

Importance of Liquidity Management on Profitability

¹Amalendu Bhunia and ²Sri Bidhan Brahma

¹Reader in Commerce, Fakir Chand College Under University of Calcutta,
Diamond Harbour, South 24-Parganas, PIN-743331, West Bengal, India

²University of Kalyani, West Bengal, India

Abstract: The main purpose of this study is to identify the effectiveness of working capital in terms of short-term liquidity of the private sector steel companies in India. Since LPG, to ensure swift economic development it was deemed essential that a sound steel production program with private sector on a formidable basis must be formulated. To some extent the priority given by the country failed to flourish due to poor capacity, under-utilisation and poor consumption. We select four private sector steel companies operating in India purposively in the present study. Liquidity position is more satisfactory in the case of TSL and unsatisfactory in the case of JSWSL. Cash management performance is weak in case of JSWSL which means liquidity crunch exists. There exists a relationship between liquidity and profitability indicators.

Key words: Indian steel companies, liquidity indicators, multiple regressions, private sector, working capital

INTRODUCTION

The Government of India has opened up the floodgates for multinationals to participate in the domestic market of the country since LPG. In such a distorted economic environment in India, the private sector investment was automatically increased. But the production capacity and growth rate in the private sector did not increase promptly due to under-utilisation and poor financial management. Improper management of working capital in terms of liquidity, solvency, operating efficiency and profitability is accountable for inadequate financial performances (Bhunia, 2006).

Working capital management is a very sensitive area in the field of financial management (Joshi, 1995). Working capital management efficiency is also essential, particularly in manufacturing companies, where a major part of assets is poised of current assets (Horne and Wachowitz, 2000). Working capital management is one of the significant vicinities despite the fact that assembling the liquidity and profitability relations and comparisons of firms (Eljelly, 2004). Hence, working capital tenders a familiar obverse for profitability and liquidity management. Liquidity refers to the ability of a concern to meet its current obligations as and when these become due. As such, every company should maintain an appropriate level of working capital. If the company does not maintain this level, it affects profitability. Proper management of working capital and profitability, therefore, ensures liquidity and profitability positions (Horne, 1973). Liquidity-profitability relationship is associated with the maintenance of the proper level of

working capital. Working capital management technique which is a sine-qua-non for the liquidity and profitability exists in the private sector enterprises (Rao, 1980).

After some investigation, steel Industry has been singled out for research in the present study. To some extent the priority given by the country failed to flourish due to poor capacity, utilisation and consumption. Obviously, 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 importance of liquidity management on profitability as a factor accountable for poor financial performance in the private sector steel Industry in India.

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

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

Table 1: Current ratio of selected private sector steel companies

Year	Tata Steel Ltd.	Lloyds Steel Inds Ltd.	Kalyani Steel Ltd.	JSW Steel Ltd.	Inds. Avg.
1997-98	1.47	1.01	0.92	0.52	1.07
1998-99	1.13	0.67	0.84	0.31	0.90
1999-00	1.07	0.52	1.11	0.27	0.84
2000-01	0.92	0.36	1.78	0.38	0.80
2001-02	1.19	0.36	2.06	0.31	0.71
2002-03	0.90	0.32	1.71	0.32	0.79
2003-04	0.92	0.33	1.21	0.75	0.89
2004-05	0.83	0.40	1.27	0.95	1.27
2005-06	1.11	0.40	1.39	1.08	1.33
A.M.	1.06	0.49	1.37	0.54	0.96
S.D.	0.20	0.23	0.41	0.31	0.22
C.V. (%)	18.87	46.94	29.93	57.41	22.92

CMIE database

METHODOLOGY

We select four private sector steel companies operating in India in the present study i.e., (i) Tata Steel Ltd. (ii) Lloyds Steel Inds Ltd. (iii) Kalyani Steels Ltd. and (iv) J S W Steel Ltd.

The study relates to a period of 9 years, starting from 1997-98 and ending on 2005-06. For the purpose of study only secondary data have been used. The study is based on the secondary data obtained from the audited balance sheets and profit & loss accounts and also the annual reports of the respective companies. Besides, the facts, figures and findings advanced in similar earlier studies and the government publications are also used to supplement the secondary data.

In the course of analysis in this study, various accounting and statistical tools and techniques have been used. Accounting techniques includes ratio analysis, while among statistical techniques the A.M., S.D., C.V, test of significance (t-test), multiple correlation and multiple regression analysis, co-efficient of determination (R^2) and linear regression equations have been applied. The use of all these techniques at different places has been made in the light of requirement of analysis.

Working capital analysis: The effectiveness of working capital is of crucial importance if short-term liquidity position as well as short-term solvency position is very acceptable and at the same time, if judgement is made with its standard or benchmark. So, the present area compacts with the computation of short-term liquidity position of the selected private sector steel companies under the study.

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”.

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 four private sector steel companies are depicted in Table 1.

Table 1 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. Satisfactory current ratio is also observed in Kalyani Steel Ltd. (1.37). This indicates the company is able to meet their matured current obligations in every year under the study period. This ratio in case of JSW Steel Ltd. (0.54) and Lloyds Steel Inds Ltd. (0.49) 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

Table 2: Liquid ratio of selected private sector steel companies

Year	Tata steel Ltd.	Lloyds steel Inds Ltd.	Kalyani steel Ltd.	JSW Steel Ltd.	Inds. Avg.
1997-98	0.68	0.29	0.49	0.01	0.26
1998-99	0.53	0.14	0.52	- 0.02	0.20
1999-00	0.51	0.01	0.34	0.05	0.24
2000-01	0.37	0.02	0.46	0.16	0.23
2001-02	0.43	0.01	1.14	0.12	0.21
2002-03	0.37	0.02	0.81	0.11	0.25
2003-04	0.50	0.01	0.73	0.36	0.34
2004-05	0.34	0.06	0.65	0.18	0.58
2005-06	0.51	0.10	0.60	0.12	0.60
A.M.	0.47	0.07	0.64	0.12	0.32
S.D.	0.11	0.09	0.24	0.11	0.16
C.V. (%)	23.40	128.57	37.50	91.67	50.00

CMIE database

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 JSW Steel Ltd., Lloyds Steel Inds Ltd. and Kalyani Steel Ltd. coefficient of variation of current ratio is higher than industry average and as follows 57.41, 46.94 and 29.93%, respectively, 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 four private sector steel companies are portrayed in Table 2.

As per Table 2, a very unsatisfactory liquidity position is seen in case of J S W Steel Ltd. and Lloyds Steel Inds Ltd. with an average of 0.12 and 0.07 and it is lower than industry average throughout the study period except only 2003-04 in JSW Steel Ltd. and 1997-98 in Lloyds Steel Inds Ltd. It is notable that negative liquid ratio is also seen in JSW 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. Liquid ratio in case of Kalyani Steel Ltd. is very satisfactory and it is more the industry average throughout the study period. This indicates that they have been able to meet their matured current obligations in every year under the study period.

Coefficient of variation liquid ratio of J S W Steel Ltd. and Lloyds Steel Inds Ltd. is 91.67 and 128.57% 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. and Kalyani Steel Ltd., coefficient of variation of liquid ratio is 23.40

and 37.50%, respectively, 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 four private sector steel companies is shown in Table 3.

It is interesting to seen from Table 3 that average of absolute liquid ratio in case of JSW 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. Again, a very poor liquidity position is found in case of Lloyds Steel Inds Ltd. with an average of 0.01 and also five years of the study period it belong zero. From the viewpoint of short-term liquidity it is observed that this ratio is satisfactory in the case of Tata Steel Ltd. and Kalyani Steels Ltd. is 0.23 and 0.13, respectively.

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 and 100.00% in case of Tata Steel Ltd., J S W Steel Ltd. and Lloyds Steel Inds 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

Table 3: Absolute liquid ratio of selected private sector steel companies

Year	Tata steel Ltd.	Lloyds steel Inds Ltd.	Kalyani steel Ltd.	JSW steel Ltd.	Inds Avg.
1997-98	0.24	0.03	0.07	- 0.10	0.03
1998-99	0.22	0	0.03	- 0.11	0.01
1999-00	0.22	0	0.07	- 0.06	0.05
2000-01	0.08	0.01	0.07	0	0.04
2001-02	0.09	0	0.55	0.01	0.04
2002-03	0.18	0	0.09	- 0.02	0.07
2003-04	0.37	0	0.14	0.06	0.15
2004-05	0.24	0.01	0.05	0.06	0.35
2005-06	0.41	0.02	0.13	0.04	0.41
A.M.	0.23	0.01	0.13	- 0.01	0.13
S.D.	0.11	0.11	0.16	0.06	0.15
C.V. (%)	47.83	100.00	123.08	- 600.00	115.38

CMIE database

Table 4: Short-term debt-equity ratio of selected private sector steel companies

Year	Tata steel Ltd.	Lloyds steel Inds Ltd.	Kalyani steel Ltd.	JSW steel Ltd.	Inds Avg.
1997-98	1.51	1.65	0.71	2.42	1.93
1998-99	1.37	2.59	0.76	3.33	2.23
1999-00	1.33	7.24	0.72	4.85	2.21
2000-01	1.18	0	0.37	10.39	2.44
2001-02	1.37	0	0.35	24.24	3.00
2002-03	1.33	0	0.31	34.90	3.02
2003-04	0.78	0	0.65	4.64	1.58
2004-05	0.40	0	0.57	1.30	0.89
2005-06	0.26	0	0.29	1.03	0.87
A.M.	1.06	1.28	0.53	9.68	2.02
S.D.	0.46	2.43	0.19	11.91	0.79
C.V. (%)	43.40	1.89.84	35.85	123.04	39.11

CMIE database

companies. In case of Kalyani Steel Ltd. coefficient of variation of current ratio is higher than industry average and as follows 123.08%, which shows less consistency during the study period of this 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 liquidity position and also important for soundness of financial position as well as financial policies in a short period of the firm. It 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 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 four private sector steel companies are depicted in Table 4.

Table 4 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. Again, a very underprivileged debt-equity ratio is found in case of Lloyds Steel Inds Ltd. with an average of 1.28. In the case of Tata Steel Ltd. (1.06) and Kalyani Steels Ltd. (0.53) it is very poor because the ratio is lower than industry average through out 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., JSW Steel Ltd. and Lloyds Steel Inds Ltd., is 43.40, 123.04 and 189.84%, 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.

Table 5: Age of inventory of selected private sector steel companies

Year	Tata steel Ltd.	Lloyds steel Inds Ltd.	Kalyani steel Ltd.	JSW steel Ltd.	Inds Avg.
1997-98	31.99	6.24	30.75	15.43	71.99
1998-99	42.59	3.40	30.27	13.03	71.57
1999-00	41.95	6.46	62.39	17.43	54.40
2000-01	32.76	6.32	34.47	15.97	43.76
2001-02	25.24	4.17	28.06	6.35	39.63
2002-03	23.78	4.81	14.61	4.21	30.17
2003-04	25.44	4.48	11.58	3.19	23.09
2004-05	31.82	6.28	10.68	4.83	21.40
2005-06	37.17	10.77	22.32	12.89	26.35
A.M.	32.53	5.88	27.24	10.37	42.48
S.D.	7.00	2.15	15.86	5.66	19.69
C.V. (%)	21.52	36.56	58.22	54.58	46.35

CMIE database

Table 6: Age of debtors' of selected private sector steel companies

Year	Tata steel Ltd.	Lloyds steel Inds Ltd.	Kalyani steel Ltd.	JSW steel Ltd.	Inds Avg.
1997-98	73.74	71.01	162.95	1460.00	66.24
1998-99	91.25	145.42	153.36	12166.67	67.59
1999-00	78.83	282.95	328.83	73.00	61.66
2000-01	62.39	228.13	149.59	69.79	54.72
2001-02	56.50	299.18	131.77	48.86	51.34
2002-03	37.86	150.83	101.67	35.13	39.00
2003-04	24.65	108.63	66.00	34.89	31.08
2004-05	14.18	36.94	40.92	17.46	24.68
2005-06	11.94	19.66	51.99	13.62	27.06
A.M.	50.15	149.19	131.90	1546.60	47.04
S.D.	29.18	102.33	86.92	4010.10	16.96
C.V. (%)	58.19	68.59	65.90	259.28	36.05

CMIE database

Age of inventory indicates duration of inventory in organisation. It shows moving position of inventory during the year. If age of inventory is minimum it means companies activity position are satisfactory, they are able to sell their product within shorter period of time which indicate sound liquidity position of organisation. On the contrary, if age of inventory is too high, it indicates slow moving of stock due to lower demand of product or excessive production by company, due to stocking policy, which affected directly liquidity position of company. Inventory is one of the major items in current assets, which shows investment of working capital in stock. The age of inventory of operating four private sector steel companies is tabulated in Table 5.

As per Table 5, 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., Lloyds Steel Industries 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 JSW Steel Ltd. and Kalyani Steel Ltd. is 54.58 and 58.22% respectively, 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 four private sectors steel is shown in Table 6.

It is observed from Table 6 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 JSW Steel Ltd. This indicates unsatisfactory and very poor situation. This ratio is also not satisfactory in case of Lloyds Steel Inds Ltd. and Kalyani Steel Ltd. because its average during period of study comes to 149.19, and 131.90 days, which is too high. This ratio is not satisfactory in case of Tata Steel Ltd. as disclosed by

Table 7: Age of creditors' of selected private sector steel companies

Year	Tata steel Ltd.	Lloyds steel Inds Ltd.	Kalyani steel Ltd.	JSW steel Ltd.	Inds Avg.
1997-98	82.58	126.30	55.56	715.69	78.33
1998-99	102.82	155.32	84.69	445.12	84.30
1999-00	100.27	202.78	238.56	401.10	83.33
2000-01	95.05	140.93	127.62	296.75	80.40
2001-02	85.48	125.86	112.65	168.98	73.29
2002-03	76.84	82.58	72.56	132.73	61.86
2003-04	78.49	82.95	69.26	102.82	59.06
2004-05	89.90	61.97	64.26	73.15	51.34
2005-06	95.55	70.87	114.42	107.99	57.84
A.M.	89.66	116.62	104.40	271.59	69.97
S.D.	9.40	46.18	56.28	214.82	12.51
C.V. (%)	10.48	39.60	53.91	79.10	17.88

CMIE database

Table 6. 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 6 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., J S W Steel Ltd., Lloyds Steel Inds Ltd., Kalyani Steel Ltd. is 58.19, 259.28, 68.595 and 65.90%, 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 7.

Table 7 shows that average age of creditors in case of JSW Steel Ltd. it is very high, which indicate better management of the liquidity. Table 7 also exposed that Tata Steel Ltd., Lloyds Steel Inds Ltd., Kalyani Steel Ltd. have 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., Lloyds Steel Inds Ltd., Kalyani Steel Ltd., is 79.10, 39.60 and 53.91%, respectively, 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-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.

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 correlations 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 8.

The strength of the relationship between the dependent variable, ROCE and all the independent variables taken together and the impact of these

Table 8: Multiple correlation and multiple regression analysis of Tata Steel Ltd.

Variable	b	S.E.	t-value	Significance	
Constant	368.747	56.443	6.533	0.097	R = 0.999
CR	55.506	25.772	2.154	0.277	
LR	- 230.482	83.460	- 2.762	0.221	R ² = 0.998
ALR	40.476	47.959	0.844	0.554	
DER	- 94.083	16.771	- 5.610	0.112	Adj. R ² = 0.985
AOI	3.143	0.666	4.717	0.133	
AOD	1.066	0.394	2.709	0.225	S.E. of the
AOC	- 4.017	0.722	- 5.565	0.113	R = 2.55793

Statistical results computed from Annual Reports of the selected enterprises

Table 9: Multiple correlation and multiple regression analysis of Lloyds Steel Inds Ltd.

Variable	b	S.E.	t-value	Significance	
Constant	274.092	575.876	0.476	0.717	R = 0.814
CR	- 588.346	1336.659	- 0.440	0.736	
LR	881.221	2346.157	0.376	0.771	R ² = 0.662
ALR	5803.831	9840.534	0.590	0.661	
DER	22.861	44.725	0.511	0.699	Adj. R ² = - 1.701
AOI	- 24.842	44.579	- 0.557	0.676	
AOD	- 0.077	0.326	- 0.237	0.852	S.E. of the
AOC	0.180	0.726	0.248	0.845	R = 24.42945

Statistical results computed from Annual Reports of the selected enterprises

independent variables on the profitability are given in Table 8. 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% level. When LR increased by one unit, the ROCE decreased by 230.482 units, which was statistically significant at 1% 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% level.

The Multiple correlation coefficients between the dependent variable ROCE and the independent variables CR, LR, ALR, DER, AOI, AOD and AOC taken together were 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 R² that 99.8 % 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 lloyds Steel Inds Ltd: Multiple correlations and multiple regression analysis of Lloyds Steel Inds Ltd. have been depicted in Table 9.

Table 9 shows the strength of relationship between the dependent variable, ROCE and all the independent variables taken together and the impact of these independent variables on the profitability. It was observed that CR increase by one unit; the ROCE decreased by

588.346 units that were statistically significant at 1% level. When LR increased by one unit, the ROCE increased by 881.221 units, which was statistically significant at 1% level. However, when ALR increased by one unit, 5803.831 units also increase the ROCE of the company though the influence of ALR on ROCE was very significant. However, when DER increased by one unit, 22.861 units also increase the ROCE of the company 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 decreased by 24.842 units and 0.077 units in case of AOI and AOD and increased by 0.180 units in case of AOC respectively which was statistically at 1 % level.

The Multiple correlation coefficients between the dependent variable ROCE and the independent variables CR, LR, ALR, DER, AOI, AOD and AOC taken together were 0.814. It indicates that the profitability was almost perfectly influenced by its CR, LR, ALR, DER, AOI, AOD and AOC. It is also evident from the value of R² that 66.2 % 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 Kalyani Steel Ltd.: Multiple correlations and multiple regression analysis of Kalyani Steel Ltd. have been tabulated in Table 10.

Table 10 clears the strength of relationship between the dependent variable, ROCE and all the independent variables taken together and the impact of these independent variables on the profitability. It was observed that increase in CR by one unit; the ROCE decreased by 26.881 units that were statistically significant at 1% level. When LR increased by one unit, the ROCE decreased by

Table 10: Multiple correlation and multiple regression analysis of Kalyani Steel Ltd.

Variable	b	S.E.	t-value	Significance	
Constant	63.387	102.271	0.620	0.647	R = 0.948
CR	-26.881	23.150	-1.161	0.453	
LR	-2.707	95.079	-0.028	0.982	R ² = 0.898
ALR	18.372	120.531	0.152	0.904	
DER	-30.286	51.328	-0.590	0.661	Adj. R ² = 0.183
AOI	-0.135	2.244	-0.060	0.962	
AOD	-0.113	0.289	-0.391	0.763	S.E. of the
AOC	0.161	0.125	1.291	0.420	R = 7.68674

Statistical results computed from annual reports of the selected enterprises

Table 11: Multiple correlation and multiple regression analysis of JSW Steel Ltd.

Variable	b	S.E.	t-value	Significance	
Constant	37.107	49.234	0.754	0.589	R = 0.939
CR	10.367	31.431	0.330	0.797	
LR	-49.069	93.699	-0.524	0.693	R ² = 0.882
ALR	-20.850	376.204	-0.055	0.965	
DER	-0.625	0.894	-0.699	0.612	Adj. R ² = 0.056
AOI	-1.187	1.498	-0.792	0.574	
AOD	-0.001	0.002	-0.398	0.759	S.E. of the
AOC	-0.031	0.074	-0.424	0.745	R = 10.9500

Statistical results computed from annual reports of the selected enterprises

2.707 units, which was statistically significant at 1% level. However, when ALR increased by one unit, the ROCE of the company increased by 18.372 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 30.286 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 decreased by 0.135 units and 0.113 units in case of AOI and AOD and increased by 0.161 units in case of AOC, respectively which was statistically at 1% level.

The Multiple correlation coefficients between the dependent variable ROCE and the independent variables CR, LR, ALR, DER, AOI, AOD and AOC taken together were 0.948. 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 R² that 89.80 % 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 JSW Steel Ltd.: Multiple correlations and multiple regression analysis of JSW Steel Ltd. have been depicted in Table 11.

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 11. It was observed that increase in CR by one unit; the ROCE increased by 10.367 units that were statistically significant at 1% level. For one unit increase in LR, the profitability of the company decreased by 49.069 units, which was statistically significant at 1% 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% 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% level.

The Multiple correlation coefficients between the dependent variable ROCE and the independent variables CR, LR, ALR, DER, AOI, AOD and AOC taken together were 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 R² that 88.2 % of variation in ROCE was accounted by the joint variation in CR, LR, ALR, DER, AOI, AOD and AOC.

Findings at a glance:

- Rapid growth has been noticed in the private sector steel companies during privatisation.
- More and more investments have been made admirably in the private sector steel companies India immediately after LPG.
- In spite of more investments and rapid growth in steel production, India is far lag behind than that of world steel scenario.
- 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 % 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 % 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.

- 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 81.40 % 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 66.20 per cent of the variations in the ROCE of LSL 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.
- 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, two coefficients that were associated with ALR and AOC showed positive influences on the profitability. There was a reduction in the profitability for a unit increases in the value of CR, LR, DER, AOI and AOD. The coefficient of multiple determination (R^2) makes it clear that 89.80 % 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 18.30 % of the variations in the ROCE of KSL 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.
- 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 % 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 % 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.

SUGGESTIONS AND RECOMMENDATION

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

- Overall inventory management is required to be progressed in case of all 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.
- Proper composition of net current assets should be sustained by means of the indexes of the Indian steel companies.
- Liquidity position is very unsatisfactory in case of all the selected steel companies except KSL. 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.
- On the whole, receivable management is not good enough in case of the entire selected 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.
- 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.

- Multiple correlation of 0.814 in case of LSIL would be further improved through external involvement and government interference.

Limitations of the study:

- Study solely depends on the published financial data, so it is subject to all limitations that are inherent in the condensed published financial statements.
- We have selected operating four private sector steel companies but not considered all the operating units as sample, which may leave some grounds of error.
- Again, our study is based on the data and information relating to the year 1997-98 to 2005-06, that is, nine years period.
- Special ratios used in the study are taken from CMIE data base.

ACKNOWLEDGMENT

This is my proud privilege of expressing my deepest sense of gratitude and indebtedness to the the Chief

Librarian of the Indian Institute of Management (IIMC, Kolkata. My wife Smt. Binapani Bhunia and my daughter Ashesha Bhunia have endured all my failure of duty towards them. But for their enthusiastic sustain, assist and cooperation, it would not have been possible to complete this study.

REFERENCES

Bhunias, A., 2006. Liquidity management of public sector iron and steel enterprises in India. Peleman Industries Inc, U.S.A., pp: 4.

Eljelly, A., 2004. Liquidity-profitability tradeoff: An empirical investigation in emerging market. *Int. J. Comm. Manage.*, 14(2): 48-58.

Horne and Wachowitz, 2000. *Fundamentals of Financial Management*. 11th Edn., Prentice Hall Inc., pp: 2.

Horne, J.C.V., 1973. *Fundamentals of Financial Management*, Prentice Hall Inc. Englewood Cliffs, N.J., pp: 29.

Joshi, P.V., 1995. *Working Capital Management under Inflation*. 1st Edn., Anmol Publishers, pp: 20-93.

Rao, R., 1980. *Working Capital Management in Private Sector*. Prateeksha Publications, Jaipur, pp: 13-22.