

A Study on Long Term Solvency (Leverage) Analysis of Select Cement Companies in Meghalaya

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Abstract: Finance is regarded as the life blood of a business. It is one of the foundations of all kind of activities. Management is interested in evaluating every activities of the firm. It is for the company to find out the long term requirement to meet its long term debt obligation. Leverage or long term funds indicate the proportion between owner's funds and non-owners funds the present study is analysis the Long term solvency position of selected cement companies in Meghalaya, the secondary data were used for this study and analysis the data by using of two way ANOVA, Mean, SD, Annual, Linear, compound growth average and Correlation finally it conclude that companies belong to the same industry followed a different debt equity position during the study period.

Keywords: Long term solvency, ANOVA, Mean, Standard Deviation, Correlation

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I. INTRODUCTION

The goal of a company is to maximize its wealth maximization and it is important for the financial manager to take the right decision to utilize its investment efficiently and effectively. One of the crucial decisions is the working capital management which is made by the financial manager. The challenge is that every firm should maintain the optimum working capital management by which the shareholders' wealth can be maximized. It is important to manage the working capital management; otherwise, the firm may suffer in insolvency which may result in bankruptcy. The term 'Leverage' or long term solvency refers to the ability of a concern to meet its long term obligations. The long-term liability of a firm is towards debenture holders, financial institutions providing medium and long term loans and other creditors selling goods on credit. These ratios indicate firm's ability to meet the fixed interest and its costs and repayment schedules associated with its long term borrowings.

Long Term Solvency Ratios

Solvency ratios are used to judge the long term financial soundness of any business. Long term Solvency means the ability of the Enterprise to meet its long term obligation on the due date. Long term lenders are basically interested in two things: payment of interest periodically and repayment of principal amount at the end of the loan period. Usually the following ratios are calculated to judge the long term financial solvency of the concern.

1. Fixed asset ratio
2. Debt to total asset ratio
3. Debt Equity ratio
4. Proprietary ratio

Objective of the Study

- i. To study about leverage position of selected cement companies in Meghalaya
- ii. To study about the long- term financial strengths of companies.
- iii. To compare the leverage position of a companies.

II. METHODOLOGY OF THE STUDY

For this analysis, data has been collected from the selected cement company's financial reports. The cement Companies which satisfied the following criteria have been short listed for further research. Availability of data for at least for the period of 10 years.

Companies that meet the above conditions are

- Mawmluh Cherra Cement Limited
- Jaintia Cement Company Limited
- Virgo Cement Limited
- Meghalaya Cement Company Limited
- Cement Manufacturing Company Limited

Statistical Tools

- ANOVA
- Mean
- Standard Deviation
- Coefficient of Variation
- Annual, Linear and Compound Growth Rate
- Correlation

III. REVIEW LITERATURE

Baxter D.N. (1967) examined that the risk associated with excessive leverage with likely increased the cost of capital of the firm. A high degree of debt increases the likelihood of bankruptcy and therefore increases the risk of overall earnings streams. Since there appear to be very real costs associated with bankruptcy other things equal, excess leverage can reduce value of the firm

Baskar H.S. (1973) utilized a simultaneous equation approach and found that leverage measured inversely by the ratio of equity to assets and had the theoretically correct negative sign and was significant as well. And also found that the predictability of output changes on total cost and hence on profit fluctuation may separately influence financial leverage decisions in expected ways, although their effect are not significant at ordinary test level.

Bhat (1980) conducts a study which is related financial leverage of Indian manufacturing company .They examine the financial leverage by employing various variables such as firm size, variability in income, growth, profitability, operating leverage and dividend payout policy. The researcher concludes that firm's financial leverage is not associated with its size. The risky firm is more likely to employ less percentage of debt by witnessing with financial leverage and EBIT. This paper funds negative co-relation between firms leverage with its growth. There is a negative related between dividend payout policy and leverage.

Crutchley and Hansen (1989) tested whether insider holding lead to lower agency costs by analyzing the relation between leverage, dividend policy and insider holdings. They found that higher earnings volatility is positively related to higher insider holdings, larger dividends and lower debt. On the other hand, if manager's faces lower costs of diversification, it leads to higher insider holdings, lower dividends, and lower debt. They concluded that managers control agency costs through financial policy trade-off.

Jensen, Solbery and Zorn (1992) analyzed the determinants of cross- sectional differences in insider holdings, debt and dividend policies of firms. They found that these three policies are related both directly and indirectly, with the operating characteristics of firms. This is the first study to explicitly state that while prior research assumes insider ownership to be an exogenous determinant of debt and / or dividend policy, rightfully it should be treated as a variable that is endogenously determined by many of the same firms – specific attributes that affect debt and dividend policy.

Safieddin and Titman (1999) presents result consistent with use of debt being positively associated with an alignment of interest between shareholder and managers as they target of failed takeovers that subsequently increased their leverage ratio tend to experience significantly better performance that those that do not.

Daniel and Wheatley (2002) Prior research has shown that accounting information available prior to a bankruptcy is associated with the likelihood of bankruptcy. We show that additionally, the accounting information available prior to bankruptcy is associated with whether or not a firm will emerge from bankruptcy. We predict that firms that exhibit low solvency risk and high liquidity risk are most likely to emerge from bankruptcy. Firms that exhibit high solvency risk and high liquidity risk are predicted to be least likely to emerge from bankruptcy. Cross-Sectional, our results support these predictions, but our findings differ across large and small firms.

Douglas and Rajan (2005) we show in this article that bank failures can be contagious. Unlike earlier work where contagion stems from depositor panics or contractual links between banks, we argue that bank failures can shrink the common pool of liquidity, creating, or exacerbating aggregate liquidity shortages. This could lead to a contagion of failures and a total meltdown of the system. Given the costs of a meltdown, there is a possible role for government intervention. Unfortunately, liquidity and solvency problems interact and can cause each other, making it hard to determine the cause of a crisis. We propose a robust sequence of intervention.

Kader and Asarpota (2007) utilize bank level data to evaluate the performance of the UAE Islamic banks. Balance Sheet and income Statements of 3 Islamic banks and 5 conventional banks in the time period 2000 to 2004 are used to compile data for the study. Financial ratios are applied to examine the performance of the Islamic banks in profitability, liquidity, risk and solvency, and efficiency. The results of the study show that in comparison with UAE conventional banks, Islamic banks of UAE are relatively more profitable, less liquid, less risky, and more efficient. They conclude that there are two important implications associated with this finding: First, attributes of the Islamic profit – and-loss sharing banking in UAE. Second, UAE Islamic banks should be regulated and supervised in a different way as the UAE Islamic banks in practice are different from UAE conventional banks.

Loan and Batrancea (2008) The management of bank liquidity is one of the problems that American banks currently encountered, while the crisis of real estate credits emerged at the end of the previous year in The United States tends to spread over Europe, Japan and other parts of the world, leading to a global crisis that will be greater than the global crisis from the '30s. That is why we believe that it is imperiously urgent that banks should create own systems of liquidity analysis for the purpose of preventing at any moment their illiquidity and insolvability. The study that we present is an analysis guide for the liquidity state and preventing liquidity risk, where we highlight aspects regarding: the concept of bank liquidity, liquidity administration, liquidity risk management, liquidity indicators and methods for measuring liquidity risk.

Viral and Viswanathan (2011) financial firms raise short-term debt to finance asset purchases; this induces risk shifting when economic conditions worsen and limits their ability to roll over debt. Constrained firms de-lever by selling assets to lower-leverage firms. In turn, asset–market liquidity depends on the system-wide distribution of leverage, which is itself endogenous to future economic prospects. Good economic prospects yield cheaper short-term debt, inducing entry of higher-leverage firms. Consequently, adverse asset shocks in good times lead to greater de-leveraging and sudden drying up of market and funding liquid

Angamuthu and Sivanandam (2012) in this paper we examine long-term and short-term solvency status of Cement companies between 2000-01 and 2009-10. The five cement companies, four private owned and one Government owned are considered for the study. Results of the analysis reveals that there is no risk of solvency either in fulfilling long-term commitment in most of the cement manufacturing companies under study. Regarding short-term solvency, the study indicates that all cement companies have sufficient liquid assets to cover their short-term debt but a significant decline in short-term solvency level is found for majority of the companies as well as for all selected companies when pooled together. Overall this study envisages that long term solvency position is good while short-term solvency level is better for cement companies.

Analysis of Long term Solvency

1. Fixed Asset Ratio

Fixed asset ratio explains whether the firm has raised adequate long-term funds to meet its fixed assets requirements. This ratio gives an idea as to what part of the capital employed has been used in purchasing fixed assets for the concern. An attempt is made to find if there is any significant difference in the fixed asset ratio among the select cement companies over the years. The results are presented in table .1.1

Table 1.1
Fixed Asset Ratio of the Select Cement Companies

Companies	Year									
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Mawmluh Cherra Cement Limited	5.37	5.94	2.36	0.78	1.27	1.25	1.36	0.74	0.02	0.01
Jaintia Cement Limited	0.54	0.53	0.48	0.69	0.74	0.72	0.58	0.67	0.60	0.53
Virgo Cement Limited	0.27	0.25	0.29	0.38	2.01	1.45	1.41	0.92	0.89	0.59
Meghalaya Cement Limited	0.01	0.01	0.63	0	0.29	0.26	0.19	1.11	1.01	1.10
Cement Manufacturing Company Limited	1.54	2.00	2.01	2.57	2.83	2.88	1.33	1.06	1.15	1.21

Source: Computed from the Annual Reports of the Select Cement Companies.

Table 1.2
Fixed Asset Ratio among the Companies over the Years: ANOVA

Source of Variation	Sum of Squares	D.F	Mean Square	Calculated F Value	P
Between companies	19.389	4	4.847	4.024	.008
Between years	5.823	9	0.647	.537	.838
Error	43.366	36	1.205		
Total	68.578	49	6.699		

The calculated F value of the fixed asset ratio among the select cement companies 4.024 is greater than the table value 2.633 at 5% level of significance. This indicates that there is a significant difference in the fixed assets ratio among the select cement companies. Hence the null hypothesis H_01 is rejected.

The calculated F value over the years is .537, which is less than the table value of 2.153 at 5% level of significance. Thus, the fixed assets ratio does not differ significantly over the years. Therefore, the null hypothesis H_02 is accepted.

Table 1.3
Co-efficient of Variation of the Fixed Asset Ratio

Companies	Mean	Standard Deviation	Co-efficient of Variation
Mawmluh Cherra Cement Limited	1.91	2.09	109.42
Jaintia Cement Limited	0.60	0.09	15
Virgo Cement Limited	0.84	0.61	72.62
Meghalaya Cement Limited	0.46	0.46	100
Cement Manufacturing Company Limited	1.86	0.71	38.17
Overall	1.14	1.18	103.50

Source: Computed from the Annual Reports of the Select Cement Companies.

It is seen in the above analysis that the variation in the fixed asset is found to be high in Mawmluh Cherra Cement (109.42%) followed by the Meghalaya Cement (100%) and it is least in Jaintia Cement (15%). The co-efficient of variation of the cement companies altogether is (103.50%), which reveals that there is a consistency in the ratio of the cement companies. Since the average of the fixed asset ratio of the Cement Manufacturing Company except shows lower value.

Figure .1 Mean Fixed Assets Ratio of the Cement Companies

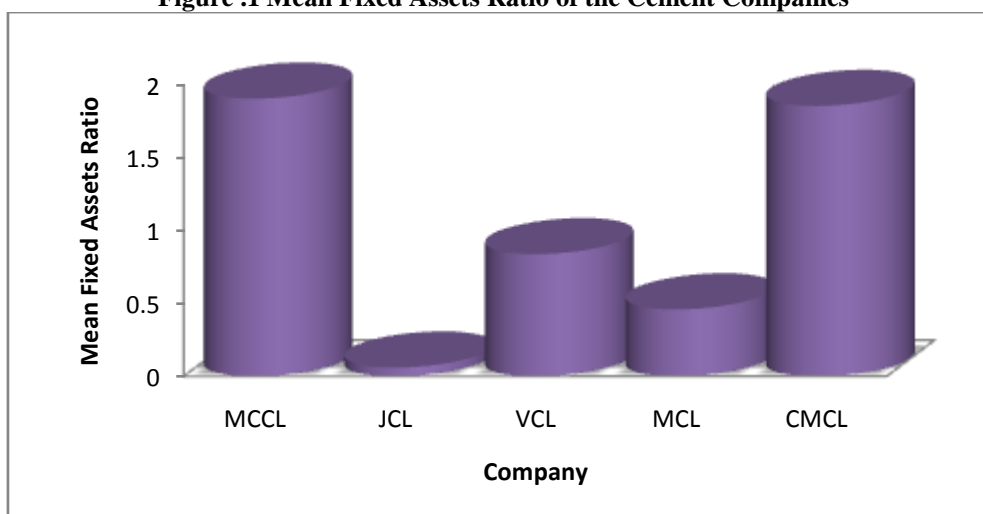


Table 1.4
Annual, Linear Annual and Compound Annual Growth Rates of the Fixed Asset Ratio

Companies	Annual Growth Rate	Linear Annual Growth Rate	Compound Annual Growth Rate
Mawmluh Cherra Cement Limited	-0.27	-0.59	-0.99
Jaintia Cement Limited	0.01	-1.11	-0.90
Virgo Cement Limited	0.41	0.04	-0.78
Meghalaya Cement Limited	7.27	0.11	10
Cement Manufacturing Company Limited	0.56	-0.04	-0.92
Overall	7.98	-1.59	6.41

Source: Computed from the Annual Reports of the Select Cement Companies.

It is inferred from the above analysis that the overall annual growth rate of the fixed asset ratio is 7.98 and Meghalaya Cement has highest positive annual growth rate (-0.78) followed by Cement Manufacturing Company (0.56). In the case of linear annual growth rate, Meghalaya Cement has higher positive growth rate of 0.11. Meghalaya Cement has registered highest negative linear average growth rate (0.96). The compound annual growth rate of the Meghalaya Cement shows positive and the highest negative value registered in Mawmluh Cherra Cement (0.99) under the study period.

2 Debt to Total Asset Ratio

Debt to total asset ratio tells whether the percentage of total assets that were financed by creditors, liabilities debt. It was calculated by dividing a corporation's total liability by its total assets. An attempt is made to find if there is any significant difference in the Debt to total ratio among the select cement companies over the years. The results are presented in table.2.1

Table.2.1
Debt to total Asset Ratio of the Select Cement Companies

Companies	Year									
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Mawmluh Cherra Cement Limited	0	0.02	0.16	0.19	0.31	0.27	0.24	3.16	0.32	0.28
Jaintia Cement Limited	2.45	3.01	3.15	1.69	8.14	1.94	2.93	2.96	2.39	1.27
Virgo Cement Limited	0.04	0.48	0.38	0.34	0.98	2.45	1.76	0.29	0.25	0.40
Meghalaya Cement Limited	6.45	4.80	3.04	2.56	2.72	3.56	1.29	8.22	3.65	2.51
Cement Manufacturing Company Limited	5.54	2.62	3.65	2.43	3.37	6.94	1.87	2.52	2.36	5.22

Source: Computed from the Annual Reports of the Select Cement Companies.

Table .2.2
Debt to Total Asset Ratio among the Companies over the Years: ANOVA

Source of Variation	Sum of Squares	D.F	Mean Square	Calculated F Value	P
Between companies	108.097	4	27.024	10.877	.000
Between years	22.688	9	2.521	1.015	.447
Error	89.441	36	2.484		
Total	11.165	49	0.228		

The calculated F value of the debt to total asset ratio among the select cement companies 10.877 is greater than the table value 2.633 at 5% level of significance. This indicates that there is a significant difference in the debt to total assets ratio among the select cement companies. Hence the null hypothesis H_01 is rejected.

The calculated F value over the years is 1.015, which is less than the table value of 2.153 at 5% level of significance. Thus, the debt to total asset ratio does not differ significantly over the years. Therefore, the null hypothesis H_02 is accepted.

Table .2.3 Co-efficient of Variation of the Debt to total asset Ratio

Companies	Mean	Standard Deviation	Co-efficient of Variation
Mawmluh Cherra Cement Limited	0.49	0.94	191.84
Jaintia Cement Limited	2.99	1.91	63.88
Virgo Cement Limited	0.64	0.87	135.93
Meghalaya Cement Limited	3.88	2.08	53.60
Cement Manufacturing Company Limited	3.65	1.69	46.30
Overall	2.33	2.12	90.99

Source: Computed from the Annual Reports of the Select Cement Companies.

It is seen in the above analysis that the variation in the debt to total asset ratio is found to be high in Mawmluh Cherra Cement (191.84%) followed by the Virgo Cements (135.93%) and it is least in Cement Manufacturing Company (46.30%). The co-efficient of variation of the cement companies altogether is (90.99%), which reveals that there is a consistency in the ratio of the cement companies. Since the average of the debt to total asset ratio of the Cement Manufacturing Company except shows lower value.

Figure.2 Mean Debts to Total Asset Ratio of the Cement Companies

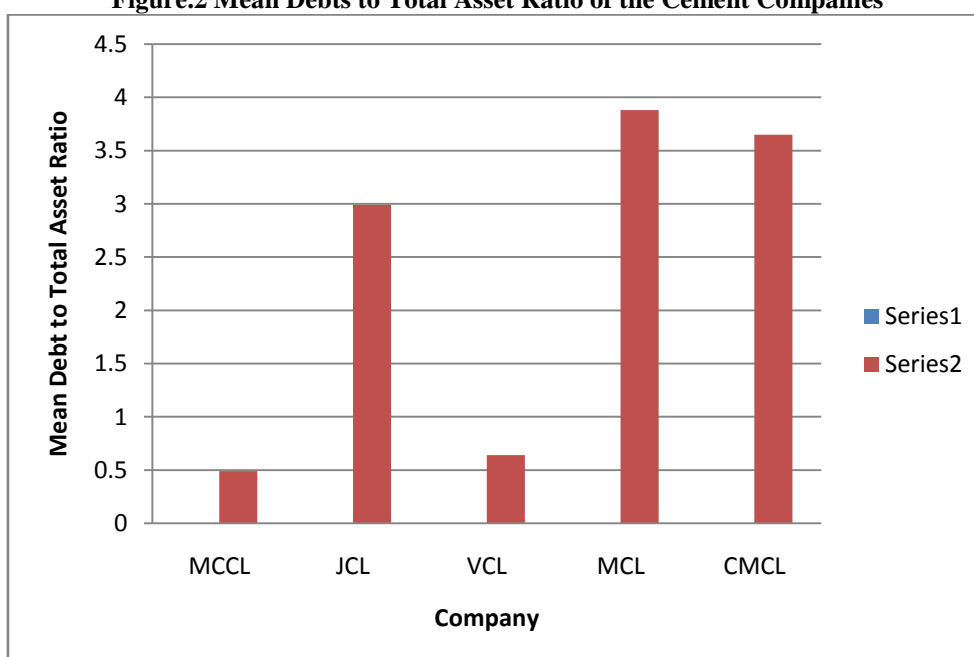


Table .2.4
Annual, Linear Annual and Compound Annual Growth Rates of the Debt to total asset Ratio

Companies	Annual Growth Rate	Linear Annual Growth Rate	Compound Annual Growth Rate
Mawmluh Cherra Cement Limited	1.21	0.03	0
Jaintia Cement Limited	0.46	0.42	-0.95
Virgo Cement Limited	1.28	0.04	0
Meghalaya Cement Limited	0.38	-0.44	-0.96
Cement Manufacturing Company Limited	0.19	-0.04	-0.90
Overall	3.52	0.01	-2.81

Source: Computed from the Annual Reports of the Select Cement Companies.

It is inferred from the above analysis that the overall annual growth rate of the debt to total ratio is 3.52 and Virgo Cement has highest positive annual growth rate (1.28) followed by Mawmluh Cherra Cement (1.21). In the case of linear annual growth rate, Jaintia Cement has higher positive growth rate of (0.42). Meghalaya Cement has registered highest negative linear average growth rate (-0.44). The compound annual growth rate of the Mawmluh Cherra Cement, Virgo Cement shows positive and the remaining cement companies have negative value.

3. Debt-Equity Ratio

The long-term solvency of a firm can be judged with capital structure ratios. The relationship between borrowed funds and the owner's capital is a popular measure of the long-term solvency of a company. This relationship is shown by the debt-equity ratio. The object of calculating the debt-equity ratio is to measure the relative interest of owners and creditors in the firm. The ratio indicates the proportionate claims of owners on the firm's assets. The purpose is to get an idea of the cushion available to outsiders on the liquidation of the firm. A ratio of 1:1 may be usually considered satisfactory, although there cannot be any rule of thumb for all types of business. An attempt is made to find if there is any significant difference in the debt-equity ratio among the companies over the years. The results are presented in table .3.1

Table .3.1
Debt-Equity Ratio of the Cement Companies

Companies	Year									
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Mawmluh Cherra Cement Limited	0.21	2.16	1.09	2.18	1.98	5.50	2.16	1.56	1.75	3.62
Jaintia Cement Limited	2.40	2.40	2.41	3.41	3.32	3.25	3.66	3.61	1.69	0.69
Virgo Cement Limited	0.82	0.92	0.84	0.30	0.10	0.16	0.19	0.24	0.16	0.15
Meghalaya Cement Limited	1.84	0.56	0.47	0.52	0.68	0.58	0.47	0.35	0.94	0.90
Cement Manufacturing Company Limited	2.55	1.62	0.42	0.29	0.26	0.29	0.48	0.57	0.81	0.87

Source: Computed from the Annual Reports of the Select Cement Companies.

Table .3.2
Debt-Equity Ratio among the Companies over the Years: ANOVA

Source of Variation	Sum of Squares	D.F	Mean Square	Calculated F Value	P
Between companies	41.303	4	10.326	11.862	.000
Between years	3.201	9	0.356	.409	.925
Error	31.338	36	.870		
Total	75.842	49	11.552		

The calculated F value of the debt-equity ratio among the cement companies 11.862 is greater than the table value 2.633 at 5% level of significance. This reveals that there is a significant difference in the debt-equity ratio among the select cement companies. Shows the null hypothesis H_01 is rejected.

The calculated F value over the years is 0.409, which is less than the table value of 2.153 at 5% level of significance. Therefore, the debt-equity ratio does not differ significantly over the years. Thus, the null hypothesis H_02 is accepted.

Table .3.3
Co-efficient of Variation of the Debt Equity Ratio

Companies	Mean	Standard Deviation	Co-efficient of Variation
Mawmluh Cherra Cement Limited	2.22	1.44	64.86
Jaintia Cement Limited	2.68	0.95	35.44
Virgo Cement Limited	0.38	0.33	86.84
Meghalaya Cement Limited	0.73	0.43	58.90
Cement Manufacturing Company Limited	0.81	0.73	95.12
Overall	1.37	1.25	91.24

Source: Computed from the Annual Reports of the Select Cement Companies.

Table 5.28 shows the variations in the debt-equity ratio of the select cement companies. It is inferred that the variation in the debt-equity ratio is found to be high in Cement Manufacturing Company Limited (95.12%) followed by Virgo Cement (86.84%) and it is least in Jaintia Cement (35.44%). The co-efficient of

variation of the select cement companies on the whole is (95.24%), which reveals that there is a modest variation in the debt-equity ratio. The mean of the debt-equity ratio of the companies shows satisfactory position over the study period and it implies that these companies have adequate solvency position to pay off the long-term borrowings.

Figure .3
Mean Debt-Equity Ratio of the Cement Companies

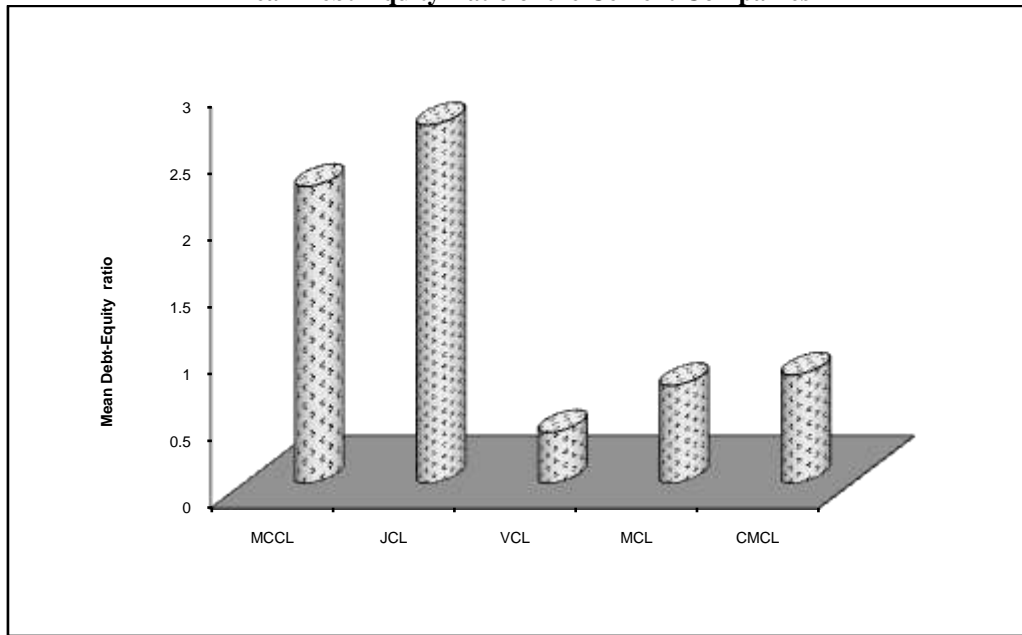


Table .3.4 Annual, Linear Annual and Compound Annual Growth Rates of the Debt-Equity Ratio

Companies	Annual Growth Rate	Linear Annual Growth Rate	Compound Annual Growth Rate
Mawmluh Cherra Cement Limited	1.31	0.26	0.72
Jaintia Cement Limited	-0.38	-0.24	-0.97
Virgo Cement Limited	-0.62	-0.07	-0.98
Meghalaya Cement Limited	-0.07	-0.10	-0.95
Cement Manufacturing Company Limited	-5.56	-0.19	-0.97
Overall	-4.42	-0.34	-3.15

Source: Computed from the Annual Reports of the Select Cement Companies.

The annual growth rate of the debt-equity ratio of the select cement companies altogether shows a negative value of about (4.42) during the study period. Mawmluh Cherra Cement has registered highest annual growth rate (1.31) followed by Meghalaya Cement (-0.07). The linear annual growth rate of Mawmluh Cherra Cement the shows highest value (0.26) followed by Virgo Cement, which has negative growth rate (-0.07). Except, Mawmluh Cherra Cement, other select companies have negative compound annual growth rate over the study period.

IV. PROPRIETARY RATIO

Proprietary ratio establishes the relationship between shareholders' funds and the total assets of the firm. The higher ratio of the share indicates better long-term solvency position. This ratio indicates the extent to which the assets of the company can be invested without affecting the interest of creditors. An attempt has been made to find whether there is any significant difference in the proprietary ratio among the select cement companies over the years. The results are presented in table .4.1

Table .4.1 Proprietary Ratio of the Select Cement Companies

Companies	Year									
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Mawmluh Cherra Cement Limited	8.77	5.24	8.86	6.36	5.80	5.73	9.17	6.46	6.22	6.15
Jaintia Cement Limited	2.80	2.62	5.14	5.65	1.08	1.98	1.75	0.95	2.60	2.59
Virgo Cement Limited	2.67	2.36	3.34	3.26	3.57	4.31	3.66	6.34	6.11	5.39
Meghalaya Cement Limited	4.67	3.16	2.04	1.47	1.03	8.31	8.54	8.74	9.09	9.54
Cement Manufacturing Company Limited	4.73	3.12	2.05	1.64	1.50	1.28	1.03	6.49	5.40	4.77

Source: Computed from the Annual Reports of the Select Cement Companies.

Table .4.2
Proprietary Ratio among the Companies over the Years: ANOVA

Source of Variation	Sum of Squares	D.F	Mean Square	Calculated F Value	P
Between companies	120.174	4	30.043	7.198	.000
Between years	54.939	9	6.104	1.463	.199
Error	150.255	36	4.174		
Total	325.368	49	40.321		

The above analysis shows that the calculated F value of the proprietary ratio among the select cement companies is 7.198, which is greater than the table value of 2.633 at 5% level of significance. This indicates that there is a significant difference in the proprietary ratio among the cement companies. Shows the null hypothesis H_01 is rejected.

The calculated F value over the years is 1.463, which is less than the table value of 2.153 at 5% level of significance. Therefore, the proprietary ratio of the cement companies does not differ significantly over the years. Hence, the hypothesis H_02 is accepted.

Table .4.3
Co-efficient of Variation of the Proprietary Ratio

Companies	Mean	Standard Deviation	Co-efficient of Variation
Mawmluh Cherra Cement Limited	6.87	1.47	21.38
Jaintia Cement Limited	2.72	1.56	57.35
Virgo Cement Limited	4.10	1.39	33.90
Meghalaya Cement Limited	5.66	3.51	62.01
Cement Manufacturing Company Limited	3.20	1.99	62.19
Overall	4.51	2.58	57.21

Source: Computed from the Annual Reports of the Select Cement Companies.

The variation in the proprietary ratio is found to be high in Cement Manufacturing Company (62.19%) followed by Meghalaya Cements (62.01%) and the least value is registered in Mawmluh Cherra Cements (21.38%). The overall co-efficient of variation of the select cement companies is (57.21%), which indicates that there is a modest variation in the proprietary ratio. The average of the proprietary ratio shows an unsatisfactory position over the study period.

Figure 4 Mean Proprietary Ratio of the Cement Companies

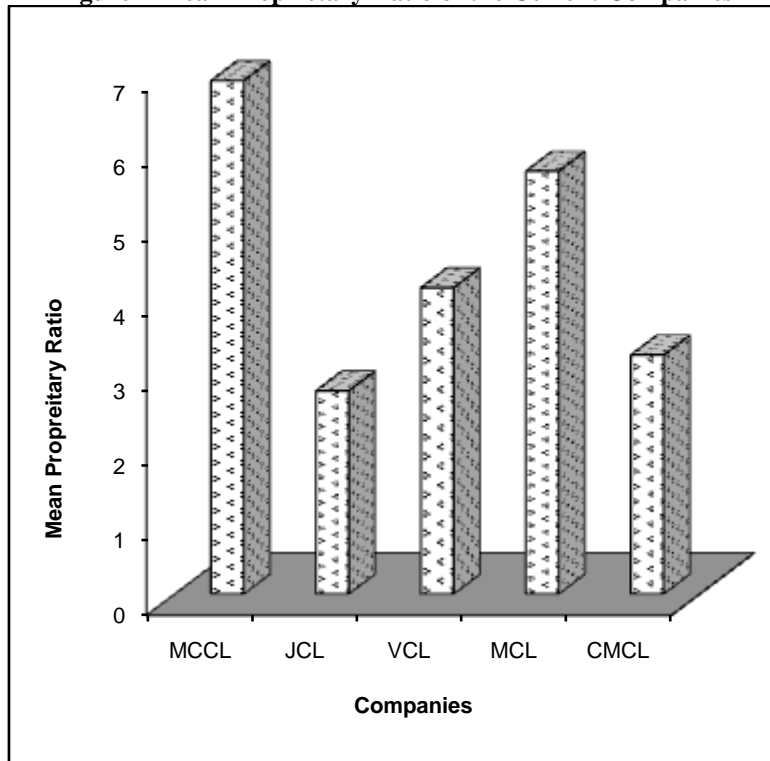


Table .4.4 Annual, Linear Annual and Compound Annual Growth Rates of the Proprietary Ratio

Companies	Annual Growth Rate	Linear Annual Growth Rate	Compound Annual Growth Rate
Mawmluh Cherra Cement Limited	0.02	0.26	-0.93
Jaintia Cement Limited	-0.19	-0.06	-0.91
Virgo Cement Limited	0.11	0.30	-0.79
Meghalaya Cement Limited	0.66	0.54	-0.79
Cement Manufacturing Company Limited	0.41	0.09	-0.89
Overall	1.01	1.13	-4.31

Source: Compiled from the Annual Reports of the Select Cement Companies.

The annual growth rate of the proprietary ratio of Meghalaya Cement has registered high positive value (0.66) followed by Cement Manufacturing Company (0.41). The linear annual growth rate is found to be high in Meghalaya Cement (0.54) followed by Virgo Cement (0.30) and it is least in Jaintia Cement (-0.06). In the case of compound annual growth rate, all Cements companies have registered negative growth rate over the study period.

Table 5. Inter-Correlations among the Long Term Solvency Ratios of the Select Cement Companies

Companies	Ratios	Debt- Equity Ratio	Fixed assets Ratio	Proprietary Ratio	Debt to total asset Ratio
Mawmluh Cherra Cement	Debt-Equity ratio	1.000	-0.146	-0.051	-.003
	Fixed Asset Ratio		1.000	0.115	-0.091
	Proprietary ratio			1.000	-0.212
	Debt to total asset Ratio				1.000
Jaintia Cement	Debt-Equity ratio	1.000	0.310	0.726*	0.983*
	Fixed Asset ratio		1.000	0.431	0.530
	Proprietary ratio			1.000	0.143
	Debt to total asset Ratio				1.000
Virgo Cement	Debt-Equity ratio	1.000	10.563	-8.047	-.392
	Fixed Asset ratio		1.000	17.174	-11.049

	Proprietary ratio			1.000	-55.136
	Debt to total asset ratio				1.000
Meghalaya Cement (Topcem)	Debt-Equity ratio	1.000	-0.216	-0.168	-0.008
	Fixed Asset ratio		1.000	0.358	-0.225
	Proprietary ratio			1.000	-1.149
	Debt to total asset ratio				1.000
Cement Manufacturing Company(Starcement)	Debt-Equity ratio	1.000	0.225	-1.149	4.403
	Fixed Asset ratio		1.000	0.764*	-0.484
	Proprietary ratio			1.000	0.970*
	Debt to total asset ratio				1.000

Source: Computed from the Annual Reports of the Select Cement Companies.

*(.05) Represents Significant at 95% level of Significance

** (.01) Represents Significant at 99 % level of Significance

It is inferred from the above analysis that the Debt Equity ratio is negatively correlated with fixed assets ratio (-0.146), Proprietary ratio (-0.051) and Debt to total Asset ratio (-0.003) in Mawmluh Cherra Cement Company. In Jaintia cement high positive correlations of Debt Equity Ratio with Debt to total asset ratio (0.983) and Proprietary ratio (0.726) at .05% level of significant. There is a high degree of positive correlation between Debt equity ratio with fixed asset ratio and negative correlation of Debt equity ratio with proprietary ratio in Virgo Cement. In Meghalaya Cement Debt Equity Ratio negatively correlated with Fixed Asset ratio and Proprietary ratio. The fixed asset ratio positively correlated with proprietary ratio (0.764) and Proprietary ratio with Debt to total asset (0.970) at .05% level of significant in Cement Manufacturing Company.

V. FINDINGS FROM THE STUDY

- Gradual increase in their fixed asset position, Mawmluh Cherra Cement showed highest mean value is 1.91 and lowest mean value for Meghalaya Cement Company is 0.46 and also indicates the highest S.D is 2.09 for Mawmluh Cherra Cement and lowest S.D is 0.09 for Jaintia Cement.
- There has been moderate fluctuation in their debt equity ratio. Jaintia Cement is having highest mean value is 2.68 and lowest debt ratio of mean value is 0.38 for Virgo Cement, and also showed highest S.D for Mawmluh Cherra Cement is 1.44 and lowest S.D is 0.33 for Virgo Cement.
- There has been increase in their proprietary ratio. From 2006 all selected companies increase their proprietary ratio. The highest mean value of proprietary ratio for Mawmluh Cherra Cement is 6.87 and lowest mean value of proprietary ratio for 2.72 for Jaintia Cement and also the highest value of S.D are 3.51 for Meghalaya Cement and lowest S.D is 0.41 for Cement Manufacturing.
- Gradual increase and decrease in their Debt to total asset ratio. The highest mean value of debt to total asset ratio is 3.88 for Meghalaya Cement and lowest mean value of debt to total asset ratio for Mawmluh Cherra Cement is 0.49 and also showed the highest S.D for Meghalaya Cement is 2.08 and lowest S.D is 0.87 for Virgo Cement.
- From the ANOVA table there is significant difference of debt equity ratio(11.862)Fixed asset ratio(4.024)Proprietary ratio(7.198) and Debt to total ratio(10.877) calculated F Value has been greater than the table value
- 2.633 at 5% level of significance. Hence the entire ratio Null hypothesis was rejected.
- It is inferred from the above analysis that the debt-equity ratio is negatively correlated with fixed assets ratio in the Meghalaya Cement and Mawmluh Cherra Cement companies. The correlation between the proprietary ratio and debt- equity ratio is negatively significant in the cement companies except Jaintia Cement. There is a high degree of positive correlation between the proprietary ratio and fixed assets ratio (17.174) in Virgo Cement followed by Cement Manufacturing Company (0.764). The proprietary ratio of the companies except Jaintia Cement has negatively correlated with debt-equity ratio during the study period. There exists a high degree of positive correlation between Debt Equity ratio and fixed assets ratio in Jaintia Cements whereas it has been negatively correlated in Mawmluh Cherra Cement, Virgo cement and Meghalaya Cement. The proprietary ratio of the select cement companies has significant association with the Debt to total asset ratio. The Debt to total asset ratio has negatively correlated with fixed assets ratio, proprietary ratio in the select cement companies. It has a close positive correlation in Jaintia Cement.

VI. CONCLUSION

The long-term solvency position of the cement companies has been assessed in this paper. There is a significant difference in the fixed assets ratio, debt-equity ratio, proprietary ratio, Debt to total asset ratio among the select cement companies. However, there is no significant difference in these ratios over the years. The variation in the fixed assets ratio, debt-equity ratio, proprietary ratio, and Debt to total asset ratio is found to be high in Jaintia Cement. The fixed assets ratio of the companies except Jaintia Cement represents the

unsatisfactory position. The debt-equity ratio, proprietary ratio of the select cement companies except Jaintia cement is satisfactory during the study period. The fixed assets ratio of the Jaintia cement is highly satisfactory during the study period. To conclude, the long-term solvency position of the select cement companies especially Jaintia cement is not up to the level to meet its long term obligations.

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