

# Impact of capital structure on financial performance of automobile industry in India

Thirumurugaraj MN<sup>1</sup> & DR. UNAS<sup>2</sup>

<sup>1</sup>RESEARCH SCHOLAR, BHARATHIAR UNIVERSITY, COIMBATORE DISTRICT.

<sup>2</sup>ASSISTANT PROFESSOR, GOVERNMENT ARTS AND SCIENCE COLLEGE, SATHIYAMANGALAM DISTRICT

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**ABSTRACT:** *The study intended to analyse the operational performance, profitability position, and impact of capital structure on firm's financial performance among Indian automobile firms. This study is based on the sample of two wheelers, three wheelers, commercial vehicles, and passenger vehicles. This study used six years of data from 2011-13 to 2017-18. This study has been formulated with the potency of analytical research design. The selection of appropriate dependent and independent variables are ascertained on the basis of the previous seminal work in capital structure. Trend analysis, correlation, regression, and descriptive statistics have been performed to analyze the data. Operational performance is found at satisfactory level in terms of gross turnover, production of vehicles, domestic sales and export. Profitability of automobile firms has been inspected by several variables connected with the automobile firms. Capital structure has no significant on automobile firm's financial performance in India.*

**Key Words:** *Operational Performance, Profitability, Capital Structure, Automobile Companies, Financial Performance.*

## 1. INTRODUCTION

Automobile industry has emerged as a rising sector in the Indian economy. Indian market is fast emerging market for passenger car and two wheeler market in the world. Moreover, India is the largest motor cycle manufacturer and fifth largest in commercial vehicles manufacturer. India is a major hub for exporting sports utility vehicles, compact cars are exported to many European countries. Electronic and hybrid cars are new innovation in car segment. Global and Indian automobile manufacturers are concentrating their effort to put innovation in vehicles, technology systems and supply chain practices. Similarly, globalization is pushing automobile firms to strengthen, to improve technology, expand product range, access new markets and slash costs. Automobile firms widely requires finance for its smooth functioning, mostly it requires huge long-term capital with sufficient short-term capital.

Capital planning consideration is utmost important for determining the profitability of the firm. Moreover, capital structure has impact on firm's performance in many ways. Therefore, efficiency of any firm or performance of a firm is get influence on its market prices of equity shares. Market value of equity shares widely depend on the earnings potential or profit earned by the automobile firms. Moreover, firm sustainability highly relied on its profit earning capacity. Therefore, the firm which earn low level of profit or its profit highly fluctuates every year, may not sustain for long-term period. Therefore, firms profitability should measured with care along with the variables like leverage, size, age, current ratio, expenses to income ratio, growth in sales, asset turnover ratio, inflation, and index of industrial production. Leverage plays vital role in attracting investments to corporate field. Therefore, profitability is the test of efficiency, effective motivational factors and a measure of control mechanism to the firm. Similarly, effective capital structure may increase firm's performance in all respects.

Therefore, impact of total debt to total assets, total debt to total equity, short term debt to total assets, long term debt to total assets, asset growth, and firm size on firm's performance have been taken into consideration.

## 2. AUTOMOBILE INDUSTRY IN INDIA

Indian automobile industry has achieved an extraordinary growth in during the last two decades. Automobile industry employs highly intense technology and most important segment in Indian economy. It manufactures lot of vehicles so as to satisfy both personal and industrial needs of a person. Automobile sector is vastly transporting goods and services from one place to another place. Automobile sector can be classified in to passenger vehicles, commercial vehicles, three wheelers and two wheelers. Passenger

vehicles consist of cars, and jeeps, in the form of hatchback, sedan, premium, luxury, and sports and utility vehicles. During the last two decades it shows considerable growth in India. Commercial vehicles are classified in to light commercial vehicles and heavy commercial vehicles, which are used to transport goods and people from one place to other place. Similarly, three wheelers and two wheelers occupy a significant position in Indian market.

Indian automobile sector produced a different variety of models so as to cater the needs of different industrial needs. Indian automobile is the seventh largest in the world. Growing income levels and finance availability is the encouraging factor to much population to upgrade their two-wheeler to car. Two-wheeler segment is the largest segment in Indian automobile market, car and commercial vehicle market placed subsequently. Ashok Leyland, Tata Motors, Eicher Motors, Forge, and Bharat Benz are the premier commercial vehicle producers in India. Hero, TVS, Yamaha, Honda, Suzuki, Royal Enfield, and Bajaj are the prominent two-wheelers in India. Maruthi Suzuki, Tata, Honda, Mahindra, Ford, Nissan, Renault, Hyundai, and Toyota, are the prominent car makers in India.

### 3. REVIEW OF LITERATURE

Vijayakumar&Kadirvel(2003) examined that age of the firm is the strongest determinant of profitability. It is followed by vertical integration, current ratio, size, inventory turnover ratio, leverage, operating expenses to sales ratio and growth rate. Mathuva (2009) examined that there exists significant association between the average payment period and profitability. Therefore, more the time taken to disburse the creditors will increase the profitability of the firm. Danuletiu (2010) investigated that there is a negative correlation between working capital and profitability. Niresh (2012) revealed that there is a negative relationship between cash conversion cycle, inventory maintenance and company's performance measures. Ganesamoorthy&Rajavathana (2013) examined that current ratio had positive relationship with profitability. Saeed et al. (2013) examined the effect of capital structure on firm's performance. Firm's performance is valued with return on equity, and return on assets. Capital structure is measured by short term debt to total capital, long-term debt to total capital, and total debt to total assets. Findings showed that there is positive relationship between firm's performance and capital structure.

### 4. OBJECTIVES OF THE STUDY

The main objective of the study is:

1. To examine the operational performance of automobile industry in India.
2. To ascertain the determinants of profitability of automobile firms in India.
3. To investigate the impact of capital structure on financial performance of automobile firms in India.

### 5. RESEARCH METHODOLOGY

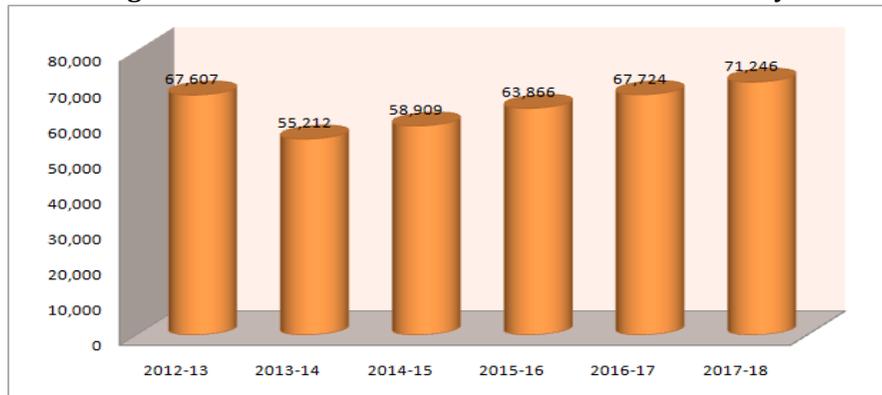
This study is conducted to assess the operational performance, profitability, and impact of capital structure on firm's financial performance of the Indian automobile industry. Analytical research design has been employed for the present study. The study collected necessary secondary data concerning financial aspects of automobile firms. The sample firms are automobile companies such as, two-wheeler manufacturers, three-wheeler manufacturers, utility vehicles, and light and heavy commercial vehicle manufacturers. In order to utilize secondary data, audited annual financial information of automobile firms is considered. This study collected various financial information for six years time period from 2012-13 to 2017-18. This study widely employed correlation, regression and descriptive statistics to analyse the data.

### 6. RESULTS AND DISCUSSION

#### 6.1. Operational Performance of Automobile Industry

Operational performance of Indian automobile industry is tested with four aspects, such as gross turnover of automobile manufacturers, annual production, annual sales, and export of vehicles. The gross turnover of Indian automobile industry is presented in figure-1.

**Figure-1: Gross Turnover of Indian Automobile Industry**



**Source: Society of Indian Automotive Manufacturing**

It is evident that in figure-1, gross turnover of Indian automobile firm consists of \$67,607 million during the year 2012-13. Global economic recession and shortfall in disposable income has effected to reduce the volume of automobile sales in 2013-14, which was \$55,212 million. Thereafter, gross turnover is gradually increasing year on year, finally it reached \$71,246 million during the year 2017-18. The production trends in Indian automobiles are given in table-1.

**Table-1: Production Trends in Indian Automobiles**

Type of Vehicle	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Passenger Vehicles	32,31,058	30,87,973	32,21,419	34,65,045	38,01,670	40,10,373
Commercial Vehicles	8,32,649	6,99,035	6,98,298	7,86,692	8,10,253	8,94,551
Three Wheelers	8,39,748	8,30,108	9,49,019	9,34,104	7,83,721	10,21,911
Two Wheelers	1,57,44,156	1,68,83,049	1,84,89,311	1,88,30,227	1,99,33,739	2,31,47,057
Grand Total	2,06,47,611	2,15,00,165	2,33,58,047	2,40,16,068	2,53,29,383	2,90,73,892

**Source: Society of Indian Automotive Manufacturers**

Table-1 reveals that during 2012-13, 2,06,47,611 vehicles were produced in Indian automobile sector, which consists of 32,31,058 passenger vehicles, 8,32,649 commercial vehicles, 8,39,748 three wheelers, and 1,57,44,156 two wheelers. Thereafter, a sharp decrease among passenger, commercial vehicles and three wheelers during the year 2013-14, but two wheeler sales increased significantly. Subsequently, there is an enhanced production to tap the rising demand both at domestic and overseas market. There is a huge demand emerged among passenger vehicle and two wheeler segment during this period. Then, automobile sales was increased to 2,90,73,892 vehicles during 2017-18. It consists of 40,10,373 passenger vehicles, 8,94,551 commercial vehicles, 10,21,911 three wheelers, and 2,31,47,057 two wheelers. Overall, the production of automobile has enhanced considerably during this period. Domestic sales of automobile companies are given in table-2.

**Table-2: Domestic Sales Trends in Indian Automobiles**

Type of Vehicle	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Passenger Vehicles	26,65,015	25,03,509	26,01,236	27,89,208	30,47,582	32,87,965
Commercial Vehicles	7,93,211	6,32,851	6,14,948	6,85,704	7,14,082	8,56,453
Three Wheelers	5,38,290	4,80,085	5,32,626	5,38,208	5,11,879	6,35,698
Two Wheelers	1,37,97,185	1,48,06,778	1,59,75,561	1,64,55,851	1,75,89,738	2,01,92,672
Grand Total	1,77,93,701	1,84,23,223	1,97,24,371	2,04,68,971	2,18,62,128	2,49,72,789

**Source: Society of Indian Automotive Manufacturers**

Table-2 reveals that overall sales of automobile have been increased year on year, 1,77,93,701 vehicles sold in 2012-13 increased to 2,49,72,789 vehicles in 2017-18. The sales of passenger vehicles has been increased from 26,65,015 vehicles in 2012-13 to 32,87,965 vehicles in 2017-18. The sales of commercial vehicles has been increased from 7,93,211 vehicles in 2012-13 to 8,56,453 vehicles in 2017-18. Similarly, the sales of three wheelers has been increased from 5,38,290 vehicles in 2012-13 to 6,35,698

vehicles in 2017-18. The same trend continued in two wheeler segment, the sales of two wheelers has been increased from 1,37,97,185 vehicles in 2012-13 to 2,01,92,672 vehicles in 2017-18. Export trends on Indian automobile are given in table-3.

**Table-3: Export Trends in Indian Automobiles**

Type of Vehicle	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Passenger Vehicles	5,59,414	5,96,142	5,21,341	6,53,053	7,58,727	7,47,287
Commercial Vehicles	80,027	77,050	86,939	1,03,124	1,08,271	96,867
Three Wheelers	3,03,088	3,53,392	4,07,600	4,04,441	2,71,894	3,81,002
Two Wheelers	19,56,378	20,84,000	24,57,466	24,82,876	23,40,277	28,16,016
Grand Total	28,98,907	31,10,584	35,73,346	36,43,494	34,79,169	40,40,172

Source: Society of Indian Automotive Manufacturers

Table-3 shows that export of Indian automobiles have been increased, 28,98,907 vehicles exported in 2012-13 and it is increased to 40,40,172 vehicles in 2017-18. The similar trend has been found among passenger vehicles, commercial vehicles, three wheelers, and two-wheelers during this period.

**6.2. Determinants of Profitability**

The study intends to measure the factors determining profitability of automobile firms. Therefore, correlation analysis is used to examine the quantum of association of variables with profitability. The dependent variable that is, return on investment is considered as a profitability measure. Current ratio (CR), leverage (LV), expenses to income ratio (EIR), age (AG), growth in sales (GS), size(S), industrial production index (IP), inflation (IN) and asset turnover ratio (ATR) are considered as independent variables. Correlation results are presented in Table-4.

**Table-4: Correlation Analysis**

Variables	r	r <sup>2</sup>
Leverage	-0.314*	0.106
Size	.0354*	0.129
Age	-0.239*	0.057
Current Ratio	0.081	0.006
Expenses to Income Ratio	-0.214*	0.046
Growth in Sales	0.301*	0.062
Asset Turnover Ratio	0.473*	0.215
Inflation	-0.129	0.017
Index of Industrial Production	0.018	0.001

Source: Annual Report of the Companies

\* Significant at 1% level

Table-4 reveals that there is a negative correlation found between leverage and profitability, which means low leverage increases profitability. The coefficient of determination (r<sup>2</sup>) shows that leverage accounts for 10.6% of variation in profitability. Similar trend also exists among age of the firm (5.7%), and expenses to income ratio (4.6%). There is a positive correlation found between size and profitability, which mean large-sized firm have more profitability. The coefficient of determination (r<sup>2</sup>) shows that size of the firm accounts for 12.9% of variation in profitability. Similar trend is found among growth (6.2%), and asset turnover ratio (21.5%). Inflation has significant effect on determining profitability of the automobile firms.

So as to observe the factors that determine profitability, regression analysis has been performed to find the impact of variables on profitability.

$$Pr = a + b_1LV + b_2S + b_3AG + b_4CR + b_5EIR + b_6GS + b_7ATR + b_8INF + b_9IP + e$$

Where,

a = Intercept Term

b<sub>1</sub>...b<sub>9</sub> = Regression Coefficients

e = Error Term

The results of multiple regression analysis are presented in table-5.

**Table-5: Multiple Regression Analysis**

Variables	Regression Coefficient	Standard Error	t statistics
Constant	9.753	0.689	1.985
Leverage	-1.616*	0.548	-2.856
Size	0.017*	0.020	4.875
Age	-0.059	0.058	-1.112
Current Ratio	2.795	1.658	1.599
Expenses to Income Ratio	-0.325	0.256	-1.079
Growth in Sales	0.121*	0.035	4.144
Asset Turnover Ratio	4.884*	0.682	7.458
Inflation	-0.639	0.316	-1.921
Index of Industrial Production	0.166	0.069	2.233
Multiple R		0.5145	
R <sup>2</sup>		0.2647	
Adjusted R <sup>2</sup>		0.2528	
SE		0.6234	

**Source: Annual Report of the Companies**

**\* Significant at 1% level**

Table-5 reveals the results of regression analysis; five variables such as age, current ratio, expenses to income ratio, inflation, index of industrial production are significant at 5% level. Leverage, size, growth in sales, inflation and assets turnover ratio are significant at 1% level. Regression coefficient indicates that leverage, age, expenses to income ratio have negative influence on profitability. Moreover, size, current ratio, growth in sales, and asset turnover ratio, and index of industrial production has positive influence on profitability.

**6.3. Effect of Capital Structure on Financial Performance**

Capital structure has significant effect on firm’s financial performance. Therefore, financial performance of firm is assumed as dependent variable, which is denoted by return on equity and return on assets. Independent variables are total debt to total assets (TDTA), total debt to total equity (TDTE), short term debt to total assets (SDTA), long term debt to total assets (LDTA), asset growth (AGW), and firm size (SIZE). The results of descriptive statistics are presented in table-6.

**Table-6: Descriptive Statistics**

Variables	ROA	ROE	SDTA	LDTA	TDTA	TDTE	SIZE	AGW
Observations	594	594	594	594	594	594	594	594
Cross Sections	99	99	99	99	99	99	99	99
Mean	0.0423	0.1572	0.5111	0.1821	0.6857	4.7421	15.435	0.2255
Median	0.0315	0.1461	0.4755	0.0913	0.7563	4.0754	15.422	0.1854
Maximum	0.2980	0.5168	0.8678	0.7888	0.9300	15.634	20.517	2.3245
Minimum	0.0000	0.0000	0.0042	0.0000	0.0042	0.0035	11.534	-0.325
Std. Deviation	0.0411	0.0834	0.2754	0.1895	0.2264	3.7566	2.2479	0.2415

**Source: Annual Report of the Companies**

Table-6 shows that the return on equity that represented the profitability, it has an average value of 15.72% over a six year period of time. This shows that automobile firms had good performance indicator during these period. Total debt to total assets have an average value of 68.57%, while short-term debt to total assets has 51.11% and long-term debt to total assets has 18.21% average value. It highly shows that automobile firms depends highly short-term debt than long-term debt. Similarly, total debt to total equity has an average value of 4.74, which means that average total debt is 4.74 times of total equity. Size of the firm has average value of 15.43 and age of the firm has 22.55% during the study period from 2012-13 to 2017-18. Therefore, the effect of capital structure on firm’s financial performance is tested with regression analysis, and the results are presented in table-7.

**Table-7: Regression Analysis**

Variables	ROA			ROE		
	Coefficient	t-stat	Prob.	Coefficient	t-stat	Prob.
C	0.0842	3.8522	0.0004	-0.0732	-1.1256	0.2156

LDTA	0.0004	-0.0054	0.9583	-0.0062	-0.1238	0.8345
TDTA	-0.8125*	-4.2567	0.0000	0.02635	0.6332	0.5324
TDTE	-0.0016	-1.2365	0.1236	-0.0012	-0.3547	0.7123
SIZE	0.0011	0.6257	0.5003	0.01356*	3.0547	0.0019
AGW	0.0124**	2.3248	0.0168	0.02365**	2.0154	0.0326
R <sup>2</sup>	0.2132			0.0705		
Adjusted R <sup>2</sup>	0.1936			0.0568		

**Source: Annual Report of the Companies**

**\* Significant at 1% level, \*\* Significant at 5% level**

Table-7 reveals that total debt to total assets has negative effect on ROA on 1% significant level but it doesn't have significant value to ROE. Long term debt to total assets and total debt to total equity have no significant effect on both ROA and ROE. Size factor have significant and positive on 1% significance level on ROE, while age of the firm have significant and positive effect on ROA and ROE on 5% significant level. The effect of capital structure on firm financial performance measured by ROA and ROE have weak association, since only total debt to total assets has significant effect on ROA. Therefore, there is no significant effect of capital structure factors on ROE.

## 7. FINDINGS & CONCLUSION

Automobile industry is a vital industry for the economic development of a nation. Automobile industry plays significant role in the development of industry through the transportation of factors of production. It requires huge amount of capital to commence its operations. Therefore, its operational performance, profitability, and impact of capital structure on firm's financial performance should be monitored so as to function it effectively. Gross turnover of Indian automobile firms consists of \$67,607 million during the year 2012-13, which was increased to \$71,246 million during the year 2017-18. Production trend shows that during the period 2012-13, 2,06,47,611 vehicles were produced in Indian automobile sector. It consists of 32,31,058 passenger vehicles, 8,32,649 commercial vehicles, 8,39,748 three wheelers, and 1,57,44,156 two wheelers. The total production in automobile sector was increased to 2,90,73,892 vehicles in 2017-18. It consists of 40,10,373 passenger vehicles, 8,94,551 commercial vehicles, 10,21,911 three wheelers, and 2,31,47,057 two wheelers. Overall, the production of automobile has enhanced considerably during this period.

Likewise, overall sales of automobile have been increased year on year, 1,77,93,701 vehicles sold in 2012-13 increased to 2,49,72,789 vehicles in 2017-18. Moreover, export of Indian automobiles found that 28,98,907 vehicles exported in 2012-13 is increased to 40,40,172 vehicles in 2017-18.

The results also showed that leverage, size, growth in sales, asset turnover ratio, index of industrial and production are the effective factors that determine the profitability of Indian automobile firms. Moreover, automobile firm occupies a considerable position by contributing significant revenue and employment. Therefore, so as to survive in the long standing, automobile firm have to decrease its expenditure to a maximum extent and use its fixed assets effectively generate profitability. The impact of capital structure on firms' financial performance measured by return on assets and return on equity has weak relationship various parameters. The total debt to total assets has significant impact on return on assets. It was concluded that there is no significant impact of capital structure on return on equity.

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