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THE CRITICAL ANALYSIS OF CAPITAL STRUCTURE OF CEMENT AND STEEL INDUSTRY IN INDIA

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ABSTRACT

Capital structure and financing decisions can contribute to maximizing the value of the firm. Financing decisions go hand in hand with investment decisions. The present study is about Analysis the Capital Structure of Cement and Steel Industry in India, the study is based on the secondary data collected from the annual reports of selected companies in cement and steel industry during the period 2013 to 2017, the study uses tools like averages, one way ANOVA & t test to analyse the relationship between the steel and cement industry. The results reveals that there is a significant difference in average debt size between automobile and steel industries over the period of study but it is proved subsequently there is no significant difference for average debt/equity ratio between automobile and steel industries over the period of study.

Keywords: Capital structure, Investment decisions,one way ANOVA, t test,

Introduction

Capital structure and financing decisions can contribute to maximizing the value of the firm. Financing decisions go hand in hand with investment decisions. That is, a firm needs sufficient funds to support its activities resulting from its investment decisions. Capital structure refers to the sources of financing employed by the firm. These sources include debt, equity, and hybrid securities that a firm uses to finance its assets, operations, and future

growth. Often thought of in terms of financial leverage, a firm's capital structure is a direct determinant of its overall risk and cost of capital. The sources of capital have important consequences for the firm and can affect its value and hence shareholder wealth. For example, while debt is the least costly form of capital, the effects of increasing leverage through the use of debt simultaneously increase financial risk. Borrowing not only increases the risk of default for a firm but also increases the volatility of a firm's earnings per share and its return on equity. The benefits of a lower cost of debt decrease as leverage rise due to increasing financial risk and the likelihood of financial distress and bankruptcy. As with most financial decisions, financial decisions involve a risk-return trade-off. Given the dramatic changes that have occurred recently in the economy, such as the global financial crisis, the topic of capital structure and corporate financing decisions is critically important.

Review of literature

Dr. Sarbapriya Ray (2013), in their work "Investigating capital structure determinants in listed cement companies of India" they identified the asset composition , size and non-dent tax shields are found to have a statistically positive relationship with debt –equity ratio which supports earlier research findings and age , profitability and asset collateral have significant negative relations with leverage.

Abolfazl Ghadiri Moghaddam & other (2014) examine the relationship between capital structure and financial performance, paying particular attention to the degree of industry level competition. The study covers 111 companies listed on the Tehran Stock Exchange during the period 2009 to 2013. The study shows that leverage, industry Lerner index, and industry concentration (Herfindahl- Hirschman Index) have a negative and significant impact on the firm performance. Also, only industry concentration decreases the negative impact of leverage on the firm performance.

A. M. Goyal (2014) in their study entitled "The Relationship between Capital Structure & Profitability of Public Sector Banks in India" examines the impact of capital structure on the performance of Indian public sector banks as measured from their Return on Equity. The study covers sample size of 19 public sector banks during the year 2008 to 2012. The study shows that a positive relationship between short term debt to capital and profitability as measured by Return on Equity. Long term debt to capital, Total debt to capital and Total assets are found to have a negative relationship with Return on Equity. Results also indicated that there exists a positive relationship between Size and profitability of Indian public sector banks.

Dr. Rosy Kalra & Ankush Singhal (2015) in the work "Analysis of Capital Structure Determinants of Ambuja Company" examine the relationship between capital structure and financial performance of the Ambuja cement company India. The study, based on secondary data on Ambuja Cement Company during the year 2003-04 to 2012-13, the study shows that the net income approach method of capital structure theories with a judicious mixture of debt and equity, a firm can evolve an optimum capital structure will be the one at which value of the firm is the highest and the overall cost of capital is the lowest. At that structure the market price per share would be Maximum.

Dr. K.S. Sekhara Rao & Dr. V. Venu Madhav (2015) in their empirical study entitled "Capital Structure Strategies and Its Effect on Sustainable Corporate Growth - A Study on Dr. Reddy's Laboratories" examine the facts related to the capital structure design, and its impact on the organization including the performance, by using various theories and tools. The study has the net profit as an indicator of the overall performance of the organization. The study shows that the capital structure has a close relationship to company performance, and it is influencing the overall performance of the organization.

Objectives of the study

- To study the pattern of the capital structure of Cement and steel industry in India
- To study the interrelationship between several pertinent aspects relating to capital structure of Cement and steel industry in India

Research Methodology

The study is based on secondary data during the period from 2012-13 to 2016-17 & a sample size of five cement & five Steel companies in India on the bases of Sales & listed in BSE and availability of required data for the study period. The data were collected from the published sources like books, annual reports of companies & website of money control.com. The collected data will be analyzed by using Averages, one way ANOVA.

Table 01: Profile of Sampled Companies of Cement & Steel Industry

Sl. No	Name of Company	Year of Establish	Headquarter
1	Ultratech Cement	1987	Mumbai
2	ACC Cement	1936	Mumbai
3	Ambuja Cements	1983	Mumbai
4	Prism Cement	1997	Hyderabad

5	Shree Cement	1970	Kolkata
6	Tata Steel	1907	Mumbai
7	JSW Steel	1982	Mumbai
8	Steel Authority of India Ltd	1954	New Delhi
9	VISA Steel	2003	Kolkata
10	Steel exchange India Ltd	1999	Visakhapatnam

Source: Collected from data available in annual reports of company

Data Analysis

Table 02: Total debts of sampled companies in Cement Industry (Rs. in Crores)

Name of the company	2013	2014	2015	2016	2017	Average company wise
Ultratech Cement	4462.68	4872.78	6511.83	4829.91	5215.96	5178.63
ACC Cement	85.03	0.00	0.00	35.50	50.02	34.11
Ambuja Cement	34.63	29.15	19.09	22.68	23.58	25.83
Prism Cement	1281.52	1576.14	1760.37	1647.61	1299.48	1513.02
Shree Cement	977.38	1078.27	616.36	716.67	1292.48	936.23
Average Year wise	1368.25	1511.27	1781.53	1450.47	1576.30	1537.56

Source: computed from data available in annual reports of company

The above table shows that the average debt of cement companies is 1537.56 crores over the debt, i.e.f study. Further, we can say that the average debt of Ultratech cement is recorded highest average debt, i.e. 5178.63 Crores and Ambuja cement is recorded lowest i.e. 25.83 crores. Moreover, we can also see that, except Ultratech cement rest of all the companies have debt size, which is less than the industry average debt.

Ho: There is no significant difference in the average total debt of the sampled companies in Cement industry.

H1: There is a significant difference in the average total debt of the sampled companies in Cement industry.

Table 03: One Way ANOVA of Total Debt (Cement Industry)

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Ultratech Cement	5	25893.16	5178.632	626637.5
ACC Cement	5	170.55	34.11	1293.723
Ambuja Cement	5	129.13	25.826	37.21873
Prism Cement	5	7565.12	1513.024	45618.05
Shree Cement	5	4681.16	936.232	74826.54

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	90826521	4	22706630	151.6985	1.17E-14	2.866081
Within Groups	2993652	20	149682.6			
Total	93820174	24				

α=0.05;

Here,

F cal. = 151.6985> F crit. =2.866081

Hence we will reject null hypothesis. Therefore we can say that there is a significant difference of the average total debt of the sampled companies of the cement industry.

Table 04: Total debts of sampled companies of Steel Industry (Rs. in Crores)

Name of the company	2013	2014	2015	2016	2017	Average company wise
Tata Steel Ltd	25911.51	26126.78	26210.25	30993.79	30209.04	27890.27
JSW Steel	16543.79	24974.98	25761.23	27941.06	32696.57	25583.53
SAIL	21500.57	24266.70	28220.72	31511.03	38900.52	28879.91
VISA Steel	2210.43	2323.71	2765.15	2986.66	2839.41	2625.07
SEIL	356.68	338.29	658.00	585.86	892.49	566.26
Average Year wise	13304.60	15606.09	16723.07	18803.68	21107.61	17109.01

Source: computed from data available in annual reports of company

The above table shows that average debt of Steel companies is 17109.01 crores over the period of study. Further we can say that average debt of SAIL is recorded highest average debt, i.e. 28879.91 Crores and SEIL is recorded lowest i.e. 566.26 crores. Moreover, we can also see that, except VISA steel & SEIL rest of all the companies have debt size which is more than industry average debt.

Hypothesis Testing

Ho: There is no significant difference in the average total debt of the sampled companies in steel industry.

H1: There is a significant difference in the average total debt of the sampled companies in steel industry.

Table 05: One Way ANOVA of Total Debt (Steel Industry)

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Tata Steel Ltd	5	139451.4	27890.27	6214097
JSW Steel	5	127917.6	25583.53	34568024
SAIL	5	144399.5	28879.91	45876579
VISA Steel	5	13125.36	2625.072	114763.9
SEIL	5	2831.32	566.264	52780.12

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	4.05E+09	4	1.01E+09	58.30999	9.64E-11	2.866081
Within Groups	3.47E+08	20	17365249			
Total	4.4E+09	24				

α=0.05;

Here,

F cal. = 58.30999> F crit. =2.866081

Hence we will reject null hypothesis. Therefore we can say that there is a significant difference of the average total debt of the sampled companies of the steel industry.

Comparison of Average Debt of two selected Industries

Hypothesis Testing

Ho: There is no significant difference for average debt size between cement and steel industries over the period of study

H1: There is significant difference for average debt size between cement and steel industries over the period of study

Table 06: Average Debt of Cement and Steel Companies

Industry/Year	2013	2014	2015	2016	2017
Cement	1368.248	1511.268	1781.53	1450.474	1576.304
Steel	13304.596	15606.092	16723.07	18803.68	21107.61

Source: computed from data available in annual reports of company

Table 07: Analysis of Average Debt of Cement and Steel Companies

t-Test: Paired Two Sample for Means

	Cement	*Steel*
Mean	1537.5648	17109.0088
Variance	24491.06308	8935488.615
Observations	5	5
Pearson Correlation	0.318953436	
Hypothesized Mean Difference	0	
Df	4	
t Stat	11.83084344	
P(T<=t) one-tail	0.0001461	
t Critical one-tail	2.131846782	
P(T<=t) two-tail	0.000292201	
t Critical two-tail	2.776445105	

α=0.05;

Here,

α=0.05< P Value 0.0001461(one-tail)

α=0.05< P Value 0.000292201 (two-tail)

Hence we will reject null hypothesis. Therefore we can say that there is a significant difference for average debt size between automobile and steel industries over the period of study.

Table 08: Debt/Equity Ratio of sampled companies in Cement Industry

Name of the company	2013	2014	2015	2016	2017	Average company wise
Ultratech Cement	0.29	0.28	0.35	0.23	0.22	0.27
ACC Cement	0.01	0.00	0.00	0.00	0.01	0.00
Ambuja Cement	0.00	0.00	0.00	0.00	0.00	0.00
Prism Cement	1.18	1.56	1.73	1.67	1.36	1.50
Shree Cement	0.25	0.23	0.12	0.12	0.17	0.18
Average Year wise	0.35	0.41	0.44	0.40	0.35	0.39

Source: computed from data available in annual reports of company

The above table shows that average debt/equity ratio of cement companies is 0.39 over the period of study. Further, we can say that the average debt/equity ratio of Prism Cement is recorded highest i.e. 1.50 and Ambuja & ACC cement is recorded lowest i.e. 0.00. Moreover, we can also see that, except Prism Cement rest of all the companies have average debt/equity ratio which is less than the industry average debt/equity ratio.

Hypothesis Testing

Ho: There is no significant difference in the Debts/Equity Ratio of the sampled companies in Cement industry.

H1: There is a significant difference in the Debts/Equity Ratio of the sampled companies in Cement industry.

Table 09: One Way ANOVA of Debts/Equity Ratio (Cement Industry)

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Ultratech Cement	5	1.37	0.274	0.00273
ACC Cement	5	0.02	0.004	0.00003
Ambuja Cement	5	0	0	0
Prism Cement	5	7.5	1.5	0.05185
Shree Cement	5	0.89	0.178	0.00367

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	7.957944	4	1.989486	170.6834	3.74E-15	2.866081
Within Groups	0.23312	20	0.011656			
Total	8.191064	24				

α=0.05;

Here,

F cal. = 170.6834> F crit. =2.866081

Hence we will reject null hypothesis. Therefore we can say that there is a significant difference of the average Debts/Equity Ratio of the sampled companies in cement industry.

Table 10: Debts/Equity Ratio of sampled companies in Steel Industry

Name of the company	2013	2014	2015	2016	2017	Average company wise
Tata Steel Ltd	0.43	0.39	0.36	0.41	0.56	0.43
JSW Steel	0.84	1.06	1.03	1.33	1.36	1.12
SAIL	0.52	0.57	0.65	0.80	1.08	0.72
VISA Steel	4.25	6.33	22.59	-6.48	-4.34	4.47
SEIL	2.05	1.62	2.86	2.24	8.37	3.43
Average Year wise	1.62	1.99	5.50	-0.34	1.41	2.04

Source: computed from data available in annual reports of company

The above table shows that average debt/equity ratio of Steel companies is 2.04 over the period of study. Further, we can say that the average debt/equity ratio of VISA Steel is recorded highest i.e. 4.47 and Tata Steel Ltd is recorded lowest i.e. 0.43. Moreover, we can also see that, except VISA Steel & SEIL rest of all the companies have average debt/equity ratio which is less than the industry average debt/equity ratio.

Hypothesis Testing

Ho: There is no significant difference in the Debts/Equity Ratio of the sampled companies in steel industry.

H1: There is a significant difference in the Debts/Equity Ratio of the sampled companies in steel industry.

Table 11: One Way ANOVA of Debts/Equity Ratio (Steel Industry)

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Tata Steel Ltd	6	2.58	0.43	0.00476
JSW Steel	6	6.744	1.124	0.038344
SAIL	6	4.344	0.724	0.040664
VISA Steel	6	26.82	4.47	105.8722
SEIL	6	20.568	3.428	6.265016

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	77.96604	4	19.49151	0.868443	0.496531	2.75871
Within Groups	561.1049	25	22.4442			
Total	639.071	29				

α=0.05;

Here,

F cal. = 0.868443< F crit. =2.75871

Hence we will accept null hypothesis. Therefore we can say that there is no significant difference of the average Debts/Equity Ratio of the sampled companies in Steel industry.

Table 12: Analysis of Average Debt/Equity ratio of Cement and Steel Companies

t-Test: Paired Two Sample for Means

	Cement	*Steel*
Mean	0.3912	2.0352
Variance	0.0016612	4.5510512
Observations	5	5
Pearson Correlation	0.520891182	
Hypothesized Mean Difference	0	
Df	4	
t Stat	1.740266283	
P(T<=t) one-tail	0.078394617	
t Critical one-tail	2.131846782	
P(T<=t) two-tail	0.156789234	
t Critical two-tail	2.776445105	

α=0.05;

Here,

α=0.05> P Value 0.078394617 (one-tail)

α=0.05> P Value 0.156789234 (two-tail)

Hence we will accept null hypothesis. Therefore we can say that there is no significant difference for average debt/equity ratio size between automobile and steel industries over the period of study.

Findings

- The Ultratech cement is recorded highest average debt, i.e. 5178.63 Crores, which is more than the industry average.
- There is a significant difference of the average total debt of the sampled companies of the cement industry.
- SAIL is recorded highest average debt, i.e. 28879.91 Crores, which is more than the industry average of 17109.01 crores.
- There is a significant difference of the average total debt of the sampled companies in the steel industry.
- There is a significant difference in average debt size between automobile and steel industries over the period of study.
- Prism Cement is recorded highest debt/equity ratio, i.e. 1.50 which is more than average debt/equity ratio of cement companies i.e. 0.39 over the period of study.
- There is a significant difference in the average Debts/Equity Ratio of the sampled companies in the cement industry.

- The average debt/equity ratio of VISA Steel is recorded highest i.e. 4.47 and Tata Steel Ltd is recorded lowest i.e. 0.43 over the period of study.
- There is no significant difference in the average Debts/Equity Ratio of the sampled companies in the Steel industry.
- There is no significant difference in average debt/equity ratio size between automobile and steel industries over the period of study.

Conclusion

The debt is the least expensive form of capital; the effects of increasing leverage through the use of debt simultaneously increase financial risk. Borrowing not only increases the risk of default for a firm but also increases the volatility of a firm's earnings per share and its return on equity. The present study is trying to analysis the pattern of the capital structure of cement & the Steel industry in India, the result shows that there is a significant difference of the average total debt of the sampled companies of the steel industry & Cement industry and also there is a significant difference in average debt size between automobile and steel industries over the period of study. There is a significant difference of the average Debts/Equity Ratio of the sampled companies in the cement industry but in the steel industry have no difference of the average Debts/Equity Ratio of the sampled companies and also there is no significant difference for average debt/equity ratio size between automobile and steel industries over the period of study.

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