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## Determinants of Leverage of Indian Companies: An Empirical Analysis (A Study of Cement Industry in India)

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### **Abstract:**

*Capital structure of a firm is defined by its leverage; that is a mix of debt and equity financing which is subject to different financial difficulties. Financial leverage represents the total debt reported to the equity of a firm, reflecting the capacity of the financial managers to attract external financial resources in order to improve the efficiency of the equity.*

*The Pecking Order theory popularized by Stewart C. Myers postulates that equity is a less preferred means of raising new capital, and is actually a last resort. The theory argues that equity is a less preferred means to raise capital because when managers issue new equity investors believe that managers overvalue the firms and are taking advantage of this over-valuation. As a result, investors will place a lower value to the new equity issuance.*

*Tests of the pecking order theory have not been able to show that it is of first-order importance in determining a firm's capital structure. However, several authors have found that there are instances where it is a good approximation of reality.*

*The present study is an attempt to examine the variable determining the leverage and risk of cement companies operating in India. five variables are selected on the basis of previous studies and literature available to study their impact on firm leverage. These variables are firm size, growth, profitability, liquidity, and tangibility.*

*A linear regression model has been developed to estimate the effect of above variables on leverage and risk of companies and it is observed that there is negative and low degree of relationship between the variables under study.*

**Key words:** *Capital structure, financial leverage, Regression model, Tangibility, Liquidity*

### **1. Introduction**

The theory of capital structure is one of the most important financial themes in corporate finance and various studies use capital structure theory to highlight the significance of debt financing. Capital structure of a firm is defined by its leverage; that is a mix of debt and equity financing which is subject to different financial difficulties. Financial leverage represents the total debt reported to the equity of a firm, reflecting the capacity of the financial managers to attract external financial resources in order to improve the efficiency of the equity. Leverage has been conceived also as a modality by which a company can increase its growth opportunity. So, Leverage decision is fundamental for any business organization because of the need to maximize return to the various stake holders and also because of the fact that such decision has great impact on the firms' ability to deal with competitive environment. It is a crucial issue confronting management that how to choose the combination of debt and equity to achieve optimum capital structure that would minimize the firm's cost of capital and improves return to owners of the business. Leverage had incorporated also the meaning of the risk increasing philosophy. A company can attract external resources, especially when it goes through a boom period and it needs additional financial resources in order to support it, but this makes it riskier. And an increasing level of risk is similar to increasing the cost of other external resources which can place the company within the danger of failure area. The first theories regarding the concept of financial leverage belong to Modigliani and Miller. In 1958 they assumed that the value of the firm does not depend on the capital structure.

Later on, authors such as Myers and Majluf (1984)<sup>3</sup>, Fama and French (2002) revealed the impact of the fiscality on the capital structure and also on the value of the firm, bringing forth the idea of asymmetry and cost agency.

Companies that possess high level of leverage in their capital structure are able to decrease their free cash flow. Companies through utilizing the additional leverage; the free cash flow as an alternative of being inadequately employed by the management given instantly to the debtors and is withdrawn from the company as interest expenses. Company's capital structure that includes a large amount of debt/equity tends to increase the risk of bankruptcy; that is when company's total debts equal to total assets (Khan, A. *et al.*, 2012). Free cash flow denotes the cash that a company is capable of generating after putting a side the cash required to preserve their assets. Free cash flow also permits a company to track investment prospects as they arise to improve shareholder wealth. Capital structure decisions rely on two major sets of theories namely, the trade-off theory and the pecking order theory.

According to the trade-off theory of capital structure, the optimal debt level balances the benefits of debt against the costs of debt. The tax benefits of debt dominate up to a certain debt ratio, resulting in higher return on equity, but the benefit would be less than

the cost after the level of debt ratio. In other words, the more a company uses debt, the less income tax the company pays, but the greater its financial risk. Elgonomy (2002) mentioned that hotel investors must consider four basic elements debt-financing: business risk, the need for financial flexibility, the degree of ownerships' risk aversion, and tax considerations. Based on the trade-off theory for capital structure, firms can take advantage of debt to make a better return on equity.,

The Pecking Order theory popularized by Stewart C. Myers postulates that equity is a less preferred means of raising new capital, and is actually a last resort. The theory states that the cost of financing increases with asymmetric information. Financing comes from internal funds, debt, and new equity. When it comes to methods of raising capital, companies will prefer internal financing, debt, and then issuing new equity, respectively. Raising equity, in this sense, can be viewed as a last resort.

The theory argues that equity is a less preferred means to raise capital because when managers issue new equity. Investors believe that managers overvalue the firms and are taking advantage of this over-valuation. As a result, investors will place a lower value to the new equity issuance. This theory maintains that businesses adhere to a hierarchy of financing sources and prefer internal financing when available, and debt is preferred over equity if external financing is required. Thus, the form of debt a firm chooses can act as a signal of its need for external finance. This sort of signaling can affect how outside investors view the firm as a potential investment, and once again must be considered by the people in charge of the firm when making capital structure decisions. The present study is an attempt to examine the variable determining the leverage and risk of cement companies operating in India.

## 2. Research Methodology

In the study, five variables selected on the basis of previous studies and literature available to study their impact on firm leverage. These variables are firm size, growth, profitability, liquidity, and tangibility. The study period is five year(2008-2012)

### 2.1. Leverage

Leverage of the firm is computed by debt equity ratio, which is obtained by total debt to shareholders equity. It is a long term solvency ratio that indicates the soundness of long-term financial policies of the company. It shows the relation between the portion of assets provided by the stockholders and the portion of assets provided by creditors.

### 2.2. Tangibility

Asset tangibility determines whether a firm faces credit constraints, firms with more tangible assets may have greater access to external funds. When firms are able to pledge their assets as collateral, investment and borrowing become endogenous: pledge able assets support more borrowings that in turn allow for further investment in pledgeable assets. Tangibility is computed by dividing fixed assets by total assets. It is a fundamental element of determining the firm's leverage. Firms with large volume tangible assets collateralize their assets and easily raise additional funds with little risk (Rajan & Zingales (1995). Therefore, a positive sign is expected between leverage and tangibility of assets ( Rajan & Zingales, 1995; Wald, 1999; Chen, 2003; Liaqat. A., 2011).

### 2.3. Liquidity

Liquidity is the ability of the company to convert its assets into cash in short period of time. It is the ability of a company to meet the short term obligations Short term obligations are those obligations which mature within one accounting year. A company that cannot pay its creditors on time and continue not to honor its obligations to the suppliers of credit, services, and goods can be declared a sick company or bankrupt company. Inability to meet the short term liabilities may affect the company's operations and in many cases it may affect its reputation too. So there is always a need for the company to maintain certain degree of liquidity.. Liquidity of the firm is measured by current ratio which is obtained by dividing current asset by current liability. Excessive amounts of current assets owned by a firm would perhaps increase the chances of internal funding resulting in a relation between leverage and liquidity (Myers, 1977, 1984; Amalendu Bhunia, 2012;). Furthermore, sufficient liquidity has an impact on the financial strength of a firm (Harris and Raviv; 1990; Al-Najjar; 2011; Al-Najjar and Taylor, 2008; Eriotis et al., 2007; Rajan and Zingales, 1995; (Bei Z, Wijewardana W.P, 2012).

### 2.4. Profitability

The study assume between Return on Assets, as an indicator for profitability to test a relationship between profitability and Leverage. Taking into consideration the fact that these companies develop most of their activity through the agreements that they have with suppliers and customers, the leverage will be considered as an essential variable for the profitability of the company. it is already stated by the pecking-order theory, that highly profitable companies rely more on their internal funding due to high revenue geratin which reduces creditors exposure to bankruptcy risk (Rajan & Zingales, 1995; Chen, 2003; Kim & Berger, 2008; Akhtar & Oliver, 2009; Sheikh and Wang, 2011). In other cases, profitable firms can issue debt at low rates of interest and arrange external fund from financial institutions in the form of borrowing as they have low financial risk(Abor, 2005). Therefore, there is a relationship between leverage and profitability (John and Williams, 1985; Liaqat. A., 2011)

### 2.5. Firm Size

Size is measured by the natural logarithm of total assets. Firm decides their source of financing by weighing cost of financing of each source of fund and by measuring weighted average cost of capital of corresponding decision . large firms are capable of decreasing transaction costs of issuing long-term debt at a favorable low rate of interest as their size of issue is large..

Consequently, since it is easier for large sized firms to raise funds from creditors, a positive sign is expected between firm size and leverage (Titman and Wessels, 1988; Agrawal & Nagarajan, 1990; Rajan & Zingales, 1995; Wald 1999; Liaquat 2011)

### 2.6. Data Collection

The sample data were extracted from company annual reports of 10 cement operating in India. The period of study is five years (2008-2012).

### 2.7. Research Model

The following multiple regression model is used to study the impact of study variables on firms leverage

$$\text{Leverage} = a + \beta_1 \text{ Profitability} + \beta_2 \text{ Size} + \beta_3 \text{ Tangibility} + \beta_4 \text{ Growth} + \beta_5 \text{ Liquidity}$$

### 2.8. Data Analysis And Interpretation

This study used pooling regression model to test the influences of study variable on the leverage.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.454 <sup>a</sup>	.206	.114	.6112799
• Predictors: (Constant), LIQUIDITY, GROWTH, TANGIBILITY, SIZE, PROFITABILITY				

Table 1.1

The above table 1.1(Annexure I) shows the relationship between leverage and all study variable namely firm size, growth, profitability, liquidity, and tangibility. There is a positive but low degree of relationship between the leverage and study variable. The correlation is 0.454 and significant level is 0.01. Coefficient of determination is 0.206 which indicates that only 20.6% of variation is due to explanatory variables taken in the study, remaining 79.4% is due to other factors which need to be studied.

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.136	.810		1.404	.168
	PROFITABILITY	-.020	.011	-.292	-1.933	.060
	SIZE	-.176	.154	-.171	-1.144	.259
	TANGIBILITY	.859	.556	.233	1.544	.130
	GROWTH	7.801E-5	.004	.003	.018	.985
	LIQUIDITY	-.182	.201	-.146	-.905	.371
• Dependent Variable: LEVERAGE						

Table 1.2

From the above table the regression equation showing the relationship between the factors is as follows:

$$\text{LEVERAGE} = (1.136) + (-0.020 \text{ Profitability}) + (-0.176 \text{ Size}) + (0.859 \text{ Tangibility}) + (0.000078 \text{ Growth}) + (-0.182 \text{ Liquidity})$$

It is found that the profitability, size, and liquidity are having low degree of negative correlation with leverage whereas tangibility has high degree of positive correlation with leverage. The explanatory variable growth has insignificant relation with the leverage.

### 3. Conclusion

The study concluded that profitability, size and liquidity is negatively correlated with leverage whereas, tangibility has positive impact on leverage or capital structure of the company. The results also reveal that growth plays very insignificant role in defining capital structure of the company.

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## 5. Annexure

<b>Ambuja Cement</b>					
	<b>Total Debt</b>	<b>Total Liabilities</b>	<b>Total Current Assets</b>	<b>Total CL &amp; Provisions</b>	<b>Total Assets</b>
Mar '12	49.36	8,118.80	1,341.25	3,420.60	8,118.80
Mar '11	65.03	7,395.13	1,228.44	2,990.55	7,395.13
Mar '10	165.70	6,636.60	952.08	2,256.36	6,636.60
Mar '09	288.67	5,961.54	1,288.08	1,883.11	5,961.54
Mar '08	330.42	4,991.67	842.22	1,575.25	4,991.67
<b>ACC Cement</b>					
	<b>Total Debt</b>	<b>Total Liabilities</b>	<b>Total Current Assets</b>	<b>Total CL &amp; Provisions</b>	<b>Total Assets</b>
Mar '12	510.73	7,703.00	1,470.53	4,357.25	7,703.00
Mar '11	523.82	6,993.31	1,188.22	4,280.30	6,993.31
Mar '10	566.92	6,583.14	1,078.32	3,650.61	6,583.14
Mar '09	482.03	5,409.76	1,191.01	3,209.32	5,409.76
Mar '08	306.41	4,459.12	1,099.02	2,657.54	4,459.12
<b>JK Cement</b>					
	<b>Total Debt</b>	<b>Total Liabilities</b>	<b>Total Current Assets</b>	<b>Total CL &amp; Provisions</b>	<b>Total Assets</b>
Mar '12	1,079.35	2,608.36	1,193.30	996.65	2,608.36
Mar '11	1,319.15	2,718.20	973.92	711.97	2,718.18
Mar '10	1,022.94	2,376.69	715.86	625.34	2,376.69
Mar '09	527.12	1,713.17	912.90	463.71	1,713.18
Mar '08	477.65	1,530.99	685.65	389.09	1,531.00
<b>Binani Cement</b>					
	<b>Total Debt</b>	<b>Total Liabilities</b>	<b>Total Current Assets</b>	<b>Total CL &amp; Provisions</b>	<b>Total Assets</b>
Mar '12	1,235.58	1,814.60	299.12	793.29	1,814.59
Mar '11	983.10	1,658.25	335.47	805.52	1,658.26
Mar '10	778.34	1,254.74	283.48	760.90	1,254.73
Mar '09	770.47	1,188.11	260.73	580.53	1,188.09
Mar '08	691.00	992.22	85.02	302.72	992.23

<b>Ultratech Cement</b>					
	<b>Total Debt</b>	<b>Total Liabilities</b>	<b>Total Current Assets</b>	<b>Total CL &amp; Provisions</b>	<b>Total Assets</b>
Mar '12	3,808.13	16,667.95	2,978.38	6,420.48	16,667.95
Mar '11	4,144.60	14,810.64	2,703.28	5,345.56	14,810.64
Mar '10	1,604.52	6,213.17	1,121.26	2,153.61	6,213.17
Mar '09	2,141.63	5,743.73	982.64	1,982.39	5,743.73
Mar '08	1,740.50	4,437.49	927.06	1,834.51	4,437.49
<b>Everest Cement</b>					
	<b>Total Debt</b>	<b>Total Liabilities</b>	<b>Total Current Assets</b>	<b>Total CL &amp; Provisions</b>	<b>Total Assets</b>
Mar '12	70.67	320.18	218.06	204.08	320.16
Mar '11	110.79	319.33	204.23	162.01	319.33
Mar '10	119.89	293.25	165.42	197.07	293.23
Mar '09	169.73	320.38	172.79	184.3	320.39
Mar '08	132.77	274.11	102.94	83.52	274.11
<b>Gujrat sidhee Cement</b>					
	<b>Total Debt</b>	<b>Total Liabilities</b>	<b>Total Current Assets</b>	<b>Total CL &amp; Provisions</b>	<b>Total Assets</b>
Mar '12	6.56	112.25	165.09	133.17	112.25
Mar '11	7.5	107.67	148.2	120.26	107.67
Mar '10	17.57	120.78	154.92	102.86	120.78
Mar '09	18.99	117.32	143.6	91.17	117.32
Sep '08	72.59	118.51	134.02	88.04	118.51
<b>India Cements</b>					
	<b>Total Debt</b>	<b>Total liabilities</b>	<b>Total Current assets</b>	<b>Total CL &amp; provisions</b>	<b>Total Assets</b>
Mar '12	2,268.59	6,336.21	3,111.35	1,914.01	6,336.20
Mar '11	2,456.07	5,995.73	2,922.01	1,410.80	5,995.73
Mar '10	2,132.73	5,660.99	2,897.08	1,564.01	5,661.00
Mar '09	1,988.03	4,953.49	2,161.98	1,427.38	4,953.49
Mar '08	1,811.51	4,408.32	2,149.41	1,209.25	4,408.32
<b>Madras Cements</b>					
	<b>Total Debt</b>	<b>Total liabilities</b>	<b>Total Current assets</b>	<b>Total CL &amp; provisions</b>	<b>Total Assets</b>
Mar '12	2,113.94	4,164.32	1,144.54	1,901.34	4,164.32
Mar '11	2,791.17	4,525.68	1,098.74	1,178.93	4,525.66
Mar '10	2,566.51	4,124.67	1,135.66	1,131.34	4,124.67
Mar '09	2,463.45	3,723.65	913.8	930.27	3,723.65
Mar '08	1,635.64	2,589.49	779.23	764.11	2,589.49
<b>Grasim Cement</b>					
	<b>Total Debt</b>	<b>Total liabilities</b>	<b>Total Current assets</b>	<b>Total CL &amp; provisions</b>	<b>Total Assets</b>
Mar '12	630.34	9729.73	1,703.93	1,317.61	9,729.73
Mar '11	813.75	8947.49	1,464.55	1,070.08	8,947.49
Mar '10	1037.62	8182.99	1,176.41	1,147.25	8,182.99
Mar '09	3,394.95	12869.17	3,150.94	3,194.43	12,869.17
Mar '08	3,201.87	11338.98	3,010.98	2,799.01	11,338.98

Table I