SHORT-TERM LIQUIDITY MANAGEMENT- A STUDY OF INDIAN STEEL COMPANIES

Dr. Amalendu Bhunia

Affiliation: Reader in Commerce, Fakir Chand College under C.U., Diamond Harbour, West Bengal, India.
bhunia.amalendu@gmail.com

ABSTRACT

The overall efficiency is vital from the viewpoint of short-term liquidity and at the same time proper plane of profitability is required for the business enterprises. Consequently, the affiliation between short-term liquidity and profitability is one of the most imperative areas necessitating management analysis. In the present study, two private sector steel companies operating in India has been selected. For analysis, accounting ratios and statistical tools i.e., A.M., C.V., multiple correlation and regression has been used. Keeping this in view, a study of managing liquidity of the selected private sector steel companies is undertaken in the present work.

Keywords: Secondary data, multiple regression analysis, financial management, Indian steel, performance.

Introduction:

Management of working capital has profitability and liquidity implications. That is why; working capital proposes a familiar front for profitability and short-term liquidity management. To reach optimal working capital management firm manager should control the trade off between profitability and short-term liquidity accurately. An optimal working capital management is expected to contribute positively to the creation of firm value.

The crucial part in managing working capital is required maintaining its liquidity in day-to-day operation to ensure its smooth running and meets its obligation (Eljelly, 2004). Liquidity 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. A study of liquidity is of major importance to both the internal and the external analysts because of its close relationship with day-to-day operations of a business (Bhunia, 2010). Dilemma in liquidity management is to achieve desired trade off between liquidity and profitability (Raheman et all, 2007). Referring to theory of risk and return, investment with more risk will result to more return. Thus, firms with high liquidity of working capital may have low risk then low profitability. Conversely, firm that has low liquidity of working capital, facing high risk results to high profitability. The issue here is in managing working capital, firm must take into consideration all the items in both accounts and try to balance the risk and return (Lee et all, 2008).

Since privatisation policy, the Government of India has opened up the floodgates for multinationals to participate in the domestic market of the country. The new alterations in the policy are likely to bring in vast changes from an erstwhile near monopoly to a highly competitive environment around public sector, forcing them to modify their behavior and carry out changes to develop competitive capabilities to meet new challenges ahead.

At the same time, the private sector investment in India was increased rapidly. But the production capacity and growth rate in the private sector did not increase promptly due to under-utilisation and poor financial management in terms of liquidity, solvency, operating efficiency and profitability especially in case of Indian steel industry.

This call for a full diagnosis of the malady, that is identification, analysis and quantification of the interfering constraints in achieving full utilisation of the capacities, thus opens a vast field for research and enquiry. In the present study, therefore; an attempt has been made to examine and evaluate the management of short-term liquidity of the private sector companies as a factor accountable for poor performance in the steel Industry in India.

Review of Related Literature:

A brief review of the different pains of research in the field is attempted in the following paragraphs.

Agarwal (1988) devised the working capital decision as a goal programming problem, giving primary importance to liquidity, by targeting the current ratio and quick ratio. The model included three liquidity goals, two profitability goals, and, at a lower priority level, four current asset sub-goals and a current liability sub-goal (for each component of working capital). In particular, the profitability constraints were designed to capture the opportunity cost of excess liquidity (in terms of reduced profitability).

Rafuse (1996) quarreled that attempts to improve working capital by delaying payment to creditors are counter-productive, and that altering debtor and creditor levels for individual tiers within a value system will rarely produce any net benefit. He proposed that stock reduction generates system-wide financial improvements and other important benefits, and suggested that, to achieve this, companies should focus on stock management strategies based on "lean supply- chain" techniques.

Garcia-Teruel and Martinez-Solano (2007) studied the effects of working capital management

on the profitability of a sample of small and medium-sized Spanish firms. They found that managers can create value by reducing their inventories and the number of days for which their accounts are outstanding. Moreover, shortening the cash conversion cycle also improves the firm's profitability.
Chakraborty (2008) evaluated the relationship between working capital and profitability of Indian pharmaceutical companies. He pointed out that there were two distinct schools of thought on this issue: according to one school of thought, working capital is not a factor of improving profitability and there may be a negative relationship between them, while according to the other school of thought, investment in working capital plays a vital role to improve corporate profitability, and unless there is a minimum level of investment of working capital, output and sales cannot be maintained - in fact, the inadequacy of working capital would keep fixed asset inoperative.
Singh (2008) found that the size of inventory directly affects working capital and its management. He suggested that inventory was the major component of working capital, and needed to be carefully controlled.

Singh and Pandey (2008) suggested that, for the successful working of any business organization, fixed and current assets play a vital role, and that the management of working capital is essential as it has a direct impact on profitability and liquidity. They studied the working capital components and found a significant impact of working capital management on profitability for Hindalco Industries Limited.
The conclusive sum of this retrospective review of relevant literature produced till date on the offered subject reveals wide room for the validity and originates of this work and reflects some decisive evidences that affirm its viability, as may be marked here it. Nor has any previous research examined the short-term liquidity position, efficiency and the existence of liquidity and profitability of private sector steel companies. No study has incorporated in this fashion before the present one.

Objectives of The Study:

The main object of the present study is to examine the overall efficiency of the management of short-term liquidity in selected private sector steel companies. More specifically it seeks to dwells upon mainly the following issues:

(i) To observe the working capital as well as liquidity position and area of weaknesses, if any, of the selected companies under the study;
(ii) To search the liquidity-profitability relationship;
(iii) To make some suggestions and specific recommendations for improvement of the liquidity management.

Hypotheses of The Study:

The study has pursued to test the following null hypothesis with reference to steel industry in India:

Hypothesis 1
H_o: Liquidity position is not satisfactory;
H_1: Liquidity position is satisfactory;

Hypothesis 2
H_o: Solvency position is not satisfactory;
H_1: Solvency position is satisfactory;

Hypothesis 3
H_o: inventory management is not satisfactory;
H_1: inventory management is satisfactory;

Hypothesis 4
H_o: receivable management is not satisfactory;
H_1: receivable management is satisfactory;

Hypothesis 5
H_o: payable management is not satisfactory;
H_1: payable management is satisfactory;

Hypothesis 6
H_o: relationship does not exist between liquidity indicators and profitability indicators;
H_1: relationship exists between liquidity indicators and profitability indicators;

Methodology of The Study:

The data utilized in this study is extracted from the CMIE database. The purposive sample design method was applied in this analysis. Preferred samples of private sector steel companies from the year of 2002 to 2010 were utilized in this analysis. The definitions of "private" are: (i) part of the economy that is not state controlled, (ii) run by individuals and companies for profit, (ii) encompasses all for-profit businesses that are not owned or operated by the government and (ii) in most free-market economies, the private sector is the sector where most jobs are held.
The used of a preferred sample of private sector might introduce a potential firm's success bias (Bhunia, 2009). It is claimed that the potential for success is overstated using this technique. However, it is worried that the bias may or may not be important depending on the usage of the model. If the model is used to rank the firms for the potential success in order to perform a more detailed analysis, then the bias is not important. However, if the model is used to identify investment portfolio selection, then the bias is significant.
A total of two successful companies were identified during the year of determination. Table 1, below, disclosed the name of successful firms.

Table-1: Name of Successful Firms

No.	Name of the Companies
1.	Tata Steel Ltd.
2.	JSW Steel Ltd.

The sample firms used in this study came from same industries. Due to the controlled sample volume for steel industry, the research focuses on the private sector industry sector. After some investigation, steel Industry has been singled out for research in the present study. This is definitely the backbone of economic growth in any industrial country. A thick relationship has been found between the level of economic growth and the quantum of steel consumption in developed as well as developing countries.

The dependent variable is defined as the profitability of the sample firms. The independent variable is interpreted as the commonly used financial ratios. The ratios used are chosen from those utilized by Bhunia (2009), Refuse (1996) and Singh et all (2008). An itemized listing of the variables is accessible in table 2.

Table-2: List of Ratios Examined

	Independent variables		Dependent variables
V1.	Current ratio	1.	Return on Capital Employed
V2.	Liquid ratio		
V3.	Absolute Liquid ratio		
V4.	Short-term Debt-Equity ratio		
V5.	Age of inventory		
V6.	Age of Debtors		
V7.	Age of Creditors		

Present Status Of Indian Steel Industry With Comparison To Global Scenario:

Present status of the Indian Steel Industry is primarily a raw material based industry as for the production of one tonne of steel; an integrated plant consumes 4 tonne of raw materials. India with its abundant availability of high grade Iron ore, the requisite technical base and cheap skilled labour is thus well placed for the development of steel industry and to provide a strong manufacturing base for the metallurgical industries. The per capita consumption of steel is 33.0 kg is also well below even the World average of 173.4 kg while 1216.7 kg in UAE, 371.4 kg in USA and 610.2 kg in Japan, as per IISI statistics in 2005[4].

The world production of crude steel has gone up during the last 10 years (1997 to 2006) from 799 MT to 1244 MT, as per the latest information of IISI. Although this fantastic growth of the world steel production about 455 MT in 10 years, it looks previous 40 years to achieve that same growth. However it was not evenly achieved by all the countries and mainly due to the exceptional performance of Chinese Steel Industry, to extent also of India and such few other steel producing countries. China alone increased its steel production during the last 10 years from 109 MT to 423 MT that means by about 314 MT. India also increased its production during that time from 24 MT to 44 MT [5]. The major steel producing countries like Japan, Germany, Italy, Russia, USA, etc., although increased their steel production marginally during the last decade, their growth rate was very low compared to China and India etc. The trend growth in the year 2010 is also quite encouraging. Finished steel production in India has already reached to the level of about 64 MT in 2009-10 [6], higher than in 2006-07. If this growth rate continues, India is expected to produce more than 75 MT within 5 years and the national target of 100 MT (for the year 2020) may be achieved even by the year 2015. Increasing trend of Indian steel industry is described in a table as compare to 2001-02.

Table -I: Increasing Trend of Indian Steel Statistics during this century

Items	2001-02 (MT)	2006-07 (MT)	2009-10 (MT)
Electric Energy Generation	517 bn KWH.	663 bn KWH.	885 bn KWH.
Automobiles	5.32	10.51	16.14
Iron Ore	84	161	228
Crude Steel	28	45	71
Finished Steel (Mild)	31	49.3	63.7
Sponge Iron	5.7	16.3	28.4
Imports of Finished Steel	1.27	4.42	6.74
Exports of Finished Steel	2.7	4.75	8.19

Source: Steel Scenario Yearbook 2010

As a result India is holding the 7th place in the world of steel producing countries in 2006 [7] and 5th place in 2009-10. For that growth, India needs comprehensive programme for development of infrastructure of steel industry including mining, railways, road net work, power net work etc. Simultaneously, the growth of processing industries like automobiles, white goods industries as well as construction of building, bridges etc. should be accelerated.

Whether we will be able to achieve that goal in this present 21st century is still remain unanswered due to various interest-clash of the development and less developed economies of the world. But, it is certain that even by doubling the present production of steel in the future decades, the need of more steel will remain unchallenged in the world in this century also.

Meaning And Concept of Liquidity:

The term 'Liquidity' means the debt-paying ability of a concern when it becomes due. Liquidity may be defined as "The ability to realise value in money - the most liquid among all assets. It has two dimensions – (a) the time required to convert the assets into money and (b) the certainty of the realised price[7]". Corporate liquidity covers the quantum of current/liquid assets, their structure, the circular flow of these assets and technical solvency in the sense of measuring the extent of current assets as cover over short-term obligations.

Measurement of Liquidity Positions:

Generally current ratio, liquid ratio, absolute liquid ratio, debt-equity ratio, age of inventory, age of debtors and age of creditors, cash to average daily cost of sales (in days), operating cash flow to sales are very useful in ascertaining the short-term debt-paying ability or liquidity of a concern. For measuring liquidity position, appropriate level of short-term liquidity is required with whom comparison can be made. As such, grand industry average/industry average has been computed on the basis of all the operating steel companies in India. Comparison of company-wise various liquidity ratios with that of the grand industry average/industry average, which is considered as a yardstick, would undoubtedly help in examining the pros and cons of the management of short-term liquidity.

Component-wise liquidity position of each of the selected steel companies under the study is drafted one by one in the sub-sections that follow.

Liquidity Position based on Current Ratio:

Current ratio is a measure of general liquidity and is most widely used to make the analysis of short-term liquidity of firm. A relatively high current ratio is an indication that the firm has liquidity and has the ability to pay the current obligation as and when they become due. Current ratios of operating selected two private sector steel companies are depicted in Table II.

Table: II – Descriptive Statistics based on Current Ratio

Year	Tata Steel Ltd.	J S W Steel Ltd.	Inds Avg.
Mean	1.06	0.54	0.96
S.E. of Mean	0.07	0.10	0.07
Maximum	1.47	1.08	1.33
Minimum	0.83	0.27	0.71
S.D.	0.20	0.31	0.22
C.V. (%)	18.87	57.41	22.92

Source: Statistics calculated from CMIE database

Table II shows that current ratio of Tata Steel Ltd. during the period of study is satisfactory as its average are 1.06 which is slightly higher than 0.96, grand industry average, which is taken as yardstick. This ratio in case of J S W Steel Ltd. (0.54) is very poor because the ratio is lower than industry average through out the study period. This indicates that they have not been able to meet their matured current obligations in every year under the study period.

Coefficient of variation of current ratio of industry as a whole is 22.92%. Coefficient of variation of current ratio is 18.87% in case of Tata Steel Ltd., which is lower than industry average. In the matter of the management of liquidity, it also shows consistency during the study period of these companies. In case of J S W Steel Ltd., coefficient of variation of current ratio is higher than industry average and as follows 57.41%, which shows less consistency during the study period of this companies. Greater variability in the current ratio indicates improper or less efficient management of fund inasmuch as the excess liquidity could have otherwise been used for investment purposes thereby enabling the company to lead a path of growth.

Liquidity Position based on Liquid Ratio:

Liquid ratio is more rigorous test of liquidity than current ratio. A high liquid ratio is an indication that the company has liquidity and ability to meet its current liabilities in time. But a low liquid ratio represents that liquidity position of the company is not good. Liquid ratios of operating two private sector steel companies are portrayed in Table III.

As per Table III, a very unsatisfactory liquidity position is seen in case of J S W Steel Ltd. with an average of 0.12 and 0.07 and it is lower than industry average throughout the study period in J S W Steel Ltd. It is notable that negative liquid ratio is also seen in J S W Steel Ltd. Liquid ratio of Tata Steel Ltd. is satisfactory with averages of 0.47 under the study period; because it is more than grand industry average of 0.32, which is taken as yardstick. This indicates that they have been able to meet their matured current obligations in every year under the study period.

Table: III - Descriptive Statistics based on Liquid Ratio

Year	Tata Steel Ltd.	J S W Steel Ltd.	Inds Avg.
Mean	0.47	0.12	0.32
S.E. of Mean	0.04	0.04	0.05
Maximum	0.68	0.36	0.60
Minimum	0.34	-0.02	0.20
S.D.	0.11	0.11	0.16
C.V. (%)	23.40	91.67	50.00

Source: Statistics calculated from CMIE database

Coefficient of variation liquid ratio of J S W Steel Ltd. is 91.67% is higher than whole industry average of 50.00%. It indicates less consistency during the study period in these companies. Again in case of Tata Steel Ltd., coefficient of variation of liquid ratio is 23.40%, which is lower than whole industry average. In the matter of the management of liquidity, it indicates consistency in these companies during the study period because it is lower than the industry, as a whole, coefficient of variation is 50%. It is clear from the above study; greater variability in the liquid ratio indicates improper or less efficient management of fund inasmuch as the excess liquidity could have otherwise been used for investment purposes thereby enabling the company to lead a path of growth.

Liquidity Position based on Absolute Liquid Ratio:

Cash and near cash is the most liquid asset. Absolute liquid ratio is more accurate test of liquidity than current and liquid ratio. The ratio of cash and near cash to current liabilities is taken as absolute liquid ratio, which is considered as most effective indicator to test the absolute liquidity position of any enterprise. In determining the cash, inventories and accounts receivable are deducted from current assets. Absolute liquid ratio of operating two private sector steel companies is shown in Table IV.

Table: IV – Descriptive Statistics based on Absolute Liquid Ratio

Year	Tata Steel Ltd.	J S W Steel Ltd.	Inds Avg.
Mean	0.23	- 0.01	0.13
S.E. of Mean	0.04	0.02	0.05
Maximum	0.41	0.06	0.41
Minimum	0.08	-0.11	0.01
S.D.	0.11	0.06	0.15
C.V. (%)	47.83	- 600.00	115.38

Source: Statistics calculated from CMIE database

It is interesting to seen from Table IV that average of absolute liquid ratio in case of J S W Steel Ltd. is (-) 0.01, not just only poor, it is also negative. This indicates that the above three company does not maintained any liquid cash (taken short-term borrowings as a spontaneous source for which interest is to be paid, erosion of profits is the ultimatum) to meeting short-term matured obligations and day to day expenditures. From the viewpoint of short-term liquidity it is observed that this ratio is satisfactory in the case of Tata Steel Ltd. is 0.23.

Coefficient of variation of absolute liquid ratio of industry as a whole is 115.38%. Coefficient of variation of absolute liquid ratio is 47.83%, (-) 600.00% in case of Tata Steel Ltd., J S W Steel Ltd. which is lower than industry average. In the matter of the management of liquidity, it also shows perfect consistency during the study period of these companies. However, greater variability in the cash position ratio indicates improper or less efficient management of cash inasmuch as the excess liquidity could have otherwise been used for investment purposes thereby enabling the company to lead a path of growth.

Liquidity Position based on Short-term Debt-Equity Ratio:

Short-term debt-equity ratio is an indicator of solvency as well as liquidity position and also important for soundness of financial position as well as financial policies in a short period of the firm. It is measures the direct proportion of debt to equity capital. It is a proportion of outside liabilities and tangible net worth relating to short period of the company. It also indicates the proportion of owners' stake in the business. In other words, this indicates the extent to which the firm depends upon outsiders for its existence. The ratio provides a margin of safety to the creditors. If the ratio is over 100%, it is indicates a highly geared company and any prudent lender will not be will to extend loan finance to such business. Short-term debt-equity ratios of operating two private sector steel companies are depicted in Table V.

Table: V – Descriptive Statistics based on Short-term Debt-Equity Ratio

Year	Tata Steel Ltd.	J S W Steel Ltd.	Inds Avg.
Mean	1.06	9.68	2.02
S.E. of Mean	0.15	3.97	0.26
Maximum	1.51	34.90	3.02

Minimum	0.26	1.03	0.87
S.D.	0.46	11.91	0.79
C.V. (%)	43.40	123.04	39.11

Source: Statistics calculated from CMIE database

Table V shows that debt-equity ratio of JSW Steel Ltd. is 9.68, which is higher than 2.02, grand industry average, which is taken as yardstick. This indicates the company is able to meet their matured current obligations in every year under the study period. In the case of Tata Steel Ltd. (1.06), it is very poor because the ratio is lower than industry average throughout the study period. This indicates an unfavourable condition to assemble their matured obligations in time.

Coefficient of variation of debt-equity ratio of Tata Steel Ltd. and JSW Steel Ltd. is 43.40%, 123.04%respectively. This indicates less consistency and thus, the companies under study not only depends upon short-term outsiders but also very dependent on the long-term sources. While perfect consistency is seen for the remaining companies during the study period because the industry, as a whole, coefficient of variation is 39.11.

Liquidity Position based on Age of Inventory:

Age of inventory establishes relationship between the costs of goods sold and average stock. This ratio measures the velocity of conversion of stock into sales. Usually, a high inventory turnover indicates efficient management of inventory because more frequently the stock is sold, the lesser amount of money is required to finance inventory. A low inventory turnover ratio indicates inefficient management of inventory, over investment in inventories, sluggish business, and poor quality of goods that lead to lower profit as compared to total investment.

The age of inventory of operating two private sector steel companies is tabulated in Table- VI.

Table: VI – Descriptive Statistics based on Age of Inventory

Year	Tata Steel Ltd.	J S W Steel Ltd.	Inds Avg.
Mean	32.53	10.37	42.48
S.E. of Mean	2.33	1.89	6.56
Maximum	42.59	17.43	71.99
Minimum	23.78	3.19	21.40
S.D.	7.00	5.66	19.69
C.V. (%)	21.52	54.58	46.35

Source: Statistics calculated from CMIE database

As per Table VI, age of inventory shows very satisfactory trend in case of all the companies under the study as compared to grand industry average of 42.48. Age of inventory in case of JSW Steel Ltd. is less than industry average throughout the study period and for remaining companies under the study it is more or less than industry average due to inefficient inventory control policy.

Coefficient of variation of the age of inventory of J S W Steel Ltd. is 54.58%, which shows less consistency in the case of liquidity management because in the industry, as a whole, coefficient of variation is 46.35%. While coefficient of variation in case of remaining companies under the study is less variable that indicates more consistency from the viewpoint of liquidity. It is clear from the study, greater variability in the age of inventory indicates improper or less efficient management of inventory policy inasmuch as low inventory indicates unnecessary recurring expenditure in respect of order placing and

receiving whereas high inventory results in unnecessary blockage of money that could otherwise have been invested.

Liquidity Position based on Age of Debtors:

Age of debtors' ratio gives an indication of the efficiency of the credit and collection policy of the firm and it will directly affect the liquidity position of the company. It is a test of speed in which debtors are converted into cash. Lower the debtors to sales ratio, better is the liquidity of debtors and it means prompt payment by the customers. Age of debtors of operating two private sectors steel is shown in Table VII.

Table: VII – Descriptive Statistics based on Age of Debtors'

Year	Tata Steel Ltd.	J S W Steel Ltd.	Inds Avg.
Mean	50.15	1546.60	47.04
S.E. of Mean	9.73	1336.70	5.65
Maximum	91.25	12166.67	67.59
Minimum S.D.	11.94	13.62	24.68
C.V. (%)	29.18	4010.10	16.96
	58.19	259.28	36.05

Source: Statistics calculated from CMIE database

It is observed from Table VII that the age of debtors during the period of study fluctuate between 13.62 days to 12166.67 days with an average of 1546.60 days in the case of J S W Steel Ltd. This indicates unsatisfactory and very poor situation. This ratio is not satisfactory in case of Tata Steel Ltd. as disclosed by Table VII. But it is shows that in coming Years Company will be able to control their debtors and collection period because trend of this ratio is decreased. Table VII also shows perfect consistency in case of these companies because in the industry, as a whole, coefficient of variation is 36.05%. While coefficient of variation of the age of debtors of Tata Steel Ltd. and J S W Steel Ltd., is 58.19%, 259.28% respectively. This indicates less consistency in case of these companies. It is clear from the study that there is greater variability in the age of debtors indicating improper or less efficient management of fund inasmuch as the fund for working capital shall not be available according to pre-determined plans. Moreover, there is a consequent increase in the bad debt risk.

Liquidity Position based on Age of Creditors:

Age of creditors gives an indication of efficiency of the credit and payment policy of the firm and liquidity position directly depends on this period. Higher the credit payment period the longer is the age of creditors as well as better is the management of liquidity whereas shorter the age of creditors shows inefficient and poor payment policy that is accountable to decrease current liabilities (credit) burden and suffering condition of liquidity position. Age of creditors of operating four private sector steel companies is furnished in Table VIII.

Table: VIII – Descriptive Statistics based on Age of Creditors'

Year	Tata Steel Ltd.	J S W Steel Ltd.	Inds Avg.
Mean	89.66	271.59	69.97
S.E. of Mean	3.13	71.61	4.17
Maximum	102.82	715.69	84.30

Minimum	76.84	73.15	51.34
S.D.	9.40	214.82	12.51
C.V. (%)	10.48	79.10	17.88

Source: Statistics calculated from CMIE database

Table VIII shows that average age of creditors in case of JSW Steel Ltd. it is very high, which indicate better management of the liquidity. Table VIII also exposed that Tata Steel Ltd. has lengthened period. It gives a clear indication of very satisfactory short-term liquidity.
Coefficient of variation of age of creditors of J S W Steel Ltd. is 79.10%, which is higher than whole industry average of 17.88%. It indicates less consistency during the study period in these companies. Again in case of Tata Steel Ltd., coefficient of variation liquid ratio is 10.48% respectively, which is lower than whole industry average. In the matter of the management of liquidity, it indicates more consistency in these companies during the study period because it is lower than the industry, as a whole, coefficient of variation is 17.88%. It is obvious that there is a lower variability in the age of creditors indicating efficient management of payment policy.

Liquidity And Profitability Analysis:

The overall efficiency is vital from the viewpoint of short-term liquidity and at the same time proper plane of profitability is required for the business enterprises. It is important for the firm to preserve an adequacy or adequate level of working capital because inadequate level of working capital impairs profitability. Consequently, the affiliation between short-term liquidity and profitability is one of the most imperative areas necessitating management analysis. Profitability of the business may be dependent on many factors together with the adequate level of liquidity of a concern. Therefore, the present area endeavors to examine the relationship between short-term liquidity and profitability of the selected steel companies under the study.

Liquidity-Profitability Relationship:

Liquidity-profitability relationship is linked with the continuance of the appropriate intensity of working capital. This concept tries to strike a level of liquidity that offers a relaxed balance of liquidity and profitability, that is to say, the investment of the company in working capital must be sufficient. It may generally be assumed that there is always a negative relationship between the two. But it is not true in all the cases. The existence of a linear relationship, though not continuous, between profitability and liquidity corresponding to the holding of current assets at least up to a certain level by firms, is not an impracticable proposition[8].
To assess the liquidity-profitability relationship of selected steel companies under the study, it is important to study liquidity indicators, namely, current ratio (CR), liquid ratio (LR), absolute liquid ratio (ALR), debt-equity ratio (DER), age of inventory (AOI), age of debtors (AOD) and age of creditors (AOC) and the most popular profitability ratio, return on capital employed (ROCE). To study the mutual disparities of these relationships, multiple correlation and multiple regression analysis have been taking up.
In order to evaluate the association between the liquidity and profitability of selected steel companies in India in detail with the help of above-mentioned measures at a time, we sketched them in the paragraphs that follow.

Joint Impact of Liquidity Indicators on Profitability of Tata Steel Ltd.
Multiple correlation and multiple regression analysis of Tata Steel Ltd. have been tabulated in Table IX.

Table- IX: Multiple Correlation and Multiple Regression Analysis of Tata Steel Ltd.

Variable	β	Std. Error	t value	Significance	
Constant	368.747	56.443	6.533	0.097	R = 0.999
CR	55.506	25.772	2.154	0.277	R^2 = 0.998
LR	(-) 230.48	83.460	(-) 2.762	0.221	Adj. R^2 = 0.985
ALR	40.476	47.959	0.844	0.554	Std. Error Of the
DER	(-) 94.08	16.771	(-) 5.610	0.112	R = 2.55793
AOI	3.143	0.666	4.717	0.133	
AOD	1.066	0.394	2.709	0.225	
AOC	(-) 4.017	0.722	(-) 5.565	0.113	

Source: Statistical results computed from CMIE database

The strength of the relationship between the dependent variable, ROCE and all the independent variables taken together and the impact of these independent variables on the profitability are given in Table IX. It was observed from the above that an increase in CR by one unit; the ROCE increased by 55.506 units that were statistically significant at 1 per cent level. When LR increased by one unit, the ROCE decreased by 230.482 units, which was statistically significant at 1 per cent level. However, when ALR increased by one unit, the ROCE of the company increased by 40.476 units though the influence of ALR on ROCE was very significant. However, when DER increased by one unit, the ROCE of the company decreased by 94.083 units though the influence of DER on ROCE was very significant. Again, three important indicators of liquidity, AOI, AOD and AOC, increased by one unit, ROCE increased by 3.143 units and 1.066 units in case of AOI and AOD and decreased by 4.017 units in case of AOC respectively which was statistically at 1 per cent level.

The Multiple correlation coefficient between the dependent variable ROCE and the independent variables CR, LR, ALR, DER, AOI, AOD and AOC taken together was 0.999. It indicates that the profitability was highly responded by its CR, LR, ALR, DER, AOI, AOD and AOC. It is also evident from the value of R^2 that 99.8 per cent of variation in ROCE was accounted by the joint variation in CR, LR, ALR, DER, AOI, AOD and AOC.

Joint Impact of Liquidity Indicators on Profitability of J S W Steel Ltd.

Multiple correlation and multiple regression analysis of JSW Steel Ltd. have been depicted in Table X.

Table X: Multiple Correlation and Multiple Regression Analysis of JSW Steel Ltd.

Variable	β	Std. Error	t value	Significance	
Constant	37.107	49.234	0.754	0.589	R = 0.939
CR	10.367	31.431	0.330	0.797	R^2 = 0.882
LR	(-) 49.07	93.699	(-) 0.524	0.693	Adj. R^2 = 0.056
ALR	(-) 20.85	376.204	(-) 0.055	0.965	Std. Error Of the
DER	(-) 0.625	0.894	(-) 0.699	0.612	R = 10.9500
AOI	(-) 1.187	1.498	(-) 0.792	0.574	
AOD	(-) 0.001	0.002	(-) 0.398	0.759	
AOC	(-) 0.031	0.074	(-) 0.424	0.745	

Source: Statistical results computed from CMIE database

The relationship between the dependent variable, ROCE and all the independent variables taken together and the impact of these independent variables on the profitability, which is shown in Table X. It was observed that increase in CR by one unit; the ROCE increased by 10.367 units that were statistically

significant at 1 per cent level. For one unit increase in LR, the profitability of the company decreased by 49.069 units, which was statistically significant at 1 per cent level. However, when ALR increased by one unit, the ROCE of the company decreased by 20.850 units though the influence of ALR on ROCE was very significant. However, when DER increased by one unit, the ROCE of the company decreased by 0.625 units, which was statistically significant at 1 per cent level. Again, three important indicators of liquidity, AOI, AOD and AOC, increased by one unit, ROCE decreased by 1.187 units, 0.001 units and 0.031 units respectively, which was statistically at 1 per cent level.

The Multiple correlation coefficient between the dependent variable ROCE and the independent variables CR, LR, ALR, DER, AOI, AOD and AOC taken together was 0.939. It indicates that the profitability was perfectly responded by its CR, LR, ALR, DER, AOI, AOD and AOC. It is also evident from the value of R^2 that 88.2 per cent of variation in ROCE was accounted by the joint variation in CR, LR, ALR, DER, AOI, AOD and AOC.

Findings at A Glance:

(i) Rapid growth has been noticed in the private sector steel companies during privatization;

(ii) More and more investments have been made admirably in the private sector steel companies India immediately after LPG;

(iii) Liquidity position is more satisfactory in the case of TSL and unsatisfactory in the case of JSWSL;

(iv) Inventory management performance is unsatisfactory and poor in case of JSWSL means that there have been excessive or under blocking of funds in inventory.

(v) The performance of receivable management is also unsatisfactory in case of JSWSL during the study period. As a result, there has been heavy accumulation of receivables/low receivables and bad debt risk.

(vi) Payables management performance is unsatisfactory and poor in case of JSWSL that means that there have been excessive burden of current liabilities and provisions.

(vii) In spite of more investments and rapid growth in steel production, India is far lag behind than that of world steel scenario.

(viii) The slopes of the ROCE, that is, profitability equation associated with CR, LR, ALR, DER, AOI, AOD and AOC witnessed both positive and negative influences of variations in the independent variables. Out of the seven regression coefficients of the ROCE line, four coefficients that were associated with CR, ALR, AOI and AOD showed positive influences on the Profitability. There was a reduction in the profitability for a unit increases in the value of LR, DER and AOC. The coefficient of multiple determinations (R^2) makes it clear that 99.80 per cent of the total variation in the profitability of the company was explained by the seven independent variables CR, LR, ALR, DER, AOI, AOD and AOC. Adjusted 'R' square (R^2) signifies that 98.50 Per Cent of the variations in the ROCE of TSL are explained by the independent variable. Standard error of regression coefficients being very low certifies that there exists really line of estimates among the variables.

(ix) The slopes of the ROCE, that is, profitability equation associated with CR, LR, ALR, DER, AOI, AOD and AOC witnessed both positive and negative influences of variations in the independent variables. Out of the seven regression coefficients of the ROCE line, only one coefficient that was associated with CR showed positive influences on the profitability. There was a reduction in the profitability for a unit increases in the value of LR, ALR, DER, AOI, AOD and AOC. The coefficient of multiple determination (R^2) makes it clear that 88.20 per cent of the total variation in the profitability of the company was explained by the seven independent variables CR, LR, ALR, DER, AOI, AOD and AOC. Adjusted 'R' square (R^2)

signifies that 5.60 per cent of the variations in the ROCE of JSWSL are explained by the independent variable. Standard Error of regression coefficients being low certifies that there exists really line of estimates among the variables.

Test of Hypotheses:

To test the hypotheses, following inferences may be drawn from the above-mentioned findings:

Hypothesis 1
Liquidity position is very satisfactory in case of Tata Steel but very unsatisfactory in JSW Steel Company. Tata Steel satisfies the alternative hypothesis but JSW Steel Company satisfies the null hypothesis.

Hypothesis 2
Liquidity position is very satisfactory in case of Tata Steel but very unsatisfactory in JSW Steel Company. Tata Steel satisfies the alternative hypothesis but JSW Steel Company satisfies the null hypothesis.

Hypothesis 3
Inventory management performance is unsatisfactory and poor in case of JSW Steel under the study that means there have been excessive or under blocking of funds in inventory. JSW Steel Company satisfies the null hypothesis. Inventory management performance is satisfactory in case of Tata Steel under the study that means there has been optimum blocking of funds in inventory. Tata Steel Company satisfies the alternative hypothesis.

Hypothesis 4
The performance of receivable management is unsatisfactory in case of JSWSL during the study period i.e. satisfies the null hypothesis and the performance of receivable management is satisfactory in case of Tata Steel during the study period i.e. satisfies the alternative hypothesis.

Hypothesis 5
Payables management performance is unsatisfactory and poor in case of JSWSL during the study period i.e. satisfies the null hypothesis and the performance of payable management is satisfactory in case of Tata Steel during the study period i.e. satisfies the alternative hypothesis.

Hypothesis 6
There exists a relationship between liquidity and profitability indicators in case of both the companies under the study i.e. both the company satisfies the alternative hypothesis.

Suggestions And Recommendations:

This is the ultimate stage in which several proposals and suggestions have been offer; to overcome the noticeable problems in the study.

(i) Overall inventory management is required to be progressed in case of both the selected steel companies by way of proper application of inventory control system, such as, EOQ, JIT, ABC analysis, etc. and improvement of their sales management so as to reduce stock piling of finished goods;
(ii) Proper composition of net current assets should be sustained by means of the indexes of the Indian steel companies;
(iii) Liquidity position is very unsatisfactory in case of JSW steel company. To remove poor liquidity position of the above companies, further investment is required to be bringing in the form of liquid

resource for significant reduction in the weigh down of current liabilities in order to improve liquidity position;

(iv) On the whole, receivable management is not good enough in case of both the companies under the study. Solution to the enormous problem of receivables management, an effective professional co-ordination between sales, production and finance departments is called for. On time billing, timely reminders to defaulting customers and immediate action should be ensured. The investment in loans and advances should be minimised to the extent possible.

(v) Suitable awareness should be pre-arranged with careful examination of payment policy for the improvement of the management of payables in case of the entire companies. It should be made by way of prompt payment policy, keeping no idle cash in hand or investment, finance from long-term source and taking short-term loan with lower interest. However, it should repay in one accounting year, otherwise harm profitability.

Limitations of The Study:

(i) We have selected operating two private sector steel companies but not considered all the operating units as sample, which may leave some grounds of error;

(ii) Again, our study is based on the data and information relating to the year 2001-02 to 2009-10, that is, nine years period. But, even these data and information do not appear widespread. We are fully conscious that many more data and information would have made our study more exhaustive;

(iii) Study is purely based on private sector steel companies, we could not compare with the data and information of efficiently managed public sector companies for testing of liquidity position and its efficiency;

(iv) Special ratios used in the study are taken from CMIE data base.

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