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Determinants of liquidity and profitability of selected cement companies in India

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Abstract
Liquidity of a company is evaluated with respect to the Liquidity ratios which are calculated to measure the company's ability to pay short-term debt obligations. Financial ratios play a significant role in estimating the performance of a Company. Ratios are used as a yardstick in financial analysis for evaluation the determinants of liquidity and profitability. From the data reported in the financial statements the researcher has arrived many ratios to analyse the performance and financial position of a firm. In the present study, the researcher has analysed the performance of 15 leading Indian Cement companies in India. Correlation and Regression analysis were done with the help of Financial Ratios to find out the determinants of liquidity and profitability. Profitability in long run contributes to sustained growth of the company. Therefore the Companies must focus on liquidity which is helpful for the smooth functioning of the organization.

Keywords: cement companies in India, current ratio, quick ratio, dividend payout ratio net profit, dividend per share, net profit margin (%), gross profit margin (%), return on assets, earnings per share

1. Introduction

Profit is very important aspects of business. Management aims at maximization of profits. The efficiency of business is measured by the amount of profit earned. The greater the profit the more efficient is the business considered to be. The profit of a business may be measured by studying the profitability of investment in it. The profitability may be defined as the ability of a give investment to earn a return from its use. This ability is referred to us learning power of operating performance of the concerned investment. Profitability is a relative term and it is measurement can be achieved by profit and is the most powerful motivational factor in any business. It is the test of efficiency and the measure of control.

The cement industry in India has grown rapidly since Independence. The Industry environment has changed to great extent. The main change in the industry environment includes variation in partial decontrol, number of new entrance, substantial addition of capacity by existing firms and changing technology etc. It is well known that the profitability of a firm is determined mainly by three factors namely structure of the firm and the market, goals of the management and government policies and other external constrains. There are a number of cross-sectional studies which provide direct evidence about the determinants of profitability. These includes Shephered (1972) [1], Berry (1975) [2], Agarwal V.K. (1978) [3], Ramachandran (1980) [4], Chaudhury (1982) [5], Clarkson & Miller (1982) [6], Ravenscraft (1983) [7], Hay & Morris (1979) [8], Narayana (1984) [9], Amato Swilder (1985) [10] and Agarwal, R.N. (1987) [11]. Ratios were used as determinants of the profitability. In the present paper, the following variables are used for analysis. Current Ratio, Quick Ratio, Dividend Payout Ratio Net Profit, Dividend Per Share, Net Profit Margin (%), Gross Profit Margin (%), Return on Assets, Earnings Per Share.

2. Methodology

The objective of this study is to examine determinants of liquidity and profitability of leading 15 selected cement companies in India. Determinants of profitability are analysed using ratios, correlation and regression analysis were done to find out the relationship between the variables. The present paper aims at testing following the hypothesis:

1. There is a positive correlation between efficiency in liquidity and profitability of the companies.
2. There is a positive correlation between market ratio and profitability of the companies.
3. There is positive correlation between liquidity and market ratio.

The following are the abbreviations used in the study

Table 1

CR	Current Ratio
QR	Quick Ratio
DPR	Dividend Payout Ratio Net Profit
DPS	Dividend Per Share
NPM	Net Profit Margin (%)
GPM	Gross Profit Margin (%)
ROA	Return on Assets
EPS	Earnings Per Share

3. Statement of the Problem

The objective of the firm was profit maximization and the firm which expanded its output earned the highest profit and was, therefore, consideration the optimum firm. By

implication, it is meant that firms either bigger or smaller then the optimum were ruled out as improbabilities. But a firm can't grow continuously or make abnormal profits. The small firm can never (in the long run) earn higher profit rates then big firms because all the technical advantages are not open to them, whereas big firms may earn higher rates of profit than small firms because some advantages open to them or not open to small firms. Thus a hierarchy of profit rates will be estimated with a smooth increase of profit rates as size of enterprise increases. Each firm now had several objectives and each decided its own policies. Firm functioned in imperfect markets, diversified and showed no signs of ceasing to grow. The concept of growth itself underwent a change from a mere concern with the increase in output. Thus, an attempt has been made in the paper to study the relationship between the liquidity and profitability.

4.1 Profitability

Return on assets and return on sales are widely used measures of profitability. It is assumed that management may be concerned with effective utilization of all resources and these two measures could be proper in this line of argument. The profit rates measured by sales will give a short-term perspective of profitability because sales are annual flows. On the other hand, the return on assets will give as long-term perspective of profitability. In this sense, both the measures of profitability are used in the study.

4.2 Liquidity

Liquidity ratios are calculated to measure the company's ability to pay short-term debt obligations. These two ratios are grouped together to accurately measure the liquidity position of a company. In the present study current ratio and quick ratio were arrived and it was compared for correlation among other ratios.

5. Results and Discussions

5.1 Correlation analysis

To study the correlation between efficiency in liquidity and profitability of the companies, ratio analysis is used. Current Ratio, Quick Ratio, Gross Profit Margin (%), Net Profit Margin (%), Return on Assets and Return on Net Worth (%) were calculated and correlation analysis was done to find the relationship between these ratios.

H1: There is a positive correlation between efficiency in liquidity and profitability of the companies

Table 2: Correlation between efficiency in liquidity and profitability ratios of the companies

	Current Ratio	Quick Ratio	Gross Profit Margin (%)	Net Profit Margin (%)	Return on Assets Including Revaluations	Return On Net Worth (%)
Current Ratio	1					
Quick Ratio	0.753963032	1				
Gross Profit Margin (%)	-0.476120	-0.1814475	1			
Net Profit Margin (%)	0.5254094	0.3595719	-0.7847973	1		
Return on Assets	-0.130506	-0.1459519	0.1850634	-0.0771276	1	
Return On Net Worth (%)	-0.127216	-0.1537386	0.3850251	0.0792222	0.3172700	1

*correlation is significant at the 0.05 level (2 tailed)

Table 2 shows the relationship between the efficiency of working capital and profitability of diary industries. The efficiency of working capital has been shown through the quick and current ratios of the cement industry. It has been found that the QR and CR of the companies were negatively related with the Gross Profit Margin, Returns on Assets and Return on Net worth. It has been found that there is significant correlation between Return on Net worth to Gross Profit Margin, and Net Profit Margin to Current ratio. Though there exists relationship within the efficiency of liquidity ratios and the profitability ratios, these relationships are not statistically significant.

H2: There is a positive correlation between market ratio and profitability of the companies.

Table 3: Correlations between market ratio and profitability of the companies

	Return On Net Worth (%)	Earnings Per Share	Dividend Payout Ratio	Inventory Turnover Ratio	Fixed Assets Turnover Ratio
Return On Net Worth (%)	1				
Earnings Per Share	0.4896977	1			
Dividend Payout Ratio	-0.1513913	-0.1988487	1		
Inventory Turnover Ratio	0.1794499	0.0591475	-0.0790062	1	
Fixed Assets Turnover Ratio	-0.0841699	-0.1035520	0.0590809	0.0142139	1

*correlation is significant at the 0.05 level (2 tailed)

Table: 3 shows the relationship between the market ratio and profitability of the cement companies in India. There are statistically significant relationships between the Earning per share and Return on Net Worth. Dividend payout ratio is negatively correlated with Return on Net Worth and Earnings per Share. Inventory Turnover Ratio is has positive correlation between Return on Net Worth and Earnings per Share. Fixed Assets Turnover Ratio is positively correlated with Dividend payout ratio and Inventory Turnover Ratio. Most of the ratios have positive correlation between each other.

H3: There is positive correlation between liquidity and market ratio.

Table 4: Correlation between liquidity and market ratio

	Current Ratio	Quick Ratio	Earnings Per Share	Dividend Payout Ratio	Dividend Per Share
Current Ratio	1				
Quick Ratio	0.75396303	1			
Earnings Per Share	-0.11248983	-0.14749	1		
Dividend Payout Ratio	0.68036112	0.372388	-0.19518	1	
Dividend Per Share	-0.05258279	-0.0522	0.777236	-0.03747	1
*correlation is significant at the 0.05 level (2 tailed)					

Table 4 shows the relationship between the liquidity and market ratio of the cement companies. There is statistically significant relationship between the Dividend Payout Ratio to Current Ratio and Quick Ratio.it has been found that there is no correlation between the Earning Per share and Quick Ratio. There is a high correlation between the current ration and quick ratio.

5.2 Regression Analysis

Regression analysis is the most powerful tool that is widely used and building a model is rarely a simple or straightforward process (Mendenhall and Sincich 339)[1]. Certain assumptions are to be satisfied and statistical tests are determined for the goodness fit of data and accuracy of the model. The independent variables can be first-order or second-order terms, interaction terms, and dummy variables. Multiple linear regression analysis studies how a dependent variable or response y is related to two or more independent variables or predictors, i.e., it enables us to consider more factors –and thus obtain better estimates– than simple linear regression.

The concepts and principles developed in dealing with simple linear regression (i.e. one explanatory variable) may be extended to deal with several explanatory variables. The basic regression equation is as follows:

$$Y = \beta 0 + \beta 1x1 + \beta 2x2 \ldots\ldots \beta nxn + e$$

In the present study, two models are framed. Earnings Per Share and Net Profit Margin (%) are the response variable and other ratios selected are the predictor variables. Hence, the regression equation for the present study is:

$$Y_1\,(EPS) = a + b_1\,CR + b_2QR + b_3DPA + b_4DPS + e$$
$$Y_2\,(NPM) = a + b_1\,CR + b_2QR + b_3GPM + b_4ROA + e$$

Y is the value of the dependent variable (Y_1, Y_2), what is being predicted or explained

a (Alpha) is the Constant or intercept $b_{1\ldots11}$ is the Slope.

R^2 represents the fraction of the sample variation of the y values that is explained by the independent variables. Adjusted R2 (R^2_{adj}) takes into account the sample size and the number of parameters in the model. R^2_{adj} increases only if mean square error decreases. The largest R^2adj indicates the best fit of the model.

In the study we have used variable screening method in stepwise regression which determines the independent variable(s) added to the model at each step using t-test. The p values are a meaningful addition to our model because changes in the predictor variable are related to changes in the response variable.

Regression Analysis: EPS versus CR, QR, DPA, DPS

Table 5: Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	4	196953	49238	32.88	0.000
Current Ratio	1	5589	5589	3.73	0.057
Quick Ratio	1	5356	5356	3.58	0.063
Dividend Payout Ratio	1	11129	11129	7.43	0.008
Dividend Per Share	1	178509	178509	119.19	0.000
Error	70	104836	1498		
Total	74	30178			

Model Summary			
S	R-sq	R-sq(adj)	R-sq(pred)
38.6995	65.26%	63.28%	46.24%

In the Table 5, we can see that the predictor variables of Dividend Payout Ratio and Dividend Per Share are significant because both of their p-values are less than 0.05 which is statistically significant. However, the p-value for Current Ratio and Quick Ratio is greater than the common alpha level of 0.05, which indicates that it is not statistically significant.

The R^2 value is 65.26% which explains that after deducting the model which best fits the study is:

Earnings Per Share = 20.39 + 19.30 Current Ratio
- 8.27 Quick Ratio
- 0.544 Dividend Payout Ratio Net Profit
+ 2.856 Dividend Per Share

Regression Analysis: Net Profit Margin versus Current Ratio, Quick Ratio, Gross Profit Margin(%), Return on assets.

Table 6

Analysis of Variance					
Source	**DF**	**Adj SS**	**Adj MS**	**F-Value**	**P-Value**
Regression	4	71380	17844.9	36.15	0.000
Current Ratio	1	1	0.9	0.00	0.966
Quick Ratio	1	2339	2339.1	4.74	0.033
Gross Profit Margin (%)	1	41791	41791.4	84.67	0.000
Return on Assets Including Reva	1	969	968.6	1.96	0.166
Error	70	34551	493.6		
Total	74	105931			

Model Summary			
S	**R-sq**	**R-sq(adj)**	**R-sq(pred)**
22.2169	7.38%	65.52%	3.12%

In the Table 6, we can see that the predictor variables of Dividend Payout Ratio and Dividend Per Share are significant because both of their p-values are less than 0.05 which is statistically significant. However, the p-value for Current Ratio and Quick Ratio is greater than the common alpha level of 0.05, which indicates that it is not statistically significant.
The R^2 value is 65.52% which explains that our regression equation is explained to a greater percentage and the model which best fits the study is

Net Profit Margin (%) = 27.98 - 0.22 Current Ratio + 5.54 Quick Ratio - 2.620 Gross Profit Margin (%) + 0.00904 Return on Assets

Conclusion

There are statistically significant relationships between the profitability and Return on Net Worth. Return on Net Worth and Earnings per Share has been correlated with turnover ratios. It can be concluded from the above analysis that liquidity is significantly associated with profitability during the study period. It has been found that there is significant correlation between Return on Net worth to Gross Profit Margin, and Net Profit Margin to Current ratio. Inventory Turnover Ratio is has positive correlation between Return on Net Worth and Earnings per Share. There is statistically significant relationship between the Dividend Payout Ratio to Current Ratio and Quick Ratio To sum up, the regression analysis shows that EPS is explained by CR, QR, DPA and DPS to 65.26% and Net Profit Margin has 65.52% influence in explaining profitability of firms in this industry. Most of the results shows that the determinants of Liquidity and Profitability are the day to day working capital cycle and the sales made by the company which directly influences growth of the concern. Hence all the companies has to concentrate on increasing CR, QR, ROA, DPS and EPS.

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