

DETERMINANTS OF CAPITAL STRUCTURE IN AUTOMOBILE COMPANIES

An Empirical Study

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Abstract

Capital structure is the way a company arranges its finances through a combination of equity and debt. It is designed with the aim of maximizing the market value of the company in the long run. The study seeks to explore the determinants of capital structure with the financial leverage of the Indian listed Automobile companies for the period 2008-09 to 2014-15. Automotive industry is perhaps the greatest engine of economic growth. In India, automobile is one of the largest industries, showing impressive growth and has been significantly contributing to the overall industrial development in the country. The determinants include liquidity, size, tangibility, profitability, risk, non-debt tax shield and growth. The study employs the Panel Data Models to examine the relation between capital structure determinants and financial leverage. The study has revealed that profitability, growth and tangibility significantly influence the financial leverage.

Key words: *Capital structure, Automobile sector, Financial leverage, Liquidity, Profitability, India*

INTRODUCTION

Finance lays the foundation that helps the organisation to grow. It is the circulatory system which provides an enterprise the needed co-

operation between various activities. The most crucial function of finance is, to accumulate finance as and when it is needed for a new activity and for a follow-up activity. It is mainly concerned with the identification of potential sources of funds and tapping these sources as per the funding requirements of the firm, often referred to as the

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capital structure decisions. Capital structure means a certain proportion of equity and debt made use of by the firms to finance their assets. The main function of a finance manager is to make sure that it accrues lesser cost in raising capital whereby maximizing shareholders wealth. A right blend of debt-equity assumes implication as it affects the risk return profile of the business. Excessive amount of debt will jeopardize the continued existence of the business. On the contrary, higher equity component in the financing mix will result in lower earnings per share for the shareholders. Capital structure must be planned vigilantly keeping in mind the shareholders wealth.

Capital structure decision is the vital one since the profitability of an enterprise is directly affected by such decision. The successful selection and use of capital is one of the key elements of the firm's financial strategy. Hence, proper care and attention need to be given while determining the capital structure decision.

Relevant Concept

The following section gives a brief description of the variables identified through the review of literature which affect the capital structure of the firm.

Financial Leverage

Financial leverage, also referred to as trading on equity occurs when firms organize debt funds with some interest charges. Higher the financial leverage, lower the cushion for paying interest on borrowings and vice-versa. Capital structure decisions should always aim at having debt component in total component in order to increase the earnings available for equity shareholders. Total debt ratio indicates the fraction of a company's assets offered in comparison to debt.

Liquidity

Liquidity is yet another factor affecting the capital structure. Greater the liquidity of a firm, lesser will be the risk of bankruptcy. This would instil the confidence of investors in the company. Liquidity is the ability to convert an asset to cash

immediately. It is also known as "marketability". The balancing of debt and equity is possible only when the marketability is created for the securities of the firm. Capital structure decisions will be affected by the firm's ability to market its securities.

Profitability

The earnings that are generated determine the efficiency of the capital that is employed in the business. It is the benefit that is gained when revenue exceeds expenditure, costs and also taxes. It is assumed that higher the profit earned by the firm would result in higher retained earnings and ultimately firms would use lesser debt funds and vice-versa.

Tangibility

Asset tangibility refers to all types of tangible assets that possess some degree of debt capacity. When the firms possess high tangible assets, it gives them the prospects for raising higher level of debt using assets as the collateral. The lenders also reduce their risk of suffering from agency costs.

Size of the firm

Size of the firm also acts as an influential factor in the financing decision of the company. It is measured as a sales volume of a firm. Larger the size, more stable is the cash flow, easier excess to the capital market. But, it is not quite the same for the small size firms. In contrast to the small size firms, financial distress risk is lower for large size firms.

Growth

Yet another determinant that influences the capital structure decision of the firms. When the firm has a lower growth rate, it means that it uses internally generated funds and if the firm is growing at a faster pace than it uses external funds as investors are willing to invest in such businesses.

Risk

Bankruptcy and agency cost implies a negative relation between capital structure and business risk. It states that if the firm's earnings are less stable then the chances for the failure of the business and also the bankruptcy costs will be greater. This would lead to increase in business risk. And as a

result of that the lenders will not lend fearing the company's failure in the repayment of loans. Hence, debt portion in the capital structure would be lesser.

Non-debt Tax Shield

In order to reduce the tax bill, firms want to exploit the tax deductibility of interest. If they have other tax deductible item which they can use as tax shield other than debt then the leverage is low. So, there exists a negative relationship between non debt tax shield and leverage.

REVIEW OF LITERATURE

The capital structure is considered to be a very important decision, as it affects the cost of capital, earnings per share, net profit, and liquidity of the firm. These factors have a significant impact on the value of the firm. In this regard, one needs to know various capital structure theories, propounded by Modigliani and Miller (1958, 1963 & 1977), the Pecking Order Theory, proposed by Myers and Majluf (1984) and the Agency Theory of Jensen and Meckling (1976).

Modigliani and Miller Theory (1958) showed that under perfect market capital structure decision is irrelevant to the value of the firm. In 1963, they argued that the capital structure is relevant to the firm-value under taxation condition. In 1977, they modified their theory and said that personal taxes are relevant to value of the firm.

Pecking Order Theory states that the firm will borrow, rather than issuing equity", when internal cashflow is not sufficient to fund the capital expenditures. Thus, the amount of debt reflects the firms' cumulative need for external fund.

The agency cost theory is based on the assumption that agents may not always act in the interest of the principals and it will lead to conflict of interest between agents with those of

principals and results in loss in return to the principals. Agency cost includes monitoring expenditures of principal, bonding expenditure by the agent and residual loss.

Venkatamuni and Hemanth (2008) investigated the nature and pattern of financing the capital structure of Indian Corporate in general and Pharmaceutical companies which are registered at NSE in specific. The hypothesis associated with target adjustment model and pecking order model are tested using OLS, GLS and Fixed Effects Models. The results obtained contradict the pecking order model and supports the target adjustment model. Firstly, the study finds that the companies are financially stable and mostly finances their investments from retained earnings, and for the rest, they depend more on equity rather than debt finance. Secondly, the paper infers that Indian pharmaceutical companies finance their investments mainly through internal funds and the rest is financed through equity share capitals.

Raj and Ajit (1996) examined the effect of financing decisions on the value of the firm both at the micro and macro level. They found that there is no significant relationship between change in capital structure and the value of the firm at the micro level and concluded that in India too, wherein the capital markets are imperfect as in west, companies have no definite way of determining their optimal capital structure. Because capital structure is just one of the many factors like the reputation of promoters, management of the company, economic and political conditions, role of bulls and bears, government policies, etc., which are not measurable as they are qualitative in nature.

Chang, Chen and Liao (2014) identified profitability, industry leverage, asset growth, tangibility, firm size and state control variables as the factors which effect the book leverage of the Chinese firm. They concluded that the state-control as a dummy variable was negatively associated with the book leverage.

Anshu and Kapil, (2014) sought to identify major determinants of capital structure of 870 listed Indian firms, comprising both private-sector companies and government companies for the period 2001 to 2010. They concluded that the factors, such as profitability, growth, asset tangibility, size, cost of debt, tax rate, and the debt-serving capacity have significant impact on the leverage structure chosen by firms in India.

Saurabh and Anil (2015) study the impact of capital structure on firm financial performance. 422 companies which are listed on Bombay Stock Exchange are accounted for to analyze the relationship between leverage and firm performance for a period of 10 years ranging from 2003 to 2013. The authors have employed Ratio analysis and panel data approach to perform the empirical study. Return on asset, return on equity and Tobin's Q are used as the proxy for measuring the firm's financial performance. It was found that financial leverage has no impact on the firm's financial performance parameters of return on asset and Tobin's Q. However, it is negative and significantly correlated with return on equity. Other independent variables like size, age, tangibility, sales growth, asset turnover and ownership structure are significant determinants of a firm's financial performance in the Indian manufacturing sector.

Arindam and Anupam (2015) investigate the influence of capital structure on dividend payout ratio of the companies listed in BSE500 in India during the pre- and post-period of the recent global recession. The pre-recession period has been taken from 2001–2002 to 2006–2007 while the post-recession period from 2007–2008 to 2012–2013. The dependent variable taken into consideration is the Dividend Payout ratio and 10 independent variables taken into consideration are Business Risk, Size (Log Sales), Size (Log assets), and Growth Rate (Assets), Interest Coverage Ratio, Degree of Operating Leverage, Financial Leverage, Return on Assets, Tangibility and Non-Debt Tax Shield. Logistic regression has been utilized in this study. It is found from the study that Growth Rate (Assets) and Profitability (Return of Assets) are significant variables influencing the

dividend payout ratio in the prerecession period, while Profitability (Return of Assets) and Financial Leverage are significant variables influencing dividend payout ratio in the post-recession period.

Reasons for selecting Automobile industry

The present study is conducted in the context of Indian Automobile industry, considered as the fastest growing sectors in the economy. Evolution of the automotive component industry inevitably followed the growth of the Auto industry. In the last decade, Automobile industry has contributed 5% GDP in the Indian economy. It has the capacity to develop into a significant market for automobile manufacturers. As such through this study, the various factors considered in financing decisions of automobile sectors were identified and are used to understand the impact of each independent variable, while raising total debt for Indian firms in the automobile sector.

OBJECTIVES OF THE STUDY

The present study seeks to achieve the following objectives:

1. To identify the various factors that influence the capital structure of a firm; and
2. To assess the impact of each independent variable, while raising total debt for an automobile company in India.

Hypotheses

The following hypothesis was formulated :

H₀: There is no significant relationship amongst financial leverage and the explanatory variables (liquidity, profitability, tangibility, size of the firm, growth, risk, non-debt tax shield).

RESEARCH METHODOLOGY

Data and Data Source

The study focuses on the capital structure in the selected Indian Automobile sector. The necessary data has been acquired from 'PROWESS Database' of CMIE. Data was extracted by analysing the financial statements for the years 2008-2009 to 2014-2015. The total number of companies listed in Auto Index National Stock Exchange are 15 which are as follows: Amarajabat Ltd, Ashok Leyland Ltd

Apollo Tyres Ltd, Amtek Auto Ltd, Bharat Forge Ltd, Bajaj Auto Ltd, Bosch Ltd, Eicher Motors Ltd, Exide Industries Ltd, Hero MotoCorp Ltd, MRF Ltd, Mahindra and Mahindra Ltd, Maruti Suzuki India Ltd, MothersonSumi Systems Ltd, Tata Motors Ltd.

Variables Considered

On the basis of an enormous literature review, the variables (factors) affecting the capital structure decisions were identified. These are listed in **Table 1**.

Table 1:
List of Factors affecting Capital Structure

Variables	Definition	Type of Variables
Financial Leverage	Total Debt/ Total Assets	Dependent
Liquidity	Total Current Assets/ Total Current Liabilities	Independent
Profitability	EBIT/Total Assets	Independent
Tangibility	Net Fixed Assets/ Total Assets	Independent
Size of the firm	Log of Sales	Independent
Growth	Change in Total Assets	Independent
Risk	EBIT/ EAIT	Independent
Non- Debt Tax shield	Depreciation/ Total Assets	Independent

Econometric Models Employed

Panel Data Econometric Models were employed to study the precise factors of capital structure in the automobile sector in India. The Panel data analysis uses both time dimensions and cross section dimensions. The Fixed Effects model and the Random Effects model are the most widely used models under the Panel data. In the Fixed Effects model, each cross-sectional unit has its own intercept value, while in the Random Effects model, the mean value of all cross-sectional intercepts is represented by others intercept. This model is based on the assumption that the constant will be randomly determined to ascertain the independent variables or the error. Specification

Tests, like the F-test, the LM test and the Hausman test are used to establish as to which model is appropriate to establish the relationship amongst financial leverage and capital structure determinants.

EMPIRICAL RESULTS

Descriptive Statistics:

The descriptive statistics of the selected capital structure variables of 15 automobile companies are summarised in **Table 2**.

Table 2:
Descriptive Statistics

Variables	FL	Liq.	Prof.	Tang.	Size	Growth	Risk	NDTS
Mean	0.1876	1.2723	0.1946	0.2834	4.8625	0.3104	2.3895	0.0332
Std Error	0.0359	0.3174	0.0215	0.0283	0.1325	0.0210	0.2636	0.0035
Median	0.1712	0.9401	0.1802	0.2732	4.9056	0.3237	2.0679	0.0292
Std Deviation	0.1391	1.2292	0.0833	0.1097	0.5132	0.0813	1.0210	0.0136
Variance	0.0193	1.5109	0.0069	0.0120	0.2634	0.0066	1.0424	0.0002
Kurtosis	-0.8785	10.4468	-0.2433	-1.0981	-0.8241	-0.5219	3.3259	-0.1459
Skewness	0.4649	3.0411	0.5401	-0.1554	-0.1866	-0.3444	1.7079	0.6636

As shown in the table, the growth rate of the companies in automobile sector is 31%, on an average, and the profitability is 19% which appears to be reasonably good. The Non-debt Tax Shield is only 3%.

Correlation Analysis

The results obtained from the correlation analysis are summarised in **Table 3**.

Table 3:
Correlation Matrix

Variables	FL	Liq.	Prof.	Tang.	Size	Growth	Risk	NDTS
FL	1							
LIQ	0.52	1						
PROF	-0.64	-0.350	1					
TANG	0.77	0.411	-0.450	1				
SIZE	-0.15	-0.465	0.094	-0.193	1			
GROWTH	-0.039	-0.485	-0.014	0.009	0.635	1		
RISK	0.743	0.245	-0.666	0.442	0.171	0.106	1	
NDTS	-0.111	-0.169	0.293	0.161	0.231	-0.170	-0.095	1

As shown in the table, the financial leverage has a mild negative correlation with the profitability, size, growth and NDTS. On the other hand, it has high degree of positive correlation with tangibility and risk. FL has an average degree of correlation with liquidity. Liquidity shows a moderate degree of negative correlation with profitability, size, growth and NDTS, and a modest positive correlation with tangibility. Profitability shows a negative correlation between tangibility, growth and risk and a very low degree of positive correlation with NDTS. Tangibility portrays no relation with the growth as its value is close to zero. Similarly, Size shows a low degree of positive correlation with Risk and NDTS. Growth indicates a negative correlation with NDTS and a very low

positive correlation with risk. Risk explains a negative correlation with profitability and a low positive correlation with liquidity, size and growth. It also indicates a high degree of correlation with financial leverage. NDTS shows a negative and a very low degree of correlation with all the other variables in the study. Correlations analysis shows that there is no evidence of severe multicollinearity among the variables under consideration.

Panel Data Analysis

In the panel data framework, three types of models are widely used. These are: Pooled Ordinary Least Square (OLS) regression model, Random Effects

Model (REM) and Fixed Effects Model (FEM). Fixed Effects Test, LM Test and Hausmantests are used to select the appropriate models under consideration. Fixed Effects (F-test) helps to decide between Fixed Effects Model and OLS. The LM test identifies whether REM or OLS is appropriate. We are unsuccessful not to reject the null hypothesis using LM test and conclude that REM is appropriate, which means that variance across the companies under consideration is not zero. In other words, there exists significant difference across the companies under study. While the Hausman Test helps to decide between Random Effects Model and Fixed Effects Model. On the basis of the inferences shown in the above table we it conclude that null hypothesis of the Hausman tests cannot be rejected at 10% significance level and hence REM

is more appropriate than OLS and FEM. Therefore OLS and FEM are not suitable to evaluate the relationship between Financial Leverage and the factors affecting Financial Leverage. It is also evident from the REM that we cannot reject the hypothesis due to the absence of correlation amongst firms' unobservable individual effects and Financial Leverage. But one can notice the similarities of impact in terms of signs of all the variables between FEM and REM. That is, profitability, tangibility and size has negative association and rest of the variables has positive impact on financial leverage under both FEM and REM. As per random effects model, growth is significant positively at 1%, profitability and tangibility are significant at 10%.

Table 4:
Panel Data Analysis

	OLS	FEM	REM
CONSTANT	0.011101 (0.112244)/ [0.098897]	0.210304 (0.239711)/ [0.877323]	0.102646 (0.154923)/ [0.662564]
GROWTH	0.038532 (0.030100)/ [1.280138]	0.035243 (0.021165)/ [1.665147]	0.038206*** (0.019362)/ [1.973262]
LIQ	0.011811 (0.007522)/ [1.570248]	0.001320 (0.006646)/ [0.198656]	0.002586 (0.006187)/ [0.417942]
NDTS	-0.563190 (0.621066)/ [-0.906812]	0.217456 (0.538863)/ [0.403546]	0.117471 (0.505762)/ [0.232266]
PROF	-0.397566* (0.140353)/ [-2.832617]	-0.395594** (0.171035)/ [-2.312940]	-0.452902* (0.146190)/ [-3.098039]
RISK	0.015852** (0.007769)/ [2.040265]	-0.004172 (0.005503)/ [-0.758138]	-0.001447 (0.005355)/ [-0.270285]
SIZE	-0.000338 (0.020827)/ [-0.016220]	-0.041596 (0.050760)/ [-0.819460]	-0.015621 (0.030522)/ [-0.511790]
TANG	0.738916* (0.105154)/ [7.026977]	0.870520* (0.175858)/ [4.950135]	0.823899* (0.132740)/ [6.206878]
R2	0.704228	0.919370	0.535731
F Statistics	22.78937***	28.77720***	11.04469***
Fixed Effects (F Test)		F(7, 53) = 6.67542***	
Breush Pagan LM test			Chi-square(1) = 41.0505***
Hausman test			Chi-square(7) = 10.0432

Note : The values in small brackets () are Standard Errors and the values in square brackets [] are statistics.

CONCLUSION

We analysed various the financial leverage determinants, using the Panel data Models on 15 automobile companies. Our findings support the assumption of the theory of capital structure, called the pecking order, which states an inverse relationship between the level of debt employed and the profitability. As the profit increases, companies rely less on the external debt. But still automobile sectors seem to employ more long term debt. Higher financial leverage indicates lower interest outflow despite its negative relation amongst capital structure and risk. Evidently, firms in the automobile sector have high growth opportunities with the growing demand in the sector, as the relation of growth with financial leverage has been found positive, statistically significant in the study. This indicates, higher growth motivates the firm to raise lesser level of debt component in its capital structure which helps to avail maximum amount of tax benefit and increase the amount available for the shareholders. A positive statistical significant relation was also found between financial leverage and tangibility. This supports the statistical significance of variables determining the capital structure in the automobile sector. The results support the predications of pecking order theory. The study helps companies in understanding the factors that influence capital structure of a firm and design appropriate capital structure.

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