



**“A STUDY ON THE IMPACT OF LEVERAGE ON FINANCIAL PERFORMANCE OF SELECTED CEMENT COMPANIES IN INDIA”**

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**ABSTRACT:**

The primary motive of a company in using financial leverage is to magnify the shareholders' return under favourable economic conditions. The role of financial leverage in magnifying the return of the shareholders' is based on the assumptions that the fixed- charges funds (such as the loan from financial institutions and other sources or debentures) can be obtained at a cost lower than the firm's rate of return on net assets (RONA or ROI). Here an attempt is made to analyze the “effect of financial leverage on the financial performance of the selected cement manufacturing companies in India (During the periods from 2012 to 2015).

**KEY WORDS:** Leverage, Operating Leverage, Financial Leverage, combined leverage, ROI



### **1.1 INTRODUCTION:**

Finance may be defined as the provision of money at the time when it is required. Finance refers to the management of flows of money through an organization. It concerns with the application of skills in the manipulation, use and control of money. Financial leverage is a measure of how much firms use equity and debt to finance its assets. A company can finance its investments by debt and equity. The company may also use preference capital. The rate of interest on debt is fixed irrespective of the company's rate of return on assets. The financial leverage employed by a company is intended to earn more on the fixed charges funds than their costs. As debt increases, financial leverage increases. Damouri, et al (2013) states that leverage ratios contribute in measuring the risk of using equity costs. They adds that there are various measures known for the capital structure among which the most important are book value based measures, market value based measures and semi- market value based measures (adjusted market value). Financial leverage affects profit after tax or earnings per share. The combined effect of two leverages can be quite significant for the earnings available to ordinary shareholders (Pandey, 2010).

Financial Leverage can be defined as the degree to which a company uses fixed-income securities such as debt and preferred equity. With a high degree of financial leverage come high interest payments. As a result, the bottom-line earnings per share is negatively affected by interest payments. As interest payments increase as a result of increased financial leverage, EPS is driven lower. As mentioned previously, financial risk is the risk to the stockholders that is caused by an increase in debt and preferred equities in a company's capital structure. As a company increases debt and preferred equities, interest payments increase, reducing EPS. As a result, risk to stockholder return is increased. A company should keep its optimal capital structure in mind when making financing decisions to ensure any increase in debt and preferred equity increase the value of the company. Strength of financial position of an organization is called financial performance. Financial analysis is the process of identifying the financial strength and weakness of the firm by properly establishing relationship between the item of the balance sheet and the profit and loss account. In financial analysis a ratio is used as a key measure for evaluating the financial position & performance of a firm. In this study Net profit, Return on capital employed and the return on equity are used to measure the financial performance of the selected cement manufacturing companies in India (During the periods from 2012 to 2015).

### **1.2 REVIEW OF LITERATURE:**

The literature review is the effective evaluation of selected documents on a research topic. The following literature reviews are collected based on the topic.

**Wipern (1966)<sup>1</sup>:** He conducted a study on relationship between leverage and cost of capital among 50 firms from seven manufacturing industries covering the years 1956,1958,1961,1963.the main focus of his study was to develop unbiased measures of leverage .he used regression and for estimation. This analysis showed that equality yields and leverage and linearly related and concluded that the shareholders wealth can be enhanced through judicious use of debt financing.

**Sarma and Rao (1969)<sup>2</sup>:** In their paper entitled to “leverage and the value of the firm”, they employed a two stage least square method on the data pertaining to 30 Indian engineering firms over the three years. In their estimates, it has been found that the leverage is one of the important variable that possessed a higher co-efficient than that of the tax rate. They concluded that the cost of capital is affected by debt apart from its tax advantages.

**Bhat (1980)<sup>3</sup>** studied ,the impact of size ,growth, business risk, dividend policy, profitability, debt service capacity and the degree of operating leverages on the leverage ratio of the firm by using a sample of 63 companies pertaining to engineering industry. He used multiple regression models to find out the contribution of each characteristic. Business risk (defined as earning instability) profitability, dividend payout and debt service capacity were found to be significant determinants of the leverage ratio.

**Pandey (1984)<sup>4</sup>:** conducted another empirical study examining the industrial pattern, trend and volatility of leverage, the impact of size, profitability and growth on leverage over 743 companies in 18 industrial groups for the period 1973-74 to 1980-81.it was found that about 72 to 80% of the asset of sample companies were financed by external debt, including current liabilities. The companies have also employed trade credit as much as bank borrowings. The study also indicated that percentage change in leverage of industry does not produce any pattern which may be regarded as systematic and significant

### **1.3 STATEMENT OF PROBLEM:**

The available literature and data suggest that financial leverage is the top most factors among the other factors that can affect the firm’s profitability. It comprises the capital structure management concepts. Manager choice of making debt intensive or equity intensive company that formulate the financing of the company assets leads to the concept of capital structure formulation. It has been observed that most of the times managers of the company use some extent of debt and some extent of equity to finance their assets. Therefore right choice of the combination of debt and equity is very important for the manager of any company. Generally financial leverage is measured by the ratio of total debts which company owe and total assets which a company own. Financial leverage ratio tells the extent to which company has used borrowed money in order to finance its capital structure. The



tradeoff theory of capital structure suggests that firms can take precedence of debt to enjoy a prominent return. Hence it is necessary to study the effect of leverage on financial performance of selected cement manufacturing companies in India.

#### **1.4 SCOPE AND SIGNIFICANCE OF THE STUDY:**

An investor who would like to rational and scientific in his investment activity has to evaluate a lot of information about past performance and future performance of the companies, industries and the economy as a whole before taking the investment decision and hence, the present study attempts to analyze the effect of leverage on financial performance of selected cement manufacturing companies in India.

#### **1.5 OBJECTIVES OF THE STUDY:**

The main objective of the study is to study the effect of financial leverage on financial performance of companies with particular reference to selected Cement companies in India.

##### **The specific objectives of the study are:**

- 1.5.1 To examine the effect of debt ratio (DR) on Return on Assets (ROA) of selected Cement companies in India.
- 1.5.2 To determine whether debt- equity ratio (DER) have any effect on Return on Assets (ROA) of selected Cement companies in India.
- 1.5.3 To establish if there is any effect of interest coverage ratio (ICR) on Return on Assets (ROA) of selected Cement companies in India.

## **1.6 HYPOTHESES OF THE STUDY:**

Based on the objectives of the study, the following hypotheses were developed.

- 1.6.1 There is significant difference in Return on Assets (ROA) among the selected Cement companies in India.
- 1.6.2 There is a significant effect of Debt Ratio (DR) on Return on Assets (ROA) of selected Cement companies in India.
- 1.6.3 Debt to Equity Ratio (DER) has a significant effect on Return on Assets (ROA) of selected Cement companies in India.
- 1.6.4 There is a significant effect of interest coverage ratio (ICR) on Return on Assets (ROA) of selected Cement companies in India.
- 1.6.5 There is a significant positive relationship between operating leverage and financial performance of selected Cement companies in India
- 1.6.6 There is a significant positive relationship between financial leverage and financial performance of selected Cement companies in India.

## **1.7 RESEARCH METHODOLOGY:**

### **1.7.1 RESEARCH DESIGN:**

Research design indicates the method and procedure of conducting research study. In pursuance of objective stated above, the following research design is used for conducting the study.

### **1.7.2 NATURE OF THE STUDY:**

The present study adopts both analytical and descriptive research design, with the support of secondary data.

### **1.7.3 SOURCE OF DATA:**

The study is based on secondary data. In this study secondary data is collected from internet, journals, reference books and project reports.

### **1.7.4 PERIOD OF STUDY:**

The present study has gathered secondary sources of information related to financial leverage and its performance for the past 4 years from 2012-13 to 2014-15

**1.8 SAMPLING DESIGN:**

**1.8.1 POPULATION OF THE STUDY:**

The Population of the study consists of cement manufacturing companies in India.

**1.8.2 SAMPLE SIZE:**

Five Indian cement manufacturing companies are chosen as sample size for the study on account of having the highest market capitalization.

**1.8.3 SAMPLING METHOD:**

Purposive sampling method was used for selecting five Indian cement manufacturing companies for the study

**1.9 CONCEPTUALISATION:**

Conceptual Frame	Variable	Indicator	Measurement
<b>Work Concept</b>			
<b>Leverage</b>	Financial	Debt equity ratio	$\frac{\text{Debt}}{\text{Equity}} \times 100$
	Leverage	Debt total assets ratio	$\frac{\text{Debt} \times 100}{\text{Total Assets}}$
<b>Financial Performance</b>	Net profit	Net profit based on sales	$\frac{\text{Net profit} \times 100}{\text{Sales}}$
	ROE	Profit based on Equity	$\frac{\text{Profit after tax} \times 100}{\text{Share Holders Capital}}$
	ROCE	Profit based on investment	$\frac{\text{Profit before interest and tax} \times 100}{\text{Capital employed}}$

**1.10 TOOLS USED FOR ANALYSIS:**

The data collected for the study were tabulated, analyses and presented with the help of appropriate tools of analysis, both descriptive and inferential statistics, like CAGR (Compounded Annual Growth Rate), Coefficient of Variation, coefficient of correlation, multiple regression coefficient (more than one independent variables) and one way ANOVA.

The researcher also used Ordinary Least Squares (OLS) method for analysis of hypotheses stated in a multiple form. For this purpose of analysis the MS Excel Software was used to analyses financial data and SPSS Software used to run the regression.

**Part 2**

**DATA ANALYSIS AND INTERPRETATION:**

**2.1** This section deals with data analysis and interpretation.

Descriptive analysis was firstly applied to describe relevant aspects of financial leverage and provided detailed information about each relevant variable. Correlation models, specifically Pearson correlation were applied to measure the degree of association between different variables under consideration while regression analysis was applied to examine the relationship of independent variables with dependent variable and to know the effect of selected independent variables on financial performance. This method is used to identify the significant of each explanatory variable to the model and also the significance of the overall model. The model used was multiple regressions (more than one independent variables). The researcher also used Ordinary Least Squares (OLS) method for analysis of hypotheses stated in a multiple form. For this purpose of analysis the MS Excel Software was used to analyses financial data and SPSS Software used to run the regression.

**Table 2.1**

**List of variables for data analysis**

1	Debt Ratio (DR)	Total Liabilities/ Total Assets
2	Debt – Equity – Ratio (DER)	Total Liabilities/ Shareholders’ Funds or Total Equity
3	Interest Coverage Ratio (ICR)	Earnings before interest and tax / Interest
4	Return on Assets (ROA)	Profit before tax / Total Asset

The ordinary least squares (OLS) used for its computation. Its procedure is simple and the estimates obtained from this procedure have optimal properties which include: linearity, Un biasedness, Mini variance and Mean square error estimation (Koutsoyianis, 2003).



Here an attempt is made to analyze the effect of financial leverage on financial performance, the researcher developed a compact form of our model as follows:  $Y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + \dots + \epsilon_i$

Where: Y = Dependent variable of company

X = Independent variable of company

$b_0$  = Intercept for X variable of i company

$b_1 - b_3$  = Coefficient for the independent variables X of companies, denoting the nature of the relationship with dependent variable Y (or parameters)

$\epsilon_i$  = The error term Specially, when researcher converts the above general least squares model into our specified variables, it becomes:

$$(\text{ROA})_{yt} = b_0 + b_1(\text{DR})_{yt} + b_2(\text{DER})_{yt} + b_3(\text{ICR})_{yt} + \epsilon_i$$

Where: ROA = Return on Assets

DR = Debt Ratio

DER = Debt-Equity-Ratio

ICR = Interest Coverage Ratio

$\epsilon_i$  = Error term

**Table 2.2**

**Debt equity ratio**

Year	Ambuja cements	Dalmia Bharat	India cements	ACC cements	JK cements
2012	0.0039	0.0081	0.63	0.01	0.84
2013	0.003	0.0026	0.75	0	0.78
2014	0.0018	0.013	0.76	0	1.42
2015	0.0022	0	0.81	0.0042	1.47

Source: Compiled from the annual reports of cement companies

In the year 2012, JK cement co. has more debt equity ratio than other cement companies. In the year 2013, India cement co. has more debt equity ratio than other cement companies. In the year 2014, JK cement co. has more debt equity ratio than other cement companies. In the year 2015, JK cement co. has more debt equity ratio than other cement companies.

H<sub>1</sub>: There is significant difference in Return on Assets among the selected Cement Companies in India

Table: 2.3

Return on Assets among the selected Cement Companies in India

Year	Ambuja	Dalmia	India	ACC	JK
2012-13	10.43	5.66	3.55	8.89	4.95
2013-14	9.98	6.77	1.85	9.06	5.98
2014-15	10.76	7.71	1.85	9.21	1.9
2015-16	5.7	3.98	0.35	4.6	2.93

Anova: Single Factor						
Groups	Count	Sum	Average	Variance		
Ambuja	4	36.87	9.22	5.6		
Dalmia	4	24.12	6.03	2.57		
India	4	7.6	1.9	1.71		
ACC	4	31.76	7.94	4.98		
JK	4	15.76	3.94	3.45		
ANOVA						
Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	139.93	4	34.98	9.55	0.00048	3.06
Within Groups	54.93	15	3.66			
Total	194.86	19				

The result of analysis of variance reveals that **p value (.000048)** it is less than .05 level of significance. Therefore the H<sub>0</sub> is rejected then the researcher concludes that there is significant difference in Return on Assets among the selected Cement Companies in India.

**Table: 2.4 Descriptive Statistics**

	Mean	Std. Deviation	N
ROA	5.3555	3.10030	20
DR	.2856	.44298	20
DER	.3754	.50612	20
ICR	31.3130	44.67770	20

The descriptive statistics shows that over the period under study, the financial leverage measured by Debt ratio (DR); Debt-equity ratio (DER) and Interest coverage ratio (ICR) have positive mean value which ranges from 0.2856 for Debt ratio (DR) to 31.3130 in interest coverage ratio (ICR). The interest coverage ratio (ICR) and ROA have the highest standard deviation of 44.67770 and 3.10030 respectively. This indicates that the observations in the data set are widely dispersed from the mean. This table also shows that Debt ratio (DR) has the lowest value of mean and standard deviation of 0.2856 and 0.44298 respectively. The relationships among the study variables were tested using Pearson Correlation and the outcomes are presented in the table 2.5 below. Model Specification involves the effect of dependent and explanatory variable which were included in the model and the expectation about the sign and the size of the parameters of the function, Koutsoyiannis (2003) and Onwumere (2008).

**Table: 2.5 Correlation analysis of ROA,DR,DER and ICR**

		ROA	DR	DER	ICR
Pearson Correlation	ROA	1.000	-.467	-.628	.279
	DR	-.467	1.000	.575	-.404
	DER	-.628	.575	1.000	-.497
	ICR	.279	-.404	-.497	1.000
Sig. (1-tailed)	ROA	.	.019	.002	.117
	DR	.019	.	.004	.039
	DER	.002	.004	.	.013
	ICR	.117	.039	.013	.

The correlation matrix table shows that Debt ratio (DR) and Debt-equity ratio (DER) have negative relationship with Return on Assets (ROA) while interest coverage ratio (ICR) has a positive relationship with Return on Assets (ROA). The strength of their relationship is indeed at -0.467%, -0.628% and 0.279% for Debt ratio (DR); Debt-equity ratio (DER) and Interest coverage ratio (ICR) respectively. It indicates that as Debt ratio (DR) and Debt-equity ratio (DER) increases, the Return on Assets (ROA)

decreases and vice versa while when interest coverage ratio (ICR) increases, the Return on Assets (ROA) also increases and vice versa. The column of Significance level of the table 2.5 shows that Debt ratio (DR) and Debt-equity ratio (DER) for this study are statistically significant with their Return on Assets (ROA) except interest coverage ratio (ICR) that has statistically insignificant with their Return on Assets (ROA). The researcher also observed that Debt ratio (DR) has strong positive relationship with Debt-equity ratio (DER) at 57.5% and weak negative relationship with interest coverage ratio (ICR) at -40.4% while Debt-equity ratio (DER) has weak negative relationship with interest coverage ratio (ICR) at -49.7%. It means that an increase in Debt ratio (DR) will increase the Debt-equity ratio (DER) and decrease the interest coverage ratio (ICR) variable and vice versa while when Debt-equity ratio (DER) increases, the interest coverage ratio (ICR) will decrease and vice versa. The researcher further observed that Debt ratio (DR) is statistically significant with Debt-equity ratio (DER) at 1% level of significance (0.01) and statistically insignificant with interest coverage ratio (ICR) at 3.9% while Debt-equity ratio (DER) is statistically insignificant with interest coverage ratio (ICR) at 1.3%.

**Table 2.6 Model Summary of Regression Coefficients**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.644 <sup>a</sup>	.415	.305	2.58455	.415	3.780	3	16	.032

a. Predictors: (Constant), ICR, DR, DER

Source: SPSS Output

The table above shows that coefficient of multiple determinations R-Square which explains the extent to which the independent variables affect the dependent variable. In this Case, 0.415 or 41.5% of the variations in the dependent variable were explained by the independent variables while 0.585 or 58.5% were affected by other variables outside the independent variables. The adjusted R-Square, a more conservative way of looking at the coefficient of determination is also less than 50%. In this case, 0.305 or 30.5% of the variations in the dependent variable is not explained by the independent variable. So this indicates that debt ratio (DR); debt-equity ratio (DER) and interest coverage ratio (ICR) are not the major determining factors of Return on Assets (ROA) of the 5 selected cement companies in India. Only 0.695 or 69.5% of the variation are determinate by other factors. Moreover, this table also shows the results of F = 3.780 at Significance level of 0.032 with df (3, 16).

**H<sub>1</sub>: There is a significant positive relationship between financial leverage and financial performance of selected Cement companies in India.**

**Table: 2.7 Descriptive statistics of ROA, and FL**

	Mean	Std. Deviation	N
ROA	5.3555	3.10030	20
FL	2.3780	5.06390	20

Source: SPSS Output

**CORRELATION ANALYSIS:**

For the purpose of identifying the pattern of relationship between financial leverage and companies' financial performance, correlation analysis has been used.

Correlation Analysis of ROA, and FL			
		ROA	FL
Pearson Correlation	ROA	1.000	-.382
	FL	-.382	1.000
Sig. (1-tailed)	ROA	.	.048
	FL	.048*	.

\*. Correlation is significant at the 0.05 level (1-tailed).

Source: SPSS Output

According to the correlation output indicate that there is weak negative relationship (-.3.82) between the financial performance and financial leverage, at 0.05 significant level. This reveals financial leverage negatively correlate with financial performance of the selected cement companies in India during the period of 2012-2015. So the **H<sub>1</sub>** is rejected by the researcher.

**REGRESSION ANALYSIS** Regression analysis is used to predict the value of one variable on the basis of other variables. In this study the researcher has analyzed the impact of financial leverage on the firm financial performance.

**Table 2.8 Model summary of Regression Coefficients**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.382 <sup>a</sup>	.146	.099	2.94318	.146	3.083	1	18	.096

a. Predictors: (Constant), FL

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.704	1	26.704	3.083	.096 <sup>b</sup>
	Residual	155.922	18	8.662		
	Total	182.626	19			

a. Dependent Variable: ROA

b. Predictors: (Constant), FL

Source: SPSS Output

Based on the model summary the Adjusted R square is 0.099 it means that 9.9% of the firm's financial performance influenced by the financial leverage. The remaining 90.1% is influenced by other factors which are not described here, because this is beyond the scope of study. From the ANOVA test the significant level is at 0.096 which is greater than the significant level 5% so it is concluded that the 9.9% of the impact is insignificant. So the  $H_0$  is accepted.

**H1: There is a significant positive relationship between operating leverage and financial performance of selected Cement companies in India**

**Table: 2.9 Correlations**

		ROA	OL
ROA	Pearson Correlation	1	-.215
	Sig. (2-tailed)		.362
	N	20	20
OL	Pearson Correlation	-.215*	1
	Sig. (2-tailed)	.362	
	*Correlation is significant at the 0.05 level (1-tailed).		

According to the correlation output indicate that there is weak negative relationship (-.215) between the financial performance and operating leverage, at 0.05 significant level. This reveals operating leverage negatively correlate with financial performance of the selected cement companies in India during the period of 2012-2015. So the H1 is rejected by the researcher.

**REGRESSION ANALYSIS:**

Regression analysis is used to predict the value of one variable on the basis of other variables. In this study the researcher has analyzed the impact of operating leverage on the firm financial performance.

**Model summary of Regression Coefficients ROA, and OL**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.215 <sup>a</sup>	.046	-.007	3.11060

a. Predictors: (Constant), OL

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.461	1	8.461	.874	.362 <sup>b</sup>
	Residual	174.165	18	9.676		
	Total	182.626	19			

a. Dependent Variable: ROA

b. Predictors: (Constant), OL

### Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	7.478	2.374		3.150	.006
OL	-1.487	1.590	-.215	-.935	.362

a. Dependent Variable: ROA

Based on the model summary the Adjusted R square is -.007it means that 0.7% of the firm's financial performance is negatively influenced by the operating leverage. The remaining 99.3% is influenced by other factors which are not described here, because this is beyond the scope of study. From the ANOVA test the significant level is at 0.362 which is greater than the significant level 5% so researcher concluded that the 3.62% of the impact is insignificant. So the H0 is accepted.

### Part 3

#### FINDINGS, SUGGESTIONS AND CONCLUSION:

##### 3.1 FINDINGS:

1. Financial leverage negatively correlates with financial performance of the selected cement companies in India during the period of 2012-2015. So the **H1** is rejected by the researcher.

##### 3.2 SUGGESTIONS:

1. Companies' management should ensure that financial decisions made by them are in consonance with shareholders' wealth maximization objectives which encompasses the profit maximization objective of the firm.
2. The amount of debt finance in the financial mix of the firm should be at the optimal level so as to ensure adequate utilization of the firms' assets.

##### 3.3 CONCLUSION:

This study investigated the relationship between leverage and financial performance of the firms belongs to cement manufacturing sector of India. It was hypothesized that there is a significant relationship exist between leverage and financial performance. The statistical test result show that there is a significant negative relationship exists between leverage and the financial performance of the firm in cement manufacturing sector of India.



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