



Paper Title: A STUDY ON THE IMPACT OF CHANGING CAPITAL STRUCTURE ON THE PROFITABILITY: AN EMPIRICAL ANALYSIS OF INDIAN AUTOMOBILE COMPANIES- PASSENGER VEHICLE SEGMENT

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Abstract: A resilient capital structure plays a very significant role for the continued profitability and survival of any firm company in long run. It is that strategic decision which is very crucial for the positive market value of the firm. A strong balance sheet of any company exists due to sound capital structure. The right mix of debt and equity gives to the company strength to face the situation of negative profit and changes in financial markets. A sound capital structure helps in reducing overall risk (business risk and financial risk), to enhance manoeuvrability and to increase versatility of new sources for finance manager to get capital funds from various sources. The positive earnings of the firms are very crucial for the sound capital structure. In the context of above significance of the capital structure, the present study attempts to investigate and critically analyse the interrelationship between capital structure and profitability in the automobile industry of India using Structural Equation Modelling approach of statistical analysis. The comprehensive research available in this area suggest that there is either a positive, negative or neutral interrelationship between capital structure and profitability of the companies. The present study proves that there is low correlation between profitability and capital structure decision of a company.

IndexTerms – Capital Structure. Automobile Car Companies. Structural Equational Modelling. Profitability, DOI. D/E Ratio. ROI. NPM

I. INTRODUCTION

This mix of various sources of finance is one of the most important indicators of capital investment decision, this proportion of various sources of long-term funds used in financing various long-term projects of the company is called Capital Structure. This ratio or proportion of these sources in capital structure of the company is decided by the cost associated with these funds. Optimisation of the overall cost of capital by judicious mix of various sources of long-term funds is key variable to maximise the market value of the firm by increasing bottom line of the income statement i.e net profit margin of the company. Capital Structure choice plays a significant role in determining success and failure of any company because the profitability of any company or firm is directly influenced by the debt-equity mix ratio. The profitability of the company is judged by the market value of the equity share of any company. Any company chooses to mix of debt and equity basically to minimise the cost of capital and maximise the market value of the share

of the company. The level of mix of debt equity where overall cost of capital is minimum is called optimum capital structure. This is the level where cost of capital mix is minimum, and company starts earning increasing profit. The key components to calculate values of these ratios are total equity capital, total debts, total assets, total expenses, total income, profit before tax, net profit etc. An appropriate capital structure is crucial for the growth in income of the company.

2. STATEMENT OF THE PROBLEM

This is undoubtedly proven fact that long term survival of any company depends on the sound capital structure of any company. The debt funds in the capital structure provided tax relief of the interest payment so debt funds cannot be ignored. A sound capital structure combines debt and equity funds in such proportion that the cost of capital gets minimum and net profit become maximum. This knowledge is very much essential for each company in different business sectors.

Due to lack of standard combination of debt equity mix to qualify as optimum capital structure for the positive impact on the profitability of any company, it is quite evident that the relationship between capital structure in various combinations and its effect on the profitability or market value of the firm is a topic with unending scope for further research as new companies need further inputs for better debt equity mix decisions to find out optimum level of capital structure. New companies in automobile industry or any other sector always face the problem of decision to find out which source of finance is suitable for the best capital structure for their business firm of which proportion is right to find out the same. Also lack of understanding and availability of debt funds sources as per the requirement of the companies in automobile industry provided a reason the pursue this research paper. Hence the main research problem of the present study is how the various capital structure choices increase or decrease profitability of various companies in automobile industry of India.

3. REVIEW OF LITERATURE

The optimum capital structure is that capital structure or combination of debt and equity that leads to the maximisation of the value of the firm. The use of debt funds in capital structure increases the EPS as the interest on debt is tax deductible which leads to increase in the share price. Theoretical and empirical research suggest that financial planner should plan optimum capital structure as financial theory has not developed to a point where data relative to these are fed at one end of a computer and an ideal or optimum capital structure pops out of the other end. Consequently, human judgement must be used to resolve many conflicting forces in laying plans for the types of funds combination to be sought according to different projects because capital structure policy involves a choice between risk and expected return. (Ravi M. Kishore, 2007)

Various research studies have been done to find out relationship between capital structure choices and the profitability of the company though Modigliani and Miller (1958) through their theory proved that the capital structure combinations are irrelevant in a perfect market condition with features like no taxes, no transaction cost and no homogeneous expectations. It means in a business world without any friction capital structure choices have no relevance as their effect on market value of the firm will be negligible, but the problem points state that the perfect market condition is unrealistic so there are frictions in the market and capital structure decisions have significant impact on the profitability of any company.

Kester (1986)^[1] found out that the mixed resulted of prior studies notwithstanding, leverage is increasing in profits when controlled for agency problems and shareholder-controlled firms exhibit the results predicted by the theory. Brander & Lewis (1986)^[2] and Maksimovic (1988)^[3] proved association between market structure and capital structure with a theoretical framework by assuming that the objective of a firm is to maximise the wealth of shareholders and prove that the market structure affects capital structure by influencing the competitive behaviour and strategies of various companies. Sheetal (1994)^[4] proved that except size of the firm, all leverage determinant factors have significant bearing on debt behaviour variation. Peterson and Rajan (1994)^[5] tried to find out positive relation between debt ratios and profitability.

Roden and Lowellen (1995)^[6] through their study on leverage buyouts, concluded the positive impact of total debt as a percentage of total buyout financing package on the income of the company. Chin Ai Fu (1997)^[7] found out relationship between capital structure and profitability through a time series cross sectional analysis of 267 Malaysian firms listed on Kuala Lumpur Stock Exchange for the period of 10 years.

The results implied that profitability is inversely related to the amount of liability in a company's capital structure. Therefore, the more debt a firm incur, the more its earnings are hurt. The study also found out the existence of optimum capital structure in some of the firms. Firms of different sectors were found to adjust their capital structure regularly in order to achieve optimum combination of debt and equity.

Lalith P.S. (1999)^[8] investigated that debt financing in Sri Lankan companies is significantly low in comparison of G7 markets. Gleason et. al, (2000)^[9] found out the negative relationship between debt equity mix and net profit of the company. Chiang Yat Hung, Chan Ping Chuen Albert & Hui Chi Man Eddie (2002)^[10] showed association among cost of capital, capital structure and profitability of property developers and contractors in Hongkong. The inference drawn prove that there is positive relationship between capital gearing and assets but there is negative relation between gearing and profit margins.

Abor (2005)^[11] suggested a significant positive interrelation between short term debt to asset ratio and ROE of the companies listed on Ghana Stock exchange. The study posited that those companies which show high profitability use more short-term debt to finance their business activities.

Zeitun & Tian (2007)^[12] studied that Capital Structure of the firms has significant negative impact on the performance measures in both the accounting and market measures. According to the study, there are many variables in the capital structure choice and structure of debt maturity affecting financial performance of a company.

Dimitris, M & Maria, P. (2008)^[13] investigated the relationship between capital structure, ownership structure (shareholder's Equity) and performance of the French manufacturing firms and found out a negative relationship between past profitability and leverage but positive relationship between current profitability and leverage.

Ebaid (2009)^[14] examined the capital structure and performance of the firms to check the relationship between debt level and financial performance of Egyptian companies (2005-1997) using least square regression modal. The findings indicated a negative influence of total debt and short-term debts on the financial performance measured by ROA but no significant relationship was found between LTD and ROA.

A Study by Nimalathasan and Brabete (2010)^[15] proved positive association of debt equity mix with all the profitability ratios of the listed companies in Sri Lanka. A study by Pratheepkanth (2011)^[16] on capital structure and its impact on financial performance of the Sri Lankan companies and the validated result found a negative relationship between capital structure and financial performance of the firms in Sri Lanka.

Prof. T. Velnampy & J. Ajoy Nireesh (2012)^[17] analysed and found out a negative association between capital structure and profitability except the association between debt to equity and return on equity. Further the results suggest that 89% of total assets in the banking sector of Sri Lanka are composed of debt, confirming the facts that banks in Sri Lanka are highly geared institutions.

Khalaf T. (2013)^[18] examined the impact of capital structure on the performance of Jordanian banks using multiple regression. The results indicate that bank performance, which is measured by net profit, return on capital employed and net profit margin has significant and positive associated with total debt while total debt is found to be insignificant in determining return on equity in the banking industry of Jordan.

Dissanayake T.D.S.H, Paliheena P.D.N.K. (2015)^[19], examined the relationship between financial performance of 9 licensed commercial Banks of Sri Lanka for the period of 2010-2014. Findings discovered equity to assets and firm size has significant negative relationship with ROA. As well as firm size positively and significantly associate with earning per share. However, equity to liabilities has negative relationship with earning per share. Oppositely, firm size negatively affected on EPS.

The other major studies undertaken by Mesquita and Lara (2003), Philips and Sipahioglu (2004), Haldlock and James (2002), Arbabiyan and Safari (2009), Chakraborty (2010), Huang and Song (2006), Pandey (2004) came up with the findings which were conflicting in nature as some studies confirm positive relationship between capital structure and profitability while other studies confirm negative relationship between the variables.

All these studies have analysed the relationship between Capital structure and Profitability in different period of time frames in various sectors of economies worldwide but very few studies are available in Automobile Industry for the period of 15 years. As capital structure decision needs revision frequently depending on the market value of the firm, so, against this background the present study has been undertaken to facilitate the existing literature and to find out impact of capital structure on the profitability of seven Indian automobile companies.

4. OBJECTIVES OF THE STUDY

The main (general) objective of this research study is to investigate the impact of changing capital structures on the profitability or financial performance of the selected automobile companies. The specific objectives are:

1. To find out and critically analyse the relationship between capital structure and profitability of the selected automobile companies using various profitability ratios and debt equity ratios.
2. To identify the optimal capital structure which causes the best financial performance of the automobile companies.
3. To provide significant suggestions to the Indian automobile companies to boost their profitability performance by focusing on the better strategic framework of debt equity mix.

5. HYPOTHESES OF THE STUDY

Following the review of literature, the study has been conducted by formulating and working on the following null hypotheses to judge the impact of dependent variable (capital structure ratio) on the independent variables (profitability ratios):

- H1: There is no significant relationship between Debt-to-Equity ratio and Profit before Depreciation, Interest and Tax (PBDIT) of the selected automobile companies.
- H2: There is no significant relationship between Debt-to-Equity ratio and Profit before Interest & Tax (PBIT) of the selected automobile companies.
- H3: There is no significant relationship between Debt-to-Equity ratio and Profit before tax (PBT) of the selected automobile companies.
- H4: There is no significant relationship between Debt-to-Equity ratio and net profit margin of the selected Indian Automobile companies.
- H5: Debt to equity Ratio has no significant impact on the Return on Net Worth (RONW) of the selected Indian Automobile companies.
- H6: There is no significant relationship between debt-to-equity ratio and return on capital Employed (ROCE) of the Automobile companies.
- H7: There is a significant relationship between debt-to-equity ratio and return on assets of the Automobile companies.
- H8: There is no significant relationship between Debt-to-Equity ratio and Asset Turnover Ratio of the selected automobile companies.
- H9: There is no significant relationship between debt to equity and current ratio of the automobile companies.
- H10: There is no significant relationship between Debt-to-Equity ratio and Quick Ratio of the selected automobile companies.

To design the conceptual or theoretical framework of the research, its quite important to understand variables of the study and these variables will help in understanding the hypotheses of the study. So, the variables of the study are:

Variables Description of the Study: The variable to represent capital structure of the sample companies is debt equity ratio and for profitability of the companies are ratios as listed below in the Table 5.1:

Table 5.1: Variable Description

Variables	Full Name	Formula to calculate/Measure	Sign
Dependent Variable			
TDE	Total Debt to Equity Ratio	Long Term Debt / Shareholders' Equity	+/-
Independent Variables			
PBDIT	Profit before Depreciation, Interest and Tax	PBDIT/Net Sales*100	%
PBIT	Profit before Interest and tax	PBIT/Net Sales*100	%
PBT	Profit before tax	PBT/Net Sales*100	%
NPM	Net Profit Margin	Net Profit / Net Sales*100	%
ROE/ RONW	Return on Net Worth	Net Profit /Net Sales*100	%
ROI/ ROCE	Return on Capital Employed	Net Sales/ Long Term Net Assets*100	%
ROA	Return on Assets	Net Sales or Net profit/Total Assets*100	%
ATR	Assets Turnover Ratio	Net Sales/ Average Total Assets	+/-
CR	Current Ratio	Current Assets/Current Liabilities	+/-
QR	Quick Ratio	Quick Assets/Current Liabilities	+/-

Source: Created by the author

The conceptual/theoretical framework of the present study as given in the figure 1.6.1 states the relationship or association between capital Structure and profitability of any company through the key ratios representing each one of the two. Theoretical framework provides path for systematic analysis of the study:

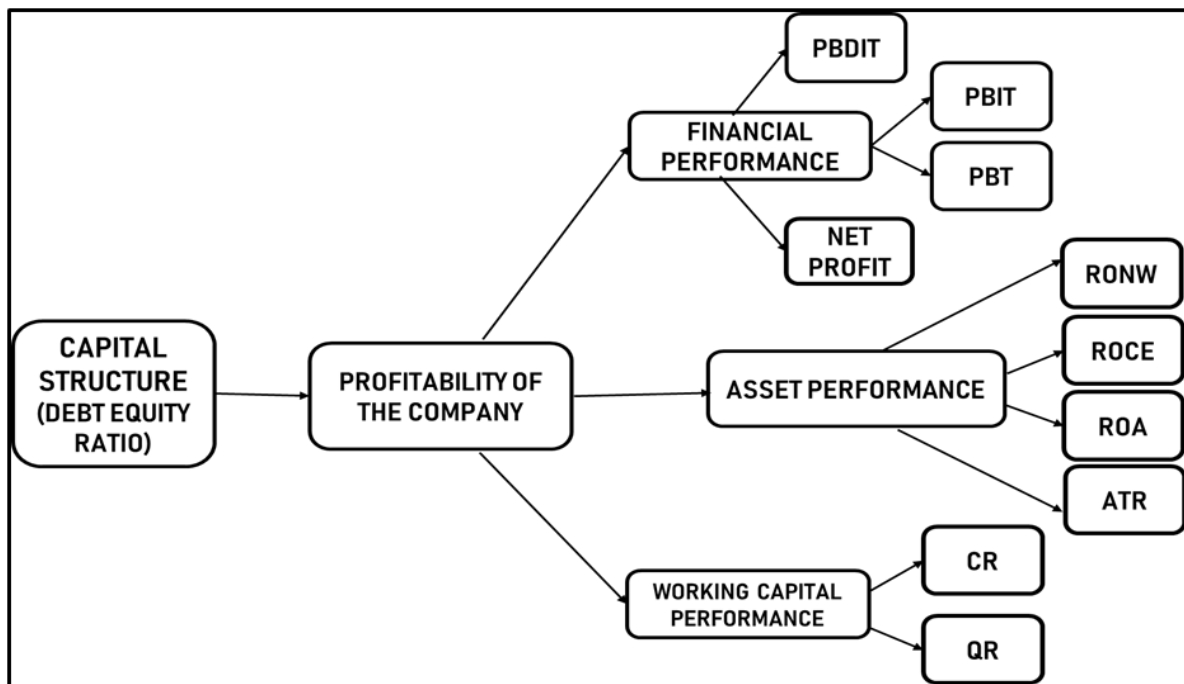


Figure: 5.1 – Conceptual/Theoretical Framework

Source: Created by the researcher

In the present study, how year on year profit figures of seven automobile companies have been affected by the proportion of debt funds and shareholders' equity funds in the fifteen years' period from 2008 to 2022. Present study includes various profitability ratios like profit before tax, net profit margin, return on net worth, return on total assets, return on investments, or return on capital employed and current ratio and impact of these on the debt equity ratio of the automobile companies. In this study only Debt to Equity ratio has been taken as dependent variable to understand its impact on the financial performance of these companies.

6. RESEARCH METHODOLOGY

The main purpose of this research is to find out if there exists any relationship between capital structure and profitability of Indian automobile companies taken in the sample. The ex post facto (after the fact) research design has been used for the above research problem. This research approach has been used as it predicts the results of the research with reliability. It is pertinent to say that the descriptive research emphasizes accurate measurement of phenomena and require unbiased and reliable observations. Seven automobile companies have been selected based on random sampling method and the required data of the key variables under study has been taken for the period of 15 years from 2007-08 to 2021-2022.

Sources of Data Collection: The major source of data collection has been the various secondary sources like the data of 15 years of 7 automobile companies extracted from CMIE database indicating financial performance, financial position or asset performance and working capital ratios under the period of the study of various automobile companies. Annual reports of the seven automobile companies, published research reports by various research agencies on the companies, sample automobile companies and various research articles on automobile sectors were also referred for understanding the changing capital structure of the companies in the study period.

Data Analysis Tools and Techniques used: The analysis of data has been presented using descriptive statistics and Structural equational modelling techniques. The purpose of SEM is to determine the reliability test of hypothetical relationship among theoretical constructs as well as those between constructs and their observed indicators. The analysis of various factors and path diagram were done in SEM using IBM SPSS AMOS 26 software and the relationship among various factors and changing capital structure has been analysed.

7. ANALYSIS & INTERPRETATION of DATA

The data of key ratios of 7 companies from automobile industry (given in Appendix-1) has been analysed using descriptive statistics and structural equational modelling. Table 7.1 presents descriptive statistics of the variables in study. The results are as follows:

Table 7.1: Descriptive Statistics

Variable	Cum Pct	Mean	SE Mean	StDev	Variance	CoefVar	Sum of Squares	Minimum	Median	Maximum	Kurtosis	MSSD
TDE	100	0.4	0.0798	0.8173	0.668	204.53	86.2432	-1.83	0.08	6	22.96	0.3669
PBT	100	2.6	62.3	638.4	407544	24923.3	42385308	-3942	9.1	4929	48.14	364233
NPM	100	-1.4	62.3	638.5	407659	-46905	42396769	-3942	7	4950	48.78	363158
RONW	100	10.6	3.36	34.47	1188.3	325.16	135386.31	-158	16.1	68.01	9.88	665.28
ROE	100	28.1	12.2	124.9	15597	443.96	1705128.9	-121	15.5	1253	91.36	13607
ROA	100	9.7	1.96	20.04	401.76	206.65	51662.02	-62.1	9.11	112.3	10.5	214.14
CR	100	1.038	0.0551	0.5641	0.3183	54.33	146.3141	0.06	0.94	2.92	0.65	0.0723

Source: calculated by the researcher based on data collection & tabulation

The key observations of SEM Analysis are as follows:

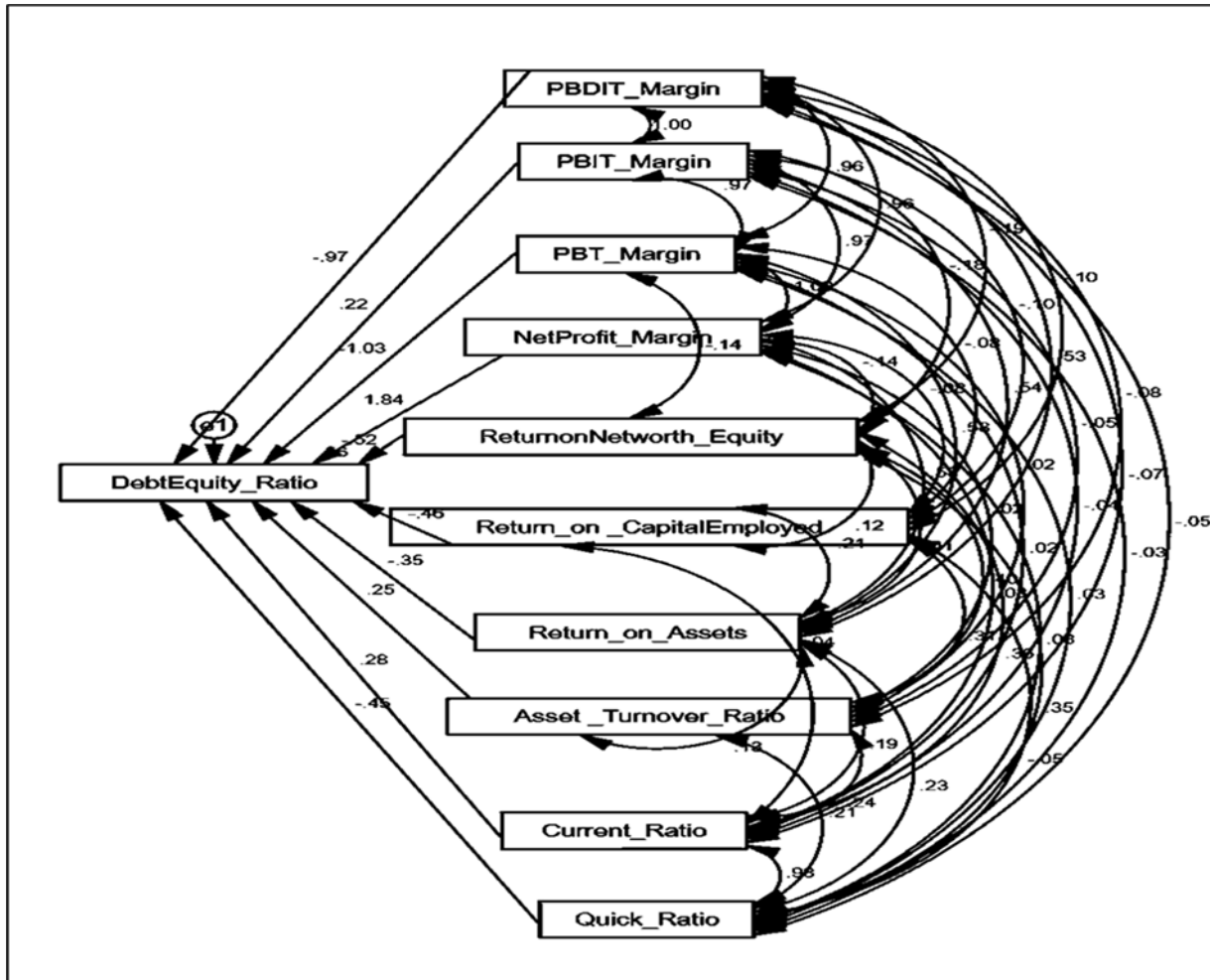


Figure 7.1: SEM Modal for Key Automobile Companies-Impact of Debt Equity Ratio on the Profitability

Source: Calculated by the researcher from the data collection and tabulation.

Note: Appendix ref: 1to 8.

Table 7.2: Coefficients of Profitability Variables, P-Value & Results of Hypotheses Testing

Dependent Variable		Independent Variable	Estimate	S.E.	C.R.	P	R Square	Status of Hypothesis
Debt Equity Ratio	<---	PBDIT Margin	-.965	.001	-3.984	***	0.559	P value is less than 0.05- H1 accepted
Debt Equity Ratio	<---	PBIT Margin	.224	.002	2.187	***		P value is less than 0.05- H2 accepted
Debt Equity Ratio	<---	PBT Margin	-1.031	.003	-4.497	***		P value is less than 0.05- H3 accepted
Debt Equity Ratio	<---	Net Profit Margin	1.838	.003	2.884	***		P value is less than 0.05- H4 accepted
Debt Equity Ratio	<---	Return on Net worth/ Equity	-.516	.002	-6.796	***		P value is less than 0.05- H5 accepted
Debt Equity Ratio	<---	Return on Capital Employed	-.464	.000	-6.453	***		P value is less than 0.05- H6 accepted
Debt Equity Ratio	<---	Return on Assets	-.348	.004	-3.810	***		P value is less than 0.05- H7 accepted
Debt Equity	<---	Asset	.251	.001	3.116	.		P value is less than

Dependent Variable		Independent Variable	Estimate	S.E.	C.R.	P	R Square	Status of Hypothesis
Ratio		Turnover Ratio				***		0.05- H8 accepted
Debt Equity Ratio	<---	Current Ratio	.281	.553	.738	.461		P value is more than 0.05- H9 is not accepted
Debt Equity Ratio	<---	Quick Ratio	-.449	.572	-1.191	.234		P value is more than 0.05- H10 is not accepted

(***P<0.001)

Source: Calculated by the author based on data collection and tabulation.

Where S.E- Standard Error; C.R. Critical Ratio; P- Probability value.

Table 7.2 given above presents the estimates of regression coefficients of the independent variables. It is quite evident from the values given in the model that Return on Net Worth, return on capital employed, Return on Assets, asset turnover ratio, current ratio and quick ratios are least influenced by changing capital structure. These have significant negative impact on the dependent variable. Net profit margin and profit before tax margin show significant impact on the debt equity ratio of the companies. The standardised estimate column of the table depicts that debt equity ratio influences net profit margin (1.838) the most followed by profit before tax (-1.031), profit before depreciation margins (-.965) and return on net worth (-.516). The Structural Equational Model depicts 56% variation in the debt equity ratio explained by all independent variables taken together.

The R-Square Value of various associations is 0.559 much lower than 0.7 (0.7-good fit to show high correlation among endogenous and exogenous variables). It clearly proves that profitability of the companies is least influenced by the capital structure choices of the Indian automobile companies in the sample.

Results of Hypothesis Testing: Based on the p-value, the first 8 hypotheses are accepted as p-value is less than 0.05 (recommended) but H9 and H10 are not accepted as P-value is greater than 0.05.

8. CONCLUSION

The present study is concluded that the choice of best debt equity mixes for different automobile companies is imperative for positive profit figure and positive returns on the investments. It also helps in ensuring sound liquidity position of the companies. This study aims to find out best model for the capital structure choices to earn increasing profit in future. The study has been performed on those companies that have sound capital structure so we see acceptance of null hypotheses which means there is no significant relationship between capital structure and profitability of the companies. In long run if debt capital is enhanced beyond a point, it adversely affects the profitability and then market value of various companies.

9. LIMITATION OF THE STUDY

The major limitation of the study is conducting research segment wise in automobile industry as Indian companies are very less and multinational players are many especially in car segment. So, collecting data of these multinational companies is a big challenge.

10. SCOPE FOR FURTHER RESEARCH

This research can be done decade wise or the key profitability ratios can be classified into three categories – key Financial Performance ratios, key Return on investment ratios and key liquidity ratios for close analysis of the impact of debt equity ratio on the profit of companies sector wise. The study can be done on various automobile companies segment wise or any other industry and show the effect of debt-equity ratios on the profitability and present an apt report for inter/intra company analysis of changing market value due to variation in capital structure choices. This will help in long term capital budgeting decisions for various companies.

11. ACKNOWLEDGEMENT

A research paper is a conduit between theoretical and practical learning in any field of research and with this think plan, I worked on this research paper and made it successful due to timely support in all forms from my inspirers. So, I take this opportunity to thank everyone who are instrumental in this research work. I dedicate this research paper to my sadguru as I received all mental, emotional and physical strength and will power to complete this research study from my Sadguru. I would like to express my special thanks to my mentor Dr. R. Srinivasan for his time and efforts he provided me to write various research papers during my PhD phase. His useful guidance and suggestions were really helpful to write quality research paper in the field of automobile industry. I express my sincere gratitude to my parents, husband and my two cute daughters who have consistently been my motivation force.

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APPENDIX 1 – NAMES OF THE AUTOMOBILE COMPANIES IN THE SAMPLE

S.No	NAME OF THE COMPANIES
1	Tata Motors
2	Mahindra & Mahindra
3	Maruti Suzuki India Ltd
4	Ashok Leyland
5	Hindustan Motors
6	Hero Motor Corp Ltd.
7	Bajaj Auto

APPENDIX 2 – TATA MOTORS-KEY RATIOS USED IN ANALYSIS

Tata Motors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PROFITABILITY / CAPITAL STRUCTURE RATIOS	Mar-22	Mar-21	Mar-20	Mar-19	Mar-18	Mar-17	Mar-16	Mar-15	Mar-14	Mar-13	Mar-12	Mar-11	Mar-10	Mar-09	Mar-08
Debt- Equity Ratio	1.17	1.14	1.14	0.79	0.81	0.89	0.61	1.35	0.76	0.75	0.56	0.73	1.12	1.06	0.8
PBDIT Margin (%)	4.56	6.21	1.66	10.82	8.27	5.84	10.15	1.77	8.52	8.48	8.74	10.8	14.44	9.98	12.7
PBIT Margin (%)	0.84	0.47	-6.01	6.35	2.99	-1	4.71	-5.39	2.48	4.42	5.79	7.91	11.52	6.57	10.43
PBT Margin (%)	-3.47	-7.53	-16.22	3.46	-1.6	-5.31	0.36	-10.95	-2.99	0.39	2.46	4.66	7.99	3.95	8.95
Net Profit Margin (%)	-2.94	-7.93	-16.59	2.91	-1.75	-5.48	-0.14	-13.05	0.97	0.67	2.28	3.84	6.33	3.96	7.05
Return on Networth / Equity (%)	-6.97	-12.57	-39.64	9.11	-5.13	-11.48	-0.26	-31.93	1.74	1.57	6.33	9.06	15.15	8.21	25.96
Return on Capital Employed (%)	1.07	0.37	-7.18	11.57	5.04	-1.19	5.31	-16.02	2.75	0.97	3.84	5.14	7.75	4.96	15.49
Return on Assets (%)	-2.17	-3.68	-11.64	3.31	-1.74	-4.12	-0.1	-9.48	0.67	0.57	2.27	3.34	4.38	2.64	7.75
Asset Turnover Ratio (%)	0.73	0.47	70.18	113.61	99.35	75.26	75.59	72.67	68.94	85.78	99.6	86.89	69.22	66.81	110.01
Current Ratio (X)	0.58	0.6	0.53	0.58	0.62	0.59	0.63	0.42	0.36	0.48	0.62	0.58	0.52	0.54	0.8
Quick Ratio (X)	0.44	0.43	0.38	0.37	0.38	0.33	0.36	0.19	0.15	0.27	0.41	0.37	0.39	0.42	0.61

APPENDIX 3- MAHINDRA & MAHINDRA - key ratios used in analysis

MAHINDRA & MAHINDRA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PROFITABILITY / CAPITAL STRUCTURE RATIOS	Mar-22	Mar-21	Mar-20	Mar-19	Mar-18	Mar-17	Mar-16	Mar-15	Mar-14	Mar-13	Mar-12	Mar-11	Mar-10	Mar-09	Mar-08
Total Debt/Equity (X)	0.17	0.21	0.09	0.07	0.09	0.1	0.08	0.14	0.22	0.22	0.27	0.23	0.37	0.77	0.6
PBDIT Margin (%)	15.87	17.15	16.41	15.53	14.91	13.3	13.38	12.89	13.42	13	13.29	16.57	17.83	10.75	13.79
PBIT Margin (%)	11.6	12.19	11.52	12.06	11.87	9.83	10.76	10.39	11.29	11.24	11.49	14.81	15.82	8.52	11.68
PBT Margin (%)	10.85	3.24	6.85	11.79	12.53	10.72	10.48	10.7	10.78	10.99	11.32	15	14.98	7.5	10.91
Net Profit Margin (%)	8.59	0.59	2.92	8.94	8.94	8.27	7.83	8.52	9.27	8.29	9.03	11.34	11.27	6.42	9.75
Return on Networth / Equity (%)	12.66	0.77	3.86	14.01	14.37	13.6	14.29	17.25	22.39	22.88	24.08	26.46	26.72	16.07	25.43
Return on Capital Employed (%)	13.8	12.35	13.26	16.86	16.95	14.28	12.49	13.85	16.68	17.36	17.39	19.59	18.75	9.38	16.32
Return on Assets (%)	7.35	0.45	2.63	9.1	9.18	9.11	9.02	10.08	12.01	12.21	12.03	13.62	12.78	5.96	10.6
Asset Turnover Ratio (%)	0.91	75.58	90.07	101.74	102.67	110.22	115.14	118.21	129.46	147.3	133.21	120.06	113.39	92.8	108.69
Current Ratio (X)	1.38	1.34	1.38	1.26	1.24	1.31	1.18	1.13	1.29	1.1	1.08	0.91	1.16	0.99	1
Quick Ratio (X)	1.06	1.08	1.07	0.99	1.03	1.02	0.91	0.86	0.97	0.8	0.76	0.63	0.93	0.78	0.71

APPENDIX 4- MARUTI SUZUKI INDIA LTD. - key ratios used in analysis

MARUTI SUZUKI INDIA LTD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PROFITABILITY / CAPITAL STRUCTURE RATIOS	Mar-22	Mar-21	Mar-20	Mar-19	Mar-18	Mar-17	Mar-16	Mar-15	Mar-14	Mar-13	Mar-12	Mar-11	Mar-10	Mar-09	Mar-08
Total Debt/Equity (X)	0.01	0.01	0	0	0	0.01	0	0.01	0.08	0.07	0.07	0.01	0.07	0.07	0.11
PBDIT Margin (%)	8.48	11.78	14.18	15.76	17.68	18.59	17.98	15.09	13.54	11.56	9.38	11.32	15	11.55	16.85
PBIT Margin (%)	5.33	7.47	9.51	12.25	14.22	14.77	13.07	10.15	8.77	7.29	6.18	8.55	12.19	8.14	13.71
PBT Margin (%)	5.18	7.33	9.34	12.16	13.79	14.64	12.93	9.74	8.37	6.86	6.03	8.48	12.07	7.9	13.38
Net Profit Margin (%)	4.26	6.01	7.47	8.71	9.68	10.8	9.32	7.42	6.36	5.48	4.59	6.24	8.51	5.87	9.58
Return on Networth / Equity (%)	6.96	8.23	11.66	16.25	18.49	20.17	17.95	15.65	13.26	12.87	10.76	16.5	21.1	13.04	20.56
Return on Capital Employed (%)	8.35	9.74	14.04	21.6	25.83	26.42	17.35	15	12.39	11.95	10.37	15.88	20.01	11.93	18.84
Return on Assets (%)	5.13	6.03	9.03	11.91	13	14.34	12.79	11.06	9.11	8.94	7.33	12.42	15.18	8.91	13.95
Asset Turnover Ratio (%)	1.23	100.37	120.87	136.68	134.34	132.74	137.19	148.93	143.11	163.04	159.56	198.74	178.27	151.58	145.65
Current Ratio (X)	0.99	1.15	0.75	0.87	0.51	0.66	0.71	0.93	1.76	1.63	1.69	2.39	0.95	1.59	0.96
Quick Ratio (X)	0.78	0.96	0.46	0.64	0.31	0.42	0.43	0.63	1.54	1.35	1.42	2.04	0.65	1.32	0.64

APPENDIX 5- HINDUSTAN MOTORS. - key ratios used in analysis

HINDUSTAN MOTORS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PROFITABILITY / CAPITAL STRUCTURE RATIOS	Mar-22	Mar-21	Mar-20	Mar-19	Mar-18	Mar-17	Mar-16	Mar-15	Mar-14	Mar-13	Mar-12	Mar-11	Mar-10	Mar-09	Mar-08
Total Debt/Equity (X)	0	0	0	0	0	-0.03	-0.1	-0.23	-0.44	-1.83	6	3.55	2.7	1.4	0.9
PBDIT Margin (%)	0	609.84	42	5,455.77	0	-449.89	-2,435.40	-211.75	-21.09	-14.81	-18.54	-8.23	-1.27	-2.2	10.93
PBIT Margin (%)	0	539.79	-378.59	5,234.24	0	-587.87	-2,668.11	-225.68	-25.71	-17.85	-22.94	-10.79	-4.14	-5.49	7.93
PBT Margin (%)	0	531.99	-402.42	4,928.96	0	-1,419.41	-3,942.02	-277.5	-0.38	-11.06	-6.74	-0.58	-5.94	-7.46	5.08
Net Profit Margin (%)	0	321.39	-392.48	4,949.73	0	-1,419.41	-3,942.02	-277.5	-1.68	-9.84	-6.04	0.11	-8.32	-6.2	4.37
Return on Networth / Equity (%)	-114.86	-10.8	0	-71.28	-88.51	0	0	0	0	0	-141.27	2.27	-158.01	-46.56	25.21
Return on Capital Employed (%)	-120.61	-27.25	2.9	-102.69	14.88	6.15	25.98	87.92	216.45	1,253.34	-38.91	0.73	-33.43	-21.64	12.9
Return on Assets (%)	61.58	12.78	-3.13	87.88	112.25	-41.13	-62.11	-59.45	-1.62	-26.68	-8.49	0.17	-12.72	-10.05	6.96
Asset Turnover Ratio (%)	0	3.97	0.79	1.77	0	2.89	1.57	21.42	96.71	270.92	140.56	155.79	152.81	162.08	159.06
Current Ratio (X)	0.34	0.19	0.09	0.14	0.24	0.06	0.15	0.33	0.58	0.44	0.48	0.57	0.68	0.69	0.94
Quick Ratio (X)	0.34	0.19	0.09	0.13	0.23	0.04	0.1	0.23	0.51	0.15	0.26	0.27	0.4	0.33	0.54

APPENDIX 6- ASHOK LEYLAND. - key ratios used in analysis

ASHOK LEYLAND	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PROFITABILITY / CAPITAL STRUCTURE RATIOS	Mar-22	Mar-21	Mar-20	Mar-19	Mar-18	Mar-17	Mar-16	Mar-15	Mar-14	Mar-13	Mar-12	Mar-11	Mar-10	Mar-09	Mar-08
Total Debt/Equity (X)	0.48	0.53	0.42	0.05	0.08	0.22	0.34	0.63	1.19	1.11	0.83	0.88	0.95	0.93	0.42
PBDIT Margin (%)	4.93	4.27	7.42	11.17	11.98	11.61	12.52	8.48	2.34	7.52	10.09	11.25	11.38	8.82	11.27
PBIT Margin (%)	1.46	-0.6	3.59	9.03	9.71	9.04	9.95	5.41	-1.44	4.47	7.34	8.86	8.64	5.92	9.05
PBT Margin (%)	2.43	-2.69	2.07	8.59	9.05	6.6	4.36	3.26	-0.91	3.77	5.37	7.17	7.27	3.37	8
Net Profit Margin (%)	2.49	-2.05	1.37	6.82	6.51	6.07	2.05	2.46	0.29	3.47	4.4	5.64	5.69	3.08	5.88
Return on Networth / Equity (%)	7.38	-4.49	3.29	23.8	23.7	19.96	7.2	8.17	0.89	13.73	19.55	23.76	18.23	9.02	22.06
Return on Capital Employed (%)	2.94	-0.91	6.67	27.81	30.07	16.05	4.94	4.04	0.35	5.55	8	9.23	6.67	3.29	14.21
Return on Assets (%)	2.66	-1.7	1.46	10.88	9.9	8.71	3.04	2.51	0.22	3.31	4.74	5.95	4.55	2.4	8.41
Asset Turnover Ratio (%)	1.12	0.88	106.57	159.42	152.02	143.44	148.25	101.88	77.63	95.3	107.77	105.51	79.88	77.97	142.92
Current Ratio (X)	1	0.9	0.77	0.93	0.91	0.93	1.06	0.93	0.84	0.81	0.89	1.06	1.38	1.46	1.21
Quick Ratio (X)	0.78	0.64	0.6	0.63	0.71	0.52	0.73	0.65	0.58	0.45	0.43	0.47	0.83	0.84	0.67

APPENDIX 7- HERO MOTOR CORP LTD. - key ratios used in analysis

HERO MOTOR CORP LTD.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PROFITABILITY / CAPITAL STRUCTURE RATIOS	Mar-22	Mar-21	Mar-20	Mar-19	Mar-18	Mar-17	Mar-16	Mar-15	Mar-14	Mar-13	Mar-12	Mar-11	Mar-10	Mar-09	Mar-08
Total Debt/Equity (X)	0	0	0	0	0	0	0	0	0	0.06	0.24	0.5	0.02	0.02	0.04
PBDIT Margin (%)	13.42	14.93	16.42	16.7	18.01	18.09	16.91	14.62	15.77	15.49	16.89	14.96	19.09	15.93	15.2
PBIT Margin (%)	11.2	12.73	13.58	14.91	16.29	16.36	15.37	12.66	11.39	10.69	12.23	12.88	17.89	14.47	13.65
PBT Margin (%)	11.11	12.66	15.86	14.89	16.27	16.34	15.36	12.06	11.34	10.64	12.14	12.39	17.87	14.45	13.63
Net Profit Margin (%)	8.45	9.62	12.59	10.05	11.47	11.84	10.95	8.64	8.34	8.91	10.08	9.93	14.09	10.39	9.35
Return on Networth / Equity (%)	15.66	19.5	25.7	26.32	31.41	33.39	39.42	36.47	37.66	42.31	55.43	65.21	64.41	33.72	32.41
Return on Capital Employed (%)	19.68	24.43	26.52	37.15	42.35	44	37.77	35.93	37.16	38.71	42.86	40.93	60.45	31.78	29.79
Return on Assets (%)	11.38	13.37	19.37	19.18	22.08	22.98	25.38	22.67	20.88	21.96	24.04	17.97	26.18	21.06	19.07
Asset Turnover Ratio (%)	1.33	138.98	153.79	190.74	192.54	193.95	231.74	262.17	250.31	246.51	238.43	180.84	185.84	202.54	203.9
Current Ratio (X)	1.99	1.79	2.08	1.96	2.04	1.82	1.47	1.36	1.26	1.22	1.11	0.96	0.6	0.49	0.51
Quick Ratio (X)	1.77	1.55	1.81	1.71	1.85	1.66	1.3	1.15	1.1	1.06	0.96	0.87	0.51	0.33	0.34

APPENDIX 8 BAJAJ AUTO LTD-key ratios used in the analysis

BAJAJ AUTO LTD.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PROFITABILITY / CAPITAL STRUCTURE RATIOS	Mar-22	Mar-21	Mar-20	Mar-19	Mar-18	Mar-17	Mar-16	Mar-15	Mar-14	Mar-13	Mar-12	Mar-11	Mar-10	Mar-09	Mar-08
Total Debt/Equity (X)	0	0	0	0	0.01	0.01	0	0.01	0.01	0.01	0.02	0.06	0.46	0.84	0.84
PBDIT Margin (%)	19.51	22.36	22.82	21.92	24.36	25.93	25.92	21.74	23.88	22.15	22.16	22.85	21.19	12.75	14.21
PBIT Margin (%)	18.7	21.43	22	21.04	23.11	24.51	24.56	20.5	22.99	21.33	21.41	22.1	20.04	11.26	12.23
PBT Margin (%)	19.62	21.4	21.99	22.15	22.97	24.51	24.56	18.9	22.98	21.33	20.61	26.51	19.99	11.02	12.18
Net Profit Margin (%)	15.14	16.41	17.04	15.45	16.16	17.58	17.39	13.01	16.09	15.21	15.38	20.36	14.39	7.52	8.56
Return on Networth / Equity (%)	18.81	18.07	25.59	21.46	21.29	22.46	29.62	26.31	33.75	38.51	49.72	68.01	58.05	35	47.6
Return on Capital Employed (%)	22.76	22.96	32.08	28.28	29.5	30.32	28.67	25.38	32.37	36.47	46.53	61.93	38.24	19.5	24.66
Return on Assets (%)	15.72	14.44	20.58	17.07	17.07	18.38	23.83	18.08	21.99	24.39	27.1	36.11	19.46	10.83	15.29
Asset Turnover Ratio (%)	1.04	0.99	120.76	110.48	105.64	104.57	137	138.87	136.62	160.25	176.23	177.32	135.26	143.99	178.64
Current Ratio (X)	2.13	2.51	1.55	1.45	2.25	2.92	1.7	2.13	1.19	1.5	1.12	0.79	0.68	0.83	0.88
Quick Ratio (X)	1.87	2.25	1.3	1.25	2.07	2.7	1.44	1.95	1.05	1.35	0.98	0.64	0.58	0.71	0.69