

**ASSESSING CORPORATE FAILURE RISK OF REAL ESTATE COMPANIES IN INDIA****Dr.Priyanka Zala<sup>1</sup>, Dr.Rajalakshmi Vel<sup>2</sup>, Dr.P.C.Lakshmi Narayanan<sup>3</sup>**

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**Abstract**

The Indian real estate sector has been badly battered by the pandemic. A fall in demand for commercial spaces due to work from scenario, disruptions in the supply chain of raw materials and relocation of labour force to home towns during lock down are some of major impacts on the business of real estate companies. Reports of halt in growth of the real estate sector are making news as housing sales dips in major cities of the country. In this scenario, the already cash trapped real estate companies are facing the heat. The real business cannot be ruled out from the risk of insolvency that haunts most companies.

The current study chooses a sample of 25 large and mid-size companies of the real estate sector and examines them for insolvency risk applying the time-tested Altman's model for predicting bankruptcy. The sector is the second largest employment provider and is indirectly connected to the prospects of many allied industries. Based on Z Score values, the study classifies the sample companies as safe, grey zone and bankrupt. The data for computing Z Score is obtained from the financial reports of the sample companies. Suitability of model and authenticity of results are statistically tested using regression and ANOVA. The results of the study states that 52% of the sample companies tested for insolvency fall in bankruptcy zone causing concern for real estate community. A mere 12% of the sample companies fall in safe zone. 36% of sample companies exhibit weakness and show signs of tilting towards insolvency. The Z Score model yields an adjusted R square value of 0.997 leading to the acceptance of the alternate hypothesis that Z Score model is significant in predicting Corporate Bankruptcy.

The study contributes to the existing literature on bankruptcy. It also emphasizes the urgency for policy decisions for the sector in terms of reviving the Real Estate Investment Trust (REITs) to boost the sector for economic development.

**Keywords:** Real Estate, Insolvency, Bankruptcy, Altman Z Score, Insolvency Bankruptcy Code

JEL Classification: C1, L2

**Background**

The saying 'Debt is a double-edged sword' is true for corporations whose empires have crashed heavily over the last few years. It's the same debt that fuelled growth that has caused the

downfall leading to situation of bankruptcy for several companies. Discussion on bankruptcy is relevant than ever before when the pile of bad loans is sky rocketing for many public sector banks. Indian banks had to write off nearly \$39 billion loans in the last one and half years in a measure to clean their balance sheets (Economic Times, 2020). While reasons of bankruptcy can widely differ in the case of start-ups, companies experiencing growth and well-established companies, overall reasons can be attributed to internal factors of management challenges, nature of business, corporate policy and external factors of industry and economy (Ooghe, H., & Prijker, S.D. 2006). It can also be hypothesized that young and adolescent firms fail due to internal shortcomings, mature established firms struggle to cope up with competition and economic downturns like the current pandemic (Kutcher et, 2018). Reasons are folly when it affects not only the lenders but all stakeholders. Timely detection of deterioration in the financial health of the company is necessary in the interest of all stakeholders.

### **Insolvency & Real Estate Sector**

Though bankruptcy is not sector specific, cases of insolvency have spiked sharply in real estate sector. The numbers have doubled after the collapse of leading housing finance lender Dewan Housing Finance Limited exposing the vulnerability of the sector (Business Standard, 2019). The grave situation represents a mini Lehman crisis according to industry sources. It is noted that nearly 421 developers filed for bankruptcy triggering a credit spiral for financiers' who are dependent on shadow banking. The cycle of crisis impacts the home owners who stand as financial creditors according to present legislation. Fortunes faded for many real estate business tycoons when government of India amended the Insolvency and Bankruptcy Code in 2018 allowing individual home buyers to initiate insolvency process against defaulting builders. This provision replaced the earlier platform of Real Estate (Regulation and Development) Act 2016 which systematically addressed the grievances of home buyers. While there is a debate that it has resulted in more harm in the form of piling cases rather than resolution, it has resulted in safeguarding the interest of individual home buyers and a reinstatement of confidence.

**Table 1: Corporate Insolvency Resolution Process in Realty Sector**

<b>Year</b>	<b>Duration</b>	<b>Cases Closed</b>	<b>Pending Cases</b>	<b>Total</b>
2019	July - September	201	299	500
2019	April - June	164	257	421
2019	January - March	128	231	359
2018	October - December	87	148	235
2018	July - September	68	141	209

Source: IBBI

The incidence of rise in insolvency cases is presented in Table 1. As on 30<sup>th</sup> Sep, 2019 the total number of cases are 500 which have doubled from 209 cases a year ago as per data provided by Insolvency and Bankruptcy Board of India. There is increase in cases as well as faster resolution. A contribution of 7% towards the nation's gross domestic product (GDP) whose share is expected to double in the next twenty years reaffirms the importance of the real estate sector.

### **Recent Developments in Insolvency Bankruptcy Code, 2016**

The setting up of Insolvency & Bankruptcy Board of India (IBBI) under the Insolvency and Bankruptcy Code (2016) is a landmark reform among various initiatives by government of India. The Code is of paramount significance preserving the rights of creditors in case of defaults. With the proposal to introduce online platform for stressed assets creating a market place, IBC has gone leaps and bounds from time to time. The idea is to accelerate the process of resolution and stimulate greater interests from investors by making information readily available about stressed assets. The proposal aims to provide serious investors with all layers of sensitive information after signing a non-disclosure agreement. Overall the code has met the twin objective of addressing the non-performing assets (NPA) of the banking sector and reduction of time taken in winding of companies from the earlier four years to 330 days

Insolvency prediction also known as bankruptcy prediction is a significant area in financial research as it affects all stakeholders. Deterioration in loan books of banks is a subject of huge concern for the government, banking system and community. That said, companies are never safeguarded from bankruptcy. Chances of bankruptcy increase during recessionary times for companies. Timely detection and action can reduce the chances of corporate failure. The purpose of this study is to assess cases of bankruptcy in real estate sector. The study stands to benefit every stakeholder who is interested to know about bankruptcy prediction and application. Moreover, it applies quantitative methods to fix real-time issues.

### **Literature Review**

Bankruptcy is a global phenomenon and widely perceived to be damaging to the economy. When individuals and entities start to enter bankruptcy in large numbers, it derails a nation's reputation among global peers apart from impacting the economy as a whole. Thus, understanding and predicting corporate default is a vital research area. Growth in bankruptcy studies can be traced to the global financial crisis that left many companies insolvent. A survey undertaken by Kiraly G. (2015) focuses on evolution of bankruptcy prediction models from 1930 till 2014. Study focuses on parametric and non-parametric models predicting bankruptcy. It was revealed that multiple discriminant analysis and logistic analysis are the most used parametric models whereas fuzzy models, artificial neural networks, genetic algorithms and hybrid models are most popular non-parametric models. Academic research focussing on financial vulnerability have happened since three decades. Early studies were done by Beaver (1966), Altman (1968) and Ohlson (1980). According to Beaver cash flow to debt ratio is the best single ratio for the prediction of financial distress in his univariate discriminant analysis. Ohlson used logit analysis for his prediction model. Altman used multivariate discriminant analysis using five variables for measuring the financial distress of firms.

In Indian context, a conducted by Rao et al (2013) observes bankruptcy prediction model to the Indian manufacturing sector which was declared sick, using two methods the Altman Z-score model and KMV Merton Distance to default model. The study concluded that overall the Altman Z-score model is able to predict bankruptcy filing more efficiently compared to the KMV model in Indian context. Another research by Pradhan R (2014) measures the effectiveness of the Z-score model for predicting bankruptcy of banks. Three public sector

banks namely Oriental Bank of Commerce, Punjab National Bank and Bank of India were considered for research. Different ratios calculated indicated progressive and healthy financial positions for these banks. It concluded that this model is 94% accurate for predicting bankruptcy before one year and 72% before two years of its occurrence. Financial health of Nifty 50 companies excluding banks and financial institutions were checked by Sanesh C (2016). Purpose was to facilitate investment actions considering the credibility and longevity of the firm through Altman-Z score model. The study concludes that sectors like electricity generation & distribution, oil and gas industry etc. have lowest Z-score and low financial performance. A study of financial health of the automobile sector during the phase of Automotive Mission Plan (AMP) brought by government of India was carried out for a period of during ten years 2007-16 Shilpa & Amulya (2017). The industry is going through transition due to change in emission norms, policies and increased competition. It concludes that Z score model has the ability to assist management for predicting corporate problems early enough to avoid bankruptcy. A sample of 37 defaulted and 37 non-defaulted listed companies matched by asset size and industry classification studied by Singh & Singla (2018) employ Mann-Whitney test to predict the normality of data and predictive ability of the variables. It's further extended by analysing the correlation of all the variables with Z-score. Results suggest positively correlation of all variables with Z-score. Decrease in any variable will decrease the Z-score, a way to show the accuracy of the model for predicting default in Indian corporate sector. Lastly, a recent study Vel & Zala (2019) test the utility of the multivariate model on a sample of 35 companies that were referred to the National Company Law Tribunal (NCLT) for insolvency proceedings. Data for two years before insolvency filings clearly show the tilt towards bankruptcy by all sample companies proving the suitability of the model. Evidence from past studies have time and again reinforced the appropriateness of the model in predicting bankruptcy with accuracy. In this research we apply the model for the Indian realty sector which has not been studied so far.

### **Research Questions**

The main research questions that explain the study are:

- R1: How useful are bankruptcy prediction models in understanding corporate failures?
- R2: How many companies casually clear the litmus test of bankruptcy in an ailing sector like real estate?
- R3: Is it possible to understand the pulse of a specific sector by dissecting the financials of select players?

### **Objectives of the Study**

1. To examine the accuracy and effectiveness of the model (Altman-Z score) in predicting financial distress of real estate companies
2. To assess levels of insolvency among select Indian real estate companies by applying the time tested model of bankruptcy prediction
3. To identify scenarios of growth based on the final results.

## Methodology

The study seeks to predict the financial health of small and medium size companies in the Indian real estate industry. A total list of 25 companies are chosen for the purpose of the study. Sample companies are drawn using random sampling method. Data for analysis are drawn from the annual reports of sample companies for the financial year 2019-2020. Financial soundness is evaluated using Altman's Z score model. Accuracy and validity of the Z scores are tested using regression and ANOVA.

### Altman's Z-Score Model

The first and foremost model to predict corporate bankruptcy was developed by Edward Altman. Famously known as the Z score model, it's a combination of five key financial ratios i.e. liquidity, profitability, leverage, solvency and activity. The output of ratios are fitted into an equation with pre-determined weights to arrive at the Z score as given below:

$$Z = 0.717X_1 + 0.847X_2 + 3.107X_3 + 0.420X_4 + 0.998X_5$$

Where,  $X_1$  = Working Capital /Total Assets

$X_2$  = Retained Earnings/Total Assets

$X_3$  = Earnings before interest and taxes/Total Assets

$X_4$  = Net Worth/Total liabilities

$X_5$  = Sales/Total Assets

The output of the equation presents three zones as follows:

Safe Zone -  $Z > 2.90$

Grey Zone -  $1.23 < Z < 2.90$

Default Zone -  $Z < 1.23$

### Hypotheses

The study proposes the following hypotheses for validating the results.

H<sub>1</sub> – Z Score model is significant in predicting Corporate Bankruptcy

H<sub>2</sub> –  $X_1$  (Working Capital /Total Assets) is significant in assessing insolvency risk of sample companies

H<sub>3</sub> -  $X_2$  (Retained Earnings/Total Assets) is significant in assessing insolvency risk of sample companies

H<sub>4</sub> -  $X_3$  (Earnings before interest and taxes/Total Assets) is significant in assessing insolvency risk of sample companies

H<sub>5</sub> -  $X_4$  (Net Worth/Total liabilities) Assets) is significant in assessing insolvency risk of sample companies

H<sub>6</sub> –  $X_5$  (Sales/Total Assets) is significant in assessing insolvency risk of sample companies

### Data Analysis

Table 2: Classification of Sample Companies based on Z Score Values					
	<b>Z Sco re Val ue</b>		<b>Z Sco re Val ue</b>		<b>Z Sco re Val ue</b>
<b>Winners</b>		<b>Grey Zone</b>		<b>Bankrupt</b>	

Delta Limited	13.1	Ashiana Housing Limited	2.22	DLF Limited	0.97
Sanmit Infra Limited	10.52	Bombay Realty	1.96	Embassy Office Parks	0.54
Oberoi Realty	3.72	Mahindra Lifespace Developers Ltd.	1.91	Emami Realty Ltd	0.34
		Phoenix Mills Limited	1.71	Godrej Properties Limited	0.66
		Lancor Holdings Ltd.	1.68	Indiabulls Real Estate	0.97
		Ganesh Housing Corporation Limited	1.67	Kotle Patil Limited	0.8
		Eldeco Housing & Industries Ltd.	1.63	Radhe Developers Limited	0.82
		NBCC India Limited	1.35	Rodium Realty Limited	0.64
		Ajmera Realty and Infra India Ltd	1.3	Shrishti Infrastructure Development Corporation Ltd.	0.58
				Sobha Limited	0.31
				Sunteck Realty Limited	1.2
				Vascon Engineers Limited	1.12
				Vipul Limited	0.67

Table 2 shows the resultant Z score of 25 companies of real estate sector. From the overall results, three companies fall under safe zones with high scores of more than ten for two companies while Oberoi reality has managed to cross the grey zone. A slight fall in any of the five metrics can shift the company to grey zone. Hence caution needs to be exercised in business operations to maintain current levels. A total of nine companies fall under grey zone with Z score values ranging between 1.23 and 2.9. Here gain three of the nine companies exhibit Z scores of 1.35 and 1.3 respectively with a higher probability of slipping to default category. A little more than half of the sample companies fall in default zone with Z score values of less than 1.23 indicating financial distress. The model clearly estimates a company's tendency to bankruptcy determining with utmost accuracy financial distress.

**Test Results:**

**Table 3: Coefficient of Determinants Test**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.999 <sup>a</sup>	.998	.997	.1688270

a. Predictors: (Constant) X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub>, X<sub>5</sub>

Table 3 explains that all independent variables X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub> and X<sub>5</sub> are apt in explaining the variability of the dependant variable Z score with 99.99 % accuracy. The Z Score model summary has an adjusted R square value of 0.997 statistically proving the soundness of the model. Therefore we accept the alternate hypothesis that Z Score model is significant in predicting Corporate Bankruptcy.

**Table 4**

ANOVA <sup>b</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	220.994	5	44.199	1550.694	.000 <sup>a</sup>
	Residual	.542	19	.029		
	Total	221.535	24			

a. Predictors: (Constant), X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub>, X<sub>5</sub>

b. Dependent Variable: Z score

Utility of the model and the percentage contribution shown by the coefficient of determination were tested using ANOVA. Table III shows Z score model result as 0.000 which is < 0.005. This reveals that each one of the five independent variable X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub> and X<sub>5</sub> statistically serve as good predictors in assessing the insolvency risk of sample companies.

**Table 5**

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.012	.073		.160	.875
	X <sub>1</sub>	.616	.299	.034	2.060	.042
	X <sub>2</sub>	1.223	.272	.065	4.490	.000
	X <sub>3</sub>	1.052	.183	.068	5.750	.000
	X <sub>4</sub>	1.004	.015	.783	66.889	.000
	X <sub>5</sub>	1.026	.028	.543	36.639	.000

a. Dependent Variable: Z score

Table 5 presents the individual impact of independent variables in assessing company's insolvency. The regression coefficient of  $X_1$  (Working Capital to Total Assets) is 0.616 with a significance of 0.042 which is less than .005. The null hypothesis  $H_2$  stating that Working Capital to Total Assets have a significant impact in assessing insolvency risk is rejected. The regression coefficient of  $X_2$  (Retained Earnings to Total Assets) is 1.223 with a significance of 0.000 confirming the alternate hypothesis  $H_3$  affirming that Retained Earnings to Total Asset is significant in assessing insolvency risk. Similarly, the regression coefficient of  $X_3$ ,  $X_4$   $X_5$  are 1.052, 1.004 and 1.026 respectively with a significance of 0.000 leading to acceptance of alternate hypotheses  $H_4$ ,  $H_5$  and  $H_6$  stating Earnings before interest and taxes/Total Assets, Net Worth/Total liabilities and Sales to Total assets are significant in assessing companies' insolvency risk. Overall all five components of the equation  $X_1$ ,  $X_2$ ,  $X_3$ ,  $X_4$  and  $X_5$  are strong contributors in determining insolvency of sample companies.

### **Findings and Discussion**

Out of the twenty five samples scrutinised for bankruptcy two companies emerge as winners with a high score crossing ten. Third company needs to exercise caution to sustain the current status of solvency. 52% of the sample companies tested for insolvency fall in bankruptcy zone causing concern for real estate community. Amid the current pandemic, the slowdown of economy coupled with fall in consumption has aggravated the situation for all industries. The stimulus packages released by government may take a long time to translate into actual benefits as overall sentiment of the industry is dipping. As companies report increase in productivity through work from home situations, commercial and office spaces may witness a fall in demand. A sector already battered by liquidity crunch and non-banking financial companies (NBFC) crisis is once again shaken by the current situation. In all this the only relief awaited is the launch of Real Estate Investment Trust (REITs) whose listing can bring a ray of hope to developers. Another opportunity can come in the form of institutional investors seeking to value buy at low prices. Localization of supplies for material and labour, digital adoption for purchase orders can be some of the new practices in the new times.

### **Conclusion**

It is always said that debt is a good friend and a bad enemy if not handled properly. Debt will maximize the earnings for investors during profitable times at the same time interest servicing becomes unmanageable when profits are falling. Therefore companies should avoid over reliance on debt. An optimal capital structure with the manageable debt level is to be identified by the management. One way could be to look for strategic equity partners that can help in retiring debt. Public-private models of developing projects in housing and infrastructure can bring in agility to real estate firms, a sustainable way to grow creating value for stakeholders.



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