

## Financial Evaluation of Safety Grade Companies.

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### Abstract

Credit rating agencies estimate the credit worthiness of borrowers. They provide independent objective assessments of the credit worthiness of borrowers. A poor credit rating indicates a high risk of default. It is believed that rating agencies provide the actual financial positions of the borrowers through different ratings. CRA helps investors to decide how risky it is to invest in certain securities. This study evaluates the financial positions of the highest safety, high safety and adequate safety rated companies in India. We used multiple discriminant analyses to assess the financial conditions of these companies. Our study finds significant difference between highest safety, high safety and adequate safety rated companies. We also find high discriminant score for highest safety rated companies. The lower discriminant score of high safety and adequate safety rated companies reveals poor performance of the companies.

**Key words:** Credit rating, Safety grade, Bankruptcy, Discriminant score, Assessment.

### 1. Introduction

High credit rating is viewed as a sign of quality, creditworthiness and better financial position of a firm. Change in the rating signals a change in the financial positions of the firm. Credit rating agency (CRA) helps investors to decide how

risky it is to invest in certain securities. Rating company can help the investor to determine whether the prospective entity will be able to meet its obligations. Poor credit rating indicates high risk of default. It is believed that rating agencies provide the accurate financial positions of the borrowers through different ratings. Sharma and Chandan (2006) report that ratings issued by the major rating agencies have proved to be a reliable source of information. Rating is a useful tool not only for the investor, but also for the issuers to attract the investors. Keller, K (2006) opine that transparency and efficiency in debt capital markets by reducing information asymmetry between borrowers and lenders benefits the market by increasing investor confidence and allowing borrowers to have broader access to funds.

Investors expect impartial information on the credit worthiness of securities issuers and their particular offerings. CRAs are not always impartial when issuing ratings under solicited rating. Securities issuers have been accused of "shopping" for the best ratings from rating agencies. Stolper (2009) observes that credit rating agencies have an incentive to assign inflated ratings and credit rating agencies may collude to assign inflated ratings. Benmelech and Jennifer (2009) report that since June 2007, the creditworthiness of structured finance products has deteriorated rapidly. Using data on ABS collateralized debt obligations they provide suggestive evidence that ratings shopping may have played a role in the subprime mortgage crisis. Heng and Kam (2008) suggest that credit ratings convey useful information in reducing value uncertainty of the issuing firms as well as information asymmetry in the IPO markets. Regulators use credit ratings for regulatory purposes in India. Canto and Frank (1994) opine that investors and regulators have been increasing their reliance on the opinions of the credit rating agencies. They argue that reassessment of the use of ratings and the adequacy of public oversight is overdue. Credit rating has been questioned after the global financial crisis.

Our study examines the financial health of highest safety, high safety and adequate safety rated companies in India. The reminder of the paper is organised as follows. Review of literature is described in section 2. Data and sample selection are presented in section 3. Methodology is described in section 4, empirical results are examined in section 5 and section 6 presents conclusions of the study.

## **2. Review of Literature**

Previous researchers examined the financial conditions of credit rated companies using multiple discriminant analysis (MDA) and other techniques. Poon and Michael (2005) find that there is a significant difference in the distributions of ratings, and the shadow group has lower ratings. They also reveal that banks that received shadow ratings are smaller and have weaker financial profiles than banks that have other ratings. Sharma and Chandan (2006) find that lower-quality credits have difficulty issuing bonds and investors' desire is mainly for highly rated instruments. They also find that nearly 84% of secondary market turnover in AAA-rated securities. Gonis and Peter (2009) report that the credit quality of UK companies has deteriorated and credit rating agencies have become more strict in the rating process. They also find that there is a clear pattern of UK credit ratings moving towards the investment-grade threshold category. Chiu. et. al. (2010) finds a positive relationship between the efficiency scores and credit rating and the credit rating is proven to influence the efficiency of banks. They also finds that the efficiency scores improve in both investment grade (above BBB-) and speculation grade (under BBB-), when credit rating is taken into consideration. Further their results show that the efficiency scores of banks with a high credit rating improved relatively more when compared to banks with a lower credit rating. Raghunathan and Varma (1993) find that credit rating being done by CRISIL is too liberal by international standards and there is little internal

consistency. They also report that when CRISIL rate AAA will usually rate in BBB range or lower by international standards and companies rated in the same category span wide range of credit worthiness. Arora (2003) find poor forecasting abilities on the part of rating analysis. She also finds that over 50 percent of the cases, the rating agencies changed the rating within a span of three years of initial rating. Further she opines that the credit assessment done by rating agencies was relatively weak. Nachane and Saibal (2004) finds that both for short-term as well as for long-term ratings, capital adequacy ratios are an important factor impinging on credit rating of Indian state-owned banks. Rao and Maruthi ((2009) find high Z-score for five major I T companies including Satyam Computers Services and they opine that rating agencies failed to signal the failure of Satyam Computers services. Bheemanagouda and Madegowda (2010) finds that Fitch India ratings maintained high rate of initial rating stability in investment grade as compare to other rating agencies. They also report that the ratings are issuer biased.

### **3. Sample and Data**

The financial statement information and rating data are collected from Prowess, the corporate database of Center for Monitoring Indian Economy (CMIE). In this study we use highest safety, high safety and adequate safety rating companies for the period of 1995 to 2010. We restricted our sample to safety grade ratings of non convertible debentures of companies which is reported in Prowess. Our initial sample consists of 20 highest safety, 30 high safety and 25 adequate safety companies. If the required financial data is not available for five year period, such companies are eliminated. The final sample of safety grade companies after applying these criteria is 32, consisting of 8 highest safety, 16 high safety and 8 adequate safety companies.

### **4. Methodology**

CRAAs provide considerable emphasis on evaluating the financial ratios, business risks and management related factors to rate the companies. This study examines the financial performance of safety grade companies in India. The methodology of the study involves use of multiple discriminant analysis (Z-score) which was used and developed by Altman (1968). Altman finds five variables that best predict the corporate bankruptcy. His model consists of working capital to total assets, retained earnings to total assets, EBIT to total assets, market value of equity to book value of debt and sales to total assets as discriminator. Altman (2000) replaced market value of equity to book value of debt with book value of equity to book value of debt.

$$Z = V_1X_1 + V_2X_2 + V_3X_3 + V_4X_4 + V_5X_5$$

Z is the discriminant score used to group the companies according to their performance.  $X_1, X_2, X_3, X_4$ , and  $X_5$  are independent variables.  $V_1, V_2, V_3, V_4$ , and  $V_5$  are discriminant coefficients, which is sample specific.

Pinches and Kent (1973) developed and tested a model for industrial bond ratings using factor analysis and M- group multiple discriminant analysis. Their final MDA model incorporated six variables:  $X_1$ -subordination,  $X_2$ -years of consecutive dividends,  $X_3$ -issue size,  $X_4$ -net income + interest/interest: five year mean,  $X_5$ -long term debt/total assets: five year mean, and  $X_6$ -net income/total assets. Results of their model performed very poorly for Baa rated bonds due to lack of statistically significant difference in the quantifiable variables considered for the study. Rao and Maruthi ((2009) examined the bankruptcy potentials of five I T companies in India. They used multiple discriminant functions used in Altman (2000) to evaluate the companies.

Our MDA finds the following three discriminant functions for highest safety, high safety and adequate safety companies respectively.

$$Z_1 = X_1 2.61193 + X_2 13.50932 + X_3 1.215681 + X_4 5.831687 + X_5 28.37814$$

$$Z_2 = X_1 0.23930923 + X_2 0.003791282 + X_3 0.015747646 + X_4 0.016815718 + X_5 0.176042877$$

$$Z_3 = X_1 1.270846 + X_2 0.003791282 + X_3 0.015747646 + X_4 0.016815718 + X_5 0.21606$$

$Z_1, Z_2, Z_3$  are discriminant score for highest safety, high safety and adequate safety companies respectively.  $X_1$  to  $X_5$  are independent variables used in the model.

The statistical significance of the average variables between groups is tested using variance analysis and the hypothesis that there is no significant difference between groups is tested.

## 5. Empirical Results

The MDA and variance analysis of safety grade companies identified interesting findings about Indian credit rating.

Table No. 1

Variable means and test of significance

	Highest	High	Adequate	
Variables	Group Mean	Group Mean	Group Mean	F Ratio
	n = 5	n = 5	n = 5	
X1	0.147842	0.219419	0.288562	22.08729 *
X2	0.310827	0.445547	0.375009	36.69587 *
X3	0.115311	0.127416	0.098614	3.544816
X4	2.450527	3.183542	2.65211	0.449763
X5	1.503292	0.77679	0.592553	186.8408*

\* Significant at 1 percent and 5 percent,  $F_{2,12}(0.01) = 6.93$ ,  $F_{2,12}(0.05) = 3.89$

Variance analysis of three independent variables of safety grade companies reveals significant difference. Working capital to total assets, retained earnings to total assets and sales to total assets are statistically significant across the group at 1 percent and 5 percent. This result indicates extremely significant difference in these variables between groups.

Table No. 2  
Z score for Highest Safety companies

Sl. No	Name of the Companies	Year				
		-5	-4	-3	-2	-1
1	BS Ltd	69.65211	77.76593	75.35109	80.64033	64.97185
2	BI Ltd	106.9265	146.899	132.129	110.3124	122.9195
3	JKLC	22.19803	26.21337	28.37851	32.62207	28.487
4	P A Ltd	48.18445	37.90759	37.85139	43.58488	31.54189
5	TATA Com	40.00794	62.26115	54.60668	45.98802	32.27169
6	HOC Ltd	42.16741	25.17101	31.81962	38.994	32.52186
7	HPCL	110.654	97.94631	93.74424	82.69564	84.69096
8	H I Ltd	48.60214	60.9026	50.86632	50.13038	56.49002
Average Z Score		61.04908	66.88337	63.09335	60.62097	56.73685

High discriminant score of highest safety rated companies reveals that all the companies in this category are in safe zone. The average Z- score is highest 4 years before the rating and lowest one year before the rating. The discriminant score is highest for Britannia Industries Ltd and HPCL and lowest for J K Lakshmi Cement Ltd. The discriminant coefficient is highest for sales to total assets followed by retained earnings to total assets and market value of equity to book value of total debt. Sales to total assets emerged as key variable to discriminate highest safety companies followed by retained earnings to total assets and market value of equity to book value of total debt.

Table No. 3  
Z score for High Safety companies

Sl. No.	Code of the companies	Year				
		-5	-4	-3	-2	-1
1	AAL	0.251452	0.228593	0.231102	0.188793	0.149587
2	AIL	0.209242	0.226091	0.188386	0.219928	0.171028
3	AHE Ltd	0.298859	0.31769	0.280388	0.217772	0.192633
4	CFH Ltd	0.332898	0.235397	0.277374	0.275983	0.255471
5	DFPC Ltd	0.169436	0.173051	0.191568	0.203094	0.211268
6	DPCL	0.279374	0.251801	0.192516	0.255267	0.170487

7	ECL	0.273878	0.257671	0.268049	0.225178	0.213024
8	GIL	0.209911	0.216229	0.223463	0.244968	0.236988
9	GNRECL	0.241712	0.143725	0.118187	0.199085	0.147363
10	HCCL	0.244786	0.239583	0.19305	0.225627	0.191066
11	JSPL	0.163418	0.134768	0.138759	0.235005	0.141123
12	Lupin	0.290073	0.325963	0.33638	0.301189	0.263801
13	PHL	0.371096	0.33853	0.403727	0.317092	0.304066
14	TSL	0.188316	0.203948	0.172639	0.090585	0.066695
15	TEECL	0.261916	0.598473	0.525571	0.473942	0.232675
16	TRENT	0.365823	0.269767	0.264336	0.205838	0.145754
Average Z Score		0.259512	0.26008	0.250343	0.242459	0.193314

Low discriminant score of high safety rated companies indicate that all the companies in this category are in danger zone and reveals poor financial performance. The average Z- score is less than one and is lowest one year before the rating. The discriminant coefficient is highest for working capital to total assets followed by sales to total assets. Working capital to total assets emerged as key variable to discriminate high safety companies followed by sales to total assets.

Table No. 4

## Z score for Adequate Safety companies

Sl. No.	Code of the Companies	Year				
		-5	-4	-3	-2	-1
1	Aftek	4.275728	1.872079	2.010916	1.533187	1.337981
2	BFL	0.764713	0.991859	0.80865	0.759	0.635125
3	CCIL	0.70726	1.03593	0.779469	1.650071	0.973288
4	Emco	0.565357	0.767837	0.805203	0.778373	0.613423
5	HLVL	0.700298	0.704409	0.734831	0.465152	0.592925
6	JAL	0.376087	0.582731	0.510735	0.540673	0.439854
7	REI	0.400584	0.578069	0.555992	0.688233	0.459081
8	UGSL	0.331714	0.308945	0.317829	0.32299	0.319264
Average Z Score		1.015218	0.855232	0.815453	0.84221	0.671368



Discriminant score of adequate safety rated companies are low and indicates poor performance. The average Z- score is less than one except 5 year before the rating. Interestingly the average Z-score of adequate safety companies are greater than the high safety rated companies. This result reveals that the performance of adequate safety companies is better than the high safety companies. The discriminant coefficient is highest for working capital to total assets followed by sales to total assets. Working capital to total assets emerged as key variable to discriminate adequate safety companies followed by sales to total assets.

## **6. Conclusion**

According to ICRA business risk, financial risk and management related factors that have a bearing on the issuer's ability to generate cash flows are considered while assigning ratings. Our study evaluates the financial risk of the safety grade companies using MDA. The result of the study reveals that there is significant difference between highest safety, high safety and adequate safety companies in India. The performance of highest safety companies is superior to other two groups. The low discriminant score of high safety and adequate safety companies signals poor financial performance. CRAs failed to recognize the actual financial positions of high safety and adequate safety companies before awarding rating. Working capital to total assets, retained earnings to total assets and sales to total assets emerged as significant discriminator between three groups of companies. Contrary to the prior research our study finds strong financial position for highest safety firms.

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## Appendix No. 1

### List of Companies

Sl. No.	Code Name of the Company	Name of the Company
1	Aftek	Aftek Ltd.
2	AAL	Amtek Auto Ltd.
3	AIL	Amtek India Ltd.
4	AHE Ltd	Apollo Hospitals Enterprise Ltd.
5	BFL	Bharat Forge Ltd.

6	BS Ltd	Blue Star Ltd.
7	BI Ltd	Britannia Industries Ltd.
8	CFH Ltd	Consolidated Finvest & Holdings Ltd.
9	CCIL	Country Club (India) Ltd.
10	DFPC Ltd	Deepak Fertilisers & Petrochemicals Cor. Ltd.
11	DPCL	Dishman Pharmaceuticals & Chemicals Ltd.
12	ECL	Electrosteel Castings Ltd.
13	Emco	Emco Ltd.
14	GIL	Graphite India Ltd.
15	GNRECL	Gujarat N R E Coke Ltd.
16	HCCL	Hindustan Construction Co. Ltd.
17	HOC Ltd	Hindustan Organic Chemicals Ltd.
18	HPCL	Hindustan Petroleum Corpn. Ltd.
19	HLVL	Hotel Leelaventure Ltd.
20	H I Ltd	Hyderabad Industries Ltd.
21	JKLC	J K Lakshmi Cement Ltd.
22	JAL	Jaiprakash Associates Ltd.
23	JSPL	Jindal Steel & Power Ltd.
24	Lupin	Lupin Ltd.
25	P A Ltd	Parekh Aluminex Ltd.
26	PHL	Piramal Healthcare Ltd.
27	REI	Rei Agro Ltd.
28	TATA Com	Tata Communications Ltd.
29	TSL	Tata Steel Ltd.
30	TEECL	Techno Electric & Engg. Co. Ltd.
31	TRENT	Trent Ltd.
32	UGSL	Uttam Galva Steels Ltd.