Chapter 6
SUMMARY AND FINDINGS

6.1 Summary of the Report

Problem

Indian credit rating agencies have, within a short period of time, established a high degree of credibility, unmatched in any other developing economy. The rating business has received a new lease of life lately because of (i) continuing soft interest rate regime which has spurred debt market issues, (ii) growing merger and acquisition activity, (iii) picking up of dis-investments, (iv) the growing capital market and move of corporate sector from debt-age to free-market-finance age.

The credit rating process is said to be a black box. The rating agencies closely guard their rating process, they merely state that financial and qualitative factors are taken into account when assigning ratings to companies. This study tries to open this black box by exploring the relationship between the financial variables (variables from financial statements) of a company and its assigned rating. This study might enable to say how much of a company's rating is affected by the analysis performed by the rating agencies using financial statements. This study examines the relationship between financial variables and credit ratings using univariate and multivariate quantitative techniques. The study of relationship between financial variables and credit rating in other words means a measure for financial information content in credit rating. The study also tries to assess the feasibility of classifying companies in rating classes using only financial statement data. The study is carried out with the expectation that the credit rating, which is a partial outcome of the financial statement of the corporate, should show a response for the negative bottom lines, poor liquidity, and negative net parsimony. If it can be proved that the ratings given by the rating
agencies and certain financial ratios are closely associated, then these ratios can be used in predicting rating and to build a credit rating model

**Objectives**

The study is carried out with the following specific objectives: (i) To evaluate the financial information content in credit rating by investigating the existing relationship between the credit rating and financial variables, (ii) To identify and examine the fact that the past and present financial performance of the firms are considered in credit rating assignments, (iii) To study the quality of credit rating by testing whether ratings incorporate efficiently the publicly available information at the time of rating, (iv) To explore the important financial variables that forms the basis for rating classification, (v) To measure the industrial effect on credit rating classification, and (vi) To test whether credit rating agency is effectively exercising its due diligence in properly checking relevant information before assigning a credit rating

**Methodology**

The study covers a period of 6 years starting from 1996-97 to 2001-02. The population for the study is defined to be the group of firms which had at least a CRISIL’s debenture rating (long term rating) during the study period. The sample is a group of manufacturing firms chosen on a stratified random basis from the defined population. The asset size range of the selected sample was restricted between Rs 100 crores and Rs 2000 crores. The study covers a sample of 103 companies dispersed into different industries with a total of 600 observations (firm years) for the study period. The financial data for the study were derived from financial statements of the year ending annual reports. The financial statement data used for analysis were drawn from CMIE (Centre for Monitoring Indian Economy) electronic database (prowess) and also form select published annual reports. The relevant credit ratings data were collected from the CRISIL’s Rating Scans (a published source of credit rating information) from March 1997 to March 2002. The statistical model used in the study are (i) two sample t test, (ii)
Kruskal-Wallis test, (iii) ANOVA, (iv) Spearman’s rank correlation, (v) factor analysis, (vi) rank transformed regression, (vii) discriminant analysis, and (viii) binary logistic regression

Past Studies

Since 1960’s many researchers have constructed models to explain and predict discrete corporate events such as bankruptcies and financial distress. Many models have been developed to explain and predict bond ratings and credit ratings. During the past 30 years there was a drastic development in these areas of research. The probit analysis, logit analysis and multivariate discriminant analysis seem to be the most popularly used technique. These techniques are felt appropriate for dichotomous and ordinal dependent variables. The linear probability and multivariate conditional probability models (logit and probit) were introduced to these areas of research in late 1970. The contribution of these methods was in estimating the probability of a firm’s failure. The necessity of a statistical alternative to avoid the problems related to the discriminant analysis lead to the use of conditional probability models, (logit and probit). These models are more flexible in their requirements. Many researchers have tried to predict the credit ratings. They have also tried to classify the credit rating using financial and non-financial information. The most popularly used tool in credit rating analysis are discriminant analysis and conditional regression models. The most of the studies have used these models as the credit rating is a qualitative dependent variable, which has to be compared with quantitative variables (financial variables). The financial variables are continuous cardinal data. The credit rating is an ordinal data

Credit Rating

The credit rating is an assessment, by an independent agency, of the capacity of an issuer of debt security to service the debt and repay the principal as per the terms of issue of debt. The international market is witnessing a larger number of credit rating agencies. These rating agencies
rate the instrument internationally and within their provinces. The area of ratings has been wide spread from short term rating to long term rating. The ratings are given by these agencies for the securities, entities and sovereigns. Some of the active and well known international rating agencies are (i) Japan credit rating Agency Ltd (JCR), (ii) Fitch, (iii) Moody's investors service, (iv) Standard & Poor's, (v) A M Best company, and (vi) Duff and Phelps credit rating company (DCR).

In 1987, the concept of credit rating to the Indian market was introduced by CRISIL. This credit rating services has grown to the maximum extent in past decade. The CRISIL was the first rating agency to emerge in the market followed by ICRA, CARE and others. The CRISIL was promoted by ICICI and UTI. It is a public limited company with its headquarters at Mumbai. It was incorporated in 1987 and developed the rating methodology for corporate debt in the context of India's financial, monetary and regulatory system. It is a publicly held company, one of the rare rating agencies to be listed on a stock exchange. CRISIL was the first rating agency in India to rate commercial paper programmes (1989), debt instruments of financial institutions and banks (1992) and asset backed securities (1992). It has provided technical assistance to Malaysia and Israel. CRISIL also stands among the top five rating agencies in the world in terms of coverage and analytical strength. The strategic alliance of CRISIL with Standard & Poor's (S&P) rating services of USA has benefited CRISIL with international experience, revamping operating systems, value added methodologies and assisting the client companies in raising funds across the country.

In India so far market shows very clearly that there is no danger of competitive generosity, which can eventually destroy the credibility of the rating service itself. The experience of the Indian rating agencies so far is that about 25-30 percent of their ratings are not accepted or used. This percentage would clearly indicate that the agencies are not driven by an urge to please borrowers, comprising their own professional judgement.
even 5 percent of issuers seeks second rating in India, of those who seek a second rating about half get the same rating and some others get a lower rating from the second agency.

The newer forms of securitization such as trade receivables and credit card receivables are also expected to contribute to growth in rating business in coming years. The insurance sector privatization and opening up of pension funds would go further long way to ensure that whatever they invest is rated. The health insurance industry is opening up new vistas of growth for rating agencies. There will be a strong demand for rating services on the back of debt market upswing due to reducing interest rates and almost stagnation in equity initial public offering and rights issues market. The interest rate being remaining soft would be again a good demand for refinancing and hence ratings. The clearance of the awaiting securitization bill would enable many big institutions in banking and government sectors to opt for asset securitization to meet the capital deficits. These deals will require a mandatory credit rating leading to a greater demand for credit rating.

Financial Variables and Credit Rating

The credit analysts in a rating agency consider many attributes of a firm, financial as well as managerial, and quantitative as well as qualitative. The quantitative analysis is mainly financial analysis and is based on the firm’s financial reports. The analysts ascertain the financial health of the firm, determines the sufficiency of earnings and cash flows to cover debt obligations. The more profitable the firm, the more resources it has to pay debtors, and the lower its propensity to default. Hence it is expected, that company’s credit worthiness is positively related to its profitability. The more liquid assets a firm has, the lower its propensity to default in short term. The activity ratios are accounting ratios that reflect some aspects of the firm that have less straightforward relations to credit risk than other variables. Generally, higher the level of coverage, higher is the credit rating. The business with lower level of coverage can get higher ratings if the earnings
are steady (i.e., business with low industry risk). The credit ratings are expected lower for the firms with more borrowing. The larger firms may default less frequently than the smaller firms. The age and track record of the firm is also considered in major financial decisions by the stakeholders. The firms with high leverage will have high exposure to default risk and as propensity to default. A high NS/TA and NS/CA ratios are a prerequisite to obtain high returns with relatively low investment and has a positive effect on the liquidity of the firm, therefore reducing the default probability and apprehending the credit rating.

**Empirical Analysis**

The sample firms for the study were selected and the obtained data of the sample firms were sequentially used for the analysis. The obtained credit (debenture) ratings were converted to numerical scales, which has been used as the independent or explained variable in most of the analysis. As the financial ratios were calculated from the financial statements there was a huge data distributional problem such as missing data, outliers, cross-sectional heterogeneity, and seasonality. At the data cleaning and data preprocessing stage, the observations with two many missing values were removed from the data set. The data disturbances were handled in the data mining stages. Once the data distributional problems were resolved and the analysis was further sequenced as, (i) selection of key financial variables, (ii) testing the relationship between the financial variables and credit rating (iii) using multivariate analysis to study the association and relation between financial variables and credit rating.

The analysis of the study has been carried along with the help of statistical models like t-test, Kruskal-Wallis test, ANOVA, factor analysis, rank transformed regression, discriminant analysis, and binary logistic regression. The results of the computed statistical models shows the significant relation between the financial variables and credit rating, which could be inferred from that the credit rating contains the financial information of a firm which is made
public through financial statements. The debt service coverage, profitability and leverage variables are seriously considered in credit rating assignments.

6.2 Main Findings of the Study

The key findings and the outcome of the study are explained in the succeeding paragraphs.

(1) The financial status of the firm is given significant importance in credit rating assignments, as the classification based on select financial variables is consistent on all credit rating categories. The select financial variables were able to predict credit rating to the extent of 60 to 70 percent. As the credit rating contains a major portion of the financial information, the major part of the credit rating can be classified using financial variables.

(2) The financial information on profitability, debt service coverage, leverage, and size are given much importance in credit rating assignments. The firms with sound financial ratios indicate good financial strength and these firms' issues are systematically classified as highly rated instruments. The empirical analysis results show that highly rated firms are identified through generally accepted financial dimensions such as profitability, debt service coverage, leverage and firm size.

(3) The firms with high profitability were given higher ratings, as their default probability is very less. The low profitability, on the other hand means that the fundamental goals of the firm is not likely to be achieved.

(4) The debt service coverage also plays a most significant role in credit rating assignments. The high debt service capability of a firm attracts a safe debt issue leading to a good credit rating.

(5) The leverage is inversely related to credit rating, as the high leverage increases exposure to interest rate risks. The leverage variables'
values are lower for highly rated firms. The firms with less leverage were assigned higher ratings because of high solvency and lower burden of fixed expenses on capital borrowed.

(6) The size of the firms (larger capital base or high turnover) also have serious effect on rating assignments. As it is known that the larger firms have diversified business, and less prone to any risk of operation.

(7) It was found that the industrial difference among the selected manufacturing firms has very less influence on credit rating assignments. The personal financial features of the firms are given much importance than their type of industry. The results identified through industrial dummies shows that credit ratings are not consistent over industries with in the manufacturing group. The credit rating predictability of financial variables after conditioning for industrial factor has showed an insignificant improvement in predictability.

(8) The past financial performance of the firms were also significantly considered in credit rating assignments, which was made evident as the financial variables adjusted (average of current and previous two years values) for past performance has provided a better classification in credit rating assignments.

(9) The seasonal factor has no influence in credit rating assignments, which was inferred from the insignificant year wise dummies. The absolute performances of the firms are considered, instead their year of rating assignment. The credit rating predictability of financial variables after conditioning for seasonal factor has showed an insignificant improvement in predictability.

(10) The strong relationship between the credit rating and financial variables identified from financial statements show that the publicly available information is given importance in credit rating assignments. It could be
understood that the credit rating agency is exercising its due diligence in properly checking the relevant information before assigning a credit rating.

(11) The major proportion of the credit rating are better classified through publicly available information. The secret information forms a moderate proportion in credit rating assignments.

6.3 Conclusion

In this research the financial information content of the credit rating has been evaluated. Most popular linear and nonlinear statistical models were used to explore the relation between credit rating and financial variables. The study revealed that the ratings of debt instruments could be predicted to significant extent using financial variables of the firms. The credit rating assignments are highly dependent on the past and present financial performance indicators of a firm. The better financial position of a firm could drive the firm for a better rating. The credit rating agencies can add special status to the credit ratings by using secret and unpublished information about the firms in credit rating assignments. The identified key financial variables can be given importance for developing a credit rating model for any other instrument. The present study can be extended in future by adding industry, and firm based qualitative variables along with quantitative variables. The results also motivates for future research on investors' attitude towards rating. The existing evidence proves that there is very good relation between the financial performance of a firm and credit rating. The credit rating contains a significant proportion of financial information of the firms.