their investment.
- The mean of Profitability is 41.532 which help us to say that the banks considered in our study earn an approximate return of 41% on the assets employed by them. This was despite of economic crises during the period of our study.
- The mean value of Liquidity turned out to be 26.752 which indicate that during the period of study period had quite comfortable liquidity position.
- The mean value of Tangibility is 0.4921 this indicates that fixed assets account of 49% of the total assets of the banks under study.
- The mean of Growth is 32.851 indicating that the banks during the study period witnessed an average growth of 32.85%.

Correlation analysis was carried out between dependent and independent variables (Table II)

From table II it can be inferred that Size, Growth and Tangibility are positively correlated to capital structure as far as Indian banks are concerned.

Further it can be concluded that Non Depreciation Tax Shield, Risk, Profitability and Free Cash Flows are negatively correlated to capital structure. (0.05 level of significant)

It clearly implies that banks which are large and are growing very fast have more components of debt in their capital structure but banks which are more profitable have less component of debt in their capital structure also have free cash available with them. Further Ordinary Least Square Regression model was used to identify the influence that independent variables have on dependant variables (Table III)

$$R^2 = 0.397$$

$$\text{Adjusted } R^2 = 0.427 \quad \text{F Value} = 18.016$$

From table III following inferences can be drawn

- Since the value of $R^2 = 0.397$ it can be inferred that the independent variables have an impact on the capital structure of manufacturing firms to the extent of 39%.
- The F Value of 18.016 and P Value of 0.000 lead us to the inference that the model is statistically significant.
- There exists a negative correlation between capital structure and risk.
- There exists a negative correlation between capital structure and free cash flow.
- There exists a negative correlation between capital structure and profitability.
- There exists a negative correlation between capital structure and liquidity.
- There exists a negative correlation between capital structure and NDTs.
- There exists a positive correlation between capital structure and size.
- There exists a positive correlation between capital structure and growth.
- There exists a positive correlation between capital structure and tangibility.

Conclusion

In this paper an attempt has been made to analyze the capital structure of Indian banks using regression analysis. Capital structure was taken as dependent variable and risk, free cash flow, profitability. Liquidity, non debt tax shield, size, growth and tangibility were taken as independent variable. It has been observed that risk, free cash flow, profitability, liquidity and non debt tax shield are negatively correlated with capital structure. However it cannot be generalized for the entire banking sector since the capital structure of banking apart from the factors considered under study is affected by regulatory factors which have not been considered. Further studies can be conducted with larger sample size and incorporating the effect of regulatory factors to generalize any findings for the entire banking industry.

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Table I : Data analysis & Interpretation

S. No	Variable Name	Mean Value	Median Value	Standard Deviation
1	Leverage / Capital Structure	0.3785	0.2918	0.031
2	Profitability	41.532	37.178	0.542
3	Liquidity	26.752	22.751	0.269
4	Size	13.081	9.276	0.086
5	Risk	16.927	12.175	1.095
6	Tangibility	0.4921	0.4397	0.0364
7	Non Depreciation Tax Shield	29.653	22.519	0.197
8	Free Cash Flow	297.374	191.763	98.586
9	Growth	32.851	31.836	0.227

Table II : Correlation Analysis was Carried out between Dependent and Independent Variables

Variables	CS	PR	NDT	FC	TAN	LI	SI	RI	GR
CS	1								
PR	-0.186*	1							
NDT	-0.042	-0.47	1						
FC	-0.74	-0.73	0.66	1					
TAN	-0.161*	-0.182	0.529*	0.971	1				
LI	-0.129*	-0.64	-0.171*	-0.071	-0.173	1			
SI	-0.057	-0.135	0.083	0.682*	0.295*	0.062	1		
RI	-0.128	-0.094	-0.19	-0.004	0.284*	0.714*	0.068	1	
GR	-0.079	-0.048	-0.157*	-0.048	0.061	0.673*	-0.029	0.367*	1

Table III : Ordinary Least Square Regression Model was used to identify the influence that independent variables have on dependant variables

Variables	Coefficient	T- Value	P- Value
Constant	0.368	5.117*	0.000
PR	-0.174	-3.272*	0.000
NDT	-0.218	-4.179*	0.000
FC	-0.293	-2.159*	0.005
TAN	0.614	5.729*	0.000
LI	-0.224	-1.728*	0.005
SI	0.061	1.634	0.397
RI	-0.292	-1.694*	0.000
GR	0.372	1.847*	0.048
* Significant at 0.01 and 0.05 level			