Vol 4 Issue 11 May 2015 ISSN No :2231-5063

International Multidisciplinary Research Journal

Golden Research Thoughts

Welcome to GRT

RNI MAHMUL/2011/38595 **ISSN No.2231-5063**

Golden Research Thoughts Journal is a multidisciplinary research journal, published monthly in English, Hindi & Marathi Language. All research papers submitted to the journal will be double - blind peer reviewed referred by members of the editorial board.Readers will include investigator in universities, research institutes government and industry with research interest in the general subjects.

Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.aygrt.isrj.org

International Recognized Double-Blind Peer Reviewed Multidisciplinary Research Journal
Golden Research Thoughts
ISSN 2231-5063 **Impact Factor :3.4052(UIF)**
Volume - 4 | Issue - 11 | May - 2015 Available online at www.aygrt.isrj.org

DETERMINANTS OF CAPITAL STRUCTURE OF INDIAN FIRMS: A STUDY OF BSE 500 COMPANIES

Prateek Bedi
Research Scholar, Department of Financial Studies, University of Delhi.

Short Profile

Prateek Bedi is Research Scholar at Department of Financial Studies, University of Delhi.

Co - Author Details :

Devesh Shankar
Research Scholar, Faculty of Management Studies, University of Delhi

ABSTRACT:

Optimizing a company's capital structure is critical to its ability to achieve near-and long-term growth objectives. The optimal capital structure should ensure companies retain sufficient capital levels during both good times and bad. Most of the companies have problems in creating and maintaining a structure that will be viable through multiple business cycles. For such an important and multi-faceted decision, it is useful to study and ascertain the factors that determine this composition. The literature offers competing theories, and empirical studies show diverse results. Hence, the topic still remains an active area of research. To capture the empirical practices with regard to determinants of capital structure in India, an important emerging market, we run OLS regression of six financial variables identified as potential explanatory variables to arrive at the capital structure of 357 non-financial companies which are part of BSE 500 group. We find that five of our six independent variables i.e. profitability, size, tangibility, business risk and debt coverage ratio have statistically significant impact on capital structure for an Indian non-financial company.

KEYWORDS

Capital Structure, Irrelevance theory, Trade-off theory, Agency cost theory, Pecking order theory, Debt ratio

Article Indexed in :
DOAJ Google Scholar DRJI
BASE EBSCO Open J-Gate

1.INTRODUCTION :

Every business organization needs funds to run its activities, survive in the complex & competitive environment and expand with time. This need for funds indicates a crucial decision that a business organization is obliged to make – Financing. In fact, this decision has direct consequences on the composition of liabilities side of every firm's balance sheet. There are two broad sources of financing for every firm - Equity and Debt. The first question that the Chief Financial Officer (CFO) has to answer is: How much Equity and How much Debt? There are logical reasons behind a rational decision and the decision regarding capital structure is no different. So the next question in line is: What factors affect the firm's financing decisions? Or rather, what are the factors that determine the capital structure of a firm? Researchers and practitioners in the area of corporate finance have devoted extensive time and effort to ascertain the answer to this important research question through theoretical and empirical means. However, there is no consensus as to how much equity and debt a firm should have and even further, if it really makes a difference. The continuation of this debate means that a unifying theory of capital structure is still awaited. The research conducted on determinants of capital structure for developed markets is extensive whereas the literature for emerging economies is relatively thin. It is quite evident that there are differences between developed and emerging markets with regard to access of capital and fund mobilisation. Moreover, there are differences between developed and emerging markets with respect to economic growth, government laws & regulations, state of capital markets, investor awareness, corporate and personal tax systems, corporate governance etc. These differences serve as a motivation to study the driving factors of capital structure of firms in the emerging markets. Out of the emerging market basket, this paper focuses on India and attempts to find determinants of capital structure for 357 non-financial firms in the BSE 500 group of companies for a period of five years starting from 1st April 2009 till 31st March 2014.

2.LITERATURE REVIEW

There are two schools of thought on capital structure. One school advocates the existence of an optimal capital structure and argues that a prudent mixture of debt and equity capital can minimize the overall cost of capital and maximize the value of the firm. They consider capital structure decisions to be relevant for value creation (see Niu, X. 2008). The other school agrees with the arguments of Modigliani and Miller (1958) and insist that financing decision does not affect the value of the firm, rendering capital structure decisions as irrelevant. The modern theory of capital structure began with the work of Modigliani and Miller (1958), Rajan and Zingales (1995), Harris and Raviv (1991).

There are four distinct theoretical approaches in the literature with regard to capital structure. These are the Irrelevance theory of Modigliani and Miller (1958), the trade-off theory of Bradley et al. (1984), Agency Cost theory by Jensen and Meckling (1976) and pecking order theory by Myers and Majluf (1984). After the establishment of Modigliani and Miller's theory, three theories of capital structure such as trade-off theory, agency cost theory and pecking order theories have been developed.

2.1 The Irrelevance Theory

Modigliani and Miller (1958) illustrate that firm's value is unaffected by its capital structure under certain key assumptions. This theory is regarded as the starting of modern theory of capital structure. Assumptions of perfect capital markets, where insiders and outsiders have symmetric information; no transactions costs; no bankruptcy costs; or no distortionary taxation exist. If all of these assumptions hold true, the choice between equity and debt financing becomes irrelevant. This makes internal and external funds perfect substitutes. Although the empirical evidence does not support the theoretical conclusions of Modigliani and Miller (1958) analysis, it is still accepted. If the key assumptions of Modigliani and Miller are relaxed, firm's value is ought to be affected by capital structure.

2.2 The Trade-off Theory

The firm is viewed as setting a target debt-equity ratio in a static trade-off framework, and gradually moves towards it. One important advantage of debt financing over equity financing is that the interest payable by firms are tax-deductible, while equity income is taxed at the prevailing corporate tax rate. Another deterrent to debt financing is that it increases financial risk. Therefore, the firm's debt-equity decision is regarded as a trade-off between interest tax shields of debt and the costs of financial distress by managers. Specifically, capital structure is determined by matching the targets that the firm has set for tax rates, assets type, business risk, profitability and bankruptcy costs. Myers (1984) opines that holding the assets and investment plans constant, the firm is balancing the costs and benefits of borrowings.

The trade-off between tax advantage of debt and various leverage related costs determine the optimal capital structure of the firm. Differences in structure of financial system, firm-specific characteristics, tax rates and bankruptcy law, will lead to differences in the target leverage ratio across companies and across countries. The trade-off theory postulates that firms which have substantial tangible assets and high taxable income should have high debt ratio. In reference to profitability, trade-off theory postulates that a high debt ratio is expected for firms which are more profitable as they have higher debt-serving capacity and higher taxable income. In terms of growth opportunities, the firms with high growth opportunities should borrow less because it is more likely to lose value in financial distress.

2.3 Agency Cost Theory

Theory based on agency costs illustrate that firm's capital structure is determined by agency costs. These agency costs include the costs for both debt and equity issue. Costs related to monitoring expenses of the equity holders; bonding expenses of the manager; and reduced welfare for equity holder due to the divergence of manager's decisions from those which maximize the welfare of the principal, are included under equity issue. Debt issue increases the owner-manager's incentive to invest in high-risk projects that yield high returns to the owner-manager but increase the likelihood of failure that the debt holders have to share if it is realized. If debt-holders anticipate that the manager has an incentive to invest in high risk projects to yield high returns by borrowing at lower rates from

debt holders, they would demand a higher premium to compensate for that risk, thereby, increasing the cost of debt. Hunsaker (1999) describes that in this case, the agency cost of debt includes the opportunity cost caused by the impact of debt on the investment decisions of the firm; the monitoring and bond expenditures by both the bond-holders and the owner-manager; and the costs associated with bankruptcy and reorganization. The optimal debt-equity ratio involves a trade-off between equity and debt since both of these incur agency costs.

2.4 The Pecking Order Theory (Asymmetric Information)

Theories based on asymmetric information assume that outside investors are rarely aware of the private information generally possessed by firm managers and insiders about the firm's characteristics of return stream or investment opportunities. Under this framework, leverage choice is designed either to mitigate the inefficiencies of investment decisions that are caused by information asymmetry (Myers and Majluf 1984) or used as a signal about the private information of insiders that is to be sent to outside investors (Ross 1977). Myers and Majluf (1984) deliberate that information asymmetries that lead to inefficiencies in a firm's investment decisions can be avoided by using debt. In this case, the asymmetric information arises because the managers know more about the firms' opportunities and threats, than outside investors. Due to this information asymmetry between investors and firm insiders, the equity may be under-priced by the market in case the firm decides to finance a project by issuing equity. Myers (1984) discusses the hypothesis of pecking order in which firms prefer internal to external financing and debt to equity if they issue securities. No information needs to be made available to public in case the managers decide to use internal funds for financing as these finances do not incur any floatation costs and require no additional disclosure financial information about the firms' investment opportunities and their potential profits. If a firm must use external funds, the preference is to use the following order of financing sources: debt, convertible securities, preferred stock, and common stock. Since only common stocks hold the right in the management, this preference reflects managers' incentives to retain control of the firms and willingness to avoid the negative market reaction to an announcement of a new equity issue. To summarise, Pecking order theory (first suggested by Donaldson in 1961 and modified by Myers and Majluf in 1984) states that companies prioritize their sources of financing (from internal financing to equity) according to the cost of financing, preferring to raise equity as a financing means of last resort. Hence, internal funds are used first, and when that is depleted, debt is issued, and when it is not sensible to issue any more debt, equity is issued.

3.OBJECTIVES

This study uses firm specific data to investigate the determinants of capital structure of Indian companies based on well-known optimal capital structure theories. For this purpose we identified six factors, namely profitability, tangibility, size of the firm, liquidity, business risk and debt coverage ratio have been identified (see Handoo, A., & Sharma, K. 2014). These factors have been selected on the basis of review of empirical research on the subject and the respective theoretical justification for each factor. The sample comprises of 357 non-financial listed Indian companies belonging to BSE 500 group. Considering the dependent variable (total debt ratio) and all the 6 independent variables (profitability,

tangibility, size, liquidity, business risk, debt coverage ratio), the objectives and associated hypotheses have been tabulated as under:

S. No.	Objective	Statement of Hypothesis
1	To study the impact of profitability as a determinant of capital structure on Total Debt ratio for Indian non-financial companies	H_{01}: There is no significant impact of profitability of Indian companies on Total Debt Ratio
2	To study the impact of tangibility as a determinant of capital structure on Total Debt ratio for Indian non-financial companies	H_{02}: There is no significant impact of tangibility of Indian companies on Total Debt Ratio
3	To study the impact of size as a determinant of capital structure on Total Debt ratio for Indian non-financial companies	H_{03}: There is no significant impact of size of Indian companies on Total Debt Ratio
4	To study the impact of liquidity as a determinant of capital structure on Total Debt ratio for Indian non-financial companies	H_{04}: There is no significant impact of liquidity of Indian companies on Total Debt Ratio
5	To study the impact of business risk as a determinant of capital structure on Total Debt ratio for Indian non-financial companies	H_{05}: There is no significant impact of Business risk of Indian companies on Total Debt Ratio
6	To study the impact of debt coverage ratio as a determinant of capital structure on Total Debt ratio for Indian non-financial companies	H_{06}: There is no significant impact of Debt coverage ratio of Indian companies on Total Debt Ratio

4.DATA

The data sample contains cross-sectional data for 395 non-financial companies which are listed on the Bombay Stock Exchange and are part of the BSE 500 group. The data for these companies has been sourced from Prowess database and covers the 5 year period from 1st April 2009 till 31st March 2014. The accounting data available from the balance sheets of these companies has been used for analysis. For all variables (dependent and independent), simple average has been calculated to arrive at a single figure representing the value of the variable for the chosen period of 5 years and to absorb structural changes if any. If there are any missing values for a variable for a particular year, average of the values for remaining years is calculated.

5.RESEARCH METHODOLOGY

Ordinary Least Squares (OLS) multiple regression analysis has been used to study the impact of each independent factor on capital structure of sample companies and build a consolidated econometric model. All five assumptions of OLS regression i.e. the linear specification, normality of error term, homoscedasticity of error term, no auto-correlation of error terms and no multicollinearity assumption have been verified and corrected for.

Total debt ratio: Total debt ratio is a financial ratio of the total debt and total assets of a company. It indicates the total borrowings as a percentage of a company's assets and has been taken as the dependent variable. This variable is proxy for the measurement of leverage of a company. This variable shall be used to represent the capital structure of the company and the impact of all explanatory factors shall be considered on this variable.

Following is the list of independent variables used in the study.

1. Profitability: The financial benefit that arises when the amount of revenue generated from a business activity exceeds the expenditure, costs, and taxes needed to carry out the activity. Owners of the business are claimants for this profit generated, who may or may not decide to spend it on the business. Operating Profit ratio i.e. PBITDA (Profit before interest, tax, depreciation and amortisation) divided by total assets is used as a measure of profitability.

2. Assets Tangibility: All types of tangible assets (e.g. land, building, machines and equipment) that possess some degree of debt capacity are referred as tangible assets. In this study we use a generally accepted proxy to measure asset tangibility that is calculated as the ratio of net fixed assets to total assets.

3. Size: Large firms are often more diversified and have more stable cash flows. They also have a lower probability of default compared to smaller ones. Thus, larger firms should have a lower risk of financial distress. Natural logarithm of total assets is used as a measure of a firm's size in this study.

4. Liquidity: Also known as "marketability", liquidity is the ability to convert an asset to cash immediately. Liquidity has been calculated by dividing the total current assets by the total current liabilities.

5. Business Risk: Volatility in revenues earned from the core activities of a business is termed as business risk. Firms need to have a stable business model to sustain and pay off debt. The standard deviation of operating income i.e. Profit before interest, tax, depreciation and amortisation (PBITDA) is used as a proxy for business risk.

6. Debt Coverage Ratio: Firms that can meet their interest obligations even if they suffer a considerable decline in PBIT (profit before depreciation, interest and taxes), are said to have a high debt coverage ratio. Therefore, there is a directly proportional relationship between the capacity of a firm to borrow and its ability to fulfil its fixed payment obligation. Hence, higher capacity of the firm to service debt will

lead to higher debt ratio. Ratio of PBIT to total interest payment made in a financial year has been taken as proxy of debt coverage ratio.

Following is the table summarising the variables, their scale of measurement and proxies used in the analysis for the same:

Variable	Measurement Scale	Proxy
Dependent Variable	Ratio	Total Debt/Total Assets
Independent Variable 1: Profitability	Ratio	PBITDA/Net Sales
Independent Variable 2: Tangibility Ratio	Ratio	Net Fixed Assets/ Total Assets
Independent Variable 3: Size of the Firm	Absolute Number	Natural Log of Total Assets
Independent Variable 4: Liquidity	Ratio	Current Assets/Current Liabilities
Independent Variable 5: Business Risk	Absolute Number	Volatility of PBITDA
Independent Variable 6: Debt Coverage Ratio	Ratio/Times	PBIT/Interest Expense

6.THE MODEL

In order to find out the relevant impact of the six financial variables on the capital structure of non-financial Indian firms, we run the following OLS regression:

$$\textbf{Capital Structure} = \alpha + \beta_1(\text{Profitability}) + \beta_2(\text{Tangibility}) + \beta_3(\text{Size}) + \beta_4(\text{Liquidity}) + \beta_5(\text{Business Risk}) + \beta_6(1/\text{Debt Coverage Ratio}) + e$$

where Capital Structure = Total Debt ratio i.e. Total Debt/Total Assets. This is the dependent variable of the regression

a = Intercept Term. This is the value that capital structure takes when all independent variables are equal to 0,
β_1, β_2, β_3, β_4, β_5 and β_6 are partial regression coefficients which represent sensitivity of profitability, tangibility, size, liquidity, business risk and 1/Debt Coverage Ratio respectively to capital structure,and e is the random error term

Instead of taking Debt Coverage Ratio as it is, we have taken reciprocal of Debt coverage ratio to make the model specification linear. Hence the direction of relationship of relationship of capital structure with debt coverage ratio will be interpreted accordingly.

7.RESULTS AND INTERPRETATION

The above model has been tested for linear specification, normality of error term, homoscedasticity, no autocorrelation and no multicollinearity using relevant tests in Eviews. The

estimates were obtained using OLS regression model and HAC Newey-West (Heteroscedasticity and Autocorrelation corrected) technique. Following are the results of the regression:

Model Summary	
R Squared	0.238627
Adjusted R Squared	0.225575
S.E. of regression	0.141631
F-Statistic	18.28268
Sig. (F-Statistic)	0.000000

Variable	Unstandardised Coefficient	Standard Error	t statistic	p value
α	-0.115546	0.071061	-1.626019	0.1048
Profitability	0.000768	9.57E-05	8.024097	0.0000
Tangibility	0.344863	0.051639	6.678406	0.0000
Size	0.027569	0.006670	4.133378	0.0000
Liquidity	-0.014635	0.007619	-1.920946	0.0556
Business Risk	-9.25E-07	2.58E-07	-3.582359	0.0004
1/Debt Coverage Ratio	0.016285	0.003581	4.547575	0.0000

•R^2 of 23.86% implies that the six independent variables are collectively able to explain 23.86% variation in Capital Structure.

•F-statistic of 18.28 and Sig. (F-Statistic) value of 0.0000 shows that the model has statistically significant explanatory power.

•Intercept value of -0.115546 is the value of ratio of Total Debt to Total Assets attained by a company on an average even when values of all independent variables are equal to 0. Further p-value (0.1048) shows that intercept is statistically not significant.

•Profitability's coefficient (β_1) of 0.000768 implies that if the profitability of a company increases by 1 unit then ratio of total debt to total assets of the company increases by 0.000768 units and vice-versa. Further p-value (0.0000) shows that profitability has a statistically significant impact on the capital structure of a company.

•Tangibility's coefficient (β_2) of 0.3448 implies that if the tangibility of a company increases by 1 unit then ratio of total debt to total assets of the company increases by 0.3448 units and vice-versa. Further p-value (0.0000) shows that profitability has a statistically significant impact on the capital structure of a company.

•Size's coefficient (β_3) of 0.2756 implies that if the size of a company increases by 1 unit then ratio of total debt to total assets of the company increases by 0.2756 units and vice-versa. Further p-value (0.0000) shows that size has a statistically significant impact on the capital structure of a company.

•Liquidity's coefficient (β_4) of -0.0146 implies that if the liquidity of a company increases by 1 unit then ratio of total debt to total assets of the company decreases by 0.0146 units and vice-versa. Further p-value (0.0556) shows that liquidity does not have a statistically significant impact on the capital structure of a company.

•Business Risk's coefficient (β_5) of -9.25E-07 implies that if the business risk of a company increases by 1 unit then ratio of total debt to total assets of the company decreases by 9.25E-07 units and vice-versa. Further p-value (0.0004) shows that liquidity has a statistically significant impact on the capital structure of a company.

•1/Debt Coverage Ratio's coefficient (β_6) of 0.0162 implies that if the reciprocal of debt coverage ratio of a company increases by 1 unit then ratio of total debt to total assets of the company increases by 0.0162 units and vice-versa. Further p-value (0.0000) shows that 1/Debt Coverage Ratio has a statistically significant impact on the capital structure of a company.

In terms of our statistical hypotheses defined earlier, we can tabulate the results as follows:

S. No.	Objective	Statement of Hypothesis	Result (α=.05)
1	To study the impact of profitability as a determinant of capital structure on Total Debt ratio for Indian non-financial companies	H_{01}: There is no significant impact of profitability of Indian companies on Total Debt Ratio	Rejected
2	To study the impact of tangibility as a determinant of capital structure on Total Debt ratio for Indian non-financial companies	H_{02}: There is no significant impact of tangibility of Indian companies on Total Debt Ratio	Rejected
3	To study the impact of size as a determinant of capital structure on Total Debt ratio for Indian non-financial companies	H_{03}: There is no significant impact of size of Indian companies on Total Debt Ratio	Rejected
4	To study the impact of liquidity as a determinant of capital structure on Total Debt ratio for Indian non-financial companies	H_{04}: There is no significant impact of liquidity of Indian companies on Total Debt Ratio	Not Rejected
5	To study the impact of business risk as a determinant of capital structure on Total Debt ratio for Indian non-financial companies	H_{05}: There is no significant impact of Business risk of Indian companies on Total Debt Ratio	Rejected
6	To study the impact of debt coverage ratio as a determinant of capital structure on Total Debt ratio for Indian non-financial companies	H_{06}: There is no significant impact of Debt coverage ratio of Indian companies on Total Debt Ratio	Rejected

Hence, we can clearly observe that five of our six independent variables i.e. profitability, size, tangibility, business risk and debt coverage ratio have statistically significant impact on capital structure i.e. Total Debt/Total Assets for an Indian non-financial company.

8.CONCLUSION

Determination of an optimal capital structure is a crucial decision for companies. An ideal capital structure does not only limit the risk of default, but has the potential to substantially increase profitability and return to equity holders. Companies should understand the determinants of capital structure to effectively manage the associated risks (see Tiemann, D., & Lead, A. 2013). In order to quickly respond to both positive and negative changes in the marketplace, companies ought to focus on key financial variables that determine their capital structure. Five such variables have proved to significantly affect capital structure of a group of 357 Indian non-financial companies. If the firms can keep a track of these variables they may be able to achieve the right mix of debt and equity for their present and future finance needs.

REFERENCES

1.Bradley, M., Jarrell, G., & Kim, E. (1984). On the existence of an optimal capital structure: theory and evidence. Journal of Finance, 39(3), 857e880.
2.Handoo, A., & Sharma, K. (2014).A study on determinants of capital structure in India. IIMB Management Review, 26(3), 170–182. http://doi.org/10.1016/j.iimb.2014.07.009
3.Harris, M., and Raviv, A., (1991).The theory of capital structure. Journal of Finance.46, 297-355.
4.Jensen, M., & Meckling, W. (1976). Theory of the firm: managerial behaviour, agency costs and ownership structure. Journal of Financial Economics, 3(4), 305e360.
5.Pathak, Joy, What Determines Capital Structure of Listed Firms in India?: Some Empirical Evidences from The Indian Capital Market (April 21, 2010). Available at SSRN: http://ssrn.com/abstract=1561145 or http://dx.doi.org/10.2139/ssrn.1561145
6.Modigliani, F., & Miller, M. (1958).The cost of capital, corporation finance, and the theory of investment. American Economic Review, 48(3), 261e297.
7.Myers, S. C., & Majluf, N. (1984). Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics, 13(2), 187e221.
8.Niu, X. (2008). Theoretical and Practical Review of Capital Structure and its Determinants. International Journal of Business and Management, 3, 133–139. Retrieved from http://www.ccsenet.org/journal/index.php/ijbm/article/view/1640
9.Pahuja, A and Sahi A, 2012. Factors affecting capital structure decisions, empirical evidence from selected Indian firms. International journal of marketing, financial services and management research, 1(3)
10.Rajan, R., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. Journal of Finance, 50(5), 1421e1460.
11.Tiemann, D., & Lead, A. (2013). Determining an Ideal Capital Structure, (I), 218764.
12.Tongkong, S. (2012). Key factors influencing capital structure decision and its speed of adjustment of Thai listed real estate companies. Procedia - Social and Behavioral Sciences, 40, 716–720. http://doi.org/10.1016/j.sbspro.2012.03.254