

Time Based Influences of Eva for Cement Industries a Time Series Analysis of Last Ten Years

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Abstract – A company that wishes to fill a demand for a good or service obtains capital (debt, equity), which is used to build products and services. In order to build these products, the company must buy materials, equipment, and labor which results in the company incurring operating expenses and effects on operating profit. In addition, the company must also pay the costs of obtaining the capital. If capital is in debt form, then the cost is simply interest. Equity is trickier. The time based impacts of EVA (Economic Value Added) for the five Cement Industries. in India have been measured for last decade (2003-04 to 201344). The simple application of time series analysis for three years moving average is measured and the conclusions are derived.

Keywords: EVA, NOPAT, Time Series Analysis, Moving Average Method

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1. INTRODUCTION

EVA is defined is the excess of a company's after tax net operating profit over the required minimum rate of return that investors and lenders could get by investing in other securities of comparable risk. EVA is the financial performance measure that captures the true economic profit of a company. A company that wishes to fill a demand for a good or service obtains capital (debt, equity), which is used to build products and services. In order to build these products, the company must buy materials, equipment, and labor which results in the company incurring operating expenses and effects on operating profit. In addition, the company must also pay the costs of obtaining the capital. If capital is in debt form, then the cost is simply interest. Equity is trickier. The cost of equity is simply a level of return that would be acceptable to its shareholders. This is essentially called the opportunity cost which is basically a return that a shareholder could have been obtained if the shareholder invested their capital somewhere else. These costs are defined as cost of capital.

Then Net operating profit after taxes (NOPAT) subtracted with capital costs (cost of capital x capital employed), whatever remains is economic value added (EVA), which can be distributed or reinvested accordingly. If you have Positive EVA, congratulations, you have created wealth. If you have negative EVA, be worried, you've destroyed wealth in your company.

Stewart defined EVA (1991) as Net operating profit after taxes (NOPAT) subtracted with a capital charges.

$$EVA = NOPAT - (COST\ OF\ CAPITAL \times CAPITAL\ EMPLOYED)$$

Cost of capital or weighted average cost of capital (WACC) is the average cost of both equity capital and interest bearing debt. Cost of equity capital is the opportunity return from an investment with same risk as the company has.

• How EVA is calculated?

The calculation of EVA can be performed at corporate level or for any profit center within an organization. Consequently, the EVA of an individual division, product line or even an individual customer can be calculated to determine where shareholder value is being created or destroyed within the organization. EVA can be enhanced if earnings can be increased more rapidly than invested capital (i.e. by making profitable investments) or if activities generating negative EVA (i.e. destroying value) can be discontinued.

It is important to note that the figures for earnings and invested capital used to calculate EVA will generally not be those appearing in financial statements as EVA focuses on economic earnings

and economic capital rather than accounting earnings and capital.

- **Calculation of cost of capital:**

Calculating the cost of capital is one of the more technical aspects of EVA, but understanding this dimension of EVA is one of the key areas where the financial organization can significantly improve the results from using EVA. Cost of capital, also known as the weighted average cost of capital (WACC), represents the expected returns of debt and equity holders of the firm, weighted for the proportionate share each holds in the business.

The cost of debt varies by firm, depending upon the term and overall creditworthiness of the company. The cost of equity also varies by firm and reflects both the firm's investment opportunities and its degree of leverage. The balance of debt and equity represents the capital structure of a company, and it is frequently the role of the treasury function to establish a target capital structure. Cost of debt is computed as:

$$K_d = \text{Total interest expenses} * (1 - \text{Effective tax rate}) / \text{Total borrowing}$$

While calculating total borrowing, all short-term as well as long-term borrowing should be included as all debts which are interest bearing. Therefore, interest paid in the financial year has been considered as total interest expenses. Debt cost includes tax shield (1-tax rate) since interest on debt can be deducted from the taxable revenues. To find out cost of equity, Stern Stewart uses the Capital Asset Pricing Model (CAPM), a widely accepted methodology. Traditional accounting income captures the cost of debt as interest expense; however, it fails to include the opportunity costs associated with equity. According to this model, the shareholders' expected rate of return is formulated as follows:

$$r_e = r_f + \text{beta} (r_m - r_f)$$

Where, r_e is the expected return on common stock, r_f is the risk-free rate of interest, r_m is the expected return on the stock market, beta is a measure of risk in market place and $(r_m - r_f)$ is the expected market premium. The risk-free rate represents the most secure return that can be achieved. It can be considered the current rate of risk-free government bonds. The market rate of return has been calculated by using Index Number of Security Prices (Bombay Stock Exchange) from year to year basis. The sources of obtaining the index numbers are the Pune Stock Exchange database (Commercial 2000) and www.bseindia.com. The yearly return of the index numbers has been computed by using following formula:

$$r_m = \text{Index Number of current year} - \text{Index number for previous year} / (\text{Index number for previous year}) * 100$$

- **Adjustments in Financial Reports :**

When computing EVA, there are adjustments to both NOPAT and capital employed to reduce what could be considered non-economic accounting and financing conventions on the income statement and on the balance sheet. In computing NOPAT, certain expenses that do not affect cash are added back to the income statement. These non-cash entries are not believed to affect value. Some of the adjustments required include those for last in, first out (LIFO), bad debts, deferred taxes, inventory obsolescence and warranty. Depreciation is not included among these adjustments because it is considered a proxy for a true economic cost in the EVA model. Interest expense after taxes, on the other hand, is added back to income to eliminate the effect of leverage on the income statement. The result of these adjustments is that NOPAT is unaffected by material, non-cash accounting adjustments or by the financial composition of capital.

On the balance sheet, the reserves associated with the aforementioned adjustments to NOPAT are considered to be "equity equivalents" in that they are included as part and parcel of capital employed. The argument is that if the reserves had not been recorded for accounting purposes, they would be included as part of the income included in equity. Another important adjustment to the balance sheet to arrive at capital employed is the capitalization of operating leases. The net present value of operating leases is considered an asset, and the future payments are considered a debt equivalent. These adjustments are intended to restate the balance sheet to its "economic" book value. Adjustments are designed to address the distortions suffered by traditional measures, such as return on equity, earnings per share and earnings growth, that change depending upon the generally accepted accounting principles (GAAP) adopted or the mix of financing employed.

To illustrate an adjustment to both balance sheet and income statement, a LIFO reserve is added back to inventory on the balance sheet to bring the valuation back to what would have been paid for the inventory if it had been bought today. The net increase to the LIFO reserve from one year to the next would be added back to net income to arrive at NOPAT. A decrease in the LIFO reserve would be subtracted from net income. The tax effect of LIFO in NOPAT is not adjusted because the cash flow from the tax benefit or loss was, in fact, realized.

2. METHODOLOGY

The study has been based on secondary data, three kinds of data and information have been collected which are as follows:

- I) Historical Information of Cement Industry
- II) Financial Reports of Cement Industry
- III) Some economic data for the calculation of EVA.

Historical data of Cement Industry, as overall and selected companies particularly have been collected from "Research, Statistics & Publication Department". Published annual financial reports of the companies including:

1. Balance Sheets,
2. Profit & Loss Accounts,
3. Schedules Related to Balance Sheet & Profit and Loss Account,
4. Note to Accounts and Accounting Policies; Have Been Taken Into consideration for second part.

Annual reports of a few companies have been requested by sending email to their email addresses and collected from companies' websites or other websites such as "Equitymaster.com", "Indianinfoline.com", "Valuenotes.com", "BSE.com",

"Myiris.com" and "Searchindia.com".

In order to find out whatever financial reports still remained to be collected, the researcher has visited Pune Stock Exchange and also observed Prowess database of Centre for Monitoring Indian Economy (CM IE).

2.1 Data Analysis

In order to meet the objectives of the study, data analysis has divided in three parts: (1) Trend analysis of Capital Structure and Economic Value Added, (2) Analysis of the effect of capital structure on EVA; and (3) Analysis of whether EVA is the best performance measure to present firm value for comparison with the other traditional measures.

The analyses have been done by time series data analysis moving average model (which is explained later) and using SYSTAT. In this research methods of time series analysis is used, the method of moving average and presentation of trends with time line graphs.

2.2 Trend Analysis

The objective of this section is to view the capital structure pattern followed by the Indian Cement Industry to recognize the created amount of economic value added by those companies in the period of 2003 to 2014. The analysis is carried out in terms of financial indicators which are four in number:

- (i) Economic Value Added
- (ii) EVA to Capital Employed Ratio

The ratios (1) and (ii) indicate the direction of changes in capital structure practices and the last two indicators present a picture of the corporate performance to create wealth. All these ratios are calculated on a year to year basis for the companies.

Table: 1 Application to Time Series Data of Cement Industries

TIME SERIES ANALYSIS				
Year	EVA	NOPAT	Three Years Moving Average	
ACC 2003-04	-71.01	200.24	**	**
2004-05	81.77	378.39	289.32	**
2005-06	820.64	1230.25	602.96	**
2006-07	1018.04	1478.87	1029.17	448.57
2007-08	537.65	1120.00	1276.37	454.67
2008-09	938.45	1607.00	1401.96	299.29
2009-10	362.14	1120.00	1282.33	175.92
2010-11	441.11	1325.00	1350.67	151.72
2011-12	341.79	1288.00	1244.33	98.18
2012-13	61.60	1096.00	1236.33	86.14
Ambuja 2003-04	11.10	336.79	906.93	339.93
2004-05	135.92	468.29	633.69	352.19
2005-06	988.45	1444.32	749.80	527.50
2006-07	1515.79	1975.35	1295.99	568.99
2007-08	822.76	1404.64	1608.10	573.09
2008-09	655.27	1324.30	1568.10	432.96
2009-10	458.62	1215.62	1314.85	192.08
2010-11	343.82	1220.87	1253.60	153.14
2011-12	260.39	1199.83	1212.11	60.74
2012-13	188.09	1220.87	1213.86	20.58
JKC 2003-04	44.60	336.79	919.16	336.33
2004-05	-75.82	9.89	522.52	447.96
2005-06	-58.13	47.86	131.51	450.53
2006-07	87.04	202.14	86.63	307.21
2007-08	136.16	275.06	175.02	100.58
2008-09	27.16	178.28	218.49	91.23
2009-10	47.41	258.22	237.19	63.42
2010-11	-186.88	67.27	167.92	63.775
2011-12	-25.40	215.45	180.31	62.74
2012-13	-45.68	253.01	178.58	75.07
JKL 2003-04	-121.71	-45.86	140.87	117.82
2004-05	-50.08	22.48	76.54	120.18
2005-06	-18.49	55.45	10.69	115.17
2006-07	80.09	178.11	85.35	67.16
2007-08	135.22	244.68	159.41	77.20
2008-09	74.88	201.11	207.97	72.85
2009-10	120.89	275.05	240.28	53.31
2010-11	-102.50	63.19	179.78	70.36
2011-12	-72.47	111.81	150.02	73.63
2012-13	-54.09	165.80	113.60	76.98
ULTR 2003-04	-163.99	29.55	102.39	56.24
2004-05	-440.61	-65.15	43.40	81.27
2005-06	21.45	228.59	64.33	121.20
2006-07	505.07	770.19	311.21	288.34
2007-08	624.80	996.77	665.18	340.39
2008-09	649.90	1163.92	976.96	344.27
2009-10	632.35	1200.91	1120.53	224.62
2010-11	-108.27	1275.47	1213.43	122.83
2011-12	679.59	2443.90	1640.09	467.77
2012-13	605.51	2819.75	2179.71	594.31

The presented data is analyzed for 2003 to 2013 for selected cement companies. The time based analysis is presented in table 1. Three yearly moving averages are tested to understand the nature of module of data.

It can be seen from table 1 that the time data is highly fluctuate for ACC and Ambuja cement for the years 2006 to 2013. It is found that in 2006 the value for Ambuja was 1029.17 which increases 19.4% by the next year in 2007. It shows the repaid high growth in NOPAT. It is consistently decreased till 2013, but compare to other companies these changes are found to be high. It decreases 1608.10 to 1213.86 in 2013. Similarly, for ACC cement during 2006 the high NOPAT is found 1029.17 which had high growth during 2008 with yearly rise of 13.29% and total 26.59% within two years.

It can be seen in figure 1 during 2006 to 2013 the actual value is goes up as well the fluctuation of short term is goes up. The short term fluctuations are noticed 527.5, 568.99 and 573.09 respectively for the year 2006 to 2008. It shows that among the selected cement industries Ambuja cement has the highest NOPAT and fluctuation of its values. It cause to high EVA in cement industries.

ACC stands second with high NOPAT fluctuation from 2006 to 2013 it was found high for the years 2007 and 2008 as 448.57 and 454.67 respectively. JKC stands on third position for the year 2004-05 and 2005-06 as 447.96 and 450.53 respectively. ULTR found on fourth position for the year 2012-13 with 2179.71 NOPAT. The last two companies' shows clear that the initial phase for JKC was going whereas ULTR has rising its repo in market after 2012-13. ACC and Ambuja cement have a growing scenario in market. Out of all the five JKL has the least NOPAT for last decade.

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