FACTORS DETERMINING CAPITAL STRUCTURE OF INDIAN COMPANIES

K. Bhagya Lakshmi
Assistant Professor.
School of Management Studies
Chaitanya Bharathi Institute of Technology
Hyderabad, AP -500059

Abstract:
This paper investigates the significant factors determining capital structure decision of the listed companies in BSE in India with a sample of top 20 listed companies in BSE Sensex for a period between 2011 to 2014. The main source of the study is from secondary data of firm's financial reports. Correlation and multiple regression analysis are used for present analysis and the results of study revealed that there is a negative correlation between leverage and firm's growth, liquidity, profitability and tangibility. But size is a major determinant of capital structure of firms in India.

Keywords: *Capital Structure .profitability leverage growth and size*

INTRODUCTION

Capital Structure is a mix of a company's long-term debt, specific short-term debt, common equity and preferred equity. The capital structure is how a firm finances its overall operations and growth by using different sources of funds. Debt comes in the form of bond issues or long-term notes payable, while equity is classified as common stock, preferred stock or retained earnings. Short-term debt such as working capital requirements is also considered to be part of the capital structure.

Capital structure decision of a firm is one of the key financial decisions reflecting how a firm finances its assets or raises capital for its business. The two primary choices are debt and equity, and most commonly a combination of both.

The financial manager is considered to see that through capital structure the value of the firm to be increased (Optimal capital structure). The decisions how firms work out their capital structure is one of the most extensively researched areas in corporate finance .There are number of research studies on capital structure determinants.(Chen,2004; Mazur, 2007; Frank & Goyal, 2009; Getzmann, Lang & Spremann, 2010). Bhabra, Lui and Tirtiroglu (2008) indicated that significant factors influencing capital structure decision are proportion of tangible assets, size, profitability, and growth opportunities. In the International dimension, it has been observed that some of the determinants of capital structure include the country norms, type and size of industry and also host Government control (Lee and Kwok, (1988) as quoted in (Al-Najjar and Taylor 2008). Frank and Goyal (2009) suggested that the reliable factors for explaining market leverage are median industry leverage, market-to-book assets ratio, tangibility of assets, profits, log of assets and expected inflation. Pathak has investigated135 firms in Bse and found factors such as tangibility of an asset, growth ,firm size, business risk ,liquidity and profitability has influence on leverage structure of Indian firms.A negative relation between profitability and leverage is found in Rajan and Zingales (1995), Supanvanij (2006), Sayilgan et al. (2006) and Sheikh & Wang (2010). Sayeed M.A.(2011) found profitability is irrelevant in determining capital structure Fanet al.(2008) examine the capital structure and debt maturity choices in a cross-section of company in 39 developed and developing countries. They find a stronger

relationship between profitability and leverage in countries with weaker shareholder protections. Jensen and Meckling (1976), Easterbrook (1984), and Jensen (1986) suggest a positive relationship between leverage and profitability.

This paper attempts to analyze, how the factors like profitability, liquidity, tangibility, size and growth are affecting capital structure decisions on Indian firms.

Objectives:

1. To study the significant factors affecting capital structure of the firms
2. To identify the variables which has major effect on leverage of the firms
3. To analyze how the factors affecting capital structure decision are related to leverage.

HYPOTHESES

The following hypothesis is formulated for the study

Ho1: Growth doesn't affect the capital structure of an organization.

Ho2: Liquidity doesn't affect the capital structure of an organization.

Ho3: Profitability doesn't affect the capital structure of an organization.

Ho4: Size doesn't affect the capital structure of an organization.

Ho5: Tangibility doesn't affect the capital structure of an organization

RESEARCH METHODOLOGY

In the present study the data has collected from 20 listed companies in Bombay stock exchange based on Market capitalization and also collected data related to independent variables for each company like size ,growth ,liquidity ,profitability and tangibility for 4 years period(2011-2014). Correlation co-efficient analysis and Regression analysis are used to test the factors determining capital structure of the listed companies traded in Bombay stock exchange. Data is obtained from two sites such as www.bse.com and www.finance.yahoo.com.moneycontrol.com

Table: 1.1, Dependent and Independent variables and their definitions

Determinants		Definitions	Signs
Dependent variable	Debt- Equity ratio	Share holders fund divided by Outsiders fund	+/-
Independent variable	Size	Natural logarithm of Sales	+/-
	Growth	Percentage Growth of Total assets	+/-
	Liquidity	Ratio of Current assets to Current liabilities	+/-
	Profitability	Profit before tax divided by Total assets	+/-

	Tangibility	Fixed assets divided by Total assets	+/-

Variables Description:

The variables used in this study include the dependent variable as capital structure the independent variables profitability, liquidity, tangibility, size and growth

Capital Structure:

A firm's capital structure is a set or mix of securities by which it fulfills its financing needs. Capital structure is comprised of debt, equity or mix of both. The proxy used for calculating capital structure is debt to equity ratio (D/E).

Profitability:

Profitability expresses the profit or gain of a firm indicating the firm is performing well; it is one of the factors affecting the capital structure of firm. The proxy used for calculating profitability is percentage of pre- tax profit divided by total assets.

Liquidity:

Liquidity is another factor affecting capital structure. According to Sarlija & Harc the more liquid the firm is the less is the risk of bankruptcy and high the confidence of investors in the company. The proxy used for calculating liquidity is current ratio that is current assets/ current liabilities. Firms with higher liquidity ratios are preferred to acquire more debt because of great ability to meet short term obligations (Ozkan, 2001).

Tangibility:

Tangibility of assets is calculated as net fixed assets/ total assets. According to Gaud, and Masnoon & Anwar there is a positive relation between tangibility and leverage which means that if tangibility of firm is high the firm can add more debt to its capital structure. Negative relationships have been reported between leverage and fixed assets in small and medium firms (Daskalakis and Psillaki, 2009) and in less developed economies (Joever, 2006).

Size of Firm:

Size of a firm is measured as sales volume of a firm. The proxy used for calculating size is the log of net sales. Many authors, Masnoon & Anwar, Rajan & Zingales in their research studies have found out a negative relation between size of firm and its leverage as there is more transparency about large firms which reduces the undervaluation of new equity issue and encourages the firms to finance through their equity. Shah A (2005) suggested the negative relationship between size and leverage of the firm. While there are many different proxies for size, in this study, the natural logarithm total assets of the firm is used

Regression models
the present study uses a method of dynamic multiple regression model. In order to determine factors influencing capital structure decisions, the model is specified as follows:

Z = β0 + β1X1 + β2X2 + β3X3 + β4X4 + ---------βnXn +ε

Z=Regression score , β0=Regression constant ,β1=Regression coefficient ,1----Xn=Independent Variables and ε =Error term

Moreover, dynamic regression model is also provided work for identify the firm's speed of adjustment towards target capital structure. Therefore, the partial adjustment model is suggested as follows:

RESULTS AND DISCUSSIONS

Table: 1.2 Descriptive Statistics

Variables	Number	2011		2012		2013		2014	
		Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
D/E ratio	20	1.567895	3.692171	1.459474	3.335998	1.401579	3.263308	1.417895	3.201714
Size	20	10.06048	1.058019	10.40347	0.969825	10.56925	0.936794	10.71505	0.907019
Liquidity	20	2.143333	1.883479	2.231965	1.902112	2.409403	2.023955	2.02808	1.725278
Tangibility	20	0.639905	0.445178	0.598359	0.384159	0.573726	0.368174	0.615302	0.492502
Profitability	20	0.340348	0.289005	0.33811	0.269865	0.368053	0.377009	0.36874	0.362461
Growth	20	1.183738	0.112718	1.205892	0.066872	1.174353	0.130435	1.184073	0.143992

The above table shows the values of mean, and standard deviation of independent, dependent variables. The variable Size has high mean value of 10.06048 in 2011 and it is having high mean value of 10.40347 in 2012 and 10.56925 in 2013 and 10.71505 in the year 2014 which is highest in all the years when compared to other variables.

Table: 1.3 Correlation Analysis 2011

Variables	D/e ratio	Size	Liquidity	tangibility	Profitability	Growth
D/e ratio	1					
Size	0.208851	1				
Liquidity	-0.45275	-0.14839	1			
Tangibility	-0.5492	0.154964	-0.10352	1		
Profitability	-0.47493	0.023851	0.102276	0.673334	1	
Growth	-0.18126	-0.31335	0.256141	0.097754	0.111986	1

The correlation analysis is calculated between dependent variable i.e. D/E Ratio and Independent variables are like size, liquidity, tangibility, profitability and growth are calculated by using karl pearson correlation method.

The above table shows the analysis of correlation between dependent and independent variables in the year 2011. The independent variables "size" having significant affect on capital structure when compared to other variables. As it is positively correlated. So it shows that the size has the major impact on capital structure decision in 2011

Table: 1.4 REGRESSION ANALYSIS FOR THE YEAR 2011

variable	Coefficients	Standard Error	t Stat	P-value
Constant	-8.502101228	10.90184759	-0.779877095	0.447594854
Size	0.9513003	0.641810852	1.482212862	0.158986209
Liquidity	-0.800462249	0.358097744	-2.235317763	0.041027931
Tangibility	-4.969122728	2.013974922	-2.467321054	0.026135981
Profitability	0.032851936	3.039874289	0.010807005	0.991519851
Growth	4.421907429	6.131865717	0.721135725	0.481915414
R Square	0.524628406			
Adjusted R square	0.366171208			
F-statistics	3.310852475			

The above table shows the regression results of determinants of capital structure of Indian companies in 2011. The adjusted R squared is 0.366171208 which indicates that about 36.61 percent of the variability in debt equity ratio. The F-statistic of 3.310852475 is highly significant at 5% level of significance. From the t-statistics, it indicates among the factors, size appear significant at 1 percent significance level . The coefficient value of --0.800462249 for liquidity, -4.969122728 for tangibility shows an inverse relationship debt ratio of indian companies. It is also observable that there are strong negative effects of liquidity and tangibility on debt ratio of Indian companies.

Table: 1.5 Correlation Analysis 2012

Variables	D/e ratio	Size	Liquidity	tangibility	Profitability	Growth
D/e ratio	1					
Size	0.217294	1				
Liquidity	-0.45166	-0.19365	1			

Tangibility	-0.59875	0.118919	-0.12657	1	
Profitability	-0.51603	-0.12648	0.162529	0.595188	1
Growth	-0.25323	-0.31095	0.137436	0.198955	0.516698	1

The above table shows the analysis of correlation between dependent and independent variables in the year 2012. The independent variables "size "having significant affect on capital structure it is positively correlated. So it shows that the size has the major impact on capital structure decision in 2012

Table: 1.6 REGRESSION ANALYSIS FOR THE YEAR 2012

variable	Coefficients	Standard Error	t Stat	P-value
Constant	-0.375375662	14.74863375	-0.02545	0.98003
Size	0.711829514	0.608877105	1.169086	0.260613
Liquidity	-0.667270435	0.30452545	-2.19118	0.04464
Tangibility	-5.351218498	1.887053282	-2.83575	0.012522
Profitability	-0.013501602	3.013182225	-0.00448	0.996484
Growth	-0.840707179	9.982369105	-0.08422	0.933996
R Square	0.564129375			
Adjusted R square	0.418839166			
F-statistics	3.882776275			

The above table shows the regression results of determinants of capital structure of Indian companies in 2012. The adjusted R squared is0.418839166 which indicates that about 41.88 percent of the variability in debt equity ratio. The F-statistic 3.882776275 is highly significant at 5% level of significance. From the t-statistics, it indicates among the factors, size appear significant at 1 percent significance level. The coefficient value of all independent variables except size shows an inverse relationship debt equity ratio of Indian companies. It is also observable that there are strong negative effects of liquidity and tangibility, profitability and growth on debt equity ratio of Indian companies.

Table: 1.6 Correlation Analysis 2013

Variables	D/e ratio	Size	Liquidity	Tangibility	Profitability	Growth

D/e ratio	1					
Size	0.233031	1				
Liquidity	0.111956	-0.15985	1			
Tangibility	-0.59308	0.037587	-0.31714	1		
Profitability	-0.37682	-0.18887	-0.07836	0.66378	1	
Growth	0.007915	-0.09654	0.324299	-0.40571	-0.44062	1

The above table shows the analysis of correlation between dependent and independent variables in the year 2013. The independent variables "size "and growth has significant affect on capital structure compared to other variables. it is positively correlated. So it shows that the size and growth has the major impact on capital structure decision in 2013

Table: 1.6 REGRESSION ANALYSIS FOR THE YEAR 2013

variable	Coefficients	Standard Error	t Stat	P-value
Constant	3.149694703	10.58982316	0.297426563	0.770220348
Size	0.788651424	0.680069085	1.159663689	0.264312753
Liquidity	-0.082509293	0.332505854	-0.248143881	0.80738808
Tangibility	-6.060919385	2.366477841	-2.561156196	0.021712177
Profitability	0.276787552	2.380272018	0.116284	0.90897003
Growth	-5.656578154	5.483616054	-1.031541614	0.31863337
R Square	0.447566138			
Adjusted R square	0.263421518			
F-statistics	2.430514327			

The above table shows the regression results of determinants of capital structure of Indian companies in 2013. The adjusted R squared is 0.263421518 which indicates that about 26.34 percent of the variability in debt equity ratio. The F-statistic of 2.430514327 is highly significant at 5% level of significance. From

the t-statistics, it indicates among the factors, size appear significant at 1 percent significance level. The coefficient value of independent variables liquidity, tangibility growth shows an inverse relationship debt equity ratio of Indian companies. It is also observable that there are strong negative effects of liquidity and tangibility, and growth
on debt equity ratio of Indian companies

Table: 1.7 Correlation Analysis 2014

Variables	D/e ratio	Size	Liquidity	Tangibility	Profitability	Growth
D/e ratio	1					
Size	0.254916	1				
Liquidity	-0.33554	-0.16708	1			
Tangibility	-0.5329	0.108024	-0.0799	1		
Profitability	-0.41215	-0.1546	0.077486	0.585083	1	
Growth	-0.23592	-0.14406	0.119682	-0.48716	-0.35714	1

The above table shows the analysis of correlation between dependent and independent variables in the year 2014. The independent variables "size" has significant affect on capital structure when compared to other variables. It is positively correlated. So it shows that the size has the major impact on capital structure decision in 2014

Table: 1.8 REGRESSION ANALYSIS FOR THE YEAR 2014

variable	Coefficients	Standard Error	t Stat	P-value
Constant	5.751165954	9.881419547	0.582018	0.5692
Size	0.634850255	0.666253797	0.952865	0.355762
Liquidity	-0.567479318	0.339167464	-1.67315	0.115018
Tangibility	-3.671758879	1.565049153	-2.3461	0.033128
Profitability	-0.925935092	2.04739115	-0.45225	0.65756
Growth	-6.35028371	4.616122842	-1.37567	0.189118
R Square	0.483223945			
Adjusted R	0.31096526			

square				
F-statistics	2.805222532			

The above table shows the regression results of determinants of capital structure of Indian companies in 2014 The adjusted R squared is 0.31096526 which indicates that about 31.09 percent of the variability in debt equity ratio. The F-statistic of 2.805222532 is highly significant at 5% level of significance. From the t-statistics, it indicates among the factors, size appear significant at 1 percent significance level. The coefficient value of all independent variables except size shows an inverse relationship debt equity ratio of Indian companies. It is also observable that there are strong negative effects of liquidity and tangibility, profitability and growth on debt equity ratio of Indian companies

Testing of Hypotheses

Statistical Techniques Results

As per the present study there is a positive correlation between the size of the firms and debt equity of the firms in capital structure of the Indian companies .Based on the empirical results of this study,

Ho1: Growth doesn't affect the capital structure of an organization .There is a negative relationship between the capital structure and firm's growth" .This hypothesis results in true Because in this study the empirical results shows that there is a insignificant relationship between growth of the firms and capital structure. Correlation and regression coefficients between growth and capital structure result in acceptance of the null hypotheses that growth doesn't affect the debt equity ratio for all the years and it is also proved by the studies of (De Jong & van Dijk, 2007) that negative relationship between growth and leverage when a company has underinvestment problems

Ho2: Liquidity doesn't affect the capital structure of an organization. As there is negative corelation between the liquidity and capital structure and has at-statistics of -2.235 in 2011 and-2.191 in 2012 , -0.248 in 2013 and -1.673 in 2014 and has negative coefficient at 5% significance level and shows liquidity is not a major determinant of capital structure of the firms in india . if liquidity is expected more the cost of equity is lowered and leverage decreases

 Ho3: Profitability doesn't affect the capital structure of an organization .There is a negative relationship between the capital structure and firm's profitability" .This hypothesis results in true Because results shows that there is a insignificant relationship between   profitability of the firms and capital structure. Correlation and regression coefficients between profitability and capital structure result in acceptance of the null hypotheses that profitability doesn't affect the debt equity ratio for all the years and it is also proved by the earlier studies of (Huang and Song, 2002 and Rajan and Zingales 1995)

Ho4: Size doesn't affect the capital structure of an organization .this hypothesis come false Because in this study the empirical results shows that there is a significant relationship between size and capital structure. Correlation and regression coefficients between size and capital structure result in rejection of the null hypotheses that size doesn't affect the debt equity ratio for all the years

Ho5: Tangibility doesn't affect the capital structure of an organization It is observed that t value for asset tangibility is negative which is highly significant at .05 level. Therefore, the null hypothesis is accepted that "There is no significant impact of asset tangibility of Indian companies on capital structure". If

there is high tangibility lower will be the risk of creditor and increases the value of assets in the case of bankruptcy (Rajan and Zingales 1995) And positive relationship between tangibility and leverage is expected but the present study shows that negative relationship between tangibility and leverage and accepts null hypothesis to be true

CONCLUSION

 In the present study we accepted null hypothesis of H01,H02 ,H03,H05 that there is a weak negative relationship between leverage and growth, liquidity ,profitability and tangibility of the firms .it is analyzed by the results that positive relationship exists between size and capital structure as it is a major determinant of capital structure of the firms in India

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