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Behavior of Financial Ratios of Indian Steel Industry during Post Recession Period

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Abstract: *The present study is envisaged to observe the financial performance of the Indian steel industry during the post recession period. It examines the financial performance of the industry in terms of different ratios selected from different aspects. 16 companies constitute the sample of the study for a period of 6 years since 2010-11 to 2015-16. Further it also investigates the relation between profitability and other financial metrics like liquidity, solvency and activity ratios. Factor analysis and multiple regression analysis are applied in the present study to facilitate the data analysis. Factor analysis is used in the study to explore the structure in the relationship of the financial variables under the study. Multiple regression analysis is used to examine the impact of liquidity factor on the profitability and it also helps to explore the linear relationship between liquidity and profitability. It has been found that liquidity has an immense positive impact on the profitability implying that when the companies are maintaining moderate amount of liquidity it helps to accelerate the profitability. Too much investment of liquid assets in the business may not give the high return due to volatility in world steel market during the post recession period.*

Keywords: *Financial Performance, Factor analysis, Multiple regression analysis, Financial Ratios, Indian steel industry*
JEL CODE*: G3, C10*

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I. Introduction

Indian steel industry is going through ups and down due to financial turmoil during 2007-08. It is experiencing a marginal slowdown in the growth during the financial meltdown in 2008-09. Before 2007 US housing bubble helped to grow the supporting industries like steel, real estate, infrastructure, etc. But recession hit the industrial sector badly. Indian steel industry, not being exception felt the pinch of such economic downturn. Indian gross domestic product growth also suffered a slow down condition on account of rising inflation and tight monetary control. This was led to weaken the domestic steel demand. The impact of volatility in prices, exchange rates, ongoing mining challenges, erratic weather occurrence, geo-political situation, increasing coal and fuel shortage was hurting economic and industrial activities in India. Slow growth has been observed in the demand for steel products in India primarily due to near stagnant growth in steel consuming sectors like infrastructure, real estate, automobile and consumer goods. At present steel industry is trying to come up from bad phase and for the first time in recent years India became the net exporter of steel products during 2013-14 and occupied 4th position after China, Japan and U.S.A. The growth rate (GDP) in India in particular, declined from 9.6% in 2006-07 to 9.3% in 2007-08 and fell to 6.8% in 2008-09 (Bhatt, 2011). It is an attempt to capture the picture of financial health of steel industry in India during the post recession period using of factor analysis and multiple regression analysis.

Presently Indian steel industry experiencing a marginal slowdown in growth compared to the previous growth rate prior to global financial crisis. Growing debt burden, declining worldwide demand, price hike of the raw materials make the overall situation toughest for this industry. Prospect of domestic demand for steel in short term appear grim and gloomy. Domestic prices are now being determined by international prices as in a free and open market situation. After recession steel prices become too much volatile and such volatility affect the steel market in a negative way.

II. Review Of Literature

India is considered to be a pioneer of iron and steel making and application which started as early as three thousand years back. After independence Government of India took the control and reserved the capacity creation only for public sector. Indian steel industry went through a rough phase during 1997-2001 because of low demand and declining steel price all over the world. Many steel firms were forced to exit from the competition. However, steel industry recovered from such difficult situation owing to resurgence of demand in United States and turnaround of Asian economies. Industrial recovery in India really began to be noted in 2002-

03, consolidated during 2003-04, gathered momentum during 2004-05 and scaled a new height during 2005 to 2007.

During that period Indian steel industry registered a spectacular growth in crude as well as finished steel production due to strong demand of steel from infrastructure, construction, automobile and power sector. But the world wide recession in 2008 hit the industry badly. Indian steel producers were forced to cut down the production to keep the steel price unaffected. High price of raw materials and demand-supply mismatch in the steel market affect the profit margin severely. Capacity creation is largely affected by the land acquisition problem which could create a challenge for the industry in near future [Bagchi (2005), Banerjee (2005), Muthuraman (2006), Bharti Bala and De (2009), Burang and Yamini (2010)].

III. Statement Of Problem

Steel industry is playing a vital role in the country's economy. But its development depends on several factors like production, technology, personnel, finance etc. Financial aspects become more important for the development and expansion of the industry. Many researchers conducted the study on the Indian steel industry. Financial ratios of the company indicate the financial health of the company. Prior to recession Indian steel industry was suffering from financial crunches but it becomes acute after the recession. Various financial factors affect the profitability of the company. In this context financial performance study is undertaken to find the behavior of the financial ratios during the post recession period for a period of 5 years since 2010-11 to 2014-15.

IV. Objectives Of The Study

1. To study the behavior of selected financial ratios of Indian steel sector during the post recession period.
2. To detect structure in the relationships between variables under the study, that is to classify variables.
3. To evaluate the impact of liquidity factor on the profitability and profit margin of the concerned industry.

V. Data And Methodology

5.1 Variable selection

The study is empirical in nature and based on secondary data i.e. financial ratios. Various conventional and non conventional financial ratios are selected from different categories to conduct the present research. Current ratio (CR), quick ratio (QR) and absolute quick ratio (AQR) are selected from liquidity, debt equity ratio (DER), total debt to total assets (TDTA), fixed assets to shareholders' equity (FASHE), current assets to shareholders equity (CASHE), interest coverage ratio (ICR) and proprietary ratio (PR) from solvency, fixed assets turnover ratio (FATR), assets turnover ratio (ATR), working capital turnover ratio (WCTR), debtor turnover ratio (DTR), inventory turnover ratio (ITR), from asset management efficiency, net profit margin (NPM), return on capital employed (ROCE), basic earnings per share (BEPS), cash earnings per share (CEPS) dividend per share (DPR) from profitability. The ratios are selected to assess the behavior of the selected ratios during the post recession period. The present study is conducted for 6 years since 2010-11 to 2015-16.

5.2 Sample selection

The study is conducted on the Indian steel industry to capture the current financial position of the same during the post recession period. Total 94 companies were selected for the study who were listed under either Bombay stock exchange (BSE) or national stock exchange (NSE) or both. The present study is purely empirical in nature and based on secondary data, audited financial statements during the period from 2010-11 to 2014-15 for 5 years. Initially 17 companies were selected but due to insufficiency of data 16 companies are included in the study whose market share is more than 1. The market share of each of the company is arrived at by dividing their respective sales (in Crore) by industries' total sales and multiplying it by 100. The list of companies along with their market share is presented in the Table-1 (Appendix 1).

5.3 Methodology

This section represents the methodology adopted in the present study.

1. Factor analysis is applied in the study. According to Tan, Koh and Low (1997) on the listed companies under Singapore Stock Exchange and they applied Factor Analysis on 29 financial ratios for a period of 12 years (1980-1991) to derive 8 underlying factors. Őcal, Oral, Erdis and Vural (2007) conducted a study on Turkish Construction industry, applied factor analysis on twenty five financial ratios, and derived five underlying factors. De, Bandopadhyay and Chakraborty (2011) performed a study on Indian cement industry to identify most important ratios to determine the financial performance of the company and applied factor analysis on forty four variables (ratios) selected from seven different categories for the study and obtained eight latent variables from that analysis. In the present study

2. Here, multiple regression analysis is also adopted to examine the relation between profitability and other financial metrics after worldwide financial turmoil during 2008-09. Kavita and Manivanna (2010) conducted a research on Indian software companies for a period of ten years ranging from 1997 to 2007. They applied regression technique to quantify the strength of relationship between operating profit and liquidity factors of the concerned firms and also to evaluate the overall financial performance and operational efficiency of the companies. Chiang, Novazzi and Gerab (2011) incorporated multiple linear regression analysis in their research on Brazilian listed companies to explore the relationship between working capital management and profitability of the companies for the time span of five years ranging from 2005 to 2009. Owolabi, Obialor and Okwu (2011) conducted a study to investigate the relationship between liquidity and profitability on selected quoted companies of Nigeria from banking, processing and manufacturing sector. Bhunia (2012) applied multiple regression analysis to examine the impact of liquidity on profitability of the Indian FMCG companies for a period of ten years from 2001 to 2010. The result of regression analysis shows that the liquidity ratios are significantly and positively associated with the companies‟ profitability ratios. S.Pal (2012) used multiple regressions to estimate liquidity, solvency and activity ratios on the profitability of the firm. The study reveals the enhancement of the overall profitability largely influenced by the liquidity, solvency factors. Therefore, the steel companies of India should concentrate to improve the overall liquidity and solvency to maximize the profitability of the firms. A functional regression model of the following order was developed to capture the relationship between the study variables, that is ROCE and NPM (dependent variables) and liquidity management (Factor-I) and debt management (Factor-II) (independent factor).

VI. Interpretation Of Data

Factor analysis is conducted in the present study with 17 variables. It extracts 5 variables (QR, ITR, DTR, TDTA and ICR) and other variables are excluded from the study. Table-2 shows the KMO value 0.623 justified the use of factor analysis in the present study. On the other hand Bartlett's test of Sphericity is significant at 5 percent level and provides the reasonable basis for factor analysis. The next output 'Communalities' (Table-3) shows the high communality for each of the variables considered under the analysis. The variable TDTA shows the highest communality of 0.993 indicating 99.3 percent of variation can be explained by the common factor followed by DTR (0.979), QR (0.964), ITR (0.951) and ICR (0.937). Two factors are extracted from the analysis as they are containing the Eigen value more than 1 and explain 96.845 percent of variation in the entire data set (Table-4). The percentage of variation explained by the first factor and second factor are 73.469 percent and 23.105 percent respectively after performing the Varimax rotation. Here, rotated factor matrix will be used after considering 0.60 as cut-off point for factor loading and naming of factor. Factor-1 comprises of QR, ITR, DTR and ICR thus can be named as Liquidity management' and Factor-2 includes only one variable TDTA so can be named as 'Debt management' (Table-5).

Multiple regression analysis is conducted by considering ROCE as dependent variable and factor scores namely 'liquidity management' and 'debt management' as independent variable to determine the impact of these two factors on the profitability of the industry after financial crisis. The regression results indicate that 93.9 percent of the variations in the satisfaction levels are explained by two factors. The significance of R-square as tested by F-statistic (23.273) indicates that the regression equation is significant as p-value is 0.015. The present model is showing that the factor 'liquidity management' has significant impact on ROCE as it has the Beta value of 0.943 followed by the second factor 'debt management' 0.224. ROCE has been influenced by the factor 'liquidity management' significantly as it contains high t-value (6.639) and low p-value (0.007). The other factor 'debt management' has insignificant positive effect on ROCE with low t-value (1.574) and high p-value (0.214). Again the regression analysis is carried on with the same factor score as independent variables and NPM as dependent variable. The same result has been derived where the model shows its robustness with R-square value 0.944, F-value 25.438 and low significance level 0.013. The liquidity management factor shows the immense significant effect on the NPM (t-value 7.027, p-value 0.006). However, debt management factor has positive but insignificant impact (t-value 1.223, p-value 0.309) on the dependent variable NPM. Thus, it can be said that liquidity management factor significantly influencing the profitability and overall profit margin of the industry after the recession period. Therefore, in both the cases profitability (ROCE) and profit margin (NPM) are influenced by liquidity management factor indicating that holding of moderate amount of liquidity in hand can accelerate the profit of the industry.

VII. Conclusion

The present study deals with the analysis of the financial performance of selected units in the steel industry in India. Several financial ratios from different aspects are considered in the present study like CR, QR and AQR from short-term liquidity, Here, factor analysis and multiple regression analysis are applied to test the structure in the relationship of the variables under the study and to measure the impact of other financial ratios

on the profitability during the post recession period. The present study reveals that liquidity factor has the positive effect on the profitability of the industry during the post recession period. Positive relation between profit and liquidity factor implies that the level of the liquidity in Indian steel companies influences the extent of profitability and growth of the firm. This finding is being supported by the previous work done by Padachi (2006), and Renato Schwambach Vieira (2010) who asserts that liquidity has a positive impact on profitability. Hirigoyen (1985) whose study shows that over the medium and long run the relationship between liquidity and profitability could become positive in the sense that low liquidity would result in a lower profitability because of greater need for loans and low profitability would not generate sufficient cash flow, thus forming a vicious cycle.

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Appendix: 1

Table 1: Market Share of Sample Companies

Sl No	Name of Companies	Market Share
1	Jsw Steel	17.55
2	Steel Authority Of India	17.41
3	Tata Steel Limited	15.91
4	Jindal Steel And Power Limited	5.10
5	Bhushan Steel	4.05
6	Uttam Glava	2.65
7	Jindal Saw	2.51
8	Jindal Stainless	2.29
9	Uttam Value Steel	1.93
10	Welspun Corp	1.88
11	National Steel	1.48
12	Usha Martin	1.43
13	Sujana Metal	1.31
14	Monnet Ispat	1.21
15	Surya Roshni	1.09
16	Mukund	1.07

	TOTAL	**78.88**

Appendix: 2

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.623
Bartlett's Test of Sphericity	Approx. Chi-Square	20.826
	df	10
	Sig.	.022

Table 3: Communalities

	Initial	Extraction
QR	1.000	.964
ITR	1.000	.951
DTR	1.000	.979
TDTA	1.000	.993
ICR	1.000	.937
Extraction Method: Principal Component Analysis.		

Table 4: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.706	74.117	74.117	3.71	74.117	74.117	3.67	73.469	73.469
2	1.118	22.368	96.485	1.12	22.368	96.485	1.15	23.015	96.485
3	.106	2.113	98.597						
4	.061	1.223	99.820						
5	.009	.180	100.000						
Extraction Method: Principal Component Analysis.									

Table 5: Rotated Component Matrix[a]

	Component	
	1	2
QR	.949	
ITR	.974	
DTR	.970	
TDTA		.995
ICR	.938	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		

Table 6: Regression Analysis Result

Dependent Variable	**Independent Variables**	**Beta**	**t-Value**	**p-value**	**Model**
ROCE	Liquidity Management	0.943	6.639	0.007	R-Square=0.939 Adj R-Square=0.899 F-Value=23.273 p-value=0.015
	Debt Management	0.224	1.574	0.214	
NPM	Liquidity Management	.957	7.027	.006	R-Square= 0.944 Adj R-Square=0.907 F-Value=25.438 p-value=0.013
	Debt Management	.167	1.223	.309	

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