A STUDY ON THE IMPACT OF LIQUIDITY RATIOS ON PROFITABILITY OF SELECTED CEMENT COMPANIES IN INDIA

P. Megaladevi

Department of Management Studies, Jay Shriram Group of Institutions, India

Abstract

The present study aims to study the relationship between liquidity and profitability of selected Cement Companies in India. Every firm has to maintain good working capital in day to day operations to increase the profitability. For analyzing the liquidity ratios on profitability, the researcher has used 8 ratios in profitability and 3 ratios Liquidity. The results of the study show that CR and QR is having significant relationship with ROAE. ROE is correlated at 5% level of significance with ICR and at 1% level of significance with ROCE and EBDITCE. ROTA is positively correlated at 5% level of significance with ROCE, EBDITCE, ROACE and ICR Profitability ratios also play an important role in the financial positions of enterprises. Every stakeholder has interest in the liquidity position of a company. The Suppliers of company will check the liquidity of the company before selling goods on credit. ROCE is having significant relationship with ROE, ROTA, EBDITCE, ROAE, ROACE, TDDR and ICR at 5% and 1% level of significance. The study reveals that Liquidity and profitability have close relationship between each ratio.

Keywords:

Liquidity, Profitability, Descriptive Statistics, Correlation, Regression Analysis

1. INTRODUCTION

Liquidity and profitability has got tremendous importance in the corporate world. Liquidity refers to the management of current assets and current liabilities of a company. It plays key role in defining, whether a firm is able to effectively manage it short term obligations. Due to its dire importance it is important for firms to maintain a reasonable amount their assets in the form of cash in order to meet their short term obligations. Liquidity is the ability to meet expected and unexpected demands for cash through ongoing cash flow or the sale of an asset at fair market value. Liquidity risk is the risk which at some time an entity will not have enough cash or liquid assets to meet its cash obligations. Liquidity management is very important for every organization that means to pay current obligations on business, the payment obligations include operating and financial expenses that are short term but maturing long term debt. Liquidity ratios are used for liquidity management in every organization in the form of current ratio, quick ratio and Acid test ratio that greatly affects the profitability of organization. So business has enough liquid assets (Cash, Bank) to meet the payment schedule by comparing the cash and near-cash with the payment obligations. Liquidity ratios work with cash and near-cash assets (together called "current" assets) of a business on one side, and the immediate payment obligations (current liabilities) on the other side. The near-cash assets mainly include receivables from customers and inventories of finished goods and raw materials. The payment obligations include dues to suppliers, operating and financial expenses that must be paid shortly and maturing installments under long-term debt [15].

India is the second largest cement producer in the world. Cement production capacity of nearly 425 million tonnes, as of September 2017. India's cement production capacity is expected to reach 550 million tonnes by 2025. There are 210 large cement plants account for a cumulative installed capacity of over 350 million tonnes, while over 350 mini cement plants have an estimated production capacity of nearly 11.10 million tonnes, as of 2016. Of the total 210 large cement plants in India, 77 are situated in the states of Andhra Pradesh, Rajasthan and Tamil Nadu.

India's cement industry is a vital part of its economy, providing employment to more than a million people, directly or indirectly. The Indian cement industry has attracted huge investments, both from Indian as well as foreign investors. India has a lot of potential for development in the infrastructure and construction sector and the cement sector is expected to largely benefit from it. Some of the recent major initiatives such as development of 98 smart cities are expected to provide a major boost to the sector. A significant factor which aids the growth of this sector is the ready availability of the raw materials for making cement, such as limestone and coal [14].

Due to the increasing demand in various sectors such as housing, commercial construction and industrial construction, cement industry is expected to reach 550-600 Million Tonnes Per Annum (MTPA) by the year 2025. With help from the government in terms of friendlier laws, lower taxation, and increased infrastructure spending, the sector will grow and take India's economy forward along with it.

2. LITERATURE REVIEW

Janjua et al. [1] aims at investigating influence on the profitability of liquidity in the cement segment in Pakistan. The correlation and regression analysis were used with the help of OLS technique to determined parameters. The factors that are considered in this study as variables are profitability (ROA i.e. dependent) and liquidity (CRR, QUR, and LR i.e. independent). The study revealed that there is a positive and significant relationship in said variables. This study concludes that liquidity ratio affects the profitability ratios. Pan and Mal [2] analysed the profitability of selected cement companies in India during period of 2001 to 2010. Devi and Sabarinathan [3] analysed production and sales, to measure the short term and the long term financial feasibility and to identify the factors that influences the profitability status of the selected cement companies in Tamil Nadu. Kumar et al. [4] focused on analyses of profitability of selected cement companies in India during period of 2005 to 2014, the tools used for analysis are mean, standard deviation, co-efficient of variation and compound annual growth rate, the study found that the profitability position of Ambuja cements is

satisfactory when compare to other companies. Panigrahi [5] attempted to study in depth the inventory management practices of Indian cement companies and its impact on working capital efficiency. The results indicate that there is a significant negative linear relationship between inventory conversion period and profitability. Velnampy [6] found that determinants of corporate governance are not correlated to the performance measures of the organization. Regression model showed that corporate governance don't affect companies' ROE and ROA.

Nimalathasan and Priya [7] suggested that Inventory Sales Period (*ISP*), Current Ratio (*CR*) and are significantly correlated with Return on Asset (*ROA*), Operating Cash Flow Ratio (*OCFR*) are significantly correlated with Return on Equity (*ROE*) 5% level of significance. At the same time *ISP* and *OCFR* also are significantly correlated with *ROA*, Creditors Payment Period (*CPP*) also is significantly correlated with *ROE* at 1% level of significance. Raheman and Nasr [8] shows that aggressive working capital management policy [12] in the form of aggressive financing policy has a negative and significant impact on profitability and firm's value, while, the aggressive investment policy has a positive and significant impact on profitability. Singh [9] states that liquidity [13] plays a significant role in the successful functioning of a business firm. A firm should ensure that it does not suffer from lack-of or excess liquidity to meet its short-term compulsions. Parasuraman [10] said that estimation of real worth of a stock is made by considering the earning potential of the company which depends on investment environment and factors relating to specific industry, competitiveness, quality of management, operational efficiency, profitability, capital structure and dividend policy. Abuzar and Elijelly [11] proved that the financial performance of an organization is influenced by several factors like capital structure, cost, revenue and the consequential profit margin. The best indicators of the financial performance are return on assets, sales, equity and other financial variables. In this study, the researcher has analyzed the performance of selected companies in Jordan on the parameters such as profitability, utilization of assets, growth of performance, financial strength and capital structure.

3. DATA COLLECTION

The study is conducted for 10 years from 2008 to 2017. The data needed for the study is collected from the annual reports of the company. Secondary data were also collected from Journals, Magazines etc.

4. METHODOLOGY

In the present study, Descriptive Statistics were used to review the collected data. Correlation analysis was done to find the relationship between the variables selected for the study. Regression analysis was done and best fit model was arrived from the study using SPSS and MINITAB.

Abbreviations used in study

NPM - Net Profit Margin

ROE - Return On Equity

ROTA - Return On Total Assets

ROCE - Return On Capital employed

EBDITCE - Earning Before Depreciation Interest and Taxes

ROAE - Return On Average Equity

ROACE - Return On Average Capital Employed

TDDR - Total Dividend Distribution Ratio

CR - Current Ratio

QR - Quick Ratio

ICR - Interest Cover Ratio

5. RESULTS AND DISCUSSIONS

In analyzing the data of cement industries, descriptive statistics, correlation and regression analysis were done by the researcher. The results are shown below.

5.1 DESCRIPTIVE STATISTICS

Descriptive Statistics for arrived 13 ratios for profitability and Liquidity has been shown in the below table.

Table.1. Descriptive Statistics

Variables	Mean	SE. Mean	St. Dev	Minimum	Maximum
NPM	-0.516	0.513	3.624	-25.311	0.236
ROE	0.1333	0.0450	0.3184	-0.8561	1.5928
ROTA	0.3461	0.0439	0.3103	-0.0266	1.2186
ROCE	0.1459	0.0162	0.1144	-0.0399	0.5124
EBDITCE	0.1861	0.0173	0.1223	-0.0316	0.5498
ROAE	0.3016	0.0826	0.5840	-0.6011	2.5478
ROACE	0.1239	0.0116	0.0823	-0.0541	0.2704
TDDR	0.0769	0.0165	0.1163	0.0325	0.8401
CR	1.186	0.106	0.749	0.159	3.652
QR	0.8325	0.0856	0.6053	0.1060	2.7865
ICR	5.520	0.993	7.021	-5.480	27.700

The Table.1 shows that *NPM* is having negative mean value (-0.516) and Standard deviation of 3.624. In the analysis, *CR* has the highest mean value (1.186). *ICR* has highest the highest Standard deviation of 7.021. Most of the ratios have negative values also in the study period.

5.2 CORRELATION ANALYSIS

- Hypothesis H_0: There is no significant relationship between the selected variables
- Hypothesis H_1: There is significant relationship between the selected variables

The Table.2 shows the correlation between profitability and liquidity ratios of selected cement companies. The results of the study show that *NPM* is correlated at 5% level of significance with *EBDITCE* and *ROACE*. *ROE* is correlated at 5% level of significance with *ICR* and at 1% level of significance with *ROCE* and *EBDITCE*. *ROTA* is positively correlated at 5% level of significance with *ROCE*, *EBDITCE*, *ROACE* and *ICR*. *ROCE* is having significant relationship with *ROE*, *ROTA*, *EBDITCE*, *ROAE*, *ROACE*, *TDDR* and *ICR* at 5% and 1% level of significance.

Table.2. Correlation Analysis

		NPM	*ROE*	*ROTA*	*ROCE*	*EBDITCE*	*ROAE*	*ROACE*	*TDDR*	*CR*	*QR*	*ICR*
NPM	Pearson Correlation	1	.226	.209	.268	.301*	.220	.321*	.069	.215	.187	.225
	Sig. (2-tailed)		.115	.146	.060	.034	.125	.023	.636	.133	.193	.115
ROE	Pearson Correlation	.226	1	.236	.405**	.403**	.171	.272	.173	.125	.105	.308*
	Sig. (2-tailed)	.115		.098	.004	.004	.235	.056	.231	.387	.467	.030
ROTA	Pearson Correlation	.209	.236	1	.641**	.704**	-.105	.485**	.167	-.177	-.262	.416**
	Sig. (2-tailed)	.146	.098		.000	.000	.470	.000	.247	.220	.066	.003
ROCE	Pearson Correlation	.268	.405**	.641**	1	.988**	.544**	.687**	.325*	.237	.174	.880**
	Sig. (2-tailed)	.060	.004	.000		.000	.000	.000	.021	.097	.226	.000
EBDITCE	Pearson Correlation	.301*	.403**	.704**	.988**	1	.489**	.721**	.299*	.209	.136	.848**
	Sig. (2-tailed)	.034	.004	.000	.000		.000	.000	.035	.146	.347	.000
ROAE	Pearson Correlation	.220	.171	-.105	.544**	.489**	1	.459**	.235	.600**	.554**	.646**
	Sig. (2-tailed)	.125	.235	.470	.000	.000		.001	.100	.000	.000	.000
ROACE	Pearson Correlation	.321*	.272	.485**	.687**	.721**	.459**	1	.127	.308*	.263	.618**
	Sig. (2-tailed)	.023	.056	.000	.000	.000	.001		.381	.030	.065	.000
TDDR	Pearson Correlation	.069	.173	.167	.325*	.299*	.235	.127	1	.159	.149	.256
	Sig. (2-tailed)	.636	.231	.247	.021	.035	.100	.381		.271	.300	.073
CR	Pearson Correlation	.215	.125	-.177	.237	.209	.600**	.308*	.159	1	.986**	.272
	Sig. (2-tailed)	.133	.387	.220	.097	.146	.000	.030	.271		.000	.056
QR	Pearson Correlation	.187	.105	-.262	.174	.136	.554**	.263	.149	.986**	1	.231
	Sig. (2-tailed)	.193	.467	.066	.226	.347	.000	.065	.300	.000		.106
ICR	Pearson Correlation	.225	.308*	.416**	.880**	.848**	.646**	.618**	.256	.272	.231	1
	Sig. (2-tailed)	.115	.030	.003	.000	.000	.000	.000	.073	.056	.106	

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

EBDITCE is correlated with all variables except *CR* and *QR*. *ROAE* is having positive correlation with most of the variables in the study. *ROACE* is having significant relationship with all variables except *ROE* and *TDDR*. *TDDR* is positively correlated at 5% level of significance with *ROCE* and *EBDITCE*. *CR* is having significant relationship with *ROAE*, *ROACE* and *QR* in the study period. *QR* is having significant relationship with *ROAE* and *CR* only. *ICR* is statistically significant with many ratios in the period of study. The study further reveals that liquidity ratios have modest impact on Profitability ratios in the study period.

5.3 REGRESSION ANALYSIS

For the analysis NPM is the Dependent variable and *PTNPM*, *ROE*, *ROTA*, *ROCE*, *EBDITCE*, *ROAE*, *ROACE*, *TDDR*, *CR*, *QR*, *ICR* and the regression equation for the study is

$NPM = \beta_0 + \beta_1 PTNPM + \beta_2 ROE + \beta_3 ROTA + \beta_4 ROCE + \beta_5 EBDITCE + \beta_6 ROAE + \beta_7 ROACE + \beta_8 TDDR + \beta_9 CR + \beta_{10} QR + \beta_{11} ICR + \acute{\epsilon}_1$

The results of the analysis are presented in Table.3.

Table.3. *NPM* versus *PTNPM*, *ROE*, *ROTA*, *ROCE*, *EBDITCE*, *ROAE*, *ROACE*, *TDDR*, *CR*, *QR*, *ICR*

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	11	454.265	41.297	8.29	0
PTNPM	1	321.597	321.597	64.52	0
ROE	1	1.674	1.674	0.34	0.566
ROTA	1	0.317	0.317	0.06	0.802
ROCE	1	0.021	0.021	0	0.948
EBDITCE	1	0.08	0.08	0.02	0.9
ROAE	1	1.549	1.549	0.31	0.581
ROACE	1	0.99	0.99	0.2	0.658
TDDR	1	0.112	0.112	0.02	0.882
CR	1	0.083	0.083	0.02	0.898
QR	1	0.12	0.12	0.02	0.877
ICR	1	1.22	1.22	0.24	0.624
Error	38	189.395	4.984		
Total	49	643.66			

Multiple linear regression is one of the most popular statistical techniques used by researchers. In the analysis, a regression line is fitted for a response variable using more than one explanatory variable. In the ANOVA calculations for multiple regressions, the degrees of freedom are adjusted to reflect the number of explanatory variables included in the model. It consists of calculations that provide information about levels of variability within a regression model and form a basis for tests of significance. This study explains how to interpret the coefficients of continuous and categorical variables. Although the data used here is a multiple linear regression model with eleven predictor variables, the same approach can be applied when interpreting coefficients from any regression model without interactions. The multiple linear regression Model (*MLRM*) is to model the relationship between the eleven explanatory variables and the response variable (*NPM*).

In the model, the predictor variables of "*NPM*" are statistically significant in case of "*p*" values as 0.00. The *p* values are a meaningful addition to our model because changes in the predictor variable are related to changes in the response variable. The analysis further indicates that the data is not sufficiently significant for statistics regardless of the type of multivariate parameters used since most of the *p* values are greater than 0.0001.

Table.4. Model Summary

S	R^2	R^2 (adj)	R^2 (pred)
2.2325	70.58%	62.06%	0.00%

Table.5. Coefficients

Source	Coef	SE Coef	T-Value	P-Value	VIF
Constant	0.42	1.1	0.38	0.703	
PTNPM	2.28	0.284	8.03	0	1.51
ROE	0.65	1.12	0.58	0.566	1.26
ROTA	0.66	2.61	0.25	0.802	6.45
ROCE	1.8	27.7	0.07	0.948	99.02
EBDITCE	-3.4	26.5	-0.13	0.9	103.32
ROAE	0.75	1.34	0.56	0.581	6.04
ROACE	-3	6.64	-0.45	0.658	2.94
TDDR	-0.5	3.01	-0.15	0.882	1.21
CR	0.52	4.07	0.13	0.898	91.15
QR	-0.8	4.97	-0.16	0.877	89.14
ICR	-0.1	0.112	-0.49	0.624	6.08

5.3.1 Regression Equation:

$$NPM = 0.42 + 2.282\ PTNPM + 0.65\ ROE + 0.66\ ROTA + 1.8\ ROCE - 3.4\ EBDITCE + 0.75\ ROAE - 2.96\ ROACE - 0.45\ TDDR + 0.52\ CR - 0.77\ QR - 0.055\ ICR$$

Table.6. Fits and Diagnostics for Unusual Observations

Obs	*NPM*	Fit	Resid	Std	Resid
11	-30.00%	17.00%	-47.00%	-0.5	X
14	-25.31	-16.26	-9.05	-6.16	R
15	-3.9	-13.91	10	6.11	R
30	0.2	-0.14	0.34	1.38	X

where, *R* is the large residual and *X* is the unusual *X*.

The squared multiple correlations R^2 is now equal to 0.705 and all the variables are significant by t test. Examination of residuals indicates some unusual patterns. The inclusion of the predictor variables explains 70.58% of the variability of the dataset. Also from the table that contains the coefficients we can say that a one unit change in EBDITCE value will give 3.4 units change in the predicted value of NPM and vice-versa.

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. The data used for the study is sufficiently significant for statistics regardless of the type of multivariate parameters used. Residual tests are used to detect violations in regression modeling assumptions. Such tests can also help indicate when a model transformation or modification is needed.

6. CONCLUSIONS

The more generally, this paper marks a first attempt to empirically address the relationship between liquid ratios and profitability. In interpreting the estimation results, it should be kept in mind that this work uses a reduced form model. In any event, the current paper serves as an initial step, highlighting an important, if elementary, relationship, relevant to the regulation of companies. It has been empirically proved through analysis that liquidity has negatively relationship with profitability, and has considerable impact on the profitability of various cement Company in India. With the growing liquidity level to ascertain limit the profitability also increases. Hence, this research indicates that liquidity has negative relationship with profitability. Therefore, it is suggested that liquidity ratios has little influence on the profitability ratios.

REFERENCES

[1] Aqeel Rasool Janjua et al., "Influence of Liquidity on Profitability of Cement Sector: Indication from Firms Listed in Pakistan Stock Exchange", *Business Management Dynamics*, Vol. 6, No. 5, pp. 1-12, 2016.

[2] Swapan Kumar Pan and Durga Pada Mal, "Profitability Analysis of Selected Cement Companies in India", *IOSR Journal of Business and Management*, Vol. 18, No. 9, pp. 65-75, 2016.

[3] B. Manjula Devi and K. Sabarinathan, "A Study on Financial Performance of Cement Industries in Tamilnadu with Reference to Select Cement Companies", *International Journal of Research in Management and Technology*, Vol. 5, No. 1, pp. 224-229, 2015.

[4] M.S. Mohan Kumar, M. Safeer Pasha and T.N. Bhanu Prakash, "Profitability Analysis of Selected Cement Companies in India", *International Journal of Multidisciplinary Research and Modern Education*, Vol. 11, No. 2, pp. 1-7, 2015.

[5] A.K. Panigrahi, "Relationship between Inventory Management and Profitability-An Empirical Analysis of Indian Cement Companies", *Asia Pacific Journal of Marketing and Management Review*, Vol. 2, No. 7, pp. 107-120, 2013.

[6] T. Velnampy, "Corporate Governance and Firm Performance: A Study of Sri Lankan Manufacturing Companies", *Journal of Economics and Sustainable Development*, Vol. 4, No. 3, pp. 228-236, 2013.

[7] M. Nimalathasan and K. Priya, "Liquidity Management and Profitability: A Case Study of Listed Manufacturing companies in Sri Lanka", *International Journal of Technological Exploration and Learning*, Vol. 2, No. 4, pp. 1-7, 2013.

[8] A. Raheman and M. Nasr, "Working Capital Management and Profitability-A Case of Pakistani Firms", *International Review of Business Research Papers*, Vol. 3, No. 1, pp. 279-300, 2007.

[9] P.K. Singh, "Working Capital Management in Lupin laboratories Ltd.- A Case Study", *The Management Accountant Journal*, Vol. 39, No. 9, pp. 534-539, 2004.

[10] N.R. Parasuraman, "Working Capital Practices in Leading Pharmaceutical Companies- A View of the Credit Policy and Profitability", *The Management Accountant Journal*, Vol. 39, No. 12, pp. 998-1005, 2004.

[11] M.A. Abuzar, "Liquidity-Profitability Tradeoff: An Empirical Investigation in an Emerging Market, *International Journal of Commerce and Management*, Vol. 14, No. 2, pp. 48-61, 2004.

[12] Ahmad Rais and Ghufran Ali, "An Analytical Study of Working Capital Management of Marketing Cooperative Societies", *Monthly Public Opinion Surveys*, Vol. 2, pp. 18-28, 2005.

[13] M. Don, "Liquidity v/s profitability-Striking the Right Balance", Available at: https://www answers yahoo. com/question, Accessed on 2009.

[14] Cement Industry in India, Available at: https://www.ibef.org/industry/cement-india.aspx.

[15] Khushbakht Tayyaba, "Leverage-An Analysis and Its Impact on Profitability With Reference To Selected Oil And Gas Companies", *International Journal of Business and Management Invention*, Vol. 2, No. 7, pp. 50-59, 2013.