RATIONALITIES OF Z-CATEGORY SHARES IN DHAKA STOCK EXCHANGE: ARE THEY IN FINANCIAL DISTRESS RISK?

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ABSTRACT

Financial distress is a situation where a firm's operating cash flows are not sufficient to satisfy current obligations and the firm is forced to take corrective actions, and a firm in financial distress may also face bankruptcy or liquidation to meet its liabilities. Financial distress can be caused by losses, dividend reduction or bankruptcy. A good way to measure the possibility of bankruptcy is to use Z score model (Altman, 1968). This paper uses the Z score model to predict risk of financial distress of Z category companies listed in Dhaka Stock Exchange (DSE). Results suggest that five of fifty three companies are out of danger while seven of those are in the gray area. Evidently, forty one of the companies are operating with high distress risk as suggested by the model result. Therefore ninety percent of the companies are suffering from financial distress risk due to very poor management capability and operating inefficiency although its reflection to the stock price is absent from the market in many instances. The Altman's Z score, model though may not be fully applicable for companies in Bangladesh, yet proves its strong validity and correctness in predicting distressful status of the Z category companies.

Keywords: financial distress, Altman Z score, bankruptcy prediction, discriminant analysis, Z category shares, company failure.

INTRODUCTION

Financial distress is a condition when a company cannot meet, or has difficulty to pay off, its financial obligations to its creditors. The chance of financial distress increases when a firm has high fixed costs, illiquid assets, or revenues that are sensitive to economic downturns. Financial distress is a term in Corporate Finance used to indicate a condition when promises to creditors of a company are broken or honored with difficulty. Sometimes financial distress can lead to bankruptcy. Financial distress is usually associated with some costs to the company and these are known as Costs of Financial Distress.

A common example of a cost of financial distress is bankruptcy costs. These direct costs include auditors' fees, legal fees, management fees and other payments. But cost of financial distress can occur even if bankruptcy is avoided (indirect costs).

Financial distress in companies can lead to problems that can reduce the efficiency of management: As maximizing firm value and maximizing shareholder value cease to be equivalent managers who are responsible to shareholders might try to transfer value from creditors to shareholders.

The result is a conflict of interest between bondholders (creditors) and shareholders. As a firm's liquidation value slips below its debt, it is the shareholder's interest for the company to invest in risky projects which increase the probability of the firms' value to rise over debt. Risky projects are not in the interest of creditors as they increase the probability of minimizing the firms' value. Since these projects do not necessarily have a

positive net present value costs may arise from lost profits.

Equally, management might choose to prolong bankruptcy, which has the same effect on probabilities of a change in the firm's value. Management might also distribute high dividends to "save" money from the creditors. Another source of indirect costs of financial distress is higher costs of capital: Short-term loans by contractors and banks will be expensive and hard if not impossible to get.

The incidence of business failure in the world is increasing. Statistics show that more than 300 companies go out of business every week (Business Failure record, Business Week, Jan 2009). The high rate of bankruptcy is attributed to the combined effect of fiercer competition in the marketplace and heavier debt burdens carried by companies. Matters grow even worse when these two factors are accompanied by an economic downturn. A company's chances of survival can be predicted with the use of financial-statement analysis. Any single one of the 20 or so acknowledged financial ratios cannot adequately evaluate the overall strength of a company, although each of them can be extremely useful in identifying specific strengths and weaknesses that contribute to the general financial health of the firm.

One of the most commonly used statistical ratio models for predicting business collapse is *Altman's Z score*. This model has proven to be a reliable tool for bankruptcy forecasting in a wide variety of contexts and markets. However, it should be noted that the Z score does not apply to every situation. It can only be used for forecasting if the company being analyzed can be compared to the database.

The Z-score formula for predicting bankruptcy was developed in *1968* by Edward I. Altman, a *financial economist and professor at the Leonard N. Stern School of Business at New York University*. The Z-score is a multivariate formula for a measurement of the financial health of a company and a powerful diagnostic tool that forecasts the probability of a company entering bankruptcy within a 2 year period.

Financial-statement analysis looks at a firm's past performance to predict its future condition. Some users of ratio information have very specific

concerns. Lenders are interested in the firm's ability *to meet the payments over the life of the loan*. Auditors are interested in judging whether *financially troubled companies are likely to continue as a going concern*. Managements are interested in knowing the problems they are about to face and, where appropriate, taking corrective action.

Statistical ratio based models are usually created by academics. They often are developed with the following pattern:

- Identify a sample of failing firms. These would meet some predetermined criterion of failure such as bankruptcy, loan defaults, etc. A sample of around 30 is probably needed for results to have statistical validity.
- Find a group of comparable firms. These would be similar with respect to size, industry, etc. The only difference is these businesses are in a healthy state.
- Analyze differences between healthy and failing businesses. Computer analysis should reveal which ratios are consistently and significantly different between the two groups.
- Derive a scoring system containing the significant ratios. This usually takes the form of a score such that score = ratio #1 * weight attached to ratio #1 +ratio #2 * weight attached to ratio #2 etc.

The model would tell whether any given firm has a profile that more closely corresponds to other successful or failing businesses. This paper applies Z score model to the Z category shares traded in DSE to judge financial distress risk of each share.

There are several categories of stocks in the capital market of Bangladesh. The categories have been made based on several factors; they are - holding annual general meetings and percentage of declared dividends. Among them Dhaka Stock Exchange has following categories.

A-category companies: Companies which are regular in holding the current annual general meetings and have declared dividend at the rate of ten percent or more in the last English calendar year will be categorized in A category companies.

B-category companies: Companies which are regular in holding the annual general meetings but have failed to declare dividend at least at the rate of

ten percent in the last English calendar year will be categorized in B category companies.

In case of the newly listed securities, the rate of earning per share (EPS) based on the audited accounts of a full year of twelve months, as contained in the prospectus of the concerned companies, shall be treated as substitute of the rate of dividend applicable for 'A' and 'B' category of companies if no dividend were declared by such companies in the last English calendar year:

G-category companies: Greenfield companies.

*N-category compani*es (Dated: July 03, 2006): All newly listed companies except Greenfield companies will be placed in this category and their settlement system would be like B-category companies.

Z-category companies: Companies which have *failed to hold the current annual general meetings* or have *failed to declare any dividend* or *which are not in operation continuously for more than six months* or *whose accumulated loss after adjustment of revenue reserve*, if any, *is negative and exceeded its paid up capital* is known as Z category companies.

It is provided that the chief executive officer (CEO) of the exchange may bring any other company under this category, if deemed necessary, with the prior written consent from the Commission: Provided further that the words, 'or whose accumulated loss after adjustment of revenue reserve, if any, is negative and exceeded its paid up capital' shall not be applicable for the companies which have declared dividend out of the current profits in the last English calendar year and held annual general meeting(s) relating to all outstanding financial year(s) despite having such accumulated loss exceeding the paid up capital.

The definition of the Z category companies shows the justification for doing Z score calculation itself. The definition suggests that Z category companies have following characteristics:

- Failed to hold the current annual general meetings

- Failed to declare any dividend

- Not in operation continuously for more than six months

- Accumulated loss after adjustment of revenue reserve and if any is negative and exceeded its paid up capital

These distinctiveness shows that these companies are in very bad shape and can not even continue its day to day operations because of their financial or managerial inefficiency. So the probabilities for bankruptcy for these companies are very high. That's why this paper is calculating the Z score to have an idea of the companies and predicting what might happen in future. This is particularly important for those investors who are planning or already investing in Z category companies of Dhaka Stock Exchange.

LITERATURE REVIEW

For a number of years, there was considerable research by accountants and finance people trying to find a business ratio that would serve as the sole predictor of corporate bankruptcy. William Beaver conducted a very comprehensive study using a variety of financial ratios (1966). His conclusion was that the cash flow to debt ratio was the single best predictor (Chuvakhin & Gertmenian, 2003).

Beaver's univariate analysis led the way to a multivariate analysis by Edward Altman, who used multiple discriminant analysis (MDA) in his effort to find a bankruptcy prediction model. He selected 33 publicly-traded manufacturing bankrupt companies between 1946 and 1965 and matched them to 33 firms on a random basis for a stratified sample (assets and industry). The results of the MDA exercise yielded an equation; he called the Z-score that correctly classified 94% of the bankrupt companies and 97% of the non-bankrupt companies one year prior to bankruptcy. These percentages dropped when trying to predict bankruptcy two or more years before it occurred. The Z-score model has been extended to include privately-held companies (Z'- model) and privately-held non-manufacturing firms (Z''- model) (Chuvakhin & Gertmenian, 2003).

In the year 2000 in July, Edward I Altman, in his paper, while predicting Financial Distress Of Companies: Revisiting the two venerable models for assessing the distress of industrial corporations. These are the so-called Z score model (1968) and ZETA® (1977) credit risk model. Both models are still being used by practitioners throughout the world. The latter is a proprietary model for

subscribers to ZETA Services, Inc. (Hoboken, NJ). The study was extended in order for the tests and findings to include application to firms not traded publicly, to non-manufacturing entities, and also refer to a new bond-rating equivalent model for emerging markets corporate bonds. The finding was the ZETA model for assessing bankruptcy risk of corporations demonstrates improved accuracy over existing failure classification model (Z-Score).

Jonah Aiyabei, a lecturer in the Department of Commerce at the Catholic University of Eastern Africa, wrote a paper on Financial Distress: Theory, Measurement & Consequence, which was a seminar paper presented at the Catholic University of Eastern Africa, Department of Commerce on 10th November 2000. He stresses on the fact that prediction and analysis of corporate financial performance is a crucial phenomenon in a developing country like Kenya in the light of recent closure of businesses such as banks and insurance companies. The paper discusses the financial performance based on the financial life cycle, explores the signs of financial distress, and addresses the issue of how firms deal with financial distress and present a model of measuring financial distress. It fully acknowledges the merit of using Z score model. It recognizes that Altman's model as a measure is a critical input to companies in Kenya. Firms can know ahead of time when they are 'sick' and when 'healthy'. It also admits that it is necessary for stakeholders to have knowledge of the Z score. This will assist them in making decisions pertaining to an organization. Fund lenders for example need to assess the Z score measure before committing finances.

In 2007 Bum J. Kim ,Department of Finance, Hallym University,Chuncheon, Kangwon, Korea had published a paper for APRIA annual meeting where his topic of the paper was "Bankruptcy Prediction: Book value or Market Value?". The paper investigates the robustness of Altman's Z-score model. Three aspects of predictability of the Z-score model are tested first, the significance of the model in terms of the prediction horizon, second, the significance of the Z-score model from 1996 to 2000 and lastly the significance of the model for individual industries. The findings were; first, Altman's Z-score model may have partially lost its significance as a bankruptcy prediction measure on two grounds: it is losing its prediction power for long-term prediction, and its accuracy is deteriorating for recent years' data. Secondly, for years between 1996 and 2000, all variables in Altman's Z-score model do not always explain the bankruptcy of firms in three industries, namely manufacturing, trading and service. Finally, it was found that the measure is applicable only to a certain industry, such as manufacturing and retail trade, however, not for service industry. Thus, the possibility of modification of the measure remains promising but challenging.

Recently, in April 2008, John R Grabski, the CEO of ClearMomentum, Inc., a financial analytics and corporate performance management software company and an MBA in Finance and Accounting with the honor of distinction from the University of Liverpool, in his discussion article called "The Dynamic Z-Score" suggests that the time tested Altman Z-score, originally designed to predict corporate default represents considerable value when used as a corporate performance metric if measured continuously as opposed to one moment in time. This article argues that the Z-score should be considered more often in the corporate performance management setting. In addition, the article highlights the significance of the measure when crafting loan covenants to compliment other measures that are perhaps shorter term in nature. A generic framework is provided that illustrates the relationship of underlying drivers that contribute to the score, representing at least one approach to managing firm viability as a component of corporate strategy.

In the article called Financial Market Imperfection and Precautionary Overinvestment, by Christian Calmès, Département des sciences administrative, Université du Québec en Outaouais, France, the author discusses firms' investment decisions in the context of financial market imperfection. The author used panel data to assess the investment-cash flow sensitivity of non-financial firms as a function of their degree of financial health. The splitting criterion used to categorize firms is a financial stress indicator, the Z-score, which is a contemporaneous indicator inversely related to firms' probability of financial failure. Based on this criterion, empirical evidence suggests that the most investment-cash-flow-sensitive firms are the financially constrained ones. More importantly, the article shows that, in this class of firms, investment seems to be partly driven by a speculative precautionary motive stemming from financial market imperfection.

One other aspect was studied by Joseph Calandro Jr. in his paper called "Considering the Utility of Altman Z Score as a Strategic Assessment and Performance Management Tool" published in the Journal Strategy and Leadership in the year 2007, Vol. 35, Issue 5, Pg 37-43. The purpose of this article was to provide commentary on the utility of Altman's Z-score as a strategic assessment and performance management tool. It was found that Z-score does assist as a strategic assessment and performance measurement tool.

In Australia, KordaMentha Research Institute, came up with an article "Predicting Corporate Failure – Bench Testing Z score" in its publication 706 in March 2007. The article says that research supports the use of Altman's Z-Score as a means of detecting financial distress in Australia, albeit the level of accuracy was well below that observed by Altman in his original study. It was concluded that Altman limited his study to a sample carefully selected by size and industry whereas the author tested all failed firms regardless of size or industry due to the limited availability of data. Moreover, it was found that while the Z-Score proved informative, its output is less than perfect. In some cases the financial wellbeing was moderately overstated while in other cases the model failed to recognize financial distress at all.

Many of the research works have been conducted, over the period to evaluate the financial position of the company with the help of the various ratios or by applying the Multiple Discriminant Analysis to predict the corporate failure. L.C Gupta (1999) attempted a refinement of Beaver's method with objective of predicting the business failure. Whereas Mansur. A.Mulla (2002) made a study in Textile mill with the help of Z score model for evaluating the financial health with five weighted financial ratios and followed by Selvam M, and others (2004) had revealed about Cement industry's financial health with special reference to India Cements Limited. Bagchi S.K (2004) analyzed about practical implication of accounting ratios in risk evaluation and concluded that accounting ratios are still dominant factors in the matter of credit risk evaluation.

Krishna Chaitanya (2005) used Z model to measure the financial distress of IDBI and concluded that IDBI is likely to become insolvent in the years to come. From the above reviews, the researcher identified the research gap which could be dealt in this study. It was also found that Z-Score can be significant tool used in turnaround management for diagnosing and evaluating overall financial corporate health, as well as the viability of turnaround or restructuring efforts. This was published by Armand Lucarelli, the Managing Director, Capital Restoration LLC, in March 11, 2003 in the article "Using the Z-Score as a Turnaround Tool". It is useful in Corporate Governance, Credit Evaluation, Private Investment, and Insurance Underwriting.

In summary, Z score is a timely model that can apply for predicting financial distress of both manufacturing and non-manufacturing firms. This model is applied in this paper with an objective to know the financial attributes of Z category companies traded in DSE and determined their likelihood of bankruptcy.

METHODOLOGY

This paper uses secondary information collected from Balance Sheet Analysis published by the Bangladesh Bank. The paper is also used basic data related to the income statement and market price of all the listed companies from the Dhaka Stock Exchange. Much other information about different categories of stocks has been collected from the website of DSE.

However, there are several limitations of this paper. First of all it works with the data from the year 2000 to 2005, considering this fact data are pretty old. Predictions based on this data may not be entirely true. Moreover, for couple of companies it did not have the data for two or three years which also breaks the continuity of trend. Moreover, some banking and non banking financial institutions which fall under Z category are not included in this paper as the relevant data could not be found. Nonetheless, the paper uses 53 companies' data to calculate Altman Z scores to predict the probability of financial distress. These companies are selected based on two criterion; first, companies whose became public limited and enlisted in DSE before 2003 and second, at least had two years of fully disclosed public information before 2005.

Studies measuring the effectiveness of the Z-score have shown the model to be accurate with more than 70% reliability. The Z-score combines four or five common business ratios using a weighting system calculated by Altman to determine the

likelihood of bankruptcy. The weighting system was originally based on data from publicly held manufacturers, but has since been modified for private manufacturing, non-manufacturing and service companies.

The original data sample consisted of 66 firms, half of which had filed for bankruptcy under Chapter 7. All businesses in the database were manufacturers and small firms with assets of less than $1million were eliminated.

The Z-Score bankruptcy predictor combines five common business ratios, using a weighting system calculated by Altman to determine the likelihood of a company going bankrupt. The given formula applicable for publicly traded manufacturing firm.

$$Z = 3.3 \frac{EBIT}{Total\ Assests} + 1.2 \frac{Net\ Working\ Capital}{Total\ Assets}$$
$$+ 1.0 \frac{Sales}{Total\ Assets} + 0.6 \frac{Market\ Value\ of\ Equity}{Book\ Value\ of\ Debt}$$
$$+ 1.4 \frac{Accumulated\ Retained\ Earnings}{Total\ Assets}$$

- If the score is 3.0 or above - bankruptcy is not likely.
- If the Score is 1.8 or less - bankruptcy is likely.
- A score between 1.8 and 3.0 is the gray area.

Probabilities of bankruptcy within the above ranges are 95% for one year and 70% within two years. Obviously, a higher score is desirable

Interpretations of those different ratios are stated below:
Working Capital/ Total Assets: This measures *liquid assets in relation to the firm's size.* Altman, interestingly, mentions that the most widely used current and acid ratios were not as good predictors as this measure.
Retained Earnings/Total Assets: This ratio is a measure of *cumulative profitability* that reflects the firm's age as well as *earning power*. Many studies have shown failure rates to be closely related to the age of the business.
Earnings before Income Taxes/Total Assets: This is a measure of *operating efficiency separated from any leverage effects*. It recognizes operating earnings as a key to long-run viability.

Market Value of Equity/Book Value of Debt: This ratio adds a market dimension. Academic studies of stock markets suggest that security price changes may foreshadow upcoming problems.
Sales/Total Assets: This is a standard turnover measure. Unfortunately, it varies greatly from one industry to another.
Altman's Z score is the tried and tested formula for bankruptcy prediction. It has been demonstrated to be quite reliable in a variety of contexts and countries. It is not designed to be used in every situation. Before using a Z score to make predictions, one must ensure the firm being examined is comparable to the database.

- If a firm's stock is not publicly traded, the term Market Value of Equity/Book Value of Debt cannot be calculated.
- Moreover for nonmanufacturing firms Sales/Total Assets ratio is believed to vary significantly by industry. It is likely to be higher for merchandising and service firms than for manufacturers, since the former is typically less capital intensive. Consequently, nonmanufacturers would have significantly higher asset turnover and Z scores. The model is thus likely to underpredict certain sorts of bankruptcy. To correct for this potential defect, Altman recommends the following correction for private nonmanufacturing firms:

$$Z = 6.56 \frac{Net\ Working\ Capital}{Total\ Assets}$$
$$+ 3.26 \frac{Accumulated\ Retained\ Earnings}{Total\ Assets}$$
$$+ 1.05 \frac{EBIT}{Total\ Assets} + 6.72 \frac{Book\ Value\ of\ Equity}{Total\ Liability}$$

- If the score is 2.90 or above - bankruptcy is not likely.
- If the Score is 1.23 or less - bankruptcy is likely.
- A score between 1.23 and 2.90 is the gray area.

For this study, paper uses the formula which is applicable for publicly traded and manufacturing firms because the companies those have been selected to analyzed, their shares are publicly traded and most of them are also manufacturing organizations.

EVALUATIONS AND ANALYSIS

The calculated result of distress risk is given in Table-1. In this table year to year Z-scores are also presented. The paper is trying to rank the z category shares (presented in Table-2) based on their individual average Z-scores, which are shown in the last column of Table-1. Surprisingly only five companies are out of financial distress risk according to their respective average Z-score. Where Z-scores are higher than 3, the scores between 1.8 to 3 is the gray area and seven companies are fallen in this area. Altman explain that companies having scores in gray area are difficult to predict about their possible distress risk. Because empirical results show that many companies of this area are successfully coming back from bankruptcy risk and many of them unfortunately trapped down into it for number of years and then become liquidated.

The average Z-scores (Table-1) refer that forty one companies are now in financial distress risk with scores less than 1.8 even many firms have negative scores. Now the paper is looking into the fundamental analysis of each group of company's from nonbankrupt to bankrupt. Paper will further investigate their financial and performance ratios on which Z score is dependent. This investigation will help to make suggestions for the capital market investors and will guide the other companies by setting a demarcation line.

Rose Heven Ball Pen: The average Z value rank Rose Heven Ball Pen as number one with a score of 33.61. This is far above the distress risk line. The performance of Rose Heven augmented with market value of equity to book value of debt ratio. Considering year to year analysis of this company it is found that it did best in 2001. The reason was that the sales increased significantly in this period. But they could not continue the performance at this rate in later periods. The current market price of this stock is Tk. 10.10.

Modern Cement: Most unusual company in the analysis. With an average score of 33.54 it is in the second position, however, this does not represent the fact for this company. Because the Z value is 132.23 in 2002 above the risk line but this is inconsistent with other two years results. These are 1.66 and 0.28 in 2001 and 2003 respectively and show that the firm is in financial distress risk. Considering as outlier this paper is excluded this

company from the ranking list. Currently this share is traded at Tk. 9.60 in DSE (Dhaka Stock Exchange).

Dhaka Fisheries: The paper could collect only four years data for Dhaka fisheries. From the trend it is seen that the firm is well above the critical line and have few possibilities to become bankrupt in near future. However, it is facing a downward trend in Z score which is not good for the company. The analysis shows that the operating efficiency declined over time as EBIT dropped from 13 lakh to 3 lakh in 2003 which was the prime reason for their downfall. They were efficient in maintaining day to day liquidity and keeping equity about 22 times higher than debt. But they retained only 3% of their earning to total asset. So in general we can say the company is not going to face bankruptcy with one or two years but it should work on its operating efficiency. The average Z score was 7.52 and current market price is Tk. 145.

Meghna Shrimp Culture: The statistics shows that the company has had a mixed experience so far. In 2000 they fell in gray area from where they cold got out for the next three years. The reason working behind their improvement was that they reduced the size of their balance sheet through downsizing the asset and debt. However, the firm was also in the gray area in 2004 because of lower EBIT. Surprisingly the average Z score of 3.31 refers that firm has no possibility of bankruptcy in near future. Moreover, the current market price of stock is Tk. 55.75

Fine food Ltd: Fine food Ltd. is an agro based firm and the paper has got data of only two years. In 2001 their Z score was 3.84 which are far above from the safe or non bankrupt region. If anyone look into the different ratios of the company in that year then could see that, their Market value of the shares were very high than their book value which was 4.17 times. Their sales turnover ratio was good. For the objective of future growth they retained 22% amount of their total asset. Though their profitability and efficiency was not that much improved in the next year but market value of the share was still very high. With an average Z value of 3.02 the firm has no possibility of distress risk. However the firm must focus on strategies to increase their profitability and efficiency level to maintain the expectations of the shareholders and share price. Currently the shares are traded at Tk 26.80.

Anwar Galvanizing: In fact for all the years, it was hovering in the gray area as its Z score was between the ranges of 1.81 to 2.99. So the company's future is unpredictable. It could get out to non bankruptcy region or might fall to bankruptcy region in the near future. However, in 2004 it came very close to the upper limit of the gray area. So it can be hope that in the next year it may come to non bankrupt area. Mainly EBIT/total asset and net working capital/ total asset these two ratios contributed to the lift is the Z score of the company. In the DSE the price of this stock is not found.

Bengal Biscuits: For the whole five years they were in between the gray area. So it can not be said for sure that they will fall in to bankruptcy region or they will get out from this situation. Their position was good in 2000 compared to other years. But in 2002 they dipped a little because of negative EBIT, and lower accumulated retained earnings compared to total assets. But in successive years they recovered by a little amount. Therefore they should try to bring the components up to the scratch so that they can grow out of the gray area.

Niloy Cements: The Z value of Niloy Cements fluctuates over the year after year with an average score of 2.57. The current market price of this share is Tk. 131.50. The company was in the Non bankrupt region in the year 2000 and 2002. In the year 2001 and 2003 it was in the gray area. But the most alarming situation occurred in the year 2004 when the company is in the bankrupt situation. The reason is the shortage of net working capital and the low volume of sales.

Gulf Food: In 2000 and 2001 the firm was in the gray area where they had the possibility of going down or high. But after 2002, Gulf food was heading towards in terrible position. EBIT/Total Asset indicated the operating inefficiency and in the year of 2003 it was lowest ever among the five years. From around 7% it went down to 2% and as it has the highest weight so Z score sharply fall. For the betterment of the company, in 2003 Gulf Food higher amount of earnings and in 2004 they were able to reach into the gray area again. Finally we can say the possibility of bankruptcy within 1 or 2 years is very much higher for Gulf Food as they are in the border line. They should try to boost up the asset turnover and simultaneously strengthen the operating efficiency level by increasing EBIT.

Current market price of this share is Tk. 126 in DSE.

Shine Pukur Holdings: Currently this stock is traded at Tk. 102.70. However, the Z value of this company was in the gray area during 2000-02, which indicates an average performance of the company and the rate was showing upward trend. But from 2003 the rate was started to decrease due to the lower amount of sales and increased cost.

Beach hatchery Ltd: Beach hatchery Ltd has been a well performing company that has kept it out of the bankruptcy region. However, it is not fully protected from bankruptcy. In 2003 the Z score was 1.88 which falls in to gray area. They were also in this area in 2000 but they were successfully out of this danger line in 2001. However, they fell into the bankruptcy region with a score 1.81 due to lower asset turnover ratio and higher amount of debt. But there was an improvement in 2003. The current market price of this share is Tk. 28.9 in DSE.

Aramit Cements: Based on the overall Z value this firm was belonging into gray area. However, the firm did its best in the year 2000-01, where it placed in above average of demarcation line. But gradually it seized by the bankrupt region due to the increased cost, low sales volume and negative working capital. Currently this share is traded at Tk. 331 in DSE.

In summary this can be said that the definition of Z category shares made by the Dhaka Stock Exchange is perfectly harmonized with their financial fundamentals. Because most of the firm has either lower level of asset turnover ratios or higher level of leverage, and both of these augmented the distress risk. In this circumstance investors have to be very careful about their long term investment decision, because the sustainability for all the selected companies is questionable.

In the following section this paper presents those Z category shares which were in financial distress risk with their respective Z value. Because the average Z value of these shares was lower than 1.8, which is below the demarcation line. The most interesting fact is that many of them had negative Z value. However, most of these shares are still traded in Dhaka and Chittagong Stock Exchange. Even they are traded at a price higher than face

value. The reason might be the positive perception of investors; they are expecting growth of these firms in future. But unfortunately this is against the fundamental of investment choices. Because until any financial restructuring these share are not suppose to be value at its current price. However, the paper is trying to look into deep of this truth to find and convey a rational comment for potential investors.

The results given in the Table - 2 shows that among the remaining 41 companies only ten had Z value higher than 1 but less than 1.88, twenty one companies had positive Z value and surprisingly ten firms had negative Z value.

Perfume Chemical Industries (PCI) Limited with an average Z value of 1.744 was near to the safe line. Analysis has found that if PCI could increase its sales percentage then it would be relocated in gray area within next few years. BD com online, BD thai aluminium, Altex industries ltd., Tallu spinning mills, Beximco fisheries, BD welding, Samanta leather complex, Rahim food and Padma textile, these are the other nine companies whose Z values are in between 1.00 to 1.59. The prime reasons behind this downfall of these companies were either lower percentage of EBIT/Total asset, Net working capital/Total Asset or Market Value of Equity/Book Value of Debt. In most of the cases the market value of equity to the book value of debt increased drastically which lead them to this catastrophe. However, investors of Dhaka Stock Exchange have a very persuasive attitude to these shares. This can be easily understood from the trading volume and price range of these shares, which are given in Table - 3. The entire polls of shares are now traded at a price higher than the face value.

The most mysterious fact identified by this paper is that there are shares traded in DSE which have negative Z value. The meaning of negative Z value is significantly articulated in this paper. Because negative Z value means either EBIT or Net Working Capital or Accumulated Retained Earnings is negative. Following the signaling hypothesis these shares are supposed to have less trading volume and low price. However, the data does not support it as most of the shares are regularly traded and speculators are making huge amount of profit by creating bubble in the market. The share are Desh garments ltd., Rahman chemical, Maq paper, Meghna condensed milk,

Amam sea food, Orion infution ltd., Therapeutics ltd., Padma printers, Zeal bangla sugar and shyampur sugar mills. In the Table-3 the current prices of theses share are given.

The cause behind this high degree of financial distress risk of above mentioned shares is negative EBIT. That means these companies were not able to generate sufficient operating revenue to meet the expenses. However, many of them were suffering with excess current liabilities over its current assets. So these firms need to be very careful about their operating efficiency. Other than this they will not be able to sustain in the market. Furthermore, negative accumulated retained earnings were another reason for this downfall. But this was augmented by the negative net income and barrier of regular dividend declaration. Later when they failed to meet this requirement relocate to Z category.

Last but not the least; twenty one companies were having an average Z value of 0.17 to 0.95. The respective Z value calculation has shown that low sales growth and operating inefficiency were the two most significant reasons behind this disgrace.

CONCLUSION

This paper investigates the financial attributes of Z category shares and found that ninety percent of these companies are suffering with financial problem. The financial management at their corporate level is very poor. Nonetheless, executives are not well equipped with asset management skills and boards of directors are not taking any positive initiatives those could motivate long term investors to invest with them. Subsequently the impact of higher leverage of these firms will create a chain effect that could lead to financial distress both for the firm and lender institutions. The management of these firms is not captivating any steps to bust sales or cut cost or increase asset turnover or accumulate internal funds to reduce higher dependency on external funds. All these augmented the possibility of brankruptcy for Z category shares over the years. So the paper can make confident comment that the central authority of Bangladesh capital market Security Exchange Commission (SEC) has to take inventiveness to classify those firms which are not truly in business and force active firms to reorganize the capital structure. Even SEC can

force them to restructure the management to ensure good governance and financial performance.

The authors of this paper are acknowledged that the Altman Z score (1968) model to predict the financial distress of publicly traded manufacturing firms may not be the best technique to apply for companies operating in Bangladesh. In Bangladesh the rules of accounting treatment, the rules of accounting information disclosure, and the governance structure may not be perfectly commensurate with the companies considered by Altman (1968) in his model. So the authors wish to develop a new model in their next paper to predict the financial distress for the companies operated and traded in Bangladesh capital market both in DSE and CSE.

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Table: 01: Year to Year Z – value of 53 companies and their average Z – scores

Name of the Company	Year to Year Z- Score					Average Z-Score
	2000	2001	2002	2003	2004	
Al Amin Chemicals	N/A	0.524096	0.635816	0.956497	0.4891	0.651388148
Alpha Tobacco	0.969706	1.043077	0.915237	1.483112	0.3551	0.953247232
Altex Industries Ltd.	1.26917	1.489265	1.508426	1.361257	1.5571	1.437050643
Amam Sea food	-0.03949	0.05337	-0.04584	-0.04236	-4.1228	-0.839415244
Anwaar Galvanizing	2.254276	2.173645	2.274588	2.379256	2.9366	2.403663499
Aramit Cements	3.304157	2.669027	1.252698	N/A*	N/A	1.806470418
Ashraf Textile Mills	0.961237	1.22882	0.625256	0.25973	N/A	0.615008619
Aziz pipe	1.16073	0.830833	0.532201	0.021843	-0.6942	0.370287181
Bangladesh Chemical	1.45086	1.541712	1.029473	0.358713	0.3080	0.937755249
Bangladesh Luggage Ltd.	0.405821	0.520556	0.411793	-0.18455	-0.2997	0.17077776
Bangladesh Welding electrodes	1.371569	1.237833	1.126163	0.98285	1.1810	1.179882902
BD Com Online	N/A	N/A	N/A	1.419987	1.7682	1.594114799
BD Thai Aluminium	1.72006	1.821545	1.454625	1.428065	1.0070	1.486252663
Beach Hatchery Ltd	2.847784	3.209601	1.181201	1.889135	N/A	1.825544249
Bengal Biscutes	2.570912	2.396621	1.835561	2.137951	2.2315	2.234502065

Name of the Company	Year to Year Z- Score					Average Z-Score
	2000	**2001**	**2002**	**2003**	**2004**	
Beximco Fishries	1.214754	1.50364	1.319429	1.125323	1.0904	1.25070377
Bionic Sea Food	1.591487	0.78097	0.802173	1.012508	N/A	0.837427549
Dandy Dying	0.516499	0.983117	1.061164	1.077987	0.7807	0.883898311
Desh Garments Ltd.	-0.3536	-0.34678	-0.27183	-0.32533	0.8334	-0.092820123
Dhaka Fisheries	14.33835	11.19566	5.884579	6.205727	N/A	7.524862993
Dynamic Textile	0.500211	0.706222	0.730878	0.363618	N/A	0.460185853
Excelsior Shoes	0.49856	0.157431	0.039825	0.033726	0.4093	0.227775022
Fine food Ltd.	N/A	3.846786	5.218217	N/A	N/A	3.021667662
Gachihata Aquaculture Firm	0.630139	0.557554	0.728297	0.275385	0.0854	0.455363412
Gulf Food	2.613286	2.136883	1.77037	1.36181	1.8061	1.937692231
Lafarge Surma Cement	N/A	N/A	N/A	0.127267	0.6309	0.379107644
Legacy Footwear	-0.24627	0.36332	0.972371	1.294007	N/A	0.47668498
Lexco Ltd	0.837475	0.723394	0.752165	0.100394	-0.0197	0.478736686
M. Hossain Garments	0.448014	0.191173	N/A	N/A	N/A	0.213062192
Maq Enterprise	0.714119	0.784654	0.518722	0.186226	-0.1350	0.413753069
Maq Paper	0.612002	0.486197	-0.37996	-0.77619	-0.9942	-0.21044139
Meghna Condensed Milk	N/A	N/A	-0.35578	-0.55251	-0.9808	-0.629687359
Meghna Pet Industries	N/A	N/A	0.784752	0.434824	-0.3525	0.28901997
Meghna Shrimp Culture	2.756436	3.586269	3.911618	3.98981	2.3067	3.310163078
Mita Textile	0.901912	0.827653	0.795925	0.818779	0.9001	0.848881269
Modern Cement	N/A	1.660982	132.2356	0.283799	N/A	33.54508671
Mona Food	1.626027	0.63318	0.397187	0.553307	0.0456	0.651064793
Niloy Cements	2.568382	1.852037	3.003303	2.611302	0.6224	2.131477752
Orion Infusion Ltd.	-2.14533	-2.77368	-3.74463	-1.24602	-0.3995	-2.061825647
Padma Cement	N/A	1.016272	2.626789	0.27969	0.1008	1.005881068
Padma Printers and Colour Ltd	-2.13059	-2.44439	-3.24372	-5.41987	-4.8921	-3.626137392
Perfume Chemical Industries	0.878979	1.053496	1.817763	2.640145	2.3317	1.74441743
Rahima Food	1.147004	1.548545	1.736097	1.083328	0.2189	1.146770572
Rahman Chemical	0.050929	-0.30229	-0.20813	-0.19007	-0.1251	-0.154936555
Rose Heven Ball Pen	6.54951	85.26981	14.4919	29.59145	32.1593	33.61238529
Samata leather Complex	1.425942	1.648339	1.222825	1.007023	0.4377	1.148357874
Shine Pukur Holdings	1.897372	1.873854	1.980232	1.78898	1.5883	1.825740448
Shyampur Suger Mills	-6.88818	-7.57501	-8.61203	-10.4019	-12.2993	-9.155287424
Tallu Spinning Mills	1.393677	1.451337	1.221904	1.311254	1.1619	1.308015801
Therapeutics (BD) Ltd.	-2.90566	-3.27753	-2.19701	-2.33452	-2.5854	-2.660019051
Wanderland Toyes	0.632029	0.653419	0.858394	0.692521	0.5655	0.680362637
Wata Chemicals	1.060259	1.151266	1.589287	N/A	N/A	0.950202834
Zeal Bangla Suger	-6.46269	-8.05155	-7.86613	-5.99052	-6.0599	-6.886155933

N/A = information was not available to calculate the Z values.

Table: 2: Ranking of Z category shares based on average Z – values

Name of the Company	Ranking Based on Average Z-Score		
	Average Z-Score	Rank	Comment
Rose Heven Ball Pen	33.61238529	1	Not in Distress Risk
Modern Cement	33.54508671	2	Not in Distress Risk
Dhaka Fisheries	7.524862993	3	Not in Distress Risk
Meghna Shrimp Culture	3.310163078	4	Not in Distress Risk
Fine food Ltd.	3.021667662	5	Not in Distress Risk
Anwaar Galvanizing	2.403663499	6	In Gray Area
Bengal Biscutes	2.234502065	7	In Gray Area
Niloy Cements	2.131477752	8	In Gray Area
Gulf Food	1.937692231	9	In Gray Area
Shine Pukur Holdings	1.825740448	10	In Gray Area
Beach Hatchery Ltd	1.825544249	11	In Gray Area
Aramit Cements	1.806470418	12	In Gray Area
Perfume Chemical Industries	1.74441743	13	In Distress Risk
BD Com Online	1.594114799	14	In Distress Risk
BD Thai Aluminium	1.486252663	15	In Distress Risk
Altex Industries Ltd.	1.437050643	16	In Distress Risk
Tallu Spinning Mills	1.308015801	17	In Distress Risk
Beximco Fishries	1.25070377	18	In Distress Risk
Bangladesh Welding electrodes	1.179882902	19	In Distress Risk
Samata leather Complex	1.148357874	20	In Distress Risk
Rahima Food	1.146770572	21	In Distress Risk
Padma Cement	1.005881068	22	In Distress Risk
Alpha Tobacco	0.953247232	23	In Distress Risk
Wata Chemicals	0.950202834	24	In Distress Risk
Bangladesh Chemical	0.937755249	25	In Distress Risk
Dandy Dying	0.883898311	26	In Distress Risk
Mita Textile	0.848881269	27	In Distress Risk
Bionic Sea Food	0.837427549	28	In Distress Risk
Wanderland Toyes	0.680362637	29	In Distress Risk
Al Amin Chemicals	0.651388148	30	In Distress Risk
Mona Food	0.651064793	31	In Distress Risk
Ashraf Textile Mills	0.615008619	32	In Distress Risk
Lexco Ltd	0.478736686	33	In Distress Risk
Legacy Footwear	0.47668498	34	In Distress Risk
Dynamic Textile	0.460185853	35	In Distress Risk
Gachihata Aquaculture Firm	0.455363412	36	In Distress Risk
Maq Enterprise	0.413753069	37	In Distress Risk
Lafarge Surma Cement	0.379107644	38	In Distress Risk
Aziz pipe	0.370287181	39	In Distress Risk
Meghna Pet Industries	0.28901997	40	In Distress Risk
Excelsior Shoes	0.227775022	41	In Distress Risk
M. Hossain Garments	0.213062192	42	In Distress Risk
Bangladesh Luggage Ltd.	0.17077776	43	In Distress Risk
Desh Garments Ltd.	-0.092820123	44	In Distress Risk
Rahman Chemical	-0.154936555	45	In Distress Risk
Maq Paper	-0.21044139	46	In Distress Risk
Meghna Condensed Milk	-0.629687359	47	In Distress Risk
Amam Sea food	-0.839415244	48	In Distress Risk
Orion Infusion Ltd.	-2.061825647	49	In Distress Risk
Therapeutics (BD) Ltd.	-2.660019051	50	In Distress Risk
Padma Printers and Colour Ltd	-3.626137392	51	In Distress Risk
Zeal Bangla Suger	-6.886155933	52	In Distress Risk
Shyampur Suger Mills	-9.155287424	53	In Distress Risk

Table: 03: Current Market Price and average Trading Volume of Z category Shares

Name of the Company	Average Market Price (April, 2009)	52 Weeks Price Range	Trading Volume (15th April, 2009)
Al Amin Chemicals	8.4	1.7 - 12.0	17500
Alpha Tobacco	13.2	7.0 - 21.8	NT*
Altex Industries Ltd.	113	54.0 - 160.0	NT
Amam Sea food	219	105.0 - 258.0	NT
Anwaar Galvanizing	273	61.25 - 355.0	3100
Aramit Cements	331	54.0 - 384.9	NT
Ashraf Textile Mills	9.10	7.5 - 19.9	17700
Aziz Pipe	227.50	45.0 - 334.0	1975
Bangladesh Chemical	40.25	12.5 - 70.0	10
Bangladesh Luggage Ltd.	28.25	7.25 - 45.0	NT
Bangladesh Welding Electrodes	62	6.4 - 75.0	NT
BD Com Online	104	12.2 - 54.8	NT
Bd Thai Aluminium	1046	43.5 - 1174.0	NT
Beach Hatchery Ltd	28.9	3.0 - 29.0	NT
Bengal Biscutes	65.50	30.0 - 98.0	800
Beximco Fisheries	95.75	24.0 - 258.0	NT
Bionic Sea Food	6.4	1.7 - 7.9	NT
Dandy Dyeing	29.25	20.25 - 50.0	200
Desh Garments Ltd	102	57.5 - 161.5	NT
Dhaka Fisheries	145	40.0 - 300.0	NT
Dynamic Textile	52.25	16.0 - 53.5	NT
Excelsior Shoes	54.25	8.75 - 84.25	22850
Fine Food Ltd.	26.80	1.9 - 45.0	NT
Gochihata Aquaculture Firm	24.50	10.75 - 40.75	5950
Gulf Food	126	24.25 - 228.0	NT
Lafarge Surma Cement	434	370.0 - 655.0	55550
Lexco Ltd	206	51.25 - 389.75	NT
M. Hossain Garments	34.75	5.75 - 35.25	NT
Maq Enterprise	21.50	8.25 - 35.75	NT
Maq Paper	23.75	9.25 - 42.0	960
Meghna Condensed Milk	14.40	3.8 - 16.1	152500
Meghna Pet Industries	10.80	1.7 - 13.4	165000
Meghna Shrimp Culture	55.75	15.0 - 70.0	NT
Mita Textile	42.75	26.0 - 70.5	1880
Modern Cement	8.90	3.1 - 12.6	199000
Mona Food	55	13.0 - 81.75	NT
Niloy Cements	131.50	66.0 - 280.0	4700
Orion Infusion Ltd.	363.50	80.25 - 519.0	17380
Padma Cement	13.30	2.2 - 16.9	542500
Padma printers and Colour Ltd	12.30	2.3 - 15.6	7600
Perfume Chemical Industries	70	21.0 - 93.0	NT
Rahima Food	95	26.0 - 96.75	NT
Rahman Chemical	237.75	28.0 - 217.0	350
Rose Heven Ball Pen	9.90	1.6 - 15.9	65500
Samata Leather Complex	79.25	18.0 - 124.5	NT
Shine Pukur Ceramics	97.25	51.7 - 120.0	NT
Shyampur Sugar Mills	15.50	7.4 - 24.8	14200
Tallu Spinning Mills	107.50	58.0 - 119.0	2410
Therapeutics (BD) Ltd	370	188.0 - 482.5	NT
Wanderland Toyes	49.25	14.25 - 76.0	1550
Wata Chemicals	310	61.75 - 330.0	NT
Zeal Bangla Sugar	18.7	11.5 - 26.3	12100

* NT = Not Traded on that day (15 April, 2009)