CAPITAL STRUCTURE EFFICIENCY OF CEMENT INDUSTRY IN TAMIL NADU

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ABSTRACT

Capital structure is a combination of debt and equity of companies. Capital structure is most significant discipline of company’s operations. The researchers carried out the study with the objective of finding out the capital structure management efficiency of cement industry in Tamil Nadu. Ten years data has been employed in this study from 1996-97 to 2005-2006. To find out the capital structure management efficiency the authors employed DEA by an application of KonSI DEA Analysis for Benchmarking Software Professional Version. The authors found that the result of increase in interest cost and costly unsecured loan affected these companies capital structure. Internal funds mobilization, right issue, and higher internal accrual will help the companies to sustain decent bottom-line.

Key words: Debt, Equity, Capital Structure, Data Envelopment Analysis, cement industry

I. INTRODUCTION

Capital Structure is a combination of debt and equity capital maintained by a firm. Capital structure is also called as financial structure of a firm. A company's proportion of short and long-term debt is considered when analyzing capital structure. Most of the authors used debt-to-equity ratio for evaluating capital structure, which provides insight into how risky a company is. Usually a company more heavily financed by debt poses greater risk, as this firm is relatively highly levered. B.Nimalatha san & Valeriu Brabete (2010) pointed out capital structure and its impact on profitability: a study of listed manufacturing companies in Sri Lanka. The analysis shows that Dept equity ratio is positively and strongly associated to all profitability ratios (Gross Profit, Operating Profit & Net Profit Ratios). DEA measures efficiency of a Decision Making Unit (DMU) by maximizing the ratio of weighted outputs over weighted inputs. This ratio is normalized according to best practical peers and efficiency
is calculated to be between 0 and 1, as 1 representing efficient unit. In this research the authors make use of DEA in cement industry to find out the Capital Structure Management efficiency.

II. REVIEW OF LITERATURE

Chakraborty (2010) employed two performance measures, including ratio of profit before interest, tax and depreciation to total assets and ratio of cash flows to total assets and two leverage measures, including ratio of total borrowing to assets and ratio of liability and equity, and reported a negative relation between these ones.


Ong Tze San and Boon Heng Teh (2011) focused on construction companies which are listed in Main Board of Bursa Malaysia from 2005-2008, the result shows that there is a relationship between capital structure and corporate performance and there is also evidence that shows that no relationship between the variables have been investigated.

Puwananthiren Pratheepkanth. (2011) analyzed the capital structure and its impact on financial performance capacity during 2005 to 2009 of Business companies in Sri Lanka. The results shown the relationship between the capital structure and financial performance is negative.

Saad (2010). The argument about the capital structure started in the early of 1950 Chakraborty (2010) suggested that in the perfect market, financing strategies do not affect the value of the firm, but later they argue that firm value can be increased by changing the capital structure because of tax advantage of debts Modigliani and Miller (1963).

Ali Saeedi and Mahmoodi (2011)examine the relationship between capital structure and firm performance the study used sample of 320 firms listed on Tehran Stock exchange over the period 2002- 2009. Expect all of the financial companies and banks, the study uses four performance measures (including ROA, ROE, EPS and Tobin’s Q) as dependent variable and three capital structures (including long- term debt short –term debt and total debt ratio) as independent variable. The study indicated that firm performances, which is measured by EPS and Tobin’s Q, is significantly and positively associated with capital structure, while reported a negative relation between capital structure and ROA, and no significant relationship between ROE and Capital structure.

Zertun and Tian (2007) investigated the effect which capital structure has had on corporate performance using a panel data sample representing of 167 Jordanian companies during 1989- 2003. The study showed that a firm’s capital structure had significantly negative impact on the firm’s performance measures, in both the accounting and market’s measures.

Chen and Manso (2010) emphasize that incorporating macroeconomic risk can increase agency costs of debt substantially.

Morellec and Schuerhoff (2011) focus on the implications of asymmetric information on the financing and timing of corporate investment.

Hackbarth and Mauer (2011) study the relation between the priority structure of corporate debt and firms' investment and financing decisions.

Nadeem and Wang (2010) investigate the influencing factors on capital structure decisions. They find positive significant relationship between capital structure and firm’s size.
III. METHODOLOGY

The pooled data collection is to assess the impact of regulation on performance of cement companies in Tamil Nadu over the time horizon viz., 1996-97 to 2005-06. The approach to macroeconomic variables is time series. The design of the study is based on the secondary sources of information on financial data. The secondary data is practically, a quantitative method that requires standardized information in order to define or describe variables or to study the relationships between the variables. The data was tested for suitability using simple statistical tools such as standard deviation, standard error of the sample. Due to non-accessibility of sensitive company data, the effect of window dressing could not be ascertained. However, Data was accepted as these were frequently inspected by SEBI and Institute of Charted Accountants of India. The study, it was felt, will be useful if the random sample drawn from the population of cement industry in the state of Tamil Nadu. The present study includes India Cements Limited (ICL), Dalmia Cement (Bharat) Limited (DCL), Madras Cements Limited (MCL) and Chettinadu Cement Corporation Limited (CCCL). Data first analyzed and experimented using non-parametric econometric Data Envelopment Analysis (DEA) programming approach for Scale efficiency.

IV. RESULTS AND DISCUSSION

Table 1.Capital Structure Efficiency Score of India Cements Limited, Dalmia Cement (Bharat) Limited, Madras Cements Limited, Chettinadu Cement Corporation Limited and Sample Total of cement industry in Tamil Nadu.

<table>
<thead>
<tr>
<th>Year/Company</th>
<th>ICL</th>
<th>DCL</th>
<th>MCL</th>
<th>CCCL</th>
<th>Sample Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>0.9163</td>
<td>0.9508</td>
</tr>
<tr>
<td>1997</td>
<td>0.9271</td>
<td>0.7014</td>
<td>0.7227</td>
<td>1.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>1998</td>
<td>1.000</td>
<td>0.7476</td>
<td>0.9199</td>
<td>1.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>1999</td>
<td>0.5561</td>
<td>0.8036</td>
<td>1.0000</td>
<td>0.7595</td>
<td>0.5358</td>
</tr>
<tr>
<td>2000</td>
<td>0.5424</td>
<td>0.7584</td>
<td>0.9058</td>
<td>0.8756</td>
<td>0.5385</td>
</tr>
<tr>
<td>2001</td>
<td>0.4913</td>
<td>0.7987</td>
<td>0.7936</td>
<td>1.0000</td>
<td>0.4912</td>
</tr>
<tr>
<td>2002</td>
<td>0.3836</td>
<td>1.0000</td>
<td>0.5022</td>
<td>0.5931</td>
<td>0.4195</td>
</tr>
<tr>
<td>2003</td>
<td>0.3448</td>
<td>1.0000</td>
<td>0.5258</td>
<td>0.7321</td>
<td>0.3524</td>
</tr>
<tr>
<td>2004</td>
<td>1.0000</td>
<td>1.0000</td>
<td>0.5760</td>
<td>0.6122</td>
<td>0.8752</td>
</tr>
<tr>
<td>2005</td>
<td>0.9925</td>
<td>0.5781</td>
<td>1.0000</td>
<td>0.6235</td>
<td>0.6276</td>
</tr>
</tbody>
</table>

Inputs: Secured Loan, Un Secured Loan and Current Liabilities

Output: Share Holders Wealth

Model: output oriented model
Scale: Constant returns- to- Scale

Source: Published Annual Reports of the companies, KonSI DEA Analysis for Benchmarking Software Professional Version.
1. Capital Structure Efficiency of India Cements Limited (ICL)

Table 1 and Bar chart in figure 1 reveal the efficiency scores of ICL. The efficient years (1996, 1998 and 2004) have scores one. DEA measures efficiency of a Decision Making Unit (DMU) by maximizing the ratio of weighted outputs over weighted inputs. This ratio is normalized according to best practical peers and efficiency is calculated to be between 0 and 1, as 1 representing efficient unit. The value 0.3448 is the inefficient score of the year 2003 means that its output can simultaneously be increased by a factor of 190.02%. From the Data Envelopment Analysis, the conclusion drawn that the ICL has efficiently utilized their debts like secured loan, unsecured loan and current liabilities to maximize the return in the form of shareholders fund except during the years 1997, 1999-2003 and 2005. The Data Envelopment Analysis states that the ICL is also not that much efficient company in so far as capital structure efficiency is concerned. Cost of funds is playing an important role in inefficient capital structure management.

![Fig.1. Capital Structure Efficiency of India Cements Limited (ICL)](image)

2. Capital Structure Efficiency of DalmiaCement (Bharat) Limited (DCL)

Table 1 and Bar chart in figure 2 reveal efficiency scores of DCL. The efficient years (1996, 2002, 2003 and 2004) have scores one. The value 0.5781 is the inefficient score of the year 2005 means that its output can simultaneously be increased by a factor of 72.98%. From the above Data Envelopment Analysis, the conclusion drawn that, the DCL has efficiently utilized their debts like secured loan, unsecured loan and current liabilities to maximize the return in the form of shareholders fund except during the years 1997, 1997-2001 and 2005. The Data Envelopment analysis states that the DCL is also had least efficient company in so far as capital structure efficiency is concerned. Cost of funds is playing an important role in debt efficiency.
3. Capital Structure Efficiency of Madras Cements Limited (MCL)

Table 1 and Bar chart in figure 3 reveal the efficiency scores of MCL. The efficient years (1996, 1999 and 2005) have scores one. The value 0.5022 is the inefficient score of the year 2002 means that its output can simultaneously be increased by a factor of 99.98%. From the above Data Envelopment Analysis, the conclusion drawn that the MCL has efficiently utilized their debts like secured loan, unsecured loan and current liabilities to maximize the return in the form of shareholders fund except during the years 1997, 1998 and 2000-2004. The Data Envelopment Analysis clearly states that the MCL is also had less efficient company in so far as capital structure efficiency is concerned. Cost of funds is playing an important role in debt management.

Fig.3. Capital Structure Efficiency of Madras Cements Limited (MCL)
4. Capital Structure Efficiency of Chettinadu Cement Corporation Limited (CCCL)

Table 1 and Bar chart in figure 4 reveal the efficiency scores of CCCL. The efficient years (1997, 1998 and 2001) have scores one. The value 0.5931 is the inefficient score of the year 2003 means that its output can simultaneously be increased by a factor of 68.60%. From the above Data Envelopment Analysis, the conclusion drawn that, the CCCL has efficiently utilized their debts like secured loan, unsecured loan and current liabilities to maximize the return in the form of shareholders fund except during the years 1996, 1999, 2000, and 2002 - 2005.

![Efficiency Score of Chettinadu Cement Corporation Limited](image)

5. Capital Structure Efficiency of Cement Industry in Tamil Nadu

Table 1 and Bar chart in figure 5 reveal efficiency score of sample total of cement industry in Tamil Nadu. The efficient years (1997 and 1998) have scores one. The value 0.3524 is the inefficient score of the year 2003 means that its output can simultaneously be increased by a factor of 183.76%. From the above Data Envelopment Analysis, the conclusion drawn that, the cement industry in Tamil Nadu has efficiently utilized their debts like secured loan, unsecured loan and current liabilities to maximize the return in the form of shareholders fund except during the years 1996, and 1999 - 2005.

![Efficiency for the Sample Total of Tamil Nadu Cement Industry](image)
V. CONCLUSION

From the above Data Envelopment Analysis, the conclusion drawn is that the cement industry in Tamil Nadu efficiently utilized their debts like secured loan, unsecured loan and current liabilities to maximize the return in the form of shareholders fund except during the years 1996 and 1999-2005. This can be seen through a rise in secured loan as resulted in a fall in unsecured loan and vice versa till 2000. There has been an increase in the level of secured loan mobilized which has declined in operation and high cost unsecured loan moreover restriction on public deposits mobilization. The inefficient operations can be seen through declining profit. The high negative bottom-line during 2003 and 2004 is result of increase in interest cost and costly unsecured loan. Internal funds mobilization, right issue, and higher internal accruals will help the companies to sustain decent bottom-line.

REFERENCES