

**IMPACT OF CAPITAL STRUCTURE ON FINANCIAL PERFORMANCE IN INDIAN
CONSTRUCTION COMPANIES**

Gupta, Naresh Kumar 

Ramjas College, Delhi University, Delhi, India

sirnkgupta@yahoo.com

Gupta, Himani

Jagannath International Management School, Jaipur, India

tinugupta76@yahoo.co.in

Abstract

This study examines the capital structure of selected construction companies in India between the periods 2009 to 2013. Emphasis has been laid to show the impact of capital structure on the financial performance of Indian construction companies listed in the Bombay Stock Exchange. For the study purpose, the data has been collected from the secondary sources i.e. from the annual reports of the selected sample companies. Multiple Regression and correlation is used to analyze the data. The variables used for the study are Debt Equity Ratio, Long term debt and Debt Asset Ratio as the independent variable and Gross Profit Margin (GPM), Net Profit Margin (NPM), Return on Capital Employed (ROCE), Return on Assets (ROA) and Return on Equity (ROE) as the dependent variables. The result revealed that there is a positive relationship between the capital structure and financial performance of the selected firms.

Keywords: Capital structure, financial performance, correlation, multiple regressions.

INTRODUCTION

Financial health of the company can be measured by the cash flows. If the cash inflows are more than the cash outflows at any given time, it is considered as a good sign for an organization. Cash inflows are generated by its assets. Assets help an organization to produce goods and services and hence earn cash inflows. The assets of the firm are financed either by the shares, retained earnings, debentures or term loans. If the firm is financed by shares only then all the cash inflows left after deducting all expenses belong to the shareholders. When the firm is financed by issuing shares and debentures then the profit is split into two streams, a relatively safe stream that goes to the debenture holders and a more risky one that goes to the shareholders. In Finance, Capital structure is defined as a mixture of company's long term debt,

specific short term debt, common equity and preferred equity. The capital structure is how a firm finances its overall operations and the growth by using different sources of funds. Debt comes in the form of bond issues or long term notes payable, while equity is classified as common stock, preferred stock or retained earnings. Financing of working capital is also considered as a part of capital structure.

Now, the most important issues in corporate finance which has been in debate among many academicians, financial institutions and the companies is how to choose the ratio of debt to equity(debt means long term loan or debentures and equity includes paid up capital, share premium, and all reserves & surplus) and the mixture of short and long term maturities to do the makeup of the liabilities and stockholder's equity side of the balance sheet. Hence, it is a very critical decision to define the optimal capital structure. The decision regarding the optimal capital structure is very important because it affects the financial risk and, hence, the value of the company. The optimal capital structure is the mix of debt and equity that will have the minimum cost of capital and will maximize the value of the firm. Cost of capital is a combination of fixed interest paid to the debenture holders and the dividend paid to the equity share holders. Hence, we can say that the 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 market of the share is also be affected by the capital structure decision. The decision regarding the capital structure is to be considered at different stages, initially at the time of its promotion and subsequently, at every time when the external funds have to be raised. A demand for raising funds generates a new capital structure which needs a critical analysis (Bodhanwala 2012).

The optimal capital structure theory evolved through the writings of Franco Modigliani and Merton Miller (MM, 1958). At first they proposed that, in a world of no income taxes and transaction costs, a firm's capital structure is irrelevant to its value. But with the introduction of corporation income taxes and transaction costs (MM, 1963), it was proposed that a firm would use its debt financing judiciously so that its tax saving would balance its chance of potential bankruptcy. Moreover, the empirical literature identifies specific factors that may affect a firm's optimal capital structure. Some papers examined the determinants of capital structure include Harris and Raviv (1991), Rajan and Zingales (1995), Bevan and Danbolt (2000), Omet and Nobanee (2001), Huang and Song (2002), Antonion et al., (2002), Caesar, and Holmes, (2003), Chen, (2004), Hall, et al.,(2004) and Buferna, et al., (2005).

Relative to the above, study attempts to provide answers to the following questions:

- 1 Whether capital structure affect on the company's financial performance?
- 2 What are the nature of relationship between debt and equity?
- 3 To what extent capital structure affect on the company's financial performance?
- 4 What is the company's capital structure?

The paper is divided in number of sections. Section 1 describes the introduction part followed by the objective of the study, literature review in section 2 & 3. Section 4 provides the information about the data and methodology and hypothesis formed, in the queue with analysis of result in Section 5 and in the last conclusion is discussed in Section 6 of this paper.

OBJECTIVE OF THE STUDY

The objective of study is to investigate how the capital structure affects the construction company's financial performance which are listed in various stock exchanges of India with the help of various dependent and independent variables.

LITERATURE REVIEW

In the starting of 1960's, which was considered as the first study of the capital structure was done by Modigliani and Miller, With the assumptions of perfect market and no tax world MM proposed that the selection of debt-equity was independent of the value of the firm and latter this was followed by the other researchers.

Jenson and Meckling (1976) identified that there are two types of conflict between debt holders and equity holders and shareholders and managers. Agency cost hypothesis suggests that firm's managers are mainly interested to maximize their own benefits than to maximize shareholders wealth. Therefore, the stockholders of the firm try to discourage these interests by means of monitoring and control actions which also prospects cost i.e. agency cost.

Myers and Majluf (1984) and Myers (1984) made a valuable addition in capital structure literature by providing Pecking Order and Static Trade-off Hypothesis respectively. According to the Pecking Order Hypothesis, the firm should follow specific hierarchy for financing its assets. Initially, the firm utilize internally generated fund i.e. retained earnings then debt and If more funds are required then assets are financed by equity capital. Trade-off hypothesis proposed that firm should have optimal capital structure based on balancing between the benefits of debt and costs of debt. In other words, firm sets target debt-equity ratio according to the nature and requirements of business and then gradually moves to achieve it.

Many researchers' finds that the numbers of variables are there that affect the capital structure choice in the different countries. Scott (1972), Carleton and Silberman (1977), Bradley *et al* (1984), Castanias (1983), Titman and Wessels (1988), Long and Malits (1985) and Marsh (1982), reveals that durable assets, operating risk, non-debt tax shields, growth opportunities and firm size, have positive correlations with the leverage, as a proxy of capital structure (dependent variable), although, volatility, advertising expenditures, research and development expenditures, bankruptcy probability, profitability and uniqueness of the product, have negative correlations with leverage.

Ferri and Jones (1979) studied the capital structure determinants considering, industry type, firm size, business risk, and operating leverage. They found independent variables, except to business risk, seemed to be related significantly, although the Industry type, have a weak relationship. Aggarwal (1981) expresses that, growth rate, profitability, and international risk are not adequate factors to determine the capital structure choice, and some important variables such as industry type have been ignored. He adds "country-effect" as another important variable in determining firm's capital structure. Park (1998) also uses the national culture as an independent variable in such researches.

Saeedi and Mahmoodi (2011) studied the capital structure and financial performance of Iranian companies considering four performance measures such as return on assets, return on equity, earning per share and Tobin's Q as dependent variable and three capital structure measures including long term debt , short term debt and total debt ratios as independent variables of 320 listed companies in Tehran Stock Exchange. They proved that financial performance of the firms measured by EPS and Tobin's Q is significantly and positively associated with capital structure, while ROA has the negative relation with capital structure and ROE has no significant relation with capital structure.

Nirajini and Priya (2013) studied the relationship between capital structure and financial performance of Sri Lanka's companies. They used correlation and multiple regression method to prove the relationship between debt equity ratio , debt asset ratio and long term debt with different determinant of financial performance and proved that capital structure is positively correlated with firms financial performance.

STUDY HYPOTHESES

The study examines the following hypotheses:

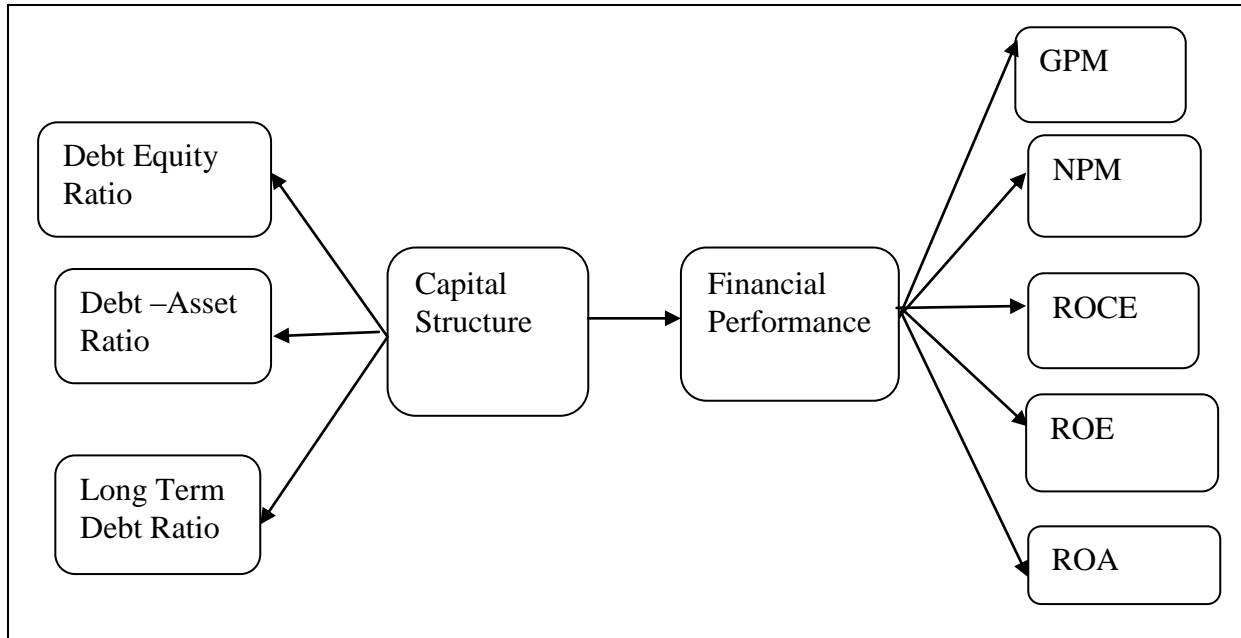
H1:-There is a negative relationship between debt equity ratio and financial performance variables (GPM, NPM, ROCE, ROE, and ROA).

H2:- There is a positive relationship between debt asset ratio and financial performance variables (GPM, NPM, ROCE, ROE, and ROA).

H3:- There is a positive relationship between long term debt ratio and financial performance variables (GPM, NPM, ROCE, ROE, and ROA).

H4: capital structure is significantly impact on the financial performance of the construction companies in India.

Figure 1: Conceptual Model



METHODOLOGY

The study consists of population of 35 companies of construction sector in India but the sample of 20 construction companies were taken as data for rest 15 companies was not available for chosen period of study. The study has been done empirically to examine the effect of capital structure on financial performance used in Indian construction industry listed in various stock exchanges in India. This sector is selected because the firms in this sector have an important role in Indian Economy as they usually depend more on the equity shares and less on short term debt or long term debt for their finance. The period selected for this study consists of 5 years ranging from 2008-09 till 2012-13. Those companies are selected whose data is available throughout the period of study. The study depended on the following sources for collecting the needed data: Profit and Loss account and Balance sheet of the selected companies.

Table 1: Name of the companies studied

S.No	Company's Name	S. No.	Company's Name
1	Vascon Engineers	12	Prestige Estates Projects
2	Kolte-Patil Developers	13	Oberoi Realty
3	Brigade Enterprises	14	Ansal Buildwell
4	SRS Real Infrastructure	15	Ansal Housing and Construction
5	Hubtown	16	Alacrity Housing
6	Housing Development and Infrastructure	17	Ajmera Realty and Infra India
7	DB Realty	18	Ahluwalia Contracts India
8	Puravankara Projects	19	Orbit Corporation
9	Sunteck Realty		
10	Omaxe		
11	Indiabulls Real Estate		

The data used in the empirical analysis is derived from the data base of www.moneycontrol.com which includes the published financial statements of all the sample firms.

To estimate regression model, the Ordinary Least Squares (OLS) was used to examine the determinants of the capital structure (leverage) and financial performance of the construction companies in India from the period ranging from 2008-09 till 2012-13.

This study tries to explore the impact of the independent variables on dependent variable values over time using the following model:

$$Y_{it} = \alpha_i + \beta_1 X_{it} + U_{it}$$

Where X represents the dependent variable (debt/equity ratio, long term debt ratio and debt to total asset ratio). i firm, t time; α_i is the individual effect that can be decomposed into fixed individual effect. Y is a vector of explanatory variables: gross profit margin, net profit margin, return on capital employed, return on equity and return on assets, β_1 parameters, and u is a random unobserved component that reflects unobserved shocks affecting the performance of firms. Thus, the regression model to test the hypotheses is as follows:

$$\text{GPM} = \alpha_1 + \beta_1 \text{Lev}_1 + \beta_2 \text{Lev}_2 + \beta_3 \text{Lev}_3 + U$$

$$\text{NPM} = \alpha_1 + \beta_1 \text{Lev}_1 + \beta_2 \text{Lev}_2 + \beta_3 \text{Lev}_3 + U$$

$$\text{ROCE} = \alpha_1 + \beta_1 \text{Lev}_1 + \beta_2 \text{Lev}_2 + \beta_3 \text{Lev}_3 + U$$

$$\text{ROE} = \alpha_1 + \beta_1 \text{Lev}_1 + \beta_2 \text{Lev}_2 + \beta_3 \text{Lev}_3 + U$$

$$\text{ROA} = \alpha_1 + \beta_1 \text{Lev}_1 + \beta_2 \text{Lev}_2 + \beta_3 \text{Lev}_3 + U$$

Where,

Lev_1 = Debt/ Equity ratio

Lev_2 = Long term debt ratio

Lev_3 = Debt to total asset ratio

GPM = Gross Profit Margin

NPM = Net Profit Margin

ROCE = Return on Capital Employed

ROE = Return on Equity

ROA = Return on Assets

U = standard error.

α = Constant factor

Additionally, R^2 or the Multiple Coefficient of Determination is another statistic that shows the amount of dependent variable changes, which explains by independent variables. The amount of R^2 is always between 0 and 1, when it equals 1, means that estimated regression explains

the whole changes in dependent variable, and when it equals 0, means that estimated regression could not explain any of the mentioned changes.

ANALYSIS & FINDINGS

Descriptive Statistics

The following table shows the maximum, minimum, mean & standard deviation and also consist of number of samples and variance of each capital structure and financial performance variables.

Table 2 : Descriptive Statistics

	N	Maximum	Minimum	Mean	Standard Deviation
GPM	82	102.160	-202.330	25.059	38.704
NPM	82	101.460	-171.860	15.826	28.301
ROCE	82	45.920	-9.970	11.772	9.309
ROE	82	243.00	-81.40	99.027	64.885
ROA	82	40.120	-37.280	8.797	10.713
DEBT-EQUITY RATIO	82	2.1	0.0	0.716	0.232
DEBT ASSET RATIO	82	0.668	-1.067	0.302	0.232
LONG TERM DEBT RATIO	82	2.020	0.000	0.534	0.4741

Correlation Analysis

H1, H2, H3 Correlation between capital structure variables (debt equity ratio, debt asset ratio and long term debt ratio) and financial performance variables (GPM, NPM, ROCE, ROA,ROE) of construction companies.

Table 3 : Correlation Matrix

Variables	GPM	NPM	ROCE	ROE	ROA	Debt Equity Ratio	Debt Asset Ratio	Long Term Debt Ratio
GPM	1.000							
NPM	0.776**	1.000						
ROCE	0.209	0.145	1.000					
ROE	0.398**	0.445**	-0.117	1.000				
ROA	0.196	0.264*	-0.858**	-0.008	1.000			
Debt Equity Ratio	-0.105	-0.172	0.044	-0.325**	0.032	1.000		
Debt Asset Ratio	0.340**	0.313**	0.132	0.076	0.084	0.609**	1.000	
Long Term Debt Ratio	-0.050	-0.080	-0.090	-0.175	0.003	0.850**	0.499**	1.000

**Correlation is significant at the 0.01 level(2-tailed)

*. Correlation is significant at the 0.05 level(2-tailed)

The above correlation table indicates the relationship between debt equity ratios, debt asset ratio and long term debt ratio are as follows:

1. Correlation between debt equity ratio and GPM, NPM, ROCE, ROA, ROE is positive as well as negative because R values of debt equity ratio & GPM is -0.105, debt equity ratio and NPM is -0.172, debt equity ratio and ROA is 0.032, debt equity ratio and ROCE is 0.044, debt equity & ROE is -0.325.
2. Correlation between debt asset ratio and GPM, NPM, ROCE, ROA, ROE is positive because R values of debt asset & GPM is 0.340, debt asset ratio and NPM is 0.313, debt asset ratio and ROA is 0.084, ROCE is 0.132, debt equity & ROE is 0.076.
3. Correlation between long term debt ratio and GPM, NPM, ROCE, ROA, ROE is both negative and positive because R values of long term debt ratio & GPM is -0.050, long term debt ratio and NPM is -0.080, long term debt ratio and ROA is 0.003, long term debt ratio and ROCE is -0.090, long term debt & ROE is -0.175

According to the above result we can accept the hypothesis H1 and H2 but cannot accept H3 because the results indicate the negative relationship between debt equity ratio and financial performance variables & positive relationship between debt asset ratio but it shows negative relationship between long-term debt ratio and financial performance variables (GPM, NPM, ROCE, ROE and ROA)

Regression Analysis

Regression analysis is a mathematical method to measure the impact of one (independent) variable on other (dependent) variable. In this part, the researcher has used this to test the hypothesis H4 to measure the impact of capital structure on financial performance.

H4: capital structure is significantly impact on the financial performance of the construction companies listed in various Indian stock exchanges.

Table 4: Regression analysis between independent variable debt equity ratio and financial performance variables

Dependent Variable	R ²	Significance level
GPM	0.006	0.453
NPM	0.039	0.061
ROCE	0.009	0.381
ROE	0.054	0.027
ROA	0.002	0.684

I) Regression analysis between debt equity ratio and GPM

Based on the above table $R^2 = 0.006$. That means 0.6% of the variation in the GPM is determined by in the variation of debt equity ratio other remaining 99.4% is undetermined with a significant level of 0.453. This means 99,4% of variation of GPM may be caused by other variables.

II) Regression analysis between debt asset ratio and NPM

Based on the above table $R^2 = 0.039$. That means 3.9 % of the variation in the NPM is determined by in the variation of debt asset ratio other remaining 96.1% is undetermined with a significant level of 0.061. This means 96.1% of variation of NPM may be caused by other variables.

III) Regression analysis between debt equity ratio and ROCE

Based on the above table $R^2 = 0.009$. That means 0.9 % of the variation in the ROCE is determined by in the variation of debt equity ratio other remaining 99.1% is undetermined with a significant level of 0.81. This means 99.1 % of variation of ROCE may be caused by other variables

IV) Regression analysis between debt equity ratio and ROA

Based on the above table $R^2 = 0.054$. That means 5.4 % of the variation in the ROA is determined by in the variation of debt equity ratio other remaining 94.6% is undetermined with a significant level of 0.027. This means 94.6% of variation of ROA may be caused by other variables.

V) Regression analysis between debt equity ratio and ROE

Based on the above table $R^2 = 0.002$. That means 0.2 % of the variation in the ROE is determined by in the variation of debt equity ratio other remaining 99.8% is undetermined with a significant level of 0.684. This means 99.8% of variation of ROE may be caused by other variables.

Table 5: Regression analysis between independent variable debt asset ratio and financial performance variables

Dependent Variables	R^2	Significance level
GPM	0.148	0.000
NPM	0.077	0.009
ROCE	0.051	0.037
ROE	0.091	0.004
ROA	0.016	0.255

I) Regression analysis between debt asset ratio and GPM

Based on the above table $R^2 = 0.148$. That means 14.8% of the variation in the GPM is determined by in the variation of debt asset ratio other remaining 84.2% is undetermined with a

significant level of 0.000. This means 84.2% of variation of GPM may be caused by other variables.

II) Regression analysis between debt asset ratio and NPM

Based on the above table $R^2 = 0.077$. That means 7.7 % of the variation in the NPM is determined by in the variation of debt asset ratio other remaining 92.3% is undetermined with a significant level of 0.009. This means 92.3% of variation of NPM may be caused by other variables.

III) Regression analysis between debt asset ratio and ROCE

Based on the above table $R^2 = 0.051$. That means 5.1 % of the variation in the ROCE is determined by in the variation of debt asset ratio other remaining 94.9% is undetermined with a significant level of 0.037. This means 94.9 % of variation of ROCE may be caused by other variables

IV) Regression analysis between debt asset ratio and ROA

Based on the above table $R^2 = 0.016$. That means 1.6 % of the variation in the ROA is determined by in the variation of debt asset ratio other remaining 98.4% is undetermined with a significant level of 0.255. This means 98.4% of variation of ROA may be caused by other variables.

V) Regression analysis between debt asset ratio and ROE

Based on the above table $R^2 = 0.091$. That means 9.1 % of the variation in the ROE is determined by in the variation of debt asset ratio other remaining 90.9% is undetermined with a significant level of 0.004. This means 90.9% of variation of ROE may be caused by other variables.

Table 6: Regression analysis between independent variable long-term debt ratio and financial performance variables.

Dependent Variables	R^2	Significance level
GPM	0.003	0.593
NPM	0.016	0.243
ROCE	0.002	0.666
ROE	0.023	0.160
ROA	0.000	0.942

I) Regression analysis between long-term debt ratio and GPM

Based on the above table $R^2 = 0.003$. That means 0.3% of the variation in the GPM is determined by in the variation of long-term debt ratio other remaining 99.7% is undetermined with a significant level of 0.593. This means 99.7% of variation of GPM may be caused by other variables.

II) Regression analysis between long-term debt ratio and NPM

Based on the above table $R^2 = 0.016$. That means 1.6 % of the variation in the NPM is determined by in the variation of long-term debt ratio other remaining 98.4% is undetermined with a significant level of 0.243. This means 98.4% of variation of NPM may be caused by other variables.

III) Regression analysis between long-term debt ratio and ROCE

Based on the above table $R^2 = 0.002$. That means 0.2 % of the variation in the ROCE is determined by in the variation of long-term debt ratio other remaining 99.8% is undetermined with a significant level of 0.222. This means 99.8 % of variation of ROCE may be caused by other variables

IV) Regression analysis between long-term debt ratio and ROA

Based on the above table $R^2 = 0.000$. That means 0 % of the variation in the ROA is determined by in the variation of long-term debt ratio other remaining 100.0% is undetermined with a significant level of 0.942. This means 100% of variation of ROA may be caused by other variables.

V) Regression analysis between long-term debt ratio and ROE

Based on the above table $R^2 = 0.023$. That means 2.3 % of the variation in the ROE is determined by in the variation of long-term debt ratio other remaining 97.7% is undetermined with a significant level of 0.160. This means 97.7% of variation of ROE may be caused by other variables.

Therefore the above results point out the capital structure variables are significantly impact on financial performance of companies, and hypothesis H4 is accepted by the researcher. Here the GPM, NPM, ROCE, ROA, ROA are considered as dependent variables to test the hypothesis & Debt equity ratio, debt asset ratio & long term debt ratio are considered as independent variables. Based on the regression analysis the following findings are discovered. They are,

- 0.6% of variation in gross profit is explained by debt equity ratio and remaining 99.4% may be caused by other variables.
- 3.9% of variation in net profit is explained by debt equity ratio and remaining 96.1% may be caused by other variables.
- 0.9% of variation in ROCE is explained by debt equity ratio and remaining 99.1% may be caused by other variables.
- 0.2% of variation in ROA is explained by debt equity ratio and remaining 99.8% may be caused by other variables.
- 5.4% of variation in ROE is explained by debt equity ratio and remaining 94.6% may be caused by other variables.

- 14.8% of variation in gross profit is explained by debt asset ratio and remaining 95.5% may be caused by other variables.
- 7.7% of variation in net profit is explained by debt asset ratio and remaining 92.3% may be caused by other variables.
- 5.1% of variation in ROCE is explained by debt asset ratio and remaining 94.9% may be caused by other variables.
- 1.6% of variation in ROA is explained by debt asset ratio and remaining 98.4% may be caused by other variables.
- 9.1% of variation in ROE is explained by debt asset ratio and remaining 90.9% may be caused by other variables.
- 0.3% of variation in gross profit is explained by long term debt ratio and remaining 99.7% may be caused by other variables.
- 1.6% of variation in net profit is explained by long term debt ratio and remaining 98.4% may be caused by other variables.
- 0.2% of variation in ROCE is explained by long term debt ratio and remaining 99.8% may be caused by other variables.
- 0% of variation in ROA is explained by long term debt ratio and remaining 100% may be caused by other variables.
- 2.3% of variation in ROE is explained by long term debt ratio and remaining 97.7% may be caused by other variables.

In addition to the above findings the ratio analysis interprets the followings. When we focus on debt and equity position of construction industry, we found that firms are more attracted towards the equity only , very few amount of financing is done by issuing debentures. So, we can say that the construction firms. However we have considered the measures on the basis of total average of each, so we can agree with hypothesis.

CONCLUSION

This paper been completed with the important objectives of to what extend capital structure impact on financial performance of companies and whether the capital structure impact in financial performance of listed construction companies in India, that Correlation analysis showed that debt asset ratio, debt equity ratio and long term debt correlated with gross profit margin, net profit margin, ROCE, ROA & ROE at various significant levels.

Finally to conclude, there is both positive & negative relationship between capital structure and financial performance. And also capital structure has very high significant impact on financial performance of the firms in case of Return on Capital Employed (ROCE) and

Return on Assets (ROA) and capital structure has less significant impact on the financial performance of the firms in case of Gross Profit(GPM) , Net Profit (NPM) and Return on Equity(ROE). So, we conclude that whatever be the pattern of capital structure the financial performance of the firms are changing due to other factors in the firms or in the economy. So, the firms should concentrate on the pattern of capital structure as well as on the other variables such as government policies, competition between rivalries, expansion of business etc to earn profit and carry on their business successfully.

RECOMMENDATIONS FOR FURTHER RESEARCH

The researcher has experiencing the ability to provide suggestion and recommendation for further researcher to gain more worthy if any research will be conducted by them in this field. Some of the suggestion and recommendations are given below,

- 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 kinds of measures.
- There are so many sectors in India but for the research only one sector ie construction sector is considered , so other sectors can also be studies and the size of the companies can also be increased.
- Only some methods are used to test hypothesis such as correlation & regression. Further the researcher can add much variety of techniques to generalize their findings such as ANOVA, descriptive statistics and etc.
- Only secondary data are collected to analysis to do this research. Further researchers may use secondary data by visiting to every company.

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