International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Impact of Capital Structure on Financial Performance: Evidence from NSE Automobile Companies

Chhaya Thakaji Lande[1], Dr. Virendra V Tatake[2]

[1]Research Scholar (Ph.D.), Indira Institute of Management, Pune, Savitribai Phule Pune University
[2]Research Guide (Ph.D.), Indira Institute of Management, Pune, Savitribai Phule Pune University

ABSTRACT:
In this study, an effort has been made to determine the effect of capital structure on a firm's profitability. Five Automobile companies are utilized as a sample in this study. Twelve years are used as the study's reference period. This study is based on the secondary data which has been collected through the financial statements of the companies & different websites.
The researchers used the multiple regression model using R programming to estimate the relationship between the independent variable (DAR, DER , ICR) and the measures of the dependent variable Return on Net Worth (RONW). According to the study's findings, capital structure does have a statistically significant effect on a company's profitability. Out of Five companies the Two Companies show the significant effect of Capital structure on profitability. In case of other three companies there was lack of evidence to conclude anything about the relation between capital structure and profitability as these three companies are almost debt free which resulted into no variation in debt equity ratio over the research period.

Keywords: Capital Structure, Profitability, Debt Equity Ratio, Interest Coverage Ratio, Debt to Assets Ratio, Return on Net worth, Multiple Regression Analysis.

Introduction:

The corporate world's motto is "survival of the fittest" in the current period of fierce competition. Given this situation, making decisions has become one of the most difficult duties because it determines the future of any company. Managers must therefore analyze the cause-and-effect relationship while selecting a particular choice. A choice made in isolation can push a company to the brink of disaster, thus managers in the modern corporate environment must employ a systems approach. The capital structure decision is the most important one to make when making a capital investment because it directly affects an enterprise's profitability.
Businesses employ either debt or equity to finance their assets. The best option is to combine the two. Owners of businesses should have to choose between using debt and equity in this situation where interest is not tax deductible. If interest is tax deductible, there are more opportunities to increase the value of the business by using 100% debt financing. As a result, if a company has a higher debt to equity ratio, there will be more risk and potentially higher interest rates.

Rising interest rates so negate the tax benefit obtained from using debt. Stockholders are in a deficit if a company's operating income is sufficient during a difficult period but is unable to pay interest charges. If they refuse, the company can be driven into bankruptcy. Happy times are far off. The shareholders could be eliminated because of this predicament (Azhagiah & gavoury, 2011).

The secondary data analysis approach was used to deepen our understanding of the capital structure and how it affects the company's profitability. sample of 5 automobile companies listed on NSE as per market Capitalization, covering a twelve -year period. In doing so, we look at both the influence of independent variables on the dependent variable as well as the relationship between capital structure and firm performance in terms of profitability.

This study contributes in two important ways: first, it deepens knowledge of capital structure, its components, and the elements that influence a company's profitability. Second it offers a more detailed understanding of the consequences that industry experiences when the debt and equity are considered. The theoretical context and literature review are introduced in the following section. The research's methodology is used after this. The study's findings and the formulation of the hypotheses are then presented, and the debate follows. We conclude the paper with findings & conclusion.

THEORETICAL BACKGROUND AND LITERATURE REVIEW

Background Theory

The choice of capital structure is crucial for the company since it affects how well a corporation can recognize and invest in projects that can guarantee higher profits. The firm's ability to compete in a hostile environment is affected by an investment decision it makes (Wald). A company's capital structure is simply a mix of different securities. A firm can choose from a wide range of capital structure alternatives. A business may issue a sizable amount of debt. Moreover, a business can set up lease financing, warrants, convertible bonds, forward contracts, bond swaps, and convertible warrants. It can also issue a huge variety of securities in countless combinations, but it aims to find the precise combination that maximizes its overall market value (Hadlock and James).

Critical review of literature

That section reviews a variety of journal papers pertaining to the following subjects.

- Impact of Capital Structure on Profitability of the company
- The Relationship between Capital Structure & Profitability

T. Velnampy & J. Aloy Niresh, (2012) In this study, which spans the eight-year period from 2002 to 2009, the capital structure and profitability of ten listed Sri Lankan banks are being examined. To determine the relationship between the variables, descriptive statistics and correlation analysis were used to analyze the data. The analysis's findings indicate that, apart from the relationship between debt to equity and return on equity, there is a negative correlation between capital structure and profitability. Furthermore, the findings imply that debt accounts for 89% of all assets in Sri Lanka's banking industry, underscoring the notion that banks are highly geared organizations. The study's findings may help banks, loan-creditors, and policymakers create better policy judgements as far as capital structure is concerned.

Dr. Atul A. Agwan, (2017) In this study, which covered the eight-year period from 2002 to 2009, the capital structure and profitability of ten listed Sri Lankan banks are being examined. Descriptive statistics and correlation analysis have been used to analyze the data to determine the as A company's capital structure reveals where its funding has come from. The owned and owed capital are the two

components of this capital structure. The choice of this capital structure was influenced by several factors, including cost of capital, control, flexibility, and others. With an average yearly production of 17.5 million automobiles, India is the seventh-largest auto producer in the world. This study seeks to determine the effect of capital structure on the profitability of the firm. The findings showed that capital structure and financial performance are positively correlated.

Monika Shah, (2015) This study discusses a company's capital structure and how its funding has been obtained. The owned and owed capital are the two components of this capital structure. The decisions made when choosing this capital structure are influenced by a number of factors, including cost of capital, control, flexibility, etc. This study focused on examining the capital structures of some illustrious listed Indian automobile companies. The goal is to determine the relationship between the capital structure, return on invested capital, company value, and a variety of other firm-related parameters.

Suresh Babu, (2016) this study investigates the capital structure and its drivers of automobile businesses listed in India. The information was obtained from the "Industry; financial aggregates and ratios" (PROWS) secondary data source of the Centre for Monitoring Indian Economy (CMIE), which includes information on 58 Indian automobile businesses registered on the Bombay Stock Exchange for the years 1997–1998 to 2010–2014. (17 years). This study used panel data analysis. For the examination of the penal data from the sample companies, a fixed effects regression model was employed. The empirical findings indicate that whereas risk and liquidity are positively correlated with leverage, profitability, scale, tangibility, growth, and non-debt tax shields are adversely correlated with leverage. Statistics show that capital structure is significantly determined by profitability.

Md. Abdur Rouf, (2015) This study examines the company performance on capital structure for the listed non-financial enterprises in the Dhaka Stock Exchange (DSE) during the years 2008 to 2011.The aim of this study is to investigate the connection between a capital structure feature and performance as shown by Return on Assets (ROA) and Return on Sales (ROS).In order to calculate the impact of capital structure on company performance, multiple regression models were used. Regression analysis results reveal a negative and substantial association between debt ratio, debt equity ratio, and proprietary equity ratio and return on asset (ROA) and return on sales (ROS).

Adnan Ali, (2015) This study seeks to determine the relationship between profitability and capital structure. There are several factors that can be used to determine the relationship between capital structure and profitability, including short- and long-term debts to assets ratios, funded capital ratios, funded debt ratios, current debt ratios, funded asset ratios, sales growth, and return on assets. Randomly selected as a sample were 28 companies from the Pakistan Stock Exchange's Cement & Automotive industry. Secondary data for 7 years was gathered from audited consolidated financial statements and analyzed using correlation and regression statistical techniques. The Housman test was employed to choose the model. Findings show a link between the variables in the cement and automobile sectors that is both positive and negative.

(Kebewar and Shah, 2012) Modigliani & Miller's research on the connection between capital structure and profitability is among the earliest and most significant (1958). The study confirmed that, in the case of perfect markets, the market value of the company is determined by the makeup of its assets and is unaffected by the capital structure.

Dare & Sola (2010), conducted research on the effects of capital structure on business performance in Nigeria's petroleum industry sectors, While the leverage ratio shows the capital structure, dividend per

share and earnings per share have some influence on performance. Results showed that there is a positive link between the factors.

Hijazi and Tariq (2006) The study identified capital structural factors that affected Pakistan's car industry from 1997 to 2001.The findings indicated that firm size is adversely connected but not statistically significant, suggesting that a large firm will use less debt. Moreover, profitability was negatively correlated but statistically significant. Moreover, a strong yet favorable link between asset tangibility and leverage was found.

Abor (2005) discovered a strong and complete link between capital structure and profitability. Also, he discovered a positive correlation between some ratios, such as the short-term debt-to-assets ratio and ROE Return on Equity, and a negative correlation between the long-term debt-to-assets ratio and ROE Return on Equity.

METHODOLOGY

The data of the study is completely based on secondary data which has been collected from various web sites and annual financial reports of the sample Companies.

STATEMENT OF THE PROBLEM

The goal of the study is to determine whether the effect of capital structure and profitability of automobile companies listed on the NSE have any relationship. If so, what is the magnitude (i.e., the influence on profitability choices of the financing structure) and the direction (positive correlation or inverse), and is there any statistical significance to the link or effect? This will be accomplished by examining the link between the dependent variables RONW and the independent variable DAR, DER, ICR.

RESEARCH QUESTIONS:

These questions were addressed to provide answers in this study:

- Is a company's capital structure strongly correlated with its profitability?
- Is there an optimal (favorable) capital structure in listed automobile firms?
- What is the capital structure trend used by listed auto companies listed on the NSE?

STUDY PERIOD

The study covers the period from 2011 to 2022.The data for the inquiry were readily available for this time period, this time period was chosen as the restriction. The required data include the following: -

Total Debts from 2011 to 2022

Total Shareholders' Equity from 2011 to 2022

Total Assets from 2011 to 2022.

Earnings before Interest and Taxes from 2011 to 2022

Interest Expenses from 2011 to 2022

Net Profit after Tax from 2011 to 2022

Total Net worth from 2011 to 2022

RESEARCH SAMPLE

In this study five (5) firms of the automobile industry have been taken as samples. All the sample firms are listed in NSE and are selected by the researchers based on Market Capitalization

The companies include:

1. Maruti Suzuki India Ltd.
2. Mahindra and Mahindra Ltd.
3. Tata Motors Ltd.
4. Bajaj Auto Ltd
5. Eicher Motors Ltd.

Ratio Analysis has been used by the researchers to meet the study's goals. The Ratios are employed to confirm the relationship between capital structure and profitability.

HYPOTHESIS:

H0: Return on Net worth is not related to Debt Equity Ratio, Debt to Assets Ratio and Interest Coverage Ratio

H1: Return on Net worth is related to Debt Equity Ratio, Debt to Assets Ratio and Interest Coverage Ratio.

H0: $\beta 1 = \beta 2 = \beta 3$

H1: Some $\beta i \neq 0$

VARIABLES USED IN STUDY

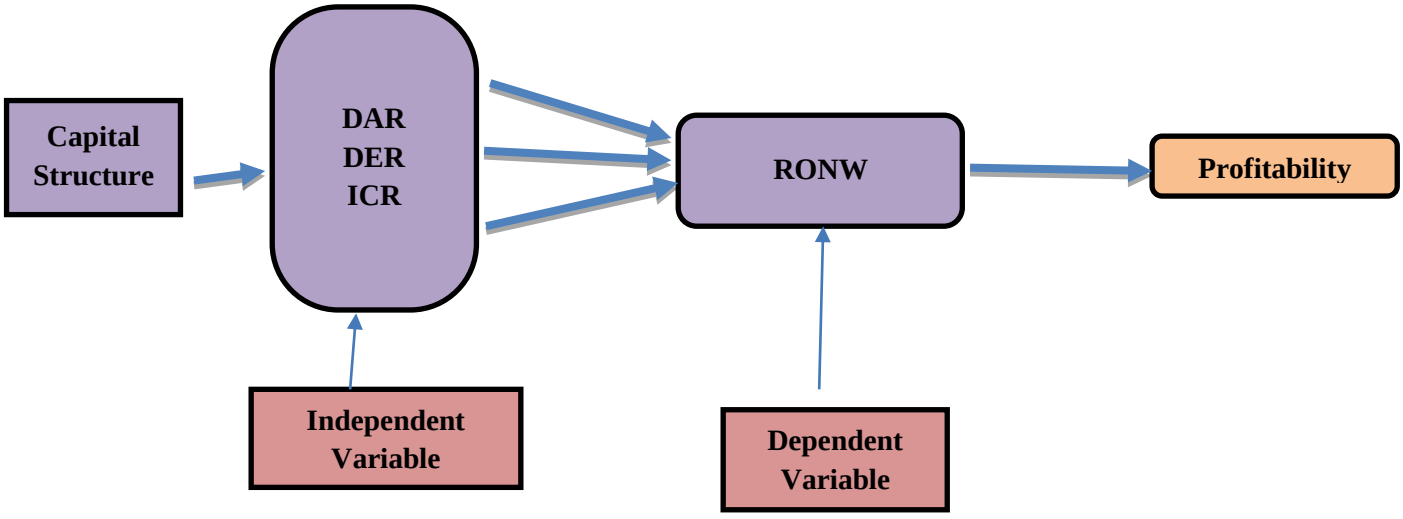
Debt to Equity Ratio (DER) = Total Debt / Total Equity

Debt to Assets Ratio (DAR) = Total Liabilities / Total Assets

Interest Coverage Ratio (ICR) = (Earnings before Interest and Tax) / Interest Expenses

Return on Net worth = Annual Net worth of the company/ shareholders equity capital.

CONCEPTUAL FRAMEWORK FOR MULTIPLE REGRESSION ANALYSIS



STATISTICAL TOOLS, TECHNIQUES & SOFTWARE PACKAGE USED:

Multiple Regression Model is used to study the effect of DAR, DER & ICR on RONW.

MULTIPLE REGRESSION MODEL

RONW = β0 + β1* DER i +β2* DAR i + β3*ICR i + e i

RONW: Return on Net Worth

βo: Intercept, β1: coefficient of DER, β2: coefficient of DAR, β3: coefficient of ICR

e: error term i: entity (firm)

The model explains the relationship between the dependent variable is Return on Net Worth and independent variables DER, DAR, ICR.

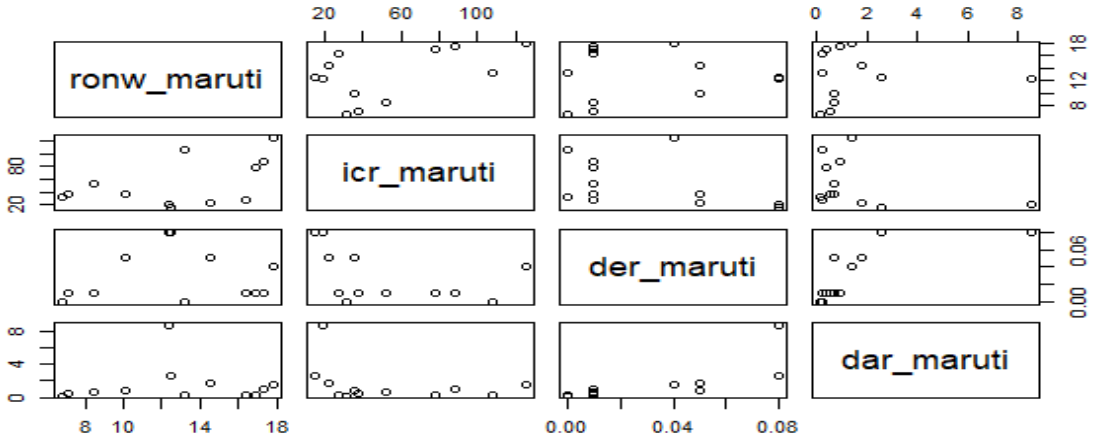
The Multiple Regression is run in R Programming to calculate F statistics, P value and R Square Values and the results obtained from R Programming and their interpretations are as below.

Maruti Suzuki India Ltd.

```
Residuals:
    Min      1Q  Median      3Q     Max
-3.6224 -2.8062 -0.4143  2.8796  6.2685

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  7.71344    2.77922   2.775   0.0241 *
icr_maruti   0.06831    0.03346   2.042   0.0755 .
der_maruti  53.97136   59.82638   0.902   0.3933
dar_maruti  -0.08884    0.72973  -0.122   0.9061
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 3.75 on 8 degrees of freedom
Multiple R-squared:  0.3495,    Adjusted R-squared:  0.1055
F-statistic: 1.432 on 3 and 8 DF,  p-value: 0.3035
```



The value of the F statistics for 3 and 8 degrees of freedom and 5% level of significance is 1.432, and the p-value of 0.3035 is greater than 0.05, the regression coefficient values are not statistically significant to reject the null hypothesis and therefore we fail to reject the null hypothesis. So, we

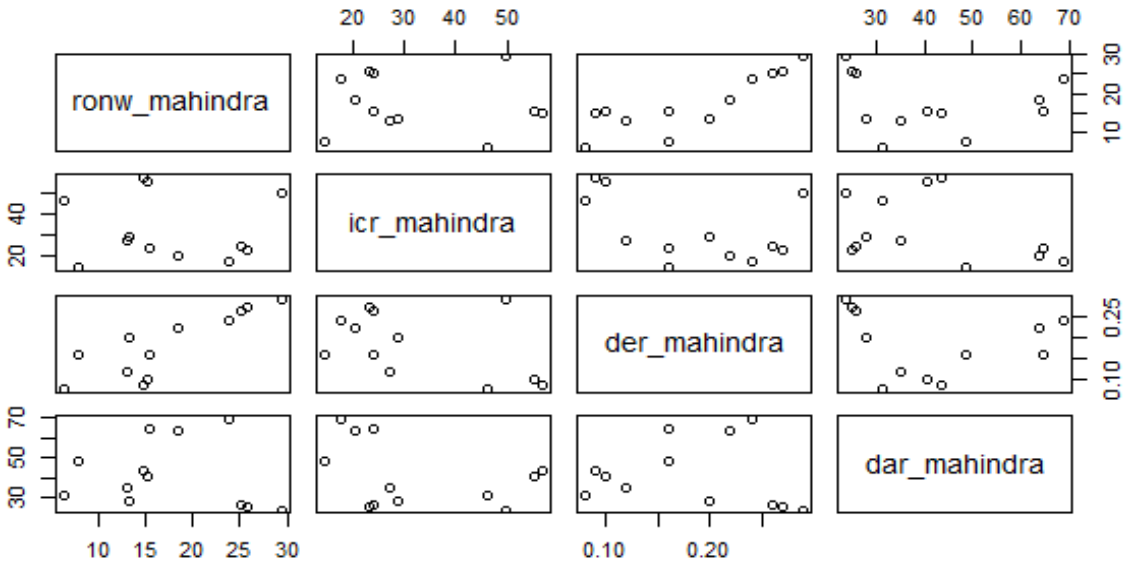
conclude that for Maruti Suzuki India ltd return on net worth is independent of Debt Equity Ratio, Debt to Asset ratio and Interest coverage ratio. The main reason behind this is that the Maruti Suzuki India ltd company is almost debt free, this resulted in constant DER, DAR and ICR over the research period. As the independent variable remained constant, we could not predict their impact on the dependent variable.

Mahindra & Mahindra India Ltd.

```
Residuals:
    Min      1Q  Median      3Q     Max
-4.0184 -2.1446  0.8898  1.8619  4.0512

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)  -12.80143    6.57348  -1.947 0.087338 .
icr_mahindra   0.23355    0.08004   2.918 0.019352 *
der_mahindra 105.95371   15.24380   6.951 0.000118 ***
dar_mahindra   0.07932    0.06633   1.196 0.266019
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 3.141 on 8 degrees of freedom
Multiple R-squared:  0.8632,    Adjusted R-squared:  0.8119
F-statistic: 16.83 on 3 and 8 DF,  p-value: 0.0008129
```



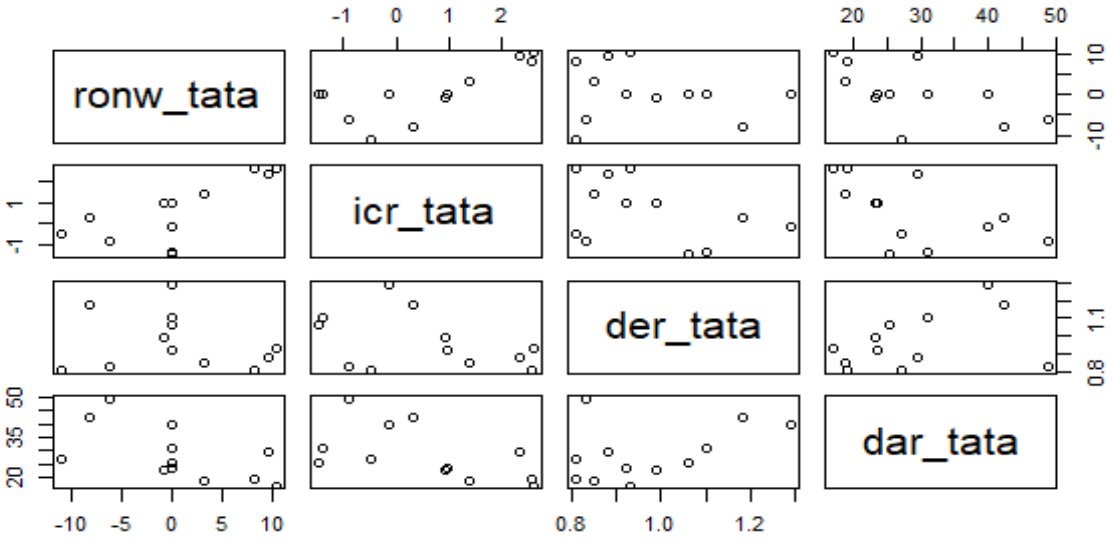
The value of the F statistics for 3 and 8 degrees of freedom and 5% level of significance is 16.83, and the p-value of 0.0008129 is less than 0.05, the regression coefficient values are statistically significant therefore we reject the null hypothesis. So, we conclude that Mahindra’s return on net worth is dependent on Debt Equity Ratio, Debt to Asset ratio and Interest coverage ratio. Adjusted R squared value is 0.8119 which indicates 81% variation in return on net worth is determined by DER, DAR and ICR jointly.

Tata Motors Ltd.

```
Residuals:
    Min      1Q  Median      3Q     Max
-7.270 -2.610   1.236   3.288   4.860

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  -3.5075    10.7743  -0.326   0.7531
icr_tata      2.9080     1.2304   2.364   0.0457 *
der_tata      8.7676    10.6066   0.827   0.4324
dar_tata     -0.2135     0.1805  -1.183   0.2709
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 4.895 on 8 degrees of freedom
Multiple R-squared:  0.6153,    Adjusted R-squared:  0.4711
F-statistic: 4.266 on 3 and 8 DF,  p-value: 0.04479
```



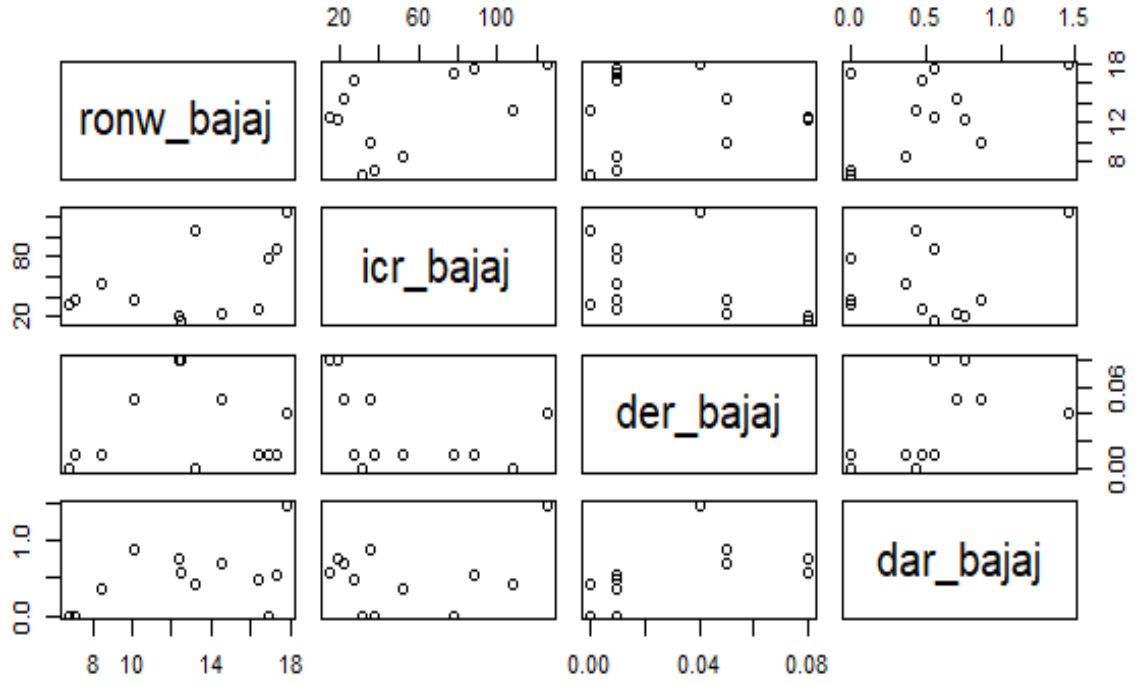
The value of the F statistics for 3 and 8 degrees of freedom and 5% level of significance is 4.266, and the p-value of 0.04479 is less than 0.05, the regression coefficient values are statistically significant therefore we reject the null hypothesis. So, we conclude that Tata Motor’s return on net worth is dependent on Debt Equity Ratio, Debt to Asset ratio and Interest coverage ratio. Adjusted R squared value is 0.4711 which indicates 47 % variation in return on net worth is determined by DER, DAR and ICR jointly.

Bajaj Auto Ltd.

```
Residuals:
    Min      1Q  Median      3Q     Max
-3.4622 -3.0350 -0.6831  2.6669  5.5225

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  8.16126    2.91308   2.802   0.0231 *
icr_bajaj    0.05370    0.04654   1.154   0.2818
der_bajaj   24.92345   67.55772   0.369   0.7218
dar_bajaj    2.02046    4.50347   0.449   0.6656
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 3.708 on 8 degrees of freedom
Multiple R-squared:  0.3642,    Adjusted R-squared:  0.1258
F-statistic: 1.528 on 3 and 8 DF,  p-value: 0.2804
```



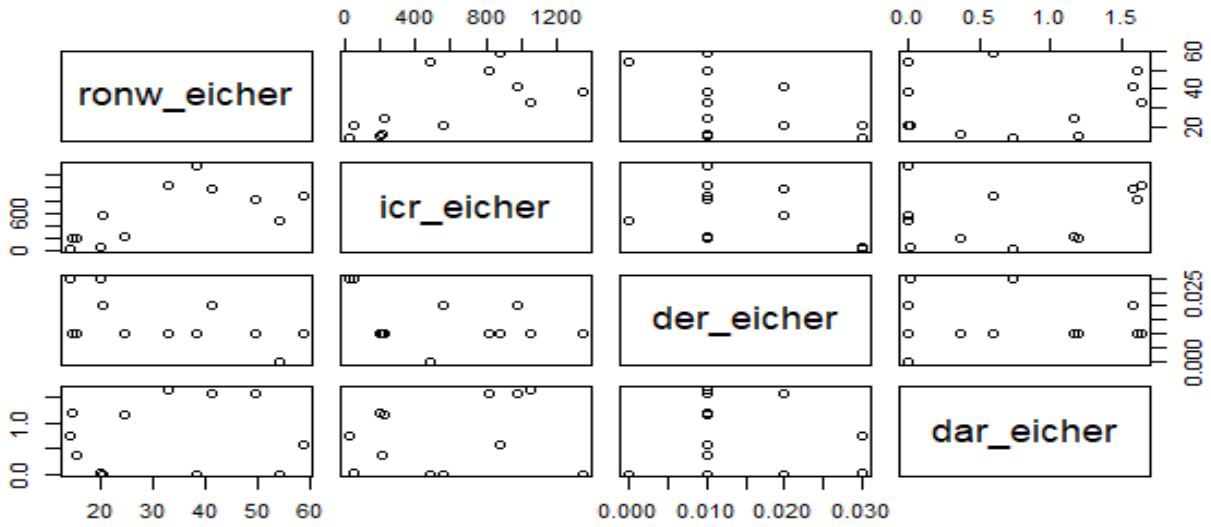
The value of the F statistics for 3 and 8 degrees of freedom and 5% level of significance is 1.528, and the p-value of 0.2804 is greater than 0.05, the regression coefficient values are not statistically significant to reject the null hypothesis and therefore we fail to reject the null hypothesis. So, we conclude that for Bajaj Auto ltd. return on net worth is independent of Debt Equity Ratio, Debt to Asset ratio and Interest coverage ratio. The main reason behind this is that the Bajaj Auto ltd. is almost debt free, this resulted in constant DER, DAR and ICR over the research period. As the independent variable remained constant, we could not predict their impact on the dependent variable.

Eicher Motors Ltd

```
Residuals:
     Min       1Q   Median       3Q      Max
-12.4223 -10.7093  -0.2357   7.8886  17.8566

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)  3.016e+01  1.143e+01   2.637   0.0298 *
icr_eicher   1.970e-02  9.912e-03   1.987   0.0821 .
der_eicher  -5.953e+02  4.743e+02  -1.255   0.2448
dar_eicher  -1.047e+00  6.015e+00  -0.174   0.8662
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 13.14 on 8 degrees of freedom
Multiple R-squared:  0.5179,    Adjusted R-squared:  0.3372
F-statistic: 2.865 on 3 and 8 DF,  p-value: 0.104
```



The value of the F statistics for 3 and 8 degrees of freedom and 5% level of significance is2.865, 1.438, and the p-value of 0.104 is greater than 0.05, the regression coefficient values are not statistically significant to reject the null hypothesis and therefore we fail to reject the null hypothesis. So, we conclude that for Eicher Motors ltd. return on net worth is independent of Debt Equity Ratio, Debt to Asset ratio and Interest coverage ratio. The main reason behind this is that the Eicher Motors company is almost debt free, this resulted in constant DER, DAR and ICR over the research period. As the independent variable remained constant, we could not predict their impact on the dependent variable.

FINDINGS:

- Maruti Suzuki India ltd return on net worth is independent of Debt Equity Ratio, Debt to Asset ratio and Interest coverage ratio.
- Maruti Suzuki India ltd company is almost debt free, this resulted in constant DER, DAR and ICR over the research period.
- Mahindra's return on net worth is dependent on Debt Equity Ratio, Debt to Asset ratio and Interest coverage ratio.
- For Mahindra and Mahindra Ltd. the regression coefficient values are statistically significant therefore we reject the null hypothesis.
- Tata Motor's return on net worth is dependent on Debt Equity Ratio, Debt to Asset ratio and Interest coverage ratio.
- For Tata Motors Ltd. the regression coefficient values are statistically significant therefore we reject the null hypothesis.
- Bajaj Auto ltd. return on net worth is independent of Debt Equity Ratio, Debt to Asset ratio and Interest coverage ratio.
- For Bajaj Auto as the independent variable remained constant, we could not predict their impact on the dependent variable.
- Eicher Motors ltd. return on net worth is independent of Debt Equity Ratio, Debt to Asset ratio and Interest coverage ratio.

CONCLUSION:

This study focused on capital structure and profitability of 5 selected automobile companies listed on NSE. with the aim of ascertaining the relationship between Capital Structure and profitability. Having seen the results and the relationships existing between the variables on the Multiple regression Analysis by using R Programming, it is found that out of the five firms we had considered for this research only two firms data showed the dependency of profitability on capital structure. Rest of the three firms have debt equity ratio almost zero over the research period therefore because of lack of evidence the relation between profitability and capital structure could not be proved. All these companies are renowned, large Cap companies and they avail share capital easily from the public and therefore they are almost debt free. Debt equity ratio, the independent variable in the study, for Maruti Suzuki ltd, Bajaj Auto ltd and Eicher Motors ltd remained constant or zero so its effect on profitability could not be established. On the other hand, Mahindra & Mahindra ltd. and Tata Motors ltd data showed a little variation in debt equity ratio therefore the relation between profitability and Capital structure could be established.

In overall analysis, there is a significant relation between the capital structure and profitability for Tata Motors & Mahindra & Mahindra ltd. Researcher found a mixed relationship between capital structure variables and company profitability after testing the relationship between the variables. This means that some capital structure variables showed a negative relationship with company profitability variables at stages, while other capital structure variables showed a positive relationship with profitability variables at particular points in time. As capital structure indicators for the automotive industry, debt equity ratios, Debt Asset Ratio and interest coverage ratios were used.

REFERENCES:

1. **Kebewar, Mazen and Shah, Syed, (2012).** "The Effect of Debt on Corporate Profitability: Evidence from French Service Sector". (December 18, 2012). Available at SSRN: http://ssrn.com/abstract=2191075 or http://dx.doi.org/10.2139/ssrn.2191075
2. Suresh Babu, M. N., & Chalam, G. v. (2016). *CAPITAL STRUCTURE AND ITS DETERMINANTS OF THE AUTOMOBILE COMPANIES IN INDIA: AN EMPIRICAL ANALYSIS*. www.eprawisdom.com
3. Agwan, A. A. (2017). EMPIRICAL ANALYSIS OF THE IMPACT OF CAPITAL STRUCTURE ON THE PROFITABILITY OF AUTOMOBILE INDUSTRY. In *International Journal of Management* (Vol. 7, Issue 5). http://www.ijmra.us,http://www.ijmra.us,http://www.ijmra.us,
4. Velnampy, B. T., & Aloy Niresh, J. (2012). The Relationship between Capital Structure & Profitability The Relationship between Capital Structure & Profitability The Relationship between Capital Structure & Profitability. *Type: Double Blind Peer Reviewed International Research Journal Publisher: Global Journals Inc*, *12*. https://www.researchgate.net/publication/231589896
5. Abdur Rouf, Md. (2015). Capital Structure and Firm Performance of Listed Non-Financial Companies in Bangladesh. *The International Journal of Applied Economics and Finance*, *9*(1), 25–32. https://doi.org/10.3923/ijaef.2015.25.32
6. Albert, A. A., Nyarko-Baasi, M., & Hughes, D. (2013), The Effects of Capital Structure on Profitability of Listed Firms in Ghana. European Journal of Business and Market, 5(3) pp. 215-229
7. Dare, D., & Sola, A. (2010), Capital Structure and Corporate Performance in Nigeria Petroleum Industry. Panel Data Analysis. Journal of Mathematics and Statistics, 6 (2) pp. 168-173.

8. Calvin Mukumbi, M., Wekulo Eugine, K., Jinghong, S., Calvin Muyundo, M., & Author, A. (2020). *Effect of Capital Structure on the Financial Performance of Non-Financial Firms Quoted at the Nairobi Securities Exchange International Journal of Science and Business*. https://doi.org/10.5281/zenodo.3787293
9. Albert, A. A., Nyarko-Baasi, M., & Hughes, D. (2013), The Effects of Capital Structure on Profitability of Listed Firms in Ghana. European Journal of Business and Market, 5(3) pp. 215-229 Ang, J., Cole, R.A., & Lin, J. (2000), Agency Costs and Ownership Structure. Journal of Finance, 55 pp. 81-106.
10. Azhagaiah, R., & Gavoury, C. (2011). The Impact of Capital Structure on Profitability with Special Reference to IT Industry in India. Managing Global Transition,9(4) pp. 371–392.
11. www.moneycontrol.com
12. www.nseindia.com