

Liquidity Position and Credit Risk Management for India's Top Shipping Companies: an Analysis**Dr. M. Amaravathi**

Assistant Professor

Department of Management Sciences,
PSG College of Arts & Science, Coimbatore
Tamil Nadu**Anand Shankar Raja. M**

PhD Research Scholar

SRM University, Kattankulathur
Tamil Nadu, India**ABSTRACT**

The global financial crisis and the increased number of corporate defaults emphasize the importance of credit risk management. It has been widely acknowledged that the lack of understanding of credit exposures may lead to incorrect use of risk management tools, which in turn might cause major losses by financial institutions triggering their bankruptcy. Consequently, the field of bankruptcy forecasting has gained significant attention in economic research and among practitioners alike. Small or large companies, private or public undertakings, no company can run without borrowed fund. Even non-profit organisations look for financial aid from some sources to exist successfully. Bankruptcy seems to unfold rapidly and news about it seems unexpected, although the signs may have been in evidence for years before the filing takes place. Naturally, many organizational stakeholders are interested in finding a reliable method to predict bankruptcy and financial distress. To date, the methods designed to predict bankruptcy events have had mixed reviews. One common bankruptcy prediction method is Altman's Z-Score formula. The objective of this study is to apply Altman's Z-Score in an empirical analysis taking into consideration the top three shipping firms of India.

KEY WORDS: Shipping industry, bankruptcy, ALTMAN Z score, Liquidity

REVIEW OF LITERATURE

Altman's Z is one of the best known, statistically derived predictive models used to forecast a firm's impending bankruptcy (Moyer, 2005). Edward Altman, a financial economist and professor at New York's Stern School of Business, developed Altman's Z (the Z-Score) in 1968. The Z-Score gained acceptance by auditors, management accountants and database systems beginning in the mid 1980s. Although, Altman originally developed the Z-Score based on a small sample of manufacturing firms, some researches seem to show that it is useful in other areas, such as healthcare, with some modifications (Al-Sulaiti & Almwajeh, 2007). Altman's Z score formula is a multivariate formula used to measure the financial health of a company and to diagnose the probability that a company will go bankrupt within a two-year period. Studies of Altman's Z have yielded mixed results and recent literature questions whether or not the formula, tested in the mid-twentieth century on manufacturing firms, is useful in today's marketplace.

OBJECTIVES OF THE STUDY.

- To analyse the liquidity position using traditional financial metrics and to forecast firms' impending bankruptcy.
- To make the investors aware of Altman Z score as an investment checklist.
- To suggest the firms in general to take efforts to increase the liquidity position and to take measures to avoid financial distress.

NEED FOR THE STUDY

The purpose of this study is two-fold. The unique characteristics of business failures are examined in order to specify and quantify the variables which are effective indicators and predictors of corporate distress where Z-scores are used to predict corporate defaults and an easy-to-calculate

control measure for the financial distress status. The study also aims at providing information to the investors about making use of Z score model as an investment checklist to be on the safer side. The study also helps to provide suggestions to the firms to avoid financial distress.

INTRODUCTION

There are a sufficient number of shipping companies in India. There are a number of opportunities in the shipping industry. There are a number of initiatives and projects intended in the present time to fully consolidate the shipping industry. Most of the shipping companies have pioneered in being vanguard institutions that provide the best and most sophisticated vessel and shipping rudiments. Most of these companies are also engaged in providing services like sea paths which is important for economic growth. Thus shipping companies play a major role in revenue generation and facilitate business by their unique transportation services. The shipping companies, being large acquire huge amounts of funds to be alive and sustain. Due to sluggish demand, growing mountain of debt and a radically changing marketplace, the listed companies in the global container shipping industry as a whole face a greater risk of financial distress, including possible bankruptcy. These huge profit making institutions face cost of financial distress which leads to bankruptcy, where the companies require the management to reduce financial distress and credit risk. Moreover, it is also necessary for the investors to study recommendations, paying close attention to the widening chasm between the haves and have-nots and work with experts to determine the level of bankruptcy before investing.

Altman Z-Score

The **Altman Z-Score** is an analytical representation created by Edward Altman in the 1960s, which involves a combination of five distinctive financial ratios used for determining the odds of bankruptcy amongst companies. Most commonly, a lower score reflects higher odds of bankruptcy.

Formula for Z-Score

This formula for Altman Z-Score is helpful in calculating and predicting the probability that a company will go into bankruptcy within two years.

5-factor model of the Altman Z-score (for private manufacturing firms):

$$Z\text{-score} = 0.717X_1 + 0.847X_2 + 3.107X_3 + 0.42X_4 + 0.998X_5$$

Factor	Ratio	Objective
X ₁	= Working Capital / Total Assets	Measure the liquidity of the company's asset base
X ₂	= Retained Earnings / Total Assets	Measure cumulative profitability relative to firm size
X ₃	= EBIT / Total Assets	Measure how efficiently the company uses its assets to generate earnings from operations
X ₄	= Market Value of Equity / Book Value of Total Liabilities	Consideration of the market's view of the company relative to its liabilities
X ₅	= Sales / Total Assets	Measure asset turnover

Zones of Discrimination

- 1.23 or less – “Distress” Zone
- from 1.23 to 2.9 – “Grey” Zone
- 2.9 or more – “Safe” Zone

Interpretation of Altman Z-Score

The Z-Scores are helpful in predicting corporate defaults as well as an easy-to-calculate measure of control for financial distress status of companies in academic studies. A Z-Score above 2.6 (2.9) indicates a company to be healthy. Besides, such a company is also not likely to become bankrupt. However, Z-Scores ranging from 1.1-2.6 (1.23-2.9) are taken to lie in the grey area.

SHIPPING CORPORATION OF INDIA

Table 1: Z SCORE (2012 &2013)

EARNINGS BEFORE INTEREST AND TAX (EBIT)	791.91	623.00
TOTAL ASSETS	13,895.83	12,260.10
NET SALES	4,198.04	3,867.55
MARKET VALUE OF EQUITY	2,804.11	2,804.11
TOTAL LIABLITIES	13,895.83	12,260.10
CURRENT ASSETS	2,334.65	2,405.79
CURRENT LIABLITIES	2,015.22	2,015.22
RETAINED EARNINGS	47.40	161.71

The 5 financial ratios in the Altman Z-Score for the year 2012 and their respective weight factors are as follows:

RATIO	WEIGHTAGE	
A EBIT/Total Assets	0.03x 3.3	-4 to +8.0
B Net Sales /Total Assets	0.01x 0.999	-4 to +8.0
C Market Value of Equity / Total Liabilities	0.05x 0.6	-4 to +8.0
D Working Capital/Total Assets	0.22x 1.2	-4 to +8.0
E Retained Earnings /Total Assets	0.34x1.4	-4 to +8.0

These ratios are multiplied by the weightage as above, and the results are added together.

$$Z\text{-Score} = A \times 3.3 + B \times 0.99 + C \times 0.6 + D \times 1.2 + E \times 1.4 = 0.68$$

The 5 financial ratios in the Altman Z-Score for the year 2013 and their respective weight factors are as follows:

RATIO	WEIGHTAGE	
A EBIT/Total Assets	0.02x 3.3	-4 to +8.0
B Net Sales /Total Assets	3.41x 0.999	-4 to +8.0
C Market Value of Equity / Total Liabilities	0.56x 0.6	-4 to +8.0
D Working Capital/Total Assets	0.20x 1.2	-4 to +8.0
E Retained Earnings /Total Assets	0.30x1.4	-4 to +8.0

These ratios are multiplied by the weightage as above, and the results are added together.

$$Z\text{-Score} = A \times 3.3 + B \times 0.99 + C \times 0.6 + D \times 1.2 + E \times 1.4 = 4.40$$

GREAT EASTERN SHIPPING CORPORATION

Table 2: Z SCORE (2012 &2013)

EARNINGS BEFORE INTEREST AND TAX (EBIT)	492.17	8,635.25
TOTAL ASSETS	8,161.75	8,635.25
NET SALES	1,735.19	1,709.62
MARKET VALUE OF EQUITY	5,537.29	5,537.29
TOTAL LIABLITIES	8,161.75	8,635.25
CURRENT ASSETS	1,448.12	3,051.73
CURRENT LIABLITIES	768.92	768.92
RETAINED EARNINGS	2,954.64	2,992.11

The 5 financial ratios in the Altman Z-Score for the year 2012 and their respective weight factors are as follows:

	RATIO	WEIGHTAGE	
A	EBIT/Total Assets	0.26x 3.3	-4 to +8.0
B	Net Sales /Total Assets	0.34x 0.999	-4 to +8.0
C	Market Value of Equity / Total Liabilities	1.00x 0.6	-4 to +8.0
D	Working Capital/Total Assets	0.64x 1.2	-4 to +8.0
E	Retained Earnings /Total Assets	0.19x1.4	-4 to +8.0

These ratios are multiplied by the weightage as above, and the results are added together.

$$Z\text{-Score} = A \times 3.3 + B \times 0.99 + C \times 0.6 + D \times 1.2 + E \times 1.4 = 2.83$$

The 5 financial ratios in the Altman Z-Score for the year 2013 and their respective weight factors are as follows:

	RATIO	WEIGHTAGE	
A	EBIT/Total Assets	0.08x 3.3	-4 to +8.0
B	Net Sales /Total Assets	0.36x 0.999	-4 to +8.0
C	Market Value of Equity / Total Liabilities	0.06x 0.6	-4 to +8.0
D	Working Capital/Total Assets	0.67x 1.2	-4 to +8.0
E	Retained Earnings /Total Assets	0.24x1.4	-4 to +8.0

These ratios are multiplied by the weightage as above, and the results are added together.

$$Z\text{-Score} = A \times 3.3 + B \times 0.99 + C \times 0.6 + D \times 1.2 + E \times 1.4 = 4.40$$

VARUN SHIPPING COMPANY

Table 3: Z SCORE (2012 &2013)

EARNINGS BEFORE INTEREST AND TAX(EBIT)	542.57	532.44
TOTAL ASSETS	1,659.62	3,522.82
NET SALES	465.50	491.43
MARKET VALUE OF EQUITY	118.51	118.21
TOTAL LIABLITIES	1,659.63	3,522.81
CURRENT ASSETS	1,125.54	164.47
CURRENT LIABLITIES	1,070.98	238.34
RETAINED EARNINGS	123.94	94.29

The 5 financial ratios in the Altman Z-Score for the year 2012 and their respective weight factors are as follows:

	RATIO	WEIGHTAGE	
A	EBIT/Total Assets	-0.02x 3.3	-4 to +8.0
B	Net Sales /Total Assets	0.26x 0.999	-4 to +8.0
C	Market Value of Equity / Total Liabilities	0.15x 0.6	-4 to +8.0
D	Working Capital/Total Assets	0.49x 1.2	-4 to +8.0
E	Retained Earnings /Total Assets	0.13x1.4	-4 to +8.0

These ratios are multiplied by the weightage as above, and the results are added together.

$$Z\text{-Score} = A \times 3.3 + B \times 0.99 + C \times 0.6 + D \times 1.2 + E \times 1.4 = 1.05$$

The 5 financial ratios in the Altman Z-Score for the year 2013 and their respective weight factors are as follows:

	RATIO	WEIGHTAGE	
A	EBIT/Total Assets	0.03x 3.3	-4 to +8.0
B	Net Sales /Total Assets	0.74x 0.999	-4 to +8.0
C	Market Value of Equity / Total Liabilities	0.32x 0.6	-4 to +8.0
D	Working Capital/Total Assets	0.07x 1.2	-4 to +8.0
E	Retained Earnings /Total Assets	0.28x1.4	-4 to +8.0

These ratios are multiplied by the weightage as above, and the results are added together.

$$Z\text{-Score} = A \times 3.3 + B \times 0.99 + C \times 0.6 + D \times 1.2 + E \times 1.4 = 1.50$$

Table 4: FINANCIAL DISTRESS RATIOS AND INTERPRETATION PERTAINING TO THE RESULTS:

FACTOR	RATIO	SHIPPING CORPORATION OF INDIA		GREAT EASTERN SHIPPING CORPORATION		VARUN SHIPPING COMPANY	
		2012	2013	2012	2013	2012	2013
X ₁	WC/TA	0.03	0.02	0.26	0.08	-0.02	0.03
X ₂	RE/TA	0.01	3.41	0.34	0.36	0.026	0.74
X ₃	EBT/TA	0.05	0.56	1.00	0.06	0.15	0.32
X ₄	MVE/TL	0.22	0.20	0.64	0.67	0.49	0.07
X ₅	NS/TA	0.34	0.30	0.19	0.21	0.13	0.28
MEAN		0.13	0.89	0.48	0.27	0.15	0.28

Factor X₁ (Working Capital/Total Assets):

A decreasing Working Capital to Total Assets ratio is usually a negative sign. The Shipping Corporation of India and Great Eastern Shipping Corporation exhibit a decreasing trend in WC to TA for the past two years. In case of Varun Shipping Company, there is a positive increasing trend, which shows that the company has less current liabilities and has improvements in the liquidity position.

Factor X₂ (Retained Earnings/Total Assets):

The Retained Earnings to Total Assets (RE/TA) ratio measures the firm's ability to accumulate earnings using its assets. The ratio is showing an increase trend in case of all the three shipping firms which indicates that the firms have more retained earnings.

Factor X₃ (Earnings Before Interest and Tax/Total Assets):

Earnings Before Interest and Tax (EBIT) to Total Assets ratio indicates a proportion between the measure that shows company's profitability and company's assets. Shipping Corporation and Varun Shipping Company show an increasing trend, whereas, Great Eastern Corporation must improvise to increase the EBIT to Total Assets.

Factor X₄ (Market Value of Equity/Total Liabilities):

Market Value of Equity to Total Liabilities (MVE/TL) ratio compares the company's market stock price to the total debt of that company. Varun Shipping Company shows an increasing trend and other two firms show a decreasing trend, which must be rectified.

Factor X₅ (Net Sales/Total Assets):

Varun Shipping and Great Eastern show a positive increasing ratio and it implies that the companies are generating more revenues per value of assets. Shipping Corporation of India must take efforts to improve its NS to TA to attain more efficiency in deploying its assets.

LIQUIDITY – SOLVENCY POSITION RATIOS OF TOP THREE SHIPPING FIRMS

Table 5: LIQUIDITY – SOLVENCY POSITION RATIOS

RATIO	SCI					GESC					VSC				
	2013	2012	2011	2010	2009	2013	2012	2011	2010	2009	2013	2012	2011	2010	2009
Current Ratio	1.60	2.53	3.19	2.95	2.90	1.53	6.31	4.19	1.56	2.73	0.98	2.51	2.05	2.71	0.78
Quick Ratio	1.85	2.43	3.06	2.88	2.86	1.87	6.98	4.26	1.49	2.67	0.93	2.46	1.93	2.63	0.70
Debt-Equity Ratio	1.10	0.82	0.66	0.43	0.40	0.97	3.30	3.35	3.51	0.62	0.63	0.68	0.66	0.68	2.41
Long	1.0	0.8	0.6	0.4	0.4	0.8	3.2	3.3	3.5	0.6	0.6	0.6	0.6	0.6	2.4

term Debt-Equity Ratio	3	2	6	3	0	0	8	5	1	2	3	8	6	8	1
-------------------------------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

The current ratio is showing a decreasing trend which clearly states that the firms have to take efforts to cover their short term liabilities. It is observed that the quick ratio for all the three firms are more than the rule of thumb >1, which show that the firms are capable enough with sufficient liquid assets to meet their upcoming liabilities. The debt-equity ratios show positive growth, which means that the firms are sound in terms of financial policies and capital structure.

CONCLUSION

Shipping firms being one of the major contributors to the Indian transportation and facilitating many business transactions through exports and imports deal with a huge sum of borrowed money which must be given back to the contributors and borrowed institutions within the stipulated time in order to avoid financial distress. The firms have strong debt-equity mixes which show that they have strong strategic financial policies. It is a general opinion that the firms have to take efforts to improvise on their liquidity to be on the safer side. Firms may make use of the various available models to predict their financial distress and take corrective actions. The debt-equity ratios show a positive growth which means that the firms are sound in terms of financial policies and capital structure which must be sustained.

REFERENCES

- Administrative Office of U.S. Courts, (2009), Bankruptcy statistic, Information retrieved on July, 2009, from <http://www.uscourts.gov/bnkrpctystats/bankruptcystats.htm>Alexeev, M., & Kim, S. (2008).
- “The Korean financial crisis and the soft budget constraint”, Journal of Economic Behaviour & Organization, 68(1), 178-193.Al-Sulaiti, K.I., & Almwajeh, O. (2007).
- “Applying Altman Z-score model of bankruptcy on service organizations and its implications on marketing concepts and strategies”, Journal of International Marketing & Marketing Research, 32(2), 59-74.
- Altman, E.I. (1968), “Financial ratios, discriminate analysis and prediction of corporate bankruptcy”, Journal of Finance, 23(4), 189-209.
- Altman, E.I. (2006), “Corporate financial distress and bankruptcy: Predict and avoid bankruptcy, analyze and invest in distressed debt”, Hoboken, NJ: Wiley
- Altman, E. (2000), Predicting financial distress of companies: Revisiting the Z-score and Zeta Model, available at <http://www.pages.stern.nyu.edu/~ealtman/>, accessed during May 2012.
- Chuvakhin, N. Gertmenian, L (2003), “Predicting bankruptcy in the WorldCom age”, Graziadio Business Report, 6(1), available at <http://gbr.pepperdine.edu/031/print/bankruptcy.html>, accessed during May 2012.
- Managing Credit Risk: The Next Great Financial Challenge - John B. Caouette, Edward I. Altman, Paul Narayanan
- Financial Reporting, Financial Statement Analysis - James Wahlen, Stephen Baginski, Mark Bradshaw