ABSTRACT

With the help of this study, author wants to represent whether there is any association between capital structure and profitability or not. This study also reveals that what is the effect of capital structure on profitability. Capital Structure refers to the way a corporation finances its assets through some combination of equity, debt, or hybrid securities. Capital Structure shows how a company's assets are built out of debt and equity. It is how a firm finances its overall processes and growth by using different sources of funds whereas Profitability is the capacity of a business to earn a profit. A profit is what is left of the revenue a business generates after it pays all expenses directly related to the generation of the revenue, such as producing a product, and other expenses related to the conduct of the business' activities. For the analysis of the capital structure and profitability, some important ratios are used in order to check the effect of capital structure on profitability, statistical tool like ANOVA used.

Keywords: Capital Structure, Profitability, Debt equity ratio, EPS, Return to capital employed, ROE

INTRODUCTION

Capital Structure

Capital structure refers to the way institutions finance its assets through some amalgamation of equity, debt, or hybrid securities. A firm's capital structure is the conformation or 'structure' of its liabilities. For example, a firm that sells 20 billion dollars in equity and 80 billion dollars in debt is said to be 20% equity-financed and 80% debt-financed. The firm's ratio of debt to total financing, 80% in this example is referred to as the firm's leverage

Profitability

Profitability is the ability to earn profit from all the activities of an enterprise. It indicates how well management of an enterprise generates earnings by using the possessions at its discarding. In the other words the ability to earn profit e.g. profitability, it is collected of two words profit and aptitude. The word profit signifies the absolute figure of profit but an unqualified figure alone does not give an exact ideas of the capability or otherwise of increase or change in presentation as shown in the financial statement of the enterprise.

1- Debt Equity Ratio-

The debt to equity ratio is a monetary, liquidness ratio that compares a company's total debt to total fairness. A debt to equity ratio of 1 would mean that savers and creditors have an equal stake in the business assets.
Debt Equity Ratio = Debt/Equity

2-Dent to total fund/solvency ratio

Debt ratio is a solvency ratio that events a firm's total liabilities as a percentage of its total assets. This ratio measures the financial leverage of a company. Companies with higher levels of liabilities likened with assets are careful highly leveraged and more risky for lenders. A ratio of 1 means that total liabilities equals total assets. In other words, the corporation would have to sell off all of its assets in order to pay off its liabilities.

Debt ratio = Total liabilities/Total assets

3-Long term fund to fixed assets ratio

This ratio founds the relationship between long term funds (equity plus long-term loans) and fixed assets. Since financial management supporters that fixed assets should be bought out of long term funds only.

Fixed Assets ratio = Net fixed assets / Long term funds

**INTERPRETATION OF PROFITABILITY RATIO**

1. Return on total assets ratio

The return on assets ratio, often called the return on total assets, is a profitability ratio that events the net income produced by total assets during a period by comparing net income to the average total assets. It only makes sense that a higher ratio is more favorable to investors because it shows that the company is more effectively management its assets to produce greater amounts of net income. A positive ROA ratio usually indicates an upward profit trend as well. ROA is most useful for comparing companies in the same industry as different industries use assets differently.

Return on Total assets = Net income/Average total asset

2. Return to capital employed

Return to capital employed = net operating profit/capital employed or total assets-current liabilities

3. Return on equity

The return on equity ratio or ROE is a profitability ratio that measures the ability of a firm to generate profits from its shareholders savings in the company. Return on equity measures how efficiently a firm can use the money from shareholders to spawn profits and grow the company. Unlike other return on speculation ratios, ROE is a profitability ratio from the investor's point of view—not the company.

Return on equity = net income/shareholder’s equity

4. Earnings per share

Earnings per share, also called net income per share, is a market prospect ratio that measures the amount of net income earned per share of stock outstanding. Earnings per share are also a calculation that shows how moneymaking a company is on a shareholder basis. So a larger company's profits per share can be likened to smaller company's profits per share. Earnings per share are the same as any profitability or market prospect ratio.

Earnings per share = net income – preferred dividends/weighted average common share outstanding

**LITERATURE REVIEW**

Saumitra N. Bhaduri (2002) “Determinants of capital structure choice: a study of the Indian corporate sector” Existing empirical research on capital structure has been largely narrowed to the United States and a few other advanced countries. This paper efforts to study the capital structure choice of Less Developed Countries (LDCs) through a case study of the Indian Corporate sector.

Singh R (2003) “Profitability management in banks under deregulate environment” has analyzed profitability management of banks under the deregulated environment with some financial parameters of the major four bank groups i.e. public sector banks, old private sector banks, new private sector banks and foreign banks, profitability has declined in the freed environment.

Andrea and Mateus, (2003) while going through an empirical research on capital structure choices follow the Booth et. al. (2001) which is obvious of the fact that the capital structure decisions of firms in developing countries are prejudiced by the same variables as in the developed countries.

Keshar J. Baral (2004) “Determinants of Capital Structure: A Case Study of Listed Companies of Nepal” In this paper, an attempt has been made to inspect the determinants of capital structure -size, business risk, growth rate, earning rate, dividend payout, debt service capacity, and degree of operating leverage of the companies listed to Nepal Stock Exchange Ltd. as of July 16, 2003.

Pandey, (2004) explains the relationship between (capital structure and market structure) and (Capital Structure and Profitability).

Buferna, Bangassa and Hodgkinson, (2005) report that the theories, static trade-off theory and agency cost theory are applicable on the capital structure of the companies in Libya. However, they further reveal that a very little evidence is there to support the theory of asymmetric information.

Christopher, Schafer and Talavera, (2006) focus that there is strong effect of short term and long term debt on profitability and according to them the group which prefer to financing through long term debt has low profitability and otherwise if firm use short term financing, it earns more profits.

Chang, Lee and Lee (2007) identified growth as the most important factor in capital structure that is affected by profitability, capability of insolvency, non-taxed debt and special values. Desai, Foley and Hines (2008) studied multinational firms in United States and concluded that variation of capital return in a high-risk country is more than that of other low-risk countries.

Ved Pal and N S Malik (2007) This study investigates the changes in the financial characteristics of public sector banks, private sector banks and foreign banks in India based on factors, such as profitability, liquidity, risk, and competence.

Joseph P.H. Fan, Sheridan Titman, and Garry Twite (2008), examined An International Comparison of Capital Structure and Debt Maturity Choices’ this study examines the influence of institutions on the capital structure and debt maturity choices in a cross-section of firms in 39 developed and developing countries.

Marc L. Lipson and Sandra Mortal (2008) Liquidity and Capital Structure. In this paper we study the link between liquidity and capital structure decisions. Since enhanced liquidity reduces the required return on equity and the cost of issuing equity, we expect more liquid firms to prefer equity in their capital structures.

Mishra, Wilson, and Williams, 2009). The early contribution to empirical literature about profitability analysis began mainly with Bain (1951) who studied the relationship between profitability and structural variables, such as concentration, growth, economics of scales, and advertising. Bain found that concentration had a positive impact on profitability. Mann (1966) supported Bain’s findings when he indicated that there was a positive relationship between concentration and profitability.

Stepen Jason kasodzi (2009), his study examines the divide between finance theory and practice by analyzing the significance of the determinants of capital structure choice among 123 listed firms on the JSE, to determine whether these firms follow the trade-off theory or the pecking-order theory.
Dangwal and Kapoor (2010) evaluated the financial performance of nationalized banks in India and assessed the growth index value of various parameters through overall profitability indices.

Jha and Sarangi (2011) analyzed the performance of seven public sector and private sector banks for the year 2009-10. They used three sets of ratios, operating performance ratios, financial ratios, and efficiency ratios.

Yang, Lee, Gu and Lee (2010) appraised co-determination of capital structure and stock return in Taiwan Stock Market using the LISREL model on two identified external factors of profitability and growth as common determinants between debt ratio and stock return. Both are harmfully related to leverage and definitely to stock return.

Muritala (2012) examined the optimum level of capital structure through which a firm can increase its financial performance in Nigeria using annual data of ten firms straddling a five-year period.

Gill, Amarjit, Nahum Biger, Neil Mathur, (2011) findings regarding the effect of capital structure on profitability by examining the effect of capital structure on profitability of the American service and manufacturing firms. A sample of 272 American firms listed on New York Stock Exchange for a period of 3 years from 2005 – 2007 was selected.

OBJECTIVES OF THE STUDY
1. To examine capital structure of selected samples.
2. To examine profitability of selected sample through different ratios.
3. To examine the impact of capital structure on the overall profitability of the selected samples.

HYPOTHESIS

$H_1$: There is a significance association between capital structure and profitability.

$H_0$: There is a no significance association between capital structure and profitability

SCOPE OF THE STUDY

Scope of this study is limited to the extent of critically examine the capital structure independently, analyzing profitability in context of capital structure and identifying possibility of association between capital structure and profitability. In this study researcher selected 8 automobile companies subject to availability of data for the study.

LIMITATIONS OF THE STUDY

Each study cannot be free from limitations. Some limitations likewise, the limitation of time, areas, economic, efforts, scope as well as the method of the study. Some limitations for present research work are as under.

1. Sample size is limited to only 8 companies
2. The accuracy of analysis depends upon reliability of secondary data accessed from annual reports and other secondary sources.
3. The study is limited to ten years (2005 to 2014) only.
4. The study is not supposed to focus upon determinants of capital structure. It is only limited to the extent of examining the association between capital structure and profitability.
RESEARCH METHODOLOGY

Nature of study will be hybrid.

Data Collection

This research study is mainly based on secondary data. The secondary data shall be collected from the records, documents, related subject matter and related websites. Besides, the researcher shall collect and analyze published data as per the requirement. As such the cosmos of this research study is constrained with the orientation to selected automobile companies, which are providing services in India. So, researcher has selected 8 automobile companies. The data concerning selected sample have been got and composed from the annual report of the businesses and related websites.

RESEARCH DESIGN

For the purpose of the study some important capital structure and profitability ratios used which are as follows-

Capital Structure ratio
1. Debt equity ratio
2. Debt to total fund ratio
3. Long term fund to fixed assets ratio

Profitability ratio
1. Return to total assets ratio
2. Return to capital employed
3. Return on equity shareholder’s fund
4. Earnings per share

Sample Design

The researcher has selected 8 automobile Companies, are listed in Indian stock exchanges namely - Escort, Force, Mahindra & Mahindra, Maruti Suzuki, TVS motors, Tata motors, Sundaram Clayton and Bajaj auto.

Period of the Study

This research study enclosed the data of last five years of the operative of the selected samples. A longer period could have been still better but due to stint and reserve constraints, the last five years not very short period has been taken for considering the data of research platform. The study period is 10 years, starting from year 2005 to 2014.

Statistical Techniques

To justify the above mentioned objectives, following statistical techniques are supposed to be implemented like Standard Deviation, F-test OR ANOVA (Analysis of Variances), Correlation Analysis, Coefficient, St. Error, t-value, p(2) tail), Intercept, R-Square, Adjusted R-Square, Cohen’s f-square, Sum of Sqs, df , Mean Sq , F-test and p-value.
INTERPRETATION OF CAPITAL STRUCTURE RATIO

ANALYSIS AND OBSERVATION

**ROA**

<table>
<thead>
<tr>
<th>Variable</th>
<th>St. Error</th>
<th>Coefficient</th>
<th>t-value</th>
<th>p(2) tail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>318.53</td>
<td>50.68</td>
<td>6.28</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Debt to equity</td>
<td>-199.86</td>
<td>80.56</td>
<td>-2.48</td>
<td>0.01</td>
</tr>
<tr>
<td>Debt to total fund</td>
<td>-.72</td>
<td>62.82</td>
<td>-.011</td>
<td>0.99</td>
</tr>
<tr>
<td>Debt to asset</td>
<td>-24.73</td>
<td>107.92</td>
<td>-.22</td>
<td>0.81</td>
</tr>
</tbody>
</table>

R-Square = 0.1855 Adjusted R-Square = 0.1533

Cohen's f-square = 0.2277, a small effect size.

As far as dependency of ROA on capital structure is concerned, it is observed that ROA is least dependent upon capital structure ratios since all the independent variables (capital structure ratios) depicts negative association with ROA of automobile industry. Amongst the variables, debt equity ratio observed to be significantly affecting the ROA of the industry, though in negative way. Other two factors namely debt to total fund and debt to asset ratio have insignificant negative impact on ROA. R square indicating there is 15.33% variation in the dependent variable attributable to the independent variables. The intercept is the constant, where the regression line intercepts the y axis, representing the amount the dependent y will be when all the independent variables are 0. In this case it is 318.53083

**Analysis of Variance to Test Regression Relation**

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Sq</th>
<th>df</th>
<th>Mean Sq</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>553665.39</td>
<td>3</td>
<td>184555.13</td>
<td>5.77</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Error</td>
<td>2431339.6</td>
<td>76</td>
<td>991.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2985005.02</td>
<td>79</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test statistic for the F-test on the regression model. It tests for a significant linear regression relationship between the response variable and the predictor variables. Observed results exhibit significant relationship between dependent variable and independent variables (F static: 5.77, P value: <.001).

**ROCE**

<table>
<thead>
<tr>
<th>Variable</th>
<th>St. Error</th>
<th>Coefficient</th>
<th>t-value</th>
<th>p(2) tail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>33.07</td>
<td>4.02</td>
<td>8.20</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Debt to equity</td>
<td>-5.05</td>
<td>6.40</td>
<td>-.78</td>
<td>0.433</td>
</tr>
<tr>
<td>Debt to total fund</td>
<td>-3.47</td>
<td>4.99</td>
<td>-.69</td>
<td>0.489</td>
</tr>
<tr>
<td>Debt to asset</td>
<td>-27.71</td>
<td>8.58</td>
<td>-3.22</td>
<td>0.002</td>
</tr>
</tbody>
</table>

R-Square = 0.213 Adjusted R-Square = 0.182

Cohen's f-square = 0.2707, a small effect size.

While examining dependency of ROCE, it is observed that in case of ROCE also all the independent variables bears negative association with ROCE. In this case debt to asset ratio is most significant factor to affect ROCE. R- Square indicates that 18.2% of the variation in ROCE due to the changes in capital structure ratio. F- test while exhibiting relationship between predictable variable and response variable indicates significant association between the same
Analysis of Variance to Test Regression Relation

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Sq</th>
<th>df</th>
<th>Mean Sq</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>4161.56</td>
<td>3</td>
<td>1387.18</td>
<td>6.85</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Error</td>
<td>15372.83</td>
<td>76</td>
<td>202.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>19534.39</td>
<td>79</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Above table indicating analysis of variance to test regression model exhibits that the model is significant with P value of less than .05 percent.

ROE

<table>
<thead>
<tr>
<th>Variable</th>
<th>St. Error</th>
<th>Coefficient</th>
<th>t-value</th>
<th>p(2) tail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1.64</td>
<td>5.92</td>
<td>5.33</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Debt to equity</td>
<td>3.49</td>
<td>9.42</td>
<td>.37</td>
<td>0.712</td>
</tr>
<tr>
<td>Debt to total fund</td>
<td>5.58</td>
<td>7.35</td>
<td>-2.11</td>
<td>0.037</td>
</tr>
<tr>
<td>Debt to asset</td>
<td>1.19</td>
<td>12.62</td>
<td>-2.47</td>
<td>0.016</td>
</tr>
</tbody>
</table>

R-Square = 0.2038 Adjusted R-Square = 0.1724

Cohen’s f-square = 0.256, a small effect size.

While analyzing response of ROE towards capital structure, it has been observed that Debt to Equity ratio bears positive relationship with ROE, through insignificant of other two ratios namely debt to total fund ratio and debt to asset ratio shows negative association with ROE. Debt to total fund ratio found to be significant factor affecting ROE. R-Square indicates 17.24% of variation in ROE is explained by capital structure ratios.

Analysis of Variance to Test Regression Relation

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Sq</th>
<th>df</th>
<th>Mean Sq</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>8521.54</td>
<td>3</td>
<td>2840.51</td>
<td>6.48</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Error</td>
<td>3282.81</td>
<td>76</td>
<td>437.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1804.35</td>
<td>79</td>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Above table indicating analysis of variance to test regression model exhibits that the model is significant with P value of less than .05 percent.

EPS

<table>
<thead>
<tr>
<th>Variable</th>
<th>St. Error</th>
<th>Coefficient</th>
<th>t-value</th>
<th>p(2) tail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>78.70</td>
<td>22.54</td>
<td>3.49</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Debt to equity</td>
<td>-45.33</td>
<td>33.15</td>
<td>-1.36</td>
<td>0.176</td>
</tr>
<tr>
<td>Debt to total fund</td>
<td>-17.47</td>
<td>25.58</td>
<td>-6.68</td>
<td>0.497</td>
</tr>
<tr>
<td>Debt to asset</td>
<td>-6.65</td>
<td>47.45</td>
<td>-1.4</td>
<td>0.889</td>
</tr>
</tbody>
</table>

R-Square = 0.1219 Adjusted R-Square = 0.0858

Cohen’s f-square = 0.1388, a small effect size

Analysis of EPS with reference to capital structure ratio exhibits negative association. Though an independent variables observed to have insignificant impact on EPS. R-square indicates only 8.58% in EPS is attributable to capital structure ratios.
Regression model exhibits significant association between dependent and independent factors.

### Analysis of Variance to Test Regression Relation

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Sqs</th>
<th>df</th>
<th>Mean Sq</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>53634.09</td>
<td>3</td>
<td>17878.03</td>
<td>3.37</td>
<td>0.023</td>
</tr>
<tr>
<td>Error</td>
<td>386496.02</td>
<td>73</td>
<td>5294.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>440130.12</td>
<td>76</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Above table indicating analysis of variance to test regression model exhibits that the model is significant with P value of less than .05 percent

### CONCLUSION

The Study reveals that in majority of cases Profitability bears negative association with capital structure. It may be possible that probability ratios in case of automobile industry are more sensitive towards investment decision rather than financing composition. The study also indicates scope for research directed towards examination of investment decision and financing decision together to observe impact of profitability on capital structure

### REFERENCES


