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Financial Leverage in Indian and Chinese Cement Industry

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Abstract

The present research paper aims to measure, analyze and compare the financial leverage of Indian and Chinese Cement industry. For this purpose, top ten cement companies were selected from Indian cement industry as well as from Chinese cement industry. Secondary data have been used to carry out the research and these data were collected from annual reports of respective companies and database software. Data were analyzed through MS Excel. Financial leverage was measured in terms of EBIT-EBT relationship and Debt-Equity ratio. Result has been tested through one way ANOVA and comparison has been tested through t-test. Study shows that Indian and Chinese cement companies are not significantly different in terms of EBIT/EBT but significantly different in terms of Debt-Equity ratio.

Keywords : EBIT/EBT, debt-equity ratio, cement industry.

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Introduction

The term financial leverage in general refers to relationships between two interrelated variables. In financial analysis, the financial leverage reflects the responsiveness of one financial variable over some other financial variable. It helps to understand the behaviour of two financial variables. While calculating financial leverage, emphasis is given on measurement of relationship between variables rather than on measuring this. The measurement of financial leverage has been done using various accounting dimensions. The present research paper measures the financial leverage in the following terms-

1. Relationship between EBIT and EBT

This concept measures the financial leverage using the relationship between Earnings before Interest and Tax (EBIT) and Earnings before Tax (EBT). The formula for financial leverage under this method is:

$$DFL = \frac{EBIT}{EBT} \text{ or } \frac{EBIT}{EBIT - Interest}$$

2. Relationship between Debt and Equity

Some experts measure the financial leverage using the relationship between company's total debt and total equity. Total debt includes both long term debt and those short-term debts which do not occur in the day-to-day operations of the company. Total equity includes paid up equity share capital and retained earnings. The formula for financial leverage under this method is:

$$DFL = \frac{Debt}{Equity}$$

Review of Literature

Some important studies were reviewed and has been presented below-

Mochi, Rekha (2018) studied the relationship between financial leverage and profitability of selected ten Indian cement companies. Ten years (from 2007-08 to 2016-17) data were used to establish the relationship and negative relationship between Debt-Equity ratio and EPS was found.

Bhagya lakshmi, K. (2016) analyzed the financial leverage, operating leverage and combined leverage of three Indian cement companies. Ten years period was taken and percentage, ratio and average were applied to compare the various types of risk and found that The India Cements Ltd. has more total risk while two other companies were having moderate total risk.

Need of the Study

Chinese cement industry is the largest cement producing country in the world and yields 60% of global production of cement while Indian cement industry is the second largest cement producer in the world and accounted for over 7% of the global production capacity. Since no study has been conducted to analyze the financial risk between both the top two cement producing country. Hence the present study attempts to fulfill the research gap.

Objectives of the Study

The present paper has following objectives:

1. To measure and analysis of financial leverage of Indian and Chinese cement companies.
2. To compare financial leverage of Indian and Chinese cement companies.

Research Hypotheses

Following hypotheses have been proposed for the study:

In order to check whether there is significant difference available or not in different sample units of a particular country, the following hypothesis has been developed-

H₀1: There is no significant difference among financial leverage of different companies of cement industry in a particular country.

H₀2: There is no significant difference among financial leverage of Indian and Chinese cement companies.

Research Methodology

To carry out the research following methodology has been adopted-

Description	Indian Sample Companies	Chinese Sample Companies
Sample Size	10	10
Period of the study	5 financial year (2013 -14 to 2017-18)	5 calendar year (2015 to 2019)
Type of data	Secondary data as financial data	Secondary data as financial data
Source of data	Annual reports of selected companies and ACE Equity Software	www.reuters.com, www.stockopedia.com, www.aastocks.com, www.yahoofinance.com and www.gurufocus.com

(Source: Own Work)

ten Indian companies and ten Chinese companies have been selected on the basis of highest market capitalization in the industry. In order to facilitate comparison between Indian and Chinese sample companies, financial data of Chinese sample companies were assumed to occur in uniform order (assuming occur evenly every month) and accordingly converted into financial years. Hence four financial years could be formed i.e. from 2015-16 to 2018-19.

Statistical Tools

Under univariate analysis, descriptive statistics like mean and coefficient of variation have been used. Further for comparing difference in financial leverage of various companies and of various years, one-way ANOVA has been used as a bivariate technique. To test the hypothesis t test has been administered.

Results and Discussion

The leverage has been calculated using EBIT-EBT relationship and Debt-Equity ratio. Table displays the test results of one-way ANOVA for finding significance of difference between year-wise data (intra-firm comparison) and firm-wise data (inter-firm comparison).

Table 1: Financial Leverage (EBIT/EBT) of Indian Cement Industry

S. N.	Company Name	2013-14	2014-15	2015-16	2016-17	2017-18	Mean	C. V. (%)
1	ACC Ltd.	1.07	1.08	1.09	1.08	1.06	1.08	1.11
2	Ambuja Cements Ltd.	1.04	1.08	1.10	1.07	1.06	1.07	2.28
3	Birla Corp. Ltd.	1.56	1.37	1.41	2.20	3.36	1.98	42.51
4	India Cements Capital Ltd.	1.91	1.18	1.21	1.09	1.11	1.30	26.59
5	JK Cement Ltd.	2.34	2.59	4.26	2.06	1.74	2.60	37.74
6	JK Lakshmi Cement Ltd.	1.67	1.86	-3.38	4.07	9.11	2.67	169.54
7	KCP Ltd.	1.88	1.65	1.38	1.44	1.31	1.53	15.10
8	Shree Cement Ltd.	1.16	1.30	1.06	1.08	1.07	1.14	8.73
9	The Ramco Cements Ltd.	2.44	1.55	1.28	1.12	1.08	1.49	37.59
10	Ultratech Cement Ltd.	1.13	1.20	1.17	1.17	1.37	1.21	8.11
Industry Average		1.62	1.49	1.06	1.64	2.23	1.61	34.93
Inter-firm Comparison		ANOVA		F	0.812	P-Value		0.608
Intra-firm Comparison		ANOVA		F	0.793	P-Value		0.535

(Source: Own Computation)

Data revealed that the average leverage of Indian cement industry is 1.61 with an overall CV of 34.93%. Highest average leverage was observed for JK Lakshmi Cement Ltd. (2.67) followed by JK Cement Ltd (2.60). This tells that these two companies are riskier than other companies in the sample. Ambuja Cement Ltd. is using very less amount of debt as is confirmed from its leverage over the years which ranges between 1.04 and 1.10.

Results of one way ANOVA for inter-firm comparison disclosed that the calculated value of F is 0.812 with a p value of 0.608. Hence there is no significant difference among leverages of different firms of cement industry. When one way ANOVA was used to make intra-firm comparison, it was observed that the calculated value of F is 0.793 with a p value of 0.535 and it was proved that there is no significant difference among leverages of different years. Hence both the null hypothesis could not be rejected at 5% level of significance.

Table 2: Financial Leverage (Debt-Equity Ratio) of Indian Cement Industry

S. N.	Company Name	2013-14	2014-15	2015-16	2016-17	2017-18	Mean	C. V. (%)
1	ACC Ltd.	0.014	0.014	0.016	0.015	0.013	0.014	7.37
2	Ambuja Cements Ltd.	0.0034	0.0034	0.0015	0.0012	0.0018	0.0022	48.12
3	Birla Corp. Ltd.	0.55	0.50	0.44	1.29	0.97	0.75	49.18
4	India Cements Capital Ltd.	1.45	1.48	1.50	1.55	2.79	1.75	33.26
5	JK Cement Ltd.	1.59	2.00	2.09	1.94	1.49	1.82	14.55
6	JK Lakshmi Cement Ltd.	1.29	1.46	1.71	1.92	1.76	1.63	15.45
7	KCP Ltd.	0.93	0.85	0.78	0.76	0.75	0.81	8.83
8	Shree Cement Ltd.	0.25	0.17	0.13	0.17	0.38	0.22	45.60
9	The Ramco Cements Ltd.	1.18	1.04	0.69	0.38	0.28	0.71	55.67
10	Ultratech Cement Ltd.	0.43	0.52	0.48	0.35	0.74	0.50	29.18
Industry Average		0.77	0.80	0.78	0.84	0.92	0.82	30.72
Inter-firm Comparison		ANOVA		F	29.862	P-Value		0.00
Intra-firm Comparison		ANOVA		F	0.0641	P-Value		0.992

(Source: Own Computa

Table 2 measures the leverage using debt-equity ratio of Indian sample companies of cement industry. It is found that the average D-E ratio of the industry is 0.82 with a CV of 30%. Over the years the D-E ratio has increased a bit but in all the years it has been less than 1. This indicates that the industry is relying less on debt. The highest average leverage was for JK Cement Ltd. as 1.82 and the lowest was for Ambuja Cement Ltd. as 0.0022. Ambuja Cement Ltd. is using a negligible amount of debt therefore it is a financial risk free company.

Inter-firm comparison results show that the calculated value of F is 29.862 with a p value of 0.00. Therefore, there is significant difference among the leverages of different Indian firms. On the other hand, intra-firm comparison shows that the calculated value of F is 0.0641 with a p value of 0.992. Thus there is no significant difference among the leverages of firms of cement industry over the years.

Table 3: Financial Leverage (EBIT/EBT) of Chinese Cement Industry

S. N.	Company Name	2015-16	2016-17	2017-18	2018-19	Mean	C. V. (%)
1	Anhui Conch Cement Co. Ltd.	1.09	1.05	1.02	1.01	1.04	3.26
2	Asia Cement (China) Holdings Corp.	-0.81	1.48	1.17	1.07	0.73	143.47
3	BBMG Corp.	1.20	1.24	1.36	1.28	1.27	5.24
4	CNBM Co. Ltd	3.07	2.52	1.67	1.50	2.19	33.76
5	China Resources Cement Holdings Ltd.	1.55	1.24	1.10	1.05	1.24	18.31
6	China Shanshui Cement Group Ltd.	0.75	-1.69	1.61	1.19	0.46	319.95
7	China Tianrui Group Cement Co. Ltd.	4.12	2.57	1.71	1.57	2.49	46.88
8	China West Construction Group Co. Ltd.	1.46	1.53	1.65	1.25	1.47	11.51
9	Huaxin Cement Co. Ltd.	2.10	1.39	1.13	1.05	1.42	33.62
10	Tangshan Jidong Cement Co. Ltd.	-0.29	2.18	1.35	1.32	1.14	90.93
	Industry Average	1.42	1.35	1.38	1.23	1.35	6.15
	Inter-Firm Comparison	ANOVA	F	2.254	P Value		0.039
	Intra-Firm Comparison	ANOVA	F	0.0914	P Value		0.964

(Source: Own Computation)

Table 3 presents the financial leverage of Chinese sample companies of cement industry. It is found that cement industry in China has an average leverage of 1.35 with a low value of C. V. of 6.15%. If individual companies are looked at, it is found that highest average leverage is 2.49 of China Tianrui Group Cement Co. Ltd., which is also having highest value of leverage in 2015-16 of 4.12. China Shanshui Cement Group Ltd. is showing average leverage of less than 1.00 which is lowest average leverage.

Result of one way ANOVA for inter-firm comparison discloses that the calculated F value is 2.254 with a P value of 0.039. Thus there is significant difference among the measures of financial leverage of the sample Chinese companies of cement industry. Hence null hypothesis for inter-firm comparison is rejected at 5% level of significance. This is due to the fact that EBIT fluctuated a lot over the years. Further, one way ANOVA result for Intra-firm comparison revealed that the calculated value of F is 0.0914 with a P value of 0.964. Thus the null hypothesis of no significant difference among financial leverage over the years is accepted at 5% level of significance and it can be concluded that there is no significant difference among financial leverage over the study period.

Table 4: Financial Leverage (Debt-Equity Ratio) of Chinese Cement Industry

S. N.	Company Name	2015-16	2016-17	2017-18	2018-19	Mean	C. V. (%)
1	Anhui Conch Cement Co. Ltd.	0.26	0.19	0.14	0.09	0.17	42.69
2	Asia Cement (China) Holdings Corp.	0.70	0.54	0.51	0.52	0.57	15.67
3	BBMG Corp.	1.42	1.94	1.89	2.05	1.83	15.17
4	CNBM Co. Ltd	3.67	3.21	2.64	2.12	2.91	23.11
5	China Resources Cement Holdings Ltd.	0.71	0.65	0.50	0.29	0.54	34.49
6	China Shanshui Cement Group Ltd.	4.12	4.42	2.27	0.77	2.89	58.96
7	China Tianrui Group Cement Co. Ltd.	1.91	1.48	1.16	1.01	1.39	28.56
8	China West Construction Group Co. Ltd.	0.92	0.83	0.60	0.49	0.71	27.52
9	Huaxin Cement Co. Ltd.	1.04	1.02	0.72	0.39	0.79	38.65
10	Tangshan Jidong Cement Co. Ltd.	2.34	2.20	2.23	1.45	2.06	19.74
Industry Average		1.71	1.65	1.27	0.92	1.39	26.49
Inter-Firm Comparison		ANOVA	F	10.047	P Value		0.00
Intra-Firm Comparison		ANOVA	F	1.116	P Value		0.355

(Source: Own Computation)

Table 4 measures the leverage using debt-equity ratio of Chinese sample firms of cement industry. It is found from the results that the average D-E ratio of the industry is 1.39 with a C.V. of 26.49%. Thus, there are low fluctuations in the D-E ratio over the years, but the values showed a continuously decreasing trend. This shows that overall the industry is using less debt than equity. Highest average D-E ratio was observed for China National Building Material Co. Ltd. as 2.91 which shows that the company is using debt more than twice than equity. Lowest average D-E ratio was observed for Anhui Conch Cement Co. Ltd. as 0.17.

When one way ANOVA was used for inter-firm comparison, it is found that the calculated F value is 10.047 with a p value of 0.00. Thus, there is significant difference among the measures of D-E Ratio of different companies and null hypothesis for inter-firm comparison is rejected at 5% level of significance. Further, result of one way ANOVA for Intra-firm comparison reveals that the calculated value of F is 1.116 with a p value of 0.355. Thus the null hypothesis of no significant difference among D-E ratio over the years cannot be rejected at 5% level of significance and it can be concluded that there is no significant difference among D-E ratio over the years.

Comparison among Financial Leverage of Indian and Chinese Sample Companies

In this section, comparison of financial leverage has been done between Indian and Chinese Sample Companies. Due to mismatch between years for which their data have been collected, three common years could be found for both Indian and Chinese sample companies i.e. 2015-16, 2016-17 and 2017-18. Hence comparison has been made using these three years only.

Table 5 presents the average financial leverage (EBIT/EBT and average D-E ratio) of Indian and Chinese sample companies for a period of three years.

Table 5: Comparison among Financial Leverage of Indian and Chinese Companies

Financial Leverage	Indian Sample Companies					Chinese Sample Companies					t	P Value	Status of H ₀
	2015-16	2016-17	2017-18	Mean	C. V. (%)	2015-16	2016-17	2017-18	Mean	C. V. (%)			
EBIT/EBT	1.06	1.64	2.23	1.64	35.69	1.42	1.35	1.38	1.38	2.64	0.76	0.53	Accepted
D-F Ratio	0.78	0.83	0.92	0.85	7.98	1.71	1.65	1.27	1.54	15.52	-4.84	0.04	Rejected

EBIT/EBT Relationship

Indian cement sector has average financial leverage of 1.64 and has observed continuous increase in leverage whereas no fixed trend was observed for Chinese cement sector. Further, for hypothesis testing three years average of financial leverage of the sector of both the countries has been considered. The hypothesis testing results showed that the calculated value of t is 0.759 with a p value of 0.528. Hence the null hypothesis is accepted and there is no significant difference among the financial leverage of Indian and Chinese sample companies. It can also be concluded that financial leverage in terms of EBIT/EBT of Indian and Chinese sample companies are almost same.

Debt-Equity Ratio (D-E ratio)

Indian cement sector has average D-E ratio of 0.85 and also shown a continuous increase, indicating the increasing use of debt whereas reverse is true for Chinese cement sector which has the average D-E ratio of 1.54. Further, hypothesis testing results reveal that t statistics as -4.84 with a p value of 0.04 and reject the null hypothesis. It can be concluded that there is significant difference among the Debt-Equity ratios of Indian and Chinese sample companies.

Conclusion

An attempt has been made to measure, analyze and compare the financial leverage of world's top two cement producing countries. It is found that the Indian cement industry is relying less on debt than to Chinese cement industry, therefore it is a less financial risky industry. Result also tells that both the countries' cement industry was significantly different.

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Appendix

Indian and Chinese Sample companies from Cement Industry

S. N.	Indian Companies	Chinese Companies
1	ACC Ltd.	Anhui Conch Cement Co. Ltd.
2	Ambuja Cements Ltd.	Asia Cement (China) Holdings Corp.
3	Birla Corporation Ltd.	BBMG Corp.
4	India Cements Capital Ltd.	China National Building Material (CNBM) Co. Ltd
5	JK Cement Ltd.	China Resources Cement Holdings Ltd.
6	JK Lakshmi Cement Ltd.	China Shanshui Cement Group Ltd.
7	KCP Ltd.	China Tianrui Group Cement Co. Ltd.
8	Shree Cement Ltd.	China West Construction Group Co. Ltd.
9	The Ramco Cements Ltd.	Huaxin Cement Co. Ltd.
10	Ultratech Cement Ltd.	Tangshan Jidong Cement Co. Ltd.