The analytical study of Altman Z score on NIFTY 50 Companies

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ABSTRACT

Stock market investments are subject to market risks and there is a possibility for loosing of all the money invested. Investment decisions are so crucial for a successful investor. Investors are using different techniques for stock selection and for investment. The Altman Z-score is a widely used measure that applies an algorithm that has been found to have useful predictive value on the likelihood of a business going bankrupt. In this paper trying to assess the Altman Z-score of NIFTY 50 companies excluding banks and financial companies. The score tries to predict probability of default by the companies due to the financial distress based on the current financial statistics of the company.

Introduction

There are always ups and downs in the stock market. A stock price that changes quickly and by a lot is more "volatile". This makes a stock riskier – you could lose a lot if you had to get your money out on short notice. One important tool that predicts the volatility and has gained popularity since 1985 is Edward Altman's Z – Score Model (Altman, 1968). It is a multivariate formula used for the measurement of the financial health. It has gained wide acceptance with a variety of stake holders like investors, financial analysts, consultants, bankers, auditors, management accountants, courts, and database systems. Further it is also used for evaluation of loans (Eidleman, 2003), as it offers an excellent measure for evaluating the financial health of a subject business. It explicitly measure(s) a firm's relative liquidity, longevity, operating profitability, leverage, solvency, and productivity—virtually all aspects of corporate performance, lead to clearer conclusions, avoid judgment bias, reliability. The Altman Z-score is a widely used measure that applies an algorithm that has been found to have useful predictive value on the likelihood of a business going bankrupt.

Looking into the scenario of business today the enhancing uncertainty scenario takes away the surety of existence from firms. Perhaps to be sure of the longevity of the firm becomes the prime issue of concern by all the business houses. The viability of banks holds prime importance as it relates to financial investments, funding, capacity building and expansion by ploughing back profits. Z score has beenused as a tool to evaluate the credibility of the firms.

Literature review

The importance of the Z score has been highlighted by a number of studies. A study conducted by Price water Coopers(2002) on 1,200 publicly owned manufacturing companies (data from 1998 to 2001) concluded that the Z-score remains a viable measure of financial distress. It has been used to predict viability in a number of sectors like telecommunications (Permatasari, 2006), wood industry (Muhammad, 2008), pharmaceuticals (Ambarsari, (2009), etc. In all these situations, it was found that the respective industries were in distress financial situation, which was later proved correct. The studies thus proved that Altman model of Z-score would provide accurate prediction of financial distress.

Working Methodology

Z- score formula was developed by Edward Altman, Assistant Professor of Finance at New York University. The score predicts the bankruptcy or the likelihood of financial distress within two years of the company and was first published in the 1968. The score tries to predict probability of default by the companies due to the financial distress based on the current financial statistics of the company.

The Z-score formula for the manufacturing companies is:

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

Where:

T1 = Working Capital / Total Assets. (Measures liquid assets in relation to the size of the company)

T2 = Retained Earnings / Total Assets. (Measures profitability that reflects the company's age and earning power)

T3 = Earnings Before Interest and Taxes / Total Assets. (Measures operating efficiency apart from tax and leveraging factors. It recognizes operating earnings as being important to long-term viability.)

T4 = Market Value of Equity / Book Value of Total Liabilities. (Adds market dimension that can show up security price fluctuation as a possible red flag.)

T5 = Sales/ Total Assets. (Standard measure for total asset turnover)

While

Z > 2.99 are considered in 'Safe' Zones

1.81 < Z < 2.99 are considered in 'Grey' Zones

Z < 1.81 are considered in the 'Distress' Zones

In its initial test, the Altman Z-Score was found to be 72% accurate in predicting bankruptcy two years before the event, with a Type II error (false negatives) of 6% (Altman, 1968). In a series of subsequent tests covering three periods over the next 31 years (up until 1999), the model was found to be approximately 80%–90% accurate in predicting bankruptcy one year before the event, with a Type II error (classifying the firm as bankrupt when it does not go bankrupt) of approximately 15%–20% (Altman, 2000).[2]

From about 1985 onwards, the Z-scores gained wide acceptance by auditors, management accountants, courts, and database systems used for loan evaluation (Eidleman). The formula's approach has been used in a variety of contexts and countries, although it was designed originally for publicly held manufacturing companies with assets of more than $1 million. Later variations by Altman were designed to be applicable to privately held companies (the Altman Z'-Score) and non-manufacturing companies (the Altman Z"-Score).

Neither the Altman models nor other balance sheet-based models are recommended for use with financial companies. This is because of the opacity of financial companies' balance sheets and their frequent use of off-balance sheet items. There are market-based formulas used to predict the default of financial firms but these have limited predictive value because they rely on market data (fluctuations of share and options prices to imply fluctuations in asset values) to predict a market event (default, i.e., the decline in asset values below the value of a firm's liabilities

Benefits of Z score analysis

The Z-score offers an excellent measure for evaluating the financial health of a firm—the lower the score the greater chance of failure. The score, which combines mutually exclusive ratios into a group, helps overcome the shortcomings of individual financial ratio analysis. The beauty of Z-score is that it provides a calculated measure based on past experience, rather than personal opinion. Studies carried out by Altman (2003) using financial ratios predicted 94% correctly for one year before bankruptcy occurred; and 72% two years before its actual occurrence. In a study Pongsatat, Ramage and Lawrence (2004) on the other hand found a bankruptcy predictive ability of 90.48% with respect to large asset firms for year one, and 100% accuracy rate for the succeeding two years. The accuracy rate for small asset bankrupt firms, for year one was 94.87%, 94.87% for year two and 94.87% for year three. Odipo and Sitati (2011) opinioned that the model is a powerful diagnostic tool that deals with financial health and forecasts the probability of a company entering bankruptcy within a period of the next two years. They found that eight out of the 10 firms analyzed using Z model failed, thus indicating a successful prediction rate of 80%. Taffler and Tishaw (1977) using the model established a 99% successful classification based on the data of 92 companies. Thus almost all studies that measured the effectiveness of the model have shown that it enjoys an overall reliability of 70 to 80%.

Objectives of the study

The main objective of the study is to identify the solvency of Nifty 50 companies and sectors.

Altman score of nifty 50 companies

Company	Sector	Industry	Altman Z-score
ACC Ltd.	Construction	Cement	5.7698
Adani Ports and Special Economic Zone Ltd.	Services	Shipping	4.2144
Ambuja Cements Ltd.	Construction	Cement	7.7601
Asian Paints Ltd.	Chemicals	Paints & Varnishes	17.5294
Aurobindo Pharma Ltd.	Healthcare	Drugs & Pharma	5.36
Axis Bank Ltd.	Financial	Banking	-
Bajaj Auto Ltd	Automobile	Two & Three Wheelers	12.1007
Bank Of Baroda	Financial	Banking	-
Bharat Heavy Electricals Ltd.	Engineering	Electrical Machinery	2.0928
Bharat Petroleum Corpn. Ltd.	Energy	Crude Oil & Natural Gas	3.9576
Bharti Airtel Ltd.	Communication	Telecom.Services	1.4261
Bharti Infratel Ltd.	Communication	Telecom.Services	8.9893
Bosch Ltd.	Automobile	Auto Ancillaries	10.7988
Cipla Ltd.	Healthcare	Drugs & Pharma	5.5022
Coal India Ltd.	Energy	Coal & Lignite	3.9211
Dr. Reddy's Laboratories Ltd.	Healthcare	Drugs & Pharma	6.1376
Eicher Motors Ltd.	Automobile	Commercial Vehicles	13.055

GAIL (India) Ltd.	Energy	Crude Oil & Natural Gas	2.3309
Grasim Industries Ltd.	Diversified	Diversified	2.3624
HCL Technologies Ltd.	Technology	Computer Software	12.2397
HDFC Bank Ltd.	Financial	Banking	-
Hero Motocorp Ltd.	Automobile	Two & Three Wheelers	12.6769
Hindalco Industries Ltd.	Metals	Aluminium	0.8846
Hindustan Unilever Ltd.	FMCG	Cosmetics & Toiletries	13.8662
Housing Development Finance Corpn. Ltd.	Financial	Housing Finance	-
ICICI Bank Ltd.	Financial	Banking	-
Idea Cellular Ltd.	Communication	Telecom.Services	2.2905
Indusind Bank Ltd.	Financial	Banking	-
Infosys Ltd.	Technology	Computer Software	23.3122
ITC Ltd.	FMCG	Tobacco Prod.	14.8786
Kotak Mahindra Bank Ltd.	Financial	Banking	-
Larsen & Toubro Ltd.	Diversified	Diversified	1.6538
Lupin Ltd.	Healthcare	Drugs & Pharma	12.9168
Mahindra & Mahindra Ltd.	Automobile	Cars & Multi Utility Vehicles	1.82
Maruti Suzuki India Ltd.	Automobile	Cars & Multi Utility Vehicles	9.9766
National Thermal Power Corp. Ltd.	Energy	Electricity Generation	2.4479
Oil & Natural Gas Corpn. Ltd.	Energy	Crude Oil & Natural Gas	1.8894
Power Grid Corpn. Of India Ltd.	Energy	Electricity Distribn.	1.0436
Reliance Industries Ltd.	Energy	Crude Oil & Natural Gas	2.0677
State Bank of India	Financial	Banking	-
Sun Pharmaceutical Inds. Ltd.	Healthcare	Drugs & Pharma	7.5326
Tata Consultancy Services Ltd.	Technology	Computer Software	29.0283
Tata Motors DVR	Automobile	Commercial Vehicles	-
Tata Motors Ltd.	Automobile	Commercial Vehicles	2.0039
Tata Power Co. Ltd.	Energy	Electricity Generation	0.9128
Tata Steel Ltd.	Metals	Finished Steel	1.5132
Tech Mahindra Ltd.	Technology	Computer Software	11.2947
Ultratech Cement Ltd.	Construction	Cement	4.4299
Wipro Ltd.	Technology	Computer Software	10.5851
Yes Bank Ltd.	Financial	Banking	-
Zee Entertainment Enterprises Ltd.	Services	Recreational Services	37.8058

As on 29/may/2016

Analysis &interpretation

From the Z-score result table of nifty 50 companies we can infer following things.

- Majority of the nifty 50 companies , ie 26 companies are in safe zone
- 9 companies are in grey zone .these companies required special attention
- 5 companies are in distress zone, there is enough probability for financial embarrassment
- The sector that is the least likely to report a low z score is technology, FMCG, Health care in that order
- The sectors of poor performers are electric generation, distribution, metals and oil& gas sector.

Conclusion

Altman Z score is a likely hood and not a prediction. From a company's financials, it may look likely that bankruptcy looms, but the management may well succeed in improving matters. However, for the thinking investor, it's wise to keep an eye on this number and have an insight into a company's solvency. The Z Score is not intended to predict when a firm will actually file for legal bankruptcy. It is instead a measure of how closely a firm resembles other firms that have filed for bankruptcy, i.e. it tries to assess the likelihood of economic bankruptcy.

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