

Distress Risk and Stock Returns in An Emerging Market

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Abstract

This study examines the link between financial distress and market performance of firm in the form of share performance by using Z-Score bankruptcy prediction model as the proxy of distress risk and the subsequent realized stock returns of the distress-listed companies as a proxy of systematic risk. The sample is drawn from Karachi Stock Exchange listed companies. We found that distress risk is not significant enough to explain the expected stock returns in the case of the Pakistani distress listed-firms. Altman's (1968) measure of distress is operationalized to test the financial health of firms. The results show that distressed firms outperform as compare to healthy firms. This study deduces that distress risk is a systematic risk in relation to the Pakistani stock market to some extent.

Keywords: Financial distress, Share returns, KSE, Distressed companies, Bankruptcy risk, systematic risk

1. Introduction

Financial distress is the inability of a firm to fulfill its debt obligations which leads to bankruptcy. Managers always try to avoid this situation and at greater extent they are able attenuate it through some expensive sources of funding taking into account costs-benefits of the firm. Either a firm is financially distressed or not, the regulatory body/bodies of the country decide based on their cut off criteria.

Chen and Zhang (1998) report distress risk is systematic, there is still undetermined either distress risk is positively associated with stock returns or not in case of Pakistani stock market. The purpose of present study is investigate the financial distress>Returns relationship of distress-listed companies using Z-score distress prediction model proposed by Altman (1968) as proxy for distress risk. Z-Score model is one of the most used and cited. Bengley et al. (1996) report that Z-Score model of distress has predictive power for compustat companies in 1980. It's also helpful tool to predict financial distress condition besides bankruptcy. Financial failure prediction is very important as failure of firm is not mere loss for the firm but also dangerous for community. A good predictive model not only saves a firm from bankruptcy but also save the broader range of its stakeholders. There is another view that emphasizes on qualitative aspects of firms and considers poor management, autocratic leadership and inability to operate successfully are major causes of financial failures (Xu, X. and Wang, Y. 2009). Inclusion these factors increase the predictive power of distress models. This also checks the efficacy of the inclusion of efficiency in distress prediction model as a predictor.

Present study attempts to inquire that whether research findings made by (Dichev 1998) in United States and (Samad et al. 2009) in Malaysia hold in Pakistani stock market?

2. Literature Review

Financial distress is generally inability of a firm to pay its liabilities within appropriate time frame and usually bankruptcy is used as an appropriate proxy for it. Researchers have made effort to predict bankruptcy across various parts of the globe. Bankruptcy is not limited to any specific region and can be due to country level, industry level and company level some unfavorable variants (Argenti, J. 1976).

New firms fail due to inexperience while the old firms fail due to their nonconformance with change in Canada (Thornhill, S., and Amit, R. 2003), while inappropriate marketing strategy is the basic reason for firms' failure in United Kingdom (Hall, G. 1992). Higher investment in property and plant cause Asian firms failure (Bongini, P. et al 2000). Poor management, insufficient accounting information, overtrading, high debentures, Political, Economic, Social, Technological (PEST) change are the major reasons of a business failure whereas one can predict a business failure through employee low morale, fall in service and quality, strained credit policy, contracting market share, increase in customer complaints, non-achievement of targets over the period and over drafting (Argenti, J. 1976). Experience is the major contributor in firms' failure as inexperience entrepreneurs have not enough potential for business survival (Cooper, A., et al 1994). Besides this, appropriate access to human and financial resources defines a new business success (Dugan, M. T., and Forsyth, T. B. 1995). The prime motive in financial distress studies of firms is to divulge the indicators which can help firm stakeholders to evaluate a firm's health. Distress risk is not clear, either it's systematic or unsystematic in current research, even though strong evidence exists in past studies on the positive impacts of book to market ratio and size on stock returns (Samad, F. et al 2009). Asset pricing model presumes that higher risk is compensated by higher returns and vice versa in case the risk is systematic. So if the financial distress risk is un-diversifiable, investors should

earn more on financial distressed stocks as a reward for taking high risk. Besides this investors take financial statements of a firm as such sources of firm information which have been modeled in accordance financial distress models predicted stock returns (Dugan, M. T., and Forsyth, T. B. 1995).

The plethora of literature on either distress risk is systematic or unsystematic is ambiguous. Financial distress risk is positively associated with systematic risk (Lang, L., and Stulz, R. 1992) (Denis, D. J., and Denis, D. 1995). Firms listed in NYSE and AMEX listed companies which are financially distressed earn higher than normal firms (Shumway, T. 1996), which confirm that distress risk is systematic. (Dichev 1998) reports that stock returns of US firms since 1980 are negatively associated with distressed risk which supports the view that distress risk is unsystematic.

Griffin and Lemmon (2002) report that in highly distressed firm, difference of stock returns between high and low book to market ratio firms is more almost twice than other firms. Stocks of distressed firms, in low value group earn more (Vassalou, M., and Xing, Y. 2004). Study of Chava and Purnanandam (2010) show positive link between financial distress and expected stock returns before 1980 and lower average returns than realized returns afterwards in United States of America.

Inverse relationship between distress risk and stock return can be due to mispricing as pointed by (Dichev 1998; Griffin and Lemon 2002) and can also be due extrapolating past operating performance too long in future.

Different studies exist on the modeling of financial distress with a variety of models to measure it. Most models are part of any of these three global categories: (i) Accounting based (ii) Market based and (iii) artificial intelligence based bankruptcy models.

The first category is mounted on past performance of a firm as its ability to survive in future (Xu, M., and Zhang, C. 2009). Most common and used accounting based models are Z-Score proposed by (Altman 1968) and O-Score proposed by (Ohlson 1980).

Researchers afterwards attempted to find the most appropriate model out of these two. (Pongstat et al. 2004) investigated the distress predictive ability of O-Score and Z-Score in Thailand for both small and large firm and he reported that Altman's Z-score is superior to (Ohlson's 1980) O-Score model. The major focus of accounting based models has been to find those ratios/variables which can differentiate the healthy and distressed firms.

The second category of distress prediction models is based on market and future performance is predicted through market variables (Xu, M., and Zhang, C. 2009). The most popular market based distress prediction models are (Black and Sholes 1973) and (Merton 1974) option pricing theory. On other hand Artificial intelligence based models are based employ heavily computer databases.

3. Methodology

Z-Score is taken as proxy of distress risk in this study and following is the general form of this model as proposed by (Altman et al. 1968). It's based on Multivariate Discriminant Analysis (MDA) which captures the discriminants ratios which make distressed firms different from healthy ones.

$$Z = .012X1 + .014X2 + .033X3 + .006X4 + .999X5 \quad (1)$$

Where X1=Working capital/Total assets, X2 = Retained Earnings/Total assets, X3= Earnings before interest and taxes/Total assets, X4= Market value equity/Book value of total debt, X5 = Sales/Total assets, Z = Overall Index.

X1 ratio measures how much the firm has liquid assets as compared to its total assets, X2 gauges the profitability and earning power of a firm, X3 takes into account the operating efficiency of firm apart from taxes and leverage, X4 captures markets effects and shows how much firm value can decline prior to its departure from solvency and X5 captures the sales making capability of firms assets. The Z-Score results of equation 1 are interpreted with following cut offs criteria. Firm is non-bankrupt if Z-Score is greater than 2.99, Zone of ignorance exist if value ranges 1.81 – 2.99 and Bankrupt if value is less than 1.81.

The sample of seventeen distressed and seventeen non-distressed companies was drawn from firms listed in Karachi Stock exchange. The Criteria for selecting sample was based on following parameters

- (i) Any non-financial firm listed in KSE during 2006-2011
- (ii) Z-Score has showed firm is distressed
- (iii) Firm has negative equity.

Out KSE firms 17 companies were found suitable over this criterion. The criteria for selecting healthy firm were based on the size resemblance with distressed firms.

4. Data and Analysis

The descriptive statistics for the average scores of the variable are as shown in the Table 1 below.

Table-1 Descriptive Statistics

Distressed Firms			
	Mean	Median	Standard Deviation
Z-Score	1.815003	1.699271	0.70732457
Share returns	0.006625	0.006	0.002328062
Non-distressed Firms			
Z-Score	32.17619	16.09508	37.96870834
Share returns	0.01525	0.006	0.053473574

Table-1 shows the descriptive properties of distressed and non-distressed of 34 listed-companies. The arithmetic mean value of stock return for distress listed-companies is 1.81% which indicates that on average the subsequent realized returns of most of the distress listed-companies are positive. The positive median returns of 1.69% show that the subsequent realized returns of the distress listed-companies skewed toward positive returns. These are much less than that of non-distressed firms. This shows the appropriateness of sample and suitability of Z-score for this study. On the other hand, the arithmetic mean value of stock return for non-distress listed-companies is 32.18% which indicate that on average the subsequent realized returns of most of the non-distress are positive. The positive median returns of 16.09% shows that the subsequent realized returns of the non-distress listed-companies skewed toward positive returns.

Table-2 Correlation Matrix

Distressed firms		
	Z-Score	Share performance
Z-Score	1	
Share performance	.140	1
Non distressed firms		
Z-Score	1	
Share performance	-.0965*	1

* Significant at 1% statistical significance

Table 2 reports the relationships between financial distress and share performance. The Pearson correlation results show that Z-Score value of stock return for distress listed-companies is 1% which indicates that on average the subsequent realized returns of most of the distress listed-companies are positive while share performance of the distress firms is .140%. So there is positive link between financial distress and share performance. This is not in line with financial distress hypothesis which states that higher distress risk requires higher expected returns by investors. In other words the financial distress model show that lower the value of a distress score the higher are the chances of a firm default. The positive relation mean the higher is distress score, which mean a firm is a bit healthy one, the firm will offer greater stock returns. This is in line with (Fama and French 2004) findings which suggested that the risk and return relation is not as linear as suggested by Capital Asset Pricing Model. Our suggested finding is however insignificant at 1% significant level. Results for healthy firms show Z-Score value of 1% which indicates that on average the subsequent realized returns of most of the non-distress listed-companies are positive while share performance of the non-distress firms is -.0965%. So there is negative link between financial distress and share performance. This result is statistically significant at 1%. This means that firms performing well as per z-score sampled in this study are not so glamorous in their shares performance.

5. Conclusion and Recommendations

This work attempts to investigate the link between distress risk and return of distressed-listed companies in Pakistani stock market. Using (Altman's 1968) Z-Score bankruptcy prediction model as the proxy of distress risk and the subsequent realized sock returns of the distressed-listed companies, this study test the empirical relationship between the two variables.

The results suggest that financial distress is positively associated with share performance in the case of the Pakistani distress listed-companies. This finding is not in line with (Shumway 1996; Chen and Zhang 1998; Samad *et al.* 2009). The results are however, not so finalized as the positive relationship found between the stock returns and distress risk is not statistically significant. In fact, the distress listed-companies appear to be over-performed as indicated by the positive mean and median value of the returns. Based on the above findings, it is inconclusive to deduce that distress risk is a systematic risk in relation to the Pakistani stock market. Based on theoretical grounds, higher risk should be rewarded with higher returns as per capital asset pricing model. Although our results are opposite to (Shumway 1996; Chen and Zhang 1998; Samad *et al.* 2009) but they are somewhat in line with the implications of asset pricing model. This shows that KSE is efficient enough to reward

the investors against their level of risk taking. Some further study can be conducted to confirm the efficiency of KSE in rewarding investors as per their risk taking levels.

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