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Research Article

A COMPARATIVE ANALYSIS OF WORKING CAPITAL MANAGEMENT IN DISTRESSED AND NON-DISTRESSED COMPANIES IN INDIAN STEEL SECTOR

***Jyoti Nair**

Faculty –Finance, N.LDalmia Institute of Management Studies and Research, Mumbai, India

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ABSTRACT

Indian steel sector is witnessing widespread financial distress with several companies, reporting net losses for the year ended 2017. Many companies are on the verge of bankruptcy. This has also put the bankers under tremendous pressure of bad loans (both existing and impending). Such a state of affairs calls for an urgent examination of factors which signal distress. Identification of early warning signal can help the stakeholders adopt timely pre-emptive measures to minimise losses. Working capital management is a critical factor affecting the profitability of companies. This paper is an attempt to compare working capital management between distressed and non-distressed companies in Indian steel sector. The objective is to identify important ratios that can discriminate a distressed company from a non-distressed one using Multivariate Discriminant Analysis. It is observed that Debtors Turnover ratio, Current ratio and Quick ratio are significant discriminators.

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INTRODUCTION

India is the third largest producer of steel in the world. Indian steel production is expected to reach 128.6 million tonnes by 2021. (IBEF sectoral report, 2017). Domestic consumption is surging with rising infrastructure needs and growing demand for automobiles. Consumption of steel has grown at a CAGR of 1.87% for the period 2008-17. Though the sector outlook is very positive, things have not been auguring well for steel sector in India and presently, there is widespread distress in Indian steel sector. As per the reports of Reserve Bank of India, of the 12 large accounts contributing to 7.7 lakh crores bad loans, 5 accounts are that of steel companies. In the year 2016-17, of the 13 large steel companies, 7 companies have reported net losses. 335 medium and small scale steel companies have reported a net loss of 5021 crores for the same period. (Capitaline Database) Several steel makers are on the verge of bankruptcy and seeking to divest their assets to reduce debt. Indian steel sector has been under tremendous pressure due to import glut and predatory pricing. Other reasons for distress is over ambitious acquisitions and capacity expansions. The sector is highly dependent on government policies with respect to anti-dumping laws and rationalisation of import duties. All these factors have led to many steel manufacturers reporting losses for several years depressing the capital markets and eroding investor wealth. Hence it becomes imperative to seek

factors that indicate distress so that stakeholders are forewarned.

Distress in a company can be read through signals provided by the company's financials. A thorough analysis of financial statements can throw light on distress causing factors. Research studies have shown that leverage, working capital management, asset utilisation influences a company's financial performance. Working capital management affects the short term solvency of a business. Even a very profitable firm will find itself bankrupt if it cannot meet its short term obligations, (Gibson, 2013). Technically, working capital is the difference between current assets and current liabilities. A company's ability to manage its current assets and current liabilities determines its immediate liquidity. Inventory management, receivables management, payables management and cash management are important components of working capital management. A prudent company ensures that its inventory levels are optimum, receivables are collected on time and maximum credit is availed from suppliers. Effective monitoring of inventories, receivables and payables ensures that a company manages its operating cycle without much reliance on long term funding. An increase in inventories and receivables leads to deployment of costly funds in current assets which affects profitability whereas a reduction in inventories and receivables leads to revenue generating opportunities. (Alireza *et al*, 2015).

*Corresponding author: **Jyoti Nair**

Faculty –Finance, N.LDalmia Institute of Management Studies and Research, Mumbai, India

Increase in working capital requires additional funding leading to high interest costs thereby increasing bankruptcy risks, (Kieschnick, 2013). It is observed that distress in a company first manifests by its inability to meet short term obligations, gradually moving to long term obligations and finally reaching a state of bankruptcy. Thus inadequate working capital management can trigger distress, (Banos Caballelo *et al*, 2013). Efficiency in working capital management is positively associated with analyst's forecasting accuracy. Longer the trade cycle, larger is the analyst's forecasting dispersion, (Gao and Wang, 2017). Identification of weaknesses in working capital management can enable managers and lenders to take remedial measures and prevent or mitigate distress.

This study seeks to examine in the context of Indian Steel sector:

1. Whether ratios indicating working capital management are significantly different for distressed and non-distressed companies?
2. Which ratio discriminates a distressed and a non-distressed firm?

Extensive studies have been done by scholars across the world examining the relationship between working capital management and profitability of companies. Ahsan Akbar (2014) studied companies 77 listed textile companies in China for the period 2007-13. It was observed that larger the days in trade cycle, lower is the performance. Managers have to focus on individual components of working capital cycle to enhance performance and efficiency. A study by Adrianna and Amrizah, (2015) examining the relationship between cash flow from operations and financial distress in Malaysian companies for the period 2006-13 revealed cash flows from operating activities to be an important factor affecting distress in companies and that companies not able to meet short term obligations are more likely to face distress. This highlights the importance of short term solvency in a company. Nihat Akta *et al*, (2015) examined 15541 US companies for the period 1982-2011 and observed that an optimum working capital policy improves the share price and value of the company. Daniel and Ambros, (2013) reviewed manufacturing and construction companies in Nairobi. A negative relationship between profitability and receivable in days and a positive relation between inventory turnover ratio was observed. A company can enhance value by optimising working capital management. Banos-Cabarello *et al*, (2013) observed that a financially constrained company is more likely to have a sub optimal working capital. They studied 258 UK companies for the period 2001-07 and pointed out that any deviation from optimal working capital policy destroys value. Supplier's credit is also a big influencer of distress Supplier credit is observed to partially substitute bank finance. There is a moderator effect of financial distress on supplier's credit, (Viana and Rodrigues, 2016). In the Indian context, studies have corroborated some of the observations made by the researchers. Ramachandra and Janakiraman (2009) in their analysis of paper industry in India observed that working capital efficiency has a positive impact on profitability. Current ratio and quick ratio are important factors affecting a company's Return on Investment (ROI), (Pandey and Sabamaithily, 2016). Singhania *et al* (2014) studied Indian manufacturing companies listed on BSE 500 and observed that cash conversion cycle can be used as a broad

measure of working capital management. Reduction in cash conversion cycle leads to an increase in profitability. Increase in day payables will result in improvement of performance of the firm. Arunkumar and Radharaman, (2012) studied 1211 manufacturing companies from different sectors in India. Positive relationship between Inventory Turnover in days and Payables Turnover in days with profitability was observed. Cash velocity and firm size were also found to be significant factors influencing profitability. Maheshwari and Reddy, (2012) studied Indian sugar companies in the state of Andhra Pradesh and observed that high operating cycle causes slow down and liquidity problems thereby leading to distress. Singh and Pandey, (2008) analysed the correlation between liquidity and profitability of aluminium company in India for the period 1990-2007. Current ratio, debtor's turnover ratio and working capital to Total Assets was found to have significant impact on profitability. Chaklader *et al* (2013) studied companies in Indian FMCG sector to examine the relationship between working capital and profitability. Receivable and Payable ratios were found to be significant factors whereas inventory turnover was not significant.

Different variables representing profitability and working capital efficiency have been used in existing research. Inventory Turnover days, Receivables Turnover days, Payables Turnover days, Cash conversion cycle, Current ratio, Quick ratio, working capital to total assets are some of the ratios used to examine working capital management.

The existing literature have established the relationship between working capital management and a company's profitability. However there is no consensus as to the most important individual working capital ratio which has the highest impact on profitability. Also a comparison between distressed and non-distressed companies can help identify the most critical factor that can indicate financial distress. This study purports to add value to existing literature by identifying the significant working capital ratios which can discriminate a distressed firm from a non-distressed one. The identified variables can provide early warning signals to managers, lenders and investors of a company so that appropriate and timely remedial measures can be taken to mitigate and minimise financial losses.

METHODOLOGY AND DATA SOURCES

Scope of study: Listed steel manufacturing companies in India are studied for the 5 year period 2012-2017.

Sample selected: 32 listed distressed companies in Indian steel sector were selected using Capitaline Plus Database. Distressed company is defined as a company incurring losses for 3 consecutive years. Companies reporting net losses in each block of 3 years i.e. 2013-14, 2014-16, and 2015-17 were identified. Companies appearing in more than one block were retained in the latest block. Small companies with less than Rs.100 crores turnover and companies with incomplete data were excluded from the study. Each of the selected distressed company was matched with a non-distressed company in the same block of three years. The final sample comprised of 32 distressed and 32 non-distressed companies.

Variables selected: 6 ratios reflecting working capital management were used as independent variables viz (i)

Inventory Turnover ratio, (ii) Debtors Turnover ratio, (iii) Working Capital Turnover ratio, (iv) Current ratio, (v) Quick ratio and (vi) Cash velocity ratio. (Annexure 2 lists the formulae for the selected ratios). These ratios indicate the efficiency or inefficiency in working capital management. The ratios were computed using the financial statements – Statement of Profit and Loss A/c and Balance Sheet of the selected companies. The financial statements were obtained from Capitaline Plus Database. The dependent variable is Distress Factor coded as 0 for distress and 1 for non-distress. 1344 observations were analysed.

Statistical Techniques used: Discriminant Analysis is a widely used technique for identifying discriminating factors between pre decided groups. Discriminant Analysis is used to predict group membership. This technique is used to determine a set of independent variables that discriminate between categories of dependent variables. The coefficients are estimated based on the principle that ratio of between group sum of squares and within group sum of squares is maximized to ensure that the group differ as far as possible. The statistical significance of the discriminant function is tested by Eigen values. Higher the Eigen values better is the function. Wilks' Lambda is another statistic to test the reliability of the function. Wilks' lambda is the ratio of within group sum of squares to total sum of squares. This statistic takes a value between 0 and 1. Lower the statistic, higher the significance of the discriminant function. Therefore a zero value would be the most preferred value. IBM SPSS 19 is used for data analysis.

RESULTS AND DISCUSSION

Six ratios calculated for each company for three years were analysed using Multivariate Discriminant Analysis. The results are discussed in the following paragraphs:

Table 1 gives the descriptive statistics for both the identified groups viz. distressed and non-distressed. From preliminary analysis, it can be observed that group means are very different for each variable in both the groups.

Table 1 Descriptive Statistics

DF	Mean	Std. Deviation	Valid N (listwise)		
			Unweighted	Weighted	
.00	INVTO	.4252	1.06462	32	32.000
	DTO	.2684	.40217	32	32.000
	WCTO	-1.9746	22.78533	32	32.000
	CR	2.3071	1.68847	32	32.000
	QR	1.3626	1.09061	32	32.000
	CV	57.4058	35.4632	32	32.000
1.00	INVTO	.1488	.07183	32	32.000
	DTO	.1822	.08901	32	32.000
	WCTO	5.3252	9.55222	32	32.000
	CR	3.6812	1.76696	32	32.000
	QR	1.3072	1.34839	32	32.000
	CV	70.7993	42.0310	32	32.000

The mean inventory turnover ratio for distressed companies is 0.42 whereas for non-distressed companies, it is 0.14. Also the Debtors turnover for distressed companies is 0.26 as compared to 0.18 for non-distressed companies. Inventories and Debtors management are very critical for ensuring a company's short term solvency. Distressed firms seem to carry a larger volume of inventories and debtors as compared to non-distressed companies. The mean current ratio is relatively higher for non-distressed companies as against distressed companies. Current ratio reflects the short term solvency of a company. The mean working capital turnover for a distressed company is - 1.97 due to negative mean working capital exhibited by distressed companies. A company with larger current liabilities in relation to current assets will have negative working capital. It is also a signal that the company is not able to meet their immediate liabilities which is an indicator of distress. The mean quick ratio of both groups stand at 1.3 whereas the cash velocity is 57 for distressed and 70.9 for non - distressed. This indicates that distressed companies hold higher amount of cash in relation to Sales than non-distressed companies.

Table 2 provides the results of step wise discriminant analysis. Wilks' Lambda tests the contribution of each variable to the discriminant function. The most significant variables are identified using 'F' test. Three variables are observed to contribute significantly to the Discriminant Function as the p values are < 0.05. Current ratio, Debtors Turnover and Quick ratio have thus exhibited strong discriminating abilities between the groups.

Table 3 and 4 gives important results of the Discriminant Function developed.

Eigen value explains the discriminating ability of the function. Higher the Eigen value, greater is the discriminating ability of the function. Canonical correlation is average at 0.562. A correlation closer to 1 is preferred. Table 4 gives the Wilks' Lambda of the Discriminant function. Wilks' Lambda measures how well the functions separates the cases into groups. It is converted to a chi square statistic to test the significance. Chi square statistic tests the null hypothesis that the function has no discriminating ability. Since the p value associated with chi square is significant, the null hypothesis is rejected. The discriminant function has good discriminating ability. The function developed is able to discriminate the cases into distressed and non-distressed groups.

Table 5 gives the coefficients to construct the Discriminant Function. Higher the magnitude of coefficients, larger is its influence on the discriminant function. CR has the greatest impact on the discriminant score

Table 2 Significant Variables

Step	Entered	Wilks' Lambda				Exact F			
		Statistic	df1	df2	df3	Statistic	df1	df2	Sig.
2	DTO	.736	2	1	62.000	10.961	2	61.000	.000
3	QR	.684	3	1	62.000	9.254	3	60.000	.000

At each step, the variable that minimizes the overall Wilks' Lambda is entered. c. Maximum partial F to remove is 2.71

a. Maximum number of steps is 12. b. Minimum partial F to enter is 3.84

.d. F level, tolerance, or VIN insufficient for further computation

Table 3 Summary of Canonical Discriminant Functions

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	.463 ^a	100.0	100.0	.562

a. First 1 canonical discriminant functions were used in the analysis.

Table 4 Wilks' Lambda of Discriminant Function

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.684	23.008	3	.000

Table 5 Standardized Canonical Discriminant Function Coefficients

	Function 1
DTO	-.749
CR	1.371
QR	-.599

Using the coefficients, the Discriminant function can be modelled as:

$$\text{Discriminant Score} = -0.749 \text{ DTO} + 1.371 \text{ CR} - 0.599 \text{ QR} \dots \text{Equation 1}$$

Table 6 provides an insight into the correlation between a specific variable and the function.

Table 6 Structure Matrix

	Function 1
CR	.594
DTO	-.221
CV ^a	-.179
INVTO ^a	-.155
WCTO ^a	-.044
QR	-.034

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions

Variables ordered by absolute size of correlation within function.

a. This variable not used in the analysis.

Current Ratio has the highest correlation with the function.

Table 7 Functions at Group Centroids

DF	Function 1
.00	-.670
1.00	.670

Unstandardized canonical discriminant functions evaluated at group means

Table 7 gives values of group centroids. The functions at group centroids is the mean discriminant scores by group for the function. It is -0.670 for distressed and 0.670 for non-distressed companies. Since the difference between the values is very large, the function separates the groups well.

Table 8 gives the classification results based on discriminant scores calculated for each company using Equation 1.

Table 8 Classification Results

	DF	Predicted Group Membership		Total	
		.00	1.00		
Original	Count	.00	28	4	32
		1.00	12	20	32
	%	.00	87.5	12.5	100.0
		1.00	37.5	62.5	100.0

a. 75.0% of original grouped cases correctly classified.

75% of the cases were correctly classified as distressed and non-distressed using discriminant scores. The classification accuracy is higher for distressed cases as compared to non-distressed cases.

CONCLUSION

Working capital management is a critical corporate finance function. An optimum working capital ensures short term solvency, thereby reducing the probability of financial distress. Management of inventory, receivables and cash are important areas in working capital management. This study attempted to find out whether these ratios are different for distressed and non-distressed companies. Analysis have shown that distressed and non-distressed companies have very different values for each of the ratio. The mean values of Inventory Turnover ratio, Debtors Turnover ratio, Working Capital to Turnover, Current ratio, Quick ratio and Cash velocity exhibit large differences. Discriminant Analysis has identified three ratios which are very significant in differentiating a distressed company from a non – distressed one. Debtors Turnover Ratio (DTO), Current Ratio (CR) and Quick ratio (QR) are strong discriminators. Current ratio and Quick ratio shows the total investment in current assets in relation to current liabilities. It means that if a company has adequate current assets in relation to its current liabilities, it has more short term solvency. Though Inventory turnover is not observed to be a significant variable, the fact that quick ratio is a significant variable indicates the relevance of inventory levels. Higher levels of inventory reduces the quick ratio. Hence distressed firms are reportedly carrying larger amount of inventories as compared to non-distressed firms. This is also seen by the mean Inventory turnover ratio. The average inventory turnover of distressed firms is very low as compared to non-distressed firms. Also receivable turnover in distressed firms are very low, indicating slow recovery from debtors. Thus debtors and inventory management have emerged as important factors to prevent distress in companies. Managers should focus on debtors' management as it can reduce the probability of distress. Also the inventory levels should be optimised to keep the company solvent. Lenders can continuously review and monitor debtors and inventory levels of borrowers and determine the solvency position and thereby determine the probability of financial distress. These early warning signals can help them devise strategies to mitigate distress and thereby reduce losses on account of bad loans.

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