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EMPIRICAL ANALYSIS OF THE IMPACT OF CAPITAL STRUCTURE ON THE PROFITABILITY OF AUTOMOBILE INDUSTRY

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ABSTRACT

The Capital Structure of a firm describes how it has sourced its finances. This capital structure is comprised of the owned & the owed capital. There are a number of determinants that affect the decisions taken while determining this capital structure like cost of capital, control, flexibility etc. The Indian Automobile Industry is the seventh-largest auto producer in the world with an average annual production of 17.5 Million vehicles. This paper is an attempt to ascertain the impact of capital structure (***CS***) on the profitability (***P***) of the firm. This study is focused on Bajaj Auto Limited, TVS Auto Limited, Hero Motors Limited and Atul Auto Limited. All these four companies are into the manufacturing of two and three wheelers auto Products. Liquidity and growth in terms of performance of the firm have significant influence on debt-equity ratio. In other words, sustainable growth along with credit worthiness of the firm influences debt-equity ratio i.e., degree of financial leverage. Capital structure, the mix of long term debts and equity securities, is generally used to finance long term assets of companies. It consists of permanent short-term debt, preferred stock, and common equity. The results revealed there is positive relationship between capital structure and financial performance.

Key Words: Debt-equity ratio, Financial leverage, Capital structure, Value of the firm, Return on capital.

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Introduction

In finance, **capital structure** refers to the way in which an organization is financed a combination of long term capital(ordinary shares and reserves, preference shares, debentures, bank loans, convertible loan stock and so on) and short term liabilities such as a bank overdraft and trade creditors. A firm's capital structure is then the composition or 'structure' of its liabilities.

Capital structure plays a role in determining the risk level of the company, and fixed cost is the key factor whether it is involved in production process or fixed financial charges. It should be kept low if the management is likely to confront an uncertain environment but how low or how high is the basic question. The assets of the company can be financed by owner or the loaner. The owner claims increase when the firm raises funds by issuing ordinary shares or by retaining the earnings which belong to the shareholders, the loaners claim increase when the company borrows money from the market using some instrument other than shares. The various means of financing represent the financial structure of the enterprises. The term capital structure is used to represent the proportionate between debt and equity, where equity includes paid-up capital, share premium, and all reserves & surplus.

An Overview of the Indian Automobile Industry

The Indian Automobile Industry is the seventh-largest auto producer in the world with an average annual production of 17.5 Million vehicles. It is the 4th largest automotive market by volume, by 2020. It contributes about 8% to the country's GDP by volume and 22% of the country's manufacturing GDP. A young population, an expanding middle class and an increasing interest of the companies in venturing into the rural markets have made the two wheelers segment the leader of the Indian automobile market. The two wheeler segment has 70 percent market share. India is also a big player in auto exports, with solid export growth expectations for the near future. Various initiatives by the Government of India like 'Make in India' and the major automobile players in the Indian market are expected to make India a leader in the Four Wheeler and Two Wheeler market by 2020. The industry has estimated that it will sell more than 6 Million-plus vehicles annually, by 2020.

Concept

The capital structure of a firm shows how it has financed its overall operations and growth by using various available sources of funds. A company's proportion of long and short-term debt is considered while analyzing its capital structure. Capital structure is most likely referring to through the firm's debt-to-equity ratio, which tells us how risky a company is. A company having a greater proportion of debt is usually considered as having greater risk, because this firm is relatively highly levered. The capital structure of a company is comprised of two components: the owned capital and the owed capital.

The Owned Capital includes: Equity Shares, Preference Shares, Retained Earnings and Surplus
The Owed Capital includes: Debentures, Bonds, Long Term Loans

Literature Review

As previously mentioned, the irrelevance theory of capital structure, which has been introduced **by Merton Miller and Franco Modigliani (1958)-** denoted by M&M throughout our paper-, was the first breakthrough in relation to the subject of capital structure and its effect on firm performance. They first hypothesized that if markets are perfectly competitive, firm performance will not be related to capital structure, thereby suggesting no significant relationship between a firm’s capital structure and its performance. The value of the firm is similarly unaffected by its financial structure. Their assumptions of a perfectly competitive market exclude the impact of tax, inflation and transaction costs associated with raising money or going bankrupt.

According to M&M a company that respects its tax obligations, benefits from partially offsetting interest, namely the tax shield, in the form of paying lower taxes. Thus, M&M indicate that companies can maximize their value by employing more debt due to tax shield benefits allied with the use of debt. In reality markets are inefficient, due to taxes, information asymmetry, transaction costs, bankruptcy costs, agency conflicts and any other imperfect elements.

Kumar, R., & Bodla, B. S. (2014), Among them, 'cost of borrowing', 'size of the firm', 'collateral value of assets', and liquidity are more important factors than others. The 'cost of borrowing' is found having negative relationship with debt equity ratio.

According to Myers (1984), firms adopting this theory could be regarded as setting a target debt-to-value ratio with gradual attempt to achieve it. However, Myers (1984) suggests that managers will be reluctant to issue equity if they feel it is undervalued in the market. The consequence is that investors perceive equity issues to only occur if equity is either fairly priced or overpriced.

According to Van der Sar (2011) leverage enhances firm's performance by limiting conflicts between shareholders and managers as a result of having excess cash.

According Ebaid (2009) argued that leverage mitigates lower agency costs, since the firm's reputation and the managers' wages are at stake. On the other hand however, higher leverage also means that the firm has higher commitment to fulfill its future obligations, in terms of principal and interest payments. Furthermore, higher leverage ratios also lead to higher costs relating to financial distress.

Objectives of the Study

The main objective of the study is to find the impact of capital structure on the profitability of the selected automobile Industry i.e. Bajaj Auto Limited, TVS Limited, Hero Motors Limited and Atul Auto Limited. The proposed research is intended to examine the trend and pattern of financing the capital structure of Indian automobile companies. Some specific objectives are as follows:

- To identify and analyse the impact of capital structure on profitability of automobile companies.
- To identify the nature of relationship between debt and equity.
- To identify the factors determine the optimal capital structure.
- To understand the capital structure adopted by these automobile companies.

The central issue I will address is to examine empirically the existence of inter industry differences in the capital structure of Indian firms and identify the possible sources of such variation in capital structure in order to find out the factors that determine the financing pattern of capital structure of Indian automobile companies, particularly in the private sector.

Research Methodology of the Study

The data for the study has been collected from various annual reports and accessed on www.moneycontrol.com website. The reference period of the study is of five years i.e. from 2011-2012 to 2015-2016. In order to achieve the set of objectives of the study, I have used ratio analysis. These ratios are employed in order to confirm the relationship between the ***CS*** and ***P***. To analyze the data, financial as well as statistical tools has been used. The financial tools like ratio analysis and statistical tools such as average, ANOVA, Karl Pearsons coefficient of correlation and regression analysis are used.

I framed the following Hypothesis for my study:

Ho: Null Hypothesis: There is significant relation between Debt Equity Ratio and other selected variables.

H1: Alternative Hypothesis: There is no significant relation between Debt Equity Ratio and other selected Variables.

Ho: Null Hypothesis: There is significant relation between Debt Asset Ratio and other selected variables.

H2: Alternative Hypothesis: There is no significant relation between Debt Asset Ratio and other selected Variables.

Ho: Null Hypothesis: There is significant relation between Long term debt ratio and other selected variables.

H3: Alternative Hypothesis: There is no significant relation between Long term debt ratio and other selected Variables.

For the purpose of correlation and regression Debt equity ratio, Debt asset ratio and Long term debt ratio are Independent variable and remaining are dependent variable which include gross profit margin, net profit margin, returns on net worth, return on capital employed, operating profit ratio and interest coverage ratio.

Results and Discussion of the Study

Debt to Equity ratio: A zero debt-equity ratio obviously indicates that the company has no debt and thus it follows that the higher the ratio, the higher the debt. A high debt to equity ratio may also indicate a pattern of very aggressive financing or large losses. It's common for large, well-established companies to have Debt-to-Equity ratios exceeding1. It paints a useful picture of the company's liability position and is frequently used.

Table No 1 Debt to Equity Ratio

	Bajaj Auto	TVS Auto	Atul Auto	Hero Moto corp.
2011-2012	0.01	1.58	0.07	0.24
2012-2013	0.01	1.02	0	0.06
2013-2014	0.01	0.62	0	0
2014-2015	0.01	0.83	0	0
2015-2016	0.01	0.62	0	0
Mean	0.01	0.934	0.014	0.06
Std Deviation	0	0.398	0.031	0.0104

Source: Data compiled from annual balance sheets

Table No 1 shows that most of the companies usually employ debt relatively lower than their equity. Bajaj Auto with 0 Std deviation has maintain their debt almost nil and is managing the financial activities by raising their capital through equity shares only. Therefore Interest charge on cost of capital is very low. All the above companies are maintaining very low debt for financing their assets.

Debt to Assets Ratio: Analysts, investors, and creditors use this measurement to evaluate the overall risk of a company. Companies with a higher figure are considered more risky to invest in as they are considered as more leveraged. This means that a company with a higher measurement will have to pay out a greater percentage of its profits in principle and interest payments than a company of the same size with a lower ratio. Thus, lower ratio is always better.

Table No 2 Debt to Assets Ratio

	Bajaj Auto	TVS Auto	Atul Auto	Hero Moto corp.
2011-2012	0.62	1.06	0.32	1.16
2012-2013	0.45	1.03	0.34	1.01
2013-2014	0.52	1.02	0.37	1.13
2014-2015	0.35	1.11	0.44	0.75
2015-2016	0.38	0.99	0.5	0.74
Mean	0.464	1.042	0.394	0.958
Std Deviation	0.109	0.045	0.075	0.202

Source: Data compiled from annual balance sheets

If debt to assets equals 1, it means the company has the same amount of liabilities as it has assets. This company is highly leveraged. A company with a DTA of greater than 1 means the company has more liabilities than assets. This company is extremely leveraged and highly risky to invest in or lend to. A company with a DTA of less than 1 shows that it has more assets than liabilities and could pay off its obligations by selling its assets if it needed to.

Table 2 shows that mean value of debt to asset ratio of TVS and Hero motors is slightly more than 1 which means that these two companies are financing their assets through debt. Bajaj Auto and Atul Auto are extremely prudent in maintaining their assets financing through equity as their debt to asset ratio is less than 1.

Interest Coverage Ratio: A ratio used to determine how easily a company can pay interest on outstanding debt. The interest coverage ratio is calculated by dividing a company's earnings before interest and taxes (EBIT) of one period by the company's interest expenses of the same period.

Table No 3 Interest Coverage Ratio

Year	Bajaj Auto	TVS Auto	Atul Auto	Hero Moto corp.
2011-2012	188.06	3.77	31.23	135.49
2012-2013	7901.43	2.57	93.29	213.36
2013-2014	9454.16	4.55	124.53	243.58
2014-2015	682.83	7.21	98.32	315.14
2015-2016	11220.13	8.59	92.57	2044.99
Mean	5889.322	5.338	87.988	590.512
Std Deviation	25118.25	2.49	34.324	815.627

Source: Data compiled from annual balance sheets

Table 3, shows that Bajaj Auto have maximum interest coverage ratio as compared to other firms with mean of 5889.332 which indicates that this company have less burden of debt expenses. On other hand TVS Auto have minimum mean of 5.33 indicating that this company have much burden with financial charges as compared to other companies. This firm is not very much attractive enough in terms of debt financing. With regard to standard deviation Bajaj Auto have highest standard deviation of 25118.25 implying that the firm paying interest at a huge fluctuating rate and TVS Auto has low standard deviation of 2.49 when compared to other companies indicates that the firm is constantly paying its interest dues in an average manner.

Gross Profit Ratio: Gross profit is very important for any business. It should be sufficient to cover all expenses and provide for profit. Generally, a higher ratio is considered better. The ratio can be used to test the business condition by comparing it with past years' ratio and with the ratio of other companies in the industry. The basic components of the formula of **gross profit ratio (GP ratio)** are gross profit and net sales.

Table No 4 Gross Profit Ratio

Year	Bajaj Auto	TVS Auto	Atul Auto	Hero Moto corp.

2011-2012	18.3	4.05	7.79	10.69
2012-2013	17.35	3.54	9.79	9.01
2013-2014	19.48	4.03	9.33	9.62
2014-2015	17.81	4.11	10.62	10.88
2015-2016	19.71	4.7	13.36	14
Mean	18.53	4.086	10.178	10.84
Std Deviation	1.032	0.412	2.055	1.927

Source: Data compiled from annual balance sheets

Table 4 depicts that Bajaj Auto and Hero Motors are having highest gross profit ratio with the mean of 18.53 and 10.84 respectively as compared to other two auto companies, which implies that these firms are very efficient in producing their products and have sufficient resources to pay for cost necessary to run and grow their business. On the other hand, TVS Auto and Atul Auto have average mean, which indicates that they also some what efficient in producing their products and have sufficient resources to pay for cost necessary to run and grow their business. The standard deviation of Atul auto is very high i.e.2.05 when compared to other companies indicates that this firm is not experiencing average gross profit.

Net Profit Ratio: The net profit percentage is the ratio of after-tax profits to net sales. It reveals the remaining profit after all costs of production, administration, and financing have been deducted from sales, and income taxes recognized. The net profit ratio is really a short-term measurement, because it does not reveal a company's actions to maintain profitability over the long term,

Table No 5 Net profit Ratio

Year	Bajaj Auto	TVS Auto	Atul Auto	Hero Moto corp.
2011-2012	15.38	1.78	5.21	10.08
2012-2013	14.63	2.67	7.12	8.91
2013-2014	15.55	2.22	6.92	8.34

2014-2015	13.01	3.18	8.23	8.64
2015-2016	16.09	3.21	8.92	10.95
Mean	14.932	2.612	7.28	9.384
Std Deviation	1.195	0.618	1.417	1.096

Source: Data compiled from annual balance sheets

Table No 5 exhibits that Bajaj Auto and Hero Motors having maximum net profit ratio with the mean of 14.93 and 9.384 respectively as compared to other company taken under study which indicates that these firms are in better position to cope up market challenges like price, low demand etc., and also shows that these companies enjoy high profitability. On other side TVS Auto has minimum mean of 2.612 which indicates that it is not in a better position to prevail economic condition because of its low profitability.

Operating Profit Ratio: Operating net profit ratio is calculated by dividing the operating net profit by sales. This ratio helps in determining the ability of the management in running the business. The operating profit margin ratio indicates how much profit a company makes after paying for variable costs of production such as wages, raw materials, etc. It is expressed as a percentage of sales and shows the efficiency of a company controlling the costs and expenses associated with business operations.

Table No 6 Operating Profit Ratio

Year	Bajaj Auto	TVS Auto	Atul Auto	Hero Moto corp.
2011-2012	19.04	6.18	9.21	15.34
2012-2013	18.17	5.91	11.01	13.81
2013-2014	20.37	5.81	10.55	14
2014-2015	19.04	5.84	11.75	12.84
2015-2016	21.06	6.57	14.36	15.54
Mean	19.536	6.062	11.376	14.306
Std Deviation	1.159	0.319	1.907	1.127

Source: Data compiled from annual balance sheets

Table No 6 exhibits that Bajaj Auto and Hero Motors are having maximum operating profit ratio with the mean of 19.53 and 14.30 when compared to all other companies, indicates that these firms are cultivating much efficiency from their operations. On other side the TVS is of low mean of 6.062 shows that firm is lacking efficient in their operation . Coming to standard deviation of the companies under study, from the table, the company Bajaj Auto and Atul Auto has highest standard deviation of 1.159 and 1.907 respectively indicates that these firms are earning their operating profits at a highly fluctuating way. On the other side, the firms like TVS auto and HERO moto corp have minimum standard deviation of 0.319 and 1.127 respectively when compared to other firms and it indicates that these firms are earning operating profits in an average pace.

Return on Capital Employed: is a financial ratio that measures a company's profitability and the efficiency with which its capital is employed. ROCE is calculated as: ROCE = Earnings Before Interest and Tax (EBIT) / Capital Employed. A higher ROCE indicates more efficient use of capital. This ratio is based on two important calculations: operating profit and capital employed. Net operating profit is often called EBIT or earnings before interest and taxes.

Table No 7 Return on Capital Employed

Year	Bajaj Auto	TVS Auto	Atul Auto	Hero Moto corp.
2011-2012	68.13	16.85	39.82	54.44
2012-2013	53.51	15.81	50.63	47.86
2013-2014	47.92	22.21	45.61	51.41
2014-2015	41.01	19.85	48.07	53.42
2015-2016	43.24	24.57	46.77	55.34
Mean	50.762	19.858	46.18	52.494
Std Deviation	10.828	3.646	4.016	2.975

Source: Data compiled from annual balance sheets

Table 7 depicts that the company Hero Motors has highest mean of 52.494when compared to other company indicates that this firm is in a favorable condition to generate more earnings from each rupee of capital employed. This company obtains satisfactory return on their capital over

the period of study. On the other hand, the TVS Auto and Atul Auto has minimum mean of 19.858 and 46.18 respectively, indicates that these companies are weak in earning profit on the capital employed. Considering the standard deviation of the company, the company with highest standard deviation is Bajaj Auto with a standard deviation of 10.828, indicates that this firm earns at a good pace on their capital invested over the period of study.

Return on Net Worth: Return on equity (ROE) is a measure of profitability that calculates how many rupees of profit a company generates with each rupee of shareholders' equity. The formula for ROE is: ROE = Net Income/Shareholders' Equity. ROE is sometimes called "return on net worth." Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested. Shareholder's equity does not include preferred shares.

Table No 8 Return on Net Worth

Year	Bajaj Auto	TVS Auto	Atul Auto	Hero Moto corp.
2011-2012	49.72	18.24	27.79	55.43
2012-2013	38.51	22.08	34.88	42.31
2013-2014	33.75	18.34	31.53	37.66
2014-2015	26.31	26.65	33.51	36.47
2015-2016	29.71	25.28	30.65	39.42
Mean	35.6	22.118	31.672	42.258
Std Deviation	9.114	3.868	2.730	7.684

Source: Data compiled from annual balance sheets

Table 8 depicts that the company Hero Motors has highest mean of 42.258 when compared to other company indicates that this firm is in a favorable condition to generate a maximum profit from a rupee invested by a shareholder. This followed by Bajaj Auto Limited with a mean of 35.60. This company obtains satisfactory return on their capital invested by the shareholder over the period of study. On the other hand, the TVS Auto and Atul Auto has a minimum mean of

22.118 and 31.672 respectively, indicates that these companies are weak in mobilizing a money to earn profit from shareholders investments.

Return on Long Term Funds: It is calculated by dividing Earnings Before Interest & Tax (EBIT) by the net capital employed. The term net capital employed is the gross capital in the business minus current liabilities. Thus it represents the long-term funds supplied by creditors and owners of the firm.

Table No 9 Return on Long Term Funds

Year	Bajaj Auto	TVS Auto	Atul Auto	Hero Moto corp.
2011-2012	68.13	19.7	42.58	54.44
2012-2013	53.51	16.45	50.63	47.86
2013-2014	47.92	23.77	45.61	51.41
2014-2015	41.01	25	48.07	53.42
2015-2016	43.24	29.44	46.77	55.34
Mean	50.762	22.872	46.732	52.494
Std Deviation	10.828	4.994	2.978	2.975

Source: Data compiled from annual balance sheet

Table 9 depicts that the company Hero Motors has highest mean of 52.494 when compared to other company indicates that this firm is in a favorable condition to generate a maximum earnings from net capital employed. This followed by Bajaj Auto Limited with a mean of 50.762 This company obtains satisfactory return on their capital invested by the shareholder over the period of study. On the other hand, the TVS Auto and Atul Auto has a minimum mean of 22.872 and 46.732 respectively, indicates that these companies are weak in mobilizing a net capital to earn profit from shareholders investments.

ANOVA Analysis

Capital Structure of any company consists of debt and equity, which helps in financing of operations and other day to day technical and administrative activities of the manufacturing unit. Capital Structure decision is a crucial financial decision in as much as it directly affected growth rate of the company, its credit standing, share prices and ultimately overall value of the company. If the Capital Structure decision can affect a firm's value, then it would like to have a ***CS*** which maximize its market value.

Therefore, I had considered the relation and effect of Independent variables i.e. debt equity ratio, debt asset ratio and Long term capital fund, on dependent variables i.e. GPM, NPM, ICR (interest coverage ratio) OPR (operating profit ratio), RCE(return on capital employed),and ROE (return on net worth). These determinants are crucial for maintaining optimal capital structure for better financial performance. ANOVA Analysis is used to study the effect of Independent variables on Dependent variables through the construction of Hypothesis. Following three phase study is given below:

1. Effect of debt equity ratio on GPM, NPM,ICR, OPR,RCE and ROE.
2. Effect of debt asset ratio on GPM, NPM,ICR, OPR,RCE and ROE.
3. Effect of long term capital fund on GPM, NPM,ICR, OPR,RCE and ROE.

Interpretation to 1st Hypothesis: Table 10 below provides us with an Anova analysis to study the effect of debt equity ratio on other financial variables in a very prudent manner. Reflecting on the constructed hypothesis No 1, as the value of calculated F for Interest coverage ratio is 1.33 which is much less than the critical table value at 5% level of significance of 5.99 for the given degree of freedom,therefore, we accept the null hypothesis i.e. there is significant relation between debt equity ratio and interest coverage ratio.

Table 10 ANOVA Analysis Debt-Equity Ratio to financial Variables.

Interest Coverage Ratio				
Source of Variation	d.f.	SS	MS	F
Between Groups	1	5399131.31	5399131.31	1.3365

Within Groups	6	24238980.9	4039830.16	
Total	**7**	29638112.3		
Gross Profit Ratio				
Source of Variation	d.f.	SS	MS	F
Between Groups	1	227.015432	227.015432	12.876
Within Groups	6	105.789262	17.6315437	
Total	**7**	332.804694		
Net Profit Ratio				
Source of Variation	d.f.	SS	MS	F
Between Groups	1	137.663825	137.663825	10.468
Within Groups	6	78.908735	13.1514558	
Total	**7**	216.57256		
Operating Profit Ratio				
Source of Variation	d.f.	SS	MS	F
Between Groups	1	315.783581	315.783581	19.801
Within Groups	6	95.685723	15.9476205	
Total	7	411.469304		
Return on Capital Employed				
Source of Variation	d.f.	SS	MS	F
Between Groups	1	3539.60152	3539.60152	30.565
Within Groups	6	694.835806	115.805968	
Total	7	4234.43733		
Return on Net Worth				
Source of Variation	d.f.	SS	MS	F

Between Groups	1	2133.08993	2133.08993	60.02
Within Groups	6	213.237446	35.5395743	
Total	7	2346.32737		

Source: Data compiled from annual balance sheets

Any change in the dynamics of debt and equity is going to affect the interest payment liability of the company. This interest cost is applicable to all the four automobile companies in study. But for the other financial variable, alternative hypothesis is accepted .i.e. there is no significant relation between debt equity ratio and other selected variables as in this case calculated value of F is far more than the critical table value at 5% level of significance. This means return on net worth and capital is not affected by the mix of debt and equity. This is also reflected in a balance sheet where the debt financing is very less as compared to equity financing. These four companies has provided a very competitive financial structure by keeping the interest cost very minimal and weighting more on equity capital.

Table 11 ANOVA Analysis Debt-Assets Ratio to financial Variable

Interest Coverage Ratio				
Source of Variation	d.f.	SS	MS	F
Between Groups	1	5396100.334	5396100.334	1.3357247
Within Groups	6	24238978.03	4039829.672	
Total	7	29635078.37		
Gross Profit Ratio				
Source of Variation	d.f.	SS	MS	F
Between Groups	1	207.835272	207.835272	11.819555
Within Groups	6	105.50411	17.58401833	
Total	7	313.339382		
Net Profit Ratio				
Source of Variation	d.f.	SS	MS	F

Between Groups	1	122.805792	122.805792	9.3688449
Within Groups	6	78.647342	13.10789033	
Total	7	201.453134		
Operating Profit Ratio				
Source of Variation	d.f.	SS	MS	F
Between Groups	1	292.8442005	292.8442005	18.428205
Within Groups	6	95.346519	15.8910865	
Total	7	388.1907195		
Return on Capital Employed				
Source of Variation	d.f.	SS	MS	F
Between Groups	1	3462.867421	3462.867421	29.886567
Within Groups	6	695.202119	115.8670198	
Total	7	4158.06954		
Return on Net Worth				
Source of Variation	d.f.	SS	MS	F
Between Groups	1	2075.354738	2075.354738	58.942617
Within Groups	6	211.258494	35.209749	
Total	7	2286.613232		

Source: Data compiled from annual balance sheets

Interpretation to 2nd Hypothesis: Table 11 above provides us with an Anova analysis to study the effect of debt asset ratio on other financial variables in a very prudent manner. Reflecting on the constructed hypothesis No2, as the value of calculated F for Interest coverage ratio is 1.33 which is much less than the critical table value at 5% level of significance of 5.99 for the given degree of freedom we accept the null hypothesis i.e. there is significant relation between debt asset ratio and Interest coverage ratio. It means any use of debt in financing the assets is going to affect the interest in a proportional way. But for the other financial variable alternative

hypothesis is accepted i.e. there is no significant relation between debt asset ratio and other selected variables as in these case calculated value of F is far more than the table value of 5.99 at 5% level of significance. Therefore, in automobile industries financing of asset through debt do not show any effect on return on capital employed and its net worth.

Table 12 ANOVA Analysis Long Term Debt to Other Financial Variables

Interest Coverage Ratio					
Source of Variation	d.f.	SS	MS	F	p-level
Between Groups	1	5120456.01	5120456.01	1.267	0.30324958
Within Groups	6	24239547.3	4039924.55		
Total	7	29360003.31			
Gross Profit Ratio					
Source of Variation	d.f.	SS	MS	F	p-level
Between Groups	1	2087.8722	2087.8722	18.57	0.00504364
Within Groups	6	674.72755	112.4545917		
Total	7	2762.59975			
Net profit Ratio					
Source of Variation	d.f.	SS	MS	F	p-level
Between Groups	1	2403.671113	2403.671113	22.26	0.00326456
Within Groups	6	647.888075	107.9813458		
Total	7	3051.559188			
Operating Profit Ratio					
Source of Variation	d.f.	SS	MS	F	p-level
Between Groups	1	1849.5362	1849.5362	16.68	0.0064694
Within Groups	6	665.18435	110.8640583		
Total	7	2514.72055			
Return on Capital					

Employed					
Source of Variation	d.f.	SS	MS	F	p-level
Between Groups	1	1.6110125	1.6110125	0.008	0.93316229
Within Groups	6	1264.061275	210.6768792		
Total	7	1265.672288			
Return on Net Worth					
Source of Variation	d.f.	SS	MS	F	p-level
Between Groups	1	212.18	212.18	1.627	0.24921512
Within Groups	6	782.24755	130.3745917		
Total	7	994.42755			

Source: Data compiled from annual balance sheets

Interpretation to 3rd Hypothesis: Table 12 above provides us with a ANOVA analysis of long term debt ratio to other financial variable affecting financial performance of the company. Referring hypothesis No 3 the calculated F value, at 5 % level of significance, of Interest coverage ratio, return on capital employed and return on net worth is 1.267, 0.008 and 1.627 respectively, which is quit less than the critical table value of 5.99 at the given degree of freedom which tells us that there is significant relation between long term debt and interest coverage ratio, return on capital employed and return on net worth, therefore we accept null hypothesis. But for the remaining financial variable we accept alternative hypothesis as their calculated F value is much more than the table value of 5.99 at 5% level of significance. In automobile industry, referring these company in study, long term capital debt do effect interest and return on net worth and capital.

Regression Analysis:

Ho: Null Hypothesis: Capital structure variables significantly impacts financial performance of the company.

H4: Alternative Hypothesis: Capital structure variables do not significantly impacts financial performance of the company.

Table 13 Regression Analysis of Debt Equity Ratio to other Financial Variables

	R	R2	Adjusted R2
Interest Coverage Ratio	0.406	0.165	-0.252
Gross Profit Ratio	0.812	0.659	0.488
Net Profit Ratio	0.784	0.615	0.422
Operating Profit Ratio	0.806	0.652	0.474
Returns on Capital Employed	0.979	0.956	0.934
Return on Net Worth	0.831	0.691	0.534

Source: Data compiled from annual balance sheets

1) Regression analysis between debt equity ratio and Interest coverage ratio. Based on the above table R2 = 0.165 That means 16.5% of the variation in the interest coverage ratio is determined by debt equity ratio other remaining 83.5% is undetermined. This means that other 83.5% variation is caused by other variables at 5% significance level.

2) Regression analysis between debt equity ratio and GPM. Based on the above table R2 = 0.659. That means 65.9% of the variation in the GPM is determined by debt equity ratio other remaining 34.1% is undetermined. This means that other 34.1% variation is caused by other variables at 5% significance level.

3) Regression analysis between debt equity ratio and NPM. Based on the above table R2 = 0.615 That means 61.5% of the variation in the NPM is determined by debt equity ratio other remaining 38.5% is undetermined. This means that other 38.5% variation is caused by other variables at 5% significance level.

4) Regression analysis between debt equity ratio and operating profit ratio. Based on the above table R2 = 0.652 That means 65.2% of the variation in the operating profit ratio is determined by debt equity ratio other remaining 34.8% is undetermined. This means that other 34.8% variation is caused by other variables at 5% significance level.

5) Regression analysis between debt equity ratio and return on capital employed. Based on the above table R2 = 0.956.That means 95.6% of the variation in the ROCE is determined by debt equity ratio other remaining 4.4% is undetermined. This means that other 4.4% variation is caused by other variables at 5% significance level.

6) Regression analysis between debt equity ratio and return on net worth. Based on the above table R2 = 0.691That means 69.1% of the variation in the return on net worth is determined by debt equity ratio other remaining 30.9% is undetermined. This means that other 30.9% variation is caused by other variables at 5% significance level.

In light of above given hypothesis I can conclude that the mix of debt to equity plays a major role and do affect the financial performance of dependable variable mentioned in the table above. It has a major impact on return on capital employed and least impact on interest coverage ratio. On an average if we analyse, 62.3% of the variation on the various dependable variable mentioned above is determined by the mix of debt to equity. Therefore we accept null hypothesis and reject alternative hypothesis given above.

Table 14 Regression Analysis of Debt Asset Ratio to other financial variables

	R	R2	Adjusted R2
Interest Coverage Ratio	0.478	0.221	-0.156
Gross Profit Ratio	0.664	0.441	0.162
Net Profit Ratio	0.575	0.331	-0.003
Operating Profit Ratio	0.546	0.298	-0.052
Returns on Capital Employed	0.541	0.293	-0.059
Return on Net Worth	0.182	0.033	-0.45

Source: Data compiled from annual balance sheets

1) Regression analysis between debt asset ratio and interest coverage ratio. Based on the above table R2 = 0.221. That means 22.1% of the variation in the interest coverage ratio is determined by debt asset ratio other remaining 77.9% is undetermined. This means that other 77.9% variation is caused by other variables at 5% significance level.

2) Regression analysis between debt asset ratio and GPM. Based on the above table R2 = 0.441. That means 44.1% of the variation in the GPM is determined by debt asset ratio other remaining 55.9% is undetermined. This means that other 55.9 % variation is caused by other variables at 5% significance level.

3) Regression analysis between debt asset ratio and NPM. Based on the above table R2 = 0.331. That means 33.1% of the variation in the NPM is determined by debt asset ratio other remaining 66.9% is undetermined. This means that other 66.9% variation is caused by other variables at 5% significance level.

4) Regression analysis between debt asset ratio and operating profit ratio. Based on the above table R2 = 0.298. That means 29.8% of the variation in the operating profit ratio is determined by debt asset ratio other remaining 70.2% is undetermined. This means that other 70.2% variation is caused by other variables at 5% significance level.

5) Regression analysis between debt asset ratio and return on capital employed. Based on the above table R2 = 0.293.That means 29.3% of the variation in the ROCE is determined by debt asset ratio other remaining 70.7% is undetermined. This means that other 70.7% variation is caused by other variables at 5% significance level.

6) Regression analysis between debt asset ratio and return on net worth. Based on the above table R2 = 0.033. That means 3.3% of the variation in the return on net worth is determined by debt asset ratio other remaining 96.7% is undetermined. This means that other 96.7% variation is caused by other variables at 5% significance level.

Analyzing the regression of debt asset ratio to other dependent financial performance variables given in table no 14 above, I conclude that the effect of debt to asset on other financial performance variable is not so effective as compared to mix of debt equity in the automobile industry under study. On an average if we analyse, 22% of the variation on the various dependable financial performance variable mentioned above is determined by the mix of debt and asset. In automobile industry under study, to my surprise, mix of debt to asset fails to show any impact on return on net worth and so on ROCE. Therefore I do reject the null hypothesis and accept the alternative hypothesis.

Table 15 Regression Analysis of Long Term Funds to other financial variables

	R	R2	Adjusted R2
Interest Coverage Ratio	0.426	0.182	-0.226
Gross Profit Ratio	0.789	0.622	0.434
Net Profit Ratio	0.815	0.665	0.498

Operating Profit Ratio	0.846	0.716	0.574
Returns on Capital Employed	1	1	1
Return on Net Worth	0.926	0.858	0.787

Source: Data compiled from annual balance sheets

1) Regression analysis between long term funds and interest coverage ratio. Based on the above table R2 = 0.182. That means 18.2% of the variation in the interest coverage ratio is determined by long term funds other remaining 81.8% is undetermined. This means that other 81.8% variation is caused by other variables at 5% significance level.

2) Regression analysis between long term funds and GPM. Based on the above table R2 = 0.622. That means 62.2% of the variation in the GPM is determined by long term funds other remaining 37.8% is undetermined. This means that 37.8% variation is caused by other variables at 5% significance level.

3) Regression analysis between long term funds and NPM. Based on the above table R2 = 0.665. That means 66.5% of the variation in the NPM is determined by long term funds other remaining 33.5% is undetermined. This means that other 33.5% variation is caused by other variables at 5% significance level.

4) Regression analysis between long term funds and operating profit ratio. Based on the above table R2 = 0.716. That means 71.6% of the variation in the operating profit ratio is determined by long term funds other remaining 28.4% is undetermined. This means that other 28.4% variation is caused by other variables at 5% significance level.

5) Regression analysis between long term funds and return on capital employed. Based on the above table R2 = 1.That means 100% of the variation in the ROCE is determined by long term funds. This means that ROCE is not affected by other variables except long term funds at 5% significance level.

6) Regression analysis between long term funds and return on net worth. Based on the above table R2 = 0.858 That means 85.8% of the variation in the return on net worth is determined by long term funds other remaining 14.2% is undetermined. This means that 14.2% variation is caused by other variables at 5% significance level.

Analyzing the regression of long term funds to other dependent financial performance variables given in table no 15 above, I conclude that the effect of long term funds on other financial

performance variable is highly effective. Long term funds do steer the performance ability of dependent variables. On an average if we analyse, 67.4% of the variation on the various dependable financial performance variable mentioned above is determined by the long term funds.

Long term funds have greater impact on return on capital employed and return on net worth. Nearly 100% variation in ROCE and 85.8% variation in Net worth happen only due to variation in long term funds. Long term funds and mix of debt to equity plays a major role in aggravating the financial performance of the automobile companies. In other words these two independent variable shows the major impact on the profitability of automobile industry. Therefore I accept the null hypothesis and reject the alternative hypothesis.

Table No 16 Pearson's Correlation coefficient Matrix

		DER	DAR	RLTF	ICR	GPM	NPM	OPR	ROCE	RONW
DER	Correlation Coefficient	1								
	R Standard Error									
	H0 (0.1%)									
DAR	Correlation Coefficient	0.692006	1							
	R Standard Error	0.260564								
	H0 (0.1%)	accepted								
RLTF	Correlation Coefficient	-0.97724	-0.538275	1						
	R Standard Error	0.022502	0.35513							
	H0 (0.1%)	accepted	accepted							
ICR	Correlation Coefficient	-0.40652	-0.474644	0.426479	1					
	R Standard Error	0.417371	0.387357	0.409058						
	H0 (0.1%)	accepted	accepted	accepted						
GPM	Correlation Coefficient	-0.78325	-0.661346	0.788988	0.886197	1				
	R Standard Error	0.193261	0.28131	0.188749	0.107327					

	H0 (0.1%)	accepted	accepted	accepted	accepted					
NPM	Correlation Coefficient	-0.78235	-0.572483	0.813497	0.872332	0.992287	1			
	R Standard Error	0.193967	0.336132	0.169111	0.119518	0.007684				
	H0 (0.1%)	accepted	accepted	accepted	accepted	accepted				
OPR	Correlation Coefficient	-0.8062	-0.542837	0.846261	0.838633	0.982375	0.99722	1		
	R Standard Error	0.175019	0.352664	0.141921	0.148348	0.01747	0.00278			
	H0 (0.1%)	accepted	accepted	accepted	accepted	accepted	accepted			
ROCE	Correlation Coefficient	-0.97747	-0.540691	0.999988	0.430804	0.792015	0.81623	0.848681	1	
	R Standard Error	0.022275	0.353827	1.25E-05	0.407204	0.186356	0.16689	0.13987		
	H0 (0.1%)	accepted	accepted	rejected	accepted	accepted	accepted	accepted		
RONW	Correlation Coefficient	-0.82897	-0.179123	0.9255	0.294485	0.6302	0.69887	0.750014	0.924447	1
	R Standard Error	0.156408	0.483957	0.071725	0.456639	0.301424	0.25579	0.21874	0.072699	
	H0 (0.1%)	accepted	accepted	accepted	accepted	accepted	accepted	accepted	accepted	

Pearson's Analysis:

Referring table no16 above on Karl Pearson's coefficient of correlation the debt to equity(DER) and debt to asset (DAR) has negatively correlated with financial performance variable of the selected firms. On other hand the interest coverage ratio(ICR) and Long term capital fund has positive impact and significantly associates with profitability of the firms under study. In this study debt to equityand debt to asset ratio is negatively correlated to profitability ratios, it implies that if the debt proportion increased aggressively then it will adversely impact the profitability. Furthermore the companies under study are exposing themselves to more risk and it may led to lose control if it continues. Positive correlation of Long term Capital Fund (RLTF) provides us a idea that the funds are properly used to finance the assets and thereby gaining good resultant in the form of net worth and return on capital thereby maximising the financial performance and growth.

Suggestions and Recommendations

The following suggestions are recommended to increase the Company's financial performance based on capital structure.

- Performance standards should be established and communicated to the investors. This will help investors to achieve the standard and take better investment decisions. Identifying weaknesses of investment may be best one to improve the firm's financial performance, because it indicates the area which decision should be taken. Inflation and exchange rate also affect the listed company's performance. So, government should consider the economic growth to control the inflation.
- Mature companies like Bajaj Auto Limited and Hero Motor corp. with stable and predictable cash flows as well as limited investment opportunities should include more debt in their capital structure, since the discipline that debt often brings outweighs the need for flexibility. Companies that face high uncertainty because of vigorous growth or the cyclical nature of their industries should carry less debt, so that they have enough flexibility to take advantage of investment opportunities or to deal with negative events.
- Corporate managers should follow a conservative investment policy in order to enhance the performance of their companies. This implies that the managers should maintain a higher level of investment in liquid assets relative to non-current assets.
- The study further established that the performance of the firm improves using more current liabilities to finance their assets which can maintain profitability. This is probably because current liabilities are less costly than long-term debt. Additionally, the study found that increasing the proportion of current assets in relation to total assets enhanced performance as measured by both ROA and ROE.

Limitations of the study

The study is limited to only 4 Companies. Therefore, this comprises the result of only a few numbers of firms, which would not be sufficient to totally generalize the inference of the automobile industry.

The data used for the study are secondary in nature. Therefore, the accuracy of the results of analysis is totally dependent upon the reliability and accuracy of secondary data. Only secondary data are collected to analysis to do this research.

Here the company's financial performance is computed based on debt equity, debt asset, long term debt but too many factors or measures have impact on financial performance of companies. So the result will be further valuable when researcher considers varies other kinds of parameters.

Only some methods are used to test hypothesis such as ANOVA, ratio analysis, correlation & regression etc. Further the researcher can add much variety of techniques to generalize their findings.

Conclusion

This paper been completed with the important objectives of, to what extend capital structure impact on financial performance of automobile companies. To conclude there is a positive relationship between capital structure and financial performance or profitability. So every firm should make good capital structure decision to earn profit and carry on their business successfully. When we focus on debt and equity position of automobile industry, some firm had adequate level of debt capital and equity capital and also long term debt but they do not maintain some specific or standardized mix of capital to earn maximum profit. Managing capital structure thus becomes a balancing act. The trade-off a company makes between financial flexibility and fiscal discipline is the most important consideration in determining its capital structure and far outweighs any tax benefits, which are negligible for most large companies unless they have extremely low debt.

Reference

- Booth, Laurence, Varouj Aivazian, Asli Demirgüç-Kunt and Vojislav Maksimovic. 2001. Capital Structures in Developing Countries. Journal of Finance 56(1): 87-130.
- B. Anu, "A Study on Capital Structure of Selected Automobile Industry of India", May 2015,International Journal of Economics and Business Review.
- Chen, Andrew and Sumon Mazumdar. 1994. Impact of Regulatory Interactions on Bank Capital
- Structure. Journal of Financial Services Research 8(4): 283-300.

- Dr.N.S. Pandey and M.Malarvizhi, "Impact of Capital Structure on Profitability of Listed Cement Industry of India", May 2015, International Journal of Research in Finance and Marketing.
- Dr. Rakeshkumar Rasiklal Jani and Mr. Satyaki J. Bhatt,"Capital Structure Determinants-A Case Study of Automobile Industry".,March 2015, International Journal of Research and Analytical Reviews.
- Dr. Rohit R. Manjule, "Impact of Capital structure in Indian Industry" Volume 5, Issue 1, January-2014, International Journal of Scientific & Engineering Research,
- Hashemi Tilehnouei Mostafa and Shivaraj Boregowda, "A Brief Review of Capital Structure Theories", Oct 2014, Research Journal of Recent Sciences.
- Nirajini,A, Priya,K B, "Impact of capital structure on Financial Performance of Listed Trading Companies in Srilanka" May 2013, International Journal of Scientific and Research Publications.
- Pandey, I. M. 2009. Financial Management: Capital Structure Planning and Policy, Vikas Publishing House Private Limited, New Delhi: 332-333.
- Pandey, I. M. 2011. Essentials of Financial Management, 3rd Edition, Vikas Publishing House Private Limited, New Delhi: 334.
- Singhania, Vinod .K, Kapil Singhania, and Monica Singhania. 2005. Direct Taxes Planning and Management, 9th Edition, Taxmann Publications Private Limited, New Delhi: 145.
- Srivastava, R. M. 2001. Essentials of Business Finance, 7th Edition, Himalaya Publishing House, Mumbai: 173.