AN EMPIRICAL ANALYSIS OF FINANCIAL LEVERAGE AND IT'S COMPONENTS WITH SPECIAL REFERENCE TO ULTRATECH CEMENT INDUSTY

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Abstract

Corporations raise their equity by different methods. Decision making on the choice of better methods is a challenge which most financial managers of corporations has to face. The Cement Industries are heavy capital intensive and low labour intensive in nature with tremendous consumption of energy. Required law material is available in plenty and quite easily, therefore the burden of debt is considerably reduced. Equity capital is same through out the period of study on one hand and on other, financing through debt in controlled manner is the basic nature of financing in cement industry. Inspite of the constant nature of equity capital we find increase of return on Equity through increase in reserves and surplus and thereby increase in net worth. We find the most efficient use of financial leverage in the cement industry to maintain their steady earnings. This paper attempts to make an empirical study of theoretical approaches and practical application of financial leverage in cement industry.

Key Words: Capital, cement, debt, equity, earnings, financial leverage, net worth.

Introduction

In general, companies may raise money from internal and external sources. They can raise money from internal sources by plowing back part of their profits, which would otherwise have been distributed as dividend to shareholders. Or, they can raise money from external sources by an issue of debt or equity. Liberalization, globalization and privatization are the important issues to the entrepreneur and corporate threatening the existence of a firm. In such a complex corporate environment, it is the challenge to the finance manager to survive the firm in long- run perspective with the objective of maximizing the owner's wealth. With a view to achieve this objective, finance manager is required to pay his due attention on investment decision, financing decision and dividend decision. Financing decision refers to the selection of appropriate financing-mix and so it relates to

the capital structure or leverage. Capital structure refers to the proportion of long- term debt capital and equity capital required to finance investment proposal. There should be an optimum capital structure, which can be attained by the judicious exercise of financial leverage.

Nature of Cement Industry

For the Purpose of our study I had placed few points which show the exact nature of cement Industries. These parameters do influence the financial leverage, debt-equity ratio, tax, interest and return on investment.

A process, capital intensive industry: The cost of cement plants is usually above Rs 1000 million per tones of annual capacity, with correspondingly high costs for modifications. The cost of a new cement plant is equivalent to around 3 years of turnover, which ranks the cement industry among the most capital intensive industries. Long time periods are therefore needed before investments can be recovered and plant modifications have to be carefully planned and must take account of the long-term nature of the industry.

An energy intensive industry: Each tone of cement produced requires 60 to 130 kilogrammes of fuel oil or its equivalent, depending on the cement variety and the process used, and about 110 KWh of electricity.

An industry with low labour intensity: With the development of modern automated machinery and continuous material handling devices, the cement industry has become a process industry using a limited amount of skilled labour. A modern plant is usually manned by less than 150 people.

An industry with a homogeneous product: Although produced from natural raw materials which vary from plant to plant, cement can be considered a standard product - there are only a few classes of cement and in each class, products from different producers can generally be interchanged. Therefore, price is the most important sales parameter next to customer service; quality premiums exist but are rather limited.

A product with heavy transportation cost: Land transportation costs are significant and it used to be said that cement could not be economically hauled beyond 200 or at most 300 km. The price of long road transportation may even be higher than the cost price. However, in large countries transportation costs normally cluster the markets into regional areas, with the exception of a few long-distance transfers (where, for example, sea terminal facilities exist).

A mature product: Demand for cement (which was first produced in the early 1800s) increased considerably in the 20th century, reflecting the development of industry and growing urbanisation. Consumption in the industrialized countries multiplied 6 to 8 times following World War II. However, over the last 25 years, consumption of cement has almost tripled due to growth in infrastructure.

Market parameters: Consumption of cement is closely linked to both the state of economic development in any given country or region and to the economic cycle. In mature markets, such as in Europe, where cement consumption per capita still varies considerably from one country to another, cement sales are dependent on evolution and habits in the construction sector, a sector that is itself following very closely (usually after a brief delay) the evolution of the economy in general.

Financial Leverage

The firm's leverage decision centers on the allocation between debt and equity in financing the company. However, how the leverage of a firm is determined in a world in which cash flows are uncertain and in which capital can be obtained by many different media ranging from pure debt instruments to pure equity instruments is an unsettled issue. A number of researchers have attempted to understand financing choices of the firm and to identify the effect of changes in financial structure on the WACC of the firm and its value. An "unlevered firm" uses only equity capital whereas a "levered firm" uses a mix of equity and various forms of debt. Common ratios such as debt-to-total capital or debt-to-equity quantify this relationship. The importance of leverage in the capital structure3 of the company is that its efficient use reduces the weighted average cost of capital (WACC) of the company. Lowering the cost of capital increases the net economic returns which, ultimately increases firm value.

The leverage of a firm is essentially related to a profit measure which may be a return on investment or on earnings before taxes. Leverage is an advantage or disadvantage which is derived from earning a return on total investment (total assets) and which is different from return on owner's equity. It is a relationship between equity share capital and securities and creates fixed interest and dividend charges.

Literature Review

The researchers have captured a number of factors determining firm's leverage. In this section, we report the factors identified in the published literature under different theoretical framework propounded over the period by the researchers.

Dalbor, 2002 : Firms with growth opportunities should need less long-term debt because they make more discretionary investments and they are not willing to pay the relatively high fixed costs of high interest payments. Long-term debt tends to send the wrong signal about a firm's market value; low-quality firms may take advantage of mispricing because investors are not able to distinguish them from high-quality firms. In terms of tax effects, a firm with a higher tax rate tends to use more long-term and more risky debt. Tax rates also can beused as a proxy for the firm's financial stress or distress. In empirically testing these theories, results showed that larger restaurant firms with low growth opportunities and with a higher probability of bankruptcy use more long-term debt because they don't want benefits to accrue to bondholders, they can afford the higher fixed costs of long-term debt, and they are willing to take advantage of mispricing.

Wessels, 1988 : Observed that highly profitable firms have lower levels of leverage than less

profitable firms because they first use their earnings before seeking outside capital. In addition, stock prices reflect how the firms tend to issue equity rather than use debt when their stock price increases, so that their leverage levels stay lower than firms using debt. Similar findings were reported in (Gu, 1993), (A, 1994), (sunder and Myers, 1999). According to (Wald, 1999), profitability, which is the most significant determinant of firms' financial leverage, negatively affects the debt to asset ratios in the heteroskedastic to bit regression model. (A, 1994) also supported the negative relationship between debt-to-asset ratio and non-debt tax shield or/and between firm`s leverage behavior and its past profitability.

Stenbacka and Tombak (2002) argued that both capital structure and investments are endogenous and that they both depend on more basic ingredient such as the nature of the capital markets, the characteristics of investment opportunities available to the firm, and the internal funds. They showed that the optimal combination of debt and equity depends on a trade off between the bankruptcy risk associated with debt and the dilution cost of incumbent shareholders of new equity.

McClure et al. (1999) found that companies' capital structures are still significantly different by nationality for the G7 countries (Canada, France, Italy, US, Germany, Japan, UK), and suggested that macroeconomic factors, including economic growth, interest rates and inflation, may be important considerations in capital structure decisions and cause of difference.

Titman and Wessels (1988) observed that highly profitable firms have lower levels of leverage than less profitable firms because they first use their earnings before seeking outside

capital. In addition, stock prices reflect how the firm performs. Firms tend to issue equity rather than use debt when their stock price increases, so that their leverage levels stay lower than firms using debt. Similar findings were reported more recently in Gu (1993), Sheel (1994), Sunder & Myers (1999) and Wald (1999).

Dhaliwal, Lee and Fargher, (1991) conducted an empirical, study which has focused on the relationship between unexpected earnings and abnormal return of stocks, or ERC and effect of financial leverage on it. They mean to collect more evidence about the factors influencing ERC and in particular to study the effect of capital structure on ERC. They assumed that financial leverage was effective on ERC, and based on that assumption they classified firms based on presence or absence of debts in their capital structures and their financial leverage level. Results of their works showed that ERC of firms lacking debts or having low financial leverage was larger than firms with high financial leverage.

Financial Leverage, Return on Investment and Debt Equity Ratio

Financial leverage occurs when a corporation earns a bigger return on fixed cost funds than it pays for the use of such funds. It refers to a typical situation in which a firm has fixed charges, securities such as preferred stock and debentures and its return on investment must not be equal to fixed charge. If these conditions are not present financial leverage is absent. The reason is that, if a firm earns exactly as much as it pays for the use of its capital, there is no use in making borrowing.

If the ROI exceeds the rate of interest, a firm has a favourable financial leverage and is in a position to pass part of this advantage to its equity stakeholders. Financial leverage is favourable when it is worthwhile for a firm to borrow. In other words when the ROI exceeds interest rate the firm is said to be trading on equity. On the other hand when the ROI is less than the interest rate, the firm loses money by its borrowings. It is not worthwhile for it to borrow and have an unfavourable financial leverage.

Trading on equity indicates the utilization of non-equity sources of funds in the capital structure of the company. At a high debt equity ratio, a firm may not be able to borrow funds at cheaper rate of interest or it may not able to borrow funds at all. This is so because creditors loose confidence in the company which has a high debt-equity ratio. The company has to strive hard to regain a reasonable debt-equity ratio so that the expectations of the market may be satisfied. Therefore, financial leverage is nothing but a process of using debt capital to increase the rate of return on equity. Leverage not only tends to magnify shareholders' return and return on investment under favorable conditions, but also exposes them to risk. Use of more and more debt capital raises the riskiness of the firm's earnings stream but it tends to provide a higher rate of return to shareholders'.

Objective of study

The objective of this study lies in the nature of cement Industry. The Industry which predominently depends on the natural raw material like sand stone, lime and calcium with high utilization of power and less utilization of labour, forced us to evaluate how these industry uses the mix of equity and

debt in its capital structure ? Such a mix is the crux of financial leverage,which prompted us to conduct this study.The objective which has been laid down for the study is:-

- To study the interest behaviour in the earnings of the company.

- To study the effect of Cost of Debt, Rate of Interest, tax and Return on Investment on Degree of financvial leverage.

- To study the effect of borrowed capital in the form of debt and equity which affects the earnings of the industry and thereby affects the financial leverage .

In this study interest component is crucial,which provides us an idea about the debt servicing charges incurred by the industry.

Research Methodology

To carry out the present study, the methodologies that have been adopted are stated as follows:

- The study of Ultratech cement industry has been carried out due to its pecularity in capital structure. The data required to complete the study has been collected from the published annual reports of the selected company. The main source of data, used for the study is secondary data collected from the annual profit and loss account and balance sheet figures.

- Taking into account the availability of data, we have chosen the study period spanning from 2009-10 to 2013-2014. The data collected from the published annual reports of the selected company for the 5 year period have been suitably re-arranged, classified and tabulated as per requirements of the study.

- To analyze the degree of financial leverage of the selected company, the technique of chi square test(X^2), and Pearsons coefficient of correlation has been used, with the help of various tools in a form of average, percentage, mean, standard deviation, coefficient of variation etc. The analysis is done with the help of the software Launch Stats 2.0 and open stat 2008.

- Null Hypothesis is used to study the influence of Rate of Interest, cost of Debt,Debt Equity Ratio and Return on Investment on Degree of Financial leverage.

Emperical Analysis

Ultratech cement Industry is pushing its activities of manufacturing the cement through secured and unsecured loan which has shown the increasing trend every year. Equity capital remains constant at Rs 274 lakhs during the period of study.This pushes our interest to study the financial operation of cement industry. Inspite of debt servicing the company is able to maintian the profit by handling the

pressure of Debt Interest and burden of tax. Debt Interest and tax do erode the earning capacity of the industry.The emperical study is given below:-

Table 1: Analysis of Financial Leverage : Ultratech Cement Industries Ltd

Rs in Lakhs

Year	Total Capital	Equity Share Capital	Reserve & Surplus	Net Worth	EBIT	Interest	EBT	Tax	EAT
2009-10	124.49	126.48	4,482.17	4,608.65	1,712.27	124.11	1,588.16	495.18	1,092.98
2010-11	274.04	274.04	10,392.00	10,666.04	2,055.82	272.52	1,783.30	379.07	1,404.23
2011-12	274.07	274.07	12,585.75	12,859.82	3,616.73	223.86	3,392.87	946.68	2,446.19
2012-13	274.18	274.18	14,960.64	15,234.82	4,035.11	209.71	3,825.40	1,169.97	2,655.43
2013-14	274.24	274.24	16,823.27	17,097.51	3,094.68	319.17	2,775.51	631.04	2,144.47

Source: Annual Financial Statement.

 Observation: The data compiled from the annual reports of the cement industry is showing very interesting feature. Below mentioned is the analysis through observation of the tables 1,2 and 3:

1. For last five years equity capital is Rs.124.50 Lakhs in 2009-2010 and then Rs. 274 Lakhs till 2013-2014 in ultratech cement. It is reserve and surplus that has given boost to net worth in a gradual and steady way. Capital turnover is very prominently being taken care of and the required funds are used in a most efficient manner.

2. Debt services are being used prominently by this cement industry which had provided good leverage for its operational purpose. It seems that secured and unsecured debts had increased in every financial year keeping equity capital requirement constant.

3. Net worth has shown increasing trend. Interest payment had also increased in a proportionately thereby pushing the debt burden on the company. It can be considered as leveraged based operation.

4. In the financial year 2013-2014 in Ultratech cement Industry, when the unit has to pay interest, of Rs 319.17 Lakhs compared to Rs. 209.71 Lakhs in 2012-2013 there was a drop of earnings to Rs 2144.47 in 2013-2014 compared to Rs. 2655.43 in previous year 2012-2013.

5. On an average EAT for five years was Rs 1949/-- lakhs after deducting the average tax of Rs 725/- and Interest of Rs 230/- respectively, from an average EBIT of Rs 2903/-. Industry has incurred the tax liability, on an average of five years, @ of 26.72%

6. Against Rs 244.60/- lakhs of equity capital employed on an average of last five years the industry has used the debt service of Rs 3476.63/- for the same perod. Effect of tax and Interest is prominently been reflected on the earnings of the company.

Table 2 : Capital Structure Layout : Ultratech Cement Industry

Year	DFL	EPS	Debt equity ratio	Debt Ratio	Rate of Interest	Cost of Debt	Rate of Return on Investment
2009-10	1.08	87.82	0.35	0.26	7.73%	5.32%	27.5%
2010-11	1.15	51.24	0.25	0.20	10.30%	8.13%	15.45%
2011-12	1.06	89.26	0.30	0.23	5.80%	4.2%	21.70%
2012-13	1.05	96.85	0.29	0.22	4.70%	3.3%	20.5%
2013-14	1.11	78.20	0.28	0.22	6.50%	5%	14.08%

Table 3: Correlation Matrix

	DFL	EPS	Debt Equity Ratio	Debt Ratio	Rate of Interest	Return on Investment
DFL	1.00	-0.969	-0.591	-0.534	0.886	-0.617
EPS		1.00	0.663	0.618	-0.908	0.591
Debt Equity Ratio			1.00	0.995	-0.305	0.91
Debt Ratio				1.00	-0.261	0.88
Rate of Interest					1.00	0.772
Return on Investment						1.00

7. With reference to table 2 and 3 the Degree of Financial Leverage is a ratio between earning before interest and taxes to earnings after tax which excludes interest component. This interest is directly related to cost of debt and decides whether the debt capital is giving favourable return or not.

8. Table 2 is providing the same information related to Financial levereage where DFL is 1.15 which is highest during 2010-2011 amongst the five years under study. So is rate of interest and cost of debt which is 10.30% and 8.13% respectively. But EPS 51.24, Debt equity ratio 0.25 and debt ratio 0.20 respectively is lowest in the same financial year.

9. It reflects that rate of interest and cost of debt directly influence the degree of financial levereage, but, rest of the component moves inversely to DFL. In the year 2012-2013 when DFL is 1.05, which is, low among the period of study is reflected due to rate of interest

which is 4.70% and cost of debt which is 3.3% respectively, this shows that rate of interest
and cost of debt do nfluence degree of financal leverage positively.

10. As per correlation matrix table, DFL is negatively correlated with EPS, debt equity ratio,debt
    ratio and return on investment but positevely correlated with rate of interest.

Table 4: Analysis of Various components of Financial Leverage

	Minimum	Maximum	Mean	Median	Variance	Std Deviation	Std Error
DFL	1.05	1.15	1.09	1.08	0.002	0.04	0.02
EPS	51.24	96.85	80.67	87.82	314.73	17.74	7.93
Debt Equity Ratio	0.25	0.35	0.29	0.29	0.001	0.04	0.02
Debt Ratio	0.20	0.26	0.23	0.22	0.000	0.02	0.01
Rate of Interest	4.70	10.30	7.01	6.50	4.60	2.15	0.96
Cost of Debt	3.00	6.00	4.40	4.00	1.30	1.14	0.51
Return on Investment	14.08	27.50	19.84	20.50	28.76	5.36	2.40

NOTES AND EXPLANATIONS

1. DFL = Degree of Financial Leverage = EBIT / EBT

2. EPS = EAT / No. of Equity Shares.

3. Debt equity ratio = Debt / Equity.

4. Debt Ratio = Total Debt/Total Assets

5. Rate of Interest = (Interest / Long-term debt) X 100

6. Interest on debt capital is an allowable expenditure for income tax purpose and it

qualifies for deduction in computing taxable income. Cost of debt (%) = Rate of Interest (1 - tax rate).

7. Rate of return on investment = (EBIT/Total Assets) x 100.

Hypothesis testing

I. **H10 Null Hypothesis:**   Rate of Interest influence degree of Financial Leverage.

   H11 Alternate Hypothesis: Rate of Interest do not influence degree of Financial Leverage

Table 5: Rate of Interest (fo) and Degree of Financial Leverage (fe)

fe	fo	fo-fe	(fo-fe)2	(fo-fe)2/fe
1.08	0.0773	-1.0027	1.005407	0.93093268
1.15	0.103	-1.047	1.096209	0.95322522
1.06	0.058	-1.002	1.004004	0.94717358
1.05	0.047	-1.003	1.006009	0.95810381
1.11	0.065	-1.045	1.092025	0.98380631
				4.77324159

Observation: Degree of freedom is 4 . The critcal value of chi-square at 4 degree of freedom at 5 % level of significance is 9.488. As the calculated value of chi-square (X^2) is 4.77 which is lesser than the critical value, therefore the null hypothesis is to be accepted. That is   Rate of Interest influence degree of Financial Leverage.

II. H20 Null Hypothesis: Cost of Debt influence degree of Financial Leverage.

H21 Alternate Hypothesis: Cost of Debt do not influence degree of Financial Leverage.

Table 6: Cost of Debt (fo) and Degree of Financial Leverage (fe)

fe	fo	fo-fe	(fo-fe)2	(fo-fe)2/fe
1.08	0.0532	-1.0268	1.054318	0.97622059
1.15	0.0813	-1.0687	1.14212	0.99314756
1.06	0.042	-1.018	1.036324	0.97766415
1.05	0.033	-1.017	1.034289	0.98503714
1.11	0.05	-1.06	1.1236	1.01225225
				4.9443217

Observation: Degree of freedom is 4 . The critcal value of chi-square at 4 degree of freedom at 5 % level of significance is 9.488. As the calculated value of chi-square (X^2) is 4.94 which is lesser than the critical value, therefore the null hypothesis is to be accepted. That is cost of debt influence degree of Financial Leverage.

III. H30 Null Hypothesis: Return on Investment influence Degree of Financial Leverage.

H31 Alternate Hypothesis: Return on Investment do not influence Degree of Financial Leverage.

Table 7 : Rate of Return on Investment (fo) and Degree of Financial Leverage (fe)

fe	fo	fo-fe	(fo-fe)2	(fo-fe)2/fe
1.08	0.275	-0.805	0.64803	0.6000231
1.15	0.1545	-0.9955	0.99102	0.8617567
1.06	0.217	-0.843	0.71065	0.6704236
1.05	0.205	-0.845	0.71403	0.6800238
1.11	0.1408	-0.9692	0.93935	0.84626
				3.6584873

Observation: Degree of freedom is 4 . The critcal value of chi-square at 4 degree of freedom at 5 % level of significance is 9.488. As the calculated value of chi-square (X^2) is 3.65 which is lesser than the critical value, therefore the null hypothesis is to be accepted. That is   Rate of Return on Investment influence degree of Financial Leverage.

IV. H40 Null Hypothesis: Debt Equity Ratio Influence Degree of Financial Leverage.

H41 Alternate Hypothesis: Debt Equity Ratio do not influence Degree of Financial Leverage.

Table 8 : Debt Equiy Ratio (fo) and Degree of Financial Leverage (fe)

fe	fo	fo-fe	(fo-fe)2	(fo-fe)2/fe
1.08	0.35	-0.73	0.5329	0.4934259
1.15	0.25	-0.9	0.81	0.7043478
1.06	0.3	-0.76	0.5776	0.5449057
1.05	0.29	-0.76	0.5776	0.5500952
1.11	0.28	-0.83	0.6889	0.6206306
				2.9134053

Observation: Degree of freedom is 4 . The critcal value of chi-square at 4 degree of freedom at 5 % level of significance is 9.488. As the calculated value of chi-square (X^2) is 2.91 which is lesser than the critical value, therefore the null hypothesis is to be accepted. That is   Debt Equity ratio influence degree of Financial Leverage.

We observed that highly profitable firms have lower levels of leverage than less profitable firms because they first use their earnings before seeking outside capital. In addition, stock prices reflect how the firms tend to issue equity rather than use debt when their stock price increases, so that their leverage levels stay lower than firms using debt.

Limitations

The study suffers from certain limitations which are stated as follows:

✓   The study has been conducted over a very limited period of five years only.

✓ The study is based on secondary data.

✓ The study is limited to a single company. Hence, it will reflect only a partial view of the overall working capital management.

✓ The study is based on consolidated financial statements of the selected company, which may leave some grounds of error.

Suggestion and Conclusion

Ultratech cement Industry has very professionally utlized the debt capital for earning profit. Its excess utilization may land industry into trouble in long run. Interest payment is a financial burden which is increasing every year. Financial leverage is within the limits of standard specified. Debt equity ratio is also to low, therefore in shortrun the company may not find any trouble and can able to enjoy on leverage. Earnings had increased on a regular basis but increase in interest liability due to debt capital has dampen the spirit of earning good profit. Degree of Financial leverage is showing negative relationship with EPS, rate of return on investment, debt equity ratio and debt ratio except rate of interest. It is due to excess dependent on Debt capital thereby diverting the funds towards payment of interest.Its my suggestion for company to maintain a proper mix of debt and equity capital so that proper cushion of funds is availabe at the time of emergency and the interest liability is to be reduced considerably.

Cement industry will have to devise strategies for economising the use of inputs and curtailing costs so as to remain competitive in the global trading environment. If gross margin declines, rate of return on capital falls, provision for reserves goes down, the rate of profit is lowered and ultimately investment is slackened. In this reverse process, the rate of growth of industries begins to fall.Therefore to remain competitive and profitable proper mix of debt and equity capital is to be pressed into operation.

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