IMPACT OF CREDIT RATING ON THE CORPORATE RATE OF INTEREST AND INVESMENT FLOW: A STUDY WITH REFERENCE TO SOME SELECTED INDIAN COMPANIES

A Thesis Submitted to the Vidyasagar University for the Degree of Doctor of Philosophy (Commerce)

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2016

CONTENT

ACKNOWLEDGEMENTS

I consider myself fortunate enough that my destiny has allowed me to submit the thesis to the Vidyasagar University named after Pundit. Iswar Chandra Vidyasagar, founder of female education in Bengal. This thesis wouldn't have seen the light of the day, but for the constant insistence, encouragement and help of Dr. Kartick Chandra Paul, my research supervisor, who is a former Professor of the Department of Commerce with Firm Management and ex-Coordinator of the Department of Business Administration, Vidyasagar University. I express my sincerest gratitude to him. I also want to offer a lot of thanks to all the family members of Prof. Paul as they also have gracefully shared some of the family burdens to relieve Prof. Paul of this burden and enabled him to devote more time to supervise this thesis. I have a huge intellectual debt to Dr. Amalendu Bhunia, Professor in the Dept. of Commerce of University of Kalyani for the constant help regarding all the statistical analyses of this thesis. I want to express my sincerest gratitude to him.

I want to express a lot of thanks to all the faculty members of the Department of Commerce with Farm Management, Vidyasagar University. I acknowledge the help of Mr. Saptarshi Roy, Assistant Professor of Bankura Sammilani College, for helping me in editing the thesis. I want to convey my thanks to all the staff of Indian Institute of Management (IIM) and Indian Statistical Institute (ISI) for their constant help regarding the thesis.

I want to convey my tribute to my parents Late Nitai Pada Saha and Late Gita Saha for the encouragement with their presence in silence. It is not perhaps gentlemanly to offer formal thanks to one's husband. I, therefore, express my regards to my husband Mr. Subrata Kumar Das for the help regarding the preparation of different tables and diagrams of this thesis and also for continuous encouragement to complete the thesis. I am equally grateful to all other members in my family for the sufferings they had to bear to allow me the time for writing the thesis. Last to mention, but first in gravity, my voice is getting choked and pen is not moving to express my endless love and affection to our beloved son, Master Mehul Das who is just five years, for not disturbing me frequently during my busy hours and for silently absorbing all the pains of sacrificing many coveted hours of spending time jointly at his so early-childhood days.

Nabina Saha

DECLARATION

I do hereby declare that the thesis entitled "**Impact *of Credit Rating on the Corporate Rate of Interest and Investment Flow: A Study with reference to Some Selected Indian Companies"*** submitted to the Vdyasagar University, Midnapore, West Bengal, India, for the award of the Degree of Doctor of Philosophy in Commerce, is an original piece of work done by me and this thesis, neither in full nor in part, has been submitted elsewhere for the award of any degree or diploma.

(Nabina Saha)

Research Scholar

Place: Kolkata, West Bengal

Date:

LIST OF TABLES

LIST OF FIGURES

Figure No.	TITLE	Page No.

ABBREVIATIONS

CRA:	Credit Rating Agency
CRISIL:	Credit Rating and Information Services of India Ltd.
ICRA:	Investment Information and Credit Rating Agency of India Ltd.
CARE:	Credit Analysis & Research Ltd.
CIBIL:	Credit Information Bureau India Limited
SEBI:	Securities and Exchange Board of India
SME:	Small and Medium Enterprise
SMERA:	Small and Medium Enterprises Rating Agency of India Ltd.
LIBOR:	London Interbank Offer Rate
NRSROs:	Nationally Recognised Statistical Rating Organisations
SEC:	Securities and Exchange Commission (U.S.A.)
AIFI:	All India Financial Institution
ESMA:	European Securities and Market Authority
FINMA:	Financial Market Supervisory Authority (Swiss)

OUTLINE OF CONTENTS

APPENDICES

Chapter 1

Introduction

CONTENTS

1.1 Introduction:

The term management can be defined as an art of procurement and utilisation of resources for the purpose of creating best possible results subject to some practical limitations. Financial management is a branch of management and it is concerned with management of money. As money can be converted into other forms of resources and vice-versa, the financial management and functional areas of management like production management, marketing management, sales management, etc. are related with each other.

One enterprise generally creates resources because it wants to distribute those resources into different assets. These assets are used for generating cash flows through profit and in this way it – the initial amount of resources along with its increment, can come back to the providers of fund. Generally, it is expected that the amounts returned must be higher than the funds collected. So, in course of achieving these objectives, an enterprise generally comes across two broad questions. The first question is, what should be the sources of funds and the second question is, which assets the funds should be invested in. For the purpose of procurement of funds, a financial manager must select any one of three principal sources of funds such as, borrowing funds (debt), issuing fresh equity/preference shares, and retention of profits. The issue of shares and retention of profits are considered as contribution of owners in the total funds of the enterprise. The share of owners in the total capital employed is called ‘equity’ and the share of lenders in the capital employed is called ‘debt’ (borrowed funds). So, it is really very tough and important task to take the financing decision regarding making a choice in determining the proportion of debt (called leverage) in capital employed and also making the choice about proportion of retained earnings in equity.

Enterprises can be of different types, such as sole proprietorships, partnerships, co-operatives, companies, and many others. Since large enterprises are generally organised as companies or corporates, in this research work efforts have been taken to make the focus on corporates. However, all the principles may also be applied to other forms of enterprises, except that the companies incur certain additional costs, called agency cost.

The relation between owners of a company (i.e. shareholders) and the management (i.e. the board of directors) is quite like that of the principal and the agent. It is expected that the board of directors must use the funds for investment in various assets of the company for the best interest of the shareholders. There exist some formal systems like statutory audit to monitor the whole system and obviously, the company has to incur some additional costs, called agency costs for the corporates. But, the enterprises like sole proprietorships and partnerships do not need to incur any agency costs.

Companies raise funds from different sources as it may be, either by the issue of securities (i.e. shares and debentures of the companies) and direct borrowings from the banks or any financial institutions or from any related party. The equity/debt which are issued by a company are called financial assets from the point of view of the investors. Actually, a financial asset is nothing but a piece of paper which entitles the holders to have some financial rights. The term ‘financial right’ in case of shares comprise the right to have dividends, right to participate in the final distribution of assets of the company at the time of liquidation of the company. In case of debentures, the holders have a right to claim interest and at the time of maturity, they must have the principal.

1.2 Capital Structure: Concepts and Approaches:

There exists mainly two principal sources of finance to a business concern - equity and debt. So, it is a great question what should be the optimal proportion of debt and equity in the capital structure of an enterprise or what should be the position of financial leverage in an enterprise. Actually, the term capital structure means the degree of leverage in total capital. The purpose of financial management is to maximise the value of the business. The value of a business may mean different thing to different people depending on some assumptions and purposes. However, there are basically three approaches to compute value of a business. These are: Asset Approach, Market Approach, and Income Approach. Asset Approach is based on substitution principle i.e. the cost of substituting the assets and liabilities of the business to be valued by a new set to create a similar business. The Market Approach, as the name suggests, depends on the 'going rate' in the market for a similar business. So, this is determined by the market forces. The third Approach i.e., Income Approach is based on the business income expected for similar investment of time, money, and efforts. There are again two sub-approaches: Capitalisation method and Discounting method. Under Capitalisation method, the value of a business is determined by capitalising the expected business earnings at the capitalisation rate. Capitalisation rate may be the growth-adjusted discounting rate or more simply, the cost of capital of the firm. Discounting method discounts the stream of projected business income (over some future period of time) at the discount rate (usually, the required rate of return). We, in this study, follow the Capitalisation method. The expected operating profit is completely contingent upon the operating efficiency of the business. It does not depend on the way through which the funds have been collected. But, the overall cost of capital may be influenced by the leverage of the

firm. So, it is possible to alter the leverage of an enterprise by reducing the overall cost of capital and at the same time by increasing the value of the business. There exist different theories and approaches which can determine the proper or optimum capital structure.

1.2.1 Net Income approach (NI approach): The overall cost of capital is nothing but a weighted average of cost of debt and equity. The weights may be measured as a proportion of debt and proportion of equity in terms of market value. Imbursement of interest and the principal is guaranteed irrespective of profit earned. So, the risk for the lenders are lower than the risk of the shareholders and as a result, according to the theory of risk and return, the cost of debt is lower than the cost of equity. In a financially sound business debt can be taken as risk-free and thus, the cost of debt in such a case can be considered as risk free rate. As a result, particularly in this case the cost of debt is lower than the cost of equity and it is independent of leverage. In Net Income Approach (NI approach) it is presumed that the cost of equity does not rest on leverage and so if the leverage increases the weighted average cost of capital will be lower. According to that particular theory, the cost of capital is a weighted average of cost of equity and cost of debt. NI approach is established upon some assumptions such as, for a sound business debt is risk free, the cost of equity is supposed to be constant irrespective of leverage, the cost of debt is lower than the cost of equity, and higher proportion of debt will make the cost of capital lower. But, if NI approach is true, the cost of capital is minimum when leverage is maximum, and therefore value of business is maximum when leverage is maximum.

1.2.2 ***Net Operating Income approach (NOI approach) or leverage irrelevance Theorem*****:** Modigliani and Miller founded the 'Net Operating Income Approach' as leverage irrelevance theorem. According to this approach, if the leverage increases the

risk of insolvency to the equity holders will also increase. So if the leverage increases, the cost of equity will also increase. Thus, in this theory it has been actually suggested that, the capital structure fixes the way in which the cash flow coming out of the business is to be shared by the lenders and equity holders but it does not affect the operating risks of the business. If the aforesaid view is true, the value of business and consequently, the overall cost of capital are not dependent upon capital structure.

So, according to this approach the cost of equity is equal to a summation of cost of capital and cost of capital minus cost of debt multiplied by a proportion of debt and equity. This approach is based upon some assumptions as: cost of debt is same as risk free rate and is constant irrespective of leverage; cost of capital is a function of operating risk and is constant regardless of leverage; if the leverage is high, the cost of equity will also go high. The NOI approach suggests that a business cannot alter its overall cost of capital by changing leverage. So, it is possible to increase the value of the business, either by increasing operating profits or by reducing the overall cost of capital and this view has been mostly accepted by financial management theorists.

1.2.3 Trade-off theory of capital structure: In accordance with the MM (Modigliani and Miller) theorem, value of levered business exceeds the value of unlevered business to the extent of present value of interest tax shield. So, if the aforesaid statement is correct, the value of a business can be increased by debt funds. But, in comparison to equity financing, debt financing consists of some extra costs as agency and bankruptcy costs. So, interest tax shield increases the value of the levered business but the value of levered business may be reduced by those extra costs (as agency and bankruptcy costs). Actually, in trade-off theory it has been given that the leverage decision actually depends upon the trade-off between two factors as, present value of interest tax shield and present value of agency and bankruptcy costs. Thus, if

present value of agency costs and bankruptcy costs exceed the present value of interest tax shield, leverage does not carry any advantages at all.

The present value of interest tax shield increases at a constant rate. But, the current value of agency cost and bankruptcy cost upsurge at an increasing rate with the escalation in leverage. The agency cost and the bankruptcy cost are not significant for low degree of leverage. So the net advantage of leverage can be achieved as long as the increase in present value of interest tax shield (for every rupee of fresh borrowing) exceeds the rise in present value of agency cost and bankruptcy cost.

As, the present value of agency cost and bankruptcy cost rises at an increasing rate in comparison to present value of interest tax shield (which increases at a constant rate), the difference between the marginal interest tax shield and marginal bankruptcy/ agency costs drop with every rupee of fresh borrowing. Therefore, the net benefit of leverage goes at maximum point when these are same. So, the degree of leverage, at which the net benefits of leverage is the maximum, is called optimum capital structure.

1.2.4 Pecking order theory of capital structure: In 'pecking order theory of capital structure' it has been suggested that there is a stringent order in the source of finance. Generally, a firm has more information about the value of the business than the providers of fund. As debt holders usually accept fixed interest rate and principal, the influence of irregular information on cost of debt is lower than the cost of equity. So, for internal source of funds, a firm may prefer debt to fresh issuance of equity. So, the amount of borrowings may be calculated as a difference between premeditated investment in new project and retained earnings.

Any company which is highly profitable, may have higher amount of retained earnings for making investment into a new project. Generally, these types of companies need lower amount of debt for funding into a new project. So, any business which is highly profitable, may have lower leverage. If any enthusiastic manager after reflecting upon the company's objectives considers that its shares are currently under-priced, he may favour debt rather than issue of equity at a lower price. But, a pessimistic manager may consider that the market has overvalued the company's prospects. So, he will try to retain the over valuation of company's share as long as possible. Therefore, any new issuance of equity shares (at their current market price) may bring down the share price to their true worth and in this way the temporary benefits will be lost. So, a pessimistic manager will also desire for debt issue than equity issue.

1.3 Sources of finance and its importance:

As the main target of financial management is to maximise the value of the firm, different approaches have been developed to minimise the cost of capital/ to maximise the value of the business. Though, there mainly exists two sources of finance and a proper combination (i.e. with proper capital structure) of which may help the firm to enhance its value, efforts have still been made in this research work to analyse the matter of debt financing i.e. debentures and bonds and term loan and also any other types of borrowings (mainly long term and also short term borrowings). Because, in this research work, the impact of credit rating on investment inflow is needed to be judged and equity holders, being the owners of the company, are not readily comfortable in accepting the opinion of credit rating agencies. They mainly want to judge the risk-return trade off and their risk is completely different from the risk of

debt holders. And finally, according to the Random Walk theory, any equity investment moves on its own way. Debt is a strategy of collecting and borrowing and in Indian context total borrowings can be divided into two types as long term borrowings and short term borrowings.

Long term borrowings mean such types of borrowings the maturity of which will be normally at least after one year. In accordance with the revised Schedule VI (effective from the financial year 2011-12) of the Companies Act, 1956, Long term borrowings can be subdivided as bonds and debentures, term loans, deferred payment liabilities, deposits, loans and advances from related parties, long term maturities of finance lease obligation and other loans and advances.

Short term borrowings mean such borrowings the maturity of which will be within one year. In accordance with the revised Schedule VI (effective from the financial year 2011-12) of the Companies Act, 1956, short term borrowings can be subdivided as, loans repayable on demand (from banks and from others), loans and advances from related parties, deposits and other loans and advances.

1.4 Value of the business:

Up to this part of the research work the term ‘value of the business’ has been used frequently. But, it is interesting to know what it actually means. Profit earning is the main objective of a business enterprise. So, it is true that a financial manager wants deployment of funds to maximise profit available for owners. But, financial manager is also concerned with the issues of obtaining the funds. So, if we summarise these twin objectives, i.e. procurement of funds and deployment of funds, it would be clear that the financial management targets to maximise the owner’s wealth and this is

known as value of the business. Funds required by a business can be raised in the form of debt and also in the form of equity. So, the value of the business is nothing but a summation of the value of debt and the value of equity. Value of equity is nothing but the present value of free cash flow for equity. The proper discounting rate applies to ascertain the present value of cash flow for equity, which may be the cost of equity. The free cash flow for equity holders comprises of dividends, issue/ buy back of shares and terminal value of equity.

Value of debt means the present value of free cash flow for debt holders. The discounting rate which is used to calculate the present value of free cash flow for debt should be the cost of debt. The free cash flow for debt comprises of post-tax interest and loan taken/ repaid and terminal value of debt.

It is true that value of business is a summation of value of debt and equity but it is not always the same as the present value of debt and equity holders. Actually, value of the business is the present value of free cash flows for debt and equity holders discounted by weighted average cost of capital. The weighted average cost of capital is based on a proportion of debt and equity. If the proportion of debt and equity changes, the weighted average cost of capital does not get represented by the same annual average yield rate.

1.5 Average Cost of Capital:

Cost of capital is the rate of return which is expected by the concerned providers of funds. Actually, the cost of capital includes the cost of equity and the cost of debt. Overall cost of capital can be computed as the weighted average of cost of the equity funds and also the cost of debt funds.

1.5.1 Cost of equity: The term cost of equity means the minimum rate of return expected by an equity shareholder. One company can opt for equity financing by two ways as by issue of fresh equity shares and by retention of earnings. Anyway, it is not important which source the company has tapped to raise its required funds. Because in both contexts cost of capital remains the same. But the only difference is that in case of retained earnings, no flotation cost is necessary.

Actually, the cost of equity is a function of risk and this type of risk is measurable. There exist a number of methods to determine cost of equity. The CAPM model is one such method that describes the technique of computing the risk. An alternative method of assessing cost of equity is discounting rate method. In discounting rate method, the present value of expected stream of dividends equals the price of share at equilibrium. The equilibrium price can be ascertained by looking at the past prices. This approach is also identified as dividend forecast approach. There exists an alternative method termed as realised yield approach. In realised yield approach the cost of equity is considered as an average annual rate of yield available to equity holders. The yield comprises of dividends and capital gains accruing to equity shareholders by trading off the shares.

1.5.2 Cost of debt: Cost of debt means the return expected by the bondholders. In spite of buying the bonds in nominal value, bondholders generally purchase them at market price. The cost of debt may be defined as an annual percentage on market value of debt. There exist several methods for calculating cost of debt such as YTM methods, quicker methods, etc. According to YTM (Yield to Maturity) method, cost of debt is measured as the rate inferred by the cash flow generated by the bond. The method of calculation of return in YTM method is similar to the methods of

calculation used for internal rate of return. According to the quicker method, cost of debt is expressed as an annual percentage of average market value of the debt. Actually cost of debt comprises of two parts, one is interest and another is redemption premium.

1.6 Ways and means to reduce cost of capital:

Value of the business can be defined as a proportion between free cash flow for equity and debt holders and overall cost of capital (i.e. free cash flow for equity and debt holders/ overall cost of capital). So, the value of the business can be increased either by increasing the free cash flow for equity and debt holders or by decreasing the overall cost of capital. The cost of capital is the average rate of return required by debt and equity holders. So, cost of capital can be reduced only if the investors lessen their expected rate of return. But, in the principle of risk aversion it has been given that none should want to take higher risk if it does not involve higher return. On the other hand, they may be satisfied with lower return if the risk is also lower.

The receipt of dividend is not as much assured as that of interest, and thus, equity holders accept higher risk than debt holders. So, in calculation of cost of capital (a measurement of risk), rate of return required by the equity holders is higher than the cost of debt and in this way, the overall cost of capital lies between cost of debt and cost of equity.

As, the cost of debt is lower than the cost of equity, one may think it to be possible that the overall cost of capital (an average of cost of equity and cost of debt) may be reduced by increasing the proportion of debt (i.e. leverage) in long-term capital. But, practically this is not true. In dividend irrelevance theorem (proposed by Modigliani

and Miller) it has been proved that the overall cost of capital is independent of leverage. This happens because cost of equity increases with a rise in leverage (as risk increases) and thus what is gained by borrowing at cheaper rate is lost due to higher cost of equity.

So, the cost of capital may be reduced by either of the two alternative ways. Firstly, it can be done by reducing the cost of equity and secondly it can be done by reducing the cost of debt. The interest is a part of cost of debt and so it is possible to reduce cost of debt by reducing interest. In accordance with the theory of risk-return trade off, one can be satisfied with lower rate of return if the risk is lower. Among different tools for reducing risk, credit rating can be considered as one of the important tools of reducing the risk of borrowing. A good rating is an indicator of lower risk and in that case borrowers may be satisfied with lower return.

1.7 Credit Rating and its uses:

A credit rating is a process of assessing the credit risk i.e. the risk of default associated with the specific financial instrument, or, the term may also be stated as an assessment of the credit worthiness (i.e. the ability to meet financial obligations) of an issuer. So, rating is some sort of evaluation of the capacity of timely payment of interest and principal. The entity whose creditworthiness is being assessed, is referred to as an obligor or issuer. Obligors/ issuers include entities as corporations, financial institutions, insurance companies, or municipalities that have been rated by a credit rating agency. Actually, credit rating is an evaluation made by the credit rating agency of the debt issuer's likelihood of default. It is a comprehensive assessment of the overall creditworthiness of an entity by a third party. So, by making an application to a credit rating agency, an entity may seek credit rating before going to the market for

borrowing money, be it (the entity) an individual corporation, state or provincial authority or sovereign government. This type of rating is generally done by a credit rating agency such as Standard & Poor's or Moody's. Such evaluation is generally done by a rating agency by not only taking account of the financial conditions of the entity, but different qualitative parameters are also considered. So, the credit rating can be obtained by a corporate body or even by a government agency by getting its related and relevant qualitative and quantitative factors including any non-public information obtained by the analysts of the appointed rating agency, evaluated by such an authorised and recognised agency in terms of its credit worthiness. Credit ratings are not based on mathematical calculations only. Actually, credit rating agencies use their expertise in determining what public and private information should be considered to assign a rating to a particular company or Government. These ratings are generally used by individuals and entities which purchase bonds issued by companies and Governments to determine whether the issuer entities are able to repay the bond or not. A poor credit rating indicates a credit rating agency's valued, verified, analysed and tested opinion that the rated company or Government is at a high risk of defaulting, based on the agency's analysis of the entity's history and long term economic prospects.

Credit rating has an inverse relationship with the possibility of debt default. A high credit rating indicates that the borrower has a low probability of defaulting on the debt and, on the other hand, a low credit rating suggests a high probability of default. An obligor of a debt security having a high credit rating (which is assessed by a credit rating agency), have a lower likelihood of default than an issuer of debt security with a lower credit rating. Changes in credit rating can have a significant impact on financial market.

Credit rating scales, symbols, and definitions may vary from one rating agency to another. Credit rating typically is expressed in a scale of alpha and /or numeric symbols, and these symbols with their interpretation are unique for a particular rating agency. Anyway, a typical credit rating scale has a top rating of "AAA" and may have the lowest rating of "D" (indicating Default). Some rating agencies distinguish between investment grade and non-investment grade through its scale.

Before we proceed further to discuss about credit ratings, we must remember that credit rating cannot be interpreted as investment device and should also not be viewed as a recommendation to buy, sell or hold securities. Credit rating cannot interpret all types of risk, such as market or liquidity risk which may also affect the value of the security. Credit rating does not consider the price at which an investor purchases or sells a security. Overall, a credit rating does not give any guarantee that the financial obligation will be repaid.

The first credit rating agency was established in New York, in 1841. In India, credit rating is a very new concept, but the changing global scenario on the subject has made an influence to the Indian financial system. Most probably India is the first among all developing countries which has set up a credit rating agency in 1988. The role of credit rating was institutionalised when RBI made it compulsory in case of issuance of commercial paper (CP) and subsequently, SEBI made it obligatory for certain types of debentures and debt instruments. In June 1994, RBI made credit rating mandatory for Non-Banking Financial Companies (NBFCs). Rating agencies constantly need security evaluation. The evaluation made by these rating agencies are always questioned by investors' media and regulators. Rating agencies publish extensive data of rating on different field. In 1998, the Securities and Exchange Board of India

(SEBI) made a committee to chalk out a draft regulation for CRAs (Credit Rating Agencies). The committee recognised that the SEBI Act 1992, should be amended to bring CRAs under the purviews of SEBI for different reasons. But, it may not be possible for a regulator to judge the relevance of one rating over another. On the basis of historical records, the trustworthiness of a rating and the CRAs should be judged by the market. But it is not possible for a regulator for making the judgement in such a matter. The committee recommends that in place of regulation, SEBI could just acknowledge certain agencies for a specific purpose only.

After making a discussion with the Central Government, SEBI in 1999 issued a notification which incorporated the CRAs under the regulatory sphere to exercise powers conferred on it by section 30 (read with section 11) of the SEBI Act 1992. After the issuance of such notification, all CRAs must be registered with SEBI. Reserve Bank of India has decided to make review and monitor the performance of credit rating agencies on a regular basis. According to the G-20 working Group recommendations, all credit rating agencies whose ratings are used for regulatory purpose will be subject to regulatory observations, and it may include registration and compliance with the International Organisation of Securities Commissions (IOSCO) code of conduct Fundamentals. The Reserve Bank of India will consult SEBI on the issue of rating agency's compliances to the IOSCO Code of conduct Fundamentals. At that time, RBI had accredited four rating agencies registered with market regulator of SEBI and this allowed them to use their rating for assessing risk weights within the framework of the Basel II.

In India there exist different credit rating agencies. But among all of them top ten rating agencies are as follows:

CRISIL: This is India's largest and first credit rating agency and a global leader in research, ratings, and risk & policy advisory services. It was established in 1988 and was jointly promoted by ICICI and UTI. It is one of the top credit rating agencies in India.

Credit Information Bureau India Limited (CIBIL): CIBIL has it's headquarter at Mumbai and it is a credit information company which maintains records of an individual payments related to credit cards and loans. CIBIL uses the information of users' loan and credit card to generate credit information reports which are used to approve loan application.

Fitch Ratings India Private Ltd: Fitch group of companies is one of the top credit rating agencies in India incorporated in 1913 in New York, U.S.A. It provides financial information services in more than 30 countries and has over 2000 employees working at 50+ offices worldwide.

Equifax Inc: Equifax inc started operations in 1899 and managed its place among the top credit rating agencies in India and at global level. It provides information management services which process lot of records of its members to supply risk management solutions, credit risk management and analysis, fraud detection triggers, decision technologies, marketing tools, etc.

ONICRA: Onicra Credit Rating Agency is a credit and performance rating company based on Gurgaon and founded in 1993. It offers smart and innovative solutions like risk assessment, analytical solutions, and ratings to MSMEs, corporates, and individuals.

High Mark Credit Information Services: High Mark Credit Information Services is a recognized credit rating company in India that was established in 2005. It provides bureau services, analytic solutions and risk management to banks and financial institutions operating in Micro-finance, retail consumer finance, MSME, Rural and cooperative sectors.

SME Rating Agency of India Ltd. (SMERA): Exclusively engaged in rating of small and medium enterprises (SMEs).

Brickwork Ratings India Private Ltd: Brickwork Ratings was established in 2007 by Sangeeta Kulkarni as a credit rating firm. The company is registered with SEBI, RBI, and NSIC and operates for ratings in wide range of areas such as NCD, Bank Loan, Commercial Paper, and MSME. Most probably it is the India's first individual rating agency.

CARE (Credit Analysis & Research Ltd.): CARE Ltd. had formally started its operations from April 1993 and from that date it had established itself as one of the renowned credit rating agency in India. This rating agency was promoted by IDBI.

ICRA LTD (Investment Information and Credit Rating Agency): ICRA LTD. is a company which gives independent and professional investment information. It was established in 1991. It is the second largest Indian rating company in term of customer base. It was a joint venture between Moody's and various Indian commercial banks and financial services companies. This rating agency was promoted by IFCI.

1.8 Literature review:

The literature on the subject is very scanty. Because, credit rating is of recent origin, and also because of the fact that very few researchers dared to undertake studies in such a very sensitive and often confidential issue; there is risk of not having any information (which are not public) from the agencies for the sake of confidentiality and business secrecy. However, an attempt is made to present a picture on the basis of the available literature, whatever small it may be.

Agarwal (2007), in his article "A Bird's Eye View of Credit Ratings", has defined the term credit rating as an evaluation of credit worthiness of an individual or money market instrument which indicates their willingness to pay obligations properly. The rating can be obtained by any group of individual or by customer.

In that particular article it has been given clearly that rating plays an important role in corporate investment inflow; rating even plays a big role in the investment inflow of a country. So, if India's grade has changed from outperformer to investment grade then inevitably the FDI flow into India will increase. Some of the key users of credit ratings are QIB (Qualified institutional Buyer), FIIs (Foreign Institutional Investors), market regulators, issuer companies, merchant bankers and some intermediaries also. It is the duty of rating agencies to update their ratings when companies change their basic principles and they must inform it to the users through any media.

According to the author, every rating agency has its own parameters for rating a particular product and the rating symbols may vary from agency to agency. Every symbol gives a similar connotation of product, like safety parameters, lowest, highest and amidst. Anyway, CRISIL has made a special grading known as non-meaningful,

for the companies which have been referred to BIFR (Bureau of Industrial & Financial Reconstruction). SEBI is always working on making the disclosure norms of listed companies stricter. On 2nd March, 2007, SEBI introduced a rule and according to that rule, IPO rating was mandatory for every company by an approved credit rating agency and the issuer company needs to bear the expenses incurred on that. In India, the rating process has been taken from International Credit Rating Agencies. The rating process involves three stages as initial stages, Data gathering, analysis and preparation of report and finally rating meeting and finalisation. The whole rating process must follow the SEBI (Credit Rating Agencies) Regulations, 1999 and any amendments made in accordance with it. Any violation of this regulation will incur a liability to the rating agency and to every defaulting officer who are involved with that.

Dhileepan (1994), in his article "Rating of banks and financial companies" has given that though both the banks and financial companies make a spread between the borrowing and the lending rates, they differ in certain important ways as banks are larger in size and in volume of operations. The legal and regulatory background of banks are totally different from financial companies and also banks enjoy some extra privileges than financial companies.

He has given that rating agencies has crafted different rating criteria which will make a full coverage of all issues influencing the credit quality of the issuer of debt, i.e. bank or financial companies. Firstly, it is necessary to understand the ownership, size, geographical spread, and the organisational structure of the issuer and also the relationship between the government and RBI is to be understood. Secondly, the issuer's source of funds in terms of their cost and availability are determined and the

issuer's innovativeness and competitive ability to attract cheaper funds is analysed. Foreign exchange and interest rate risks connected with each source of fund and management of such risk are ascertained to estimate the possible impact on credit quality. Thirdly, it is important to understand the issuer's segment of operations and its competitive position and the risk profile of each segment. The extent of Non-Performing Assets in the portfolio is calculated. Fourthly, to ascertain the profitability it is important to understand the asset segment wise spreads and their volatility. The basic strength of the issuer in generating such income is analysed to determine the probability of continuance of such income.

He has given that other than the above mentioned criteria it is also very important to ascertain the capital structure and for that purpose it is necessary to analysis the capital adequacy ratio. In India, RBI has prescribed a norm for both banks and financial companies with a schedule to attain the ratio.

According to him, to judge the management and the systems, the quality of management is judged by the profile of operating executives, human resources policies, organisational structure, and the extent of delegation of authority and responsibility. Though the RBI has recommended the accounting policy for both bank and financial companies to some extent, still there are some areas where the issuers have the liberty to adopt different policies. The financial figures are adjusted for any such non-standard or unwise accounting policies to disclose the true financial position of the issuer.

Panda and Tripathi (1998), in their article "Debt Rating in India - A service to Investor", have given some information on debt rating in India. They have written that as lots of companies are raising money through different types of debts and

instruments, it is quite difficult for an investor to judge which investment opportunity is the best and more reliable. At present, as corporate investors are depending upon professionals for the decision of their investment, the need for an independent and reliable agency was there and as a result credit rating agencies were introduced in India. India was the first country in the developing world which have set up credit rating agency and initially there were three credit rating agencies performing in India (as CRISIL, ICRA, CARE). According to them, credit rating is a qualitative appearance of opinions of rating agencies regarding the relative competence of the issuer of debt obligation to serve the debt obligation timely in accordance with the contract with the creditors. There exist mainly three components of rating, as financial instruments, customer ratings, and borrower ratings. They have described the rating process and how it works actually. Rating may be changed if any development of the concerned company exists. They (authors) have also given some benefits of credit rating. They, however, have also cautioned about some continuing challenges of credit rating. Some suggestions of authors regarding credit rating are also there.

Turing (2000), on the topic "The standard & Poor's approach to ratings", has given that the rating given by Standard & Poor's always reflects the opinion of S&P's about the credit worthiness of the obligator with respect to a specific obligation. Debts are mainly divided into short-term and long-term categories and these may have different rating scales. Ratings are mainly based on the probability of payment in accordance with the terms of the obligation and also with the nature and provisions of the obligation. Ratings are expressed in terms of risk of default. Rating may be of different types. Rating below BBB suggests a speculative investment. All ratings have been categorised under different scales as it has started with AAA (i.e. extremely strong capacity to meet financial commitment) and ended with D (i.e. obligation in

payment default) and (**+**) or (**–**) signs reflect relative strength of rating within these categories. 'R' reflects significant non-credit aspect of obligation (i.e. equity linked instrument) and credit watch indicates that rating may be raised or lowered, if the credit watch designation is positive or negative respectively. Rating may be raised, lowered or affirmed according to the influence of new information.

Rustagi (1998), in the book titled '*Financial Management Theory, Concepts and Problems'*, has written a topic on "Credit Rating Analysis". According to him, credit rating is an opinion of the rating agency on the timely payment of interest and principal of the instrument. But, a rating is not a general evaluation of the issuers. Rating generally presented in alpha numeric manner and it is an easily recognisable tool for the investors. Different types of debt instrument can be rated such as commercial paper, inter corporate deposits, long term bonds, debentures, etc. Some international rating agencies also give sovereign ratings. In India, the first rating agency was established in 1988. The name of the first rating agency is CRISIL. Afterwards different rating agencies have come up such as ICRA, and CARE.

The author has described the system of rating process. The required information relating to any particular security is collected from the annual and interim report of the issuer, prospectus, letter of offer, etc. Sectorial and economic data can be made available from industry groups. Diverse information of Government agencies can also be a source of data. Requisite data can also be acquired by dint of primary data. Any information received from the company kept secret. The time taken for exercise is usually two to three weeks. The issuer may accept or do not accept the rating. If rating is not accepted, it is not disclosed. But, if it is accepted, it comes under surveillance and is publicized. When any major event takes place which has an impact on the

credit quality or if there is any deviation from the expected trends, the rating is put on a credit watch. Rating evaluates risk. Risk can be of two types - business risk and financial risk. The business risk includes an evaluation of the industry characteristics, performance, outlook and operating efficiencies of the issuer. Financial risk is the evaluation of the financial management, cash flow adequacy, earning forecasts, and accounting policies. Certain qualitative factors like management capability, group strength and support, business philosophy are also to be considered. Credit rating provides a basis for determining the returns compared to the risk involved. Higher risk may have higher return and this could result in savings in cost and optimisation of the fund-costs. Author has given some precautions of credit rating as credit ratings are not any recommendations to buy or sell any rated security. On 7th July 1999, SEBI has notified SEBI (Credit Rating Agencies) Regulations, 1999 to regulate the registration of credit rating agencies in India.

Khan (1993), in his article "CRISIL Rating in India - a new financial service in capital market" has given an idea about CRISIL rating. In that article it is said that the growth of Indian capital market has been tremendous for the last more than seven years. During that period many healthy developments took place in money market and capital market. To help investors in taking proper decision about their investment, the concept of credit rating has been introduced. In India, the first rating agency was CRISIL. Anyway, the objectives of the study are – to study the conceptual and methodological aspects of CRISIL rating in India, to review the shortcomings and flaws in the workings of CRISIL, to examine the progress in its operations in India, and to suggest some measures to make credit rating a successful scheme in India.

Moyer, Mcguigan, and Kreflow (1990), in their article on “Bond rating” have given some information about the risk of valuation faced by different rating agencies, including Moody's Investors Service and S&P Corporation. The write up was mainly based on global scenario. Rating agencies provide rating by considering different factors such as earning stability coverage ratio, the relative amount of debt in the firm's capital structure, and the degree of subordination and past experience.

The authors have shown that the firms having lowest debt ratios and highest interest coverage ratios tend to have the best credit rating. Companies having a weak financial position sometimes issue high yield debt securities to obtain funds, such debts are known as junk bonds. Different developments have been suggested by them to reduce the interest of investors in junk bonds. The developments include firstly, prevention of economic recession; secondly, experience of disappointment to acquire money from several banks and savings and loan institutions, which had invested in junk bonds; thirdly, Government regulations of financial institutions have increased; and fourthly and finally, investment banking firm of Drexel Burnham Lambert, the largest underwriter of junk bonds have collapsed, creating a problem in investing in junk bonds.

The Securities and Exchange Board of India (Credit Rating Agencies) Regulations, 1999, have given different guidelines with regard to the registration and functioning of the credit rating agencies in India. The registration procedure includes application for the establishment of a credit rating agency which matches all eligibility criteria. They have to maintain the strict examination procedure with regard to the details furnished by them. They are required to prepare internal procedure in accordance with circulars. They provide guideline regarding the credit rating procedure by the act.

Sarkar (1994), in his article "Credit rating in India: a new feather in the capital market's cap" has given some information in detail about credit rating. Credit rating helps the company to raise funds and also helps the investors to select their risk-return trade off. The system of credit rating was started in USA. The Railroad Companies were the first on which information and financial statistics were published by Varnum Poor in 1854. Though US is the founder-country of the concept of credit rating, now it has become a universal phenomenon. In India, the need for credit rating was felt with the development of capital market. Credit rating indicates the risk involved in a debt instrument.

In US, S&P, Moody's investor services and Fitch's are some of the important firms engaged in credit rating operation. To analyse the issuer's financial position, rating agencies consider some financial ratios and issuer's significance and size. Usually, financial leverage ratios, liquidity ratios, and profitability ratios are most important. Through a chart the author has shown how S&P used financial ratios in the rating quality of the bond. But the bond rating process is not so easy as shown by the author in the chart. It is true that before the assignment of a rating, analysis by some other ratios like pre-tax fixed charge coverage ratio, cash flow to long term debt, pre-tax return on long term capital, long term debt to capitalisation is also required. The author has also referred to the rating system of some other countries e.g. the credit rating system in Japan that started with the establishment of Japan Bond Research Institution (JBRI) in 1975, which is also supported by four other rating agencies.

The author also has given some ideas in detail about the rating agencies in India. Some information about CRISIL and ICRA has been given by the author. Initially the credit assessment was developed for State Bank of India, later they provided rating to

some nationalised banks. CRISIL was tying up with operational research group (ORG, a Delhi based market research company) to produce industry specific data information services. The author has suggested some improvements as rating in India is fairly of very recent origin. It is very important that rating assigned by the rating agencies must be revised frequently. Rating agencies also need to revise their fees structure so that they can meet their expenditures. A proposal for equity rating was there. Anyway, the author also shared one important information that the parliament had recommended that the credit rating for the issue of shares as well as debentures would be made compulsory.

Kumar and Rao (2012), in their article "Credit Rating - role in modern financial system" have given the idea that credit rating has been introduced for the protection of small investors who are the main target for unlisted corporate debt in the form of fixed deposits with companies. Rating is generally used as an alphanumeric symbols and is based on the judgment of credit rating agency.

They have defined sovereign credit rating as credit rating that indicates the level of risk of the investing environment of a country and is used by the investors who want to make investment out of the country. They have provided a list of ten least risky countries. They explained credit rating as a link between risk and return. One investor uses it to evaluate the risk and compares the expected rate of return with offered rate of return to augment its risk-return trade off. It helps the issuers of the debt instruments to determine their price properly. The analysis of credit rating is based on some quantitative as well as qualitative factors.

They have also given an overall idea about credit rating in India. Perhaps India was the first among developing countries, which set up a credit rating agency in 1988. In

June 1994, RBI made it mandatory for Non-Banking Financial Companies (NBFCs). In 1998 SEBI formed a committee to make some regulations for CRAs. In consultation with the Government, in July 1999, SEBI issued a notification bringing the CRAs under its regulations (section 30 to be read with section 11 of the SEBI Act 1992). There exist some factors which may affect assigned ratings. Role of credit rating agencies in India was given on that particular article also. Among all the rating agencies, a detailed discussion has been given about CRISIL. CRISIL provides both the long term and short term ratings. According to the authors, any instrument which carries a rating lower than BBB-rating is considered a speculative grade or junk bond.

Rao (1999), in his article entitled "credit rating" has given the details about the process of credit rating. The article was started with a historical view on credit rating. The author has given some information about the Indian scenario of credit rating. For example, he has shared information about the Investment Research Division (IRD) which provides analysed and value added information on the Indian economy, capital markets, industry and companies through various products and services. The IRD products are CRISIL rating scan, CRISIL ecoscan, CRISIL view, and CRISIL-IDBI bond yield tables.

He has pointed out the existence of a group named 'The Advisory Services Group (ASG)' which provides services on restructuring operations, privatisation services, financial evaluation, credit management, risk management, resource mobilisation, infrastructure advice, and credit assessment. In 1991, another rating agency 'ICRA' was established which was promoted by IFCI and 21 other shareholders consisting of nationalised and foreign banks and insurance companies. Some features of credit rating have also been mentioned by the author. Credit rating provides guidelines to

investors for making investments. It is a current assessment of the creditworthiness of an issuer and actually it provides the lenders with a simple system of gradation. Rating is an opinion of the rating agency about the timely and safe payment of interest and principal of debt. Ratings are expressed in an alphanumerical way and these ratings can also be revised. So it helps the investors in making decision. The author has specified that there exist various types of credit rating as bond rating, equity rating, commercial papers rating, rating of borrowers, sovereign rating, and customer rating.

Choudhury (1994), in his article "Credit Rating: A few sample facts" has given something about the system of credit rating. According to him, credit rating is an opinion of a rating agency about the relative capability and willingness of an issuer to meet the debt obligations. Anyway, a credit rating is neither a general purpose evaluation nor an overall assessment of the credit risk and a credit rating is not a recommendation to buy, hold, or sell an instrument because it does not consider factors like market price, personal risk preference of an investor and any other factors which may influence an investment decision.

Credit Rating provides investors a very simple and easily comprehensible indicator of the latent credit quality of a debt. Through credit rating an investor can assess the risk level of the instrument and compare the offered rate of return with the expected rate of return to optimise the risk-return trade off. A rating (if not changed) is valid for the life time of the debt instrument. But during the whole life time of a debt instrument, the rating would be under a continuous vigilance process and depending upon the performance of the issuer, the rating may be retained, placed under watch, upgraded or downgraded.

According to the author credit rating is mandatory in India for issuance of certain debt instruments as public issue of debentures or bonds having a conversion or redemption period exceeding 18 months. Commercial paper can be issued in India if the programme has a rating not below investment grade. Fixed deposit programmes of all Non-banking finance companies having net owned funds above Rs. 200 lakh need to be compulsorily rated by March 31, 1995, as per the RBI guidelines. The NBFCs with net owned funds between Rs 50 lakh and Rs 200 lakh should also have their fixed deposit programmes rated within March 31, 1996.

Goel (1998), in his article "Need for Regulations for Credit Rating Agencies" has discussed mainly the need for regulating credit rating agencies and the area in which control could be applied. According to him, an investor for the purpose of making any investment decision would consider three parameters: safety, liquidity and profitability. But it still remains a significant question whether the ratings are reliable or not.

The author has continued to recommend that control should be imposed for the entry of more rating agencies into the field of rating. Otherwise, free entry of rating agencies would make too much competitive pressures on the rating agencies and the quality of rating will crumble. Industrial houses and capital market intermediaries would also come to form rating agency and as a result, competition will increase and the quality of rating may be deteriorated. In a particular study which has been done few years back by the Federal Reserve Bank of New York, it has been observed that the increasing number of rating agencies have created problems for existing rating based regulations. After realisation of the competitive pressures SEC, the Govt. of USA has declined to grant recognition to new rating agencies albeit they have the

requisite criteria. Nevertheless, rating agencies have faced diverse constraints for rating such as failure of companies to disclose adequate information, inability to obtain information independently, etc. According to the author the importance of the rating agency may be lost if the rating agency and the investor use same source of information fully. The author has observed that rating agencies do not accomplish their observation process frequently and they do not follow due diligence report.

It has been found that for the purpose of making a business attractive the business must have high ratings but after 2-3 months, the rating may be downgraded and then the issuer does not have any alternatives as they have been already accepted the rating. Alternatively, the rating agency would continue to get its fees every year. Corporates must have a desire to achieve a good rating and for that purpose they will shift to another rating agency if they have a lower rating from any rating agency. Anyway, it may be made mandatory on the rating agencies to notify SEBI of all upgrades and withdrawals of rating made by them.

Kaur and Kaur (2011), in their article "Credit rating in India: A study of rating methodology of rating agencies" discussed about the rating methodology of each rating agency after considering all companies that belong to the same rating class.

A rated security always deserves a higher place in the consideration of investors than an unrated security regardless of better financial position or reputation of the issuer company. Actually, credit rating does the job of determining the strength and prospect of a particular security by differentiating it from other securities with the pre-set standards called grades. In India, there exist various rating agencies as CRISIL, ICRA, CARE and Duff and Phelps Credit Rating (India) Private Ltd (presently known as Fitch Rating India Private Ltd.).

The main objective of the paper was to assess the constancy in rating methodology of rating agencies by validating some of the common factors which determine the bond ratings. Bond rating methodology has been analysed corresponding to eight ratios as, current ratio, quick ratio, debt equity ratio, interest coverage ratio and so on. For all the rating grades F-values using Analysis of Variance (ANOVA) is calculated for all the eight ratios.

For the purpose of comparison on the basis of credit rating, all companies have been classified into four types as, 'AAA' rated companies, 'AA' rated companies, 'A' rated companies, and 'BBB' rated companies. The authors in their study have highlighted that F values of all the relevant ratios of the companies in the study, which were assigned AAA rating by ICRA are not significant; it means that ICRA has used consistent methodology while assigning AAA grade to different companies during the period of study. In case of CRISIL, however, only quick ratio has significant F values, which means the quick ratio of different sets of companies having assigned with AA ratings by CRISIL, is different from each other. In case of ICRA none of the F values of the eight financial ratios of the companies which have been assigned AA ratings by ICRA is significant which means that there is no significant difference between the values of various ratios of the companies which have been assigned AA rating by ICRA. The authors have further highlighted that in case of FITCH, the F values of the ratios of companies belonging to AA rating class are not significant which implies that during the period of study the financial ratios of the companies belonging to AA rating grade by FITCH are not significantly different from each other; it indicates the consistency in rating methodology by FITCH. In another part of the study they have shown that F values of all the ratios are not significant in case of A rated companies by CRISIL, which means that there is no significant difference in the similar ratios of

A rated companies and it proves that during the period of study CRISIL has used similar methodology while assigning A grade to different companies. In case of CRISIL, all the ratios do not have significant F values, which means that the companies which belong to similar BBB rating grade by CRISIL have similar ratios and it shows the consistency in rating methodology of CRISIL over the period of study.

Dhru (1997), in his article "provisioning for grades" has expressed an opinion that there is no doubt that an audit report is the only way of communication with his clients because large funds are invested by shareholders, financial institutions, and banks, merely on the basis of audit reports. So, it is the prime duty of an auditor to ensure that he can communicate his opinion in clear and unequivocal terms. So, in case of audit reports, ratings would serve the purpose of communicating the level of confidence that an auditor has on the basis of data provided by the client. The ratings would not change the report but would change its quality and the same report with different levels of confidence ratings would give a different meaning of the report.

Ratings can be decided by mainly two types of criteria as, system criteria (which would cover the accounting system, procedures, accuracy of documentation and effectiveness of control systems) and people criteria (which would include the experience, qualification, and motivation of the persons responsible for the maintenance and operations of the accounting control system in the organisation). The idea about the entire system mainly involve some symbols as A+, A, A- meaning perfect grade and B+, B, B- meaning sound grade, C+, C, C- meaning good grade, D+, D, D- meaning poor grade, and F means bad grade. Importantly, the message of

ratings must be communicated with the lenders quickly, and most probably there must have some auditors who have already started it.

A thorough sliding scale can be very extensive and might not be very easy to apply on listed public companies. But, even in their case, the time has certainly come for evolution of some quality standard like the ISO9000 (awarded by the Geneva-based International Organisation for Standardisation) for the accounting and internal control systems and like ISO9000 certification, the quality standard may be made obligatory for public limited companies, and for companies intending to raise funds from public or from financial institution.

Saluja and Drolia (2015), have published a paper entitled "Effect of credit rating on cash holding and earnings momentum of Indian companies". In the particular paper the authors have reiterated that credit rating represents the probabilistic estimate about the default of repayment of a debt instrument. Firms which have strong growth hold more cash. It has also been observed that companies which have huge profit and turnovers keep about 10%-20% of total assets as cash in hand. The term 'earnings momentum' has also been described by the author. They think that borrower's private information also plays an important role in corporate decision of debt maturity structure. Anyway, the objective of the study is to determine the effect of credit rating on Cash holdings of a firm and to determine the effect of credit rating on earnings momentum of a company. The research has been attempted by taking a random sample of 30 listed Indian companies in BSE 200 index. The quarterly data from the year 2006 to 2014 for these companies have been collected from their respective annual reports and BSE. The data for credit rating has been taken from CRISIL. The

impact of credit rating on cash holding and earnings momentum has been assessed using the classical linear regression model.

It is observed that credit ratings directly influence the capital structure decisions by managers. The results may be applicable for both the upgrade as well as a downgrade and to both large and small firms. Managers are mostly concerned with ratings changes around the AA and B credit rating levels, as well as the change from investment grade to junk. As to the impact assessment, it is observed that credit rating has a positive and significant impact on the cash holdings of top 200 listed Indian companies taken randomly. It is further observed that a higher rating has a strong effect on the growth of earning of Indian companies.

Rao and Sreejith (2013), on the topic "Impact of credit ratings (upgrade and downgrade) on stock prices in India" have examined the impact of credit rating agencies (as ICRA, CRISIL, CARE, Fitch Ratings and Brickwork Ratings) on equity returns in India. The ratings have a great impact on the decisions of the investors and due to this impact on investors, credit ratings will influence market prices of the financial instruments of those entities. Anyway, rating also has an important economic impact and researchers in different countries like Australia, France, Germany, Holland, USA, U.K, Japan, and China, have analysed the impact of such ratings to their market behaviour.

The paper was mainly based on two research queries and these are firstly, whether the stock prices react significantly to rating declaration or not, and secondly, whether the prices are anticipated to go up/down with the rating upgrades/ downgrades respectively or not. They had used event study methodology to test how the stock prices respond to the rating declarations. In the event study methodology,

notwithstanding various techniques, they have defined two periods as estimation period and event window. In the estimation period, they have derived the estimates and by using these estimates they have defined the normal returns for each firm during the event period. The event window has been denoted by the event date plus /minus few days, weeks, months as required for the research problem. In the particular study, they have used the event window as five days before and after the event. For the purpose of their calculations they have calculated mean-adjusted returns and market adjusted returns.

They have organised an ordinary least square market model and in that particular model, firstly they have built up the relationship between the dependent variable (stock returns) and independent variable (return on index) and subsequently, they have predicted the normal expected returns for the firm during the event window. They have also predicted the difference between the observed/ actual returns. The returns, which are predicted by the regression model is termed as abnormal returns. In all the methods, the prediction errors are averaged through the N firms on each day to form an Average Prediction Error (APE). The average prediction errors are cumulated from day -5 to 5. The average prediction errors are also cumulated over various sub periods to form Window Average Prediction Errors (WAPE). Finally, cumulative abnormal prediction errors have been calculated. After having the complete results through mean adjusted returns, market adjusted returns and after making the ordinary least square market models it was easier to compare the results of various methods with Indian data.

However, this particular study has put light on the impact of credit rating on the Indian market behaviour by estimating the normal returns using three different methods of normal return estimators as, mean adjusted method, market adjusted

method, and conditional risk adjusted method. This study puts light only on the abnormal returns on pre-announcements of downgrading. But, upgrade ratings have no impact on stock prices. They have concluded further that upgrade ratings are received cautiously by investors with no significant return but downgrade ratings are received more negatively by investors with significant negative abnormal returns.

Griffin and Sanvicente (1982), in their article "Common stock returns and rating changes: A methodological comparison" produced some results on the effect of credit rating announcement on security return. They have collected data relating to 180 Moody's and Standard and Poor's rating changes and monthly stock returns for a period of sixteen years (1960 to 1975). They have established the presence of negative reaction on stock prices immediately after the downgrades. However, this study is most probably the first attempt to compare the impact of two credit rating agencies on the market. All relevant data have been collected on monthly basis. Nonetheless, the correctness of the outcomes is quite low owing to the confounding happenings.

Hsueh and Liu (2007), in an article entitled, "Market Anticipation and Effect of Bond Rating Changes on Stock Prices," have also examined the impact of credit rating revisions on common stock prices and the effect of market anticipation of bond rating changes on stock prices. Their analysis revealed the impact of credit rating on stock returns is based on the reputation of the company in the security market. The reputation acquired by the organisation through positive performance is very significant in rating revisions. In that particular study it has been found that in downgrades and upgrades, there are significant abnormal ups and downs of the stock price, in reply to a rating change (particularly for firms with less information available in the market).

Steiner and Heinke (2001), examined the correlation between credit ratings and Eurobond prices in their article on “Event study concerning international bond price effects of credit rating actions”. They have also tested the information content of US based credit rating agencies among non-US investors in the international capital markets. They have carried out their study by using daily excess Eurobond returns related with the announcements of watch listings and rating changes by Standard & Poor's and Moody's. The results revealed significant bond price reactions after the announcements of downgrades and negative watch-listings. They also opined that the factors like actual yield level, issuer type, and the issuer nationality are the key factors which can determine the intensity of price reactions after the downgrades. Interestingly, the price reaction is considerably stronger for the downgrades in speculative grade.

Jerry, Faff, Parwada, and Poh (2007), have observed the information content of managed fund ratings on the Australian retail investors in their study presented in an article on “The Information Content of Australian Managed Fund Ratings”. The study has shown the large scale impact of credit ratings. It has also depicted the affirmative response of market to upgrades and adverse response to downgrades in the managed fund market. They have exposed that the Australian investors’ high prediction towards rating revisions mainly cause downgrades. The presence of the role of qualitative factors in the ratings has also been recognised.

Hettenhouse and Sartoris (1976), in their article "An Analysis of the Informational Value of Bond-Rating Changes” examined the effect of credit rating by global credit rating agencies and also the effect of local (Japanese) credit rating agencies on the Japanese stock prices. They collected data from Moody Rating Interactive, S & P from Credit week, and JCR from website for a period ranging from 1983 to 2003.

They settled upon the fact that global credit rating agencies (Moody's and S & P) are more influential than others. They established that ratings of global credit rating agencies had a good impression on the investors than the local credit rating agencies. The impact of global credit rating agency was comparatively high in downgrades as compared to local rating agencies and their research also showed that among global rating agencies, Moody is more powerful in creating stock market price volatility through their announcement of ratings.

Rao and Ramachandran (2004), have conducted a study to examine the effect of credit rating on the Indian stock prices by means of conditional risk adjusted method and they have presented the results in the article entitled "Response of Stock Prices and Volumes to Bond Rating Changes: The Indian Evidence". The study has revealed significant positive/ negative abnormal returns and volumes prior to the upgrades/downgrades. Anyway, they have shown the observant approach of investors to the upgrades and the attitude of investors to the downgrades. This study helps to exhibit the seriousness of Indian investors to the downgrades. But the main disadvantage of the study is that the study has been conducted by using only conditional risk adjusted method of normal return estimators.

May (2010) has used daily corporate bond and stock data collected from TRACE to examine the impact of bond rating changes. The summary of the study has been presented in the article "The impact of bond rating changes on corporate bond prices: New evidence from the over-the-counter market" The author has made a comparison of stock and bond markets on abnormal returns. It has been shown that the bond market and stock market actively respond in a similar way while considering daily data. The bond market responds positively/negatively corresponding to upgrades/downgrades of credit ratings for a two-day event window. But, their results

show a dissimilarity in the stock market. The reaction of stock market to downgrade is statistically significant but the reaction to upgrade is not statistically significant.

Dichev and Piotroski (2001) have analysed the monthly returns of stock portfolios by using data on changes in credit ratings by Moody's over a period of twenty seven years (i.e. from 1970 to 1997). The analysis has been presented in the article "The Long-Run Stock Returns following Bond Ratings Changes". They have shown that there is a significant negative return during the first month after a downgrade, but no significant reactions are there for the upgrades.

Rosch (2000), in his article "An empirical comparison of default risk forecasts from alternative credit rating philosophies" made comparisons among default risk forecasts of diverse rating philosophies, mainly, the 'point-in-time' and 'through the cycle approaches'. The 'through-the-cycle approach' provides a definite amount of independence from the business cycle. As defaults are objective events, in independent rating approach, default rates vary all through the business cycle.

Katz (1974), in the article "The price adjustment process of bonds to rating reclassification: A test of bond market efficiency," has observed that like a new information, investors react to ratings. He has done an event study to examine the efficiency of the bond market by analysing the price adjustment of bonds related to the rating changes. In this study, yields estimated from the bonds are anticipated for their old and new rating classes. He observed that bond holders rely on the judgement of rating agencies.

Micu, Remolona, and Wooldridge (2004), in their writing "The price impact of rating announcements: Evidence from the credit default swap market," have shown that rating changes cause dynamics on CDS (Credit Default Swap) markets. They

have measured to see whether the market based indicators can forecast rating changes. It is found that ratings can add information to the market. Rating changes in one firm can also influence other firms in the same sector.

Shleifer and Vishny (1997), in the article "A survey of corporate governance," have proved that, due to wealth redistribution effects from bond holders to stock holders, rating downgrades could increase stock returns, in a few circumstances. In their study they have shown that losses on the bond market would not be able to lead the losses on stock markets.

Romero and Fernandez (2007) have argued in their article "Bond rating changes and stock returns: Evidence from the Spanish stock market" that as stock prices on Spanish markets respond negatively to both downgrades and upgrades, there could be a wealth redistribution effect in the reverse way from stock holders to bond holders. Alternatively, the inconsistent market responses might also be affected by supplementary factors.

Gropp and Richards (2001) have shared their observation in the article "Rating agency actions and pricing of debt equity of European banks: What can we infer about private sector monitoring of bank soundness?". They have found that there exist no major effects for rating changes of European banks on the bond market but it has a strong effect on the stock market. The authors' observation that this may be caused due to inadequate liquidity on the bond market is significant.

Jorion and Zhang (2007) have put forward a theoretical basis for various price effects, in the form of a non-linear function of the rating (before the declaration of the rating modification). They have presented it in their article "Information effects of bond rating changes: The role of the rating prior to the announcement". In the model,

the change in default probability and the modification in stock price have been exposed through a Merton-type model. Before making the study, they have presumed implicitly an equal change in default probability for all changes of rating. They have ascertained that the inclusion of the prior rating to estimate price reactions also has a significant outcome on stock prices. But, this effect is quite lesser than that of downgrades.

Matthies (2013) in the article "Empirical Research on Corporate Credit-Ratings: A Literature Review", has given some ideas on corporate credit rating. He reports on the present status and different vital earlier outcomes of empirical studies about corporate credit ratings and their association to ratings of several other entities. Specifically, he takes into account the results of three lines of research as the correlation of credit ratings and corporate default, the influence of ratings on capital markets, the factors of credit ratings, and rating changes. Results from each individual line are important and relevant for the construction and interpretation of studies in the other two fields. Additionally, design and construct of credit ratings and the credit rating scale are essential to understand all empirical findings.

Actually, the author has reviewed the work empirically mainly based on credit ratings in the framework of international capital markets. In the study the author has put light upon three branches of research within the particular field and their ways of interface with each other. Furthermore, he has shown how the involvements of each individual branch are essential to understand the results in other fields. The first line of research has shown the information content of credit ratings and their relationship with corporate default.

Differences in rating classes are not matched to equivalent differences in default probability and this expression has important significance for the two aspects of the

study; firstly, the information content of ratings with regard to capital market reactions and secondly, the determinants of credit ratings. The importance of credit ratings changes for capital markets, i.e. the efficient market hypothesis, can only be measured effectively if they are conditioned on the respective change in default probability. Moreover, market responses around rating changes are same. Specifically, markets react stronger to downgrades than to upgrades. This reaction might have multiple reasons. It might be caused by the way rating agencies operate. Alternatively, it might be caused by the behaviour of corporations and their intention to release relevant information. Generally, rating agencies try to estimate the long term creditworthiness of a corporation independent of short-term business cycle effects. Nevertheless, ratings are correlated with the business cycle. So, credit ratings can be decided by macroeconomic variables, financial ratios, and features of corporate governance.

Ross, Westerfield, and Jordon (2001), in their article "Bond rating" have discussed mainly about the junk bond and what a bond rating means in terms of the risk of fluctuations in a bond's value, caused by interest rate changes. According to them, debt rating is nothing but an assessment of the creditworthiness of the corporate issuer and bond ratings are related only with the likelihood of default. Ratings are given by rating agency and it is mainly based upon the information provided by the corporation. Any debt which is having the highest rating is considered to be the best and will have the lowest degree of risk. The debt which has got the lowest rating is considered to be defaulted. These low graded (junk bonds) corporate bonds must be rated below investment grade by any major rating agency. But, rating agencies does not always agree because sometimes they are rated 'BBB' by one rating agency but 'BB' by another. Credit rating of a bond can be changed if the issuer's financial

strength improves or decorates. Bonds that drop into junk grade are called fallen angels. Credit ratings are important because sometimes defaults occur in actuality, and then, investors may lose severely.

Bhojraj and Sengupta (2003) have opined in their article "effect of corporate Governance on Bond Ratings and yields: the role of institutional investors and outside directors", that Corporate Governance mechanism is one of the contributing factor of credit ratings. They have argued that the chance of default of a firm mainly depends upon the accessibility of credible information to measure the default risk and agency costs, and both of these are determined by corporate governance mechanisms. They have provided two systems through which corporate governance can influence credit rating. These include, firstly, the agency risks (i.e. the risk which is performed by management in its own regard and which deviate from firm value mechanism, as well as it may be considered as the risk in which the manager is inept) and secondly, the information risk (i.e. the risk that managers have information from any private source and that would negatively affect the default risk of a loan.). Corporate governance mechanism can decrease both of these risks. Anyway, they have pointed out three factors which control these corporate governance mechanisms such as, institutional ownership, block holding, and board structure. One institutional owner may actively watch the steps taken by the management and, if considered, take necessary actions to defend the interests of shareholder. Alternatively, it may be said that institutional investors are restricted in their own interest to monitor management. Bad management under this type of indirect monitoring hypothesis would then encourage institutional investors better to sell their stock than to take corrective action. But, this effect may vary in a cross sectional analysis, as it might depend upon the system of corporate governance of the relevant country. So, under this notion, the influence of institutional

ownership on credit ratings would depend upon the investment strategy i.e. either speak, otherwise leave.

For the purpose of their study they have used two variables as, the percentage of stock held by institutional investors and the percentage of outside board directors as the two proxies for institutional ownership and board independence respectively. They have found that both the variables can certainly control the ratings. They have used separately the percentage of stock held by block holders and the percentage of shares held by institutional investors for the purpose of seizing block ownership. In absence of a control variable to signify a potential wealth redistribution outcome, this needs additional analysis. But they have asserted (on the basis of empirical work) that this effect is not so important. If this is correct, the coefficients of the control variables would be irrelevant. Nevertheless, although their arguments are true and wealth transfer effects are inappropriate to define the creditworthiness of a firm, rating agencies will identify them as relevant.

1.9 Research Gap:

From the literature survey, we have seen that all these works suffer from one or more of the following gaps:

i) It is a well-known fact that due to higher rating the risk associated with the debt reduces and as a result debt holders are satisfied with lower rate of interest. If the rate of interest is lower, cost of debt will be lower and thus overall cost of capital will be lower and finally, the value of the business will be higher. But, all these points have not been considered in earlier studies.

ii) They did not consider how rating plays an important role in increasing corporate investment inflow (borrowings).

iii) It has not been discussed what will be the effect if there exist more numbers of credit rating agencies in India.

iv) The gradation of credit rating agencies still remains an unresolved demand.

v) Study of credit rating in India vis-à-vis foreign countries has also been overlooked by the authors in the earlier studies.

vi) At what interval it is better to make revaluation of rating has also missed the attention of the earlier researchers.

vii) In India, if there is any difference between the rating of the same debt programme of the same issuer by two different rating agencies, then which rating will be considered optimal has not been discussed earlier.

1.10 Objectives of the study:

Covering all the above gaps in this study is not feasible. Considering various limits of this research study we have identified the following specific objectives of this research study:

1. To examine whether the corporate investment inflow (borrowings) go high / low remaining consequent upon a respective higher / lower ratings of the company.

2. To examine whether the corporate interest rate go high / low due to lower/ higher ratings of the company.

3. To examine whether there exists any change in investment inflow (borrowings) pattern after credit rating was made mandatory before issue of debt instruments.

4. To examine whether there exists any change in interest rates after credit rating was made mandatory before issue of debt instruments.

1.11 Chapter Plan:

On the basis of the above background discussion the following chapterisation plan is proposed:

Chapter 1: Introduction

Chapter 2: Credit Rating - An insight

Chapter 3: Research Methodology

Chapter 4: Impact of Credit Rating on Corporate Rate of Interest

Chapter 5: Impact of Credit Rating on Inflow of Corporate investment

Chapter 6: Observations, Summary, and Conclusion.

Chapter 2

Credit Rating – An Insight

CONTENTS

2.1 Introduction:

Credit rating is an evaluation of the credit worthiness (i.e. the ability to meet financial obligations) of an issuer in general term or evaluation of creditworthiness of a particular debt or financial obligation (especially, debt issued by a business enterprise). The entity whose creditworthiness is assessed is called as an obligor or issuer. Obligors include entities as corporations, financial institutions, insurance companies, or municipalities that have been rated by a credit rating agency. Actually, credit rating is an evaluation made by the credit rating agency of the debt issuer's possibility of default. It is an assessment of the overall creditworthiness of an entity by a third party. So, before going to a market for borrowing money, an entity may depend upon credit rating. Different entities like individual corporation, state or provincial authority or sovereign government may seek credit rating. Credit rating is generally done by different credit rating agencies as Standard & Poor's or Moody's. This type of evaluation is generally done by a rating agency by considering different parameters. So, the rating for creditworthiness should be assigned to the corporate body or governments after evaluating different relevant quantitative or qualitative factors. Credit ratings are not only based on mathematical calculations. Actually, credit rating agencies use their knowledge and expertise to determine which type of information (public or private) should be considered to assign a rating to a particular company or Government. Individuals and entities, before purchasing any bonds or debt instruments use credit ratings to judge whether the issuer entities are able to repay the bond and debt or not. A poor credit rating indicates that the issuer (company or government) entity is at a high risk of defaulting.

Credit rating has an inverse relationship with the possibility of debt default. A high credit rating indicates that the borrower has a low probability of defaulting on the debt and on the other hand, a low credit rating suggests that the borrower has a high probability of default. An obligor of a debt security having a high credit rating has a lower chance of default than an issuer of debt security having a low credit rating. Changes in credit rating may have a significant impact on the financial market.

Scales, symbols, and definitions of credit rating may vary from one rating agency to another. Generally, credit ratings are expressed in an alphanumeric manner. But, the interpretation of these symbols is specific to a particular rating agency. Anyway, a typical credit rating scale may be ranged from “AAA” (indicating top) to “D” (indicating Default). Some rating agencies distinguish between investment grade and speculative grade through its scale.

But, before discussing further about credit ratings, it is to be remembered that credit rating cannot be expressed as an investment device and should also not be considered as a recommendation to buy, sell or hold securities. Different types of risk, as market or liquidity risk which may affect the value of the security, is not reflected through credit rating. Credit rating does not consider the price at which an investor purchases or sells a security. Overall, a credit rating does not give any guarantee for repayment of any financial obligation. For example, a debt instrument having an 'AAA' credit rating does not mean that the instrument has an absolute certainty. Because investments rated as ‘AAA’ may turn into ‘D’ any time.

Credit rating agencies (some of which are registered with Securities and Exchange Commission or SEC) provide credit rating. Credit rating agencies which are registered with the SEC are recognized as Nationally Recognized Statistical Rating

Organisations ("NRSRO"s). The large credit rating agencies provide credit rating to different industries around the world. But, smaller credit rating agencies provide some specific types of ratings. The SEC has examination authority over NRSROs. But, by laws, SEC is not permitted to regulate the procedures and methodologies according to which NRSRO determines credit ratings.

For individuals, the credit rating is expressed through numerical credit score which is maintained by Equifax, Experian, and other credit rating agencies established for this purpose. A high credit score indicates a stronger credit profile of individuals (which can be provided by considering different factors as payment history, credit utilization, the length of credit history, types of credit history, types of credit used, etc.) and will attract a lower interest rate.

A sovereign rating is the credit rating of a sovereign entity i.e. a national Government. The risk level of the investing environment of a country is expressed through this rating. This rating is helpful to the investors who want to invest abroad. It also takes the political risk into account.

2.2 Historical background:

The total historical background of credit rating can be divided into the following stages: (i) Early History, (ii) Post-Depression Era, (iii) Growth of Bond Market, and (iv) 1980s onwards.

2.2.1 Early history: When the territory of the business in the United States was closed, it was easier for the merchants to allow credit to the persons who purchased goods or services from them. It was easier because the merchants knew the persons (purchasing goods and services from the merchants) personally and they were sure

that they will get the repayment positively. But, with the passage of time as the trading distances increased it was not possible that merchants knew their customers personally. So, it was not possible for them to allow credit to people to whom they did not know; and the businessmen were not sure about the debtors' ability to pay them back. This type of fear among businessmen to provide credit to new customers led to the birth of the credit rating agencies.

Mercantile credit agencies which are the pioneer of rating agencies of today were established at the time of the financial crisis of 1837. The ability of merchants to pay their debts were rated by these agencies and they also consolidated these ratings in public guides (Cantor and Packer, 1994). The first agency of such a type was incorporated in 1841 by Lewis Tappan in New York City (Cantor and Packer, 1994; Langhor and Langohr, 2009). It was subsequently taken over by Robert Dun and published the agency's first Ratings Guide in 1859. Another agency, Jhon Bradstreet was formed in 1849 and published a Rating Guide in 1857 (Cantor and Packer, 1994).

According to Cantor and Packer, "Formally, Credit rating agencies were originated in the United States in the early 1900s, when ratings were started to be applied to securities, especially those related to the railroad bond market" and according to Karp (2011), "In the United States the construction of extensive railroad systems had led to the development of corporate bond issued to finance them and as a result the bond market was larger than in other countries. Companies were formed to provide investors necessary financial information on the growing railroad industry. Henry Varnum Poor's publishing company was a company which produced a publication compiling financial data about the railroad and canal industries". In 1909, financial analyst, John Moody made a publication solely on railroad bonds. (Sinclair, 2005;

White, 2010; Yasuyuki and Robert, 2006). Most probably his company was the first among all rating agencies which charged subscription fees to investors (Yasuyuki and Robert, 2006) and his rating was the first rating which was published widely in an accessible format. (Sylla, 2002; Sinclair 2005 and Richard, 1987).

In 1913, there were two significant changes in rating publication by Moody. Firstly, it expanded its focus to include all industrial firms. Secondly, it started using a letter-rating system. So, this was the first time when public securities were rated by means of letters which specify their creditworthiness. Within the next few years, "big three" credit rating agencies were established. Poor's publishing company started to issue ratings in 1916. Standard Statistics and Fitch publishing company started to issue ratings in 1922 and 1924 respectively.

2.2.2 Post-Depression Era: In 1933, the Glass-Steagall Act was passed and from that time the security businesses were totally separated from banking (Sinclair, 2005). From that particular period, the rating industry started to grow and was consolidated rapidly. The market was extended beyond the traditional investment banking institutions. So, new investors were called again for more transparency. From this particular period, the introduction of new mandatory disclosure laws for issuers was there. The SEC was also incorporated for the same reasons. In 1936, a new regulation was introduced. According to that regulation, banks were prohibited from investing in such bonds which were determined by "recognized rating manuals" (the forerunners of credit rating agencies) as "speculative investment securities" ("junk bonds" in modern terminology). U.S. banks were permitted to hold only "investment grade" bonds which were rated by Fitch, Moody's, Poor's and standard. From 1930 to 1980,

the responsibility of bonds rating was given to "American municipalities and American blue chip industrial firms" (Toffler,1990).

The concept of ratings was applicable to both commercial paper and bank deposit in the late 1960s and 1970s. During that time, some major agencies rebuilt their business model by charging both investors and bond issuers. Most probably the change occurred because of two reasons. The first reason was the complexity of the financial market (White, 2009) and the second reason was the availability of the cheaper photocopy machine (White, 2002). In 1973, Fitch started the process of adding plus / minus sign to its existing rating system which was completely based on letters. In the next year, the same procedure was also adopted by S& P. In 1982, Moody's started the system of using numbers (Cantor and Packer, 1994).

2.2.3 Growth of bond market: In 1971, after the end of Bretton Woods System, the expansion of capital markets and the liberalization of financial regulation were started (Sinclair, 2005). In 1975, a vivid referencing of credit rating was started by the SEC (Securities and Exchange Commission) to change its minimum capital requirements for broker-dealers. The commission also started to allow to maintain smaller reserves for those bonds which are rated highly. In U.S.A and also in other countries the number of issuers accessing debt market grew. So, as a result, rating agencies expanded in size and also in profitability (Clarke, 2009).

2.2.4 1980s onwards: In 1980s and 90s there was a significant expansion in the global capital market which was caused by two economic trends. The first trend was the transformation of 'intermediated' financing (bank loan) towards cheaper and "disintermediated" financings like tradable bonds and other fixed income securities (Sinclair, 2005). The second trend was the global movement raised from state-led

industrial adjustment toward economic liberalism which was based on global capital market and a close relationship between govt. and industry (Sinclair, 2005). More debt securities were a very good indication for "Big Three" agencies. Because, it means more business for them and many investors were depended on it (Yasuyuki and Robert, 2006). The United States govt. regulators were also depended on the rating agencies. They allowed pension funds and money market funds to purchase only such securities which have ratings above some specific grades.

In the very beginning of the 1980s, there was a huge change in financial markets. During that period a market for lower rated and higher yielded "junk bonds" were grown. These "junk bonds" have expanded security financing to different firms (other than large blue chip corporations) (Sinclair, 2005). Rating agencies did not restrict their ratings to bonds only. They started to apply their ratings to other types of risk (as the performance risk of mortgage services and the price volatility of mutual funds) also. Ratings were started to be used increasingly in the financial markets of different developed countries and also in the "emerging markets" of the developing world. Moody's and S & P opened their offices in Europe and Japan (Sinclair, 2005). In the early 1990s, with these largest U.S. raters, one British, two Canadian and three Japanese firms were listed in world's 'most influential' rating agencies by the Financial Times Publication - 'Credit Ratings International' (Cantor and Packer, 1994).

2.3 Uses of Credit Rating:

Credit rating can be used by different parties like investors, issuers, investment banks, broker-dealer and Government (i.e. those who want to measure their credit risk). If the credit rating agency's ratings are accurate and proper, different investment

alternatives grow, borrowing costs are lower and markets are efficient. It is also opened for those borrowers which can be stopped out if no rating is there (as small startup companies, underwriters, and hospitals).

2.3.1 Use of Credit ratings in the bond market: Credit rating assigns grade about the creditworthiness of bonds issued by different parties like corporations, Government and packagers of asset-backed securities (Altman; Oncu; Schmeits; and White, 2010). Credit rating is not a recommendation to buy any particular security or bond. So, ratings for bonds/securities can be obtained from one or more than one of the credit rating agencies (McLean and JoeNocera, 2010). Actually, CRAs (Credit Rating Agencies) provide credit ratings to investors about the creditworthiness of debt securities (International Monetary Fund, 2010). But, recently sometimes it has been seen that the customers of CRAs are not only the issuers of securities. It has been extended also to the buyers of securities. In U.S court and also to some other countries rating agencies are liable for any losses occurred because of their carelessness or after knowing that the rating is not proper (Sinclair, 2006*).* Otherwise, the opinion of rating agency has protected as an independent comment of a rating agency (Jones, 2009). Disclaimer of one of the CRA is as follows: "The ratings … are and must be construed solely as, statements of opinion and not statements of fact or recommendations to purchase, sell, or hold any securities". (The Financial Crisis Inquiry Report of The Financial Crisis Inquiry Commission). According to an amendment to the 2010 Dodd-Frank Act, this protection has been removed. But, how the rules will be implemented was determined by the SEC and by the court (Madura, 2011; Lippert, 2010; Haar, 2013; Yang and Boghdady, 2013).

If any credit rating agency wants to ascertain the credit rating of a bond, a rating agency may analyze all legal documents related to the bond. (Brown, 2006). The rating agency will also predict the bond's chance of default and an expected loss or a similar metric (Brown, 2006*).* But, the metrics may vary from agency to agency. As, S&P's ratings reflect default probability, the ratings by Moody's may reflect expected investor losses (Salmon, 2011). The process of rating for the convertible bond is similar to bonds. But, bonds and convertible bonds issued by the same entity may have different ratings. (Spiegeleer and Schoutens, 2011). There exist some banks which obtain ratings to attract institutional investors. (Yescombe, 2007). Generally, the relative risk on the rating grades are expressed through an alphanumerical order and a plus and minus sign adds an extra weight to the rating (Global Financial Stability Report Chapter 3). Sometimes a government regulation restricts financial institutions to purchase any security which is rated below a certain level. As, in the U.S, in accordance with two regulations of 1989, pension funds are prohibited from investing in asset-backed securities, rated below "A" (Sicilia, 2011) and savings and loan associations from investing in securities rated below "BBB" (Sinclair, 2005). CRAs always make a regular review of securities after the assignment of initial ratings and if think it is appropriate, may change it (Rabah; Bertrand and Amadou, 2011).

2.3.2 Use of credit ratings in structure finance: One credit rating agency may play a great role in different types of structured financial transactions, like Asset-Backed Securities (ABS), Residential Mortgage-Backed Securities (RMBS), and Commercial Mortgage-Backed Securities (CMBS), Collateralised Debt Obligations (CDOS), synthetic CDOs or derivatives. Rating for structured finance instruments may be differentiated from ratings for other debt securities in different ways.

In accordance with the financial crisis inquiry report of the National Commission (which was based on the causes of the financial and economic crisis in the United States), rating agencies were obvious for the smooth dealing of the mortgage-backed securities market. Credit rating is necessary to different parties, as banks needed their ratings to determine the amount of capital on hold; Issuers needed them to approve the structure of their deals; repo markets needed their ratings to fix up the terms of the loan. (Yasuyuki and Robert, 2006).

2.3.3 Use of ratings by Government regulators: Regulatory agencies and legislative bodies in U.S and other jurisdictions generally attach a regulatory function to their rating with the debt issue, because they depend too much on the assessment of credit rating agencies about the debt issue. (Caprio, 2012 and Jackson, 2001). Credit ratings have been considered into minimum capital requirements for banks, allowable investment alternatives for many institutional investors by Govt. bodies in both national and international level. They (Govt. bodies in both national and international level) imposed similar conservative regulations for insurance companies and other financial market participants also (World Bank, 2012).

In the 1930s, banks were prohibited by the U.S. regulators to invest in such bonds which were below the investment grade (White, 2010). From 1975 to 2006, Nationally Recognized Statistical Rating Organisations (NRSROs) were recognized by SEC as largest, reliable and most credible rating agencies. They started to rely too much on such agency for distinguishing between grades of creditworthiness in various rules and regulations under federal securities laws (Caprio, 2012; Langhor and Langohr 2009). In 2006, the Credit Rating Agency Reform Act was passed. That particular act provided for a voluntary registration system for those CRAs which met

some minimum criteria. SEC was considered as broader watching authority for this purpose (Raquel and Javier Ruiz, 2012).

Now, the use of credit rating for the regulatory purpose has been expanded globally (Caprio, 2012). In different countries, the financial market regulation contains extensive references to ratings. (Caprio, 2012; Yasuyuki; Richard and Robert, 2009). A global bank capital standardization effort has been taken by Basel III by relying upon the system of credit ratings for calculation of minimum liquidity ratio and minimum capital standards (Caprio, 2012). Any regulated market participants must follow minimum investment grade regulation. Because, rating changes from the investment grade to non-investment grade may lead to strong market price fluctuations and cause systemic reactions (Caprio, 2012).

2.3.4 Use of ratings in sovereign debt: By sovereign credit ratings a rating agency ascertains the sovereign's willingness and ability to repay its debt properly (Jakob and Fabian, 2011). Governments from both advanced economies and emerging markets can borrow money by different ways. It may borrow money either by issuing bonds and selling them to private investors (either overseas or domestically) or may borrow from other Governments and international organizations (as the World Bank and the International Monetary Fund or shortly termed as IMF) (Nelson, 2013). Credit rating agencies also make credit ratings for sovereign borrowers, like state municipalities, national govt. and different sovereign-supported international entities (Caprio, 2012). The rating methodologies used by a rating agency to assess the sovereign credit ratings are similar to those methodologies which have been used for corporate credit ratings. But the only difference is that in the case of sovereign rating an extra importance is to be given on borrowers' willingness to repay the debt, as in

accordance with the international law, national govt. may be liable for debt repayment.

In the case of sovereign rating, credit assessments do not include only the long term default risk. It includes short-term political and economic developments also. Generally, govt. of a country uses credit ratings to create the interest of investors. It also helps to improve the accessibility with the international capital markets. Once the rating is introduced, the rating agency will monitor the necessary development and will make the necessary adjustments in a regular way (Suk-Joong and Eliza, 2011). In 2010, in an International Monetary Fund study it has been found that rating was a good indicator of sovereign-default risk (Global Financial Stability Report, Chapter 3; The Economist, 2011). But, credit rating agencies were criticized very much for failing to predict the Asian financial crisis in 1997. Similar criticism can be found after recent credit downgrades to Greece, Ireland, Portugal, and Spain (Jakob and Fabian, 2011).

2.4 Advantages of Credit Rating:

Different parties can get various types of advantages from credit rating. Various class of investors or the company can have different benefits from the rated instruments. These are as follows (https://essays.pw / essay/nature-of-credit-rating-finance-essay-153095):

2.4.1 Advantages to investors:

a) Safety of investments: Investors can have an idea about the financial strength of the issuer company from credit rating. The risk of an investor can be minimized through a highly rated issue and an assurance of safety.

b) Recognition of risk and returns: The financial strength of a company can be expressed through the credit rating symbols. So, by this rating, investors can understand the worth of the issuer company easily and from the Credit rating symbols investors can also get an idea about the risk and return associated with a particular issue.

c) Freedom of investment decision: Every credit rating symbol attached to a particular investment gives an idea about the creditworthiness of the business and degree of risk associated with it. So, from the credit rating, investors can, on their own, have an idea about the pattern of their investment easily without depending on the advice of the stock brokers, portfolio managers, and merchant bankers. Today an investor can make the investment decision on the basis of credit rating symbols attached to a particular security.

d) Wider choice of investment: Today as credit rating has been made mandatory before the issue of any debt by any issuer company, different credit rated instruments are available to the prospective investors for making the investment. So, one investor can invest in any securities in accordance with his ability and willingness to accept the risk.

e) Dependable credibility of issuer: As there exist no connections between the rater and rated firm, the investors are attracted with the credibility of issuer. Investors always accept the rating given by the rating agencies.

f) Easy interpretation of investment proposal: Investors may not have any knowledge about the issuer company properly. So, depending upon the rating symbols assigned by the rating agency they can take the decisions to make an investment in any particular rated security of a company.

g) Relief from botheration to know company: Through credit rating, investors can have a relief about the botheration of knowing the details about the company about different matters **(**like its history, nature of business, financial position, liquidity, etc.). Because credit ratiung is done by different trustworthy professionals and specialists. So, investors can take the investment decision confidently by relying upon the credit symbols.

h) Advantages of continuous monitoring: Credit rating agencies keep a continuous monitoring on the related aspects of the issuer company and make upgradations/down gradations of rating symbols in accordance with the decline/improvement in the financial symbols.

2.4.2 Advantages to company:

a) Easy to raise resources: A company which has highly rated instrument can raise funds easily from the public. Because, investors are attracted with highly rated instruments.

b) Reduce borrowing costs: It has been found from the previous history that investors generally like to invest in such an instrument which have easy liquidity and high safety rather than the higher rate of return. So, a company can reduce its cost of borrowings by quoting lesser interest on those fixed deposits or debentures or bonds, which are highly rated.

c) Reduce cost of public issues: A company having high rating does not need to make expenditure on press and publicity to raise funds from the public. Because public generally have a good faith upon the rating provided by credit rating agency.

d) Building of image: Companies which have high rating instruments generally have better goodwill and corporate image in the eyes of customers, shareholders, investors, and creditors. Because shareholders get assurance of high returns and creditors are assured to have timely payments of interest and principal.

e) Rating facilitates growth: By ratings, promoters are motivated to diversify their production activities. So, in this way it helps to expand the growth of the company in future.

f) Recognition to unknown companies: Any unknown company can get a recognition through credit rating. So, while entering into the market for making an investment, investors have more reliance on the rating grades than on the name of the company.

2.4.3 Advantages to intermediaries: Rating enables financial intermediaries to save time, energy costs and manpower to convince their clients. Because they have to make fewer efforts to motivate their clients to make an investment in highly rated instruments.

2.5 Disadvantages of Credit Rating:

Credit ratings have some limitations (https://essays.pw/essay/nature-of-credit-rating-finance-essay-153095) also and these are as follows:

i) Non-disclosure of significant information: Firms which are rated may not provide significant or material information to the rating agency. So, the rating may be wrong and it may affect the investor's decision about an investment. Therefore, any decision taken in the absence of such significant information may cause a loss to investors.

ii) Static study: Different factors like economic, political, environmental, and government policies have a direct impact on the working of a company. So, any changes after the assignment of rating symbols may affect the ultimate purpose of rating.

iii) Rating is not a certificate of soundness: Rating does not give a certificate about the total financial soundness of the company. The user may make an independent view of the rating symbols.

iv) Rating may be biased: Personal biases of the investigating team can affect the quality of the rating.

v) Rating under unfavorable conditions: Rating grades are not always a representative of the proper image of the company. As for example, a company might be given low grade because it was passing through adverse conditions on the period of rating. So, misleading conclusions drawn by the investors may hamper the company's image.

vi) Difference in rating grade: Some instrument may be rated differently by two different rating agency because of their personal judgment which may confuse the investors.

vii) Who will rate the rater is still a question.

2.6 Nature of Credit Rating:

The following factors (https://essays.pw/essay/ nature-of-credit-rating-finance-essay-153095) are very common in credit rating.

a) Rating is based on information: The success and failure of a rating agency depend completely on its ability to collect information properly. Because rating is completely based on published information. Cooperation from the issuer to have the confidential information are important pre-requisites for rating. But, it is the duty of credit rating agency to keep all important information confidential.

b) Many factors affecting ratings: Rating is not a byproduct of any mathematical formula. So, the rating can be provided to the issuers by taking into account different qualitative factors like quality of management, corporate strategy, economic outlook and international environment. The rating committee consists of different financial and credit analysts.

c) Rating by more than one agency: Debt issues may be rated by more than one agency. So the ratings given by two or more agencies may not be similar to each other as, a debt issue which is rated as "AA+" by one agency may be rated as "AA" or "AA-" by another. But, it will be quite abnormal if one agency assigns a rating of "AA" whereas another agency assigns a "BBB" rating.

d) Monitoring the already rated issues: Debt service capabilities of the issuer may be affected by different factors. So, it is essential that rating agencies should always monitor all outstanding debt issues rated by them. The rating agency should upgrade/downgrade the ratings after a close discussion with the issuer.

e) Publication of ratings: Generally ratings are done only at the request of the issuers of debt. Only the ratings which are accepted by the issuers are published. If a rating is accepted for once and is also published, any subsequent changes that come out of the monitoring by the agency will also be published.

f) Right to appeal against assigned rating: If the issuer is not satisfied with assigned ratings, it may put a request to the rating agency for a formal review of assigned ratings and may supply additional information if considered necessary to them. After considering all, the rating agency may make a review and give its revised decisions.

g) Rating of rating agencies: The success or failure of a rating agency is measured by the quality of the services offered, consistency and integrity of the agency.

h) Credit analysis and financial analysis: The rating is generally done at the request of the issuer and for this purpose, an active cooperation of the issuer may be needed. The rating agency should access unpublished information also and should make a meaningful discussion with the senior managers of the issuer to put a meaningful look into corporate plans and strategies. Rating is done by specialized professionals who are highly qualified. So, their opinion is so valuable to the issuer.

i) Time taken in rating process: The process of credit rating is very time consuming in nature. It involves different steps like analysis of published financial information, a visit to issuers' offices, a close discussion with the senior executives of issuer and discussion with the auditors, bankers, creditors, etc. It also needs a study in depth. For all these works rating agency may take 6 to 8 weeks or more. For short-term instruments, time needed may be slightly less as 3 to 4 weeks. Issuers are always advised to approach the rating agencies in advance so that issuers can follow the issue schedules.

2.7 Process of Credit Rating:

The process of credit rating is quite tough. It involves series of steps. The steps are quite complex in nature. In India, the rating process has been adopted by international

rating agencies. Indian credit rating process starts with a formal request from the issuer (such as MF issuer, bond issuer, IPO issuer, etc.) which includes the terms of rating assignment. Next, a rating team is formed which comprises of different experts required to evaluate the business of the issuer. To facilitate the rating, lists of required information are provided to the issuer and this required information are derived from the experience of the issuer-business. The rating agency may also utilize the secondary source of information which may include the utilization of its own research division, and the rating agency also has a panel of industry experts which may provide sufficient guidance to the rating team about a specific issue. To make a rating, estimating the future earnings of the issuer is very important and for this purpose, an interaction with the issuer's management - specially relating to plans, outlook and funding policies - is made. For the purpose of rating, plant visit is also very essential which facilitates understanding of the production process, quality of the technical personnel, the cost of production, etc. After completing the analysis the findings are discussed at the internal committee of credit rating agency comprising senior analysts of that agency and at this stage, an opinion about the rating is also formed. Finally, the rating team makes a presentation in brief about the management and business of the issuer and also the recommendation of internal committee is considered and at last a rating is assigned. The assigned rating is communicated to the top management of the issuer company for acceptance and if the rating is not accepted by the issuer, the issuer-organisation has a right to make an appeal for review of the rating. The review can be done only if the issuer provides fresh inputs to the rating agency about the issues that were considered for assigning the rating and if the inputs are proper or convincing, the committee can change its initial decision. (Saha, 2010)

2.8 Instruments for Ratings:

Credit rating may be done by the rating agencies in respect of the following:

a) Equity shares issued by the company,

b) Preference share issued by the company,

c) Bond /Debenture issued by corporate / Government,

d) Commercial Papers issued by companies, banks, and financial institutions to raise short term loan,

e) Fixed deposits raised for medium-term ranking as unsecured borrowings,

f) Borrowers who borrowed money,

g) Individuals, and

h) Asset-backed securities.

Today credit rating is not limited only to debt instruments. It has been expanded also to all those activities where uncertainty and risk are involved. Anyway, credit rating may also be applicable to the following cases (Credit Rating: An Introduction, Rai University):

2.8.1 Country Rating: A country rating is to be done in order to determine the safety and security of the investment in that country. This type of rating is necessary where some investment is intended to be invited from international investors. Different factors like growth rate, Government policies, industrial and agricultural production, inflation, fiscal policy, etc. are important to make such rating. Any upgrade/downgrade movement in such ratings has a positive impact on the stock markets. Morgan Stanlay, Moody's, etc. provide country rating service.

2.8.2 Ratings of real estate builders and developers: Some rating agency (as CRISIL) has been started to assign ratings to the builders and developers so that they can have

a guideline about the real estate. Rating agencies thoroughly scrutinize the sale deed papers, sanctioned plan, lawyer's report, government clearance certificate, etc. for assignment of such ratings to builders and developers. Different factors like past experience of the builder, financial strength, time taken for completion, etc. are taken into consideration by the agency while giving a final rating to the real estate builder/ developer.

2.8.3 Rating of Chit Funds: Sometimes chit funds are rated in order to assess their ability to make timely payment of prize money to the subscribers. This rating helps the chit funds in better marketing of their fund.

2.8.4 Rating of States: Different states of a country may want to have a rating from the rating agencies for rating (as different states in India like Maharashtra, Madhya Pradesh, Tamil Nadu, Andhra Pradesh and Kerala have already been rated by CRISIL). Because this type of Rating helps to attract investors both from the home country and from the abroad to make the investment. Generally, foreign companies come and start projects in such a state which has been rated high. For the purpose of assignment of rating, rating agencies consider different factors like economic parameters such as the industrial and agricultural growth of the state, availability of raw material, labour, etc. and also political party / parties dominate / s in the administration of the state.

2.8.5 Rating of Banks: Regulatory changes in bank's capital requirements under Basel II have been taken a new role in credit rating. The main objectives of Basel II are to revise the rules of Basel Capital. This rule may be a way to distribute banks' regulatory capital more closely. Under Pillar I of Basel II, regulatory capital requirements for credit risk are calculated by two alternative approaches. The

approaches are: (i) The standardized approach (shortly termed as SA), and (ii) Internal Rating-Based Approach (IRBA). Under SA, capital requirements are calculated on the basis of external credit assessments provided by External Credit Assessment Institutions (ECAIs) such as credit rating agencies or export credit agencies. Under IRBA, after satisfaction of certain conditions, banks may use their own rating system. In Foundation Version (FV), banks calculate the probability of default (PD) on the basis of their own ratings but rely upon their supervisors for other determinants of credit risk measurements. In Advanced Version (AV), banks also estimate their own measure of all the determinants of credit risk, including Loss Given Default (LGD) and Exposure at Default (EAD). Under regulatory capital requirement for operational risk, there are three options such as, Basic Indicator Approach (BIA), The Standardized Approach (SA), and Advanced Measurement Approach (AMA). Pillar 2 and Pillar 3 of Basel II are concerned with supervisory review of capital adequacy and achievement of market discipline through disclosure.

Some rating agencies (like CRISIL and ICRA) assign ratings of banks on the basis of six parameters (also called CAMEL) and these are as follows:

C (Capital Adequacy) - A bank must keep at least 10% capital against bank □s risky assets.

A (Asset quality) - The loan is examined to assess non-performing assets (NPA). Some ratios like NPA to Net Advances, Adequacy to Provision, and Debt Service Coverage ratio are also calculated to determine the exact picture of the quality of asset of a bank.

M (Management evaluation) - The efficacy of management in framing plans and policies are tested. Different ratios as, ROI, Return on Capital Employed (ROCE),

Return on Assets (ROA) are calculated to determine bank's efficiency to utilize the assets.

E (Earnings) – This can be assessed by computing the growth of the bank, its stability, net interest margin, net worth level and the quality of its existing assets.

L (Liquidity Positions) - Liquid and current ratios are calculated to find out banks' capability to meet its short-term claims.

S (Systems and control) - Existing systems are studied in detail to determine how much adequate or efficient it is.

So, after analyzing above six parameters by the rating agency, the final rating is provided to a particular bank. Ratings vary from A (revealing financial managerial and operational soundness of a bank) to D (revealing that bank is in financial crisis, lacks managerial expertise, and is facing operational problems).

2.8.6 Rating (Recommendation) for Equities: Different analysts, specialised in equity ratings can make a prediction of the stock price of a company. For that purpose, they use different financial statement analysis tools like ratio analysis, trend analysis, fund flow analysis, etc. Analysists suggest for a target price giving the signal to the investors to take action whenever the stock hits to that particular price. The following are some of the recommendations made by the equity analysts for their investors.

a. Buy: It indicates that the stock may be bought at its current price.

b. Buy on declines: This indicates that the stock is basically good but overpriced now.

c. Long-term buy: This recommendation suggests that a stock should be bought and held for at least a year to realize a gain.

d. Strong buy: This recommendation involves a strong suggestion to buy the stock just now because analysts expect a steep rise in the prices of stock from its current price.

e. Out-performer: This recommends whatever may be the position of the stock market, the stock will perform better than the market.

f. Over weight: This refers to a situation when investors can increase the quantum or weight of that stock in his portfolio.

g. Hold: This involves a suggestion to investors to exit because the stock price is not likely to appreciate from the current price level.

h. Sell/dispose/ sub-standard/ under-weight: This recommends to the investor to sell/ dispose of the stock as the stock is fundamentally overvalued at its current level and the investors should exit from it immediately.

2.9 Individual credit rating / credit score:

Now-a-days the fiscal systems of the entire business world basically rest on credit. So before assessing the eligibility of an entity to obtain loan, it is really very important task to ascertain the creditworthiness of the borrowing entity. For the purpose of ascertaining the creditworthiness of an entity the concept of credit score has been introduced.

Simply speaking, a credit score means a numerical expression of a statistical analysis regarding a person's credit files with the purpose of denoting the creditworthiness of that individual. For example, if a person could pay all EMIs properly on a loan taken

from a bank but defaulted in paying EMIs on another loan taken from another bank and again wanted to have a loan, say, from the first bank, the first bank would look for his credit report from credit scoring agency before granting another loan. Credit scoring system being in vogue, the bank could easily have the information about the person's defaulting behaviour in paying off his existing loan from another bank. Generally, lenders, like banks and credit card companies apply credit scores to assess the possible risk attached with the lending of money to customers, and to mitigate the probability of loss on account of bad debts. The technique of credit scoring is not only used by banks; it is also used by different lending-sectors / agencies like mobile phone companies, insurance companies, employers, landlords, and Government departments.

2.9.1 Benefits and shortcomings of credit scoring: Credit score has got to its credit various plusses. Having been motivated to derive the advantages, this technique has been gaining importance in the financial management structure of different lending organizations. Generally, credit score is used by lenders. Through the technique of credit scores lenders can determine which person would qualify for a loan; what may be the proper interest rate and credit limits. The technique of credit scoring helps to lessen the credit risk of lenders. Through this system, lenders feel no urge to spend their valuable time on research and background check of the loan applicants; so this system helps them to process a loan application swiftly. Credit scores also help lenders to understand which loaned-customers may bring them better revenues. The system of credit score has several drawbacks also. Someone may default to pay a certain sum of money on the due date but may be able to pay the same later on. Sometimes CIBIL (Credit Information Bureau of India Limited or CIBIL - India's first credit information bureau - a repository of information, which contains the credit history of commercial and consumer borrowers) does not necessarily update its

records (records of default), and therefore, the calculation of a good credit score possibly gets affected. CIBIL generally handles thousands of names which may be similar in the database of CIBIL. So, there may be a chance that the default of one may be recorded in another file carrying the same / similar name. If any one of the bank employees makes any simple input error at the time of sending information from bank to CIBIL regarding loan or credit card payment, generation of default-information may be possible.

2.9.2 The credit score methodology: Credit scores are determined by bearing in mind various factors. Nevertheless, the particular formulae for calculating credit scores have been kept undisclosed. However, FICO (Fair Isaac Corporation) has given the following factors and also their approximate weighted contribution for calculation of credit score (vide figure 2.1).

a) Payment history (35%): Late payment of different bills (as a mortgage credit card or automobile loan) can make a consumer's FICO score down and payment of bills within the particular time can improve the FICO score of an investor.

b) Credit utilization (30%): Credit utilization ratio may be explained as the ratio of current revolving debt (such as credit card balances) to the total available revolving credit (credit limits). FICO score of a consumer can be improved if they decrease their utilization ratio. If they close the existing revolving accounts, it will adversely affect the credit utilization ratio and have a negative bearing on their FICO score.

c) Length of credit history (15%): A longer credit history may have an affirmative outcome on FICO score since it delivers additional information regarding the consumer's spending pattern.

d) Types of credit used (10%): Consumer can have advantages about FICO score if he possesses a history of managing diverse categories of credit.

e) New credit (10%): To apply for a lot of new credit for a short time might be considered risky, and this can drop an individual's score.

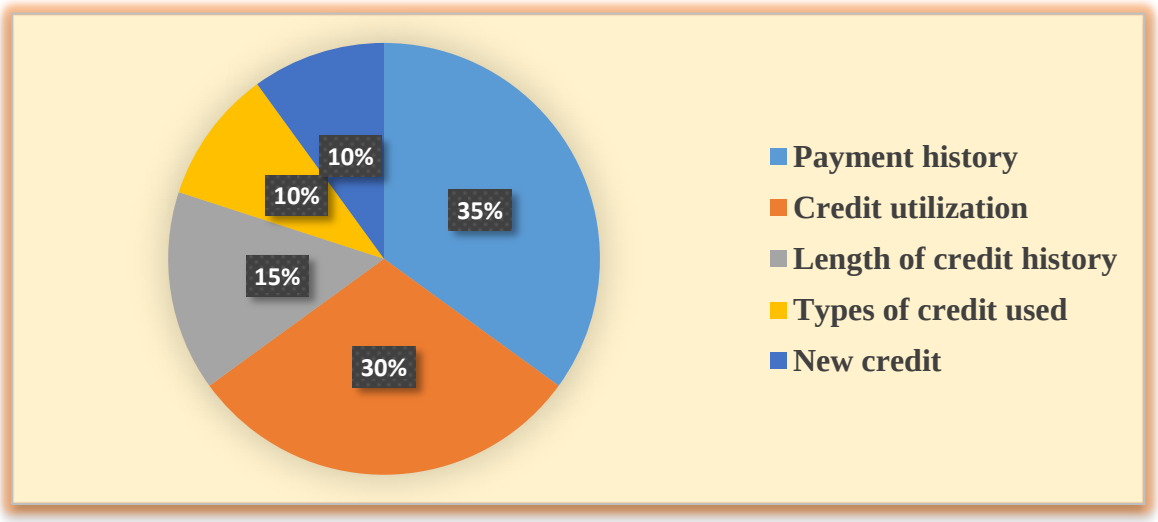

Figure: 2.1: Impact of different factors on credit score

Along with the above factors, there exist some other special factors which may also have an impact on the FICO score. Those factors are as follows: Any money due on account of the judgment of court, tax lien, etc. can carry an extra negative penalty; having one or more than one consumer finance credit accounts may also bring about a negative weight. (Saha, 2014)

2.9.3 Score clarification: There exist different scores in the market. So, it is important to understand the actual meaning of score. The Fair Isaac Corporation (FICO) was the pioneer of the credit score system. They did the first credit scoring system in 1958, for American Investments, and the first credit scoring system for a bank credit card in 1970, for American Bank and Trust. In USA there exist two credit bureaus: Trans Union and Equifax. They use FICO software to produce FICO score

and they sell it to lenders. There exists another credit bureau as Experian which has left off this scoring model and trusts on their less popular "PLUS" system. The three companies also use Vantage Score which is a competing score technology to FICO. There are some other scoring systems also, such as Trans Union's "Trans Risk" or Experian's "Score X". Anyway, every individual may have three credit scores in reality, at any given time, for any given scoring model, the reason being that the three credit rating agencies have their own individual databases.

In USA, FICO credit score ranges from 350-850 with 723 being the median FICO score of Americans. FICO scores below 600 are considered high-risk borrowers, 620 being the demarcation line between good and bad, 640 or above being "pretty good", 650 as average general credit-use behavior, and above 690 or 720 being excellent. But, adding confusion, Experian's PLUS score system ranges from 330-830, and the Vantage score ranges from 501-990 (Saha, 2014).

2.9.4 Global scenario*:* In Australia, along with the approval of credit to an applicant, credit scoring is used to settle the credit limits on credit cards or store cards. This technique is also used in the pre-approval of additional credit to a company's client. In Australia, 'logistic probability modeling' is the most popular method to develop scorecards. But there exist some other alternative powerful methods also (as MARS, CART, CHAID, etc.).

In Canada, as like as it is in USA, there exist two reporting agencies as Equifax and Trans Union. Though Canadian credit scoring is similar to USA credit scoring. There exist some differences also. One such difference is that in USA, a consumer is allowed to have only one free copy of their credit report in a year. But, in Canada, the consumer can get it for multiple number of times in a year. The Government of

Canada bids a free publication called “Understanding Your Credit Report and Credit Score”. This publication consists of sample credit reports and credit score documents (with explanations and codes which have been used). The publication is accessible online at the financial consumer agency of Canada and paper copy of which can be obtainable at free of cost for all the residents of Canada.

In Sweden, the system of credit scoring has only two levels as bad and good. Anyone who does not pay his dues properly in terms of due-time and even after issuing a reminder, becomes a problematic case, and this case is handed over to the Swedish Enforcement Administration (a national authority which collects debts). If any company frequently appears to that authority, it will be provided with a mark among private credit bureaus (but this is not applicable for a private person). In accordance with the law, this mark is stored for five years for a company. If any company has this type of non-payment record, it will face difficulty to have a fresh loan, a rental apartment, a telephone subscription, etc. Anyway, one may get an injunction to pay to the Enforcement Administration on making an objection to it.

In the United Kingdom, a logistic regression (a popular statistical technique) is used to forecast the binary outcome (such as bad debt or no bad debt). In U.K., credit scoring is regulated by the Financial Services Authority. The structure of credit scoring may vary from one lender to another. Anyway, because of lack of information, it is not possible for any consumer to recognize in advance whether they (Financial Services Authority) will pass a lender’s credit score as per requirement or not.

In USA, a credit score is mainly based on credit report information from one of the three chief credit bureaus as Experian, TransUnion, and Equifax. There are different

methods of calculating a credit score. Similar to that as stated above, all credit bureaus possess their own separate credit scores as Equifax's score power, Experian's PLUS score, and TransUnions's credit score, and each of them also sells the 'Vantage score' credit score. Additionally, different large lenders have built up their own proprietary scoring models separately. Americans can get only one free credit report within a 12-month period from each of the three bureaus. If any consumer wants to obtain its credit score, it can be purchased separately from any credit bureaus or he can purchase his FICO score directly from Fair Isaac.

2.9.5 Credit score in India: CIBIL (Credit Information Bureau India Limited), India's first credit information bureau was incorporated in 2000. This agency was formed by the Government of India and the Reserve Bank of India on the approval of a working group organized by the RBI. The company was originally promoted by the State Bank of India (SBI), Housing Development Finance Corporation Limited (HDFC), Dun & Bradstreet Information Services India Private Limited (D&B) and Transunion International Inc. (TransUnion). But, today the company is maintained by a syndicate of banks. Now, the stake of this company is being hold by different banks in India (as, Bank of India, HSBC, and ICICI). CIBIL collects all relevant information from all financing institutions (which are its members) and gives an informative report (after considering all financial activities of the consumer). It helps banks, financial institutions, and other financiers to share credit histories of retail and commercial customers. The credit information bureau gives both positive and negative evidence about bank's borrowers. Such information help lenders to evaluate the credit worthiness of prospective customers. CIBIL gives the right to access its credit report only to those banks which share their whole customers' credit information with them.

2.10 Credit Rating Agency:

Any company which assigns credit ratings is regarded as Credit rating agency. A rating agency rates the debt instruments and also the issuer of debt instruments, and also the services of the underlying debt (Campbell R.). Different types of debt instruments as government bonds, corporate bonds, CDs, municipal bonds, preferred stock and collateralised securities, such as mortgage-backed securities and CDO are rated by CRAs (Alessi, 2012**)**. The issuers of the obligation or securities may include special purpose entities, state and local governments, non-profit organizations or sovereign nations (Alessi, 2012). Because of credit rating trading in the secondary market has become quite easier, credit rating has an impact on interest rates. The interest rate on corporate debt is affected favorably or adversely by the corresponding lower or higher credit rating before the issue of debt (i.e. if credit rating is higher, the rate of interest may be lower and if credit rating is lower, the rate of interest is higher). CRAs do not rate individual consumers. Generally, individual consumers are rated by a credit bureau or consumer credit reporting agencies. Individual consumers are provided with credit score only. But, still it is a great question whether credit rating is important at all or not.

As "hundreds of billions of securities given the agencies highest rating were downgraded to junk during the 2007-09 financial crisis **(**McLean and Joe Ncera, 2010; Barnett-Hart and Katherine, 2009) and rating downgrades during the European sovereign debt crisis of 2010-2012 have been blamed by EU officials for accelerating the crisis" (quoted from Alessi, 2012). More or less approximately 95% of the rating business throughout the world is controlled by the "Big Three" credit rating agencies (Moody's, S&P, and Fitch Ratings) (Alessi, 2012**)**.

2.10.1 The Big Three: The “Big Three” has been formed by bringing together three largest credit rating agencies ~~as~~ like Standard & Poor’s (S&P), Moody's investors’ service, and Fitch Ratings in accordance with their market shares. In accordance with the current U.S Securities and Exchange Commission (SEC) report, this “Big Three” has done approximately 96% of all credit ratings throughout the world. In December 2012, S&P had 1.2 million outstanding ratings and 1416 analysts and supervisors and was considered as one of the rating agency throughout the world (Neumann, 2012). Moody's has been considered as the second largest agency throughout the world which has million outstanding ratings and 1252 analysts and supervisors (Neumann, 2012). Among all three, Fitch has been considered as the smallest one which has approximately 3,50,000 outstanding ratings. For sometimes it is used as an alternative of S&P and Moody’s (Klein, 2004). Fitch's ratings may be considered as a measurement of investor loss in the event of default. But, its ratings can measure default risk narrowly in the case of structured, project and public finance obligations (Baker and Martin, 2011). In 1909 the first agency was established or it is better to say that from that year ratings were accessible in wide format. At that time not more than four rating agencies having significant market share were there. Among all agencies, the “Big Three” have taken the significant market share. But, the causes of such concentration is really a great question. Most probably, the historical reputation of those “Big Three” was so strong in the financial industry and that had restricted any newcomers to enter the financial market (Caprio, 2012).

2.10.2 Other Rating Agencies: In 2006, the credit rating agency reform act was passed. After the passing of that particular act, seven additional rating agencies have obtained the recognition from the SEC as Nationally Recognised Statistical Rating Organisations (NRSROs) (Leone, 2006). In 2008 financial crisis (Yali, 2013) while

some agencies were inactive, some have gained a market share. In October 2012, a new organization was formed which is called as the Universal Credit Rating Group (Rabinovitch, 2012). These "Big Three" provides a rating for the long term and also for short term instruments. (vide appendix 2).

There exist different rating agencies throughout the world which are recognized or not recognised by SEC (U.S. Securities and Exchange Commission), ESMA (European Securities and Markets Authority), and FINMA (Swiss Financial Market Supervisory Authority). (vide appendix 1).

2.11 Functions of a Credit Rating Agency:

A credit rating is nothing but a specialized view of the third party about the financial position of an entity. Anyway, one credit rating agency possesses following functions:

i) Provides unbiased opinion: One credit rating agency does not have any interest in an issue like intermediaries and brokers and they always try to keep their reputations. So, it is expected that they will provide an unbiased opinion.

ii) Provides quality and dependable information: A credit rating agency has highly trained professionals having a better capacity to assess risk and they can have a lot of information which may not be available publicly. So, it can be expected that rating agency will provide information on credit risk which will be reliable enough.

iii) Provides information at low cost: At the time taking a decision, most of the investors are relying upon the credit rating provided by rating agencies. Investors can access ratings by paying proper fees. It is not possible for investors on their own to obtain information about the creditworthiness of the company in such a less expensive way.

iv) Provides information which is easy to understand: For the purpose of providing information, rating agencies need to obtain all relevant information (it may be complex in nature) then analyze it and at last, interpret it in presentable and easily understood format. So, it is easier to investors to take a proper decision about investments on the basis of information provided by a rating agency.

v) Provide a basis for investment: An investor gets a higher confidence with an investment rated by a credit rating agency. A rating makes it easier to estimate the risk and return associated with a particular investment while investing money in them.

vi) Credit rating makes a healthy discipline on corporate borrowers.

2.12 SME Rating in India: In India growth and expansion of this type of business hampered, mainly because of two reasons. Firstly, due to their non-credibility they fail to obtain funds and secondly, they have to maintain huge formalities to obtain loan which restrict their funds and time. For the purpose of removing such problems Govt. of India has taken different steps and SME rating is one of them. SME rating exposes the overall creditworthiness of rated entities as compared to other non-rated SMEs. The techniques used in SMEs to determine the creditworthiness are entirely dissimilar to those procedures which are conventionally used for large corporates. This rating increases the leverage of the company.

2.12.1 Why SME rating? Rating helps different SMEs to obtain the financial services more efficiently and rating also improves the transparency of the business (as different information is available on time). Because of the independent view of the rating agency lenders can get confidence for providing loan. Thus the quantum of financial resources available to SMEs are increased. Rating shares the perceived

uncertainty of the SMEs and as a result their time and transaction costs are reduced. Through an interactive rating, system management can have a unique perspective of business from rating experts (who have a specialized knowledge and understanding about risk). SMEs can use ratings also to enhance their credibility with different parties like technology providers, suppliers, customers, etc.

2.12.2 A few fallacies: There exist a lot of faulty notions about SMEs. Firstly, lenders and investors always think that SMEs will have a low rating because these are small in size. But in one analysis of 5000 SMEs, CRISIL has shown that this concept is wrong because a large number of companies have a remarkable business strength. Different successful companies like Sun Pharma Industries, Muser Beer India, Satyam Computer Services, Marico Industries and Maharashtra Seamlers were SMEs only a decade ago. Secondly, some people doubt whether SMEs will be able to provide reliable information to the rating agency or not. But, in current times, several SMEs possess a good track record of providing decent quality of financial information to the rating agency. Thirdly, some people think that SMEs will not be able to pay the fees for rating. But, rating fees are the lowest element of the cost of raising funds; and in a few instances, National Small Scale Industries has started to provide a subsidy of the rating fees (Saha, 2015).

2.12.3 Rating tool of SME: In India, CRISIL (one of the leading credit rating agencies) has given the methodology to achieve the creditworthiness of SMEs. This methodology comprises of three major categories of risk as business risk, management risk, and financial risk.

a) Business risk: To ascertain the business risk CRISIL makes certain the sustainability of the business strategy and the long-standing feasibility of the entity.

The relationship of a SME with its key customers is an important indicator to make the assessment of a SME. Either a team of analyst of CRISIL or its business associates may visit the SME to assess its manufacturing facilities. To understand the quality of relationship of an SME with its key supplier, CRISIL might require contacting the key supplier of the SME.

b) Management risk: To evaluate the management risk, different factors like the entity's ability to develop suppliers, integration with customers, maintenance of banking, and labour relationships are very important to assess how a promoter can successfully manage the entity.

c) Financial risk: Financial risk analysis by CRISIL is generally based on the disclosed financial statements. Different factors like an assessment of size (sales and net worth), profitability, efficiency of capital and working capital management, and credit protection measures such as interest coverage, debt service coverage, and cash accruals to debt ratios are involved in the calculation of financial risk by CRISIL.

2.12.4 Period of Validity of ratings: If there exist no significant changes in the organization which may have an important effect on the rating, CRISIL's SME rating and SMERA's SME rating are valid for one year from the date of assignment of rating. However, if there exist any significant changes in the organization which may have an effect on the rating, the rated entities may want to have a review of rating.

2.12.5 Rating Process: There exist six stages in the rating process. The rating process starts with the formal request of a company which wants to be rated. The rating process ends with the submission of the rating report and rating certificate. Any company which wants to be rated shall file all necessary documents to the concerned rating agency, in accordance with the necessity of that rating agency. The company

has to pay necessary fees along with the application. After getting all necessary documents, the team of the rating agency pay a visit to the company. After having an overall view about the company, the rating agency discusses a few matters with the management of the company regarding their problems. After this discussion, the rating agency begins their rating procedure. The rating committee comprises a team of industry experts who will analyse the rating formula and relevant documents of the company. After making the verification of all documents, the rating committee will select what scale can be allotted to the company. At the end of the rating process, the rating agency will dispatch the rating report to the company. The company may accept the rating or can deliver supplementary data and evidence to the rating agency to make their company upgraded. If the rating committee is satisfied with all the documents which have been supplied to them, they may upgrade the rating. If they are not satisfied with the supplied documents, they decline to alter the assigned rating for the same company.

2.12.6 SME rating agencies in India: In India, there exist different credit rating agencies. These are CRISIL, ICRA, CARE, ONICRA, FITCH, and SMERA. Among all of the rating agencies, CRISIL is the largest rating agency. SMERA is the rating agency exclusively established for SME rating. As SMERA is the rating agency which was established only for SME rating, a detailed discussion about that agency is provided below (Saha, 2015).

2.12.6.1 Small and Medium Enterprises Rating Agency (SMERA): In India, SMERA ratings Ltd. (a credit rating agency) has been formed specifically for micro, small and medium enterprises (MSME). This rating agency was incorporated in 2005 by Small Industries Development Bank of India (SIDBI), Dun & Brand Street

Information and Services India Private Ltd. and different leading Government, private, and MNC banks in India. Because of the ratings of this agency, any MSME unit can get bank loan at competitive rate of interest. In various ways, a MSME unit can get the benefits of this rating. For example, it aids to augment the credibility of the MSME units, accelerate growth, and also to provide a device for self-evaluation and upgradation. This type of rating is a third party evaluation of the MSME. This rating is assigned bearing in mind the financial position and diverse qualitative parameters of the MSME, which have a sturdy influence on the creditworthiness of the unit.

SMERA bank loan rating is allocated to various long term and short term bank services like, project loans, working capital loans, cash credit facilities, etc. These services also include some non-fund based facilities (as bank guarantee and letter of credit). SMERA has done 25000 ratings till date across varied sectors and geographies on a PAN-India basis. Within the investing community, this rating has gained a significant part of the risk assessment process. SIDBI was awarded "Outstanding Development Project Award" for introducing SMERA, by the Association of Development Financing Institution in Asia and Pacific (ADFIAP). SMERA has also been registered under Securities and Exchange Board of India (Credit Rating Agencies) Regulations 1999. A recognition of SEBI makes it empowered to rate different issues as IPO, bonds, commercial papers, etc. SMERA rating-scales and its parallel indicators are provided below in Table 2.1.

Table 2.1: SMERA rating and rating appraisal indicator

SMERA Rating	Rating Appraisal indicator
SME 1	Highest
SME 2	High
SME 3	Above Average
SME 4	Average
SME 5	Below Average
SME 6	Inadequate
SME 7	Low
SME 8	Lowest

Source: SMERA

2.13 Credit Rating in India:

Today, investors in India deal with two types of risks. These risks are “business risk” and “payment risk”. The term “business risk” means that type of risk which arises out of the “open economy” and the term “payment risk” means that type of risk which arises mainly out of the foreign exchange markets. The system of credit rating is obvious to protect small investors (who are the main target for unlisted corporate debt in the form of fixed deposits with companies) and for this purpose, the system of credit rating has been mandatory. Credit rating is a process which gives an assurance of smooth operation of the financial management for the collection of funds. Actually, it is an opinion of the rating agency on the capacity and willingness of the issuer of a debt instrument to meet the debt obligation properly (i.e. the timely payment of interest and / or principal). Generally, credit rating is expressed through an alphanumeric manner. Symbols used by rating agencies are very simple and easily

understood tools. These symbols help investors to understand the exact differences between different debt instruments on the basis of their underlying credit quality. Rating companies provide an explanation of their assigned rating symbols.

In India, the concept of credit rating is very new. But, credit rating has played an important role in Indian financial markets. On the changing global scenario, credit rating has an impact. Most probably, India was the first among all developing countries which has set up a credit rating agency in 1988. The function of credit rating has got a base when RBI made it mandatory in case of issuance of commercial paper (CP). It got a further importance when SEBI made it compulsory for certain categories of debentures and debt instruments. In June 1994, RBI has made credit rating mandatory for Non-Banking Financial Companies (NBFCs). Credit rating is just recommendatory for private sector undertakings (PSU) bonds and privately placed convertible debentures up to Rs. 50 million. Credit rating is also optional for fixed deposits of manufacturing companies. After CRISIL, the second rating agency, named ICRA (Investment information and credit rating agency) was formed in 1991. Next, another rating agency, CARE (Credit Analysis and Research Ltd.) was formed in 1992. All these three are promoted by the All India Financial Institution (AIFI). In 1996, Duff and Phelps tied up with two Indian NBFCs and set up Duff and Phelps Credit Ratings India (Pvt. Ltd).

In 1998, for the purpose of making a draft regulation for CRAs (Credit Rating Agencies), a committee was formed by the Securities and Exchange Board of India (SEBI). The committee felt the necessity of amendment of the SEBI act 1992, to bring CRAs outside the control of SEBI. But, it may not be possible for a regulator to judge two types of rating. The credibility of a rating and the CRAs should be judged on the

basis of historical records but not by the regulator. After making an observation the committee recommended that instead of making regulation, SEBI could just recognize certain agencies for some particular purpose only.

In 1999, after making a consultation with the central Government, SEBI issued a notification to bring all CRAs under the same regulatory ambit to exercise the powers conferred on it by section 30 read with section 11 of the SEBI Act 1992. Under the provisions of that Act, it is provided that all CRAs are to be registered with SEBI. RBI also decided to make a regular review and monitor the performance of credit rating agencies. In accordance with the recommendations of G-20 working Group, all credit rating agencies whose ratings are used for the regulatory purpose will be under a regulatory ambit, which includes registration and compliance with the International Organisation of Securities Commissions (IOSCO) Code of Conduct Fundamentals. The Reserve Bank of India will consult with SEBI to judge whether all rating agencies are complying the IOSCO Code of Conduct Fundamentals or not. RBI has accepted the accreditation of four rating agencies registered with market regulator, SEBI. This accreditation of RBI will permit these rating agencies to use their rating for assessing risk weights within the framework of the Basel II.

2.14 Credit rating agencies in India:

In India following are the top ten rating agencies in accordance with the risk assessment, providence of ratings and analytic solutions.

2.14.1 Credit Rating and Information Services of India Ltd. (CRISIL): CRISIL is the largest and first credit rating agency of India. It has it's headquarter at Mumbai. This is a global leader in research, ratings, and risk & policy advisory services. It was

established in 1988 and was jointly promoted by ICICI and UTI. It is one of the Indian top credit rating agencies which has won many prestigious awards about credit rating. More than 61000 entities were assessed by this agency. CRISIL's majority shareholder is Standard & Poor's, a division of the McGraw-Hill Companies. CRISIL provides different independent information, opinions and solutions related to credit ratings and risk assessment; energy, infrastructure and corporate advisory; research on India's economy, industries and companies; global equity research; fund services; and risk management to all of its domestic and international customers (CRISIL Global Research and Analytics consisting of Irvna and Pipal Research caters to international clients).

Debt obligations which are rated by CRISIL include non-convertible debentures/ bonds/preference shares, commercial papers/ certificates of deposits/ short-term debt and fixed deposits, loans/ structured debt. So, CRISIL's credit rating is an opinion on the probability of default of the rated obligation. But, these types of the rating are neither a comment on the general performance of the issuer, nor it is an indication of the potential price of issuers' bonds or equity shares. It is also not a recommendation to buy/ sell /hold a particular security.

CRISIL ratings are based on a framework which is analytical enough. This rating ensures comprehensiveness, standardization, comparability and effective communication of the assigned ratings. Different industrial companies, banks, Non-Banking Financial Institution (NBFCs), infrastructure entities, microfinance institutions, insurance companies, mutual funds, state governments, urban local bodies, etc. come under the purview of CRISIL ratings. Different issuers, investors, and intermediaries are trusted upon CRISIL ratings. This rating has played an

important role in India's credit market by introducing new products and services regularly. The different services of CRISIL are as follows (Vide Table 2.2):

Table 2.2: Different services of CRISIL

Sl. No.	Name of services provided by CRISIL	Year of introduction
1	First corporate sector entity rating	1988
2	First financial sector entity rating	1989
3	First ABS rating with a separate symbol	1991
4	First bank rating	1993
5	First public finance rating	1993
6	First credit quality rating on a mutual fund's debt scheme	1996
7	First financial strength rating	1998
8	First municipal bond rating (first in Asia)	1998
9	First bond fund rating	1998
10	First MBS rating	2000
11	First Ratings Round-Up	2000
12	First rating based on partial guarantee (a global first)	2001
13	First hospital grading	2002
14	First governance and value creation rating	2004
15	First default study	2005
16	First fund governance rating	2005
17	First capital protected fund rating	2006
18	First bank loan rating	2007
19	Assignment of complexity levels, a pro bono service, for classifying capital market instruments into three categories based on the ease of understanding of the risk elements inherent in these instruments	2008

Table Contd.

Sl. No.	Name of services provided by CRISIL	Year of introduction
20	Sectorial Credit Alerts	2009
21	First multi asset MFI securitization	2010
22	First education grading	2011
23	First criteria on corporate sector perpetual instruments	2011
24	First 50-year rupee bond rating	2013
25	First inflation-indexed debentures' rating	2013
26	First Basel III compliant issues' rating	2013
27	First NBFC IDF rating	2013
28	CRISIL rates India's first CMBS issue	2014

Source: http://www.crisil.com

2.14.2 Credit Information Bureau India Limited (CIBIL): CIBIL is a credit information company which maintains records of individual payments related to credit cards and loans. The headquarter of CIBIL also is situated in Mumbai. CIBIL uses the information of user's loan and credit card to generate credit information reports which may be useful to approve the loan application.

2.14.3 Fitch Ratings India Private Ltd: It is a part of the Fitch group of companies has been incorporated in 1913 in New York, U.S.A. This is one of the top credit agencies in India. It provides financial information services in more than 30 countries. It has more than 2000 employees working at 50+ offices all over the world.

2.14.4 Equifax: Equifax Inc. was incorporated in 1899. This agency has taken an important position among top ten agencies in India and also throughout the world. It provides information to management services. It also processes a lot of records of its

members to supply risk management solutions, credit risk management and analysis, fraud detection triggers, decision technologies, marketing tools, etc.

2.14.5 ONICRA: ONICRA Credit Rating Agency is a credit and performance rating company incorporated in 1993 at Mumbai. It gives smart and innovative solutions like risk assessment, analytical solutions and ratings to different parties like MSMEs, corporates and individuals.

2.14.6 High Mark Credit Information Services: High Mark Credit Information Services is a recognized credit rating company in India which was established in 2005. It provides a different type of services as bureau services, analytic solutions and risk management to banks and financial institutions operating in Micro-finance, retail consumer finance, MSME, Rural and cooperative sectors.

2.14.7 SME Rating Agency of India Ltd (SMERA): It has already been presented in para 2.12.6.2. So, repetition is avoided here.

2.14.8 Brickwork Ratings India Private Ltd: Brickwork Ratings was established in 2007 as an individual credit rating firm by Sangeeta Kulkarni. The company is registered with SEBI, RBI & NSIC. This firm provides its work through a wide range of areas such as NCD, Bank Loan, Commercial Paper, and MSME. It is one of the leading Indian credit rating companies which have already rated Rs. 200000 cores of bonds and bank loans.

2.14.9 CARE (Credit Analysis & Research Ltd.): CARE Ratings is the second largest credit rating agency in India. It had formally started its operations in April 1993. CARE's registered office and head office is also located in Mumbai. But, CARE has its regional offices in different parts of India, like Ahmedabad, Bangalore, Chennai,

Hyderabad, Jaipur, Kolkata, New Delhi, and Pune. It also has some international connections in different countries. Its rating volume of debt is Rs. 56.99 lakh crore (as of March 31st, 2014). CARE Ratings help investors to enter in capital market with confidence. CARE Ratings has also proved its efficiency by providing different types of rating as the rating for banks, sub-sovereigns, and IPO grading.

CARE ratings provide different helps to corporate to raise capital for their different requirements and assist investors to make their investment decision properly with proper information. It also helps investors to take investment decision on the basis of credit risk and their own risk-return expectations. With independent and unbiased credit rating opinions it has been building up the core of its business model, CARE Ratings has the unique advantage in the form an External Rating Committee to decide on the ratings. CARE rating committee consists of a group of efficient and experienced professionals.

2.14.10 ICRA LTD. (Investment Information and Credit Rating Agency of India Ltd): ICRA LTD. was incorporated in 1991. In term of the customer base, it is the second largest rating company in India. Actually, this was a joint-venture between Moody's and various Indian commercial banks and financial services companies. This company always gives independent and professional investment information.

Like other different types of credit rating agencies, credit ratings of ICRA is based on symbols. These symbols always give information on the relative credit risks associated with the rated debt obligations/issues. These ratings are based on local currency (as in India it is based on Rupee). ICRA ratings also make relative rankings of credit risk within India. ICRA ratings do not make any rating comparison among different instruments across the country. Actually, it assesses the relative credit risk

within India. Other than credit ratings, ICRA also provides Corporate Governance Ratings, Performance Ratings, Grading and Rankings to mutual funds and construction companies.

2.15 Conclusion:

Rating is an opinion of the rating agencies on a specific issue. It may be considered as a "guidepost" to lay investors. Credit rating encourages investors to channelize their savings into capital market activities. It is not a suggestion for investors to invest in a particular issue. Still, with the help of rating, investors can enter the capital market with confidence. CRAs may sometimes face some conflicts in making the rating and to solve the problem. In December 2004, the International Organization of Securities Commission (IOSCO) published a code of conduct for CRAs. That particular code of conduct is designed to trace the types of conflicts of interest that CRAs face. All major CRAs have agreed to sign this code of conduct and it has been approved by regular rating from the European Commission to the U.S Securities Exchange Commission. In India, the entire rating process is strictly adhered to the SEBI (Credit Rating Agencies) regulation, 1999, and amendments thereto. Credit rating agencies are now gaining much public faith regarding their rating; and this rating will help to convert the household savings into corporate investments.

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Chapter 3

Research Methodology

CONTENTS

3.1 Introduction:

A research work may be of various types. According to the necessity of research work one research worker may accept any one of them that suits best in the particular study. In a broad sense the research work can be classified into different types as descriptive research, analytical research, applied research, fundamental research, quantitative research, qualitative research, conceptual research and empirical research. Other than the above said basic types of research work there exist some other types of research work also as one-time research or longitudinal research, field-setting research or laboratory research or simulation research, clinical or diagnostic research and historical research. Any research work can also be classified into conclusion-oriented research and decision-oriented research.

Among all of the above said research works, our research work can be considered as an empirical research work. An empirical research work is such a research, which is based on empirical evidence. Through this type of research work knowledge can be gained through direct and indirect observation or experience. Interestingly, empirical evidence (the record of one's direct observations or experiences) can be evaluated quantitatively or qualitatively. Through quantifying the relevant evidence or by adjusting it in qualitative form, a researcher can answer different empirical questions provided that these questions must be clearly defined and answerable with relevant evidence. Generally these types of answers are regarded as data. Now a days, many researchers combine qualitative and quantitative forms of analysis to have a better answer to the questions. But this type of combination cannot be studied in laboratory. Actually, it can be seen particularly in the social sciences and in education. So, empirical research is based on observed and measured evidences. It originates knowledge from actual experience rather than the theory. In science, the term

empirical refers to the gathering of data which is observable by the senses, and in some cases it can be gathered by using some scientific instruments.

3.2 Objectives:

As stated in chapter 1, the objectives of the present study have been set as under:

1. To examine whether the corporate investment inflow (borrowings) go high / low remaining consequent upon a respective higher / lower ratings of the company.
2. To examine whether the corporate interest rate go high / low due to lower/ higher ratings of the company.
3. To examine whether there exists any change in investment inflow (borrowings) pattern after credit rating was made mandatory before issue of debt instruments.
4. To examine whether there exists any change in interest rates after credit rating was made mandatory before issue of debt instruments.

3.3 Hypotheses:

In view of the above objectives the following hypotheses have been framed that are to be tested in the study:

1. Corporate investment inflow (borrowings) is affected favourably or adversely by the corresponding higher or lower credit rating before issue of debt.
2. Interest rate on corporate debt is affected favourably or adversely by the corresponding lower or higher credit rating before issue of debt.
3. There is no significant difference between the investment inflow (borrowings) of pre-credit rating periods (see section 3.9.2) and post credit rating periods (see section 3.9.2) [i.e. Borrowings of pre-credit rating period = Borrowings of post-credit rating period].

4. There is no significant difference between the interest rate of pre-credit rating periods and post-credit rating periods (i.e. interest rate of pre-credit rating period = Interest rates of post-credit rating period).

3.4 Study Period:

The relevant data relating to the effect of credit rating on corporate investment inflow (borrowings) and on interest rate have been collected for the period of 15 accounting years (1999-2000 to 2013-2014). The reasons for fixing such a study period are as follows:

1. In the accounting year 1999-2000, SEBI for the first time promulgated a regulation about credit rating [SEBI (Credit Rating Agencies) Regulation 1999] and definitely it put a significant feather on the cap of credit rating. Though after the initiation there are a number of different amendments to the provisions, still the initial effort is always remarkable and that definitely is recognisable as a milestone because from that period the base of the credit rating has been so robust.

2. The entire study period has been divided into two parts. The first part is from 1999-2000 (i.e., the beginning of the relevant period) to 2007-2008 and the second part is from 2008-2009 [i.e., the year from which credit rating was made compulsory for every public issue of debt security [vide Chapter II, notification of SEBI (Issue and Listing of Debt Securities) Regulations, 2008] to 2013-2014 (up to the end of the selected study period).

3. The last year of the selected study period i.e., 2013-2014 covers a 15-year period beginning from 1999-2000, sufficient to capture the effect of any related significant event.

3.5 Nature of data:

An empirical research work may involve different types of data as quantitative data, qualitative data, nominal data, ordinal data, discrete data, continuous data, time series data, cross section data, frequency data, non-frequency data, primary data and secondary data.

Amid all these aforesaid data, our entire research work is mainly based on secondary data. Secondary data means those types of data set which have already been collected by some agency or any type of data which have been collected by one person but is used by another or may be collected for one purpose but used for any other purpose or any data which is already published somewhere. So, secondary data are not exclusive and consequently comprise inaccuracies due to transcription, rounding, etc. and thus it is less reliable. Before using such type of data one user must be careful about the coverage of the data, the methods of collection and their degree of reliability. As, this type of data involves less man-power and time, it is quite cheaper.

The entire research work is mainly based on quantitative data and ordinal data. A data is said to be ordinal when there is clear ordering of the forms of the attribute and inheritably have an order. Quantitative data is such a type of data which gives information about quantity. It gives that type of information which is measurable and countable in terms of numbers. So, the term quantitative data is used to describe such type of information which can be counted or expressed numerically. Quantitative data generally can be represented visually through graphs, histograms, tables, and charts. This data is a numerical measurement which is not simply expressed by using language. It is generally expressed in terms of numbers. Quantitative data are always

associated with a measurement scale and probably the most popular scale is the ratio analysis. Sometimes quantitative data are also regarded as continuous data.

3.6 Sources of data:

For the purpose of data collection in this research work, we have taken the help of PROWESS Database (PROWESS release 4.15) of Centre for Monitoring Indian Economy (CMIE). Among all types of information contained in that particular database we have used the following items for our relevant research work:

1. For the first aspect of our study [i.e., to study the effect of credit rating in corporate investment inflow (borrowings)], we have considered the annual cash flow statement and among all items of cash flow statement, items of the financial cash inflow - particularly inflows of long-term and short term borrowings – have been taken into consideration. We have assumed that all long term and short term borrowings which have been taken into consideration here, are influenced by credit ratings.

2. For the second aspect of our study [i.e., to study the effect of credit rating on corporate interest rate] we have considered the annual financial statements that show the amount of debt outstanding. Interestingly, we have considered only the standalone annual financial statements, not the consolidated ones. This is in view of our objective to show the effect of credit rating on the interest rate of the companies individually. For the amount of interest expended in any accounting year, we have used the annual cash flow statement as the source of data; in the absence of any other specific data on the actual amount of interest paid (or payable) for a particular accounting year, we have assumed it to be the same as available from the cash flow statement.

3. Relevant necessary data regarding credit rating of the selected companies are available directly from the database we have used.

3.7 Sample designing:

For the purpose of the study we have taken all NSE listed public limited companies (i.e. the population) which belong to cement industry. As pointed out earlier, we have considered a study period of 15 years. We have taken the cement industry because it gives a reasonable coverage of samples among the population and we find the existence of almost all types of ratings in the sample companies in this industry. We have selected all the sample-companies from a particular industry as we intend to make a meaningful inter-period comparison in our study (i.e., comparison of the results of the same analysis carried over during two different periods – one before the date when credit rating was made compulsory and the other after that). It may reveal the effect of mandatory credit rating before debt-issue on the changes in the investment inflow pattern, and also on the changes in the interest rate, if any, among cement production companies.

3.8 Sample selection criteria:

Two major aspects of our study are – (i) to study the effect of credit rating on the investment inflows (borrowings) of the selected companies, and (ii) to study the effect of credit rating on the rate of interest of the borrowings. With both these ends in view, sample companies have been selected on the basis of their satisfying the following conditions set for the purpose:

1. The public limited companies in cement industry which have a paid up capital of Rs. 10 million or more, and which have been more or less regular in operation

throughout the 15-year study period, have been selected for the first aspect of our study analysing the effect of credit rating on investment inflow (borrowings).

2. The public limited companies in cement industry which have a paid up capital of Rs. 10 million or more, and which have been showing an interest/debt ratio for at least 5 years out of the 15-year study period, have been selected for the second aspect of the research work analysing the effect of credit rating on interest rate (interest/debt ratio).

3.9 Data Processing:

In our study there exist two parts and for that purpose we have collected relevant data but these are slightly undeveloped in nature. Selecting from these data, we have done the work of processing, so that we can have the relevant data in accordance with our necessity. The basic data which were obvious for our study are: Cash inflow of long term and short term borrowings, financial interest, debt outstanding and credit rating. We first want to discuss how we have got the relevant data of credit rating.

3.9.1 Processing of data regarding credit rating: In India there exist different credit rating agencies but among all of them we have considered only CRISIL, CARE, and ICRA. All these rating agencies provide ratings which are symbolically different. But if we consider their actual meaning then it will be clear that these are not different at all. Actually, a rating code (alpha-numeric) - irrespective of any of these three agencies providing it - starts with “Highest safety” and ends with “Default” (see table 3.1 below). Any addition of plus or minus to the rating code represents comparative strength of rating within the class. There exist ratings for short term borrowings also. But, interestingly these are also within the coverage of the ratings for long term borrowings, the only difference being that in case of short term borrowings, there are

no such rating as ‘adequate safety’ and ‘moderate risk’. So, if we consider the rating for long term borrowing as a super set then the rating for short term borrowings may be considered as a sub set of that super set. For the purpose of the research work, all ratings have been given rank/weightage. Obviously, highest weightage has been given for highest rating (i.e., for highest safety) and lowest weightage/ranking has been given for the lowest rating (i.e., default). For the purpose of simplicity any plus or minus sign attached with any particular rating has been ignored. An eight-point scale has been used for the particular purpose (see table 3.1 below). Interestingly, ratings from ‘highest safety’ to ‘moderate safety’ are called “investment grade” while from ‘moderate risk’ to ‘default’ ratings are regarded as “speculative grade” (Ref. http://www.sebi.gov.in/faq/creditrate faq.pdf accessed on 6th June, 2015).

Table 3.1: Ratings with its actual meaning and rank assigned to it

Rating Grade	Ratings with actual meaning	Assigned Weightage/ Rank
Investment Grade	Highest Safety	8
	High Safety	7
	Adequate Safety	6
	Moderate Safety	5
Speculative Grade	Moderate Risk/Inadequate safety	4
	High Risk	3
	Very High Risk/Substantial risk	2
	Default	1

Source: Own assignment

Already, we have explained that rating is instrument specific. So, in a particular year a company may have different types of instruments which have been rated differently. To obtain an average rating in a particular year, one particular rating has been assigned with a weightage, with respect to its value among total values of all the rated

instruments. In such a way, the ratings (in numerical codes) for the rated companies have been obtained. A list of such credit rating of the selected companies, as computed is shown in appendix 4.

We can explain the above paragraph with the help of some practical examples. In case of ACC Ltd. for the accounting year 1999-2000, the 'high safety' grade was obtained for the instrument 'fixed rate unsecured non-convertible debentures' valued at Rs. 10,000 (only initial rating and reaffirmation have been taken into consideration). The 'highest safety' rating was obtained for the instrument, 'Commercial Paper' valued at Rs. 9,000. So, according to our explanation, rating of ACC Ltd. for the accounting year 1999-2000 is to be taken as 7.47 i.e. [8x{9,000/(9,000+10,000)}] + [7 x {10,000/(9,000+10,000)}]. To obtain the average rating, total rating for the particular rated company has been divided by the total number of years through which the rating has been done. A list of such average rating has been shown in appendix 7.The rating for the companies which has no rating (i.e. non-rated company) has been considered as zero.

***3.9.2 Processing of data regarding Investment inflow (borrowings*)**: For the purpose of having investment inflow (borrowing) we have considered the total cash inflow (from long term and short term borrowings) in each of the selected companies for each year (if there exist any borrowing at all). We have taken relevant data regarding this, directly from the PROWESS Database.

To have the average investment inflow for each of the selected companies, a simple average has been calculated for the relevant years (through which it has been generated). A list of such average investment inflows of the selected companies, as computed, is shown in appendix 5.

For another part of our study, we have made an attempt to compare the investment inflows between pre-credit rating period (the period before credit rating has been made mandatory prior to issuing debt), and the post-credit rating period (the period after credit rating has been made mandatory before issuing debt). Accordingly, we have computed the company-wise average investment inflow for pre- and post-credit rating period. A list of average investment inflow for pre- and post-credit rating period for each company is shown in appendix 8.

3.9.3 Processing of data regarding Interest rates: Similar to the abovementioned procedure for computing investment inflows (borrowings), we have computed company-wise interest rates (interest debt ratio actually). This has been done by computing the yearly rate by dividing the total interest paid or payable by a company in a year by the amount of outstanding debts in that year; finally, in this way we get the company-wise interest rates. A table presenting the company-wise interest rates, is shown in appendix 3.

To have the average interest rate for each selected companies a simple average has been calculated for the relevant years (over the period of time it has been calculated). A list of such average interest rates of the selected companies, as computed, is shown in appendix 6.

For an additional part of our study, we have made an attempt to compare the interest rates between pre-credit rating periods. Accordingly, we have computed the company-wise average interest rates for pre- and post-credit rating period. A company-wise average interest rate for pre- and post-credit rating period has been obtained by dividing the aggregate of the interest rates for each company for both the periods by the number of periods (i.e. for 9 years and 6 years respectively). A list of average

interest rates for pre- and post-credit rating periods for each company is shown in appendix 9.

3.10 Scheme for Investigation:

The following scheme of investigation has been designed for the study:

1. ***Sample selection**:* The first step is collecting the list of public limited companies in cement industry in India, which are listed in National Stock Exchange. Companies which remained alive with regular operations and had a paid up capital of Rs. 10 million or more during the study period of 15 years, were selected. Out of the selected companies, the companies which paid interest for at least 5 years during the study period have been considered for the second aspect of our study on interest rates.
2. ***Collecting data:*** Data regarding investment inflows and interest rates (as mentioned in the previous sections) have been collected from the annual reports of the selected companies.
3. Identifying the credit rating agencies then operating (during the study period) in India;
4. Identifying the ratings assigned by the credit rating agencies to debts in different selected companies;
5. Computing investment inflows, credit ratings and interest rate (section 3.9 above) for each of the selected companies during the study period;
6. Ascertaining average investment inflows (borrowings) and average interest rates of each of the selected companies for the years during pre-credit rating and post-credit rating periods;

7. Analysing the nature of association between two sets of variables i.e. between investment inflows (borrowings) and credit rating, and between interest rates and credit rating;
8. Finding whether there exists any change in investment inflows and in interest rates during pre-credit rating and post-credit rating periods.

3.11 Tools and techniques for Data Analysis:

After collection of necessary data, these are suitably rearranged and classified according to the requirement of the study. Keeping in view the objectives of this study, we have tested the pre-determined hypotheses with the help of some statistical methods (by different statistical software as *Eviews 7* and IBM SPSS 21) applied on the available data. During the process, we have arranged the analyses by applying various statistical tools i.e. natural logarithm, correlation coefficient, linear regression model (by panel data methodology) testing of hypotheses by paired t test (one-tailed). Different statistical techniques as, F statistic, Durbin Watson test, R square tests also have been used to judge the accuracy of the regression model. Some accounting and arithmetical tools as, averages and percentages have been used to test the hypotheses set in the study. The statistical techniques which are used are described below:

Statistical technique 'logarithm' has been used for transforming data. Logarithm is the power to which a number (called a "base") is raised to achieve a given number. Generally, logarithms are used to convert data with the intention to meet the assumptions of an analysis. There exist three types of logarithm such as, common logarithm (base 10), natural logarithm (base e), and binary logarithm (base 2).

Statistical technique "correlation" has been used to determine the associations or interdependence between investment inflow (borrowings) & credit rating and interest

rates & credit rating. Actually, by correlation we mean the association or relation between two variables. If two variables are so related that a change in the magnitude of one of them is accompanied by a change in the magnitude of the other, they are said to be correlated. This correlation may be of two types, such as, linear and nonlinear. If one variable increases/ decreases with the increment/ decrement of other variable, the variables are considered to be positively correlated. Again, if one variable decreases / increases, with the increment/ decrement of other variable, they are considered to be negatively correlated. Sometimes it may be found that one variable increases but the other remains constant, on the average. This is an example of zero correlation and in this particular situation variables are supposed to be uncorrelated. In correlation coefficients (denoted as ***r***) statistics the relation between two variables are measured in unit-free term. If all points of a scatter plot lie directly on a line with an upward slope, then ***r* = +*1***. If all points of a scatter plot fall directly on line having a downward gradient, then ***r* = -*1***. If the ***r*** is closer to ***+1***, the positive correlation is stronger. If the ***r*** is closer to ***-1***, the negative correlation is stronger. .Pearson's correlation coefficient is a number that lies between ***-1*** and ***1*** and it measures the strength of a linear relationship between two continuous variables. The absolute value of this coefficient determines how closely the variables are associated. The sign of the correlation coefficient determines whether the correlation is positive or negative. Even though there are no hard and fast rules for describing the strength of correlation, $0 < |r| < 0.3$ implies a weak correlation; $0.3 < |r| < 0.7$ implies a moderate correlation and $|r| > 0.7$ implies a strong correlation. However, this correlation coefficient has some limitations, such as, if the data does not come from the same source, the result of correlation coefficient may be quite misleading. Nevertheless, a high correlation between two variables does not always mean that

they are indeed related. We may find a high correlation between two variables simply because both the variables may in turn be dependent upon a third variable.

Panel (data) analysis is a statistical method which is used broadly in social science, epidemiology, and econometrics. This is a statistical method which deals with two and "n"-dimensional (in and by the - cross sectional/times series time) panel data. So, Panel (data) analysis might be defined as an econometric method in which data are gathered over and above two dimensions (typically, time, individuals, and certain third dimension). In Panel data methodology, data are gathered over time and over the similar individuals. Thus a regression analysis is done with these two dimensions/multidimensional data.

In a Panel data study, there are three autonomous methodologies, such as, Independently Pooled Panels, Random Effects Model and Fixed Effects Model (also known as first differenced model). Amid three of the aforementioned models, Random Effects Model and Fixed Effects Model are frequently in use.

Fixed Effects Model calculate differences in intercepts for a piece group (computed via a distinct dummy variable for every group). This approach is also considered as "Least Squares Dummy Variable" method. This is mainly an OLS model with dummy variables which control the group differences, assuming constant slopes (coefficients) for independent variables and constant variance across groups. This model also can be termed as a statistical model that denotes the perceived quantities in terms of explanatory variables which are handled as if the quantities were non-random in character. In panel data analysis, the term ‘fixed effects estimator’ (also known as the ‘within estimator’) is used to talk about an estimator for the coefficients in the regression model. If we take up fixed effects, we enforce time independent effects for

each entity that are probably correlated with the regressors. Fixed effects model can be used if two conditions are met. Firstly, it is assumed that all the studies comprised in the analysis are functionally same in nature. Secondly, the eventual goal is to calculate the common consequence for the identified population, and it is not appropriate to generalize this to other populations. So, it may be said that, "The fixed-effects model controls for all time-invariant differences between the individuals, so the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics [like culture, religion, gender, race, etc.]. One side effect of the features of fixed-effects models is that they cannot be used to investigate time-invariant causes of the dependent variables. Technically, time-invariant characteristics of the individuals are perfectly collinear with the person [or entity] dummies. Substantively, fixed-effects models are designed to study the causes of changes within a person [or entity]. A time-invariant characteristic cannot cause such a change, because it is constant for each person" (Kohler and Kreuter, 2009).

In statistics, a random effect(s) model (also termed as variance components model) is that type of model which assumes that the dataset which are analysed must have a pecking-order of diverse populations. In econometrics, random effects models are used for analysing the hierarchical / panel data when it is assumed that there is no fixed effects (it allows for individual effects only). The random effects assumption (which are taken in a random effects model) essentially mean about the individual specific effects and these are not correlated with the independent variables. If the random effects assumption is valid, the random effects model is more efficient than the fixed effects model. But, if this assumption is not valid, the random effects model is also not consistent. The justification behind random effects model is that, dissimilar to the fixed effects model, the variation across entities is assumed to be random and

uncorrelated with the predictor or independent variables that are included in the model. So it can be said that, "…the crucial distinction between fixed and random effects is whether the unobserved individual effect embodies elements that are correlated with the regressors in the model, not whether these effects are stochastic or not" (Greene, 2008).

The Hausman test is a class of tests frequently used in econometrics. The fundamental idea behind the Hausman test is to compare two sets of estimates. Among two sets of estimates, one is consistent under both the null and the alternative hypotheses and another is consistent only under the null hypothesis. A large difference between the two sets of estimates is taken as proof in favour of the alternative hypothesis. Hausman test is generally used to discriminate the fixed effects model and random effects model in panel data methodology. Random Effects (RE) model under the Null Hypothesis is preferred if it has greater efficiency otherwise Fixed Effects (FE) model under alternative hypothesis can be taken into consideration.

Paired t-test (also known as difference test) is used to judge the significance of the mean of difference between the two related samples. It is also used for evaluating the implication of the coefficients of simple and partial correlations. For this test it is assumed that the distribution is normal and follows student t distribution. The relevant test statistic, t, is calculated from the sample data and then compared with the corresponding p value for accepting or rejecting the null hypothesis.

The t statistic for this purpose is as follows:

$$t = \frac{\bar{d}}{S / \sqrt{n - 1}}$$

Where $\bar{d}$ and S represent the mean and standard deviation of the differences d_i respectively. [i.e. $d_i = x_i - y_i$ indicate the difference (with appropriate sign) in the values of x and y for the i-th pair (i = 1, 2, 3, ……. , n)].

Durbin Watson test is the happening of autocorrelation in residuals. The term autocorrelation means that adjacent observations are correlated. If they are correlated, then least squares regression underestimates the standard error of the coefficients and when they may not be so, all predictors may seem to be significant.

References:

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Chapter 4

Impact of Credit Rating on Corporate Rate of Interest

CONTENTS

4.1 Introduction:

Interest rate may be defined as "the amount charged, expressed as a percentage of principal by a lender to a borrower for the use of assets" (http://www.investopedia.com). Interest is calculated on ‘Asset borrowed’. The term 'asset borrowed' includes cash, consumer goods, and tangible fixed assets, such as vehicle or building. The rate of interest is generally stated as a percentage on an annual basis (i.e. rate of interest p.a.). However, it may be expressed on monthly or daily basis as per the requirement of both the parties (i.e. lender and borrower). This interest rate is popularly known as the annual percentage rate (APR). In other words, extra amount paid by a borrower to the lender for the use of the asset (cash or equivalent) is interest, and the ratio of interest accrued (annually, monthly or otherwise) on the principal amount borrowed expressed on a percentage basis is termed as the rate of interest. So, interest is the rental or compensation for the benefit foregone by the lender on lending the money or asset (expressed in terms of money) for the use of the borrower.

In the case of borrowings of tangible fixed assets, like a vehicle or building, the interest rate is sometimes known as the 'lease rate'. From another viewpoint, interest may be recognised as the opportunity cost of fund, borrowed in the sense that it would be possible for the lenders to invest these funds otherwise instead of lending them out. The lender could instead generate income from the asset by using these assets for their own purpose. The accrued interest could be paid intermittently (periodically) during the tenure of the loan as per the agreement between lender and borrower.

Interest rate depends upon several factors, like credit worthiness of the borrower, period of the loan, time value of money, etc. So, the interest rate may vary from one time period to another. In retail finance, the term ‘annual percentage rate’ and

‘effective annual rate’ have been applied and these concepts help the consumers to easily understand the real value of the products with different payment structures. In business and in investment finance, the effective interest rate is sometime determined from the yield of the invested amount.

The rate of interest is an important tool of monetary policy of a country. It is considered when any country deals with various important factors like investment, inflation, and unemployment. The Central Banks of all countries throughout the world generally reduce interest rates when they try to increase domestic consumption and export of the concerned countries. However, as a part of macro-economic policy, the low interest rate is risky because surplus wealth might be invested in capital or money market instead of increased consumptions, and can create an economic bubble. A large amount of wealth might be invested in the real-estate market and stock market. So, in advanced economies, the interest rate adjustments are made to retain inflation within a target range for the health of economic activities (Sepehri and Moshiri, 2004).

Generally, interest rates are determined either by the corresponding national governments or by the central banks of the respective countries. Modern capital market has become successful to arrest the higher rate of return (interest). Before the existence of modern capital market, there were some savings deposit accounts which could achieve an annual return in the range of 25% to 50% (http://www.moneyextra.com).

4.2 How to calculate rate of interest:

Generally, interest is calculated under two alternative methods as:

1) Simple rate of interest

2) Compound rate of interest

4.2.1 Simple rate of interest: This method is easy to calculate and understand the interest on borrowings, and this is a quicker method for interest calculation. It is simple in the sense that it does not consider the compounding effect of arrear interest. In this method, interest is determined on the principal amount at the time of borrowings. This method is generally used in case of short term loan/deposit. This rate is also known as 'Nominal rate of interest'. According to the Simple rate of interest, 'interest' is determined as follows:

Interest = P * R * T

(Where P = amount of borrowings, R = interest rate, T= Time period).

4.2.2 Compound rate of interest: Compound rate of interest is such type of interest rate where accrued interest of a time period would be added to the principal amount so that accrued interest also earns interest in the succeeding time period. This process is popularly known as compounding. Generally, customers (both borrowers and depositors) are alike to know about the annual rate of interest over the tenure of their borrowings or deposits. As interest amount on deposit or borrowings under compound rate is more than simple interest rate, Banks, Post Offices, and other financial institutions display / offer both simple and compound interest rates to the customers. Interest under compound interest rate can be calculated as follow:

Interest = P $[(1 + i)^n - 1]$

(Where P = Principal, r = nominal annual interest rate in percentage terms, i = r/100 i.e. interest of Re 1 in a year, and n is the number of compounding periods during the tenure).

4.3 Types of interest rates:

Among the various determinants, interest is one of the important determinants for the purpose of selection of borrowing-sources. Interest rates can be broadly classified into two types:

1) Fixed rate of interest.

2) Fluctuating/ floating/ variable rate of interest.

4.3.1 Fixed rate of interest: The term 'fixed rate of interest' may be defined as an interest rate (on a particular liability like loan or mortgage) which remains fixed either for the entire period of the loan or for the part of the loan period. How one lender assumes about the discounting rate throughout the fixed rate period, is very important to determine this rate. If the discounting rate is exceptionally low, fixed rates are higher than variable rate. On the other hand, if interest rates are unusually high, the borrowers are normally offered a discount to settle their rate of interest over time. So, a fixed rate of interest may be attractive to a borrower who predicts that the interest rate might rise over the tenure of the loan, which would increase interest expense. Thus, an interest rate risk may be evaded in this type of interest rate. But such a risk is unavoidable in the case of a floating or variable interest rate.

4.3.2 Floating rate of interest: Floating rate of interest is that type of interest rate which fluctuates according to the response of the market or along with a benchmark rate like LIBOR (London Interbank Offer Rate). In the case of floating interest rates on mortgage or loan and most other floating rate agreements, the fixed lending rate is used as a basis for the fixation of floating rate of interest. But, there is the condition that interest rate charged to the borrower would be the fixed interest rate plus a certain spread.

4.4 Fixed rate of interest vs. floating rate of interest:

The main difference between two rates is that a fixed interest rate never gets altered during the period of the loan. So, one borrower can understand at the time of accepting borrowings exactly how much is to be paid as interest every month / time period. This type of interest rate is suitable for the conservative borrowers who do not want to have any sort of risk in their periodical commitment. But floating rate is that type of rate which is based on a benchmark rate (e.g. BLR, BFR, OPR, and LIBOR) and can change throughout the duration of the loan. This floating rate is controlled by the bank (e.g. BLR) or market (e.g. OPR) and could be changed at any time and this type of change in interest could either increase the monthly instalment amount or the loan repayment period.

Apart from the above two rates of interest, we can mention another type of interest rate which is known as implicit rate of interest

4.5 Implicit rate of interest:

An implicit interest rate is such an interest rate that is not stated in a commercial deal. In other words, it is a rate which is not explicit or the rate which is not expressed. For

example, instead of paying Rs.500 at a time, a borrower may prefer to repay the loan by giving Rs.46 per month for twelve consecutive months. So, in this particular transaction, interest is not expressly stated but it could be calculated by using the present value factors. Any accounting transaction which is paid off in several instalments positively includes an interest rate, albeit there is no rate specified in the allied business agreement. Otherwise, the agreement would not express the cost accompanied with the delayed payments throughout a period of time **(**which is known as interest expense). Anyone can use the implicit interest rate to calculate the present value of the series of payments associated with the transaction. For this purpose, any one of the two formulae can be used. It can be done by using the formula for either the present value of an annuity due (where payments are due at the beginning of each period) or the present value of an ordinary annuity (where payments are due at the end of each period - which is more common). The difference between the present value of these series of cash inflows and the total payment amount is recognised in the accounting records as the interest component of the transaction. The market rate should be considered as most appropriate for any transaction, if that particular transaction incorporates an interest rate which is significantly unalike from the current market rate of interest**.** Besides, if the difference between the two rates (i.e. market rate of interest and actual rate of interest) is not material, it may be acceptable to account for the transaction with the interest rate stated in the agreement.

4.6 Interest rates vs. APR:

There are some differences between the rate of interest and APR (Annual Percentage Rate). In general, interest rate may be defined as a cost of a loan to a borrower and expressed in a percentage form and this type of interest rate does not include fees

charged for the loan. On the other hand, APR can be defined as an annual cost of a loan to a borrower comprising of fees. APR is also being expressed in the form of percentage. But, dissimilar to an interest rate, the APR consists of some extra charges or fees to reveal total cost of the loan. Generally, APR can help consumers to realise the trade-offs among the rate of interest and the fees payable at the closure of the term. The Federal Truth in Lending Act requires that every loan agreement discloses the APR positively. Because, all lenders must abide by the similar guidelines to ensure the accurateness of the APR and borrowers can use APR as a good basis for comparing certain costs of loans.

4.7 Effect of rising interest rates:

The rate of interest and risk are closely associated with each other. Depending upon the degree of risk, the interest rate would be high or low. The interest rate would be comparatively low in case of low-risk bearing project/ borrowing as compared to the high rate of interest in case of high-risk bearing project/ borrowings. On the other hand, the borrower will be agreed to bear a high rate of interest for the financially risky project and vice versa. The rate of interest of Govt. bonds are lower because it carries lower risk as it contains with government assurance. So, volatile investments like shares and junk bonds have a higher return than low risk bearing securities like Govt. bonds. The extra interest charged on the risky investment may be considered as a risk premium. Risk preference of a lender can settle the risk premium. However, economic effects of the high interest rate may be summarised as follows:

1. ***Cost of borrowings may be higher:*** Interest on borrowings is an expense to the borrower. So, higher rate of interest demotivates individuals from borrowing. Borrowers have no position to increase their consumption in other areas as they

have to incur high interest due to the costly borrowings that they have already taken.

2. ***Financial position of investors may be improved:*** If the rate of interest earned from a particular borrowing is high, it will be more attractive to save money in that particular deposit account for yielding high return. So in this way, any investor can boost up his financial position.

3. ***Increasing interest rates affect both consumers and firms:*** If interest is high, borrowers need to pay more interest and so the economy may lose the consumption.

4. ***Government debt interest expenses may rise:*** Government's liability on account of interest on debt would be increased sharply. This could lead to higher amount of taxes in the future.

5. ***Decrease confidence:*** High interest rates have an adverse effect on the confidence of both potential borrower and business. A rise in interest rates discourages the borrowers to take new investment as they have to pay more interest that would affect the profitability of their project.

4.8 Factors determining the changes in interest rate:

Several factors can influence the rate of interest and none of them can get singular consideration than others. However, factors influencing the interest rate are discussed as under:

1. ***Political influence:*** Any short term improvement to the economy can be possible by reducing the interest rates. Under normal condition, most of the economists are

of the opinion that a cut in the interest rates can give a short term gain in the economic activity and for this reason politicians use this tool. But unfortunately this effect is made neutral by inflation. An election can also be influenced by this quick boost. Several economists thus want to have independent central banks in order to limit the influence of politics on interest rates.

2. ***Effect of delayed consumption:*** When money is given as loan by the lender, he makes a delay to use the money for consumption of goods. Since the time preference theory suggests that people prefer to acquire goods now, than consuming the goods later, in a free market there will be a positive interest rate.

3. ***Inflationary effects:*** Most economists explain inflation as a given amount of money buys fewer goods now than in the future. Inflation reduces the purchasing power of the people. At the time of inflation, the borrowers must compensate lenders by interest. So, inflation and interest are positively correlated.

4. ***Chance of alternative investments:*** An investor can invest his money in different available alternatives. A rational investor invests in that alternative where he/she would receive maximum return. With due consideration of all alternatives, interest rate of a particular investment-area should be fixed.

5. ***Liquidity preference:*** Interest rate depends upon the block period of the investment - the time span when the investment cannot be redeemed. Interest rate would be low if the block period is short, otherwise the rate would be high. Interest rate and liquidity have a reverse relation.

6. ***Risk of the investment:*** Risk massively impacts the rate of interest**.** An investor would be satisfied with lower rate of interest if the project, on which he is

investing, is less risky. If the investing project contains high risk, he will obviously opt for higher return (i.e. interest). Still there is always a chance that the borrower will go bankrupt, abscond, die, or default on the loan. So, a lender generally charges high interest rates to cover these risks.

7. ***Effect of the economy:*** Rate of interest changes in accordance with the status of economy. Thus it can said that the position of an economy (strong or weak whatever it may be) and rate of interest both are positively correlated.

8. ***Influence of Banks:*** Bank can change the interest rate, either to slow down or to speed up economic growth. So, these forces either raise interest rates to slow down the economy, or drop the rates to promote economic growth.

9. ***Effect of taxes:*** Interest can give the lender a tax shield effect which is quite beneficial to him so the lender may insist on a higher rate to obtain the benefit of this tax shield effect.

4.9 What is coupon rate:

The coupon rate of a bond is the amount of interest that the bondholders will receive per year as a percentage on the face value or principal. So, it is the interest rate which the issuer promises to pay during the terms of the loan. The coupon rate may be expressed as a yield which the bond assures to pay. Usually, this coupon rate remains fixed throughout the term of the bond although it might fluctuate too with a money market index, such as LIBOR. The bond will also consist of the particular date regarding the payment of interest. It may be paid on monthly, quarterly, semi-annually, or on annual basis. The term "coupon" is derived from that situation where paper bond certificates were issued with tagged coupons one for each interest

payment. On the due date, the bondholder had encashed the coupon to the specified Bank. Now-a-days, the amount of these coupons are deposited directly into the account of the bond holders.

The term coupon rate has some differences from the term ‘current yield’; the term ‘current yield’ means the proper interest rate of a fixed income security (as bond or note). It can be calculated by dividing the amount of interest paid annually with the bond's current price. If the bond is traded at a discount to its face value, the current yield will be higher than that of the coupon rate; and if the bond is traded at a premium to its face value then the current yield will be lower than the coupon rate. But, a bond's coupon rate is simply the rate of interest it pays each year, stated as a percentage of the par value (i.e. face value of the bond or the value must be paid by the issuing entity to the bond holder at the time of maturity). Generaly interest rates have a great impact on investments and this is applicable also in the case of bonds. When the prevailing market rate of interest is higher than the coupon rate, there is a tendency to drop the price of the bond on the open market. Because, investors feel uninterested to buy any bond at face value by the reason of lower interest yield when they possess an opportunity to have a higher yield from somewhere else. So, this falling demand thrusts the bond price in the direction of an equilibrium yield. Alternatively, if the coupon rate attached with the bond is higher than the market rate of interest, the bond price may increase. So, if the general rate of interest is lower than the coupon rate, investors will feel interested in purchasing the particular bond to achieve a higher return on their investment. But, the increased demand will raise the price of the bond until it reaches to an equilibrium price.

4.10 How to calculate coupon payments:

Bond is such a type of debt instrument that offers investors to get a secure and predictable return. Investors generally purchase bonds at par, premium or discount (based on face value) and receives coupon payments in every six months over the life of the bonds and finally receives the face amount at the time of maturity. The amount of coupon payment depends on the terms of the bond. The process of calculation of bond's payment is very important and it can be calculated as follows:

Firstly, it is necessary to determine the terms and conditions of the bond. In order to calculate coupon payment, three points are to be considered. Out of these three main factors, two are very important regarding calculation of coupon payments. The first point is the face value (also known as “par value”), that is the total amount which an investor will receive at maturity. The face value is the amount upon which interest is calculated (i.e., if the face value is high, coupon payments will be high). The second point is the interest rate/ coupon rate of the bond which represents the annual interest rate applied to the face value. The third point is the maturity period of the bond. Though this maturity period does not directly play any part in the calculation of coupon payments, a lengthier span of bond exposes the investor to higher liquidity risk, inflation risk, and interest rate risk. In order to compensate for these higher risks, the bond holder can expect a higher coupon rate.

Secondly, the interest on bond should be calculated by multiplying the bond's coupon rate to its face value and this amount would be the same irrespective of issue price of the bond.

Thirdly, the coupon payment for the bond should be determined. Generally, Interest is paid in an interval of six months (i.e. on a half-yearly basis). So, in order to determine the coupon payment each time, annual interest payment should be divided by two.

Coupon rate can be calculated by the following formula:

$C = i/ P$

[Where, C = coupon rate, i = annualized interest (or coupon), and p = par value of bond].

4.11 Types of coupon rate:

Coupon rates are of different types and these rates are mentioned as follows:

1. ***Coupon paid by fixed rate bond*** (also termed as straight or plain vanilla coupon)

2. ***Coupon paid by Floating rate bond***

3. ***Coupon rate attached with zero coupon bond***

4. ***Coupon paid by Inflation linked bonds (linkers)***

These varieties are explained in details as follows:

4.11.1 Coupon paid by Fixed rate bond **:** A Fixed-rate bond is a variety of bond which has a coupon that persists as constant during the life span of the bond, and the coupon rate as stated is payable at a specified date prior to the maturity. So, a fixed rate bond is such type of long term debt paper which contains a pre-determined interest rate. The market value of a fixed-rate bond is swayed by the fluctuations of interest rates, and therefore it has a substantial amount of interest rate risk. So, during the inflation, fixed-rate bond faces a problem of loss in value. The fixed-rate bond's

predetermined coupon rate and long tenure provides an opportunity to an investor for earning positive return, and the fixed payments are provided periodically to the investors at a percentage rate on the face value of the bond.

4.11.2 Coupon paid by Floating rate bond*:* Floating rate bonds (FRBs) are bonds that have a fluctuating coupon rate (attached to any benchmark rate, like LIBOR [London Interbank Offer Rate] or Federal Funds Rate) plus a quoted spread. Generally, all FRBs have quarterly coupons (i.e., they pay out interest in each quarter). At the starting of each coupon period, the coupon rate is calculated. This rate can be ascertained by fixing up any benchmarked rate (like LIBOR) for that day and adding the spread with it. In the United States, Floating rate bonds are issued by Government Sponsored Enterprises (GSEs), such as the Federal Home Loan Banks, the Federal National Mortgage Association, and the Federal Home Loan Mortgage Corporation,

4.11.3 Coupon rate attached with zero coupon bond*:* Zero-coupon bonds (also known as discount bonds or deep discount bonds) are those types of bonds which do not pay any coupons and thus, the coupon rate there is zero percent From this type of bond, only one time payment can be obtained and that amount is equals to the face value on the date of maturity. It does not make any periodic interest payments (i.e. bond does not have any "coupon") and that's why it is termed as zero-coupon bond. The bondholder can have the total principal amount on the date of redemption. An example of zero coupon bonds is Series E savings bonds issued by the U.S. government.

4.11.4 Coupon paid by Inflation linked bonds (linkers)*:* Inflation linked bond is that type of bond in which the principal amount and the interest payments are linked with

inflation. The rate of interest of this type of bond is generally less than the fixed rate bonds which have a similar maturity period. In the case of inflation, the payment increases as it would lead to increase the principal amount of bond to tackle the inflationary situation. The United Kingdom was the first country to issue inflation linked Gilts in the 1980s. Treasury Inflation-Protected Securities (TIPS) and I-bonds are examples of inflation linked bonds issued by the U.S. government.

4.12 Data analysis and explanation:

4.12.1 Relationship between corporate interest rate and credit rating: In this research work in accordance with our second hypothesis "Corporate interest rate will be higher / lower with corresponding lower / higher credit rating", we want to show that corporate interest rate and credit ratings has a negative relationship, meaning negative correlation i.e. if rating is higher, interest rate will be lower and vice-versa. Since corporate interest rate is affected by the credit rating significantly, it is necessary to check statistically whether the empirical results support the related economic theory or not. For this purpose, corporate interest rate (I) has been considered as a dependent variable and credit rating (CR) has been considered as an independent variable. For getting the better results, the raw data of two particular variables have been converted into logarithmic series as log of interest rate (i.e. li) and log of credit rating (i.e. lcr) in our panel data methodology. For the purpose of analyses, *Eviews 7* software has been used. Before examining the relationship between interest rate and credit rating the raw data has been presented in Figure 4.1. Both li (in blue line) and lcr (in red line) show that both fluctuated year after year.

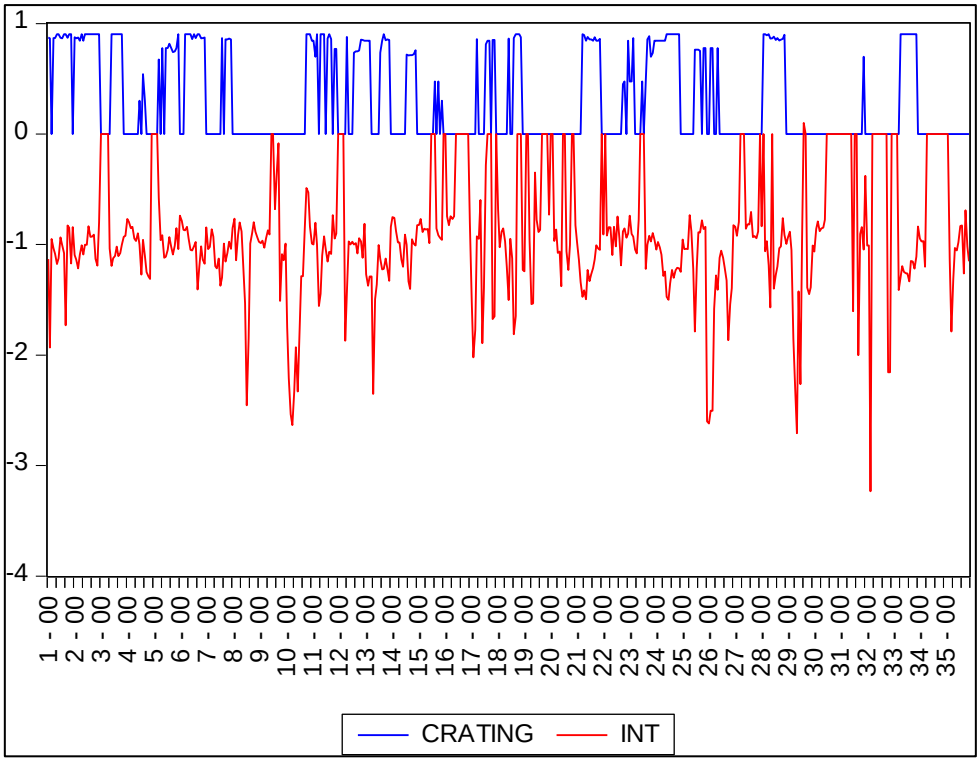

Figure 4.1: Raw data of borrowings and credit rating

To examine the relationship between li and lcr, Pearson Correlation technique has been used. The correlation test results are shown in table 4.1. The correlation statistics show that li and lcr are lowly and negatively associated, which is significant at 5% level.

Table 4.1: Calculation of correlation coefficient between between log of interest (li) and log of credit rating (lcr)

		li	**lcr**
li	Pearson correlation	1.000000	-0.224431
lcr	Pearson correlation	-0.224431	1.000000

Source: Own calculation

Basically correlation does not talk about the cause and effect of the relationship. It indicates only the strength and direction of the association. Therefore, for understanding the cause and effect relationship, it is necessary to apply the linear regression model based on panel data methodology.

Before going to the regression analysis, it is, however, obligatory to check panel unit root test of credit rating and interest rates (vide Table 4.2 and Table 4.3 respectively). Whether panel data regression is applicable or not has been checked through Levin, Lin & Chu t, Im, Pesaran and Shin W-stat, ADF-Fisher Chi-square and PP-Fisher Chi-square tests. The related theory goes like this that if more than 50% is stationary at level (i.e. probability of test statistics is less than 50%), we can use panel data regression technique. In case of interest rate, the results illustrate that four-unit root tests are stationary at level because the probability is 0.00. In case of credit rating, the results illustrate that four-unit root tests are stationary at level because two tests have probability 0.00 and two tests have probability 0.012 and 0.017. Therefore, panel data regression through Pooled OLS regression, Fixed Effect Model, and Random Effect Model can be used for obtaining the cause and effect of relationship as well as testing of research hypothesis under study.

Table 4.2: Result of Panel unit root test of Credit Rating (at level)

Automatic lag length selection based on SIC: 0 to 2				
Newey-West automatic bandwidth selection and Bartlett kernel				
Method	Statistic	Prob.**	Cross-sections	Observation
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-3.45231	0.0003	21	288
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-2.24675	0.0123	21	288
ADF-Fisher Chi-square	63.5157	0.0176	21	288
PP-Fisher Chi-square	110.309	0.0000	21	294
** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.				

Source: Own calculation

Table 4.3: Result of Panel unit root test of Interest rate (at level)

Automatic lag length selection based on SIC: 0 to 2				
Newey-West automatic bandwidth selection and Bartlett kernel				
Method	Statistic	Prob.**	Cross-sections	Observation
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-6.08494	0.0000	35	481
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-4.45695	0.0000	35	481
ADF-Fisher Chi-square	124.018	0.0001	35	481
PP-Fisher Chi-square	120.925	0.0002	35	490
** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.				

Source: Own calculation

Panel data regression test results of Pooled OLS model (Table 4.4), Fixed Effect Model (Table 4.5) and Random Effect Model (Table 4.6) have been shown below.

Table 4.4: Results of Pooled OLS Model

Dependent Variable: li				
Method: Panel Least Squares				
Periods included: 15				
Cross-sections included: 35				
Total panel (unbalanced) observations: 524				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.808036	0.030000	-26.93427	0.0000
lcr	-0.314605	0.059789	-5.261882	0.0000
R-squared	0.050369	Mean dependent var		-0.901895
Adjusted R-squared	0.048550	S.D. dependent var		0.566079
S.E. of regression	0.552166	Akaike info criterion		1.653875
Sum squared resid	159.1514	Schwarz criterion		1.670140
Log likelihood	-431.3152	Hannan-Quinn criter.		1.660245
F-statistic	27.68740	Durbin-Watson stat		0.761122
Prob(F-statistic)	0.000000			

Source: Own calculation

Positions of residual (in blue line), actual (in red line) and fitted (in green line) proportion (under Pooled OLS Model) have been shown in figure 4.2 below.

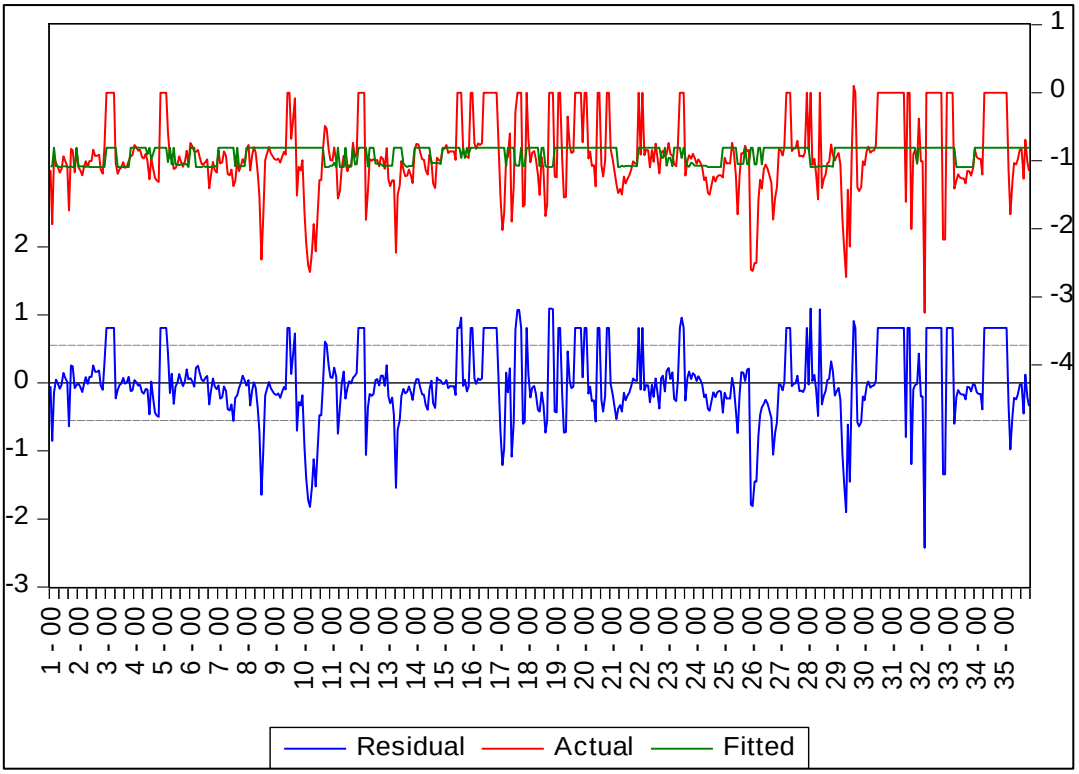

Figure 4.2: Position of residual, actual and fitted proportion

Position of only residual (in blue line) has been shown in figure 4.3.

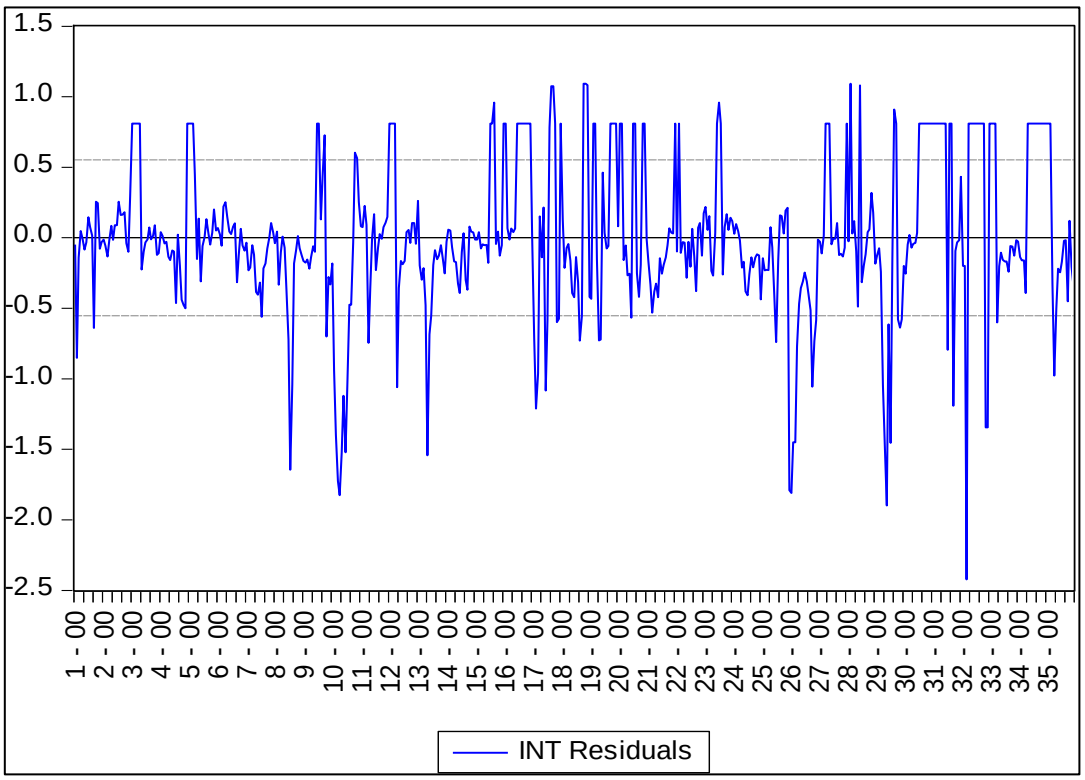

Figure 4.3: Position of residual only

Table 4.5: Results of Fixed Effect Model (FEM)

Dependent Variable: li				
Method: Panel Least Squares				
Periods included: 15				
Cross-sections included: 35				
Total panel (unbalanced) observations: 524				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.835059	0.031377	-26.61346	0.0000
lcr	-0.224027	0.077412	-2.893936	0.0040
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.311626	Mean dependent var		-0.901895
Adjusted R-squared	0.262255	S.D. dependent var		0.566079
S.E. of regression	0.486217	Akaike info criterion		1.461905
Sum squared resid	115.3667	Schwarz criterion		1.754680
Log likelihood	-347.0192	Hannan-Quinn criter.		1.576558
F-statistic	6.311909	Durbin-Watson stat		1.040827
Prob(F-statistic)	0.000000			

Source: Own calculation

Positions of residual (in blue line), actual (in red line) and fitted (in green line) proportion (under Fixed Effect Model or FEM) have been shown in figure 4.4.

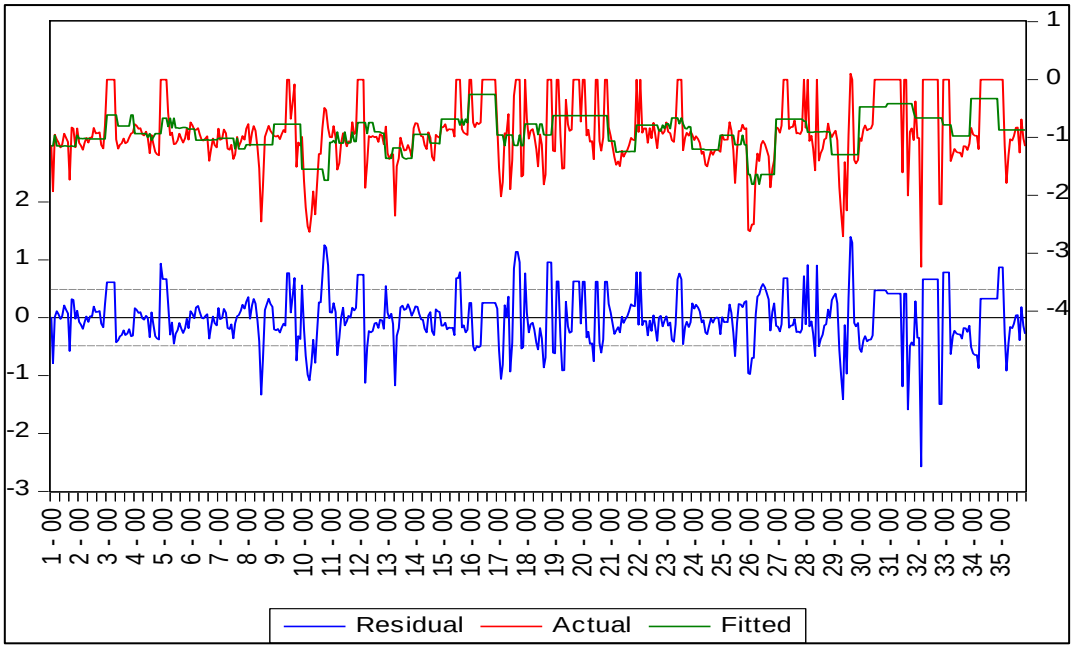

Figure 4.4: Positions of residual, actual and fitted proportion (under FEM)

Position (under FEM) of only residual (in blue line) has been shown in figure 4.5.

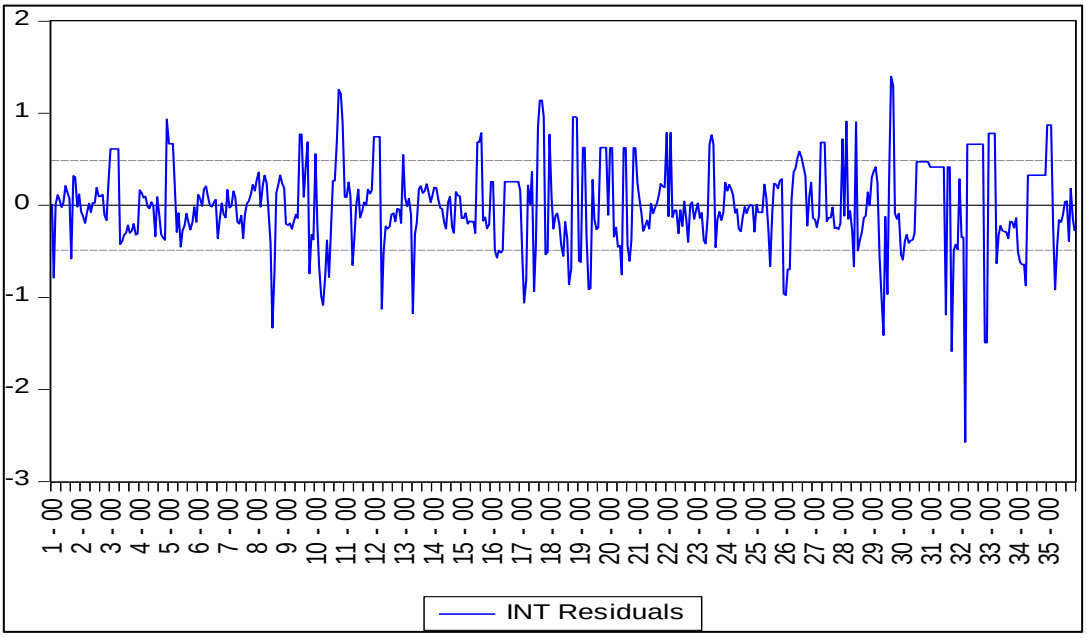

Figure 4.5: Position of residual only (under FEM)

Table 4.6: Results of Random Effect Model (REM)

Dependent Variable: INT				
Method: Panel EGLS (Cross-section random effects)				
Periods included: 15				
Cross-sections included: 35				
Total panel (unbalanced) observations: 524				
Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.826351	0.054220	-15.24057	0.0000
lcr	-0.253235	0.070367	-3.598789	0.0004
	Effects Specification			
			S.D.	Rho
Cross-section random			0.267600	0.2325
Idiosyncratic random			0.486217	0.7675
	Weighted Statistics			
R-squared	0.024221	Mean dependent var		-0.383381
Adjusted R-squared	0.022351	S.D. dependent var		0.491668
S.E. of regression	0.486111	Sum squared resid		123.3504
F-statistic	12.95696	Durbin-Watson stat		0.975688
Prob(F-statistic)	0.000349			
	Unweighted Statistics			
R-squared	0.048453	Mean dependent var		-0.901895
Sum squared resid	159.4726	Durbin-Watson stat		0.754684

Source: Own calculation

Positions of residual (in blue line), actual (in red line) and fitted (in green line) proportion (under REM) have been shown in figure 4.6.

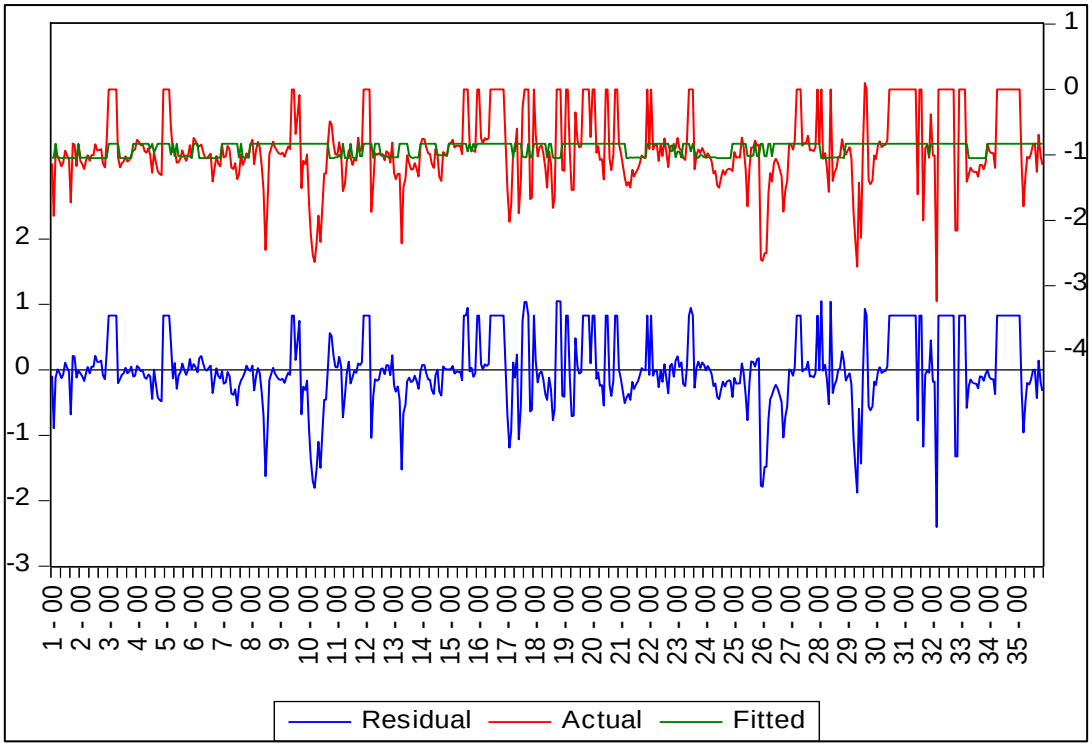

Figure 4.6: Position of residual, actual and fitted proportion (under REM)

Position (under REM) of only residual (in blue line) has been shown in figure 4.7.

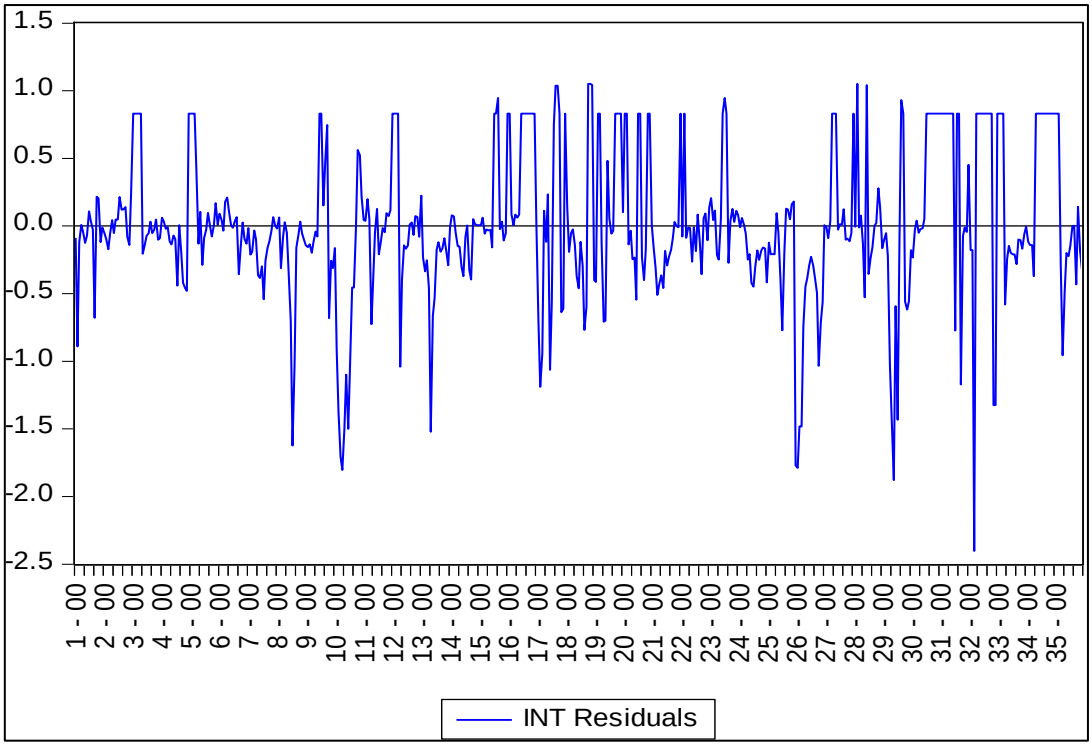

Figure 4.7: Position of residual only (under REM)

To check whether fixed effect model or random effect model is appropriate or not, Hausman test is suitable and shown in Table 4.7. The following hypothesis is to be considered.

H_0: Random Effect model is appropriate

H_1: Fixed effect model is appropriate

Table 4.7: Result of Hausman Test

Correlated Random Effects - **Hausman Test**				
Test cross-section random effects				
Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		0.819344	1	0.3654
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
Lcr	-0.224027	-0.253235	0.001041	0.3654

Source: Own calculation

The probability of Chi-square comes out to be 36.54%, which is more than 5%. Therefore, null hypothesis is accepted. Random model is suitable for lcr to explain li.

A graphical representation of forecasting effect has been shown in figure 4.8.

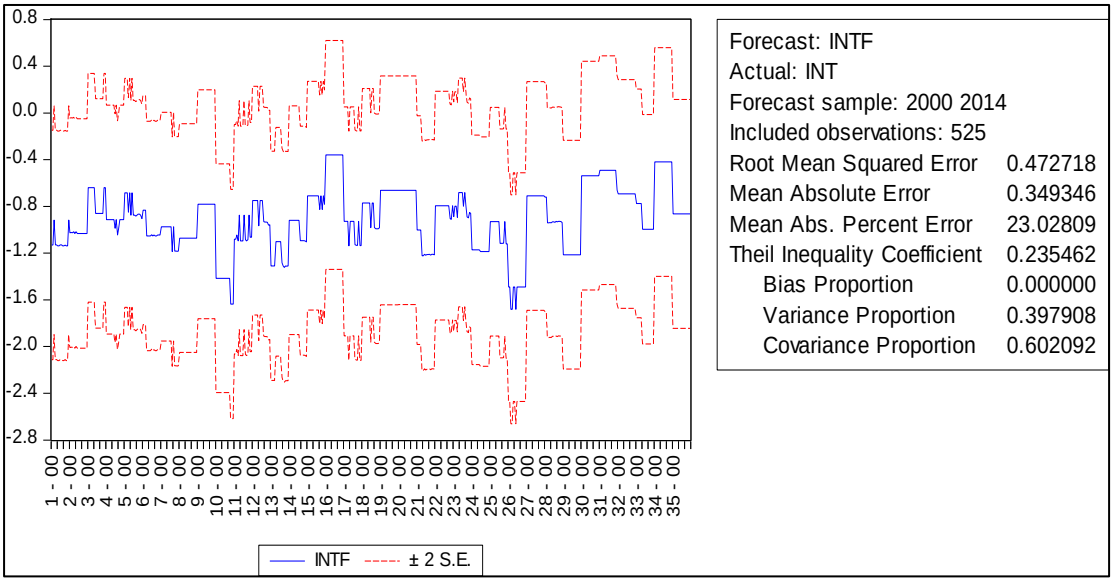

Figure 4.8: Position of forecasting effect

The random effect model is again shown in Table 4.8 to test finally, the impact of lcr on li.

Table 4.8: Result of Random Effect Model (REM)

Sample: 2000 – 2014				
Periods included: 15				
Cross-sections included: 35				
Total panel (unbalanced) observations: 524				
Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.826351	0.054220	-15.24057	0.0000
Lcr	-0.253235	0.070367	-3.598789	0.0004
	Effects Specification			
			S.D.	Rho
Cross-section random			0.267600	0.2325
Idiosyncratic random			0.486217	0.7675
	Weighted Statistics			
R-squared	0.024221	Mean dependent var		-0.383381
Adjusted R-squared	0.022351	S.D. dependent var		0.491668
S.E. of regression	0.486111	Sum squared resid		123.3504
F-statistic	12.95696	Durbin-Watson stat		0.975688
Prob(F-statistic)	0.000349			
	Unweighted Statistics			
R-squared	0.048453	Mean dependent var		-0.901895
Sum squared resid	159.4726	Durbin-Watson stat		0.754684

Source: Own calculation

It has been observed that when credit rating is changed by one unit, interest rates are changed negatively by 0.253235 units, which is statistically significant at 1% and 5% levels. R-squared (2.42%) is quite low, which indicates that the variation is quite low but the model is more or less appropriate. The probability of F-statistics (0.00) indicates that the negative effect is true for population also. Durbin-Watson statistics

(.975) indicate that the residuals are independent and not auto-correlated. There is a negative cross section effect observed from the model.

The final model is:

li= -0.826350636468 - 0.253234887729*lcr+ [CX=R]

Finally, it has been observed that interest rate is negatively affected by credit rating, which is a multiple of 0.25323 units plus a cross section effect.

4.12.2 Effect of interest rate after credit rating was mandatory: In this research work in accordance with our fourth hypothesis, "There is no significant difference between the interest rates of pre-credit rating periods and post-credit rating periods". We want to compare the interest rates between pre- and post-credit rating periods. So, we need to test whether there exists any significant change in average interest rate after the credit rating was made mandatory. For such comparison we have taken average interest rates of companies (which have been taken as sample for our research purpose) in two groups. In the first group, average is computed out of the interest rates of the companies from the year 1999-2000 to 2007-2008 (i.e. for 9 years) and the second group counts the average for the rest of the years i.e. from 2008-2009 to 2009-2014 (i.e. for 6 years). For the purpose of the calculating average interest rate of selected companies, we have taken total of interest rates of selected companies for two groups separately for the two selected periods (i. e. 9 and 6 years respectively) and these total interest rates have been divided by the number of years in the respective selected periods (i.e. by 9 and 6 respectively). For the purpose of our research work, these two groups of data have been taken to represent average interest rates for pre- and post-credit rating periods respectively (see appendix 9).

As, it has been desired to make a comparison between two periods (i.e. pre- and post-credit rating periods) we can apply paired t test with the following hypothesis:

$H_{0:}$ There is no significant difference between the interest rates of pre-credit rating period and post-credit rating period. (i.e. interest rates of pre-credit rating period = interest rates of post-credit rating period).

H_1: Interest rates of post-credit rating period is significantly lower than the interest rates of pre-credit rating periods (i.e. interest rates of post-credit rating period < interest rates of pre-credit rating period).

Now by applying the paired t test (see Table 4.9 below) we have the following result.

Table 4.9: Result of Paired t Test

		Paired Differences					t	df	Sig. (1 tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Interest rate of pre credit rating period – Interest rate of post credit rating period	.01011	.07054	.01192	-.03434	.01412	-.848	34	.201

Source: Own calculation

The observed value of t is -.848. The P-value of corresponding t-value is .201. Since the p(t) statistic is > 0.05, H_0 is accepted, that indicate that there is no significant difference between the interest rate of pre- and post- credit rating period.

4.13 Graphical representation:

Up to this stage we have statistically done the test of hypothesis that credit rating has a negative relationship with corporate interest rate. But, it is possible very much to show this hypothesis graphically also. The graphical representation will help one layman to understand the topic quite easily. Through the graphical representation it is possible to access all data quickly. Moreover, a diagram can clarify a complex problem and reveal hidden facts, which are not apparent from the tabular form. There exist different types of graph but among all of them we have taken the help of line diagram to show the pattern of average interest rate of selected companies for fifteen years i.e. 9 years before and 6 years after the rating has become mandatory (vide appendix 10). Through bar diagram we have tried to show the comparative positions of different rated and non-rated companies with respect to average interest rate for selected companies for the selected periods and the relationship between average interest rate and average credit ratings for selected companies for selected periods. For the purpose of making the diagram, both types of data have been shown in a decimal scale in the figure. There exists pie diagram also, which has shown the comparative effects of credit rating on interest rate. First, we want to show bar diagram.

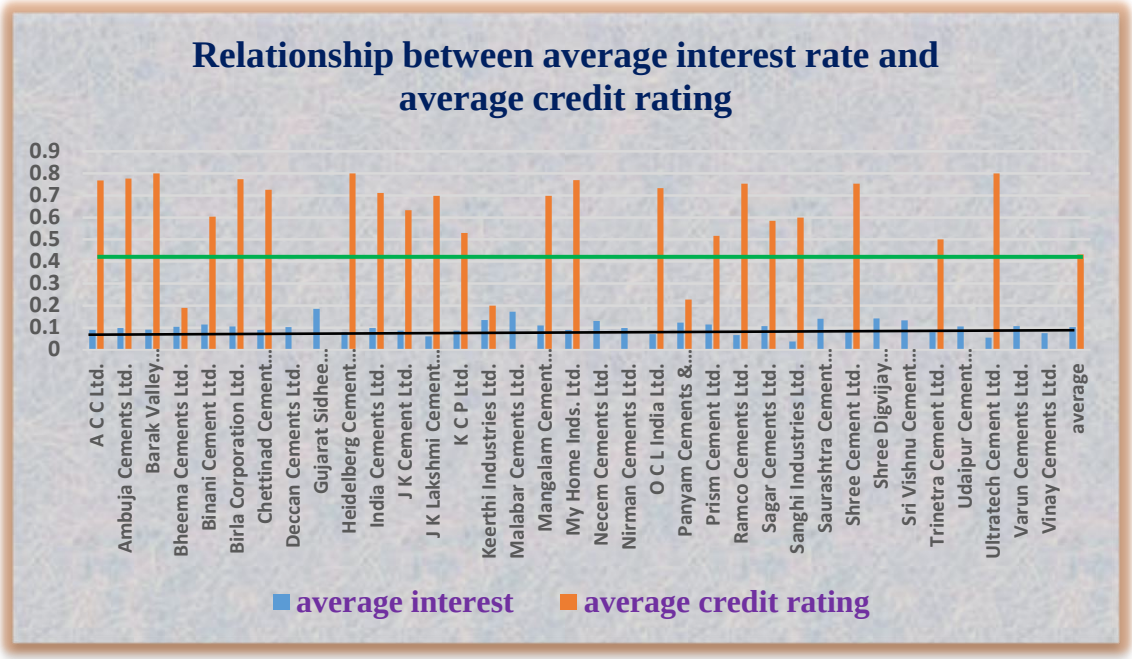

Figure 4.9: Relationship between average interest rate and average credit rating

In the above figure (figure 4.9), the names of the companies have been shown along the x-axis and the average interest rates and average credit ratings of the companies along the y-axis. As already mentioned earlier, the data relate to the 15-year study period. The graph reflects that the majority of the companies having a lower interest rate (lower than the average) have a higher credit rating (higher than the average) and companies having a higher interest rate (higher than the average) have a lower credit rating (lower than the average).

But, there still remains a question - how many companies are under or above the average interest rates corresponding to the higher or lower credit ratings. These have been shown in table no.4.10.

Table 4.10: Number of companies having lower/higher interest corresponding to different credit ratings

Number of Companies with					
Lower interest rate & higher rating	Higher interest rate & higher rating	Higher interest rate & lower rating	Lower interest rate & lower rating	Higher interest rate but non-rated	Lower interest rate but non-rated
16	5	3	0	9	2

Source: Own calculation

It is possible to show all of the above information through pie diagram (Figure 4.10) and it is as follows:

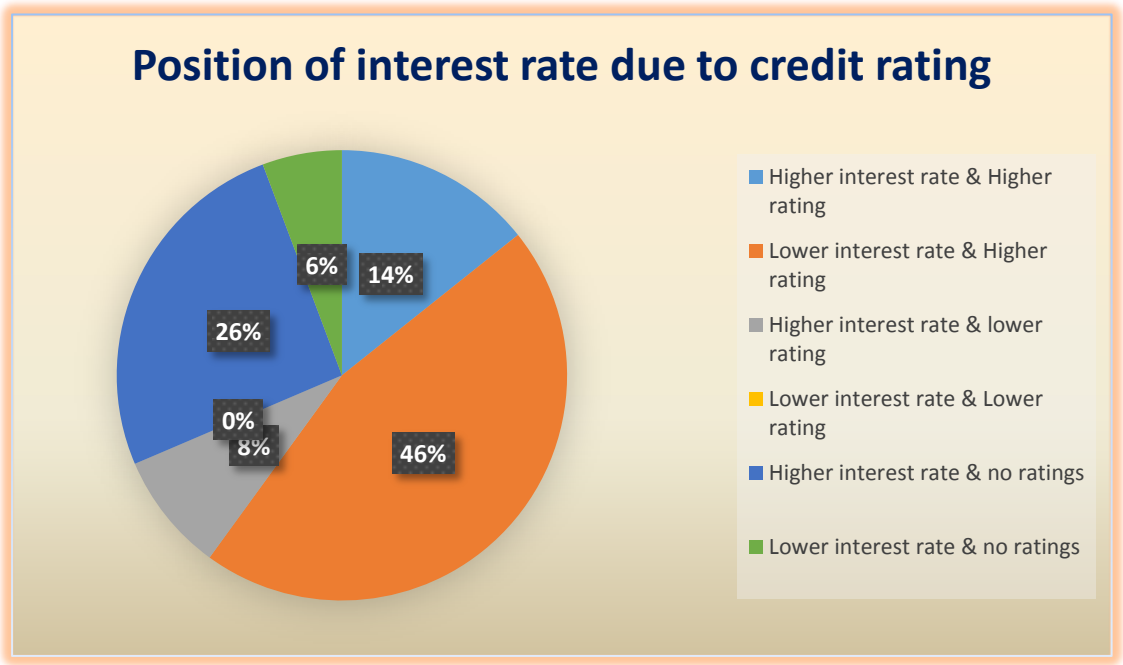

Figure 4.10: Position of interest rates due to different credit rating

In our research work we want to prove that interest rates and credit ratings are negatively correlated i.e. if rating is higher (higher than the average), the interest rate will be lower (lower than the average) and if rating is lower (lower than the average),

interest rate will be higher (higher than the average) and in case of non-rated companies also, interest rate will be higher. If the above statements are true, the companies would be considered as responding companies; else, a company would be treated as non-responding one. So,

Responding company = Companies having (lower interest rates & higher rating + higher interest rates & lower ratings + higher interest rates & no rating).

Non responding company = Companies having (higher interest rates & higher rating + lower interest rate & lower rating + lower interest rates & no rating).

In our research work, it may be calculated as (vide table no. 4.10):

Responding companies = 16 +3 + 9 = 28

Non responding companies = 5 + 0 + 2 = 7.

The above results can be expressed through a pie diagram (Figure 4.11) as follows:

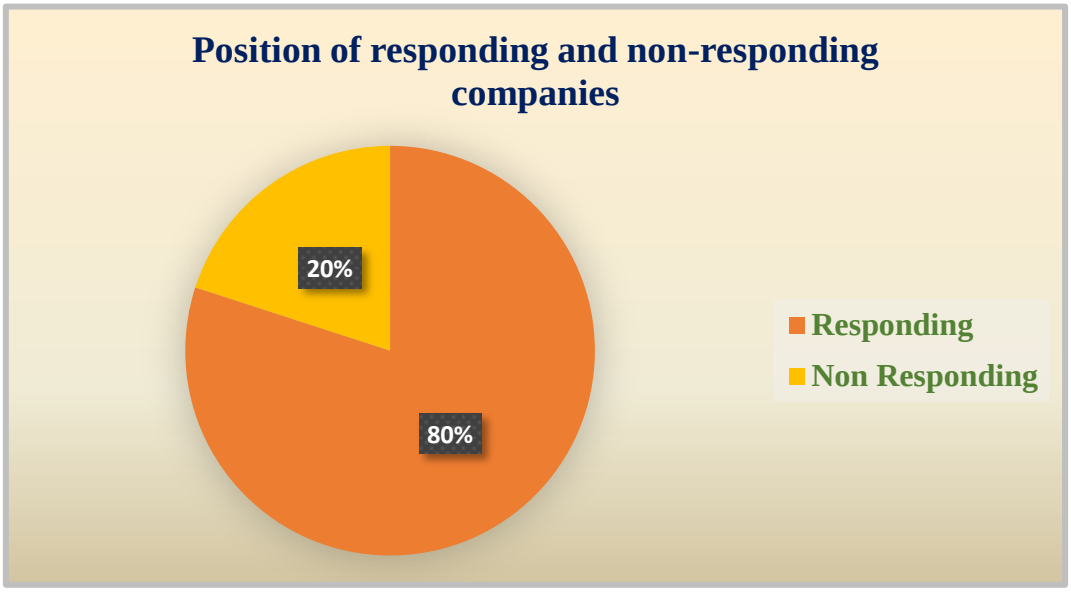

Figure 4.11: Position of responding and non-responding companies

If we want to draw the pattern of average interest rates throughout the fifteen years i.e. nine years before and six years after the year in which the ratings became mandatory, then it will be as follows (Figure 4.12).

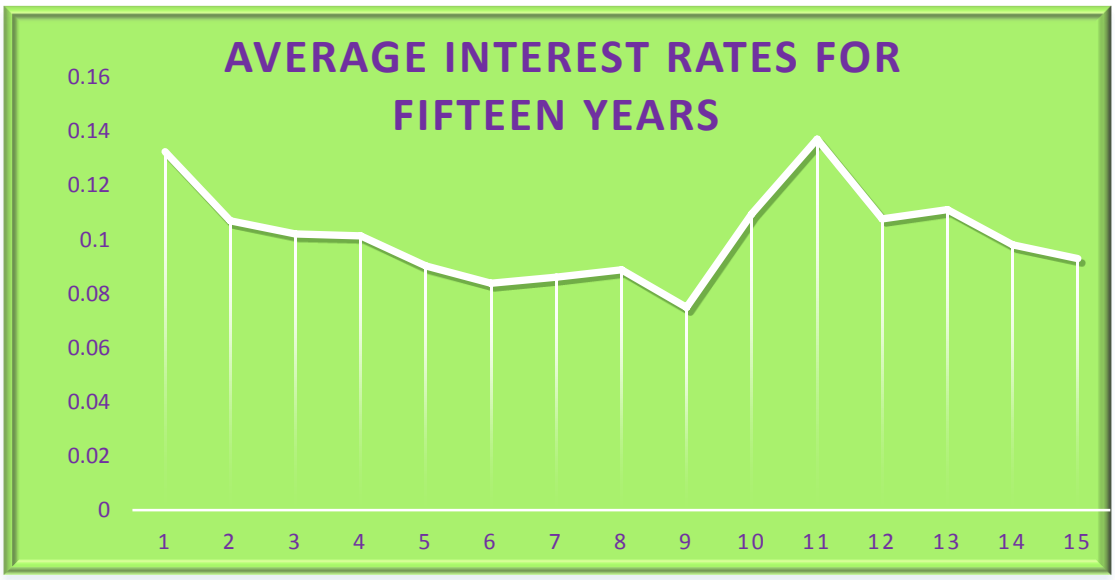

Figure 4.12: Average interest rates of selected companies for fifteen years

Actually, the relationship between risk and return is a concept which has been prevailing from the historical age. As credit rating is an important parameter of measuring risk, it plays a significant role in settling the interest rate. If credit rating is high, the risk will be lower and investors will be satisfied even with lower interest rates and if credit rating is not high, investors will demand for higher interest rate for their investments. As the above said risk and return theory is prevalent as an ultimate truth, the rules for making credit rating mandatory cannot put any extra light on the interest rates. But in the above diagram (measuring number of years along the x-axis and the interest rate along the y-axis) the lowest average interest rate (average interest rate for selected companies for that particular year) is evident in the ninth year (i.e. the year since when credit rating was made mandatory).

If we want to see the actual position of average interest rates in the holistic term in pre- and post-credit rating periods (shown in yellow and green colour respectively), we have to take the help of bar diagram as follows (Figure 4.13):

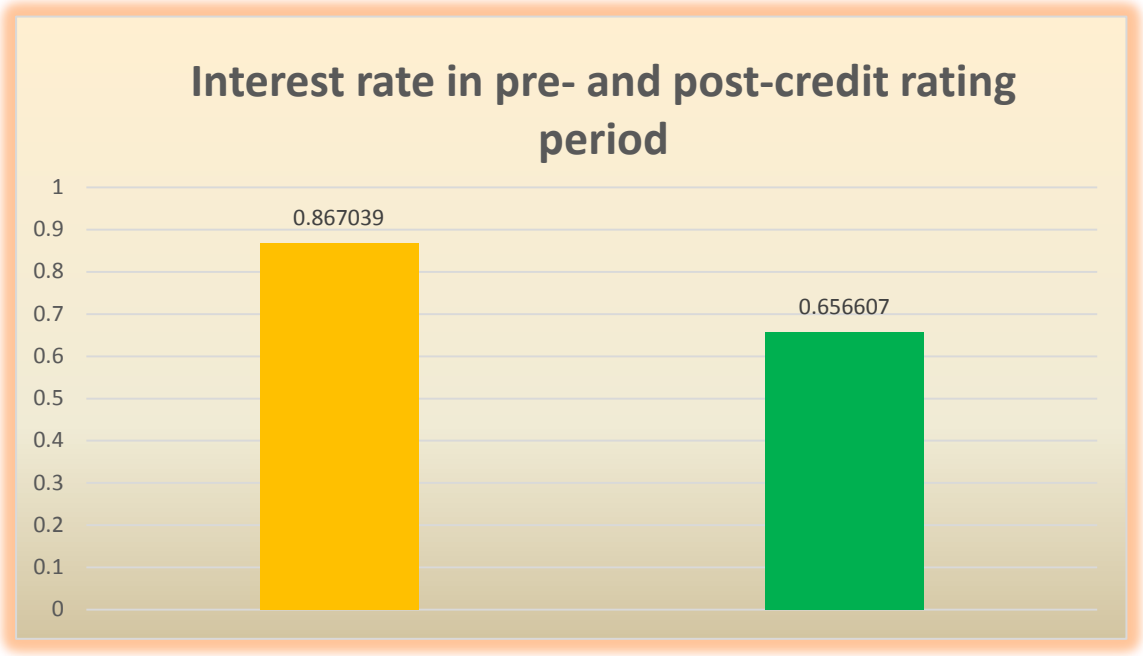

Figure 4.13: Accumulated average interest rates in pre- and post-credit rating period

In the above diagram it is shown that accumulated interest rate during the period after the year in which credit rating was made mandatory, is lower than the accumulated average rate of interest for the period before the credit rating was made mandatory. But the main problem here remains that in the first case (i.e. for the pre-credit rating period), average total interest rate has been computed over a total of nine years but in the second case (i.e. for post-credit rating period), a total period of six years has been taken. But from the diagram, one may be more satisfied with the fact that interest rate in post-credit rating periods have not increased than that of the pre-credit rating periods.

4.14 Conclusion:

From all of the above discussions it is clear that interest rates respond negatively with the credit rating i.e. if credit rating increases interest rate decreases and if credit rating decreases, interest rate increases. A correlation coefficient of - 0.224 is there between interest rates and credit ratings and evidently this is surely a low negative correlation coefficient between credit rating and interest rates. Actually, interest rate may depend upon a number of factors and most probably for that reason a low correlation coefficient between interest rate and credit rating has been found. Yet it cannot be denied that interest rate and credit rating are correlated with each other. With the help of a Random Effect Model it has been shown that credit rating and interest rates have a reverse association i.e. with the increment of credit rating the interest rates decrease and vice versa. In table 4.9 above, we have presented some information about the number of companies that are responding with or in other words, conforming to our hypothesis; there we have seen that 80% of the companies under study correspond to our hypothesis. We have also done paired t test, to see whether, as per our hypothesis, there exist any significant differences in interest rates in pre- and post-credit rating periods. As H_0 has been accepted in the test, we conclude that there is no significant difference between the interest rates of pre- and post-credit rating periods. Actually, the fact that credit rating reduces interest rates is an eternal matter and this may be the cause behind the result that there exists no significant change in interest rates in pre- and post-credit rating periods.

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Chapter 5

Impact of Credit Rating on Inflow of Corporate Investment

CONTENTS

5.1 Introduction:

Generally, a business enterprise uses two types of funds i.e. long term fund and short term fund. The long term fund means that is expected to be used through a long period. Long term fund generally includes share capital, retained earnings, and debenture (bond also). Long term funds are used to finance capital assets (fixed assets) and current assets which are required for smooth operation of the business. A business concern can raise funds (investment inflow) through different sources. These sources of funds can be broadly divided into two different classes, i.e. equity and debt. Funds provided by the owners are regarded as equity and funds provided by the lenders are regarded as debt. The equity funds consist of share capital (both equity and preference capital and retained earnings) and debt funds consist of long term and short term borrowings. Actually, debt financing is a strategy according to which money is borrowed from a lender or investor on a condition that the full amount (usually with an interest) will be repaid in future. A finance manager should determine the proportion of funds to be raised under each of these two categories (equity and debt) within the total capital. This proportion of equity and debt is popularly known as leverage. Both debt and equity financing have different advantages and disadvantages to a company. One company should always evaluate the particular situation and accordingly should determine the optimal capital structure of the company. “The optimal capital structure is the one that strikes a balance between risk and return and thereby maximizes the price of the stock and simultaneously minimizes the cost of capital" (Brigham and Houston, 2013).

Debt capital means the fund supplied by lenders. This debt capital is a part of the capital structure of a company. Debt capital generally includes long term debt. But if

any short term debt rolled over continuously then it can be relatively permanent and become a part of debt capital. So debt generally refers to money owed by one party (i.e. borrower) to a second party (i.e. lender). Debt is generally nothing but a contract of the timely repayment of principal and interest (http://www.investopedia.com). The dues of debt holders get preference than equity shareholders and preference shareholders. Even at the time of liquidation the dues of debt holders are to be paid first. The term 'debt' is not always based on economic value. The term 'debt' can be used to cover moral interaction and moral obligations. David Graeber (Graeber, 2011) argued that trade started with some sort of credit, namely, the promise to pay later for already handed over goods; therefore, credit and debt existed even before coins.

Actually, the word 'debt' has come from the French word 'dette' and ultimately from the Latin word 'debere' (i.e. to owe) and also from 'de habere' (to have). (http://dictionary.reference.com and http://www.merriam-webster.com)

5.2 Why debt financing:

If any company wants to construct their capital structure, it may use debt financing. Because of debt financing the financing cost of a company may be lower. The risk associated with the debt financing is also less than that with equity financing. So, according to the theory of risk-return trade off, the return expected by the debt holders is also lower. However, debt financing has got some advantages as follows:

a) Reduction of cost: Generally, the cost of debt financing is comparatively lower. So, if any company wants to make its average financing cost lower, it may introduce debt into the capital structure. In case of debt, companies are liable to pay the periodic interest only and the principal amount at the time of maturity. Debt holders always bear lower risk than equity holders. At the time of liquidation of a company, debt

holders always get preference to place their claim to the assets of the company to equity holders and in this way it gives an extra protection to debt holders. So, it is natural that a safer instrument should always bear lower compensation cost.

b) Retention of profit: Debt holders want to get only the amount of interest out of the profits of a company. But if any company earns more, which is quite natural in running a business, it has to share the additional earning only with equity holders because they are the owners of the company. So, debt financing helps a company to retain a greater share of profit within the company than equity financing. Any company which has a stable business and which can make the payment of interest easily can take the advantage of debt financing. Because, by making the payment of interest easy, they can retain the residual profit for themselves; but this is not possible in case of equity financing.

c) Financial leverage: By debt financing, existing owners can enjoy the advantages of the effect of financial leverage. Debt financing is cheaper than equity financing. So, if any company uses debt financing as a source of additional capital for their business, equity holders may take the residual profit (if there exists any) after making the interest payment to debt holders. Because of this additional profit-opportunity available from debt financing, equity holders can have a higher return with the same amount of equity investment. As their return grow higher, equity holders too always welcome debt financing.

d) Tax Savings: Interest is a tax deductible expense. So, debt financing helps a company to make its tax burden lower. According to tax rules, interest payment is an allowable expense. So, because of interest expenses the taxable income of a company becomes lower and as a result the tax burden of a company also becomes lower.

Dividend is not a tax deductible expense. So, in this way debt financing helps a company more than equity financing.

5.3 Why debt financing is not:

In the world there exist some arguments against considering debt as an instrument. Even today Islam prohibits lending with interest. “Excessive debt has been blamed for creating economic problems” (Kiplinger, 2007). For example, before the Great Depression in the world, the debt to GDP ratio was very high. This excessive debt created excessive expectations on future returns, and this had made asset bubbles on the stock markets. In the corporate sector, debt financing has some other disadvantages also. The main disadvantage of debt financing is that in case of a small and young company, it may have some shortage of cash. So, in the case of this type of business, it is quite difficult to make the final payment of principal amount and the payment of the interest amount regularly. Most of the lenders are generally provided with different penalties for late payments. These penalties may include charging of late fees, taking possession of collateral or calling of the loan at the earliest, etc. If any loan cannot be paid timely, it may have an adverse effect on credit rating and it will not be possible to obtain a loan in future without any disruption. Generally, lenders primarily want some securities for their funds. So it may be too difficult for a new business or a small business to obtain a loan. As the scope for debt financing is limited to small business, they generally find some other source of finance.

5.4 Why equity financing:

Any new business can avail equity financing quite easily than debt financing. As equity holders are the owners of a company, there is no obligation at all to repayment of money. Being the owners of the company, equity holders generally opted for the

growth of the business. So, for application of a good idea they are often willing to accept many risk or changes. Sometimes equity holders also provide some good suggestions to the company.

5.5 Why equity financing is not:

The promoter of a company must have some idea to control the business and investors also may have some idea to control the business. But, if the investor's idea about the company's strategic direction or day by day operations does not match with the idea of entrepreneur, it may pose problems for the entrepreneur. Some sales on equity as Initial Public Offerings (IPO), may be very complex in nature and may be highly expensive to the administrator. Equity financing is a complicated process. It may require complicated legal filings and a great deal of paperwork for the fulfilment of different regulations. Help of attorney and accountants are also needed for equity financing.

5.6 Mezzanine finance:

This type of financing is a mixture of debt and equity financing. In this system the lender is entitled to ownership or equity interest in the company. This type of financing needs a very little paper work, or no paper work may be required at all. Generally, companies use it to finance their expansion costs. The rate of interest of this type of financing is much higher than traditional financing. Normally it is short term financing. This sort of bankrolling is not just constrained to companies which are looking to develop, procure another company or on the threshold of an Initial Public Offering (IPO). This type of financing is an alternative way of funding and so it must be considered carefully.

5.6.1 Why Mezzanine financing: Most banks and financial institutions lend money to the company on the basis of cash flow of the company. But, sometimes because of their insufficient cash flow it is not possible for the companies to make repayment of their traditional loans. So, it is not possible for the companies to obtain debt financing. At past, many companies looked for equity investors as an alternative option. But equity is very expensive source of capital. Owners of this form of financing acquire the amount conferring to their necessity while giving up slight or no possession of the company, given that they are capable to pay their debt in timely manner and in full. This type of financing is to be shown as equity in company's balance sheet.

5.6.2 Why Mezzanine finance is not: There exist different limitations of mezzanine financing. Like traditional loan this type of financing does not require any time for verification and this type of financing is not collateralised. So, investors may think that this type of financing may involve greater risk than traditional loan. Because of this risk, mezzanine finance is not available at most of the standard institution. Generally, mezzanine finance is found through lending institutions which are unconventional in nature and expecting a return of 20%. According to the risk return trade off, as the risk involved in this type of finance is higher, the rate of interest of this type of finance is also higher than that of traditional debt financing. This type of financing may also be structured with warrants and options. Companies which have a good track record in the industry and have a good reputation may want to have this type of finance. Additionally, the borrowing companies must have history of profitability so that lenders can get a minimum assurance to get the return that they are looking for. A detailed description of how the capital will be used to generate more profit as well as more income for the company and to repay lenders should be shown.

5.7 Hybrid Financing:

There exist so many advantages and disadvantages of equity and debt financing. It is too tough to say which one is better. So, it is better to have a combination of debt and equity financing. But, it is quite difficult to determine the proper combination of equity and debt financing. There exist different theories in finance according to which the optimal capital structure can be determined. But, among all theories the common and most popular theory has been given by Modigliani-Miller. In that particular theory, in a perfect market, without taxes, the value of a firm is independent of leverage i.e., the value of a levered firm (with debt finance) does not change if it is run without debt finance. It is immaterial whether the firm is financed completely by debt or equity or a hybrid. But, this theory was too theoretical and was also criticised too much.

5.8 Why borrowings:

Though mainly there exist two sources of finance, still in this research work efforts have been made to analyse the matter of debt financing i.e. financing with debentures, bonds, term loans, and any other types of borrowings (mainly long term and also short term borrowings). Because, in this research work the impact of credit rating on investment inflow is needed to be judged; and, as equity holders are owners of the company they do not rely on the opinion of credit rating agency. They mainly want to judge the risk return trade off and their risk is completely different from the risk of debt holders. Finally, according to the Random walk theory, any equity investment moves on its own way. Debt is a strategy of collecting borrowed funds, and in Indian context total borrowings can be divided into two types - long term borrowings and short term borrowings.

5.8.1 Long term borrowings: Long term borrowings mean such types of borrowings the maturity of which will be at least after one year. In accordance with the revised Schedule VI (effective from the financial year 2011-12) of the Companies Act, 1956, Long term borrowings can be subdivided as follows:

i) Debentures and Bonds,

ii) Term Loans,

iii) Deferred Payment Liabilities,

iv) Deposits,

v) Loans and Advances from Related Parties,

vi) Long Term Maturities of Finance Lease Obligation, and

vii) Other Loans and Advances.

A brief discussion on each of the above subdivided forms of long-term loans follows:

5.8.1.1 Debentures and Bonds: A Debenture / Bond is nothing but an agreement on a piece of paper stating therein the amount borrowed, the term of repayment, and the rate of interest. They are issued in different denominations ranging from Rs.100 to Rs.1000. The terms and conditions of issue of debentures/bonds are stated in a document called the debenture trust deed. These debentures are normally secured against assets of the company. Today, debentures are more attractive to investors than preference shares. Because, unlike preference dividend, interest on debentures/bonds must be paid always – as a charge against revenues. In the case of payment of interest, it does not matter whether there exists any profit or not. Any deviation from or default

in making payment of interest on such bonds or debentures, which are due to be paid, may cause the debenture holders to take legal action, even to put the company into liquidation. Today this debenture/ bond financing is a tremendously popular way of financing because through this type of financing funds can be raised without diluting any controlling interest. Debenture financing is cheaper than equity and preference capital forms of financing. Because debenture holders generally have lesser risk than both preference and equity shareholders, based on the risk return trade off, debentures naturally attach lesser return than preference and equity shareholders. Debenture interest is a tax deductible expense. In an era of rising prices, the company gains in terms of real purchasing power. If any company earns at a rate which is higher than the interest rate, the company gains to the extent of the difference. The main disadvantage of debenture/bond is that in the case of non-payment of interest and principal amount the company can be put into liquidation and thus it creates a pressure to the liquidity position of the company.

5.8.1.2 Term loans: Term loan may be defined as a loan from a bank for a specific amount which has a particular repayment schedule and a floating rate of interest. The tenure of a term loan usually lies between one to ten years but in some exceptional cases, it can be extended to thirty years even. Generally, a term loan does not involve any fixed rate of interest. Thus the unfixed rate of interest is added to the additional balance outstanding for repayment. For example, different banks may have term loan programmes which can be an offer to businesses for the cash they need for their time to time operation. Term loans are generally given on an individual basis. As the term loan is given for a longer period of time it is very attractive for new businesses as they expect that they will earn more profit over time. Term loans are a very good way to increase the capital quickly. At the time of taking a term loan, it is necessary to

consider which type of interest rate (may be fixed or floating) is attached to it. A fixed interest rate is such an interest rate which will never increase. At the time of low-interest rate period, it is better to go for the term loan. Floating rate of interest is such a rate which is attached with some international benchmark rate like LIBOR. Whether the loan is taken at compound interest is a considerable factor. If the loan is at compound interest, the amount of interest will be periodically added with the principal amount. So, in that case, the real interest income will be higher if the loan lasts for a long time. It is important to see whether there exist any penalties for the early repayment of the loan. If the terms of loan support are decent and if anyone has sufficient profit to repayment of the loan, it is better to pay off the entire loan before the due date. Because payment of loan before due date can prevent anyone from paying the additional interest by waiting for termination of the term of the loan. Different financial institutions may provide different types of repayment plans for the term loan. Generally, one may pay the loan in even amounts or the amount may increase gradually over the loan period. If anyone has the confidence that he will be more financially sound for repayment in future, may wait for making payment in future because it may help him to save interest. If anyone is not sure about his financial position, it will be better for him to choose even payments. Because even payments may help him to prevent defaulting of the loan if bad situations arise in future. So, the selection of the way of financing through term loan may be in the best interest of a borrower. But, one must be aware of the extremely long repayment period. If the term is lengthy enough, one will have to pay more, because the amount of interest accrues over the long period of time.

Bankers generally classify term loans into two categories as intermediate term loans and long term loans. Usually, intermediate term loans are continued for less than three

years and these loans are repaid in monthly instalments (sometimes with balloon payments). This type of loan is repaid on a monthly or quarterly basis from the profits or cash flow of a business. Long term loans are collateralised by an asset of a business and sometimes its repayment is tied with the useful life of the particular asset. Long term loans are commonly set for more than three years (most are between three and ten years) and for very few cases it may be run for twenty years also.

Term loans are very appropriate for a business which is properly established and financially sound. Because, an established business can make substantial down payments which may minimise monthly payments of the loan and the total cost of loan also. The process of the term loan is comparatively rigorous and also it needs collateral but can help to reduce the risk by minimisation of costs.

5.8.1.3 Deferred Payment Liabilities: The actual meaning of the term 'deferred payment' is prepayment. A deferred payment situation arises when goods and services are delivered to the customers before their payment for those goods and services. The term 'deferred payment' may be defined as a loan arrangement in which the borrower is allowed to start payment at some specified time in future. A "fly now, pay later" plan situation and the "0% financing" plan are used as incentives to buy vehicles are perfect examples of deferred payment. This particular type of deferred payment arrangements are generally used in retail settings where a person buys and uses an item but starts to make the payment at a future date. So, in this arrangement, debt does not have to be repaid until some specified time in the future. A debt may be created only when one person takes loan or purchases goods or services and the payment for that particular loan or good or services can be deferred for a certain period of time, depending upon the arrangements. There exist different arrangements

of this type of payments as sometimes it needs to be paid in full on a certain date, and sometime it may be paid in different smaller amounts until the payment of the full amount. Depending upon the arrangement, interest may be charged. Sometimes it (interest) may be added with the amount due immediately or it may be paid after a certain period of time or no interest may be added at all. This deferred payment plan is one of the common sales and marketing tools which is used by companies. Actually, according to this plan the customers can buy now and pay later. A deferred payment plan is useful when it is quite impossible for the customers to pay at the time of purchase but he may have a confidence that he will be able to make the payment in full in future. There exist some companies which offer these plans only to preferred customers, but some companies offer them to everyone. Any company which gives this type of facility to customers, normally require some qualification process. For example, a customer may have an old and steady relationship with the seller and may have an excellent history of making payments. But if any new customer wants to achieve this facility, he has to pass credit checks and other evaluation to ensure that he has passed all necessary requirements for obtaining these facilities. In the case of deferred payment plan, no interest is required to be paid if the payment is made within the due period. But, if the buyer fails to make the payment on the due date the seller may charge interest to the outstanding balance. In a common deferred payment plan, the customer does not need to make any payment and no interest will be charged even for the first six months after the purchase. After that, the customer may pay in full or start to make smaller payments. If the customer accepts the second alternative (i.e. if starts to make the smaller payments for each month), interest will be added with the outstanding amount until the full payment of debt. From the point of view of the seller, deferred payments may be described as accrued revenues and recorded as an

asset in the Balance Sheet. But from the point of view of a buyer, deferred payment may be described as accrued expenses and recorded as a liability in the Balance Sheet. Accrued expenses are first entered in the journal as a liability and when paid the liability account is debited (reduced) and an asset account (such as cash), is credited (decreased).

5.8.1.4 Deposit: The term deposit may be defined as a credit for the party who placed it. Sometimes it is used by the banks where deposits are considered as the main source of their funds. For the purpose of the growth and expansion, any type of business always requires money. They deposit the money to earn interest. There exist different types of deposits as follows:

a) Transactional account: In this system, the depositor has the full right to use the money at any time.

b) Term deposit: It is a system which attaches a fixed time and fixed interest rate.

c) Fixed deposit (within India).

The abovementioned deposits can be of different types. For example, term deposit may be of two types - long term deposit and short term deposit. Customers generally choose long term deposit of one or more than one year because they want to have a better interest rate. In the case of long term deposit bank has an opportunity to hold the money for a long time and for this reason bank generally pays a better interest rate for long term deposit. If any customer does not need the money presently, he may make the deposit for a long period to have a better yield. Deposits are considered as the main source of funding for a bank. They lend out the deposits to customers in different ways - in the form of mortgages, line of credit, or with another type of loans.

Banking regulation has given a limit up to which a bank can obtain a loan in exchange for deposits. There exist some disadvantages of long term deposits also. Customers are given penalties if they withdraw money from deposits before the due term, and so, it gives lesser flexibility to customers.

If there exist inflation risk and the interest rates are low, long term deposits may not be paid with sufficient interest to make them worthy. In such a situation, customers may accept an extra risk in exchange of better yield with assets such as long term Treasury Bonds or dividend paying stocks.

A time deposit (also known as certificate of deposit in the USA, term deposit in Canada, Australia and New Zealand, bond in U.K and fixed deposits in India and some other Asian countries) is a money deposit at a banking institution that cannot be withdrawn for a certain term or for a certain period of time. When the term is over it can be withdrawn or reinvested into another. Generally, the longer the term, the better the return on the money in term deposits. But, sometimes certificate of deposits are differentiated from that of time deposits in terms of negotiability. Certificate of Deposits can be rediscounted at the time of requirement of money but it is not possible for time deposits until maturity. Some banks offer market linked time deposits which offer comparatively higher returns with a higher risk.

5.8.1.5 Loan and Advances from related parties: Before going to write anything about related parties, it is better to understand the actual meaning of the term 'related' party. According to the IAS 24.9 (http://www.ifrs.org/Documents/IAS24.pdf), “a related party is a person or entity that is related to the entity that is preparing its financial statements”.

According to IAS 24.9 the following points are important for consideration:

a) A person or a close member of that person's family is related to a reporting entity if that person:

   i) has control or joint control over the reporting entity;

   ii) has significant influence over the reporting entity; or

   iii) is a member of the key management personnel of the reporting entity or of a parent of the reporting entity.

b) An entity is related to the reporting entity if any of the following conditions applies:

i) The entity and the reporting entity are members of the same group (i.e. each parent, subsidiary and fellow subsidiary is related to the others).

ii) One entity is an associate or joint venture of the other entity (or an associate or joint venture of a member of a group of which the other entity is a member).

iii) Both entities are joint ventures of the same third party.

iv) One entity is a joint venture of a third entity and the other entity is an associate of the third entity.

v) The entity is a post-employment defined benefit plan for the employees of either the reporting entity or an entity related to the reporting entity. If the reporting entity is itself such a plan, the sponsoring employers are also related to the reporting entity.

vi) The entity is controlled or jointly controlled by a person identified in (a).

vii) A person identified in (a)(i) has significant influence over the entity or is a member of the Key management personnel of the entity.

viii) The entity, or any member of a group of which it is a part, provides key management personnel services to the reporting entity or to the parent of the reporting entity.

But, the following are deemed not to be related (IAS 24.11):

- Two entities simply because they have a director or key manager in common.
- Two venturers who share joint control over a joint venture.
- Providers of finance, trade unions, public utilities, and departments and agencies of a government that do not control, jointly control or significantly influence the reporting entity, simply by virtue of their normal dealings with an entity (even though they may affect the freedom of action of an entity or participate in its decision-making process).
- A single customer, supplier, franchiser, distributor, or general agent with whom an entity transacts a significant volume of business merely by virtue of the resulting economic dependence.

Indian Companies Act 2013 has defined the term ‘related party’ as:

- A director or his relative;
- a KNP (Key Managerial Personnel) or his relative;
- a firm, in which a director, manager or his relative is a partner;
- a private company in which a director or manager is a member or director;

- a public company in which a director or manager is a director and holds along with his relatives, more than 2% of its paid-up share capital;
- a body corporate whose board, managing director or manager is accustomed to act in accordance with the advice, directions or instructions of a director or manager, except if advice/ directions/ instructions are given in the professional capacity;
- any person on whose advice, directions or instructions a director or manager is accustomed to act, except if advice/ directions/ instructions are given in the professional capacity;
- any company which is a holding, subsidiary or an associate company of such company or a subsidiary of a holding company to which it is also a subsidiary and any other person as may be prescribed.

Any long term borrowing or lending from related parties may be on interest free basis. The long term borrowing or lending from related parties may also be at a rate of interest which is significantly above market rates prevailing at the time of the transaction. This type of lending includes two types of loan as the normal loan that have a scheduled time and repayment procedure and any loan which do not contain any scheduled time and repayment procedure.

5.8.1.6 Long term maturities of finance lease obligation: A financial lease/ capital lease may be defined as a commercial arrangement where the lessor (finance company) purchases an asset (as equipment, vehicle, software etc.) in accordance with the selection of the customer or borrower and ultimately the lessee uses that asset during the term of the lease. For the use of that particular asset, the lessee has to pay a series of rentals or instalments for the use of that asset. The lessor can recover a large

portion or all of the cost of the asset plus earn interest in the form of the rentals paid by the lessee. The lessee has the option to acquire ownership of the asset. So, during the duration of the lease, the finance company is the legal owner of the asset but the lessee may possess control over the asset with respect to benefits and risk of the ownership. Through the system of a financial lease, the risk and return associated with the ownership of the asset is transformed from the lessor to lessee but the actual ownership does not get transferred. So, in the case of financial lease only the notional ownership is passed to the lessee. The amount of interest paid is shown on the debit side of the profit and loss account. At the termination or conclusion of the lease, the lessee has been given the option to purchase the asset. The cost of this buyout is determined by the lessee and lessor at the time of entering into the lease agreement. A financial lease is quite shorter than capital lease but in most of the cases it is extended. The financial lease has some features as:

a) It is not cancellable;

b) The lessor may or may not bear the cost of insurance, repair and maintenance etc. Generally, the lessee bears all of those costs.

c) At the end of the lease term, the lessor may transfer the ownership of the asset to the lessee. A lessee has an option to purchase the asset at a price which is determined at the time of lease agreement. Generally, its value is lower than the value at the end of the lease period.

Like a bond or loan, the expenses of the financial lease are allocated between principal value and interest. So, a part of lease payments is recorded as operating cash flow and a part of it is recorded as financial cash flow in the cash flow statement of the company. The term of the loan is longer and more flexible than many bank loans

(i.e. it may be for 3 to 5 years). Nevertheless, this financial lease has different advantages as follows:

i) Asset and capital equipment can be paid out from the revenue they earn.

ii) The interest rate attached to the financial lease may be better than bank funding rates because of the security provided by the asset.

iii) Generally, Lessor cannot cancel this type of lease and thus it provides certainty to businesses.

iv) Asset finance offers real value to the business with limited capital.

v) It is highly accessible, as it is secured (largely or entirely) by the asset which has been financed.

vi) By this type of leasing companies may get benefit from tax advantages.

vii) In a recession, leasing can help a business when most businesses have low taxable profit.

5.8.1.7 Other loans and advances*:* There exist some other ways for financing and those may be of long or short term. It also includes any type of loan or advances which are taken from friends or from any financial institutions. It is better to say that any types of borrowings which do not come under the preview of any types of borrowings described above, may be taken in the head of other loan advances.

5.8.2 Short term borrowings*:* The term 'short term borrowings' may be defined as any borrowings, the maturity period of which will come before completion of one

year. In accordance with revised Schedule VI (effective from the financial year 2011-12) of the Companies Act, 1956, short term borrowings can be subdivided as follows:

i) Loans repayable on demand (from banks and from others);

ii) Loans and advances from related parties;

iii) Deposits; and

iv) Other loans and advances.

Short-term borrowings are designed to meet the needs of short-term financing. These types of borrowings can be used as a versatile financial tool for better management of cash flow. It deals with unexpected needs for extra cash and also takes the advantage of new business opportunities. All subdivisions of short term borrowings are discussed below:

5.8.2.1 Loans repayable on demand (from banks and from others): Short term loan which is repayable on demand generally includes two elements - demand deposits and call money. The money, which is lent for one day in the financial market is known as "call money" and if it exceeds one day, is referred to as "notice money". Call money is short-term finance which is repayable on demand. These types of financing are generally used for inter-bank transactions. With the use of the method of call money, banks lend to each other to sustain the cash reserve ratio. The interest rate paid on call money is known as the call rate. It varies from day to day and sometimes even from hour to hour. A rise in call money rates makes other sources of finance. Thus, commercial paper and certificates of deposit become comparatively cheaper to raise funds from these sources.

The term 'Demand Deposit' means such types of funds that are held in an account and from which the deposited money can be withdrawn at any time. No prior intimation is required to be given to the depository institution for this type of withdrawal. It is called demand deposit because this deposit can be "demanded" by an account holder at any time. Savings accounts of today are a great example of demand deposits which can be accessible by the account holder through different types of banking options like teller, ATM, and online banking.

5.8.2.2 Loans and advances from related parties: The meaning of related party has been described in long term borrowing (vide para 5.8.1). But it is not proper that all loans must be of long term in nature. Any short term borrowings or lending from related parties may be on an interest-free basis or it may be at a rate of interest that exists above the market rates prevailing at the time of the transaction. These types of financing include two types of loan as the normal loan that have a scheduled time and repayment procedure and loans that do not include any specific term and procedure for the repayment.

5.8.2.3 Deposits: The term short term deposit may be defined as an amount of money which has been taken from any bank or financial institution for a term no longer than one year. This short term deposits generally have a fixed rate of interest and a maturity date. Short term deposits are popularly known as short term certificate of deposit. This type of deposits is appropriate for those types of investors who are ready to give up liquidity in exchange for higher interest rate than that are available from an ordinary savings accounts. They also provide a comparatively higher degree of safety and it fully depends on the credit quality of the issuing financial institution.

5.9 Depending factors of investment inflow:

It is true that risk plays an important role in the investment decision. Because, before making an investment one investor always considers the risk. Interestingly, though there are different risk reducing devices, credit rating plays a vital role. But, other than the risks, there exist some other factors also which control investment inflow (Equity/ Debt financing whatever may be) and these factors are as follows:

5.9.1 Interest rates*:* If the rate of interest increases, investors always want to have that particular debt. If debt financing increases, the project will be more risky. If the project is risky, equity shareholders will expect more, and the cost of equity will increase and the overall cost of capital will increase; and the value of business becomes lower. So one company can restrict the debt financing. If the supply of debts (debentures and bonds) is restricted, according to the theory of supply and demand, greater demand and restricted supply increase the cost (i.e. face value) of investment (debt). The increased cost of debt (bond) may demotivate investors to purchase that particular debt (bond). As a result, the ultimate flow of debt may be lower.

5.9.2 The rate of growth of demand*:* If consumer spending is higher, investment will increase. Higher expected sales always increase potential profits. In accordance with the price mechanism, these extra funds should be allocated towards capital goods into those markets where consumer demand is rising.

5.9.3 Income tax rate and Government policies*:* Amount of income tax mainly depends on the income level of the individual. If the Govt. reduces the rate of taxation then there will be a greater chance to invest the extra amount somewhere. Because of a lower rate of taxation, there will be an extra flow of income from debt.

5.9.4 Social costs and benefits: In the Govt. sector, a different set of criteria may be used for taking the decision of making investment. Generally, state and central Govt. use cost-benefit analysis before assessing the pattern of investment.

5.9.5 Past market trends: It is commonly said, "sometimes history repeats itself and sometimes markets learn from their mistakes". So, before making any investment a proper survey should be made to understand the market trends.

5.9.6 Investment horizon: How long one can keep the invested money is very important to make the decision of investments. Because, the longer time of investment can increase the expectations of investors to have a greater return.

5.9.7 Investible surplus: How much money one can keep aside for investment is very important. The investible surplus plays a role in selecting the area and pattern of investment. Investible surplus depends upon different factors as Govt. taxation policies and other Govt. policies.

5.9.8 Investment needs: How much money one should need at the time of maturity is very important for the decision making regarding an investment. The requirement varies from person to person. This helps investors to determine the amount of money needed to invest every month or every year to reach the expected amount.

5.9.9 Expected return: The anticipated rate of return is a significant issue to regulate where and how the investment is to be made. On the basis of their expectations, one investor can decide whether to make an investment into equities or debt or to make a balance of his portfolio.

Though there exist different factors for taking the decision about where to invest, it is true that it depends on the attitude of investors. Because there exist some people who

like to take the risk if there exists a high return. But some people are there who are known as risk avoiders and they always want to remain protected. So they always want to invest where the risks are low (even with a lower return, like Govt. bonds etc.). Still, the risk is an important factor for making the decision of investment and a portion of which can be explained through credit rating.

5.10 Data analysis and explanation:

5.10. Relationship between corporate investment inflow and credit rating: In this research work, in accordance with our first hypothesis "Corporate investment inflow (borrowings) will be higher / lower with corresponding higher / lower credit rating", we want to show that investment inflow and ratings have a positive relationship (correlation) i.e. if rating is higher, investment inflow (borrowings) is higher. Since, corporate investment inflow (borrowings) is affected by the credit rating significantly, it is necessary to check statistically whether the empirical results support the economic theory or not. For this purpose, corporate investment inflow (borrowing, in the present case, termed as 'B') has been considered as a dependent variable and credit rating (CR) has been considered as an independent variable. For getting the better results, raw data of two particular variables have been converted into logarithm series as log of investment inflow (borrowings i.e. LB) and log of credit rating (i.e. LCR) in our panel data methodology. For the purpose of analyses, *Eviews 7* software has been used. Before examining the relationship between borrowings and credit rating the raw data has been presented in Figure 5.1. Both LB (in blue line) and LCR (in red line) shows that both fluctuated year after year.

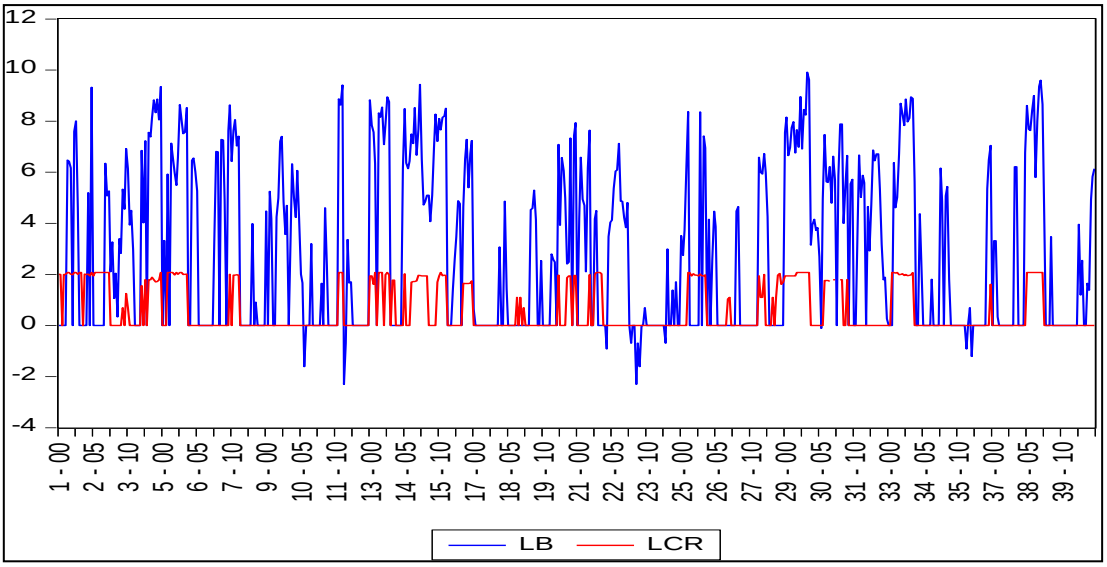

Figure 5.1: Raw data of borrowings and credit rating

To examine the relationship between LB and LCR, Pearson correlation technique has been used. The correlation test results are shown in table 5.1. The correlation statistics show than LB and LCR are moderately and positively associated, which is significant at 5% level.

Table 5.1: Calculation of correlation coefficient between log of investment inflow (borrowings) and log of credit rating

		LB	LCR
LB	Pearson correlation	1.000000	0.555831
LCR	Pearson correlation	0.555831	1.000000

Source: Own calculation

Basically correlation does not talk about the cause and effect of the relationship. It indicates only the strength and direction of the association. Therefore, to know the cause and effect, it is obligatory to apply the linear regression model based on panel data methodology.

Before going to the regression analysis, it is obligatory to check panel unit root test of borrowings and panel unit root test of credit ratings (see Table 5.2 and 5.3

respectively) through Levin, Lin & Chu t, Im, Pesaran and Shin W-stat, ADF-Fisher Chi-square and PP-Fisher Chi-square tests to decide whether panel data regression is applicable or not. The theory is that if more than 50% is stationary at level (i.e. the probability of test statistics is less than 50%), we can use panel data regression technique. The results illustrate that in case of borrowings, four-unit root tests are stationary at level because the probability is 0.00 and in case of credit ratings, four-unit root tests are stationary at level because the probabilities of each test are lower than 0.05. Therefore, panel data regression through Pooled OLS regression, Fixed Effect Model and Random Effect Model can be used for obtaining the cause and effect of relationship as well as testing of research hypothesis under study.

Table 5.2: Results of Panel unit root test of borrowings (at level)

Series: -LB				
Automatic selection of maximum lags				
Newey-West automatic bandwidth selection and Bartlett kernel				
Method	Statistic	Prob.**	Cross-sections	Observation
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-10.6832	0.0000	39	533
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-5.76841	0.0000	39	533
ADF-Fisher Chi-square	169.729	0.0000	39	533
PP-Fisher Chi-square	164.572	0.0000	39	546
** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.				

Source: Own calculation

Table 5.3: Results of panel unit root test of credit Rating (at level)

Series: LCR				
Automatic selection of maximum lags				
Newey-West automatic bandwidth selection and Bartlett kernel				
Method	Statistic	Prob.**	Cross sections	Observation
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-3.21534	0.0007	20	270
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-2.09368	0.0181	20	270
ADF-Fisher Chi-square	60.7863	0.0186	20	270
PP-Fisher Chi-square	108.795	0.0000	20	276
** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.				

Source: Own calculation

Panel data regression test results of Pooled OLS Model (Table 5.4), Fixed Effect Model (Table 5.5) and Random Effect Model (Table 5.6) have been shown in the following tables.

Table 5.4: Results of Pooled OLS Model

Dependent Variable:LB				
Method: Panel Least Squares				
Periods included: 15				
Cross-sections included: 40				
Total panel (unbalanced) observations: 597				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.748349	0.132755	13.16974	0.0000
LCR	2.045067	0.125389	16.30971	0.0000
R-squared	0.308949	Mean dependent var		2.931553
Adjusted R-squared	0.307787	S.D. dependent var		3.265077
S.E. of regression	2.716522	Akaike info criterion		4.839927
Sum squared resid	4390.799	Schwarz criterion		4.854640
Log likelihood	-1442.718	Hannan-Quinn criter.		4.845655
F-statistic	266.0068	Durbin-Watson stat		0.742008
Prob (F-statistic)	0.000000			

Source: Own calculation

Position of residual (in blue line), actual (in red line) and fitted (in green line) proportions have been shown in figure 5.2.

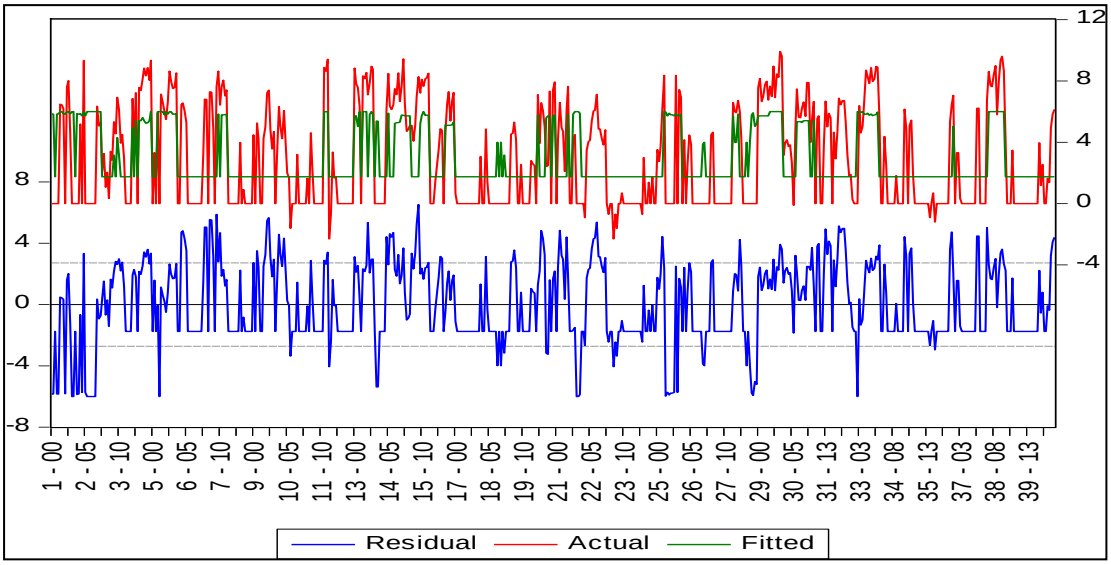

Figure 5.2: Position of residual, actual and fitted proportions

Position of only residual (in blue line) has been shown in figure 5.3.

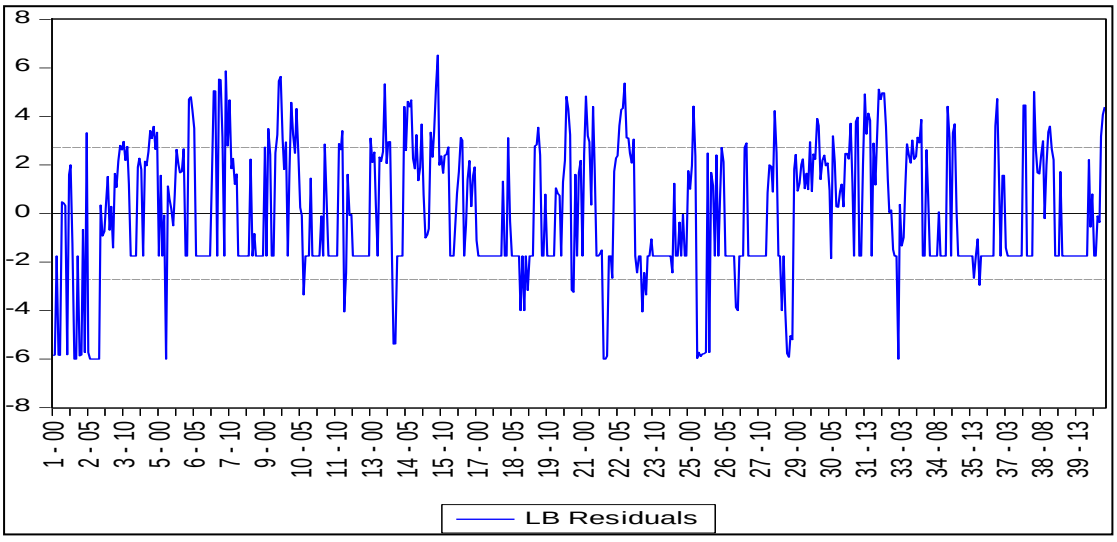

Figure 5.3: Position of residual only

Table 5.5: Results of Fixed Effect Model (FEM)

Dependent Variable: LB				
Method: Panel Least Squares				
Periods included: 15				
Cross-sections included: 40				
Total panel (unbalanced) observations: 597				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.861930	0.134079	13.88680	0.0000
LCR	1.848751	0.164912	11.21053	0.0000
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.536425	Mean dependent var		2.931553
Adjusted R-squared	0.503074	S.D. dependent var		3.265077
S.E. of regression	2.301649	Akaike info criterion		4.571333
Sum squared resid	2945.459	Schwarz criterion		4.872956
Log likelihood	-1323.543	Hannan-Quinn criter		4.688775
F-statistic	16.08437	Durbin-Watson stat		1.097688
Prob. (F-statistic)	0.000000			

Source: Own calculation

Position of residual (in blue line), actual (in red line) and fitted (in green line) proportions have been shown in figure 5.4.

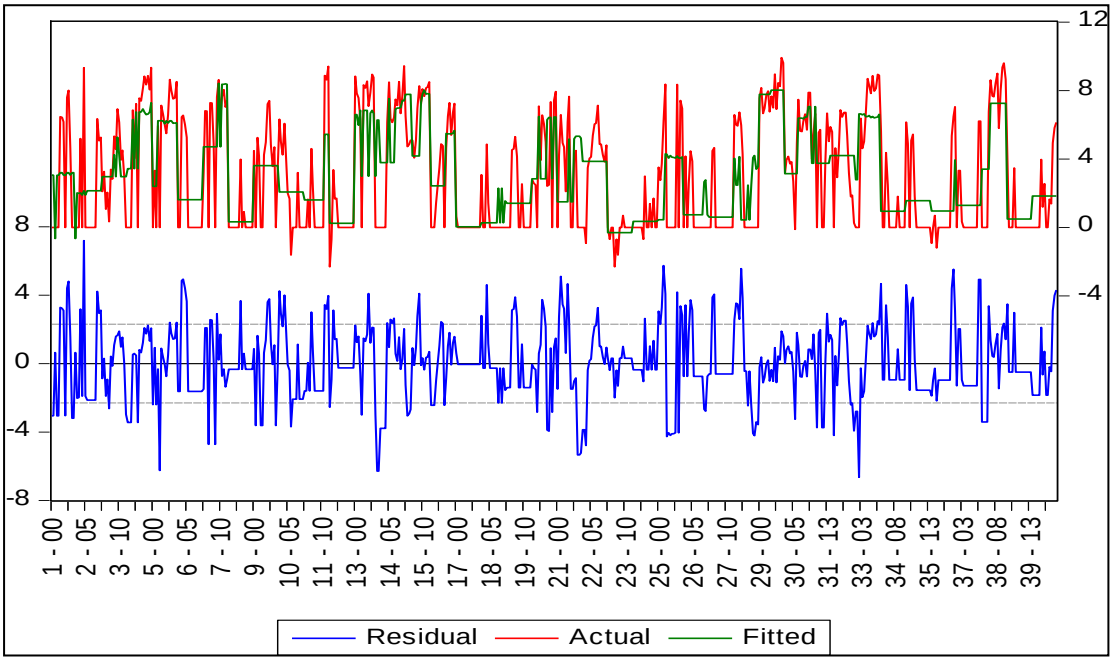

Figure 5.4: Position of residual, actual and fitted proportions (under FEM)

Position of only residual (in blue line) has been shown in figure 5.5.

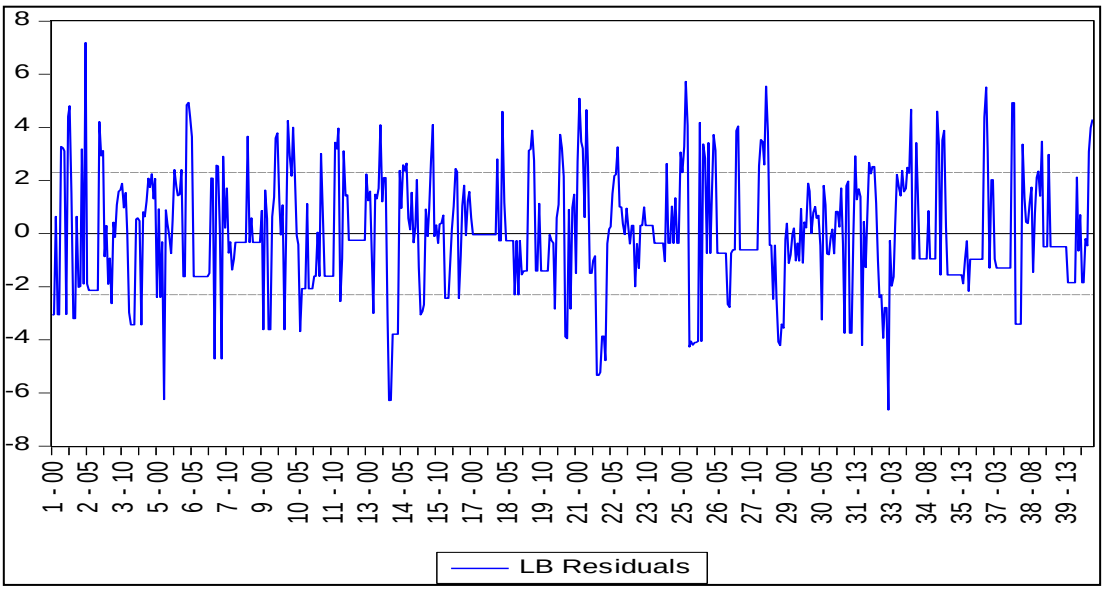

Figure 5.5: Position of residual only (under FEM)

Table 5.6: Results of Random Effect Model (REM)

Dependent Variable: LB				
Method: Panel EGLS (Cross-section random effects)				
Periods included: 15				
Cross-sections included: 40				
Total panel (unbalanced) observations: 597				
Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.837186	0.265998	6.906756	0.0000
LCR	1.903830	0.150716	12.63192	0.0000
	Effects Specification			
			S.D.	Rho
Cross-section random			1.473483	0.2907
Idiosyncratic random			2.301649	0.7093
	Weighted Statistics			
R-squared	0.211548	Mean dependent var		1.100026
Adjusted R-squared	0.210223	S.D. dependent var		2.589863
S.E. of regression	2.301087	Sum squared resid		3150.525
F-statistic	159.6434	Durbin-Watson stat		1.027992
Prob. (F-statistic)	0.000000			
	Un weighted Statistics			
R-squared	0.307470	Mean dependent var		2.931553
Sum squared resid	4400.192	Durbin-Watson stat		0.736040

Source: Own calculation

Position of residual (in blue line), actual (in red line) and fitted (in green line) has been shown in figure 5.6.

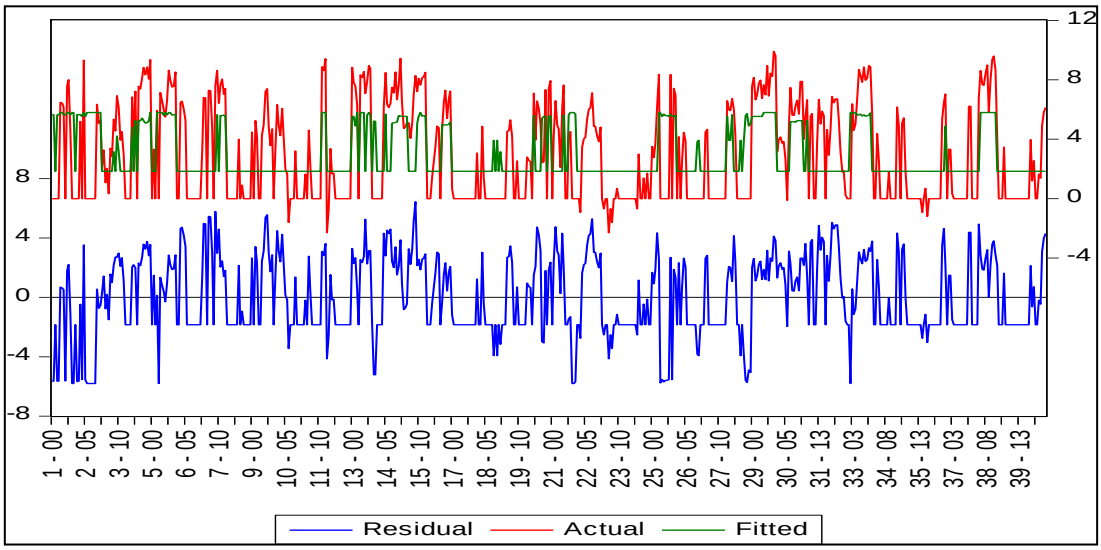

Figure 5.6: Position of residual, actual and fitted proportion (under REM)

Position of only residual (in blue line) has been shown in figure 5.7.

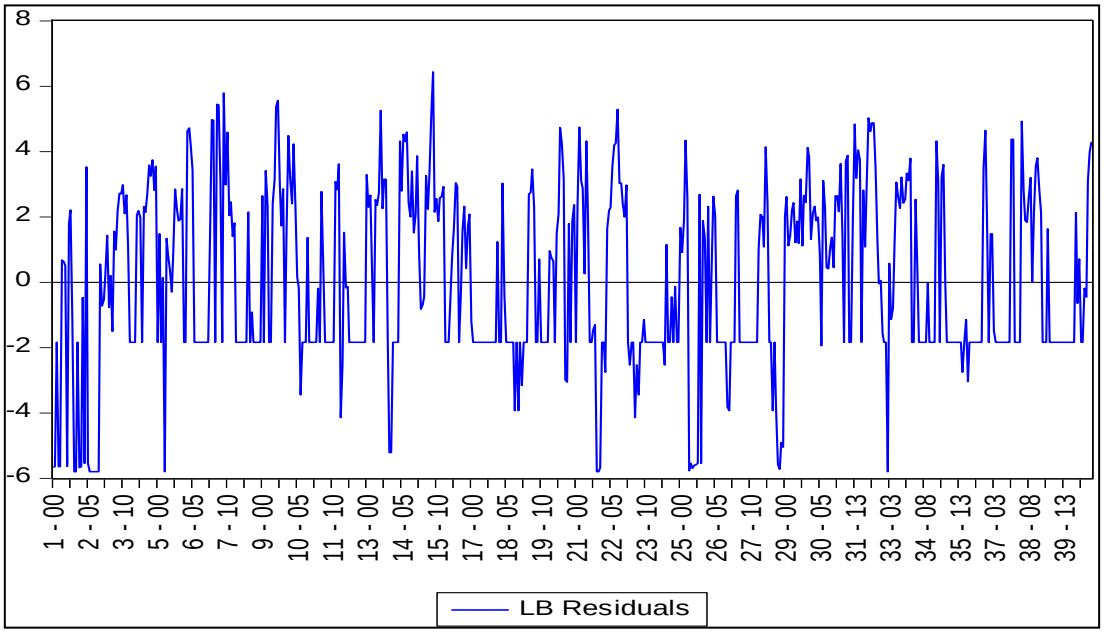

Figure 5.7: Position of residuals only (under REM)

To check whether fixed effect model or random effect model is appropriate or not, Hausman test (Table 5.7) is suitable. The following hypothesis is to be considered:

H_0: Random Effect model is appropriate

H_1: Fixed effect model is appropriate

Table 5.7: Result of Hausman Test

Correlated Random Effects - Hausman Test				
Equation: Untitled				
Test cross-section random effects				
Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		0.677059	1	0.4106
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
LCR	1.848751	1.903830	0.004481	0.4106

Source: Own calculation

The probability of Chi-square comes out as 41.06%, which is more than 5%. Therefore, null hypothesis is accepted. Random model is suitable for LCR to explain LB.

A graphical representation of forecasting effect has been shown in figure 5.8.

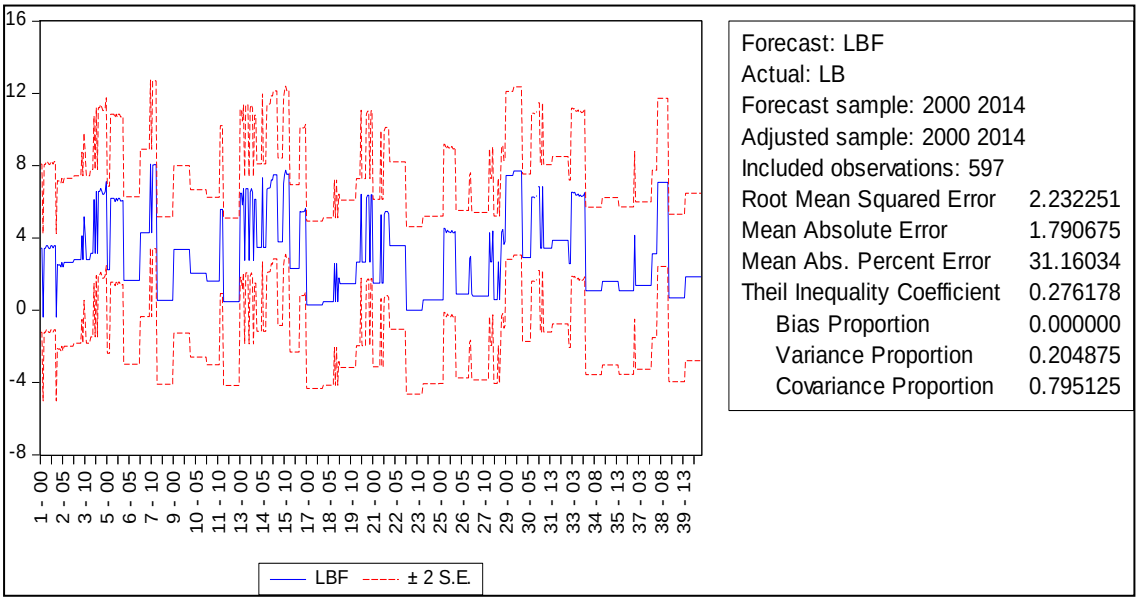

Figure 5.8: Position of forecasting effect

The Random Effect (Table 5.8) is again calculated to test the impact of LCR on LB.

Table 5.8: Result of Random Effect Model (REM)

Dependent Variable: LB				
Method: Panel EGLS (Cross-section random effects)				
Periods included: 15				
Cross-sections included: 40				
Total panel (unbalanced) observations: 597				
Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.837186	0.265998	6.906756	0.0000
LCR	1.903830	0.150716	12.63192	0.0000
	Effects Specification			
			S.D.	Rho
Cross-section random			1.473483	0.2907
Idiosyncratic random			2.301649	0.7093
	Weighted Statistics			
R-squared	0.211548	Mean dependent var		1.100026
Adjusted R-squared	0.210223	S.D. dependent var		2.589863
S.E. of regression	2.301087	Sum squared resid		3150.525
F-statistic	159.6434	Durbin-Watson stat		1.027992
Prob(F-statistic)	0.000000			
	Unweighted Statistics			
R-squared	0.307470	Mean dependent var		2.931553
Sum squared resid	4400.192	Durbin-Watson stat		0.736040

Source: Own calculation

It has been observed that when credit rating is changed by one unit, borrowings are changed positively by 1.9038 units, which is statistically significant at 1% and 5% level. R-squared (21.15%) is not very low, which indicates that the variation is not very low and the model is more or less appropriate. The probability of F-statistics (0.00) indicates that the positive effect is also true for population also. Durbin-Watson statistics (1.02) says that the residuals are independent and not auto correlated. There is a positive cross section effect observed from the model.

The final model is LB = 1.83718555085 + 1.90383034076*LCR+ [CX=R]

Finally, it has been observed that 'borrowings' is positively affected by credit rating, which is a multiple of 1.9038 units plus a cross section effect.

5.10.2 A comparison between borrowings of pre- credit rating period and post-credit rating period: In this research work, in accordance with our third hypothesis, "There is no significant difference between the investment inflow (borrowings) of pre-credit rating periods and post-credit rating periods" (i.e. Borrowings of pre-credit rating period = Borrowings of post-credit rating period). We want to compare the investments inflow between pre- and post-credit rating period. So, we need to test whether there exists any significant change in average investment inflow (borrowings) after the credit rating was made mandatory. For such comparison we have segregated average of investments inflow of companies (which have been taken as sample for our research purpose) in two groups. The first group is counted from 1999-2000 to 2007-2008 (i.e. for 9 years) and the second group is counted from 2008-2009 to 2009-2014 (i.e. for 6 years from the year in which credit rating was made mandatory for issuing debt instruments). For the purpose of calculating average investment inflow (borrowings) of selected companies we have taken total of investment inflow (borrowings) of selected companies for selected periods (i.e. 9 and 6 years respectively) and these total investment inflow have been divided by selected periods (i.e. 9 and 6 years respectively). For the purpose of our calculations these two groups of data have been considered as average investment inflow (i.e. borrowings) for pre- and post-credit rating period respectively (see appendix 8).

As, it has been desired to make a comparison between two periods (i.e. pre- and post-credit rating periods) we can apply paired t test with the following hypothesis —

$H_{0:}$ There is no significant difference between the borrowings of pre-credit rating periods and post-credit rating periods. (i.e. Borrowings of pre-credit rating periods = Borrowings of post-credit rating periods).

H_1: Borrowings of pre-credit rating period is significantly superior to borrowings of post-credit rating periods (i.e. Borrowings of pre-credit rating period < Borrowings of post-credit rating period).

Now by applying the paired t test (see Table 5.9 below) we have the following result.

Table 5.9: Result of Paired t Test

		Paired Differences					t	df	Sig. (1 tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	borrowings of pre-credit rating period – borrowings of post-credit rating period	911.628	1868.9535	295.50750	1509.3488	313.90817	3.085	39	.002

Source: Own calculation

The observed value of t is 3.085. The P-value of corresponding t-value is .002. Since the p(t) statistic is < 0.05, H_0 is rejected; it indicates that investment inflow (borrowings) in Post-credit rating period is significantly higher than that in Pre-credit rating period at 5% level of significance ($\alpha = 5\%$).

5.11 Graphical representation: Up to this stage we have done the test of hypothesis that ratings attract more investments statistically. But, it is possible very much to show this theory graphically also. The graphical representation will help a layman to understand the topic quite easily. Through the graphical representation it is possible to access all data quickly. Moreover, a diagram can clarify a complex problem and reveal hidden facts, which are not apparent from the tabular form. There exist different types of graphs, but among all of them we have taken the help of line

diagram to show the pattern of average investment inflow (average borrowing) of selected companies of the cement industry for fifteen years i.e. '9 years before' and '6 years after' the ratings have become mandatory (see appendix 10). Also through bar diagram, firstly, we have tried to show the comparative position of different companies with respect to average investment inflow (average borrowings) and average credit rating for selected periods (see appendix 5 and 7) and secondly, we have tried to show the position of total investment inflow (borrowings) for pre- and post-credit rating periods. There also exists pie diagram which shows how the corporate investment inflow (borrowings) have responded to different credit ratings. Firstly, the bar diagram has been shown which has represented the relationship between the average borrowings and average credit ratings.

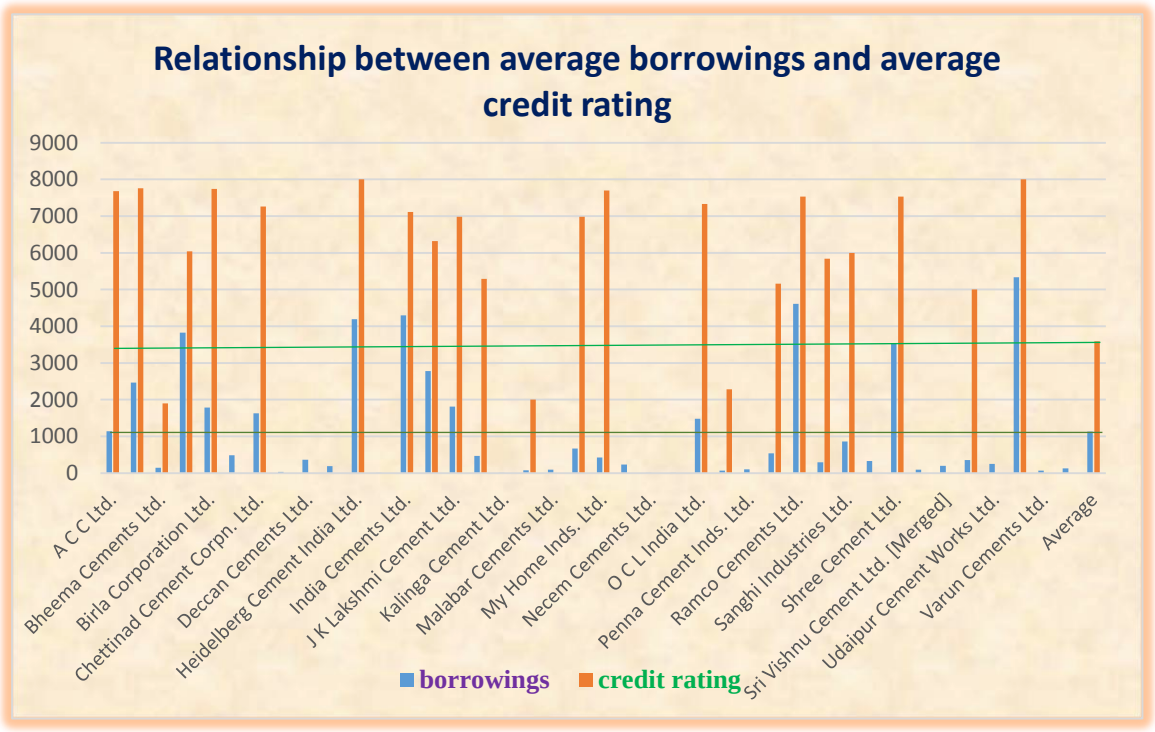

Figure 5.9: Relationship between average credit ratings and average borrowings

In the above figure (figure 5.9), the names of the companies have been shown along the x-axis and the amount of average investment inflow (borrowings) and average

credit ratings of the companies for the study period of fifteen years along the y-axis have been shown. For the purpose of drawing the figure properly it is assumed that one unit of credit rating is equal to one thousand units in scale. The graph reflects that majority of the companies having a higher borrowing (higher than the average) corresponds to a higher credit rating (higher than the average). But, it is still a question how many companies are above or under the average borrowings corresponding to higher or lower credit ratings. These have been shown in table no. 5.10.

Table 5.10: Number of companies having higher/lower borrowings corresponding to different credit ratings

Number of Companies with					
higher borrowings & higher rating	lower borrowings & higher rating	higher borrowings & lower rating	lower borrowings & lower rating	higher borrowings but non-rated	lower borrowings but non-rated
13	7	0	3	0	17

Source: Own calculation

It is possible to show all of the above information through a pie diagram (Figure 5.10) shown below:

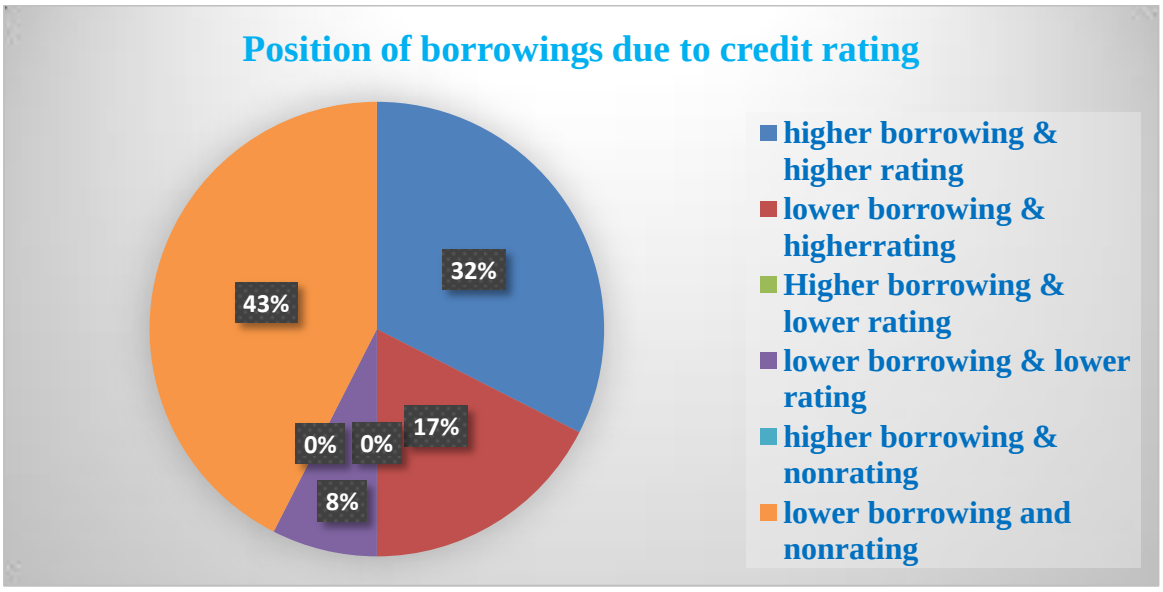

Figure 5.10: Position of corporate borrowings due to credit rating

In our research work we want to prove that investment and credit ratings are positively correlated i.e. if rating is higher (higher than the average) then borrowings will also be higher (higher than the average), and if rating is lower (lower than the average) borrowings will also be lower (lower than the average) and in case of non-rated companies, borrowings will also be lower. If the above statement is true then the companies will be regarded as responding companies, otherwise it will be treated as a non-responding company. So,

Responding company = Companies having (higher borrowings & higher rating + lower borrowings & lower ratings + lower borrowings & no ratings).

Non-responding company = Companies having (lower borrowings & higher rating + higher borrowings & lower rating + higher borrowings & no rating).

In our research work it has been calculated as (please refer to table no. 5.10):

Responding companies = 13+3+17 = 33

Non-responding companies = 7+ 0 +0 =7

The above results can be expressed through a pie diagram (Figure 5.11) as follows:

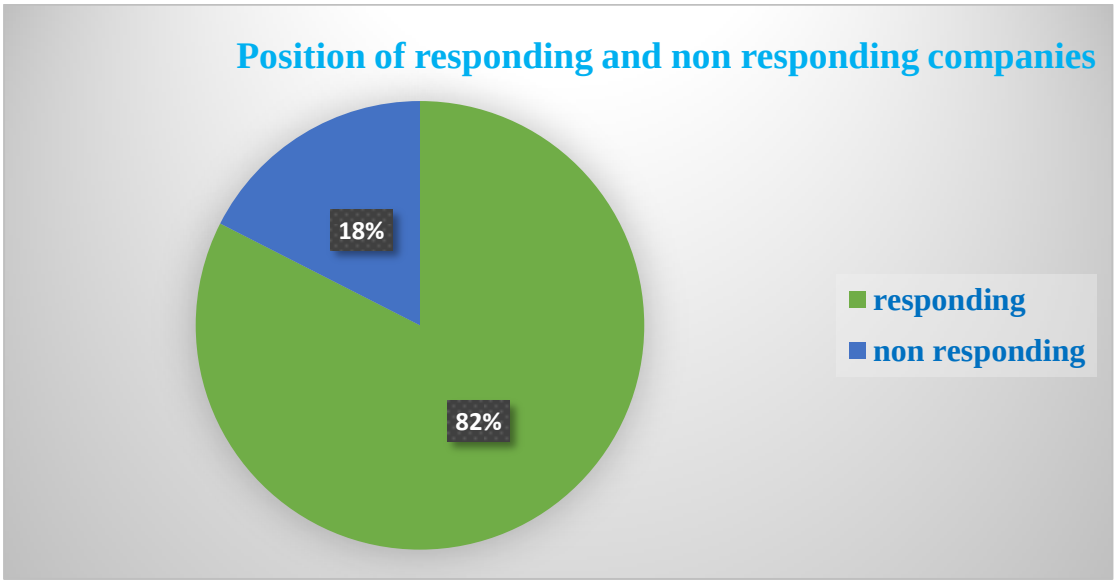

Figure 5.11: Position of responding and non-responding companies regarding credit rating

If we want to draw the average investment inflow (borrowings) pattern throughout the fifteen-year study period i.e. nine years before and six years after the year in which the ratings became mandatory (Figure 5.12), it will be as follows:

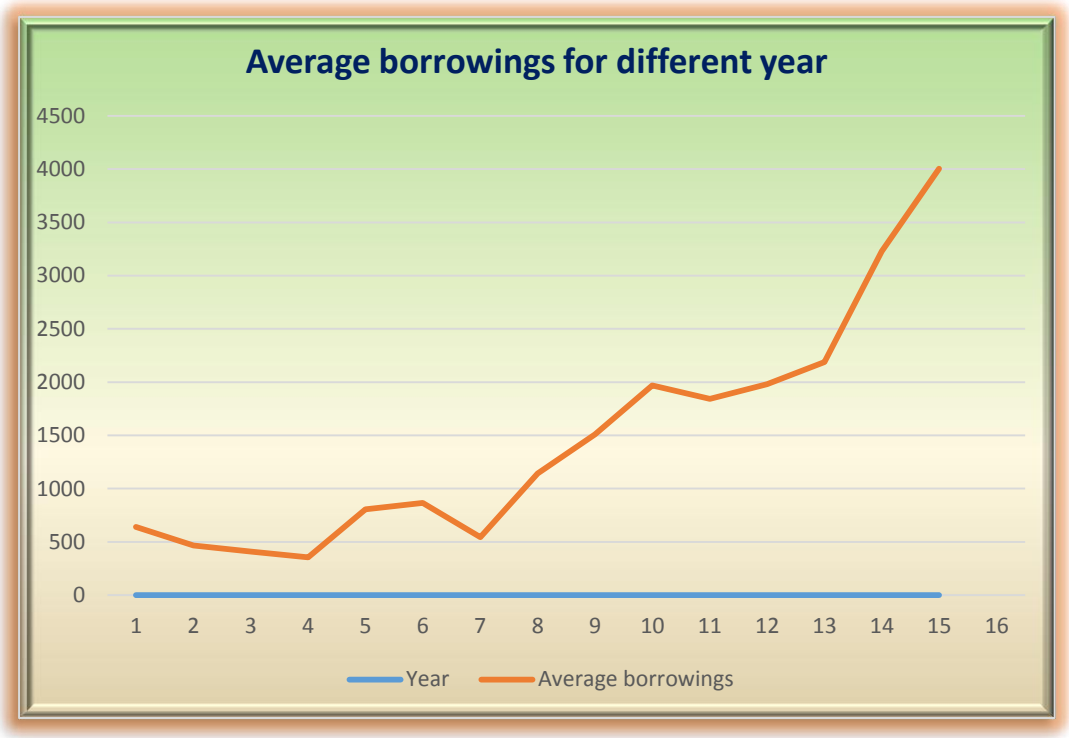

Figure 5.12: Average borrowings for different years

For the year 2006-2007, the IPO rating was made mandatory by SEBI. The expectation for a number of years thus came true and obviously it put a feather on the cap of credit rating, and as a result, there was a hopeful expectation that credit rating will be mandatory for issue of debt instruments in near future. This has pulled the borrowings, and most probably for this very reason, an upward movement of average borrowings could be found from that year particularly. This upward movement of investment inflow was found to be continuing in 2008-2009 (i.e. the year from which credit rating was mandatory for issuing debt instruments).

Through the following diagram (Figure 5.13) it is possible to show the actual position of total average investment inflow (borrowings) in pre- and post-credit rating period (shown in green and yellow respectively).

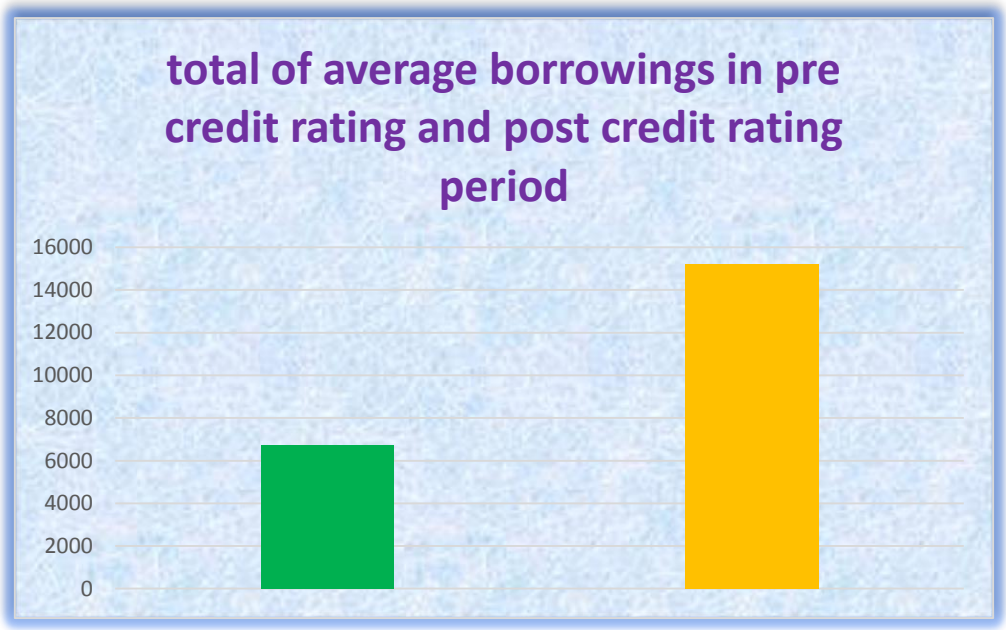

Figure 5.13: Total average borrowings in pre- and post-credit rating periods

In the above diagram it is shown that accumulated average investment inflow (borrowings) during the period after the year in which credit rating was made mandatory, is higher than the accumulated average investment inflow (borrowings)for the period before the credit rating was made mandatory.

5.12 Conclusion:

Today it is too tough to rely upon any company to make investment and interestingly investors are not necessarily to be a financial analyst. So, it will be quite helpful for a layman if any agency takes the responsibility of certification. Actually, credit rating agencies perform that duty of certification, and SEBI has given a guideline for an agency to be recognised as a credit rating agency i.e. before introducing itself as a recognised credit rating agency, every agency has to fulfil certain conditions laid down in SEBI guideline in that regard.. In this particular research work it has been shown that credit rating has an influence on the investment inflow/ borrowings of the company. Though there exist different factors for making investment and finally it depends upon the attitude of the investors about where to invest, credit rating is, however, definitely a factor which can still influence the investment of an investor.

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Chapter 6

Summary and Conclusion

CONTENTS

In this concluding chapter, a sum up of the study which has covered chapter one to chapter five has been offered. Centered on the outcomes of the study, conclusions are drawn and a number of recommendations have been presented for the improvement of implementation of credit rating policy on the basis of a selection of sample companies. Results of hypotheses testing are also specified in this chapter. Finally, presentation of the study is concluded by affixing shortcomings of the study and scope for further research in the penultimate segment of this chapter.

6.1 Summary and conclusion of different chapters:

In this research work, an attempt has been made to examine and analyze the effect of credit rating on investment inflows and interest rate on some selected Indian cement companies in the selected study period. The summary of the chapters (i.e., chapter one to chapter five) and conclusions based on the findings of the study are presented in the following sub-sections:

***6.1.1 Summary of chapter one*:** The first chapter has discussed the base of this study. It has been discussed how this study will be beneficial to the corporate sector. This chapter also makes a review of literature in the area of credit rating and this review has included various contexts of Indian studies as well as foreign studies. Based on the literature review in the related areas, different research gaps have been identified.

i) In a business concern, there exists mainly two principal sources of finance as, equity and debt. But, what should be the position of the optimal capital structure of a firm, is a significant and debatable question. Today, the main object of financial management is to maximise the value of a firm and a major portion of this depends upon the leverage of the firm. So it is very important to find out the appropriate

capital structure. There exist different theories to find out the optimum capital structure such as: NI approach, NOI approach, Trade off theory, and Pecking order theory. The value of a business has been defined as a proportion of operating profit and cost of capital. So, efforts have been given to define the value of business and cost of capital. The means of reducing the cost of capital have also been given. As the cost of debt is a part of the cost of capital, the latter can be reduced if the cost of debt is reduced. Interest is a part of the cost of debt; so, if interest is reduced, the cost of debt can also be reduced. Interest can be reduced to a great extent if the credit rating is higher.

ii) The literature on the subject is very scanty. However, an effort has been given to make it to the extent possible in a given situation of empirical studies having been very small in number. Different authors have discussed the theoretical aspects of credit rating and all those have been considered as the base of this study. Some authors have given some ideas about the definition, the position of credit rating in India, the process of credit rating, and the historical background of credit rating throughout the world and also in India. Some authors have given the idea about the rating of banks and financial institutions. It has been discussed by some authors how the system of credit rating has been taken by different credit rating agencies in India. Various important information about credit rating have been obtained from various studies. One author has discussed the need for regulating the credit rating agencies. Another author has discussed the rating methodologies used by the Indian Credit Rating Agencies. Yet a different author has given some idea about how rating should be implemented in auditing. Some authors have provided certain ideas about the effect of the credit rating on cash holding and earnings momentum of Indian companies. Some authors have specified concepts about the impact of credit ratings

(upgrade and downgrade whatever it may be) on stock prices within India. Some authors have also examined the impact of credit rating revisions on common stock prices and the market anticipation of bond rating changes on stock prices. A few of them have also examined the correlation between credit ratings and Eurobond prices. Some authors have scrutinized the impact of the credit rating on the Indian stock prices and for this purpose, they have used conditional risk adjusted method. An author has compared the default risk forecasts of different rating philosophies, specifically, the 'point-in-time' and 'through the cycle approaches'. One author has said that investors are responding to credit rating. Another one has discussed mainly the junk bond and what bond ratings say about the risk of fluctuations in a bond's value (which results from interest rate changes). One author has opined that Corporate Governance mechanism is one of the determining factors of credit ratings.

iii) On the basis of literature review, we find different studies that cover the impact of credit rating in stock market, both in India and abroad. But no studies are found to reflect upon the effect of credit ratings on corporate investment inflows and also on corporate interest rate. Also no comparison has been found between pre- and post-credit rating period of corporate investment inflows or corporate interest rate. So with these limitations, the present study attempts to overcome all these backdrops and may be considered as the first time attempt in the area covered under study.

6.1.2 Summary of Chapter Two: The second chapter deals with the theoretical aspect of credit rating. Historical background of credit rating, the process of credit rating, nature of credit rating and its advantages and disadvantages have been discussed in this particular chapter. This chapter has elaborately conferred about the credit score

and SME (Small and Medium size Enterprises) rating. This chapter also deals with the position of credit rating in India and about different credit rating agencies in India.

i) The term ‘credit rating’ may be expressed as an evaluation of the credit-worthiness of an issuer in general term. Also, the term can be used as regards a particular debt or financial obligation. So, credit rating is an evaluation made by the credit rating agency about the chances of default of debt issuer. It is a widely used assessment of the overall credit-worthiness of an entity by a third party. A high credit rating points out that the borrower has a low chance of defaulting on the debt; on the other hand, a low credit rating indicates a high probability of default. Credit rating scales, symbols, and definitions may vary from one rating agency to another. Credit rating is determined on a scale of alpha and /or numeric symbols. But, credit rating is not a recommendation to buy, sell or hold securities.

ii) The total historical background of credit rating can be divided into the following stages: Early History, Post-Depression Era, Growth of Bond Market, and 1980s onwards. The first such agency was established in 1841 by Lewis Tappan in New York City which was subsequently taken over by Robert Dun, who published the agency’s first Ratings Guide in 1859. In 1909, financial analyst, John Moody issued a publication solely on railroad bonds and his company was the first which charged subscription fees to investors. In 1936, a new regulation was introduced to prohibit banks from investing in such bonds which has been determined by “recognized rating manuals” (the forerunners of credit rating agencies) to be “speculative investment securities” (“junk bonds” in modern terminology). U.S. banks were permitted to hold only “investment grade” bonds which were rated by

Fitch, Moody's, and Standard and Poor's. In the late 1960s and 1970s, ratings were extended to commercial papers and bank deposits. In 1973, Fitch added plus and minus symbols to its existing letter-rating system. The following year, Standard and Poor's did the same, and in 1982 Moody's began using numbers for the same purpose. In 1975, SEC (Securities and Exchange Commission) came up with a rule for explicitly referencing credit ratings.

iii) Credit rating can be used in bond markets, structured finance, and sovereign debt and also by the Government regulators. As credit rating is not a recommendation to buy any particular bond, ratings can be obtained from one or more of the credit rating agencies. Credit rating agencies play a great role in structured financial transactions i.e. Asset-Backed Securities (ABS), Residential Mortgage-Backed Securities (RMBS), Commercial Mortgage Backed Securities (CMBS), Collateralised Debt Obligations (CDOs), and synthetic CDOs or derivatives. Govt. bodies in both national and international level have taken credit ratings into minimum capital requirements for banks, allowable investment alternatives for many institutional investors, and similar restrictive regulations for insurance companies and other financial market participants.

iv) Credit rating has a lot of advantages to different parties like investors, companies, and intermediaries. Credit rating has also got different disadvantages.

v) Some factors are commonly seen in credit rating, e.g. Rating is based on information; there exist different factors which may affect credit rating. Debt can be rated by more than one agency; only those ratings which are accepted by the issuers get published, etc.

vi) The credit rating process is quite lengthy. In India, credit rating starts by a formal request from the issuer which includes the terms of rating assignment. Next, a rating team is formed which comprises of different experts required to evaluate the business of the issuer. The rating agency tries to gather necessary information from issuers and also utilizes the secondary source of information. To make a rating, an interaction with the issuer's management - specially relating to plans, outlook, and funding policies - is made. For the purpose of rating, plant visiting is also very essential. After completing the analysis, the findings are discussed at the internal committee of credit rating agency comprising senior analysts of that agency; also an opinion about the rating is formed. Finally, the rating team makes a presentation in brief about the management and business of the issuer. Next, the recommendation of internal committee is considered, and at last a rating is assigned. The assigned rating is communicated to the top management of the issuer company for acceptance - and if the rating is not accepted by the issuer, he has a right to make appeal for reviewing the rating. The review can be done only if the issuer provides fresh inputs to the rating agency about the issues that were considered for assigning the rating. If the inputs are found proper or convincing, the committee might change its initial decision.

v) Credit rating is done by the rating agencies in respect of equity shares/ preference shares issued by the company, bond /debentures issued by corporate/ Government, commercial papers issued by companies, fixed deposits raised for medium-term ranking as unsecured borrowings, etc. Credit rating is also applicable to a country, to real estate builders and developers, to chit funds, to different states, and banks.

vi) A credit score means a numerical expression based on a statistical analysis of a person's credit files, to represent the creditworthiness of that person. Lenders use credit scores to determine who qualifies for a loan, at what rate of interest and at what credit limits. Lenders also use credit score to determine those customers who will bring most revenue. Credit score helps to reduce the credit risk of lenders and helps to process a loan quickly, without wasting valuable time on research and background check on the loan applicant. The system of credit score has some disadvantages also. Credit scores are calculated by taking into account different factors in a person's financial history. The Fair Isaac Corporation (FICO) created the first credit scoring system in 1958, for American Investments. CIBIL (Credit Information Bureau India Limited), India's first credit information bureau was incorporated in 2000 by the Government of India and the Reserve Bank of India on the recommendation of a working group constituted by RBI to establish a world class bureau in Indian private sector.

vii) A Credit Rating Agency (CRA) means a company which assigns credit ratings. Credit rating is a highly concentrated industry with the "Big Three" credit rating agencies (Moody's, S & P, and Fitch Ratings) which control approximately 95% of the ratings business all over the world. After the Credit Rating Agency Reform Act 2006, seven additional rating agencies have attained recognition from the SEC as Nationally Recognised Statistical Rating Organisations (NRSROs). In 2008 financial crisis, while some agencies were inactive, some have gained a market share. In October 2012, several agencies announced plans to merge together and a new organization was created. It was called the Universal Credit Rating Group.

viii) Credit rating agencies have different functions such as, they provide unbiased opinion, offer quality and dependable information, provide information at low cost, provide information which are easy to understand, and they also provide a basis for making investment.

ix) It has been observed that most of the SMEs are finding it difficult to approach the banks to have loan. Since, the formalities to be complied with the banking system is quite lengthy, it kills most of their valuable time to obtain the loan. So, the unavailability of funds due to their non-credibility and huge formalities for obtaining loan restricts their time to growth and expansion of business. For removal of such problems a lot of initiatives have been taken up by Government of India and one such strong initiative is SME rating. SME rating reveals the rated entities' overall creditworthiness. SME ratings are done by giving weightage to different factors such as, business risk, management risk, and financial risk. Indian credit rating industry mainly comprises of CRISIL, ICRA, CARE, ONICRA, FITCH, and SMERA. Among all these rating agencies, CRISIL is the largest.

x) In India, rating is of very recent origin. But, most probably India was the first among all developing countries to set up a credit rating agency in 1988. The function of credit rating was institutionalized when RBI made it mandatory in case of issuance of commercial paper (CP) and subsequently, SEBI made it compulsory for certain categories of debentures and debt instruments. After consultation with the central Government, in 1999, SEBI issued a notification which brought the CRAs under the regulatory ambit to exercise the powers

conferred upon it by section 30 read with section 11 of the SEBI Act 1992. The act required that all CRAs are to be registered with SEBI. Regulators.

xi) In India there exists mainly ten credit rating agencies:

a) CRISIL: CRISIL is India's largest and first credit rating agency. It was established in 1988 and was jointly promoted by ICICI and UTI. It is one of the top credit rating agencies in India. The majority shareholder of CRISIL is Standard & Poor's, which itself is a division of the McGraw-Hill Company and it has been considered as world's top provider of financial market efficiency. It provides ratings to different sectors: to industrial companies, banks, Non-Banking Financial Institutions (NBFCs), infrastructure entities, microfinance institutions, insurance companies, mutual funds, state governments, urban local bodies, etc.

b) Credit Information Bureau India Limited (CIBIL): CIBIL is a credit information company in India which maintains records of individual payments related to credit cards and loans.

c) Fitch Ratings India Private Ltd: Fitch group of companies (incorporated in 1913 in New York, U.S.A.) is one of the top credit agencies in India.

d) Equifax: Equifax Inc. started operations in 1899. It provides information management services which process lot of records of its members to supply risk management solutions, credit risk management and analysis, fraud detection triggers, decision technologies, marketing tools, etc.

e) ONICRA: Onicra Credit Rating Agency is a credit and performance rating company founded in 1993. It provides different types of solutions like risk

assessment, analytical solutions and ratings to MSMEs, corporates and individuals.

f) High Mark Credit Information Services: High Mark Credit Information Services is a recognized credit rating company in India which was established in 2005. It provides analytic solutions and risk management services to banks and financial institutions operating in micro-finance, retail consumer finance, MSME, rural and cooperative sectors.

g) SME Rating Agency of India Ltd. (SMERA): It is a rating agency which has been set up exclusively for SMEs. The agency was founded in 2005 by Small Industries Development Bank of India (SIDBI), Dun & Brand Street Information and Services India Private Ltd. and several leading Government public-private and MNC bank in the country.

h) Brickwork Ratings India Private Ltd: Brickwork Ratings was established in 2007 by Sangeeta Kulkarni as a credit rating firm. It is one of the leading credit rating companies in India which has been organised with individual efforts.

i) CARE (Credit Analysis & Research Ltd.): CARE Ratings formally started its operations in April 1993. It is considered as the second-largest credit rating agency in India. CARE Ratings has the unique advantage in the form of an External Rating Committee to decide on the ratings.

j) ICRA LTD. (Investment Information and Credit Rating Agency): ICRA LTD. is a company which gives independent and professional investment information. It was established in 1991. It is the second largest Indian rating

company in terms of customer base. It was a joint-venture between Moody's and various Indian commercial banks and financial services companies.

6.1.3 Summary and conclusion of chapter three: The third chapter describes the research methodology used in the study. Discussion has been made on objectives and hypotheses of the study, study period, nature of data, and sources of data, sample designing, data processing, and scheme of investigation. Tools and techniques (i.e., statistical and econometric) employed in the study for data analysis are also discussed in this chapter.

i) There are four objectives of this study. The first objective was to examine whether there existed any positive relationship between investment inflows and credit rating, and the second objective tested if there was any negative relationship between interest rate and credit rating. While the third objective targeted examining whether investment inflows changed between pre- and post-credit rating periods, the fourth objective tested it for interest rates. Different hypotheses were framed in view of those objectives.

ii) All relevant data have been collected for the period of 15 accounting years (i.e. from 1999-2000 to 2013-2014). The initiation of the study period is 1999-2000 because, SEBI then for the first time had promulgated a regulation about credit rating [SEBI (Credit Rating Agencies) Regulation, 1999] and definitely it put a significant feather on the cap of credit rating. The entire study period has been divided into two parts. The first part is from 1999-2000 (i.e., the beginning of the relevant period) to 2007-2008 and the second part is from 2008-2009 [i.e., the year from which credit rating was made compulsory for every public issue of debt security [vide Chapter II, notification of SEBI (Issue and Listing of Debt

Securities) Regulations, 2008] to 2013-2014 (up to the end of the selected study period).

iii) The entire research work was based on secondary data. Two types of data: quantitative and ordinal, have been used in the study.

iv) To get the amount of investment inflows we have considered annual cash flow statement (mainly financial cash flow). Among all items of cash flow, only the cash flow arising from long term and short term borrowing, have been considered. For getting the figure of debt outstanding, we have considered Annual financial statement (standalone). For the amount of interest expended in any accounting year, we have used the annual cash flow statement as the source of data; in the absence of any other specific data on the actual amount of interest paid or payable for a particular accounting year, we have assumed it to be the same as available from the cash flow statement. All of the above said data and data regarding credit rating have been obtained from the PROWESS Database (PROWESS release 4.15) of Centre for Monitoring Indian Economy (CMIE).

v) For the purpose of the study we have taken all NSE listed public limited companies (i.e. population) which belong to cement industry; as pointed out earlier, we have considered a study period of 15 years. We have taken the cement industry because it gives a reasonable coverage of samples among the population and we find the existence of almost all types of ratings in the sample companies in this industry. We have selected all the sample-companies from a particular industry as we intend to make a meaningful inter-period comparison in our study (i.e., comparison of the results of the same analysis carried over during two

different periods – one before the date when credit rating was made compulsory before issuing debt instruments and the other after that).

vi) The public limited companies in cement industry which have a paid up capital of Rs. 10 million or more and which have been more or less regular in operation throughout the 15 years, have been selected for the first aspect of our study analyzing the effect of credit rating on investment inflows (borrowings). The public limited companies in cement industry which have a paid up capital of Rs. 10 million or more and which have been showing an interest/debt ratio for at least 5 years out of the 15-years study period, have been selected for the second aspect of the research work analyzing the effect of credit rating on interest rate (interest/debt ratio).

vii) Among all of the credit rating agencies in India we have considered only CRISIL, ICRA, and CARE for our study. All these rating agencies assign rating which are symbolically different; but if we consider its actual meaning then it will become clear that they are not different. A rating code (alpha-numeric), irrespective of the agency providing it, starts with "Highest safety" and ends with "Default". Any addition of plus or minus to the rating code represents comparative strength of rating within the class. Rating for short term borrowings also stay under the coverage of ratings for long term borrowings. For the purpose of simplicity any plus or minus sign attached with any particular rating has been ignored. For the purpose of the research work all ratings have been given rank/weightage and obviously highest weightage has been given for highest rating (i.e., for highest safety) and lowest weightage/ranking has been given for the lowest rating (i.e., default). An eight point scale has been used for the

particular purpose. In a particular year a company may have different types of instruments which have been rated differently. To obtain an average rating in a particular year, one particular rating has been assigned with a weightage relating to its value among total values of all the rated instruments.

viii) For the purpose of having investment inflows (borrowing) we have taken the total cash inflow (from long term and short term borrowings) in each of the selected companies for each year (if there exists any at all). Company-wise average investment inflows (borrowing) for pre- and post- credit rating periods have been obtained by dividing the aggregate of the investment inflows (borrowings) for each company for both the periods separately by the number of years in each period (i.e. for 9 years and 6 years respectively).

ix) Company wise interest rates (interest debt ratio actually) can be computed by dividing the total interest paid or payable by a company in a year by the amount of outstanding debts in that year. Company wise average interest rates for pre- and post- credit rating periods separately have been computed by dividing the aggregate of the interest rates for each company for both periods by number of periods (i.e. For 9 years and 6 years respectively).

x) All data have been re-arranged, classified, tabulated, and computed. Necessary calculations have been done with the help of SPSS (IBM SPSS statistics 23) and Eviews (7) software.

xi) Statistical technique using ‘logarithm’ has been used for transformation of data to get better results. Statistical technique ‘correlation’ has been used to ascertain the interdependence, if any, between variables. To ascertain the cause and effect of such interdependence of variables, a linear regression model based on panel data

methodology has been developed. Checking of panel unit root test of all variables has been done by using Levin, Lin & Chu t, Im, Pesaran and Shin W-stat, ADF-Fisher Chi-square and PP-Fisher Chi-square tests to ascertain whether panel data regression is applicable or not. Hausman test has been done to ascertain which regression model can be better applied. Finally, we have chosen Random Effect Model. We have also used Durbin Watson test and F test in this study. Paired t-test also has been used to make the pre- and post- credit rating period analysis for both the dependent variables.

***6.1.4 Summary and conclusion of chapter four*:** The fourth chapter made a linear regression analysis of corporate interest rate and credit rating of some selected Indian companies in cement industry. A comparative analysis of interest rates between pre- and post- credit rating periods of some selected Indian companies in cement industry has been done in this chapter. The main object of this chapter is to establish a relationship between corporate interest rate and credit rating. The major findings and conclusions in this chapter are stated below:

i) This particular chapter was started with some theoretical aspect of interest rate and this has been considered as a preface of this chapter. Starting with defining interest rate, a historical background of interest rate has also been given in this chapter. Interest can be calculated differently depending on two different types: simple rate of interest and compound rate of interest. Simple rate of interest is that type of interest rate which is always calculated upon the principal; and compound interest rate is that type of rate in which interest amount is always added to the principal amount for computing interest for next period. Again, there exist two other types based on the changeability of the rate over the

borrowing period, such as, fixed rate of interest and floating rate of interest. Fixed interest rate is fixed on a particular liability but floating rate of interest is tagged with some benchmark rate like LIBOR. There exists also another type of rate of interest as the implicit rate of interest.

ii) If any interest rate is high, it may have some economic effects like increment in the cost of borrowing; it affects both the consumers and the firms, Govt. debt interest payments may increase and it also reduces business confidence. There may be various causes behind changing the interest rate such as, political short term gain, deferred consumption, inflationary expectations, scope of alternative investments, liquidity preference theory, effect of taxes, risk of the investment, etc.

iii) In this study one commonly used term as 'coupon rate' has been defined as the amount of interest that the bondholders will receive per year as a percentage of the face value or principal. It also has been described how the coupon payment-amount should be calculated.

iv) There exist different types of coupon rate as, coupon paid by fixed rate, coupon paid by variable rate, coupon paid by inflation-linked rate, and zero coupon bond.

v) In this study we have tried to check whether corporate interest rate is influenced by credit rating or not. For this purpose, corporate interest rate (in present case termed as I) has been termed as dependent variable and credit rating (CR) has been termed as independent variable. To get better results, the raw data of the two variables has been converted into logarithm series in our panel data methodology.

vi) For the purpose of ascertaining relationship between corporate interest rate and credit rating, we have used Pearson correlation technique. The correlation has been shown as -0.22. The correlation statistics show that both the variables are negatively correlated, which is significant at 5% level.

vii) We have tried to know the cause and effect relationship between the two variables. So, we have applied the linear regression model based on panel data methodology. Before going for regression analysis, we have checked panel unit root test following the tests as mentioned above (Section 6.1.3-xi). In case of interest rate, the results illustrate that four unit root tests are stationary at level because the probability is 0.00. In case of credit rating, the results illustrate that four unit root tests are stationary at level because two tests have probability 0.00 and two tests have probability 0.012 and 0.017 and these prove that the panel data regression can be done by using any one model as Pooled OLS Regression Model, Fixed Effect Model, and Random Effect Model.

viii) The effects of the above-mentioned three models have been shown in three different tables (Table Nos. 4.4, 4.5 and 4.6). We have tried to ascertain whether fixed effect model or random effect model is suitable or not and for this purpose Hausman test has been considered as the most suitable test.

ix) Since the probability of Chi-square in the Hausman test, has come out to be 36.54% (i.e. more than 5%), we have accepted the null hypothesis that Random Effect Model is considered to be the most suitable for log of credit rating to explain log of interest rate.

x) From Random Effect Model we have observed that when credit rating is changed by one unit, interest rates are changed negatively by 0.253235 units, which is

statistically significant at 1% and 5% levels. R-square (2.42%) is quite low, which indicates that the variation is quite low but the model is more or less appropriate. The probability of F-statistics (0.00) indicates that the negative effect is also true for population also. Durbin-Watson statistics (.975) has shown that the residuals are independent and not auto correlated. There is also a negative cross section effect which has been observed from the model.

xi) Finally we have formed a regression model from which it has been found that interest rates are negatively affected by credit rating and it is a multiple of 0.25323 units plus a cross section effect.

xii) We have also made a comparison of the interest rates for pre- and post- credit rating periods in the selected Indian companies in cement industry in India. For this purpose, paired t-test has been considered as the most suitable. The observed value of t is -.848. The P-value of the corresponding t-value is .201. Since the p(t) statistic is > 0.05, we can conclude that there is no significant difference between the interest rates of pre- and post- credit rating periods.

xiii) We have also taken the help of different graphs and diagrams to show the relationship between the two variables i.e., interest rate and credit rating.

xiv) **Conclusion:** From the study we could show that there is a negative relationship between two variables i.e. if credit rating increases interest rate decreases and if credit rating decreases interest rate increases. A correlation of – 0.224 is there between interest rates and credit ratings; it indicates that there is a low and negative correlation between credit rating and interest rates. We have tried to make a linear regression model based on panel data methodology after due tests mentioned above. The results illustrate that at least three unit root tests of both

the variables are stationary at level. Next, we have tried to ascertain which of the three models, as above, will be the most appropriate, and for this purpose we have conducted Hausman test. From the Hausman test, it is clear that random effect model is the most suitable. From random effect model we could find that if credit rating is changed by one unit, interest rates are changed negatively by 0.253235 units and this is significant at 1% and 5% levels. We have tried to make a comparison between the interest rates of pre- and post- credit rating periods and so we have conducted paired t test. The P-value of corresponding t-value is .201. Since the p(t) statistic is > 0.05, we could conclude that there is no significant difference between the interest rates of pre- and post- credit rating periods.

6.1.5 Summary and conclusion of chapter five: The fifth chapter made a linear regression analysis of corporate investment inflows (borrowings) and credit rating of some selected Indian companies in cement industry. A comparative analysis of investment inflows (borrowings) of pre- and post- credit rating period of some selected Indian companies in cement industry has been done in this chapter. The main objective of this chapter is to establish a relationship between corporate investment inflows (borrowings) and credit rating. The major findings and conclusions in this chapter are stated below:

i) The chapter starts with some theoretical aspects of investment or source of financing which has been considered as a preface of this chapter. At the start, an attempt has been made to define the scope of discussion and for the purpose, a few definitions of ‘debt’ have been considered. There exist different views which favour debt financing as measures of cost reduction, profit retention,

financial leverage, and tax savings. Debt financing obviously has got some disadvantages also. Equity financing, as we know, is another source of financing and the main advantage of equity financing is that it does not seek any repayment until the company goes into liquidation. There exists yet another source of financing as mezzanine financing. It is a mixture of equity and debt financing. Some advantages and disadvantages of this type of financing have been discussed in this chapter. As there exist different advantages and disadvantages of debt and equity financing, a mixture of both may be considered to be the most desired method of financing. There exist diverse theories to determine the best mixture of debt and equity capital; but among all of them, MM theory appears to be the most popular.

ii) In spite of the fact that there exist two major sources of finance – debt and equity, efforts have been made in this research work to analyse only the matter of debt financing. Because, in this research work the impact of the credit rating on investment inflows is needed to be judged. As equity holders are owners of the company, they may not and many a times, do not, rely on the opinion of credit rating agency. They mainly want to judge the risk-return trade off which is completely different from that of debt holders and finally, according to the Random Walk theory, any equity investment moves on its own way. In fact, debt is a strategy of collecting borrowed fund.

iii) In Indian context, total borrowings can be divided into two types, on the basis of repayment terms: long term borrowings and short term borrowings. According to the revised Schedule VI (effective from the financial year 2011-12) of the Companies Act, 1956, long term borrowings can be subdivided as: bonds and

debentures, term loans, deferred payment liabilities, deposits, loans and advances from related parties, long term maturities of finance lease obligation, and other loans and advances.

iv) According to the revised Schedule VI (effective from the financial year 2011-12) of the Companies Act, 1956, short term borrowings can be divided as: loans repayable on demand (from banks and from others), loans and advances from related parties, deposits and other loans and advances.

v) In this study, we have tried to check whether investment inflows (borrowings) is dominated by credit rating or not. For this purpose, corporate investment inflows (borrowing - in the present case termed as 'B') have been termed as dependent variable and credit rating (CR) has been termed as independent variable. For getting better results, the raw data of two variables have been converted into logarithm series in our panel data methodology.

vi) For the purpose of ascertaining relationship between investment inflows and credit rating, we have used Pearson correlation technique. The correlation has come out to be 0.56. This statistical measure, 'correlation', show that both the variables are moderately and positively correlated, which is significant at 5% level.

vii) We have tried to know the cause and effect relationship between the two variables under study. So, we have applied the linear regression model based on panel data methodology. Before going for regression analysis, we have checked panel unit root test after conducting all the tests mentioned in Section 6.1.3-xi. The results illustrate that three unit root tests are stationary at level because the probability is 0.00 and this proves that panel data regression can be done by

using any one of the models as Pooled OLS regression model, Fixed Effect Model, and Random Effect Model.

viii) The effect of three models has been shown in three tables (Table Nos. 5.4, 5.5 and 5.6). We have tried to ascertain whether Fixed Effect Model or Random Effect Model is suitable or not; and for this purpose Hausman test has been conducted.

ix) Since the probability of Chi-square as per Hausman test computed to be 41.06% (i.e. more than 5%), Random Effect model is considered as the most suitable for log measure of credit rating to explain log of borrowings (i.e. investment inflow).

x) From Random Effect model we have observed that if credit rating is changed by one unit, borrowings are changed positively by 1.9038 units and this is significant at 1% and 5% level. R-squared (21.15%) is not very low, which indicates that the variation is not very low, and the model is more or less appropriate. The probability of F-statistics (0.00) indicates that the positive effect is also true for population. Durbin-Watson statistics (1.02) show that the residuals are independent and not auto-correlated. A positive cross section effect has been observed from the model.

xi) Finally, we have formed a regression model from which it has been found that borrowings (investment inflow) are positively affected by credit rating and it is a multiple of 1.9038 units plus a cross section effect.

xii) We have also made a comparison between the effects in pre- credit rating and post- credit rating periods on selected Indian companies in cement industry. For

this purpose, paired t-test has been considered as the most suitable measure. The observed value of t is 3.085. The P-value of the corresponding t-value is .002. Since the p(t) statistic is < 0.05, we can conclude that investment inflow (borrowings) in Post-credit rating period is significantly higher than that in Pre-credit rating period at 5% level of significance ($\alpha = 5\%$).

xiii) We have also taken the help of different graphs and diagrams to show the relationship between the two variables.

xiv) **Conclusions:** Now-a-days, it has gone tough for an investor to rely on any company to make the investment. Investors are not necessarily a finance analyst. So before going to the market one investor prefers to rely on credit rating. In this chapter, an effort has been made to ascertain the relationship between corporate investment inflows (borrowings) and credit rating on the basis of some selected Indian companies in cement industry. It has been shown in this study that there exists a positive and moderate correlation between the two variables. We have tried to fit a linear regression model based on panel data methodology. Before doing the regression analysis, we have checked panel unit root test of both the variables after all the tests due to be made. The results illustrate that at least three unit root tests of both the variables are stationary at level. Next, we have tried to ascertain which model will be the most appropriate and accordingly, we have done Hausman test. From Hausman test, it is clear that random effect model is the most suitable. From random effect model, we could find that if credit rating is changed by one unit, borrowings are changed positively by 1.9038 units and this is significant at 1% and 5% levels. We have also tried to make a comparison between pre- and post- credit rating periods and so we have

done paired t test. The P-value of the corresponding t-value is .002. Since the p(t) statistic is < 0.05, we can conclude that investment inflow (borrowings) in Post-credit rating period is significantly higher than that in Pre-credit rating period at 5% level of significance ($\alpha = 5\%$).

***6.1.6 Overall conclusions*:** With respect to the main object of this study, we have found satisfactory results. Because when we have analysed the effect of credit rating on investment inflows, we could realise that there exists a positive correlation between the two identified variables. From random effect model it has been found that borrowings (investment inflows) are positively affected by credit rating and it is a multiple of 1.9038 units plus a cross section effect. R-square value (21.15%) is not very low, which indicates the model is more or less appropriate. The probability of F-statistics (0.00) indicates that the positive effect is also true for population. Durbin-Watson statistics (1.02) shows that the residuals are independent and not auto correlated. Also, we have shown that investment inflow (borrowings) in Post-credit rating period is significantly higher than that in Pre-credit rating period at 5% level of significance ($\alpha = 5\%$).

In our analysis of the effect of credit rating on interest rate, we could find that there exists a negative correlation between the two variables. From random effect model it has been found that interest rates are negatively affected by credit rating and it is a multiple of 0.253235 units plus a cross section effect. R-square value (2.42%) is quite low, which indicates that the variation is quite low but roughly the model is appropriate. The probability of F-statistics (0.00) indicates that the negative effect is also true for population. Durbin-Watson statistics (.975) confirm that the residuals are

independent and not auto correlated. Also, we have shown that there is no significant difference between the interest rates of pre- and post- credit rating periods.

6.2 Results of hypotheses testing:

The results of hypotheses testing that have been formulated in the study are outlined below:

1) ***Hypothesis 1: Corporate investment inflow (borrowing) is affected favourably or adversely by the corresponding higher or lower credit rating before the issue of debt.***

For testing the hypothesis, correlation and a linear regression model (by using panel data methodology) have been done. The results are summarised below:

i) Pearson correlation coefficient as computed indicates that there is a positive correlation between investment inflows (borrowing) and credit rating.

ii) Checking of panel unit root test for both the variables has been done by using Levin, Lin & Chu t, Im, Pesaran and Shin W-stat, ADF-Fisher Chi-square and PP-Fisher Chi-square tests. The result illustrates that three tests are stationary at level and thus it was possible to do a panel data regression.

iii) Hausman test shows Random Effect Model is appropriate to make panel data regression.

iv) From Random Effect Model it has been observed that investment inflows (borrowing) changed positively with the change of credit rating. R-square indicates that the variation is not very low. The probability as computed by F-statistics indicates that the positive effect of the credit rating on investment

inflows is also true for the population. Durbin Watson statistics indicate that the residuals are independent and not auto correlated.

2) Hypothesis 2: Interest rate on corporate debt is affected favourably or adversely by the corresponding lower or higher credit rating before the issue of debt.

For testing the hypothesis, correlation and a linear regression model (by using panel data methodology) has been done. The results are summarised below:

i) Pearson correlation measure has shown that there is a negative correlation between interest rate and credit rating.

ii) Checking of panel unit root test for both the variables have been done by using the same tests as for hypothesis 1 above. The result indicates that three tests are stationary at level and thus panel data regression is possible.

iii) Hausman test shows Random Effect Model is appropriate to make panel data regression.

iv) From Random Effect Model it is observed that interest rate changes negatively with the change of credit rating. R-square value indicates that the variation is not very low. The probability measure of F-statistics indicates that the negative effect of the credit rating on interest rate is also true for the population. Durbin Watson statistics indicate that the residuals are independent and not auto correlated.

3) Hypothesis 3: There is no significant difference between the investment inflows (borrowings) of pre- credit rating periods and post- credit rating periods.

For testing this hypothesis paired t test has been done. It rejects the hypothesis at 5% level. So it may be concluded that investment inflow (borrowings) in Post-credit

rating period is significantly higher than that in Pre-credit rating period at 5% level of significance ($\alpha = 5\%$).

4) Hypothesis 4: There is no significant difference between the interest rate of pre credit rating periods and post credit rating periods.

For testing the hypothesis, paired t test has been done. It accepts the hypothesis at 5% level. So it may be concluded that the interest rate of pre credit rating period and interest of post credit rating period are equal.

6.3 Limitations of the study:

This research study suffers from the following limitations:

a) In case of investment inflows only the inflow of borrowings in cash has been considered. Actually, there may be some non-cash borrowings like deferred payment liabilities, etc. which have not been taken into consideration.

b) A plus or minus sign used in rating codes for indicating rating grade reflects the comparative standing of rating within the group, which has not been considered in the present study.

c) In case of interest rate calculation the effect of taxation has been ignored.

d) The regression model of investment inflows and credit rating will be effective if the market is open i.e. an investor has a full opportunity to invest anywhere and everywhere he / she desires.

6.4 Scope for further study on the subject:

The present study has been conducted in a small canvas; it is mostly a case study in the cement industry in India. There is enough scope to conduct similar studies in a much wider canvas. A few such scopes, definitely not an exhaustive list, are mentioned below:

a) A comparison of inflow of borrowings before and after the credit rating was made compulsory for issue of debt instrument has been made in the present study for cement industry only. Similar comparisons can be made for various other industries.

b) The study on the aspect of interest rate too has been made in the Cement industry; it can be similarly extended to cover other industries as well.

c) The regression analysis between credit rating and inflow of borrowings and between credit rating and interest rates can also be used to take into its fold other industries to find the most responsive ones amongst them.

d) What happens, if at all, when rating grade given by a credit rating agency for a particular company for a particular period is different from the rating grade given by another agency i.e. different rating by different agencies with the same or similar input data? That type of study, though a critical and risky one, may be an interesting study.

e) The immediately preceding point strikes at the reliability of the rating agencies - studies to rate the rating agencies.

6.5 Some Suggestions:

On the basis of the findings and conclusions drawn in the study, the suggestions that may be offered for better implication of credit rating system in investment inflows and interest rates of the selected companies are as follows:

i) The policy of rating is a qualitative measure. So, the rating may vary from one agency to another agency i.e. for the same instrument, one rating agency may assign one rating which may not be assigned by the other. In this way credit rating losses its importance to investors and it may not be too much reliable factors to the investors. So, one standardised measurement may be introduced for assigning such a grade for all rating agencies. As for example, when rating agencies make fundamental analysis they consider capital adequacy, asset quality, etc. But, all those factors must be quantified in some standardised form so that different agency may provide the same rating which will help the investors to make the investment and will be helpful for companies to attract more funds.

ii) The terms of rating consist of different technical terms which are not very easy to understand for most of the persons, whom it is aimed at. So, the language or interpretation of different types of rating must be in non-technical terms so that every person who are investing, can clearly understand the interpretation properly.

iii) Any addition of plus or minus to the rating code represents the comparative strength of rating within the same class. But the term ‘comparative’ does not convey a clear meaning to investors as they are incapable to understand how

much strength such a grading posseses actually. So, in place of plus or minus sign, it is better to introduce a separate grade.

iv) From the study, it has been found that even after making ratings mandatory, there exist some non-rated companies which also attract borrowings. So, SEBI must be strict enough and should introduce proper punishment to prevent the unfair practices.

v) It has been found from the study that some companies do not have any rating. The probable cause may be the high charge of rating agency that prevent them from having the rating. So, Central Government can reduce these fees by giving subsidy to the rating agencies.

vi) SEBI may allow some individual persons to do the rating jobs as their profession. Then it will be possible for them to reach to the door of some small and medium enterprises for providing rating; and this system would help those enterprises to attract loans and borrowings easily.

Appendix

Contents

Appendix 1
Non-exhaustive list of credit rating agencies (recognised/non-recognised by SEC, ESMA and FINMA) throughout the world

Sort ID	Credit rating agency/ organisa-tion	Non-Profit	Headquarter	Recognised by SEC	Recognised by ESMA	Recognised by FINMA
1.	A.M. Best Company	No	USA	Yes	Yes	No
2.	Academic Credit Rating	Yes	Spain	No	No	No
3.	Agusto & Co.	No	Nigeria	No	No	No
4.	Apoyo& Asociados Internacionales S.A.C	No	Peru	No	No	No
5.	ASSEKURATA Assekuranz Rating-Agentur GmbH	No	Germany	No	Yes	No
6.	Atradius	No	Spain	No	No	No
7.	Axesor SA	No	Spain	No	Yes	No
8.	Bank Watch Ratings S.A	No	Educator	No	No	No
9.	Berkshire Hathaway Credit Ratings, Inc	No	USA	No	No	No
10.	BRC Investor Services S.A	No	Colombia	No	No	No
11.	Bulgarian Credit Rating Agency AD	No	Bulgaria	No	Yes	No
12.	Calificadora de Riesgo	No	Uruguay	No	No	No
13.	Capital Intelligence (Cyprus) Ltd.	No	Cyprus	No	Yes	No
14.	Capital Standards Rating (CSR)	No	Kuwait	No	No	No
15.	Caribben Information & Credit Rating Services. Ltd.	No	Trinidad and Tobago	No	No	No
16.	CERVED Group S.p.A	No	Italy	No	Yes	No
17.	Chengxin International Credit Rating Co. Ltd.	No	China	No	No	No
18.	China Lianhe Credit Rating, Co. Ltd.	No	China	No	No	No
19.	Clasificadora de Riesgo Humphreys, Ltda	No	Chile	No	No	No
20.	Class y Asociados S.A	No	Peru	No	No	No
21.	Compagnie Francaised' Assur-ance pour le Commerce Exterieur (COFACE)	No	France	No	No	No
22.	Companhia Portuguesa De Rating, S. A. (CPR)	No	Portugal	No	Yes	No
23.	Credit Analysis & Research, Ltd. (CARE)	No	India	No	No	No
24.	Credit Rating Agency of Bangladesh, Ltd.(CRAB)	No	Bangladesh	No	No	No
25.	Credit Rating Information and Services Ltd.	No	Bangladesh	No	No	No
26.	Credit - Rating	No	Ukraine	No	No	No
27.	Creditreform Rating AG	No	Germany	No	Yes	No
28.	CRIF S.p.A	No	Italy	No	Yes	No
29.	CRISIL Ltd.	No	India	No	No	No
30.	Dagong Europe Credit Rat-ing,S.r.l.(DagongEurope)	No	Italy	No	Yes	No
31.	Dagong Global Credit Rating	No	China	No	No	No
32.	Demotech, Inc.	No	USA	No	No	No

Table Contd.

Sort ID	Credit rating agency/ organisation	Non-Profit	Headquarter	Recognised by SEC*	Recognised by ESMA**	Recognised by FINMA***
33.	Dominion Bond Rating Service Ltd.	No	Canada	Yes	Yes	Yes
34.	Dun & Bradstreet	No	USA	No	No	No
35.	Egan-Jones Rating Company	No	USA	Yes	No	No
36.	Emerging Credit Rating ltd (ECRL)	No	Bangladesh	No	No	No
37.	Equilidbrium Clasificadora de Riesgo	No	Peru	No	No	No
38.	Euler Hermes Rating GmbH	No	Germany	No	Yes	No
39.	Euromoney Country Risk	No	UK	No	No	No
40.	European Rating Agency, A.S. (ERA)	No	Slovakia	No	Yes	No
41.	EuroRating, Sp.z.o.o	No	Poland	No	Yes	No
42.	Expert RA	No	Russia	No	No	No
43.	Fedafin	No	Switzerland	No	No	No
44.	Feller Rate Clasificadora de Ries-go	No	Chile	No	No	No
45.	Feri Euro Rating Services AG	No	Germany	No	Yes	No
46.	Fitch Ratings	No	USA	Yes	Yes	Yes
47.	Fitch Ratings Polska	No	Poland	No	Yes	No
48.	Global Credit Ratings Co.	No	South Africa	No	No	No
49.	HR Ratings, S.A. de C.V	No	Mexico	Yes	No	No
50.	ICAP Group, S.A.	No	Greece	No	Yes	No
51.	International Non-Profit Credit Rating Agency(INCRA)	Yes	USA	No	No	No
52.	Investment Information and Cred-it Rating Agency (ICRA)	No	India	No	No	No
53.	Interfax Rating Agency(IRA)	No	Russia	No	No	No
54.	Islamic International Rating Agency, B.S.C.(IIRA)	No	Bahrain	No	No	No
55.	Japan Credit Rating Agency, Ltd.	No	Japan	Yes	Yes	No
56.	JCR-VIS Credit Rating Co. Ltd	No	Pakistan	No	No	No
57.	Kobirate A.S.	No	Turkey	No	No	No
58.	Korea Investors Services, Inc.(KIS)	No	South Korea	No	No	No
59.	Korea Ratings Corporation	No	South Korea	No	No	No
60.	Kroll Bond Rating Agency	No	USA	Yes	Yes	No
61.	Levin and Goldstein	No	Zambia	No	No	No
62.	Malaysian Rating Corpor- tion Berhad (MARC)	No	Malaysia	No	No	No
63.	Moody's Investors Service	No	USA	Yes	Yes	Yes
64.	Morningstar, Inc.	No	USA	Yes	No	No
65.	Muros Ratings	No	Russia	No	No	No
66.	National Information &Cr- edit Evaluation,Inc. (NICE)	No	South Korea	No	No	No
67.	NSU Risk Management Institute.	Yes	Singapore	No	No	No
68.	ONICRA Credit Rating Agency of India, Ltd.	No	India	No	No	No
69.	Ontonix	No	Italy	No	No	No
70.	Pacific Credit Rating (PCR)	No	Peru	No	No	No
71.	Pakistan Credit Rating Agency, Ltd.(PACRA)	No	Pakistan	No	No	No
72.	Pefindo Credit Rating Agency	No	Indonesia	No	No	No
73.	Philippine Rating Services, Corp. (PhiRatings)	No	Philippines	No	No	No

Table Contd.

Sort ID	Credit rating agency/ organisation	Non-Profit	Headquarter	Recognised by SEC	Recognised by ESMA	Recognised by FINMA
74.	Public Sector Credit Solutions	Yes	USA	No	No	No
75.	RAM Rating Services Berhad	No	Malaysia	No	No	No
76.	Rapid Ratings International Inc. (RRI)	No	USA	Yes	No	No
77.	Rating and Investment Information, Inc.(R&I)	No	Japan	No	No	No
78.	Rus Rating	No	Russia	No	No	No
79.	SAHA A.S.	No	Turkey	No	No	No
80.	Scope Credit Rating GmbH	No	Germany	No	Yes	No
81.	Seoul Credit Rating & Information, Inc. (SCI)	No	South Korea	No	No	No
82.	Sanghai Credit Information Services Co., Ltd. (CIS)	No	China	No	No	No
83.	SMERA Ratings, Ltd.	No	India	No	No	No
84.	Sociedad Calificadora de riesgo Centroamericana, S.A., (S C Riesgo)	No	Costa Rica	No	No	No
85.	Spread Research	No	France	No	Yes	No
86.	SR Rating, Ltda.	No	Brazil	No	No	No
87.	Standard & Poor's	No	USA	Yes	Yes	Yes
88.	Taiwan Ratings, Corp.(TCR)	No	Taiwan	No	No	No
89.	Thai Rating and Information Services Co., Ltd. (TRIS)	No	Thailand	No	No	No
90.	The Economist Intelligence Unit, Ltd.	No	UK	No	Yes	No
91.	Turkish Credit Rating A.S.	No	Turkey	No	No	No
92.	TURK rating	No	Turkey	No	No	No
93.	Veda	No	Australia	No	No	No
94.	Veribanc, Inc.	No	USA	No	No	No
95.	Weiss Ratings, LLC	No	USA	No	No	No
96.	Wikirating	Yes	Switzerland	No	No	No

Source: http://www.wikirating.org/wiki/List_of_credit_rating_agencies, accessed on 05th June,2015

Appendix 2

Ratings of "The Big Three"

Moody's		S&P		Fitch		rating description
Long-term	**Short-term**	**Long-term**	**Short-term**	**Long-term**	**Short-term**	
Aaa	P-1	AAA	A-1+	AAA	F1+	Prime
Aa1		AA+		AA+		High grade
Aa2		AA		AA		
Aa3		AA−		AA−		
A1		A+	A-1	A+	F1	Upper medium grade
A2		A		A		
A3	P-2	A−	A-2	A−	F2	
Baa1		BBB+		BBB+		Lower medium grade
Baa2	P-3	BBB	A-3	BBB	F3	
Baa3		BBB−		BBB−		
Ba1	Not prime	BB+	B	BB+	B	Non-investment grade speculative
Ba2		BB		BB		
Ba3		BB−		BB−		
B1		B+		B+		Highly speculative
B2		B		B		
B3		B−		B−		
Caa1		CCC+	C	CCC	C	Substantial risks
Caa2		CCC				Extremely speculative
Caa3		CCC−				Default imminent with little prospect for recovery
Ca		CC				
		C				
C		D	/	DDD	/	In default
/				DD		
/				D		

Source: http://en.wikipedia.org/wiki/Bond_credit_rating

Appendix 3

Interest Rate of the Selected Companies

Figures are shown in%

SL.	Company Name	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
1	A C C Ltd.	7.38	1.17	11.21	9.27	8.22
2	Ambuja Cements Ltd.	8.03	7.28	6.09	8.07	9.86
3	Barak Valley Cements Ltd.	0.00	0.00	0.00	0.00	0.00
4	Bheema Cements Ltd.	17.00	16.01	14.07	14.50	11.36
5	Binani Cement Ltd.	0.00	0.00	0.00	26.58	10.94
6	Birla Corporation Ltd.	18.19	16.38	13.63	13.45	14.46
7	Chettinad Cement Corpn. Ltd.	14.27	9.10	9.50	13.71	11.79
8	Deccan Cements Ltd.	14.17	17.10	7.20	12.18	15.79
9	Gujarat Sidhee Cement Ltd.	10.62	10.31	10.84	9.36	11.33
10	Heidelberg Cement India Ltd.	10.18	1.79	0.62	0.29	0.23
11	India Cements Ltd.	10.17	10.02	15.75	9.97	2.78
12	J K Cement Ltd.	0.00	0.00	0.00	0.00	1.35
13	J K Lakshmi Cement Ltd.	15.39	5.37	4.25	5.14	5.14
14	K C P Ltd.	14.46	17.70	17.44	13.22	10.50
15	Keerthi Industries Ltd.	15.00	15.01	17.01	13.00	13.93
16	Malabar Cements Ltd.	0.00	0.00	18.06	15.00	18.00
17	Mangalam Cement Ltd.	15.75	3.02	0.95	1.69	11.84
18	My Home Inds. Ltd.	0.00	20.82	9.49	13.09	13.95
19	Necem Cements Ltd.	5.88	5.71	0.00	0.00	10.96
20	Nirman Cements Ltd.	18.69	0.00	0.00	10.77	13.64
21	O C L India Ltd.	14.99	10.52	7.21	4.56	3.36
22	Panyam Cements & Mineral Inds. Ltd.	0.00	12.34	0.00	12.07	14.41
23	Prism Cement Ltd.	12.58	18.20	12.50	11.83	9.00
24	Ramco Cements Ltd.	11.07	9.01	10.53	9.39	8.08
25	Sagar Cements Ltd.	5.65	11.12	9.11	9.17	9.12
26	Sanghi Industries Ltd.	0.25	0.24	0.31	0.31	2.63
27	Saurashtra Cement Ltd.	15.00	14.50	12.01	16.00	0.00
28	Shree Cement Ltd.	0.00	14.59	0.00	8.68	10.70
29	Shree Digvijay Cement Co. Ltd.	10.12	11.61	13.08	8.88	1.40
30	Sri Vishnu Cement Ltd. [Merged]	9.79	8.63	13.83	16.20	13.18
31	Trinetra Cement Ltd.	0.00	0.00	0.00	0.00	0.00
32	Udaipur Cement Works Ltd.	41.94	9.79	9.79	0.06	0.00
33	Ultratech Cement Ltd.	0.00	0.00	0.00	0.00	3.88
34	Varun Cements Ltd.	14.57	11.31	10.69	10.69	6.29
35	Vinay Cements Ltd.	0.00	0.00	0.00	7.25	1.63

Table Contd.

SL.	Company Name	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009
1	A C C Ltd.	6.68	7.52	11.62	9.90	8.36
2	Ambuja Cements Ltd.	8.14	9.93	9.93	14.60	11.75
3	Barak Valley Cements Ltd.	9.20	6.42	7.50	7.90	9.58
4	Bheema Cements Ltd.	10.77	12.60	9.95	5.34	11.04
5	Binani Cement Ltd.	12.12	7.60	7.75	8.94	11.67
6	Birla Corporation Ltd.	11.33	8.96	8.85	9.69	10.52
7	Chettinad Cement Corpn. Ltd.	6.39	6.10	7.46	4.25	5.03
8	Deccan Cements Ltd.	13.15	6.62	2.94	0.35	1.41
9	Gujarat Sidhee Cement Ltd.	13.46	12.33	0.00	0.00	20.93
10	Heidelberg Cement India Ltd.	0.47	1.17	0.47	1.42	5.18
11	India Cements Ltd.	3.59	7.93	11.88	9.13	7.03
12	J K Cement Ltd.	3.63	10.63	10.02	10.59	10.00
13	J K Lakshmi Cement Ltd.	0.44	3.20	4.33	9.92	7.44
14	K C P Ltd.	10.40	7.31	6.29	12.27	9.95
15	Keerthi Industries Ltd.	13.70	13.81	10.28	0.00	0.00
16	Malabar Cements Ltd.	17.00	18.00	0.00	0.00	0.00
17	Mangalam Cement Ltd.	11.27	25.34	1.28	4.04	52.37
18	My Home Inds. Ltd.	10.64	6.29	3.15	11.29	7.50
19	Necem Cements Ltd.	2.89	2.94	44.86	16.72	12.99
20	Nirman Cements Ltd.	8.40	8.63	4.20	0.00	0.00
21	O C L India Ltd.	3.85	3.19	5.90	4.66	5.39
22	Panyam Cements & Mineral Inds. Ltd.	14.31	8.04	14.47	9.65	17.94
23	Prism Cement Ltd.	8.34	16.74	0.00	0.00	0.00
24	Ramco Cements Ltd.	5.19	5.70	3.37	3.16	4.47
25	Sagar Cements Ltd.	18.42	13.24	6.00	1.63	6.16
26	Sanghi Industries Ltd.	5.26	3.90	7.58	8.78	7.59
27	Saurashtra Cement Ltd.	0.00	0.00	13.91	15.21	15.21
28	Shree Cement Ltd.	6.48	2.70	0.00	3.98	5.32
29	Shree Digvijay Cement Co. Ltd.	0.53	0.20	3.77	0.54	10.87
30	Sri Vishnu Cement Ltd. [Merged]	14.01	14.21	16.72	0.00	0.00
31	Trinetra Cement Ltd.	0.00	0.00	0.00	2.49	0.00
32	Udaipur Cement Works Ltd.	0.00	0.00	0.00	0.00	0.00
33	Ultratech Cement Ltd.	5.09	6.36	5.65	5.49	5.48
34	Varun Cements Ltd.	0.00	0.00	0.00	0.00	0.00
35	Vinay Cements Ltd.	4.85	9.33	8.82	10.49	14.73

Table Contd.

SL.	Company Name	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
1	A C C Ltd.	1.86	14.92	14.25	6.76	14.42
2	Ambuja Cements Ltd.	11.80	12.30	7.41	6.43	15.96
3	Barak Valley Cements Ltd.	7.87	8.37	9.95	11.72	12.03
4	Bheema Cements Ltd.	7.92	5.63	5.14	4.89	0.00
5	Binani Cement Ltd.	9.49	8.13	9.81	14.08	9.12
6	Birla Corporation Ltd.	3.92	6.08	9.63	7.32	6.70
7	Chettinad Cement Corpn. Ltd.	10.20	7.03	8.43	10.58	9.14
8	Deccan Cements Ltd.	10.21	12.68	15.92	13.08	11.62
9	Gujarat Sidhee Cement Ltd.	42.11	82.62	3.09	8.17	7.22
10	Heidelberg Cement India Ltd.	5.18	14.40	32.54	29.60	14.52
11	India Cements Ltd.	8.59	8.20	18.42	11.36	12.54
12	J K Cement Ltd.	10.28	8.32	11.44	10.68	7.61
13	J K Lakshmi Cement Ltd.	5.95	6.03	7.45	6.05	4.70
14	K C P Ltd.	4.65	3.97	11.13	10.18	9.81
15	Keerthi Industries Ltd.	0.00	14.00	12.16	11.57	11.03
16	Malabar Cements Ltd.	0.00	0.00	0.00	0.00	0.00
17	Mangalam Cement Ltd.	0.00	0.00	0.00	2.11	2.24
18	My Home Inds. Ltd.	1.54	2.26	0.00	0.00	0.00
19	Necem Cements Ltd.	13.56	0.00	0.00	0.00	0.00
20	Nirman Cements Ltd.	8.68	5.88	9.97	0.00	0.00
21	O C L India Ltd.	6.14	7.33	9.83	9.18	8.93
22	Panyam Cements & Mineral Inds. Ltd.	11.34	6.49	13.16	13.98	11.57
23	Prism Cement Ltd.	6.03	9.97	12.02	10.67	12.71
24	Ramco Cements Ltd.	5.88	4.99	5.85	6.17	6.08
25	Sagar Cements Ltd.	12.95	12.82	16.60	13.83	14.47
26	Sanghi Industries Ltd.	6.15	4.74	1.36	2.87	4.04
27	Saurashtra Cement Ltd.	19.69	11.69	11.93	11.38	13.16
28	Shree Cement Ltd.	6.34	9.23	9.63	17.36	12.21
29	Shree Digvijay Cement Co. Ltd.	125.95	0.00	4.09	3.57	4.09
30	Sri Vishnu Cement Ltd. [Merged]	0.00	0.00	0.00	0.00	0.00
31	Trinetra Cement Ltd.	0.00	1.00	12.48	14.39	9.01
32	Udaipur Cement Works Ltd.	0.00	0.00	0.00	0.70	0.70
33	Ultratech Cement Ltd.	4.64	7.08	7.00	6.04	7.78
34	Varun Cements Ltd.	0.00	0.00	0.00	0.00	0.00
35	Vinay Cements Ltd.	14.90	5.48	20.47	9.64	7.07

Source: Own Calculation

Appendix 4

Credit rating (assigned) of selected companies

SL.	Company Name	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
1	A C C Ltd.	7.47	7.36	0	7.38	7.4
2	Ambuja Cements Ltd.	7.5	7.36	7.47	7	8
3	Barak valley cements Ltd.	0	0	0	0	0
4	Bheema Cements Ltd.	0	0	0	0	0
5	Binani Cement Ltd.	0	0	0	4.74	0
6	Birla Corporation Ltd.	0	0	0	8	8
7	Cement Corpn. Of India Ltd.	0	0	0	0	0
8	Chettinad Cement Corpn. Ltd.	0	0	0	0	0
9	Cochin Cements Ltd.	0	0	0	0	0
10	Deccan Cements Ltd.	0	0	0	0	0
11	Gujarat Sidhee Cement Ltd.	0	0	0	0	0
12	Heidelberg Cement India Ltd.	0	0	0	0	0
13	Hemadri Cements Ltd.	0	0	0	0	0
14	India Cements Ltd.	7	7	5	8	0
15	J K Cement Ltd.	0	0	0	0	0
16	J K Lakshmi Cement Ltd.	7	7	7	7	0
17	K C P Ltd.	0	0	0	0	0
18	Kalinga Cement Ltd.	0	0	0	0	0
19	Keerthi Industries Ltd.	0	0	0	0	0
20	Malabar Cements Ltd.	0	0	0	0	0
21	Mangalam Cement Ltd.	0	0	0	0	7.21
22	My Home Inds. Ltd.	0	0	0	0	0
23	N C L Industries Ltd.	0	0	0	0	0
24	Necem Cements Ltd.	0	0	0	0	0
25	Nirman Cements Ltd.	0	0	0	0	0
26	O C L India Ltd.	0	0	0	0	8
27	Panyam Cements & Mineral Inds. Ltd.	0	0	0	0	0
28	Penna Cement Inds. Ltd.	0	0	0	0	0
29	Prism Cement Ltd.	7	3	3	7.39	0
30	Ramco Cements Ltd.	7	7	7	7	7
31	Sagar Cements Ltd.	0	0	0	0	0
32	Sanghi Industries Ltd.	0	0	6	6	0
33	Saurashtra Cement Ltd.	0	0	0	0	0
34	Shree Cement Ltd.	0	0	8	8	7.8
35	Shree Digvijay Cement Co. Ltd.	0	0	0	0	0
36	Sri Vishnu Cement Ltd. [Merged]	0	0	0	0	0
37	Trinetra Cement Ltd.	0	0	0	0	0
38	Udaipur Cement Works Ltd.	0	0	0	0	0
39	Ultratech Cement Ltd.	0	0	0	0	0
40	Varun Cements Ltd.	0	0	0	0	0
41	Vinay Cements Ltd.	0	0	0	0	0

Table Contd.

SL.	Company Name	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009
1	A C C Ltd.	8	8	7.42	7.33	8
2	Ambuja Cements Ltd.	7	8	8	8	8
3	Barak valley Cements Ltd.	0	8	8	8	8
4	Bheema Cements Ltd.	0	0	2	0	3.48
5	Binani Cement Ltd.	6	0	6	6	6.58
6	Birla Corporation Ltd.	8	8	7.23	8	7.4
7	Cement Corpn. Of India Ltd.	0	0	0	0	0
8	Chettinad Cement Corpn. Ltd.	0	0	0	0	7.4
9	Cochin Cements Ltd.	0	0	0	0	0
10	Deccan Cements Ltd.	0	0	0	0	0
11	Gujarat Sidhee Cement Ltd.	0	0	0	0	0
12	Heidelberg Cement India Ltd.	0	0	0	0	0
13	Hemadri Cements Ltd.	0	0	0	0	0
14	India Cements Ltd.	8	8	8	0	7.31
15	J K Cement Ltd.	7.57	0	0	0	5.46
16	J K Lakshmi Cement Ltd.	0	0	0	0	5.45
17	K C P Ltd.	0	0	0	0	5.23
18	Kalinga Cement Ltd.	0	0	0	0	0
19	Keerthi Industries Ltd.	0	0	0	0	0
20	Malabar Cements Ltd.	0	0	0	0	0
21	Mangalam Cement Ltd.	0	0	0	0	6.5
22	My Home Inds. Ltd.	0	0	7.3	0	0
23	N C L Industries Ltd.	0	0	0	0	0
24	Necem Cements Ltd.	0	0	0	0	0
25	Nirman Cements Ltd.	0	0	0	0	0
26	O C L India Ltd.	7.88	7	7.58	7.2	7.19
27	Panyam Cements & Mineral Inds. Ltd.	0	0	0	0	0
28	Penna Cement Inds. Ltd.	0	0	0	0	0
29	Prism Cement Ltd.	0	0	0	3	0
30	Ramco Cements Ltd.	7	7	8	8	8
31	Sagar Cements Ltd.	0	0	0	5.8	5.8
32	Sanghi Industries Ltd.	0	6	0	0	0
33	Saurashtra Cement Ltd.	0	0	0	0	0
34	Shree Cement Ltd.	8	7.31	7.36	7.6	7.1
35	Shree Digvijay Cement Co. Ltd.	0	0	0	0	0
36	Sri Vishnu Cement Ltd. [Merged]	0	0	0	0	0
37	Trinetra Cement Ltd.	0	0	0	0	0
38	Udaipur Cement Works Ltd.	0	0	0	0	0
39	Ultratech Cement Ltd.	8	8	8	8	8
40	Varun Cements Ltd.	0	0	0	0	0
41	Vinay Cements Ltd.	0	0	0	0	0

Table Contd.

SL.	Company Name	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
1	A C C Ltd.	8	7.45	8	8	0
2	Ambuja Cements Ltd.	8	8	8	8	8
3	Barak valley Cements Ltd.	8	8	8	0	0
4	Bheema Cements Ltd.	2	0	1	1	0
5	Binani Cement Ltd.	6	5.52	5.6	5.98	8
6	Birla Corporation Ltd.	8	8	7.35	7.41	7.48
7	Cement Corpn. Of India Ltd.	0	0	0	0	0
8	Chettinad Cement Corpn. Ltd.	0	7.19	7.19	7.31	7.2
9	Cochin Cements Ltd.	0	0	0	0	0
10	Deccan Cements Ltd.	0	0	0	0	0
11	Gujarat Sidhee Cement Ltd.	0	0	0	0	0
12	Heidelberg Cement India Ltd.	0	0	8	8	8
13	Hemadri Cements Ltd.	0	0	0	0	0
14	India Cements Ltd.	8	7.24	0	5.9	5.89
15	J K Cement Ltd.	5.61	5.61	5.71	7.16	7.1
16	J K Lakshmi Cement Ltd.	7	8	7.05	7.17	7.11
17	K C P Ltd.	5.16	5.17	5.18	5.27	5.73
18	Kalinga Cement Ltd.	0	0	0	0	0
19	Keerthi Industries Ltd.	3	1	3	1	2
20	Malabar Cements Ltd.	0	0	0	0	0
21	Mangalam Cement Ltd.	7	7	0	7.1	7.1
22	My Home Inds. Ltd.	7.37	8	8	8	7.52
23	N C L Industries Ltd.	0	0	0	0	0
24	Necem Cements Ltd.	0	0	0	0	0
25	Nirman Cements Ltd.	0	0	0	0	0
26	O C L India Ltd.	7	7.5	7	7	7.28
27	Panyam Cements & Mineral Inds. Ltd.	0	0	2.83	3	1
28	Penna Cement Inds. Ltd.	0	0	0	0	0
29	Prism Cement Ltd.	3	7.17	7.69	5	5.41
30	Ramco Cements Ltd.	8	8	8	8	8
31	Sagar Cements Ltd.	5.8	5.66	0	6	6
32	Sanghi Industries Ltd.	0	0	0	0	0
33	Saurashtra Cement Ltd.	0	0	0	0	0
34	Shree Cement Ltd.	7.39	7.03	7.14	7.28	7.89
35	Shree Digvijay Cement Co. Ltd.	0	0	0	0	0
36	Sri Vishnu Cement Ltd. [Merged]	0	0	0	0	0
37	Trinetra Cement Ltd.	0	0	0	0	5
38	Udaipur Cement Works Ltd.	0	0	0	0	0
39	Ultratech Cement Ltd.	8	8	8	8	8
40	Varun Cements Ltd.	0	0	0	0	0
41	Vinay Cements Ltd.	0	0	0	0	0

Source: Own Calculation

Appendix 5

Average Investment Inflows (borrowings) of the companies

Sl. Nos.	Name of the Companies	Average investment Inflows (borrowings) Rs. In Million	Sl. Nos.	Name of the Companies	Average investment Inflows (borrowings) Rs. in Million
1	ACC Ltd.	1140.2500	21	My Home Cement Inds. Ltd.	419.1000
2	Ambuja Cements Ltd.	2461.6400	22	NCL Cement Inds Ltd.	227.8600
3	Bheema Cements Ltd.	145.2214	23	Necem Cements Ltd.	0.6600
4	Binani Cements Ltd.	3820.3360	24	Nirman Cements Ltd.	7.4750
5	Birla Cemrents Corporation Ltd.	1771.5170	25	OCL India Ltd.	1482.1900
6	Cement Corporation of India Ltd.	486.9500	26	Panayam Cement Inds. Ltd.	53.1400
7	Chettinad Cement Corporation Ltd.	1623.3770	27	Penna Cement Inds. Ltd.	96.5500
8	Coachin Cements Ltd.	28.2000	28	Prism Cement Ltd.	468.0000
9	Deccan Cements Ltd.	350.7455	29	Ramco Cements Ltd.	4607.7000
10	GujratSidhee Cement Ltd.	146.0333	30	Sagar Cements Ltd.	290.8400
11	Heidelberg Cement India Ltd.	4187.2000	31	Sanghi Cements Inds Ltd	755.3000
12	Hemadri Cements Ltd.	8.0400	32	Saurashtra Cement Ltd.	311.01430
13	India Cements Ltd.	3870.5180	33	Shree Cement Ltd.	3537.0080
14	J K Cement Ltd.	2776.8600	34	Shree Digvijay Cement Co. Ltd.	93.6000
15	J K Lakshmi Cement Ltd.	1681.4600	35	Sri Vishnu Cement Ltd.(Merged)	200.4600
16	KCP Cement Ltd.	453.2364	36	Trinetra Cement Ltd.	336.3833
17	Kalinga Cement Ltd.	1.9000	37	Udaipur Cement Works Ltd.	211.3200
18	Keerthi Cements Ltd.	51.86667	38	Ultratech Cement Ltd.	5332.8550
19	Malabar Cements Ltd.	93.4400	39	Varun Cements Ltd.	42.5000
20	Mangalam Cements Ltd.	664.5200	40	Vinay Cements Ltd.	127.3375

Source: PROWSE Database (PROWSE release 4.15)

Appendix 6

Average Interest Rate of the Selected Companies

Sl. Nos.	Name of the Companies	Average Interest rates %	Sl. Nos.	Name of the Companies	Average Interest rates %
1	A CC Ltd.	8.9	19	Neceem Cements Ltd.	13
2	Ambuja Cements Ltd.	9.83	20	Nirman Cements Ltd.	9.87
3	Barak Valley Cements Ltd.	9.05	21	OCL India Ltd.	7
4	Bheema Cement Ltd.	10.44	22	Panayam Cement Inds. Ltd.	12.29
5	Binani Cement Ltd.	11.35	23	Prism Cement Ltd.	11.49
6	Birla Cement Corporation Ltd	10.50	24	Ramco Cements Ltd.	6.6
7	Chettinad Cement Corporation Ltd.	8.86	25	Sagar Cements Ltd.	10.68
8	Deccan Cements Ltd.	10.29	26	Sanghi Cement Inds Ltd.	3.73
9	Gujrat Sidhee Cement Ltd.	18.46	27	Saurashtra Cement Ltd.	14
10	Heidelberg Cement India Ltd.	7.87	28	Shree Cement Ltd.	8.93
11	India Cements Ltd.	9.82	29	Shree Digvijay Cement Co. Ltd.	14
12	J K Cement Ltd.	8.59	30	Sri Vishnu Cement Ltd. (Merged)	13.32
13	J K Lakshmi Cement Ltd.	6.05	31	Trinetra Cement Ltd.	7.87
14	KCP Cement Ltd.	8.69	32	Udaipur Cement Works Ltd.	10.49
15	Keerthi Cements Ltd.	13.37	33	Ultratech Cements Ltd.	5.46
16	Malabar Cements Ltd.	17.21	34	Varun Cements Ltd.	10.71
17	Mangalam Cement Ltd.	10.99	35	Vinay Cements Ltd.	7.46
18	My Home Cement Inds Ltd.	9			

Source: Own calculation

Appendix 7

Average credit rating (assigned) of selected companies

Sl. Nos.	Name of the rated companies	Average credit rating (assigned)
1	ACC Ltd.	7.68
2	Ambuja Cements Ltd.	7.76
3	Barak Valley	8
4	Bheema Cements Ltd.	1.9
5	Binani Cement Ltd.	6.04
6	Birla Corporation Ltd.	7.74
7	Chettinad Cement Corporation Ltd.	7.26
8	Heidelberg Cement India Ltd.	8
9	India Cements Ltd.	7.11
10	J K Cements Ltd.	6.32
11	J K Lakshmi Cement Ltd.	6.98
12	KCP Cement Ltd.	5.29
13	Keerthi Cement Inds Ltd.	2
14	Mangalam Cement Ltd.	7
15	My Home Cement Inds. Ltd.	7.7
16	O C L India Ltd.	7.33
17	Panayam Cement Inds Ltd.	2.28
18	Prism Cements Ltd.	5.16
19	Ramco Cements Ltd.	7.53
20	Sagar Cements Ltd.	5.84
21	Sanghi Cement Inds Ltd.	6
22	Shree Cement Ltd.	7.53
23	Trinetra Cements Ltd.	5
24	Ultratech Cements Ltd.	8

Source: Own Calculation.

Appendix 8

Average investment Inflows (borrowings) of companies in pre- and post- credit rating period

Sl. Nos.	Name of the Companies	Average investment Inflows (borrowings) in pre- credit rating period. Rs. In Million	Average investment Inflows (borrowings) in post- credit rating period. Rs. in Million
1	ACC Ltd.	193.5778	849.8833
2	Ambuja Cements Ltd.	1264.8560	154.0833
3	Bheema Cements Ltd.	44.0111	272.8333
4	Binani Cements Ltd.	656.9556	6018.5170
5	Birla Cemrents Corporation Ltd.	338.1444	3035.8170
6	Cement Corporation of India Ltd.	216.4222	0.0000
7	Chettinad Cement Corporation Ltd.	765.8111	2368.6000
8	Coachin Cements Ltd.	5.9889	0.4167
9	Deccan Cements Ltd.	213.5556	322.7000
10	GujratSidhee Cement Ltd.	143.3111	4.083333
11	Heidelberg Cement India Ltd.	12.8778	4167.8830
12	Hemadri Cements Ltd.	4.4667	0
13	India Cements Ltd.	2871.2110	2789.1330
14	J K Cement Ltd.	775.9222	3927.0330
15	J K Lakshmi Cement Ltd.	716.6111	3128.7330
16	KCP Cement Ltd.	33.16667	781.1833
17	Kalinga Cement Ltd.	0.2111	0
18	Keerthi Cements Ltd.	17.2889	0
19	Malabar Cements Ltd.	50.5000	2.116667
20	Mangalam Cements Ltd.	286.9000	1009.4500
21	My Home Cement Inds. Ltd.	401.9444	25.73333
22	NCL Cement Inds Ltd.	136.0667	289.6000
23	Necem Cements Ltd.	0.1444	0.3333
24	Nirman Cements Ltd.	2.2667	1.5833
25	OCL India Ltd.	541.7222	1163.6670
26	Panayam Cement Inds. Ltd.	23.6222	0
27	Penna Cement Inds. Ltd.	21.4556	0
28	Prism Cement Ltd.	312.0000	0
29	Ramco Cements Ltd.	1836.0220	8765.2330
30	Sagar Cements Ltd.	238.3556	369.5667
31	Sanghi Cements Inds Ltd	779.7667	215.0667
32	Saurashtra Cement Ltd.	364.6556	178.7167
33	Shree Cement Ltd.	1297.1890	5128.2330
34	Shree Digvijay Cement Co. Ltd.	40.9222	1.0166
35	Sri Vishnu Cement Ltd.(Merged)	111.3667	0
36	Trinetra Cement Ltd.	0.3000	335.9333
37	Udaipur Cement Works Ltd.	6.2889	166.6667
38	Ultratech Cement Ltd.	1680.3670	7256.3500
39	Varun Cements Ltd.	9.4444	0
40	Vinay Cements Ltd.	7.6333	158.3333

Source: Own calculation

Appendix 9

Average interest rates of companies in pre- and post- credit rating period

Sl. No.	Name of the Companies	Average interest rate in pre-credit rating period. %	Average interest rate in post-credit rating period. %
1	A C C Ltd.	8.11	10.09
2	Ambuja Cements Ltd.	9.10	10.94
3	Barak Valley Cements Ltd.	3.45	9.92
4	Bheema Cements Ltd.	12.40	5.77
5	Binani Cement Ltd.	8.22	10.38
6	Birla Corporation Ltd.	12.77	7.36
7	Chettinad Cement Corpn. Ltd.	9.17	8.40
8	Deccan Cements Ltd.	9.95	10.82
9	Gujarat Sidhee Cement Ltd.	8.70	27.36
10	Heidelberg Cement India Ltd.	1.85	16.91
11	India Cements Ltd.	9.02	11.03
12	J K Cement Ltd.	4.02	9.72
13	J K Lakshmi Cement Ltd.	5.91	6.27
14	K C P Ltd.	12.18	8.28
15	Keerthi Industries Ltd.	12.42	8.13
16	Malabar Cements Ltd.	9.56	0.00
17	Mangalam Cement Ltd.	8.35	9.45
18	My Home Inds. Ltd.	9.86	1.88
19	Necem Cements Ltd.	10.00	4.42
20	Nirman Cements Ltd.	7.15	4.09
21	O C L India Ltd.	6.47	7.80
22	Panyam Cements & Mineral Inds. Ltd.	9.48	12.41
23	Prism Cement Ltd.	9.91	8.57
24	Ramco Cements Ltd.	7.28	5.57
25	Sagar Cements Ltd.	9.27	12.80
26	Sanghi Industries Ltd.	3.25	4.46
27	Saurashtra Cement Ltd.	9.63	13.84
28	Shree Cement Ltd.	5.24	10.02
29	Shree Digvijay Cement Co. Ltd.	5.57	24.76
30	Sri Vishnu Cement Ltd. [Merged]	11.84	0.00
31	Trinetra Cement Ltd.	0.28	6.15
32	Udaipur Cement Works Ltd.	6.84	0.23
33	Ultratech Cement Ltd.	2.94	6.34
34	Varun Cements Ltd.	5.95	0.00
35	Vinay Cements Ltd.	4.71	12.05

Source: Own calculation

Appendix 10

Average interest rate of selected companies for each selected year

Year	Average interest rate %
1999-2000	0.13
2000-2001	0.11
2001-2002	0.10
2002-2003	0.10
2003-2004	0.09
2004-2005	0.08
2005-2006	0.09
2006-2007	0.09
2007-2008	0.08
2008-2009	0.11
2009-2010	0.14
2010-2011	0.11
2011-2012	0.11
2012-2013	0.10
2013-2014	0.09

Source: Own calculation

Appendix 11

Average investment inflow (borrowings) of selected companies for each selected year

Year	Average investment inflow (borrowings) Rs. in Million
1999-2000	637.6947
2000-2001	454.8421
2001-2002	421.7905
2002-2003	362.8778
2003-2004	823.6000
2004-2005	866.9700
2005-2006	565.6565
2006-2007	1141.2200
2007-2008	1508.0000
2008-2009	1968.0570
2009-2010	1843.3800
2010-2011	1980.8800
2011-2012	2189.0900
2012-2013	3229.0600
2013-2014	4004.7800

Source: Own calculation

Appendix 12

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