

# Signs of Financial Distress in Projects Funded by Project Finance

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## Abstract

The need to implore project finance for funding projects cannot be overemphasized. Project financing are however susceptible to risk. In the last few decades, a number of projects and companies have plunged into financial distress. The impact of financial distress on economies of nations is huge. Financial distress of companies and projects is of serious concern and need to be investigated in order to find a remedy for the canker. This paper moves beyond traditional ratio analysis to find out the possibility of financial distress of companies and projects using a Prediction model. The Modified Altman's Z-score Model is applied to the financial statements of the defunct Enron Company to see if it was possible to detect its collapse before it eventually did. The Modified Altman's Z-score Model is a predictor of bankruptcy. It was found that the use of the Modified Altman Model was possible to notice early signs of financial distress of the Enron Company in particular and generally all businesses. It is recommended that projects and companies should make it a habit to apply Prediction models to test their financial soundness regularly to guide against financial distress.

**Keywords:** Project finance, financial distress, Prediction models, The Modified Altman model

## 1.0 Introduction

Contemporary governance in most economies in their quest to meet accelerated developmental needs has shifted focus on developing large scale projects through the application of project finance schemes (Andrews, 2010; Mawutor, 2014). Unlike corporate finance, project finance is a non-recourse debt that is financed through cash generated from the project. In the last few decades, the number of project finance schemes employed to provide basic infrastructure for public consumption has increased considerably (Fight, 2006). For example, the year 2010 witnessed the signing of over 200 project finance schemes worth \$130 billion across China, Russia, Brazil and other emerging economies in Africa, Asia, Europe, Latin America (Thompson, 2010). Globally, firms financed a record \$415 billion of capital expenditures using project finance in 2013 (Esty et al, 2014).

Project finance however is susceptible to a number of risks capable of frustrating the entire execution of the project (Fight, 2005). The delivery, operation, and profitability of a project can fail or may not go according to schedule. This plunged most projects to encountering financial distress leading to bankruptcy or restructuring. Cash flow issues occur in 71 percent of project financings and 82 percent of project financings encounter some form of financial distress (Castle, 1975) as cited by (Laurens, 2012). The Euro Disneyland projects distress is a practical example of risks associated with project finance. Apart from financial distress most project finance schemes encounter structural distress, managerial distress, organizational distress and general corporate governance distress (Vilanova, 2006). However, the extent to which these distresses impact on the fortunes of a project is not as severe as the impact financial distress have on projects (Morrison, 2012). Financial distress generally impacts on the entire success of a project due to the non-recourse nature of project finance schemes (Pustylnick, 2012).

The aim of this paper therefore is to move beyond the traditional ratio analysis to find out the possibility of financial distress of companies and projects using a Prediction model. The Modified Altman's Z-score Model is applied to the financial statements of the defunct Enron Company to see if it was possible to detect its collapse before it eventually did. The rest of the study is organized along the following structure; Section 2 discusses brief literature on project finance. Section 3 explains the methodology employed by the study. Section 4 discusses the findings of the study while section 5 concludes the study.

## 2.0 Literature Review

Project distress is a situation that can arise during the life of a project, which could make it difficult for the project to be completed successfully. Although project distress is of serious concern and can be costly, it is possible to notice early signs and hence take early action to ensure that those concerns are addressed before serious problems develop. The literature framework will discuss the state of distress of project finance, major signs of distress, and potential sources of financial distress.

### 2.1 The State of Distress

In general, financial distress refers to the inability of a company to pay its financial obligations as they become due (Beaver et al., 2011; Tomas and Dimitric, 2011). Kordestani et al. (2011) pointed out that financial distress is a situation where the outflow of cash outweighs the cash inflow. This will lead to a situation where the company cannot satisfy its financial obligations and hence falling into a financial distress. The financial

obligation that the company is required to meet is the periodical payments which include the principle and the interest of the loan acquired by the company. Pustynnick (2012) believes there are two different types of distress, which are the negative net present value (NPV) and negative cash flow, in which the cash deficit could happen any time in the project due to simply raising operational cost.

A project encounters financial distress when the pre-determined financial ratios (loan covenants) are breached (Borgonova and Gatti, 2012). Parties in a project financing scheme rely on the project to generate sufficient cash flow to service the debt (Fight, 2006), cover operating expenses, and pay sponsors and investors dividends that are in line with their expected returns (Gatti, 2008). Laurens (2012) indicated that a project financing encounters financial distress if the project's cash flow becomes negative, i.e. insufficient to cover required payments (Finnerty, 2007; Gatti, 2008). This may be a consequence of a decline in revenues, an increase in expenditures, or both. A case in point is the Euro Disneyland Project (Finnerty, 2007). In this case the collapse of the real estate market in France and the onset of a severe recession in Europe - resulting in an unexpected rise in interest rates and project input costs, and a decline in the projected revenue (Finnerty, 2007) - had a significant adverse impact on the cash flow of the project. Because of this, the project encountered financial distress and at one point reached the verge of bankruptcy.

## 2.2 Major Signs of Distress

Predicting the early signs of distress could be a make-or-break point for corporations and their projects. Financial statements have been used to assess the likelihood of a distress. If a company reports losses for three consecutive months, or discontinue payment of preferred dividends and the decrease in common stock dividends payments, it is financially distressed (Jantadej, 2006). One of the major applications of financial statements is their ability to look into the future of the project or the company, a look that is based on the findings of financial statements (Bardia, 2012). Models of financial distress analyze the trends of selected ratios. All such models presume that evidence of financial distress can be traced in selected ratios and distress can be detected at the early stages. Thus, it can be checked by taking appropriate actions immediately to either avoid risk of huge loss or to capitalize on this information" (Wild et al., 2007).

## 2.3 Potential Sources of Financial Distress

Financial and non-financial sources could act as major sources of a financial distress, in which the non-financial sources could have a negative impact on financials of the company, and hence, leading to the state of distress. There are various reasons for the project to be in distress which include financial and non-financial factors such as managerial, organizational, and financial reasons (Pustynnick, 2012). Pustynnick indicated that projects can suffer from poor performance due to objective conditions such as supply delivery faults, fluctuations in quality and labour force availability. The majority of these reasons have nothing to do with financial elements of the project. Studies have attributed financial distress to a number of factors that include, for example, economic turbulence, change in demand, high debt, restrictive monetary policy, high interest rates, inadequate capital structure and poor financial management (Madrid-Guijarro et al., 2011). Possible risks that may evolve into project problems and eventual financial distress include project risks at start-up risks, credit risks, financial risks (also known as macroeconomic risks) and political risks (Hoffman, 2008).

The potential of start-up risks occurring may prevent the project from becoming operational, i.e. unable to generate sufficient cash flow. The major risk associated with the start-up phase of a project is conflict of interest among the parties in the scheme (Fight, 2006). These conflicts normally emanate mainly from the project sponsors and lenders. The banks and other lenders need to be satisfied that the project will operate at the costs and according to the specifications agreed at the onset (Fight, 2006), and will expect that all the necessary performance test before acceptance are clearly verified by the project engineer prior to the release of the contractor. Most sponsors on the other hand tend to compromise on the necessary performance and acceptance test. This opposing interest among the project parties might result in the sponsors possibly compelled to generate cash by persuading the engineers to compromise on the reviews (Ghershi & Sabal, 2012).

In the case of project financings the viability of a project depends not only on the financial status of the project company/borrower, but also other participants such as suppliers (Fight, 2006) and buyers of the project's produce (Hilmarrsson, 2010; Fight, 2006). Therefore, the inability by a project company to, e.g. sell its produce as a result of credit issues on the part of off-takers could result in the project encountering financial distress.

Financial risk is another risk that is critical to the success of projects. Financial risks are the risks that concern the inability of the borrower to meet the financial obligation of other participants in a typical project finance scheme. These risks usually arise as a result of foreign exchange exposures, interest rates exposures, inflation exposures, liquidity exposures and project pricing exposures (Fight, 2005).

One of the major risks that affect project financing schemes is political risk. Political risks that stem from government action have an impact on the returns and debt-service capacity of the project finance (Sachs et al, 2008). According to Sachs et al, political risks include currency inconvertibility and transfer restrictions,

breach of contract, political violence and expropriation, legal and regulatory risks. Political risks are activities that are likely to affect the output of projects as a result of high taxes, change in government regulators, outbreak of war, and expropriation. In developing countries, political risks accounts for most challenges exposed to lenders and foreign investors (Fight, 2004).

The materialization of political risk may result in financial distress for a project, e.g. should a relevant government withdraw its approval for the project (Fight, 2006). Political risk is catastrophic by nature, potentially imposing significant losses. A case in point is the USD 28 billion Dabhol Power project in India (Sesia and Esty, 2010). Following a political change in the area where the project was located soon after completion of the financing, the government withdrew its support for the project. This led to the abandonment of the project resulting in significant losses to the project sponsors, including the (now defunct) Enron Corporation and General Electric Capital Corporation. Furthermore, frequent passage of laws regarding tax rates will also negatively impact on the project's cash flow especially in high tax regimes (Sangre, 2010).

### 3.0 Methodology

The research employed the case study method by employing the Modified Altman's Z-score Model on the financial statements of Enron Company Ltd.

Altman's Z-score is one of the most reliable indicators of financial distress (Bardia, 2012). Altman z-score could be used to assess the financial direction and hence the performance of a given company in general, as opposed to solely being used as a prediction model of corporate financial crisis (Nugent, 2003). Altman's Z-Score is a formula published in 1968 by Edward I. Altman which sought to predict financial distress or corporate bankruptcy. The model is a linear combination of five common business ratios, weighted by co-efficient. Altman's model is based on analyzing the financial strength of a company using five ratios built on key numbers mainly taken from a firm's balance sheet, along with few from the profit and loss account (Bennett, 2008). The five categories of ratios identified are liquidity, profitability, leverage, solvency, and activity ratios. Based on this classification, Altman developed the Z score model as follows:  $Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 6.0X_4 + 1.0X_5$ , where:

$X_1$  represents working capital/ total assets ratio

$X_2$  represents retained earnings/ total assets ratio

$X_3$  represents earnings before interest and taxes/ total assets

$X_4$  represents market value/ book value of total debt

$X_5$  represents sales/ total assets

Each ratio is weighted to reflect its relative importance before the five ratios are added together to generate a Z-score, usually a single digit. The state of distress is determined based on the score. Financially sound companies have a score of 2.99 and above, whilst companies in serious trouble have Z-score below 1.81. Those with the score between 1.81 and 2.99 may be facing financial deterioration leading to a financial distress. In his 10-year research using Altman's Z-score model aimed at predicting the financial distress of two leading steel manufacturing companies in India, Steel Authority of India Limited (SAIL), and Tata Steel Limited, Bardia (2012) comes to the conclusion that his conclusion from corporations under his research is in complete harmony with the Z-score interpretation, which is a Z-score of less than 1.20 suggests high chances of financial distress and a score of over 2.90 implies low or no chances of financial distress.

Prediction models such as the Altman's Z-score may need modifications (Bhunia and Mukhuti, 2011; Ying and Campbell, 2010). The Altman Z-score was modified to the Modified Altman Z-score. The Modified Altman Z-score is applied to the financial statement of Enron Corporation to demonstrate the prediction of financial distress by the Z-score. Data used for the analysis was derived from the financial statement of Enron from 1996 to 2000 shown below in table 1

**Table 1: Summary of Enron Corporation Financial Statements from 1996 to 2000**

	1996 US\$ Millions	1997 US\$ Millions	1998 US\$ Millions	1999 US\$ Millions	2000 US\$ Millions
Current Assets		4113.00	5933.00	7255.00	30,381.00
Total Assets		22,552.00	29,350.00	33,381.00	65,503.00
Current Liabilities		3,856.00	6,107.00	6,759.00	28,406.00
Retained Earnings		1,852.00	2,226.00	2,698.00	3,226.00
Accounts Receivable		1,372.00	2,060.00	3,030.00	10,396.00
Total Debt		14,794.00	19,158.00	20,381.00	50,715.00
Working Capital		257.00	(174.00)	496.00	1,975.00
EBIT	1,238.00	565.00	1,582.00	1,995.00	2,482.00
Net Revenues /Sales	13,289.00	20,273.00	31,260.00	40,112.00	100,789.00
Gross Margin/Profit	690.00	15.00	1,378.00	802.00	1,953.00
Market Value of Equity		6,614.00	9,509.00	32,080	62,523.00
Shareholders ' Equity		5,618.00	7,048.00	9,570.00	11,470.00
Net Cash Flow		(59.00)	(86.00)	177.00	1,086.00
Cost gas electricity metal and others		1,731.00	26,381.00	34,761.00	94,517.00
Outstanding Shares (in numbers )		318,297,276	335,547,276	716,865,081	752,205,112
Market Value Per Equity		\$20.78	\$28.34	\$44.75	\$83.12

(Source: Enron Corporation, 1998, 1999, 2000)

#### 4.0 Discussions

The modified Altman Z-score according to Nugent (2003) is used if the gross margin decline. This is done by adjusting the  $X_4$  (Market Value of Equity/Book Value of Total Liabilities) value as illustrated in table 2.

**Table 2: Adjusted  $X_4$  in the Modified Altman Z-score**

Annual Decline in Gross Margin%	Decline $X_4$ Weighting of (0.6) by	$X_4$ Value
.5% < 2%	100%	0
> 2% < 5%	200%	-0.6
> 5% < 10%	300%	-1.2
> 10% < 20%	600%	-3.0
> 20%	1,000%	-5.4

(Source: Nugent 2003)

From table 2 above, there is no adjustment for 1997, as it is the starting point of the trend analysis, so it is left as 0.6 and as the 1998 gross margin was an increment from 1997 -4%-, this was also left as 0.6. However, there was a negative gross margin -2% movement from 1998 to 1999 and as such,  $X_4$  was adjusted by 200% to -0.6. Furthermore, as there is no gross margin movement from 1999 to 2000 the same  $X_4$  adjustment i.e. -.6 is employed (Nugent, 2003).

Z Score =  $1.2 * X_1 + 1.4 * X_2 + 3.3 * X_3 + 0.6 X_4 + 1.0 * X_5$ , Where:

$X_1$  = Working Capital/Total Assets

$X_2$  = Retained Earnings/Total Assets

$X_3$  = EBIT/Total Assets

$X_4$  = Market Value of Equity/ Book Value of Total Debt

$X_5$  = Sales/ Total Assets

**Table 3: Z-scores using Modified Altman's Adjusted Z-score**

Modified Altman Z Score	1997	1998	1999	2000
$1.2 * X_1$ (working capital/total assets)	0.14	0.00708	0.01776	0.03612
$1.4 * X_2$ (Retained Earnings/Total Assets)	0.12	0.10612	0.11312	0.06888
$3.3 * X_3$ (EBIT/Total Assets)	0.08	0.17787	0.19701	0.12474
0.6 or (0.6) * $X_4$ (Market Value of Equity/ Book Value of Total Debt)	0.27	0.29778	( 0.9444)	(0.73968)
$1.0 * X_5$ (Sales/Total Assets)	0.9	1.0650	1.2016	1.5358
Z Score = $1.2 * X_1 + 1.4 * X_2 + 3.3 * X_3 + 0.6 * X_4 + 1.0 * X_5$	<b>1.50</b>	<b>1.65</b>	<b>0.59</b>	<b>1.03</b>

The calculated Z-Scores are all below the distress zone which indicates that Enron was likely

experiencing financial distress and possibly heading towards collapse.

Financial distress can be received during the implementation of financial ratios of an organization. Loan covenants typically include financial ratios which are used as tools to establish the financial status (health) and performance of firms (Malikova and Brabec, 2012; Monea, 2009) and to detect signs of financial distress. An example of a case where financial ratios provided lenders with an early warning mechanism that the project was deteriorating financially and that the project company/borrower was becoming financially distressed is the Eurotunnel Project (Borgonova and Gatti, 2012). In this case significant cost overruns and competition from ferry operators, who cut fares aggressively, reduced the project's forecast revenues (Finnerty, 2007), resulting in a breach of the financial ratios (loan covenants) on a number of occasions. The detection that the project company was failing to comply with the loan covenants, enabled the lenders to take corrective actions before the projects reached financial collapse. The lenders came to the rescue by (inter alia) restructuring the debt, reducing it from approximately USD 7.5 billion to USD 3.2 billion.

## 5.0 Conclusions

The need to improve project finance for funding projects cannot be overemphasized. Project financing involves huge capital investments. Globally, firms financed a record \$415 billion of capital expenditures using project finance in 2013 (Esty et al, 2014). The cost involved in the failure of such huge investments is enormous. It is important to keep a daily log of what is happening in projects. Waiting until the project has failed is not useful since it retards economic development

It is recommended that projects and companies should make it a habit to apply Prediction models to test their financial soundness regularly to guide against financial distress.

More research should also be carried out on restructuring and construction of distress projects.

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