

Predicting Solvency Status of Companies listed in BSE SENSEX

*Aswathy R Nair, #Nithesh R, \$Dr. Sathish Kumar B

*#PG Research Scholar, \$Associate Professor, Dept of Commerce, Christ (Deemed to be University), India.

*aswathynair2701@gmail.com, #nithesh.r@mcom.christuniversity.in, \$sathish.kumar@christuniversity.in

Abstract - The fundamental intention of this article is to predict the solvency status of companies listed in BSE Sensex . In this paper BSE Sensex companies (eliminating banks and financial institutions) have been used for predicting the long term solvency of the firm with the help of Altman Z-score model and for short term solvency current ratio has been calculated. Altman Z score helps in predicting the bankruptcy of the companies, as well as the possibility of default by the companies on the basis of the company's financial suffering. It also determines the value of Z score to classify not healthy, healthy, too healthy. This study is entirely built upon secondary data which were collected from issued sources i.e. Annual reports and Ace Analyser for the period of 5 years(2012-2017).The study shows that out of twenty-three companies eleven companies are too healthy and other companies need to improve on their financial distress. The study revealed that there were eighteen companies whose current ratio was less than one and faced the problem in meeting their short term financial obligations. The monetary health can turn into financial suffering because of insufficient cashflows due to which the current obligations are not met, and as a result, reparative steps are taken by the firm. Thus, such a firm dealing with financial suffering may end up facing bankruptcy or liquidation to meet its obligation.

Keywords - Financial suffering , Atman Z score, long- term solvency , short -term solvency, Bankruptcy

I. INTRODUCTION

Investments in stock market comes under the purview of market risk since there are dependably high points and low points in the share trading market. One of the most important tool that helps in anticipating the financial suffering of the company is Edward Altman's Z score Model, which has garnered increased popularity since 1985. The Altman Z score is generally used to forecast the value on the probability of a company going bankrupt. Monetary well-being of an organization is important for any business firm. The profit and loss account provides information related to the working activities whereas, the assets and liabilities of any organization is presented in the balance sheet. Monetary health relies on the solvency of an organization which should be accomplished in the most effective manner so as to ensure that there is systematic development and survival of the business. Predicting bankruptcy of a company was made possible through the emergence of several new models such as the Braver Model, Ohlson Model and discriminant analysis models such as Altman model. There is a renewed interest in credit risk valuation, driven by the organisations. Traditional book-keeping ratio based model Altman(1968) Z score, has led to forecasting of corporate failures with KMV model which are widely utilised by banks and other financial institutions. Altman's 1968 Z-Score does a better job at

failure prediction over one year period than their KMV type. The Multiple Discriminant Analysis (MDA) approach to predicting the financial suffering prediction was first applied by Altman (1968) by developing a Z score bankruptcy forecast model which determines the value of Z score (2.675) on the basis of which organizations are categorized into healthy and distressed. Most authors follows Z-score model in diverse markets, different time periods and in different industries since it is one of the oldest methods used for predicting bankruptcy. Financial suffering is a phase before bankruptcy where a firm's creditors are paid with substantial difficulty or not being paid. While a firm can abstain from moving financial suffering to bankruptcy, it can be very difficult. Often, financial suffering can be seen through added costs, such as fees paid to lawyers or the costs of extra interest for late installments.

II. REVIEW OF LITERATURE

(C, 2016) This paper assesses the Nifty 50 companies based on Altman Z - score excluding the banks and financial services. It stated that the Z score cannot be relied fully because it's just a likelihood not a prediction. Moreover, it only attempts to assess the possibility of economic bankruptcy. The analysis from this study shows that out of 50 companies 26 are in safe zone, 9 companies require

special zone and requires to improve, sectors with low Z-score are FMCG, health sectors, technology. (Elam, 1975) based his analysis on two assumptions, the first of the two being a conceptual assumption that when leases of the companies are capitalized it affects both bankrupt and non-bankrupt firms. In case of empirical assumption it states that there is a rapid expansion of firms ratio which needs to be stopped as it leads to bankruptcy and the assets leased was not utilized to its maximum because of its high lease cost. (Mohammed, 2016) undertook a case study of Raysut Cement Company SAOG and its subsidiaries and found out that the company is financially strong and has a high Z score which was above the Level of 2.99. Though the profitability of the companies is been in increasing trend over the past years but there has been a decline in the market value of equity in the year 2011-12 & 2012-13. (Tyagi, 2014) The study examined the financial health of Indian logistics industry field and found out that the results were healthy and the average Z-score value also increased from the period 2006-2010 even though the Indian economy was going through recession and the overall performance of the company was satisfactory. (Altman, 1968) In the first part of his research he analysed the financial situation with the help of traditional ratio analysis which suggested that the traditional approach has no importance to the analytical technique. The second part of the paper where he emphasized on the shortcomings using multiple discriminant analysis to predict the bankruptcy was proved to be highly accurate. (Salimi, 2015) also used Altman Z score model to check the accuracy and to forecast the bankruptcy of various industries. The study is based on the assumption that the Altman model will be steady in all the economic conditions. The analysis of this paper states that the z-score model is productive to anticipate bankruptcy of companies and it also indicates that majority of the companies are said to be bankrupt. (anjum, 2012) This paper states that the Altman Z-score can be useful to analyse the financial soundness up to 2-3 years in advance. It also states that it can be relevant to the modern economy to anticipate the bankruptcy and distress 1-3 years prior. The study shows that the changes made to the z-score can help to improve the analysis of predicting bankruptcy and showcase various financial information that are helpful for prediction. (Katz, Lilien, & Nelson, 1985) This study tries to explore the effects of stock prices of financial suffering and recovery signals created by bankruptcy prediction models namely Altman model and Gambler's Ruin model given by Wilcox. The financial data is obtained from the firms listed in NYSE from the period 1968-76. The study is to analyse the impact of stock prices when there is a shift in the company's financial position from distress zone to safe zone and from safe zone to distress zone. From the Altman model it is evident that there is no abnormal behaviour of the stock prices whereas Wilcox model shows a negative abnormal behaviour before and after the event is taken place. (Krishnan & Moyer, 1994) This paper conducts the

study based on re-examination of the lease/ borrowings giving explicit acknowledgment to the job liquidation costs and also relative transactions expenses of leasing and borrowing. Leasing have shown a lower expected bankruptcy thus it is preferred as an option for financing for companies that are going bankrupt than borrowing. The overall result states that lease financing is the most attractive option. (Vineet Chouhan, 2014) also used Altman Z score model to analyse the financial distress of the BSE companies and came to the conclusion that all the companies were in safe zone. (Edward I. Altman, Gabriele Sabato, Nicholas Wilson, 2010) Credit worthiness of the business were analysed using various credit risk models for both small and medium scale. Non-financial, compliance and event data are used for non-listed firms. From the study it was found out of 5.8 million sets of accounts of unlisted firms, 66000 failed during the period 2000-07

Aim of the Study :

- To analyse the short-term solvency of BSE Sensex companies.
- To test the long - term solvency of the selected companies

III. RESEARCH METHODOLOGY

This paper uses sources of secondary data obtained from the annual reports of the BSE listed companies using Ace Analyser. The period of study is from 2012-2017. Short term solvency has been calculated using Current Ratio based on five years average. Long term solvency has been calculated using Altman Z-score model based on the average of five years data. In this paper out of 30 companies we have selected 23 companies as part of our analysis and financial companies are excluded from the study. Since, it uses a different method for financial companies.

Current Ratio:

Current Ratio = Current Assets / Current Liabilities. It helps in determining the capacity of the organization to pay short term and long term borrowings.

Current Assets include stocks, account receivable, cash and other assets that can be converted into cash within a year. Current Liabilities include wages, taxes payable and other current portions of the long term debt. The ideal current ratio is 2:1, it indicates the financial soundness of the business. If it is less than 1, it indicates that the firm does not have enough liquid assets to cover its short-term liabilities. When current assets double the current liabilities, it is considered to be satisfactory.

The Z-Score :

Z-score formula was developed by Edward Altman in the year 1968. The score predicts the bankruptcy or the probability that the company will experience financial

suffering within two years. Using the current financial data of the firm, the score makes an attempt to predict the possibility of default by the companies which results as a consequence of financial distress. It involves five different ratios which are combined together to form a single score. The estimated score is called Altman Z score .The value of the score can be presented as below :

$$Z = 1.2T1 + 1.4T2 + 3.3T3 + 0.6T4 + 1T5$$

Where;

Z = Discriminant function score of a firm

T1= Networking capital to total assets ratio.

- ❖ Networking capital = Current assets- Current Liabilities

- ❖ Total Assets = Current Assets + Capital Assets

T2 = Retained Earnings to total assets ratio.

- ❖ Retained Earnings = Reserves and surplus

- ❖ Total Assets = Current Assets + Capital Assets

T3= Profit Before Interest & Tax (PBIT) to total assets ratio.

- ❖ Profit before Interest & Tax = Net profit + Interest + Taxes

- ❖ Total Assets = Current Assets + Capital Assets

T4= Capital funds to total liabilities ratio.

- ❖ Capital Funds= The sum total of all the values of the shares in the market

- ❖ Total Liabilities = Current Liabilities + Non - Current Liabilities

T5= Net Sales to total assets ratio.

- ❖ Net Sales = Total Revenue- Cost of Sales Return

- ❖ Total Assets = Current Assets + Capital Asset

Altman Guidelines for Health zone :

The financial health can be measured ,with the help of Altman guidelines

Categories	Z-score	Zones
1	<1.8	Not Healthy
2	Between 1.8 - 2.99	Healthy
3	>3.00	Too Healthy

Table 1 – Industrial Profile of the Sample Companies

Sr.no	Name of the Company	Sector	Z score	Current Ratio
1	Adani Ports and SEZ Ltd	Port	-0.0659	-0.6237
2	Asian Paints Ltd	Paints	3.5530	0.5302
3	Axis Bank Ltd	Banking -Private	-	-
4	Bajaj Auto Ltd.	Automobile Two and Three Wheelers	3.8419	0.7591
5	Bharathi Airtel	Telecommunication-Services Provider	1.4069	-0.4380
6	Coal India Ltd	Mining and Minerals	3.1121	1.6907
7	HDFC Bank Ltd	Bank- Private	-	-
8	Hero Moto corp LTD	Automobile Two and Three Wheeler	4.3713	0.4251
9	Hindustan Unilever Ltd	Personal Care	3.8767	0.1702
10	Housing development finance corp	Finance - Housing	-0.16506	-0.6846
11	ICICI Bank LTD	Bank-Private	-	-
12	IndusInd bank LTD	Bank-Private	-	-
13	Infosys Ltd.	IT- Software	3.8824	3.0835
14	ITC LTD	Cigarettes/Tobacco	3.4193	1.4010
15	Kotak Mahindra Bank Ltd	Bank-Private	-	-
16	Larsen and Toubro Ltd	Engineering-Construction	4.2141	0.9367
17	Mahindra and Mahindra Ltd	Automobiles-Passengers Cars	2.7307	0.1806
18	Maruthi Suzuki India Ltd	Automobiles-Passengers Cars	4.3425	0.0621
19	NPTC Ltd	Power Generation/Distribution	1.3872	0.3991
20	Oil and Natural Gas Corp Ltd	Oil Exploration	2.0394	0.5484
21	Power grid Corp of India Ltd	Power Generation/Distribution	0.5721	-0.4872
22	Reliance Industries Ltd	Refineries	2.1153	0.2956
23	SBI	Bank-Public	-	-
24	Sun Pharmaceuticals Industries LTD	Pharmaceuticals and Drugs	1.5040	0.7170
25	TATA Consultancy Services ltd	IT-Software	4.3425	-0.4824

26	Tata Motors Ltd	Automobiles-Trucks/LCV	0.9944	-0.2699
27	Tata Steel ltd	Steel and Iron Products	1.4920	2.4565
28	Vedanta Ltd	Metal-Non Ferrous	1.0884	-0.5265
29	Wipro Ltd	IT-Software	3.0327	1.4627
30	Yes, Bank Ltd	Bank-Private	-	-

Source: Bombay Stock Exchange

IV. ANALYSIS AND INTERPRETATION:

Table 1 shows the average current ratio from the year 2012-2017 of the BSE SENSEX Companies and we can infer the following things :

- Out of twenty-three companies Infosys and Tata Steel have met the ideal ratio that is 2:1 and have ideal financial obligation as and when required
- Eighteen companies from the above list shows less than 1 which indicates that the company will face problems in meeting their short term financial obligations.

From the table given above, the Z-score of the companies from the year 20112-17 we can interpret that :

- Out of the twenty-three companies, eleven companies are considered to be too healthy and are in safe zone.
- Nine firms are in distress zone and are not healthy and requires special attention.
- Three companies i.e. Mahindra and Mahindra Ltd, Oil and Natural Gas Corp Ltd, Reliance Industries Ltd. are in Grey Zone and are therefore, healthy.

V. CONCLUSION

Altman Z score is only a prediction which does not prove the true insights into a company s solvency. However, the organization can succeed in improving the related insights which causes the solvency of the firm with the help of the score. The Z-score does not intend to forecast when an organisation would actually file for a legal bankruptcy but it tries to estimate the probability of an economic bankruptcy. For an investor, it would be prudent to scrutinize on this number and to be aware of a firm’s creditworthiness. Originally, this idea was developed for widely held manufacturing companies that has assets worth more than \$1 Million. Subsequently, Altman made several variations which were designed so that it can be applicable for privately held companies and non- manufacturing companies, as well. However, Altman Model is not always successful in predicting bankruptcy. However, the financial ratio used in the calculation of the model and Z-score is quite helpful in providing useful and important information pertaining to the solvency of the organisation and its chances of going bankrupt. Altman Z-score is, thus, the ideal measurement that can help to form a decision for the investors.

REFERENCES

- [1] Katz, S., Lilien , S., & Nelson , B. (1985, january-february). Stock Market Behavior around Bankruptcy Model Distress and Recovery Predictions. *Financial Analysts Journal*, 41(1), 70-74.
- [2] Krishnan , V. S., & Moyer , R. C. (1994). Bankruptcy Costs and the Financial Leasing Decision. *Financial Management*, 23(2), 31-42.
- [3] REDDY , N. R., & REDDY , K. H. (2013, January). FINANCIAL STATUS OF SELECT SUGAR MANUFACTURING. *International Journal of Education and Research*, 1(1), 1-9.
- [4] Altman, E. I. (1968, september). Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. *The Journal of Finance*, 23(4), 589-609.
- [5] anjum, S. (2012). Business bankruptcy prediction models: A significant study of the Altman’s Z-score model. *ASIAN JOURNAL OF MANAGEMENT RESEARCH*, 3(1), 212-219.
- [6] Beattie, V. Dhanani, A. Jones, M. (2008). Investigating presentational change in UK annual reports: a longitudinal perspective. *Journal of Business Communication*. Glasgow ePrints Service, 181-222.
- [7] C, S. (2016). The analytical study of Altman Z score on NIFTY 50 Companies. *IRA-International Journal of Management & Social Sciences*, 03(03), 433-438.
- [8] Edward I. Altman ,Gabriele Sabato,NicholasWilson. (2010). *The Journal of Credit Risk* (1–33). 6(2), 1-33.
- [9] Elam. (1975). The Effect of Lease Data on the Predictive Ability of Financial Ratios. *The Accounting Review*, 25-43.
- [10] Mohammed, S. (2016). Bankruptcy Prediction by Using the Altman Zscore Model in Oman: A Case Study of Raysut Cement Company SAOG and its subsidiaries. *Australasian Accounting Business and Finance Journal*, 10(4), 70-80.
- [11] Salimi, A. Y. (2015). VALIDITY OF ALTMANS Z-SCORE MODEL IN PREDICTING BANKRUPTCY IN RECENT YEARS. *Academy of Accounting and Financial Studies Journal*, 19(2), 233-238.
- [12] Tyagi, V. (2014). A Study To Measures The Financial Health Of Selected Firms With Special Reference To Indian Logistic Industry: AN APPLICATION OF ALTMAN’S Z SCORE. *Industrial Engineering Letters*, 4(4), 43-52.
- [13] Vineet Chouhan,Bibhas Chandra,Shubham Goswami. (2014). Predicting financial stability of select BSE companies revisiting Altman Z score. *International Letters of Social and Humanistic Sciences*, 72-105.