

# Indian Automobile Industry - A Study on Its Capital Structure

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**Abstract:** Financial decisions are the most important decisions since they affect Risk and return of the shareholders. Decisions relating to the capital structure form vital among all financial decisions. This study is an attempt to analyse the determinants of the capital structure of Indian Automobile industry. Sample of the study consists of ten companies of Indian Automobile industry. Selection of companies is based on debt-equity ratio and the data availability for the period of study. The data used are secondary in nature and it has been collected from ACE Equity database for a period of sixteen years from 2005-2006 to 2020-2021. Correlation, Regression and Step wise regression were the statistical tools used for the analysis of the data. The results of the study indicate that among the sixteen variables, six variables viz., 'return on equity', 'size', 'dividend pay-out ratio', 'effective tax rate', 'cost of equity', and 'cost of debt' are the most significant factors that influence debt-equity ratio.

**Keywords:** Financial decisions, Capital structure, Debt-Equity ratio, Return on equity and Size

## INTRODUCTION

Indian industrial sector witnessed a steady growth and development in the Post Liberalization era. In any country, industries contribute more for the country's GDP and thereby for the growth of the economy. Indian industrial sector contributes 24.29 per cent of the Gross Domestic Product (GDP) (<https://statisticstimes.com/economy/country/india-gdp-sectorwise.php>) and boosts employment generation. As a result, steady industrial growth helps to compliment and sustain continued economic development.

Capital structure is a concept defining the way a company finances its total assets using two main capital sources: debt and equity. The proportion of debt and equity in the capital structure is the most important decision to be taken by the company

because the decision affects the risk and return of shareholders, which in turn affects the credibility of the company. Use of debt capital in the capital structure is termed as financial leverage. Such capital is cheaper than the equity while the cost of debt is generally lower than equity due to tax advantage is attached with its use (Sanjay Bhayani and Butalal Ajmera, 2011).

Finance, Purchase, Production, and Marketing are the core areas of a company, among those areas, categorically, management of finance plays a crucial role in any company. In finance, capital structure decisions are vital financial decisions, and indecisiveness on the capital structure may lead to financial distress and eventually to bankruptcy (Narayana Baser, Mamta Brahmabhatt, Beteshwar Singh, 2012).

## LITERATURE REVIEW

Ahmed Belkaoui (1975) in the article "A Canadian Survey of Financial Structure", concluded that debt ratios do not vary significantly among industry and the evidence do not prove that optimal financial structures are functions of their business risk. Paul marsh (1982) in the article "The Choice between Equity and Debt: An Empirical Study revealed that companies are heavily influenced by market conditions and the history of security prices in choosing between equity and debt. Jianchen and Roger strange (2005) in their article "The Determinants of Capital Structure: Evidence from Chinese Listed Companies", revealed that profitability is negatively related to the capital structure. Vukasin Kuc& Dorde Kallcanin (2021) in their article entitled "Determinants of the capital structure of large companies: Evidence from Serbia", studied the capital structure and reported that the country specific determinants, such as inflation and development of the banking sector, have significant impact on the capital structure of the largest companies

in Serbia. Aamer Shahzad, Muhammed Azeem, Mian Sajid Nazir, Xuan vinh vo. Nguyen T.M.Linh (2021) in their article entitled “The determinants of capital structure: Evidence from SAARC countries”, suggested that firms in the region are more likely to make their capital structure decisions following Pecking order theory.

**OBJECTIVE OF THE STUDY**

The objective of the study is to determine the factors that determine the capital structure of the select companies in the Indian Automobile Industry.

**SIGNIFICANCE OF THE STUDY**

Capital structure decision being one of the important decision in Financial decisions, the results of the study may help the finance managers of the company to take vital financial decisions regarding capital structure. The findings of the study may help the investors to choose the company which gives them a higher return.

**LIMITATIONS OF THE STUDY**

As the study is based on secondary data, the limitations of the secondary data will influence the study.

**METHODOLOGY**

The study has been carried out with a sample of ten companies selected from Indian Automobile industry. The companies have been selected on the basis of debt equity ratio and the availability of the data for the period of the study. Correlation, Regression and Step wise regression were the statistical tools used for the analysis of the data.

**HYPOTHESES**

There exists no association between selected independent variable and the capital structure of the select company.

**NATURE AND STRENGTH OF RELATIONSHIP BETWEEN DEBT-EQUITY RATIO AND SELECT VARIABLES – AUTOMOBILE INDUSTRY**

It is revealed from the correlation analysis that the eight variables viz., non-debt tax shield, dividend payout ratio, age, selling and distribution expenses

ratio, solvency ratio, inflation rate, bank rate and cost of debt are not significantly associated with debt-equity ratio. The other eight variables which are significantly associated with the debt equity ratio are explained hereunder.

*i) Size:* The size of the companies is found to have significant association with the debt-equity ratio. It is clear from the correlation analysis that this variable which is the natural log of gross tangible assets is negatively correlated with debt-equity ratio indicating that an increase in the size would decrease the debt level in the capital mix. The co-efficient of determination ( $r^2$ ) shows that the size accounts for 26.6 per cent of the variation in the level of capital structure.

*ii ) Profitability :* The profitability of the companies is found to be significantly associated with the debt-equity ratio. It is revealed from the analysis that this variable which is measured as the ratio of earnings before interest and tax to total assets is negatively associated with debt-equity ratio indicating that an increase in this ratio would decrease the debt level in the capital mix. The coefficient of determination ( $r^2$ ) shows that the profitability accounts for 22.6 per cent of the variation in the level of debt-equity ratio.

*iii) Liquidity:* The variable liquidity is identified to have significant association with debt-equity ratio. The variable liquidity which is measured as a ratio between current assets and current liabilities is positively correlated with debt-equity ratio, implying that a change in this ratio would positively influence the debt equity ratio. The co-efficient of determination ( $r^2$ ) shows that the variable liquidity accounts for 39.5 per cent of the variation in the level of debt-equity ratio.

**TABLE 1 CORRELATION ANALYSIS - AUTOMOBILE INDUSTRY**

Variables	r	r <sup>2</sup>
Size	-0.516**	0.266
Profitability	-0.476**	0.226
NDTS	-0.030	0.001
Liquidity	0.628**	0.395
DPR	-0.119	0.014
Growth	-0.332**	0.111
Age	0.021	0.000
ETR	0.425**	0.181
ICR	-0.173*	0.030
SDR	-0.095	0.009
ROE	-0.922**	0.850

SOL	-0.026	0.001
Inflation Rate	-0.084	0.007
Bank Rate	-0.129	0.017
Cost of Equity	0.492**	0.242
Cost of Debt	-0.017	0.000

\* Significant at five per cent level

\*\* Significant at one per cent level

iii) *Growth* : The growth of the companies is found to have significant association with the debt-equity ratio. It is revealed from the analysis that this variable which is measured as the growth rate of sales is negatively associated with debt-equity ratio indicating that an increase in this ratio would decrease the debt level in the capital mix. The coefficient of determination ( $r^2$ ) shows that growth accounts for 11.1 per cent of the variation in the level of debt-equity ratio.

iv) *Effective Tax Rate*: Effective tax rate is identified to have a significant association with debt-equity ratio. It is observed that this variable as a measure of provision for tax to profit before tax is positively correlated with debt-equity ratio, which implies that the increase in the effective tax rate will increase the debt level. The coefficient of determination ( $r^2$ ) shows that the effective tax rate accounts for 18.1 per cent of the variation in debt-equity ratio.

v) *Interest Coverage Ratio*: The interest coverage ratio of the companies is significantly associated with the debt-equity ratio. It is clear from the analysis that this variable which is measured as the ratio of earnings before interest and taxes and interest is negatively associated with debt-equity ratio indicating that an increase in this ratio would decrease the debt level in the capital mix. The coefficient of determination ( $r^2$ ) shows that interest coverage ratio accounts for 3 per cent of the variation in the level of capital structure.

vi) *Return On Equity*: The return on equity of the companies is found to have significant association with the debt-equity ratio. It is clear from the analysis that this variable which is measured as the ratio of profit after tax and net worth is negatively associated with debt-equity ratio indicating that an increase in this ratio would decrease the debt level in the capital mix. The coefficient of determination ( $r^2$ ) shows that return on equity accounts for 85 per cent of the variation in the level of debt-equity ratio.

vii) *Cost of Equity*: Cost of equity is identified

to have a significant association with debt-equity ratio. It is revealed from the correlation analysis that this variable which is measured as earnings per share to market price per share plus growth is positively correlated with debt-equity ratio implies that an increase in this ratio would increase the level of debt. The co-efficient of determination ( $r^2$ ) shows that cost of equity accounts for 24.2 per cent of the variation in the level of debt-equity ratio.

### DETERMINANTS OF DEBT-EQUITY RATIO – AUTOMOBILE INDUSTRY

The results of the multiple regression analysis indicate that seven variables out of sixteen variables namely liquidity, growth, age, selling and distribution expenses ratio, solvency ratio, inflation rate and bank rate are not associated with debt-equity ratio. The other nine variables which are significantly associated with debt-equity ratio are explained under

i) *Size*: The regression coefficient between size and debt-equity ratio is -0.125, which implies that the size is negatively related with debt-equity ratio. It is clear from the regression coefficient that an increase of one unit in size will have an effect of reducing debt-equity ratio by 0.125 units, keeping the other variables constant.

ii) *Profitability*: The influence of profitability on debt-equity ratio is positive and significant at one per cent level. The contribution of profitability to debt-equity ratio is 2.468, which shows that an increase in profitability has positive impact on debt-equity ratio, keeping the other variables constant.

iii) *Non-Debt Tax Shield* : The regression coefficient between non-debt tax shield and debt-equity ratio is -5.881. It reveals that, non-debt tax shield is negatively associated with debt-equity ratio which implies when non-debt tax shield is increased by one unit it brings down trend by 5.881 units.

iv) *Dividend payout ratio*: It can be understood from the regression coefficient that the influence of dividend payout ratio on debt-equity ratio is positive and significant at one per cent level. It means that a raise in dividend payout ratio by one unit will increase debt-equity ratio by 0.001 units, as the regression coefficient is 0.001.

v) *Effective tax rate*: It is opined from the regression results that the effective tax rate and debt-equity ratio are inversely related. The regression

coefficient between these two variables is -0.011 and is significant at one per cent level. It can be deduced from the regression coefficient that an increase on one unit in effective tax rate has the effect of depressing debt-equity ratio by 0.011 units.

vi) *Interest coverage ratio*: It can be seen from Table 5.5 that the regression coefficient of interest coverage ratio is -0.001. This implies that the variable interest coverage ratio has negative impact on debt-equity ratio at one per cent level. It can be inferred from the regression results that an increase of one unit in interest coverage ratio will depress the debt-equity ratio by 0.001 units.

vii) *Return on Equity*: The regression coefficient between return on equity and debt-equity ratio is -2.838 which implies a negative relationship between two variables. This further reveals that, an increase of one unit in return on equity will have a negative impact on debt-equity ratio by 2.838 units.

TABLE 2-DETERMINANTS OF DEBT-EQUITY RATIO - AUTOMOBILE INDUSTRY -MULTIPLE REGRESSION ANALYSIS

Variables	Regression coefficient	Standard error	t
Size	-0.125**	0.033	-3.747
Profitability	2.468**	0.695	3.551
NDTS	-5.881*	2.386	-2.465
Liquidity	-0.016	0.012	-1.297

Regression Equation

$$\text{Debt-Equity Ratio} = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7 + b_8x_8 + b_9x_9 + b_{10}x_{10} + b_{11}x_{11} + b_{12}x_{12} + b_{13}x_{13} + b_{14}x_{14} + b_{15}x_{15} + b_{16}x_{16} + e$$

where,

- a : intercept form
- b1...b16 : Regression coefficients
- x1 : Size
- x2 : Profitability
- x3 : Non Debt Tax Shield
- x4 : Liquidity
- x5 : Dividend Payout Ratio
- x6 : Growth
- x7 : Age
- x8 : Effective Tax Rate
- x9 : Interest Coverage Ratio
- x10 : Selling and Distribution expenses ratio
- x11 : Return on Equity
- x12 : Solvency ratio
- x13 : Inflation rate
- x14 : Bank rate
- x15 : Cost of Equity
- x16 : Cost of Debt
- e : Error term

Sixteen independent variables have been regressed on the dependent variable, Debt-Equity ratio. The significance of the regression coefficient is tested through ‘t’ statistics. R<sup>2</sup> value calculated to ascertain the goodness of fit of the regression equation has been

DPR	0.001**	0.000	3.779
Growth	-0.058	0.199	-0.290
Age	0.002	0.003	0.752
ETR	-0.011**	0.002	-4.801
ICR	-0.001**	0.000	-3.723
SDR	-0.701	0.993	-0.706
ROE	-2.838**	0.227	-12.506
SOL	0.000	0.000	0.194
Inflation Rate	-0.001	0.013	-0.113
Bank Rate	-0.020	0.031	-0.628
Cost of Equity	0.019**	0.006	3.034
Cost of Debt	-1.968**	0.632	-3.113

\*Significant at five per cent level

\*\* Significant at one per cent level

Constant : 2.121 R<sup>2</sup> : 0.897

Std. Error of Estimate : 0.356 R<sup>2</sup> : 0.907

\*\*

viii) *Cost of equity*: The variable cost of equity is positively associated with debt-equity ratio at one per cent significant level. It is clear from the regression results when cost of equity escalates by one unit, debt-equity ratio goes up by 0.019 units. The contributions of other variables are not significant.

ix) *Cost of debt*: The influence of cost of debt on debt-equity ratio is negative and significant at one per cent level. The contribution of cost of debt to debt-equity ratio is 1.968 which shows that an increase in cost of debt has negative impact on debt-equity ratio, keeping the other variables constant.

tested for its significance through ‘F’ statistic. The levels of confidence chosen for ‘t’ and ‘F’ statistics are five and one per cent. (Hemapasanna S, 2015)

FACTORS PROMINENTLY ASSOCIATED WITH DEBT-EQUITY RATIO – AUTOMOBILE

INDUSTRY

In the first step, the variable ‘return on equity’ has been introduced. The contribution of this variable to debt-equity ratio is 85 per cent. Size a second variable increases the contribution from 85 per cent to 85.9 per cent. The contribution increases by one per cent with the introduction of the variable dividend payout ratio.

Effective tax rate is the variable introduced in step four and the contribution increase from 86.9 per cent to 87.6 per cent. The contribution is 88.5 per cent with the introduction of the variable cost of equity and finally the contribution is 89 per cent with the introduction of the variable cost of debt

TABLE 2-STEPWISE REGRESSION ANALYSIS - AUTOMOBILE INDUSTRY

Step	Constant	ROE	SIZE	DPR	ETR	K <sub>e</sub>	K <sub>d</sub>	R <sup>2</sup>
1	1.050	-2.433						0.850
2	1.736	-2.297	-.097					0.859
3	1.745	-2.348	-.104	.000				0.869
4	1.831	-2.473	-.114	.000	-.004			0.876
5	1.759	-2.427	-.105	.000	-.009	.023		0.885
6	1.843	-2.444	-.099	.000	-.009	.023	-1.568	0.890

The total contribution of the six variables namely ‘return on equity’, ‘size’, ‘dividend payout ratio’, ‘effective tax rate’, ‘cost of equity’ and ‘cost of debt’ amounts to 89 per cent while the contribution of all the sixteen variables works out to 90.7 per cent. It can be concluded that the difference in R<sup>2</sup> value i.e.1.7 percent is the contribution of the remaining independent variables to the dependent variable debt-equity ratio.

FINDINGS AND SUGGESTIONS

This study identified the determinants that affect the capital structure of the Indian Automobile Industry. To conclude six variables viz., ‘return on equity’, ‘size’, ‘dividend pay-out ratio’, ‘effective tax rate’, ‘cost of equity’, and ‘cost of debt’ are the most significant factors that influence debt-equity ratio of Automobile industry. The study may assist the managers to identify the factors to be given importance in arriving at vital financial decisions and the results of the study may help the investors to choose the best company for their profitable investments.

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