

Financial Distress in Glass Industry of Pakistan: Using Altaman's Zscore

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Abstract

Better economy is always greater concern of every country, for this concern there is greater role of industry especially the glass industry. It is very important to assess the risk faced by glass industry and provide some solutions. This research is done to analyze the financial distress in glass industry, the secondary data from 2011-2015 was taken and used Altman's Z score to find out the research results. The research results showed that the glass industry faced financial distress due to unstable political conditions. This research will helpful for allied industries and managers to revise their business strategies to maximize the market shares.

Keywords: Financial Distress, Political Setup, Prediction, Policies

Introduction

The manufacturing sector of any country has significant importance, particularly to enhance export which is positive for underdeveloped countries. Pakistan is not thought to be exporter of minerals and there is need to strengthen this sector. It is compulsory for the country like Pakistan to prevent the decline rate of manufacturing of mineral products to sustain in the market and reduce the inclination of risk and be a competitor in the market (Davydenko, 2005; Gordon, 1971).

It's the matter of the time nobody knows the accurate history of glass manufacturing, but the glass seems to have been produced in Egypt as far it is. This industry was well established in 1500 BC in Egypt. During the reign of Romans many varieties of glasses were used by Egyptian for window panes, mirrors and magnifying glasses. After the fall of Roman Empire in the 5th century AD, the glass making witnessed decline in Europe. The industry continues to flourish in Iran, Iraq and Egypt. In the 15th century, Venice become the major manufacturer of glassware in Europe. Glass industry in Pakistan manufacturers in the well-organized sector, which contribute about 90 percent of the endemic production (Myers and Jensen, 1986).

There are 8 companies which are registered in state bank Pakistan. More than 100 units in the non-organized sector are engaged in making of different glass goods. These units are situated in Hyderabad, Karachi, Multan and Lahore. About 60 percent of them produce small glass containers, tableware, etc. The units that left behind are concerned in the making of bangles, bead, small glasses for dresses, furniture, crystal glass goods and many more.

A large number of glass units are situated near the source of raw material. Out of the total, around 73 percent are situated in Punjab, 19 per cent in NWFP, 5 per cent in Sindh, and 3 percent in Balochistan. The glass industry directly provides jobs to more than 100,000 skilled, semiskilled and unskilled workers. In addition to this, the converter units and the informal sector are providing more than 100,000 jobs. The demand for glassware has shown a rising trend due to increase in population and somewhat rising income among buying segments of the population. Bangle industry in Hyderabad has been thriving for a long time. The bangles were exported to Bangladesh, Sri Lanka, Middle East, Africa, Europe and USA (Andrade & Kaplan, 1998; Wruck, 1990).

With a view to look up the bunch of several thousand women employees of the bracelet industry, a glass deceitful and progress center base on modern lines has been established at Hyderabad with cost of Rs400 million by SMEDA. This is a joint venture of the Sindh Small Industries Corporation (SSIC) and Small and Medium Enterprise Development Authority (SMEDA). At present the condition of glass industry is pathetic. Around 50 percent of glass industry has suspended its activities while the units that remain are on the verge of closedown due to gas & power load shedding. About 80 percent of glass production depends upon gas (Pindado and Rodrigues, 2005; Stulz, 1990 etc).

Eight units established in Punjab & NWFP have already suspended their industrial production due to complete supply halt by Sui Northern Gas. further 20,000 workers have become unemployed and if the condition remains same there is the probability of more being without a job. Furnaces in Pakistan having production capacity of 100-150 ton per day were drastically exaggerated by the deficiency of gas supply. During the winter

both WAPDA and SNGPL cooperatively played destruction with the glass industry. According to glass industry, representing a total of 2,000 million metric cubic feet (MMCFD) of gas is available to Sui Northern Gas per day. The total requirement of Punjab and NWFP is only 16 metric cubic feet Wruck (1990).

From the shopping plaza, industrial, residential complex and trading house the glass provides vast materials of different kinds, but in Pakistan they leftovers not ill-used due to the truth that larger quality is being imported. There is a big span to manufacture a thousand kind of glasses from essential variety like Float glass (plate), Energy Efficient Glass, Self-cleaning Glass, Patterned (Obscured Glass). The glass business was never provided with attractive incentives to build up its size and quality Purnanandam (2005).

With the increase in the population and enlarged utilize of glass, there is enormous scope for its growth both in domestic production and export. Except the government provide a constant supply of gas and sort out the subsistence of particular allowance in custom duty rates on trade in of some glass goods and elevated price of input there cannot be any impressive development in the glass business in Pakistan. The fundamental and the prime measure the government should take is Innovate, ease, determine and set up efficient machinery to boost the domestic production and all of this should be done in good belief to help the sector gain more profits.

Literature Review:

The recent emergence manufacturing industries (minerals) as non-financial companies is detectable in Pakistan which is underdeveloped country, but the research on various issues of non-financial companies remains considerably rare (Sufian, 2008); (Kogi 2003). Empirical evidence regarding the decrease to increase of the non-financial sector stays even more insignificant, particularly in the framework of under developed countries. With regard to the literature, so far a little number of studies have been conducted, concerning the glass (non-financial) sector in Pakistan. That is because it is binding to measure the financial health of non-financial companies (mineral product) in Pakistan to predict possible financial distress.

For corporate governance, prediction of distress has taken an important attention, indicate by many researchers. (1989); Gilson (1990); Dattaand Iskandar-Datta (1995). The research, Telmoudi, Ghourabi, and Limam (2011) centralized on anticipation of financial position and performance of firms by pointing out that if early contingency plans can be identified with the failing firms, it can discourage managers from making poor investment decisions and from apply required actions that will help to counterbalance future losses.

It is the potential insolvency and the after effects associated with it that have made academic researchers from the whole world to keep under developed a large number of models regarding corporate failure prediction, based on many kinds of modeling proficiency (Aldrich & Nelson, 2007); (Simic, Evic,&Simic, 2012).. Ross, Westerfield, Jaffe, and Jordan (2007) defined financial distress as a situation in which a firm does have insufficient operating cash flows to satisfy current obligations and the firm is forced to take essential measures. In research, O'Leary (2001) gives an argument that anticipation of insolvency probably is single most significant tasks relating to business decision-making problems that influence the whole life span of a business as the failure results in a high cost from the all types of stakeholders and from the country's economy.

Distress analysis has been done on many industries such as; banking, capital market, insurance companies, ceramic companies (Masum&Johora, 2015), SME (Jahur&Quadir, 2012), pharmaceutical companies (Islam &Mili, 2012), cement companies (Hossain&Moudud -Ul-Huq, 2014) and some other industries in Bangladesh also.

A limitation that it is based primarily on the nature that only allows for one ratio used at a time. From which the consequences of the firm are discrepant. Also, the cut-off point determined is chosen post-failure of a company which may consequences in wrong classifications. Altman classifies the companies into two mutually exclusive groups; safe and distress (Altman, 1968). The original Altman model took the following form:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$$

Where:

- X1= Working Capital/ Total Assets
- X2= Retained earnings/ Total assets;
- X3= Earnings before interest and taxes/Total assets;
- X4= Market value of equity/Book value of Total liabilities;
- X5= Sales/Total assets.

Methodology

To identify a trend in the Z scores of non financial companies (mineral products) over six years, starting from 2010 to 2015 and to develop an early warning system in mineral products industry, I selected all companies listed in the State Bank Pakistan from all the ratings ranging from AAA to the lowest rate, so that the statistics set has better reporting and reliability. For every company selected, all the required data of six years, starting from 2010 to 2015 were collect from the SBP site published annual reports for calculation of the five ratios used in Altman Z Score. The table 1 below presents the details.

Table 1. Sample details

Sector	No. of Companies Listed in SBP	No. of Companies Taken as Samples	% of Companies Taken as Samples	No. of Years of Sample Company	No. of Firm Years of Sample Companies
Non Financial Institutions	8	8	100	6	75

The Statistical Model: Altman Z score Model

To categorize banks into ‘Safe’, ‘Grey’, and ‘Distress’ zone, I am going to make the data of the non financial(mineral products) subject to the statistical model outlined below.

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$$

Where:

X₁: Working Capital/Total Assets;

X₂: Retained Earnings/Total Assets;

X₃: EBIT/Total Assets;

X₄: Book Value Equity/Total liabilities;

X₅: Sales/Total Assets

The main reason for choosing the Z score as a statistical model is due to its high predictive ability that it produced for banks over many years. This made the model very related for my analysis considering it had worked correctly on non-financial companies (mineral products). The weightings of the variables did not vary for our study as the aim was to use the original existing model to verify its validity as a predictor for Pakistani non-financial company’s mineral products.

Table No.2

sector name	years	X1	X2	X3	X4	X5	Z	ZONE
Balochistan Glass Limited	2010	-0.24	0	0	-0.091489901	0.413354646	0.08	Distress
Balochistan Glass Limited	2011	-0.54	0	0	-0.143334983	0.492416315	-0.19	Distress
Balochistan Glass Limited	2012	-0.41	0	0	-0.210748502	0.862298161	0.24	Distress
Balochistan Glass Limited	2013	-0.38	0	0	-0.229770542	1.155803352	0.54	Distress
Balochistan Glass Limited	2014	-0.47	-2.310241085	-0.154521356	-0.294230272	1.046840126	-2.53	Distress
Balochistan Glass Limited	2015	-0.65	-2.749699425	-0.345266226	-0.328455906	0.803231448	-3.27	Distress
Frontier ceramics Limited	2010	-0.17	0	0	0.243789417	0.20057063	0.28	Distress
Frontier ceramics Limited	2011	-0.4	0	0	0.276459877	0.406309362	0.28	Distress
Frontier ceramics Limited	2012	-0.34	0	0	0.363161835	0.38486706	0.41	Distress
Frontier ceramics Limited	2013	-0.31	0	0	0.393460552	0.370556389	0.45	Distress
Frontier ceramics Limited	2014	-0.18	-0.070487263	0.305445465	0.832034914	0.343289739	1.23	Distress
Frontier ceramics Limited	2015	-0.04	-0.00259986	0.028070465	1.029283198	0.365602408	1.38	Distress
Ghani Glass Limited	2010	0.34	0	0	1.571289455	1.141110184	3.05	Safe
Ghani Glass Limited	2011	0.22	0	0	1.28900873	0.962204875	2.47	Grey
Ghani Glass Limited	2012	-0.03	0	0	0.697879788	0.859520537	1.53	Distress
Ghani Glass Limited	2013	0.1	0	0	0.802133544	0.94649682	1.85	Grey
Ghani Glass Limited	2014	0.15	0.625119754	0.439507345	0.859030277	0.836526278	2.91	Grey
Ghani Glass Limited	2015	0.18	0.757325348	0.618605049	1.490325349	0.897738685	3.94	Safe
Ghani Value Glass Limited	2010	-0.07	0	0	0.471582248	1.186547761	1.98	Grey
Ghani Value Glass Limited	2011	-0.1	0	0	0.374713882	0.926541387	1.2	Distress
Ghani Value Glass Limited	2012	0.01	0	0	0.462449171	1.269755923	1.74	Distress
Ghani Value Glass Limited	2013	0.28	0	0	0.734017458	0.995033656	2.01	Grey
Ghani Value Glass Limited	2014	0.29	0.123482753	0.184274533	0.9871943	1.181700695	2.77	Grey
Ghani Value Glass Limited	2015	0.06	0.134327017	0.13239056	0.667452208	0.944264882	2.94	Grey
Karam Ceramics Limited	2010	0.01	0	0	0.310213197	1.028441184	1.35	Distress
Karam Ceramics Limited	2011	-0.07	0	0	0.341965827	1.217533992	1.49	Distress
Karam Ceramics Limited	2012	-0.14	0	0	0.282980937	1.256723072	1.4	Distress
Karam Ceramics Limited	2013	0.01	0	0	0.426152853	1.318873052	1.75	Distress
Karam Ceramics Limited	2014	0.02	0.259633012	0.179927896	0.478961946	1.48746555	2.43	Grey
Karam Ceramics Limited	2015	0.04	0.189778617	0.186290666	0.260661715	0.990973713	1.67	Distress
Safe Mix Ceramics Limited	2010	0.151894681	0	0	1.068962928	1.608448	2.83	Grey
Safe Mix Ceramics Limited	2011	0.123331668	0	0	1.032942309	1.558371838	2.71	Grey
Safe Mix Ceramics Limited	2012	0.035774948	0	0	0.896565528	1.720793945	2.65	Grey
Safe Mix Ceramics Limited	2013	0.069849339	0	0	0.95145866	1.867339865	2.89	Grey
Safe Mix Ceramics Limited	2014	0.078616466	0	0.130925106	0.836172024	1.304858558	2.35	Grey
Safe Mix Ceramics Limited	2015	0.193083675	0	0.271938024	1.11671994	1.505942523	3.09	Safe
Shabbir Tiles and Ceramics Limite	2010	0.002715069	0	0	0.164957814	0.720721797	0.89	Distress
Shabbir Tiles and Ceramics Limite	2011	0.034438687	0	0	0.273736529	0.843124416	1.15	Distress
Shabbir Tiles and Ceramics Limite	2012	0.007175221	0	0	0.317023019	0.936419924	1.26	Distress
Shabbir Tiles and Ceramics Limite	2013	-0.050591185	0	0	0.362673109	1.029875581	1.34	Distress
Shabbir Tiles and Ceramics Limite	2014	-0.158125085	0	0.197970346	0.330364337	1.002177969	1.37	Distress
Shabbir Tiles and Ceramics Limite	2015	0.052407287	0	0.123300025	0.444391918	0.845094064	1.47	Distress
Tariq Glass Industries Limited	2010	0.02	0	0	0.497184776	1.517528479	2.04	Grey
Tariq Glass Industries Limited	2011	0.25	0	0	1.432348142	1.114060793	2.79	Grey
Tariq Glass Industries Limited	2012	0.02	0	0	0.678118144	0.890335054	1.59	Distress
Tariq Glass Industries Limited	2013	0.01	0	0	0.394675605	0.611355604	1.02	Distress
Tariq Glass Industries Limited	2014	0	0.181637247	0.171517729	0.32262632	1.021985403	1.7	Distress
Tariq Glass Industries Limited	2015	0.04	0.264646289	0.539453338	0.410698413	1.068859582	2.13	Grey
Mineral Products Overall	2010	0.04460975	0	0	4.236489934	7.81672268	1.56	Distress
Mineral Products Overall	2011	-0.482229645	0	0	4.877840313	7.520562978	1.49	Distress
Mineral Products Overall	2012	-0.847049831	0	0	3.48742992	8.180713677	1.18	Distress
Mineral Products Overall	2013	-0.270741846	0	0	3.834801239	8.29533432	1.48	Distress
Mineral Products Overall	2014	-0.269508619	-1.190855582	1.455047064	4.352153846	8.224844319	1.53	Distress
Mineral Products Overall	2015	-0.124509037	-1.406222014	1.554781901	5.091076835	7.421707306	1.67	Distress

Findings & Analysis

After organizing the data in to different variants and ratios, the study determined the score of each of the companies for of the 6 years, using Altman Z Score Model. The details of company's data are shown in the table.

After the analysis of the data of the (glass product) companies of different years, study find that few companies are in ‘Safe’ zone, only 12.5% in year 2010, 37.5% are in Grey zone and 50% are in distress zone.

In 2011, 0% of companies are in safe zone, 37.5% are in grey zone and 62.5% are in distress zone. In 2012, 0% companies are in safe zone 12.5% companies are in grey zone and remaining are in distress zone. In 2013, 0% companies are in safe zone, 37.5% companies are in grey zone and remaining are in distress zone. In 2014, 0 % companies are in safe zone and 50% companies are in grey zone and remaining 50% are in distress zone. Finally, in 2015, 25% of companies are in safe zone 25% are in grey zone and remaining 50% are in distress zone.

From the results, the study says that some of the non-financial companies are in ‘Grey’ zone, and maximum of them are in ‘Distress’ zone over the six years of our study, three companies are fully in distress zone. During the time period of 2010-2015, the companies marked ‘Safe’ had a little upward trend, but in rest of the years, they again went down at 0%. Few companies have ‘Grey’ zone.

The overall scenario shows that the sampled non-financial companies (glass product) in the given period can be best narrate as being in the ‘Distress’ zone. Though some of them have ‘Grey’ trend, this trend is not upward sloping, whereas the ‘Distress’ trend is upward sloping. Therefore, based on our study with Z Scores, the study concludes that (glass product) non-financial companies have a trend of downgrading their financial position and thus trend to belong to the ‘Distress’ zone.

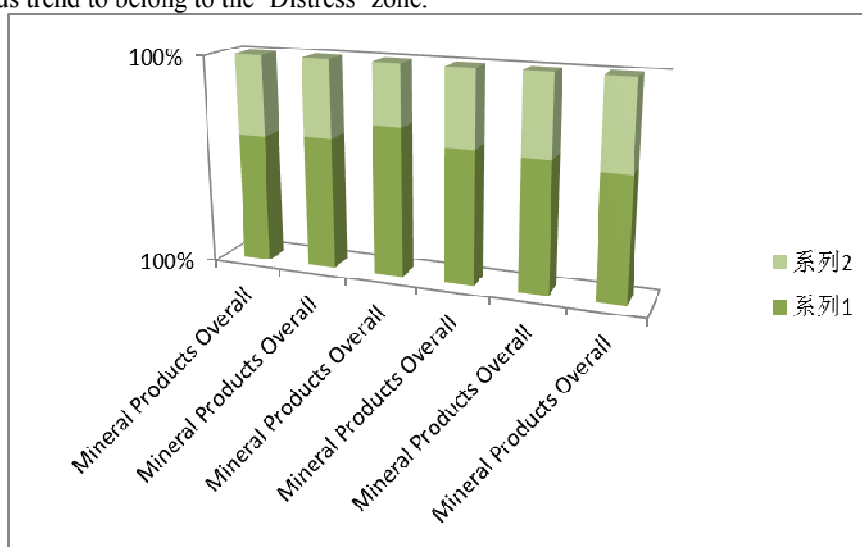


Fig: 1 Distress zones

Conclusion

From the above discussion, findings, and analysis of data of all (glass industry) non-financial companies with the Altman Z score model, the study concludes that almost every of the company has been in the ‘Distress’ zone. Though all of them all registered with SECP for their great performances and contributions to the industrial and overall development of the country, they fail to achieve the minimum score as per Z score model. According to the model, nearly all of the companies are lying on the bankruptcy level. It is also to be mentioned that this model may not be suitable for the countries like ours, but preventive actions have to be taken to reduce future unforeseen losses that might obstruct the growth of the economy and industry. The findings suggest more tight regulation by the SBP and other regulatory bodies for that the non-financial companies play a vital function in the economy.

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