Chapter V

CREDIT RISK MANAGEMENT IN THE BANKING SECTORS OF RUSSIA AND INDIA:
A COMPARATIVE STUDY
Recent financial disasters in financial, non-financial firms and in governmental agencies point to the need for various forms of risk management approaches. Financial misadventures are hardly a new phenomenon, but the rapidity with which economic entities can get into trouble is. Savings and Loan (S&L) crisis in the United States took two decades plus serious regulatory ineptness and legislative cupiditity to develop into the debacle it became. Manager of the Orange County Investment Pool (OCIP) took less than three years to increase that quasi-bank’s potential one-month loss from a significant but perhaps manageable 1.8% to a disastrous 5% of its investors deposit like claims (Jorison 1995: 2). Anyone who is aware of the leverage inherent in various interest rate derivatives knows he could have done this faster and even more ruinously had he set his mind to it. To their credit, most regulatory authorities appear to recognize that the core of the problem is not derivatives per se but inadequate risk management (Pyle 1997: 1-2).

This chapter of the present study deals with the management perspective of risks especially credit risk in the banking sector. It also discusses various aspects and approaches of credit risk management in general and in Russian and Indian banking sector in particular. It also highlights a comparative approach signifying the similarities and differences in both the countries banking credit risk management strategies and approaches.

Banks and similar financial institutions need to meet forthcoming regulatory requirements for risk measurement and capital (Merton 1977: 2). However, it is a serious error to think that meeting regulatory requirements is the sole or even the most important reason for establishing a sound, scientific risk management system. Management need reliable risk measures to direct capital to activities with the best risk/reward ratios. They need estimates of the size of potential losses to stay within limits imposed by readily available liquidity, by creditors, customers, and regulators. They need mechanisms to monitor positions and create incentives for prudent risk-taking by divisions and individuals. And, risk management is that process by which managers satisfy these needs by identifying key risks, obtaining consistent, understandable, operational risk measures, choosing which risks to reduce and which to increase and by what means, and establishing procedures to monitor the resulting risk position (Pyle 1997: 2).

Major Risks Groups

Risk, may be defined as reductions in firm value due to changes in the business environment. Risk is defined as uncertainty, or the deviation from an
expected outcome (Johanning 1998: 47). Uncertainties are of two types, General uncertainty, which refer to complete ignorance about any potential outcome, makes both rational decision making, many quantification impossible and Specific uncertainty, in which objective, or at least subjective, probabilities can be assigned to the potential outcomes (stochastic) and hence allow for quantification. Term Risk is usually used synonymously with specific uncertainty, because statistics allows us to quantify this specific uncertainty by using so called measures of dispersion. The variability around the expected or average value is usually measured by calculating the variance or (its square root) the standard deviation (Copeland & Weston 1988: 149-153), which is also known as volatility in a finance context (Steiner & Bruns 1995: 53). Risk is also an event or injury that can cause damage to an institution’s income or reputation. It is like energy that cannot be created or destroyed but can only be passed on or managed. Various categories of Risk have been shown in the Figure 1, given below which draws a clear picture of various risks. But what accelerates taking of risk in any of the arena is a big question? The answer is reward. There exist a direct relationship between Risk and Reward and the quests for profit maximization has given rise for accelerated risk assumption for enhanced rewards (Godse 2002: 1). There are various other reasons for taking Risks like, Overconfidence, Optimism, Hindsight, Pattern seeking, Overcompensation, Myopia, Inertia, Complacency and Zealotry (Ibid: 5).

**Chart 5 (a): Categorization of Risks**

Below given figure categorizes risk into risk of physical loss, risk of skill loss, risk of pecuniary loss. Peculiar risks consist of credit risk, which if further divided into default risk, MTM risk and portfolio risk. Portfolio risk can be further divided into intrinsic risk and concentration risk and non-credit risk includes liquidity, pricing, forex, country, security and interest rate risk.
Typically, the major sources of value loss which are generally involved in the transactions of banking are identified as:

*Market risk* is the change in net asset value due to changes in underlying economic factors such as interest rates, exchange rates, and equity and commodity prices.

*Credit risk* is the change in net asset value due to changes the perceived ability of counter-parties to meet their contractual obligations.

*Operational risk* results from costs incurred through mistakes made in carrying out transactions such as settlement failures, failures to meet regulatory requirements, and untimely collections.

*Performance risk* encompasses losses resulting from the failure to properly monitor employees or to use appropriate methods (including “model risk”).

Risk management can therefore be considered the identification, assessment, and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities. Bank risk management processes is essentially an investigation of how they manage these four risks. In each case, the procedure discussed in this chapter in later part is adapted to the risk considered so as to standardize, measure, constrain and manage each of these risks.

**Objectives of Risk management**

Domain of risk management function grew steadily in size and importance within commercial and investment banks since 1990s. Risk management department exists not only to eliminate the possibility of all expected losses, but also to control the frequency, extent size of such losses in such a way as to provide the minimum surprise to senior management and shareholders. Risk exists in all competitive business and the key objective of the risk management function within a financial institution is to allow a clear understanding of the risks and exposures the firm engaged in, such that monetary loss is deemed acceptable by the firm. Acceptability of any loss should be on the basis that occasional loss is to be expected as a result of the firm being engaged in a particular business activity. If a bank’s risk management function is effective, there will be no over-reaction to any unexpected losses, which may increase eventual costs to many times the original loss amount (Choudhry 2006: 7).
Lessons learned from the recent risk management failure

The recent crisis in the sub-prime lending market exposed structural deficiencies in the financial system globally, particularly in the area of risk management. With lacking corporate governance and incentive schemes along with inappropriate structure; poor risk management spearheaded the crisis. Power seemed to fall in the hands of those taking risks instead of those assessing it. It was found that many financial institutions continue to view and manage risk in the traditional fashion — as a threat that may bear a negative impact in the future. Lacking a more comprehensive, proactive and integrated view of risk, many institutions mandate narrowly focused risk control and mitigation strategies, and then overreact when unforeseen or damaging events arise.

Moreover in today's changing world, most financial services institutions are predominantly risk averse. But as the balance between product mix and capital adequacy shows greater variance, business models are becoming noticeably polarized — with progressive institutions understanding, managing risks in financial institutions more holistically.

"Risk analyses that are 'siloed' in one area of an institution may exaggerate the danger attached to new products or services, thus leading institutions to stifle innovation and forgo growth opportunities", said Guillermo Kopp, author and executive director of global research fellow at Tower-Group. "On the other side of the coin, poor integration of risk management across an organization masks the interdependencies of risk and financial indicators — potentially exposing financial institutions to severe losses. Unfortunately many institutions only become aware of their risk management pitfalls once a lapse in controls or unforeseen interdependencies between events causes a major business problem", he added.

Report also addresses poor risk management practices within financial institutions involved in both purchasing and originating sophisticated mortgage-related investments. Another disturbing revelation of the sub-prime crisis is that major financial institutions are unable to estimate their actual exposure to losses resulting from these types of securities accurately. Causes for this ranged from improper understanding of the actual risk associated with individual investments to the inability

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1 A large, underground facility for the control, storage, and launching of a long-range ballistic missile
to aggregate the holdings of various investments properly across all of a firm's business lines. Resultantly, financial institutions have found themselves far more exposed to risk and potential liquidity problems than expected, especially as credit conditions have deteriorated (John 20th March 2008: 1-2).

**Banking Risk Management: Various Approaches**

Banking Risk management is both a philosophical, operational and normative issue (approaches). As a philosophical approach, banking risk management is about attitudes toward risk and the payoff associated with it, and strategies in dealing with them. As an operational approach, risk management is about the identification and classification of banking risks, and methods and procedures to measure, monitor, and control them. Actually, the two approaches are not independent from one another, and the attitudes toward risk shape up the guidelines for risk measurement, monitoring, and control (Panos 2001:9-12). Normative theory explains that risk management creates value since it constitutes a whole spectrum of instruments apart from just derivatives in liquid markets, which can be used as the cost of applying them is lower than the total risk costs associated with the transaction and secondly it also deals that whether risk generate enough revenues to compensate both market and total risk costs.

**Risk Management in various Credit Models**

Risk is involved in bank transactions since centuries, but complexities involved in transactions were less in traditional credit process model as compared to modern credit process model. Under the classical or traditional credit process, concept of credit risk management had always been to ensure that adequate capital was available for loan funding and that reserves were provisioned according to the borrower's credit assessment. Credit extensions had always used a static approach whereby subsequent to the loan origination, the credit risk of the borrower would remain on the issuing creditors balance sheet until maturity. Figure 5 (a) illustrates the key elements of this approach, which began with the transactions origination between the account officer and the borrower. Credit requests were prepared and presented for approval to enter into a transaction that more often than not would be underpriced for the risks relative to the proposed facility terms and structure. The credit granting and subsequent monitoring process was often accompanied by unpredictable financial indicators that had been derived from limited financial analysis and due diligence (Colquitt 2007: 145). A supporting credit department was responsible for independently assessing and monitoring the risks based on financial statements, and
the account officers provided credit analysis and if applicable, collateral appraisals. Loan syndication\(^3\) played an important role in the credit markets at that time; however, the emphasis by most lenders was foremost on mitigating credit risks through risk disaggregation rather than managing loan funding for liquidity purposes. A common problem under this approach was the lack of risk sensitive pricing strategies, did not always result in sufficient capital being allocated against rising unexpected losses. This became quite evident as the extension of loans declined from being a leading product for lenders to one of a \textit{loss leader} (Cade 2004: 60), in anticipation that future ancillary business from borrowers would compensate for the losses on loans. As a result, when defaults occur, costs were not recovered, which served to further depress credit earnings.

\textbf{Figure 5 (a): Traditional Credit Model}

![Traditional Credit Model Diagram]

Source: Cade 2004: 64.

Whereas in modern credit approach subsequently began to make comparisons between their historically passive approach to loan management and the more active style of portfolio managers that used most of the same skills and techniques for selecting credits. They found that the difference between these alternatives credit

\(^3\) A syndicated loan is one that is provided by a group of lenders and is structured, arranged, and administered by one or several commercial or investment banks known as arrangers.
providers and traditional commercial lenders was that portfolio and fund managers did not retain non-performing assets if those assets failed to provide expected portfolio returns. *Modern Credit Risk Approach* (Cade 2004: 65) is considered to be a dynamic application in which all aspects of credit risk are built around an ongoing credit portfolio assessment and measurement process. Credit portfolio management techniques have become an integral part in credit functions for business units throughout banks, beginning with the evaluation of loan originations. Supporting functions, including relationship managers, the credit department, credit administration, and credit portfolio management, all have complementary roles that are driven by several common themes- to reduce the banks cost of capital and to increase aggregate portfolio performance. In general, relationship managers in conjunction with each supporting credit functions originate transactions, so that when new business is developed it will be based on realizing a hurdle rate of return that is also in line with the banks’ portfolio concentration limits.

**Figure 5 (b): Modern Credit Approach**

*Source: Cade 2004: 68*
Besides traditional and modern credit process, functional approach is also established within the credit organization; the credit process will typically begin with the origination of new business and revolve around type supporting credit functions which are given below. *Marketing or Relationship Management* (Wyman 1999: 403; Cade 2004: 75) is usually conducted by the business development or loan department and is the original and sometimes primary contact with borrowers. Because relationship managers are also charged with having full knowledge about the borrowers business and industry, they will usually propose to the credit department or approving authorities the supporting reasons to extend new credit transactions in the credit application. The credit application therefore becomes a primary document to drive the credit process in that it serves as a basis to derive historical borrower information that will subsequently be used in credit risk measurement. Information relevant to borrower characteristics, exposure amounts, and facility types will be gathered and collected from credit applications to measure future potential losses from credit exposures. Credit risk approval is then based on the credit assessment and risk measurement applications after assigned risk ratings are given to support the credit analysis and quantify a borrower's 'probability of default' to exposure loss. Credit rating systems have been a significant development in modern credit applications, depending on the type of system that is used, the credit process can be integrated to appropriate information systems technology so that credit functions can inclusively perform a variety of tasks.

5 (c) Figure of Functional Approach to the Credit Process

1. Credit Origination and Generation
2. Credit Proposed and Assessed
3. Credit Approval
4. Loan Documentation and Disbursement
5. Credit Administration
6. Problem Loans and Work Out
7. Mission and Objectives to establish credit philosophy and credit culture

A Functional Approach to the Credit Process

Source: Cade 2004:78.
Distinguishing factor illustrated in above figure 5 (c) relative to modern credit risk is that the entire credit process revolves around credit portfolio management to ensure that appropriate pricing and portfolio returns can be attained on credit extensions. As an active part of the credit organization that has taken on an increasingly visible role, credit portfolio management is charged with reducing the cost of capital, also increasing portfolio performance (Wyman 1999: 403).

Figure 5 (d) given below, explains how the extension of a credit facility to a firm that is below investment grade, but accompanied with high yields, may contain a credit default swap to mitigate future loss exposure. Credit portfolio management is also subcomponent of the credit monitoring function that heavily relies on advanced information system applications to measure daily analytic credit risk activities on the overall credit portfolio composition and asset quality. Techniques such as Value at Risk (VAR) along with other scenario conditions are applied to stress testing circumstances under various conditions to determine how credit portfolio transactions can impact capital allocations and earnings profitability. An overview of each of these supporting functions is important to build a credit process. Credit risk transfer has enabled to a greater extent in solving this problem of managing credit risk. For this, internal credit default swaps and credit risk trading and hedging is used.

Figure 5 (d): Managing the credit risk transfer

![Diagram of credit risk management process]

According to standard economic theory, managers of value maximizing firms ought to maximize expected profit without regard to the variability around its expected value. Stulz (1984: 19), Smith, Smithson, Wilford (1990), Froot, Sharfstein, Stein (1993: 20) and Santomero (1995: 15) opined that managerial self-interest, the non-linearity of the tax structure, the costs of financial distress and the existence of capital market imperfections are the reasons responsible for active risk management.

These risks undoubtedly need to be managed timely and the management relies on a sequence of steps to implement a risk management system i.e., standard setting and financial reporting. Underwriting standards, risk categorizations, and standards of review are all traditional tools of risk management and control. Consistent evaluation and rating of exposures of various types are essential to understand the risks in the portfolio, and the extent to which these risks must be mitigated or absorbed and reporting should be standardized with daily or weekly basis. Second technique for internal control of active management is the use of position limits, and or minimum standards for participation (Santomero 1997: 16). In terms of latter, the domain of risk taking is restricted to only those assets or counterparties that pass some prescribed quality standard. Even those investments that are eligible, limits are imposed to cover exposures to counter-parties, credits and overall position concentrates relative to various types of risks. While such limits are costly to establish and administer, their imposition restricts the risk that can be assumed by any one individual, and therefore by the organization as a whole. In general, each person who can commit capital will have a well-defined limit. This applies to traders, lenders, and portfolio managers (Allen 2000: 12). Thirdly, investment guidelines and strategies are outlined in terms of concentrations and commitments to particular areas of the market, the extent of desired asset-liability mismatching or exposure, and the need to hedge against systematic risk of a particular type. Limits described above lead to passive risk avoidance and/or diversification, because managers generally operate within position limits and prescribed rules. Beyond this, guidelines offer firm level advice as to the appropriate level of active management, given the state of the market and the willingness of senior management to absorb the risks implied by the aggregate portfolio (Gale 2000:21). Such guidelines help in firm level hedging and asset-liability matching. In addition, securitization and even derivative activity are rapidly growing techniques of position management open to participants looking to reduce their exposure to be in line with management's guidelines. Fourthly, managers enter
into incentive contracts but such incentive contracts require accurate position valuation and proper internal control systems.

**Credit Risk Management**

Major cause of serious banking problems continues to be the ineffective credit risk management. Provision of credit remains the primary business of financial institutions like various banks. For this reason, credit quality is considered a primary indicator of the financial soundness of the banking industries.

For the purposeful understanding of the credit risk management, following terms like credit, credit risk, credit risk management, exposure and non-performing loans should be well defined in the following manner in this study:

- **Financial Institution** includes any person doing banking business and all offices and branches of the financial institution shall be deemed to be one financial institution.

- **Credit** is the provision of funds on agreed terms and conditions to a borrower, who is obliged to repay the amount borrowed (together with interest thereon). Credit may be extended on a secured or unsecured basis by way of loans, mortgages, bonds, private placements, derivatives and leases.

- **Credit risk** is the risk that a lender will suffer a financial loss as a result of a borrower’s failure to perform according to the terms and conditions of the credit or loan agreement.

- **Credit Risk Management** is the process of controlling the impact of credit risk-related events on the financial institution and involves the identification, understanding, and quantification of the degree of potential loss and the consequential implementation of appropriate measures to minimize the risk of loss to the financial institution (Eastern Caribbean Bank Supervision Department 2009: 9).

- **Exposure** includes advances, credit facilities, guarantees, repurchase agreements, swap agreements and equity investments.

- **Non-performing loans** include loans and advances: that are not earning income; on which: full payment can no longer be expected; payments are more than 90 days delinquent; total credits to the accounts are insufficient to cover interest charges over a three-month period;

**Objective of Credit Risk Management**

Objective of credit risk management is to maximize a financial institution’s risk-adjusted rate of return by maintaining credit risk exposure within acceptable parameters. Credit risk management should not only effectively address the credit risk inherent in the credit portfolio, but should also consider the relationships between credit risks and other risks (Colquitt 2007: 249). The effective management of credit risk is a critical component of a comprehensive approach to total risk management.
and is fundamental to the safety and soundness of financial institutions. Appropriate policies, procedures and systems should be implemented at each financial institution to effectively identify, measure, monitor and control credit risk (Eastern Caribbean Bank Supervision Department 2009: 10).

**Types of Credit Risk**

There are various types of credit risk:

- Default risk is the chance the issuer will fail to meet its obligations
- Sovereign risk is a risk in which the counterpart is prohibited to pay when its country of domiciliation defaults and blocks all foreign payments. This risk is called sovereign transfer risk.
- Mark to Market risk is the risk that arises due to change in fair value of an asset over time.
- Portfolio risk is the risk, which is common to all securities.
- Intrinsic risk is the risk that says that market won’t pay a fair price for your asset when one decides to sell it.
- Concentration risk or Credit spread risk is the chance the spread between the risky bond and risk-free securities will vary after purchase
- Downgrade risk is the chance a rating agency will lower its rating on the issuer.

Credit risk consists of pre-settlement and settlement risk. It is typically represented by means of three factors: default risk, loss risk and exposure.

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4 Pre-settlement risk is the potential loss due to the counterpart’s default during the life of the transaction (loan, bond, derivative product). It exists over long period, often years, starting from the time it is contracted until settlement.

5 Settlement risk is the risk in which payment or the exchange of cash flows is not made directly to the counterpart, but via one or multiple banks that may also default at the moment of the exchange. The risk is present as soon as an institution makes the required payment until the offsetting payment is received. The longer the time between the two payments, higher the risk. Large payments and payments in different time zones and in different currencies have a higher settlement risk.

6 Default risk is the probability that a default event occurs. This probability is called the probability of default (PD). The probability has values between 0 and 1. A default event is a payment delay of at least 3 months. It depends on many factors. Counterparts with a weak financial situation, high debt burden, low and unstable income has a higher default probability. Apart from quantitative factors, qualitative factors like sector information and management quality also allow discriminating between counterparts with high and low default risk. In markets with increased competition, reducing industry margins, and a macroeconomic downturn, the default rates are expected to be higher than on average. The continuous default probability is typically represented on an internal rating scale with an ordinal ranking of the risk and discrete, increasing default probability. There also exist external rating agencies that provide an independent and external assessment of the default risk for investors in debt and other products. In case of a default, the actual loss depends on the loss given default (LGD) and the exposure at default (EAD).

7 The loss risk determines the loss as a fraction of the exposure in the case of the default. In the case of no loss, the LGD is equal to zero. When one loses the full exposure amount, the LGD is equal to 100%. A negative LGD indicates a profit. In some cases, the LGD can be above 100%, e.g., due to litigation costs and almost zero recovery from the defaulted counterpart. Resolution for the LGD is cure, restructuring, and liquidation. (EL=PD x LGD)
Credit risk management techniques that can be used to mitigate credit risk is good selection of counterparts and products. For counterparts with a higher default risk, more collateral is asked for to reduce recovery risk; it can also be reduced by requiring more stringent covenants e.g., on asset sales and good pricing of the product in line with the estimated risk (Bhatia 2006: 186). Besides selection, limitation also helps in reducing recovery risk by setting limit of how much credit a counterpart with a given risk profile can take. Diversification strategies spread the credit risk in order to avoid a concentration on credit risk problems, but it is easier for large, international banks and lastly credit enhancement can be done when the bank observes it is too exposed to a certain category of counterparts, it can buy credit protection in the form of guarantees from financial guarantors or via credit derivative products (Bank of International Settlement Report 2005: 14). By the protection, the credit quality of the guaranteed assets is enhanced also known as credit risk mitigation. Four types of credit culture have been identified like value driven, immediate performance driven, production driven and unfocussed. And optimal risk strategy is the one that is in the line with the business strategy. It is not the one that minimizes losses, but the one that provides a good credit quality in line with the business objectives. Effectiveness of credit risk management is verified by internal risk control, audit that monitor credit discipline, loan policies, approval policies, facility risk exposure (PD,

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8 The exposure at the time of default (EAD) may not be known beforehand. For some products like a bond or a straight loan, the amount is a fixed amount. For credit cards or overdraft facilities, the amount varies with the liquidity varies with the liquidity needs of the borrower. The counterpart can take cash up to a negotiated credit limit. The credit limit bounds the commitment of the bank. Other products have no explicit limit, but each additional drawing needs approval of the bank. The uncertainty on the exact amount at risk at the very moment of a future default is exposure risk. Privately negotiated derivative product contracts defaults bear exposure risk: if the counterpart of the derivative products defaults during the contract, one is exposed to the net positive value of the replacement cost of the contract. This specific type of risk is called counterpart credit risk. Risk factors also depend upon the maturity of the contract. Longer the contract, the higher the uncertainty and the risk.

9 Value driven strategy adheres to long term and consistent performance and requires a strong credit organization defined by the long-term profit plan. Success of the strategy depends on the balance between credit quality and revenue generation.

10 The immediate performance driven strategy defines current earnings to sustain a high stock price as the main priority. Profit generation is defined by the annual profit plan.

11 In this strategy, market share and volume growth are the highest priority, which is motivated by the ambition to become or to remain a large player on the market. Front office lenders are demanded to produce new loans and may experience difficulties with credit risk loan approvers, because of low credit quality and non-adequate pricing.

12 In unfocussed strategy, priorities may change frequently to time varying current priorities. This strategy may result from a reactive management, but also from a lack of a clear long-term vision. It often causes confusion for front office lenders and risk officers.
Chapter -V Credit Risk Management in the Banking Sectors of Russia and India: A Comparative Study

LGD, EAD) and portfolio level risk. Credit culture is supported by the top management and by a strong credit risk management (Baesens and Gestel 2008: 45).

1. Credit Risk Management Approach

To achieve and maintain effective credit risk management, financial institution should develop and implement a comprehensive credit risk management programme in accordance with its credit risk strategy. The credit risk strategy should reflect the institution’s tolerance for risk and the desired level of profitability for incurring various credit risks. The board of directors, management and staff of the financial institution should be aware of credit risk and understand their respective responsibilities within the credit risk management programme. An effective credit risk management programme includes the implementation of clearly defined credit policy and processes to facilitate the identification and quantification of risks inherent in an institution’s lending and investment activities (Ryser 2004: 4). Credit policy should be formally established in writing, approved by the board of directors, and should clearly set out the parameters under which credit risk is to be controlled.

Credit Policy

Most of the countries banks are facing serious credit issue related problems mainly due to the following reasons:

- Lax credit standards for assessment of borrowing/guarantors.
- Poor portfolio risk management.
- Lack of attention of changes in economic or other circumstances leading to the deterioration in credit quality (Eastern Caribbean Bank Supervision department 2009: 14). Hence a proper credit policy should be in place to mitigate rising credit risk. Credit policy establishes the authority, rules and framework for the effective operation and administration of the credit portfolio (Bhatia 2006: 200). This policy should be communicated throughout the organization in a timely manner and effectively implemented through the use of appropriate procedures. It is critical that the policy be reviewed periodically (at least annually) to ensure that it remains effective and flexible, and continues to meet the institution’s objectives. Changes in statutory and regulatory requirements should also be incorporated in the policy (Eastern Caribbean Bank Supervision department 2009: 15). A comprehensive credit policy that is effectively implemented enables the financial institution to:
• Maintain sound credit-underwriting standards;
• Assess, monitor and control credit risk;
• Properly evaluate new business opportunities; and
• Identify, administer and collect problem credits.

The credit policy should specify, *inter alia*:

• A credit risk philosophy governing the extent to which the institution is willing to accept credit risk;
• Levels of authority to approve credits. Delegated credit authority should be subject to timely review to ensure that it remains appropriate to current market conditions and expertise of credit officers;
• Target markets;
• Types of facilities to be offered, along with ceilings, pricing, profitability, maximum maturities and debt-service ratios of borrowers for each type of lending;
• Loan portfolio ratios (e.g. total loans to deposit ratio, total loans as a percentage of capital base);
• Loan portfolio limits for aggregate exposure by country, industry, category of borrower/counterparty, product, groups of related parties and single borrowers etc. Consideration of relevant legislation and ECCB guidelines should be made in establishing such limits. For example, Section 16 of the Banking Act imposes restrictions on the aggregate amount of credit that can be extended to a person or group of related persons;
• Criteria and procedures for granting new credits, unsecured credits and for credit restructuring and refinancing; (Bhatia 2006: 205)
• The minimum information required from loan applicants (considering anti-money laundering and know your customer best practices, and legal requirements);
• Loan review procedures, including a grading/rating system;
• Types of acceptable collateral and the criteria for accepting guarantees;
• Guidelines for classification, provisioning and write offs;
• Guidelines for obtaining and reviewing appraisals of real estate and other collateral;
• Guidelines for related party transactions including limits for exposure to a borrower or group of related borrowers (Bank of International settlement Report 2008: 16).

**Credit Risk Management Processes** involves various steps that are going to be discussed below.

Credit appraisal and approval is the initial stage where all required information on the credit is gathered and credit applicants are screened. Credit application forms should be sufficiently detailed to permit gathering of all information needed for credit
assessment. For this reason, financial institutions should have a checklist to ensure that all required information is collected. The appraisal criteria will of necessity vary between corporate credit applicants and personal credit applicants. Loans to insiders should be appraised and approved by the Board or its committee in accordance with applicable provisions of the Banking Act (Bank of International Settlement Report 2007: 14).

Corporate credit applicants should be required to provide up to date audited financial statements, and management accounts where necessary, in support of their applications. At a minimum, the appraisal criteria for corporate credit should focus on:

- Amount requested and purpose for credit;
- Sources of repayment;
- Applicant’s integrity as well as legal capacity to assume credit obligation;
- Risk profile of the applicant and the sensitivity of the applicable industry sector to economic fluctuations;
- Performance of the applicant in any credit previously granted by the financial institution and other institutions;
- The applicant’s capacity to repay based on the business plan and projected cash flows;
- Cumulative exposure of the applicant to different institutions;
- Physical inspection of the applicant’s business premises as well as the asset that is the subject of the proposed financing;
- Applicant’s business expertise and managerial capacity;
- Adequacy, marketability and enforceability of collateral or guarantees, taking into account the existence of any previous charges of other institutions on the collateral;
- Current and forecast operating environment of the borrower; and
- Background information on shareholders, directors and beneficial owners (Eastern Caribbean Bank Supervision department 2009: 16).

Credit Administration

A financial institution’s credit administration function should, at a minimum, ensure that:

- Credit files are neatly organized and cross-indexed;
- Credit files should not be removed from the institution’s premises without the requisite approval;
- Insurance policies are properly assigned to the institution and premiums are current;
• Credit facilities are disbursed only after all contractual terms and conditions
  have been met and all required documents received; (Bank of International
  Settlement Report 2007: 18)
• Security documents are duly executed and properly protected from fire, theft
  etc;
• Collateral value is periodically ascertained and monitored;
• The borrower is making timely repayments on interest, principal and any
  agreed to fees and commissions;
• Information on credit provided to the financial institution’s management is
  accurate and timely (Eastern Caribbean Bank supervision department 2009:
  17);
• Credit administration responsibilities within the financial institution are
  adequately segregated;
• Funds disbursed under the credit agreement are used for the purpose for which
  they were granted;
• Established policies and procedures, as well as relevant laws and regulations,
  are being complied with; and
• Assessments of borrower’s business are conducted through regular
  inspections. Each credit file, including electronic credit files, should contain,
  at a minimum, information that:
  • Identifies the borrower by name and occupation or type of business, and
    identifies cosigners, endorsers, guarantors and connected counter parties;
  • Know your customer information should be in accordance with the guidance
    notes issued by the money laundering supervisory authority;
  • Provides evidence of the borrower’s legal ability to borrow, financial
    condition, and ability to repay, including the timing and source(s) of
    repayment;
  • Describes the terms of the credit obligation, including the purpose of the
    credit;
  • Describes and evaluates the collateral;
  • Provides a history of the credit, including copies of the most recent credit
    authorization and internal credit reviews, and evidence of the level of
    approval;
  • Describes any relationship to owners, directors and management of the
    financial institution; and
  • Reflects the full relationship of the borrower with the bank, such as deposit
    accounts, off-balance sheet transactions, credit history etc (Bank of

Measuring and Monitoring of Credit Risk

Financial institutions should have in place comprehensive procedures and
information systems to effectively monitor and control credit risk. These procedures
should incorporate prudent criteria for identifying, reporting existing, potential
problem accounts, ensuring that such accounts are sufficiently reviewed, adequately monitored and the relevant corrective action taken. The accurate classification of accounts and provisioning for loan losses should also form part of these procedures.

The feasibility and effectiveness of the various requirements of the credit risk management framework depend, in large measure, on the adequacy of management information systems (Bidani 2004:62). Financial institutions should have information systems and analytical techniques that are sufficiently flexible to help identify:

- Risk concentrations, such as, credits grouped by related borrowers, economic sector, geographic areas etc;
- Degrees of delinquency and level of follow up;
- Volumes of loans secured versus unsecured;
- Volumes of new loans generated by officers;
- Missing or inadequate information such as financial statements;
- Losses by officer/type of loan;
- Adequacy of loan loss reserves; and
- Restructured debts, expired and written-off accounts.

Credit risk is calculated on the basis of possible losses from the credit portfolio.

Potential losses in the credit business can be divided into

- Expected losses and
- Unexpected losses

Expected losses are derived from the borrower’s expected probability of default and the predicted exposure at default less the recovery rate, i.e. all expected cash flows, especially from the realization of collateral. Expected losses should be accounted for income planning and included as standard risk costs in the credit conditions. Unexpected losses result from deviations in losses from the expected loss. Unexpected losses are taken into account only indirectly via equity cost in the course of income planning and setting of credit conditions. They have to be secured by the risk coverage capital (Bidani 2004: 63).

Financial institutions should have in place a credit rating system that defines risk rating criteria and rates credits according to these criteria. Each institution should have in place appropriate policies for classifying credits, recognizing revenue and providing for loan loss. Institutions should have a well-defined credit collection and arrears management process. For institutions that have a high level of non-performing loans, it is recommended that a unit be established to handle the workout and recovery of problem loans with appropriate policies in place.
Adequate Credit Risk Controls:

Segregation of Duties

Financial institutions should establish internal controls and practices to ensure that the credit initiation, approval, review, administration, payments and work-out functions are kept as separate as possible. Breaches of internal controls and practices should be reported to the appropriate level of management.

Credit Review

Financial institutions should establish a system of independent, ongoing assessment of its credit risk management processes and the results of such reviews should be communicated directly to the board of directors or committee thereof, and to senior management. The credit risk management programme of each institution must include procedures governing the formal review and rating of individual credits. An independent review of credits should be conducted along with regular analysis and rating of credits by account officers. Because of their frequent contact with borrowers, account officers are in a position to detect changes in a borrower’s operations or financial condition. Accordingly, these officers should be able to identify potential problems before they may be discovered by independent credit reviewers (Chaudhry 2006: 75) and credit review systems should include the ongoing monitoring of credits and, where applicable, underlying security. Common objectives of effective credit review system include:

- Ensuring that the institution is aware of borrowers’ current financial condition;
- Ensuring that collateral security is adequate and enforceable relative to borrowers’ current circumstances;
- Ensuring that credits are in compliance with their covenants and margins;
- Providing early identification, classification of potential problem credits to protect the investment and ensure repayment of the loan before it becomes a complete loss;
- Providing essential information to determine the adequacy of the provision for loan losses (Eastern Caribbean Bank Supervision department 2009: 23);
- Providing senior management and the board with an objective and timely assessment of the overall quality of the loan and investment portfolio; and
- Ensuring that proper accounting is maintained for all types of credits, for example, delinquent loans are put on a non-accrual basis and investments held for trading or available for sale are appropriately marked to market.

Independent Audit

Financial institutions should establish a system of regular independent credit and compliance audits. Audit should be performed by an independent party, that is,
internal auditor and or compliance officer, who should report directly to the board or its committees. Assessment should, at a minimum, randomly test all aspects of credit risk management in order to determine that:

- Credit policies are adequate;
- Credit activities are in compliance with the institution’s credit and accounting policies and procedures, and with the laws and regulations to which the activities are subject;
- Credits are duly authorized and accurately recorded;
- Credits are appropriately rated (Eastern Caribbean Bank Supervision department 2009: 29);
- Credit files are complete and security perfected;
- Potential problem credits are being identified in a timely manner and provision for credit losses is adequate; and
- Credit risk management information reports are adequate and accurate.

**Credit Risk Management Models**

Over the last decade, number of the world’s largest banks has developed sophisticated systems in an attempt to model the credit risk arising from important aspects of their business lines. Such models are intended to aid banks in quantifying, aggregating and managing risk across geographical and product lines. Output of these models also play increasingly important roles in bank’s risk management and performance measurement processes, including performance-based compensation, customer profitability analysis, risk-based pricing and to a lesser (but growing) degree, active portfolio management and capital structure decisions. Credit scoring models use data on observed borrower characteristics either to calculate the probability of default or to borrowers into different default risk classes (Saunders and Cornett 2007: 23).

Four methodological approaches to developing multivariate credit scoring systems are **Linear Probability Model, Logit Model, Probit Model** and the **Discriminant Analysis Model**. Most common form of discriminant analysis seeks to find a linear function of accounting and market variables that best distinguishes between two loan borrower classification groups—repayment and non-repayment facilities. This requires an analysis of a set of variables to maximize the between group variance while maximizing the within group variance among these variables. Similarly Logit analysis uses a set of accounting variables to predict the probability of borrower default, assuming that the probability of default is logistically distributed i.e., the
cumulative probability of default takes a logistic functional form and is, by definition, constrained to fall between 0 and 1 (Altman 1996: 11). In the Black-Scholes-Merton model, probability of a firm going bankrupt depends crucially on the beginning period market value of that firm’s assets (a) relative to its outside debt (b), as well as the volatility of the market value of a firm’s asset (\( \sigma_A \)) (Saunders 1996: 13). Random Effect Multinomial ordered Probit model for panel data employs a method based on calculating the probability of a particular business entity being in a certain credit worthiness class, based on the value of the selected indicators. Model takes into account not only selected microeconomic indicators but also time component and possible different credit worthiness of relevant business entity at different banks (Kavcic 2008: 11).

Prominent amongst the credit scoring is Altman’s Z-Score. The Z-score formula for predicting bankruptcy of Dr. Edward Altman (1968) is a multivariate formula for measurement of the financial health of a company and a powerful diagnostic tool that forecast the probability of a company entering bankruptcy within a two-year period with a proven accuracy of 75-80%. KMV Model is a credit monitor model that helps to solve the lending problems of banks and further look at the repayment incentive problem (Gilbert 2004: 22). To try resolving the problems, KMV model uses the structural relationship between the volatility of a firm’s asset and the volatility of the firm’s equity. An increasingly popular model used to evaluate the return on a loan to a large customer is the risk-adjusted return on capital (RAROC) model. This model, originally pioneered by Bankers Trust (acquired by Deutsche Bank in 1998) is now adopted by virtually all the large banks in Europe and the US. According to James Christopher (1996), immediate purpose of the RAROC risk-measurement systems is to provide bank managements with a more reliable way to determine the amount of capital necessary to support each of their major activities and, to determine the overall leverage for the banks as a whole (Achou and Ntui 2008: 34).

If one looks into the banking sector since 1990’s, evidences of various risks especially credit risk can be found in both the regions, and the objective behind the introduction of credit risk management in the banking sector of transition countries was to break the monotonous control of centrally command economy and to reform banking sector as per the changing global world. Efforts have been done throughout the transition phase to improve the performance of banking sector and to reduce the
magnitude of credit risks and non-performing assets to improve the profitability of the banking sector. Both the countries are trying to reduce the credit risk through the credit risk management approach. Question now arises that after taking so many efforts are both these countries in a position to reduce credit risk or not?

2. Credit Risk Management Approaches in the Banking Sector of Russia and India

Russian Credit Risk Management Approaches

During Soviet era, there was a united banking system and hence, there was no need for banking supervision. Even after disintegration, firms avoid the banking system while making payments, since Russian banking system was notoriously inefficient and costly for its users. Bank transfers take longer than a month and these delays are not compensated. As large cash payments are illegal and risky, barter can be a method of payment that is legal and safe, while avoiding explicit and implicit banking costs in Russia (Commander and Christian 1998: 12). A second reason was that as Russian banks act as intermediaries for tax collection, avoiding bank transfers means reducing both visibility of transactions and physical access to the companies' resources. Firms trying to evade taxes will generally prefer to avoid bank transfers. Barter was prevalent in Russia and spot barter allows trade without the credit risk (or with credit risk reduced and shifted elsewhere). By accepting goods, the firm secures immediate control rights and avoids credit risk. The disadvantage was that barter incurs additional transactions costs. By avoiding credit risk, spot barter can be very attractive in the Russian context where ownership and creditor rights were weak (Commander and Christian 1998: 14). Hence when credit risk was very low hence credit risk management was also nominal.

Present scenario of credit risk management approaches in Russia

During 1990’s after the initiation of economic reforms especially banking reforms, emphasis was laid towards the risk management in banking institutions. It was suggested that in Russia, credit risk was most intrinsic to the commercial banking business. It was emphasized that to manage it, stress should be laid to make credit policy and who has the approval authority should be made clearer and business promotion division should be separated from screening division. Credit assessment system consisting of portfolio management (establish a better lending asset structure by assessing an expected loss from loans as a whole) and individual credit (credit one
by one and takes safeguarding measures such as the inspection and management of each credit and the requirements of collateral) should be used to judge a debtor's ability to repay debts consistently and strictly. Various processes like credit policy, credit approval, credit monitoring, credit examination, client screening, credit analysis, operating cash flow analysis taking into consideration quantitative and qualitative factors should be involved in credit risk management process (Kurosaka 2001: 36).

Credit risk management in Russian banks include different steps involving assessment, evaluation, monitoring including risk concentration, exposure limits and securitization which is going to be discussed below.

Assessment of Credit risk

As defined by the group\(^{13}\) for the purpose of internal credit risk assessment, loans fall into the “non-performing category” when principal and/or interest payment becomes more than 90 days overdue. Thus non-performing loans comprise impaired loans to individuals, both impaired and non-impaired loans to legal entities; which are over 90 days overdue. A loan is considered overdue when the borrower fails to make any payment due under the loan at the balance sheet. In this case an overdue amount is recognized as the aggregate amount of all amounts due from borrower under the loan agreement including accrued interest and commissions. Corporate loans are deemed impaired when the principal and/or interest payment becomes more than 90 days overdue (Sberbank 2009: 14).

Impairment losses are recognized in profit or loss when incurred as a result of one or more events (loss events) that occurred after the initial recognition of the financial asset and which have an impact on the amount or timing of the estimated future cash flows of the financial asset or group of financial assets that can reliably estimated. The primary factors that the group considers whether a financial asset is impaired or not is its overdue status and realiseability of related collateral, if any. The following other principal criteria are used to determine if there is objective evidence that an impairment loss has occurred:

- Any installment is overdue; and the late payment cannot be attributed to a delay in settlement systems;
- A borrower experiences significant financial difficulties or any information exists about threatening adverse effect that can cause the borrower’s

\(^{13}\) Group signifies various managers involved in formulation of credit risk management policy in banks.
insolvency as evidenced by the borrower’s financial information obtained by the group;

• Renegotiation of material original terms of contract (restructuring) as a result of changes in the borrower’s financial position;

• Asset is issued to a borrower to repay his earlier debts;

• A borrower considers bankruptcy or financial reorganization; and

• Adverse change in the payment status of a borrower exists as a result of changes in internal factors (unprofitable activity, drop in production, significant increase in receivables/payables) and external factors (changes in national or local economic conditions that impact the borrower) (Sberbank consolidated Financial Statements and Independent Auditors’s Report 2009: 46).

Evaluation of Credit Risk

Future cash flows in a group of financial assets that are collectively evaluated for impairment are estimated on the basis of the contractual cash flows of the assets and historical loss experience in respect of the extent to which amounts will become overdue as a result of past loss events and the success of recovery of overdue amounts. Past experience is adjusted on the basis of current observable data to reflect the effects of current conditions that did not past affect past periods and to remove the effects of past conditions that do not exist currently. Impairment losses are recognized through an allowance account to write down the asset’s carrying amount to the present value of expected cash flows (which exclude future credit losses that have not been incurred) discounted at the original effective interest rate of the asset. The calculation of the present value of the estimated future cash flows of a collateralized financial asset reflects the cash flows that may result from foreclosure less costs for obtaining and selling the collateral, whether or not foreclosure is probable (Sberbank consolidated Financial Statements and Independent Auditors’s Report 2009: 15). After a loan has been written down as a result of impairment, interest income is then recognized on the basis of the interest rate used to discount future cash flows for the purpose of measuring the impairment loss. If, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognized (such as an improvement in the debtor’s credit rating), the previously recognized impairment loss is reversed by adjusting the allowance account through profit or loss.
Securitization of Credit Risk

As a rule the group requires collateral and/or guarantees for loans to legal entities (commercial and specialized loans). Acceptable collateral includes real estate, securities (within the Group’s risk limits for such securities), transport and production equipment, inventory, precious metal, certain contract rights and certain personal property. Guarantees can be provided by controlling shareholders (or other controlling persons) of small businesses, government entities, banks and other solvent legal entities (all within risk limits for such guarantees). A guarantor is evaluated on the same basis as the borrower itself. Group assesses value of collateral on the basis of an internal expert evaluation performed by the group’s specialists, an independent appraiser’s evaluation or on the basis of the discounted book value of the collateral. In accordance with the group’s policy, value of collateral or the amount of guarantee must cover the principal and interest on the loan for a period of three months. Borrowers must either insure the collateral or make a payment to the group reflecting the increase in credit risk due to the lack of insurance. According to the group’s policy the value of collateral or the amount of guarantee must cover the principal and interest on the loan for a period of at least a year. Group determines the value of collateral on the basis of internal or independent evaluation or its discounted carrying amount. Individual guarantors are evaluated on the same basis as the borrower itself (Sberbank consolidated financial statements and independent auditor’s report 2009: 17).

If group is exposed to credit risk, which is a risk of a counter-party being unable to meet its credit obligations in whole or in part when due. Group manages credit risk in accordance with internal policies and procedures, which are reviewed and updated periodically, as well as on an ad-hoc basis. Group’s maximum exposure to credit risk is reflected in the carrying amounts of financial assets on the consolidated balance sheet. For guarantees and commitments to extend credit, the maximum exposure to credit risk is the amount of the commitment.

Securitization in Russia is used to clean-up balance sheet by reducing the mandatory reserves of assets, improving financial ratios, and disposal of low liquidity assets. It helps in access to cheaper financing by lowering interest rates/discounts and higher credit ratings for the transaction. It also helps in diversification of sources of funding, profile raising and creation of long term financing program (Zolotarev 2007: 1). Volume of securitization which was only 300 US $ million during 2004 increased
to 2300 US $ million during 2006 and concentration of it is maximum in auto loans which is 33%.

Credit Monitoring Authority

Group’s lending policies focus on the improvement of the credit quality and profitability of its loan portfolio and minimization and diversification of credit risks. To minimize credit risk at the branch level, the CIC (credit inspection committee) at the Bank’s central head office sets lending limits for the regional head offices and branches that report to the bank’s central head office directly. Regional head offices then allocate these lending limits among branches, sub-branches and outlets that report to them. Loans that exceed these lending limits must be approved by the CIC of the Bank’s central head office. Group usually requires collateral and/or guarantees for loans. Acceptable collateral includes real estate, securities, transportation and production equipment, inventory, precious metals, contract rights and personal property. Group accepts guarantees from controlling shareholders (or other controlling persons) of small businesses, government entities, banks, other solvent legal entities, individuals (for loans to individuals). In order to reduce credit risk, several types of collateral may be used simultaneously (Sberbank consolidated Financial Statements and Independent Auditors’s Report 2009: 18).

Exposure Limits

To manage its credit risk, Group places its counter-parties into risk groups, which reflect the possibility of default on their obligations. Counter-parties placed into particular risk groups are assigned exposure limits. Group has procedures for calculation and review of risk limits for the following categories: corporate clients, Russian federation subjects, municipal bodies, domestic and foreign banks. Exposure limits are also set for foreign countries, single and related borrowers and banking operations subject to credit risk. Exposure limits for corporate clients are set on the basis of their ownership structure, business reputation, credit history, financial condition, future financial trends, quality of financial management, transparency, industry and regional position and facilities and equipment quality. On the basis of these factors, corporate clients are placed into risk groups and assigned long-term and short-term exposure limits.

Credit risk of Russian federation subjects and municipal bodies is evaluated on the basis of their financial position and the level of development. Financial position is evaluated on the basis of credit history, debt level and compliance with its budget and
budgetary norms. The level of development is evaluated on the basis of the current socio-economic development level, future socio-economic development potential and tax proceeds sources. Group sets three types of exposure limits for federation subjects and municipal bodies: short-term (for transactions with a term of no more than a year), temporary (for transactions that take place before their budgets are approved and have a term of no more than three months) and long-term (for transactions with a term of over a year). These limits are calculated on the basis of the Russian federation subjects’ budgets for the current year and reports relating to compliance with their budgets for a previous year. Exposure limits are not set and credit operations are not performed if a federation subject has no legal basis for loan operations or where its financial position or level of development indicate that credit transactions are not advisable (Sberbank consolidated Financial Statements and Independent Auditors’s Report 2009: 19).

Exposure limits for counter-party banks are set on the basis of their financial condition, position among comparable banks, transparency of asset and liability structure and operations, operating environment (for non-resident counter-party banks), capital structure, concentration of banking operations, credit history, business reputation and relationship with the group. Branch and/or banking group structure are also taken into account in setting exposure limits for a particular counter-party bank. The amount of a loan granted to an individual is limited by his/her creditworthiness, which is calculated individually for each client by using reducing ratios to the amount of his/her income and by taking into account the amount of his/her previous loans received and guarantees given. Also the amount of a loan depends on collateral provided by the client.

Risk Concentration

In order to reduce and diversify its credit risk, the group monitors its credit risk concentration, sets exposure limits for single borrowers and groups of related borrowers that are lower than those set by the standards of the Bank of Russia and sets limits for loans and bank guarantees made to related parties. Concentration and exposure limits for large credit operations and related borrowers and high-risk credit operations are approved at the Bank’s central head office level.

Credit Risk Monitoring

Group constantly monitors credit risks and exposure limits of various counterparties. Exposure limits for corporate clients are reviewed at least twice a year based
on their year-end and interim financial information, for federation subjects and municipal bodies twice a year on the basis of their approved budgets, for resident banks on a monthly basis and for non-resident banks and foreign countries at least once a year. Exposure limits may also be reviewed on an ad-hoc basis, if required.

For the purpose of monitoring credit risk credit departments of the Group compile regular reports based on a structured analysis of the client’s business and financial results. All information about the existing exposures against customers with deteriorating creditworthiness is reported to the management for further consideration. Group uses formalized internal credit ratings for monitoring credit risk. Management monitors and follow-up control of past due balances. Lending divisions of the Group perform a credit analysis by maturity and follow-up overdue balances. Credit risk for off-balance sheet financial instruments is defined as the possibility of sustaining a loss as a result of another party to a financial instrument failing to perform in accordance with the terms of the contract. Group uses the same credit policies in making conditional obligations as it does for on-balance sheet financial instruments through established credit approvals, risk control limits and monitoring procedures (Sberbank Annual Report 2007: 44).

Management of credit risk is conducted in accordance with regulatory document, approved by the main credit committee of the bank. The regulations foresee a systematic approach, based on the principles of awareness about the risk, delineation of authority, responsibility limitation, monitoring and control of risk (INVESTSBERBANK Financial Statements 2007: 40). In the retail business the approach to estimate the risk is taken to build using statistical estimation (scoring cards), as well as application of personal information (credit bureau, Federal Migration Service etc). In order to optimize the work of the Directorate of collection of arrears, it was also decided to employ outside collection agencies, several of them being already accredited in 2007. Such specialists regularly monitor and analyze the market, which allows them to make informed decision. All necessary changes in the Bank’s products are being made on the basis of resolutions of the collegial body – committee on development of products (OTB-bank Annual Report 2007: 35).

Russian banks especially Sberbank, Vneshtorgbank and Alfa bank manage their credit risk in following manner. All risk authority is centralized in the group’s credit committee (headed by the Chairman of the Executive Board) and asset and liability committee (“ALCO”, headed by the CEO). Credit committee and the
credit risk management department monitor on a revolving basis and subject to regular review credit risk. For instance, in Alfa bank the components of credit risk estimation are credit exposure (CE), probability of default (PD), loss given default (LGD) or recovery rate (RR) or LGD = 1 - RR, hence, credit expected loss is estimated: expected loss = (1 - PD) * CE + PD * CE * (1 - RR) = PD * CE * (1 - RR).

Altman Z score model (construct a formula for a borrower’s score (which determines default rate) depending on balance sheet ratios can be used as an approach for credit risk estimation, but it doesn’t suit Russia due to lack of reliable balance sheet data (IFRS desirable), difficulty of correct factors choice and lack of default data for calibration. Market bond prices serve as an indicator of the issuers credit risk, but there is limited applicability to Russia since few borrowers have quoted liquid bonds. Merton model is a structural model in which default process is endogenous and relates to borrowers capital structure and default happens when value of assets fall below the face value of debt. Even this has limited application in Russia since few borrowers have liquid stocks and assets market value and their volatility usually remain unobserved. In a reduced form of the model in which defaults probability depends on exogenous factors (borrower’s characteristics, general economic variables), the dependency can be specified by Logit and Probit Model. This works in Russian environment since statistically significant estimates of default probability were obtained using bank’s proprietary credit portfolio payments and default information (Halperin 2005:6-7).

Limits on the level of credit risk by product, borrower and industry sectors are approved regularly by the credit committee within its authority and approved by the executive committee and the board of directors. Credit limits are established and monitored in accordance with the bank’s lending policy. Exposure to credit risk is also managed, in part, by obtaining collateral and corporate and personal guarantees. Various challenges which the credit risk management faced were lack of reliable balance sheet data (IFRS desirable), difficulty of correct factors choice, lack of default data for calibration, few borrowers have quoted liquid bonds, few borrowers have liquid stocks and asset market value and its volatility are usually unobserved.

Despite significant improvements in recent years, banking supervision in Russia remains focused to a significant degree on formal compliance with guidelines rather than on substantive analysis. The standards that the Central Bank of Russia (CBR) established for Russian banks have been brought in line with global banking
standards in order to comply with Basel II, but most of them are not compulsory. Most small and medium enterprise banks in Russia employ only the compulsory requirements and standards because they still lack the necessary skills, experience, and resources for certain core aspects of bank governance and management. In particular, they are not yet adapt at applying state-of-the-art risk management techniques, for which the guidelines offer little help. Based on the project experience and the pre-selected 27 regional and non-regional banks answers, banks do not always recognize the necessity for advanced risk management methodologies. Most banks have considerable internal regulations, but they do not follow them in daily practice. Midsize bank’s monitoring and reporting systems are insufficiently developed because the banks have no IT systems that support risk management. These banks cannot afford the best-known and most advanced international IT systems (Buruc 2009: 2). Russian banks needs recommendations on how they can develop the simplest models for assessing probability of default (PD), loss given default (LGD) and correlations and how they can develop their own rating systems from regulators. Why does Russian banks use scoring/rating systems is shown in given below figure.

Why Does Banks Use Scoring/Rating Systems

Source: Buruc 2009: 5
Credit risk management policy of the bank dictates the credit risk strategy. This policy spell out the target markets, risk acceptance/avoidance levels, risk tolerance limits, preferred levels of diversification and concentration, credit risk measurement, monitoring and controlling mechanisms. Standardized credit approval process with well-established methods of appraisal and rating is the pivot of the credit management of the bank. Bank has comprehensive credit rating / scoring models being applied in the spheres of retail and non-retail portfolios of the bank. The Credit rating system of the bank has eight borrower grades for standard accounts and three grades for defaulted borrowers. Proactive credit risk management practices in the form of studies of rating-wise distribution, rating migration, probability of defaults of borrowers, Portfolio Analysis of retail lending assets, periodic industry review, review of country, currency, counter-party and group exposures are only some of the prudent measures, the bank is engaged in mitigating risk exposures. The current focus is on augmenting the bank’s abilities to quantify risk in a consistent, reliable and valid fashion, which will ensure advanced level of sophistication in the credit risk measurement and management in the years ahead (CBR 2008: 176).

**Credit Risk Management Approaches in Indian Banking Sector**

Whereas in India, before 1990’s banking sector was centrally controlled, highly regulated and always looked up-to the Reserve Bank of India to issue guidelines not only on policy issues but also on operational matters. RBI guidelines covered bank’s various functional areas may be appraisal and monitoring of loan accounts, assessment of credit needs of borrowers, fixation of interest rates on loans/advances and deposits, levying of service and penal charges, priority sector lending particularly to weaker sections and those covered under government sponsored schemes, import/export etc. Resultantly, emphasis on credit risk management was not prevalent.

Problem of credit risk and non-performing assets needs to be managed through proper credit risk management, which is going to be discussed below.

**Identification and Ascertainment of Credit Default Risk:** In order to assess the credit default risk the concerned bank has to check the following five C’s from the borrower.

- Cash flows reflecting the earning capacity of the borrower.
- Collateral - the tangible assets of the borrowers who intends to mortgage.
- Character – the management capabilities of the concerned party.
• Conditions - the loan covenants to safeguard the lenders interest and
• Capital - referring to the buffer to absorb earnings shocks (Chaudhuri 2005: 15).

Utilization of credit default protection measures and instruments: Once the credit default is ascertained and quantified, credit default protection measures and instruments like credit default swaps, credit default options and credit linked notes can be utilized.

**Credit Default Swap:** It is a bilateral financial contract in which buyer pays a periodic fee expressed in fixed basis points on the notional amount in return for a floating payment contingent on the default of a third party reference credit. The floating payment is designated to mirror the loss incurred by creditors of the reference credit in the event of its default. The credit event varies from bank to bank and from transaction to transaction. The credit events are pre defined in the agreement, which includes bankruptcy, insolvency, rating and downgrading below agreed threshold, failure to adjust for new payment obligation and debt rescheduling. The credit event triggers the obligation of the seller of default protection to the purchaser of the same. The investors who need to protect themselves against default but do not want to sell them at risk security for accounting, tax and regulatory reasons can buy a credit default swap (Karunakar 2008: 7).

**Credit Limited Notes (CLN):** These are known as credit swaps in which buyer makes periodic payments of a fixed percentage of the reference asset to the seller over the life of the swap. Then the seller promises a payment in the case of credit default for the reasons viz., bankruptcy, delinquency and credit rating downgrade. The payments may be either a pre-determined amount and also decrease in the market value of the reference obligation that may cause the credit event. The seller calls the structure away from the investor and delivers the defaulting notes against them on the happening of credit event. The CLN are like bonds in character and are acceptable to certain banks. They are not allowed to involve in credit default swap (Namboodri 2001: 12).

**Preventive Management: Credit Assessment and Risk Management Mechanism:** A lasting solution to the problem of NPAs can be achieved only with proper credit assessment and risk management mechanism. The documentation of credit policy and credit audit immediately after the sanction is necessary to upgrade the quality of credit appraisal in banks (Vasuki 2008: 7). In a situation of liquidity
overhang the enthusiasm of the banking system is to increase lending with compromise on asset quality, raising concern about adverse selection and potential danger of addition to the NPAs stock. It is necessary that the banking system is equipped with prudential norms to minimize if not completely avoid the problem of credit risk.

**Organizational Restructuring**: With regard to internal factors leading to NPAs the onus for containing the same rest with the bank themselves. These will necessitates organizational restructuring improvement in the managerial efficiency, skill up gradation for proper assessment of credit worthiness and a change in the attitude of the banks towards legal action, which is traditionally viewed as a measure of the last resort (Saravanan 2008:8).

**Reduce Dependence on Interest**: The Indian banks are largely depending upon lending and investments. The banks in the developed countries do not depend upon this income whereas 86 percent of income of Indian banks is accounted from interest and the rest of the income is fee based. The banker can earn sufficient net margin by investing in safer securities though not at high rate of interest. It facilitates for limiting of high level of NPAs gradually. It is possible that average yield on loans and advances net default provisions and services costs do not exceed the average yield on safety securities because of the absence of risk and service cost (Paramita 2003:13).

**Potential and Borderline NPAs under Check**: The potential and borderline accounts require quick diagnosis and remedial measures so that they do not step into NPAs categories. The auditors of the banking companies must monitor all outstanding accounts in respect of accounts enjoying credit limits beyond cut – off points, so that new sub-standard assets can be kept under check.

**Curative Management**: The curative measures are designed to maximize recoveries so that banks funds locked up in NPAs are released for recycling. Central government and RBI have taken steps for arresting incidence of fresh NPAs and creating legal and regulatory environment to facilitate the recovery of existing NPAs of banks. They are:

**Debt Recovery Tribunals (DRT)**: In order to expedite speedy disposal of high value claims of banks debt recovery tribunals were setup. Central government has amended the recovery of debts due to banks and financial institutions Act in January 2000 for enhancing the effectiveness of DRTs (Naik 2006: 357). The
provisions for placement of more than one recovery officer, power to attach dependents property before judgment, penal provision for disobedience of tribunals order and appointment of receiver with powers of realization, management, protection and preservation of property are expected to provide necessary teeth to the DRTs and speed up the recovery of NPAs in times to come (RBI Report 2009: 167).

**Lok-Adalats** are the institutions that help banks to settle disputes involving accounts in doubtful and loss categories. These are proved to be an effective institution for settlement of dues in respect of smaller loans. Lok-adalats and debt recovery tribunals have been empowered to organize regular lok-adalats to decide for NPAs of Rs. 10 lakhs and above (Bagchi 2006: 352).

**Asset Reconstruction Company (ARC):** The Narasimham committee on financial system (1991) has recommended for setting up of asset reconstruction funds (ARF). The following concerns were expressed by the committee:

- It was felt that centralized all India fund will severely handicap in its recovery efforts by lack of widespread geographical reach which individual bank posses and.
- Given the large fiscal deficits, there will be a problem of financing the ARF (CFSA Report on Indian Financial Transparency and Supervision 2009: 198). Subsequently, the Narasimham committee on banking sector reforms has recommended for transfer of sticky assets of banks to the ARC. Thereafter the Verma Committee on restructuring weak public sector banks has also viewed the separation of NPAs and its transfer thereafter to the ARF is an important element in a comprehensive restructuring strategy for weak banks. In recognition of the same ARC Bill was passed to regulate securitization and reconstruction of financial assets and enforcement of security interest (Namboodri 2001: 13). The ICICI BANK, State Bank of India and IDBI has promoted the country’s first asset reconstruction company. The company is specialized in recovery and liquidation of assets. The NPAs can be assigned to ARC by banks at a discounted price. The objective of ARC is floating of bonds and making necessary steps for recovery of NPAs from the borrowers directly. This enables a one-time clearing of balance sheet of banks by sticky loans (Mukherjee 2002: 32).

**Corporate Debt Restructuring (CDR):** The corporate debt restructuring is one of the methods suggested for the reduction of NPAs. Its objective is to ensure a timely and transparent mechanism for restructure of corporate debts of viable corporate entities affected by the contributing factors outside the purview of BIFR,
DRT and other legal proceedings for the benefit of concerned. The CDR has three-tier structure viz., CDR standing forum, CDR empowered group and CDR cell (CFSA Report on Indian Financial Transparency and Supervision 2009: 200).

**Mechanism of the CDR:** It is a voluntary system based on debtors and creditors agreement. It will not apply to accounts involving one financial institution or one bank instead it covers multiple banking accounts, syndication, consortium accounts with outstanding exposure of Rs. 20 crores and above by banks and institutions.

The CDR system is applicable to standard and sub-standard accounts with potential cases of NPAs getting a priority. In addition to the steps taken by the RBI and government of India for arresting the incidence of new NPAs and creating legal and regulatory environment to facilitate for the recovery of existing NPAs of banks, the following measures were initiated for reduction of NPAs (Paramita 2003: 20).

**Circulation of Information of Defaulters:** The RBI has put in place a system for periodical circulation of details of willful defaulters of banks and financial institutions. The RBI also publishes a list of borrowers (with outstanding aggregate rupees one crore and above) against whom banks and financial institutions in recovery of funds have filed suits as on 31st March every year. It will serve as a caution list while considering a request for new or additional credit limits from defaulting borrowing units and also from the directors, proprietors and partners of these entities.

**Recovery Action against Large NPAs:** The RBI has directed the PSBs to examine all cases of willful default of Rs. One crore and above and file criminal cases against willful defaulters. The board of directors are requested to review NPAs accounts of one crore and above with special reference to fix staff accountability in individually (Namboodri 2001: 15). It is observed from the above table that the gross NPAs of the banks is gradually declining from Rs. 68717 crores in 2002-03 to Rs. 50552 crores in 2006-07 whereas the net recovery of NPAs is increasing from Rs. 23183 crores in 2002-03 to Rs. 27176 crores in 2006-07. It shows that the banks have taken strenuous efforts to contain the NPAs. Moreover the percentage of recovery to gross NPAs is also in the increasing trend (RBI Annual Report 2008: 188).

**Credit Information Bureau:** The institutionalization of information sharing arrangement is now possible through the newly formed Credit Information Bureau of India Limited (CIBIL) it was set up in January 2001, by SBI, HDFC, and two foreign technology partners. This will prevent those who take advantage of lack of system of
information sharing amongst leading institutions to borrow large amount against same assets and property, which has in no measures contributed to the incremental of NPAs of banks (RBI Report on Trends and Progress in Indian Banking 2007: 190).

It was discussed earlier in Indian chapter that direct lending and guarantees or letter of credit contains the highest credit risk. If credit risk exists then its management is a must. A survey by Bodla and Verma discusses the credit risk management framework in scheduled commercial banks. Findings of the result are that 61.1% of public sector banks and 37.5% of Private Banks are of the view that ‘Securitization Ordinance’\textsuperscript{14} played an important role in banks credit risk management (Nirmala 2004: 96). Yet, Six (33.3%) PSBs (Public sector banks) are of the view that, the act will be of ‘some what help’ in dealing with credit risk. Similar response is obtained in case of four (50%) PBs (Private Banks). Two (28.6%) large banks and 12 (63.2%) small size banks have responded favorably to this question. But, five (71.4%) large and five (26.3%) small size banker are of view that it will be of some what help to them in dealing with risk. Authority who is responsible for approval of ‘credit risk policy’ is the ‘Board of Directors’ in as many as 17 (94.4%) PSBs and the credit policy committee approve credit risk policy in one PSB out of 18 banks surveyed. In the case of private sector banks, the board of directors’ is responsible in case of five (62.5%) banks and the same task is performed by credit policy committee in three (37.5%) banks. Analysis also shows that the authority for credit risk policy depends on the ownership pattern of the banks (Bodla and Richa 2009: 64). It indicates that senior management is not given responsibility for credit risk management in even a single bank. Bank size wise analysis indicates that in as many as five (71.4%) large banks and 17 (89.5%) small size banks, the ‘board of directors’ is responsible is responsible for approval of credit risk policy and same task is performed by credit policy committee in two large (28.6%) and two small (10.5%) banks. Instruments/techniques used by them for managing credit risk in their bank.

\textsuperscript{14}Securitization in India began in the early nineties, with CRISIL rating the first securitization program in 1991-92. Initially it started as a device for bilateral acquisitions of portfolios of finance companies. These were forms of quasi-securitizations, with portfolios moving from the balance sheet of one originator to that of another. Through most of the 90s, securitization of auto loans was the mainstay of the Indian markets. But since 2000, Residential Mortgage Backed Securities (RMBS) have fuelled the growth of the market. The need for securitization in India exists in three major areas - Mortgage Backed Securities (MBS), the infrastructure Sector and other Asset Backed Securities (ABS). It has been observed that Financial Institutions/banks have made considerable progress in financing of projects in the housing and infrastructure sector.
Result show that the ‘risk rating’ techniques are found in use by the maximum banks in India (i.e., 92.3%) followed by ‘credit approval authority’ (88.5%), ‘prudential limits’ and ‘loan review policy’ (80.8%) and so on. Prudential limits, credit approval committee and loan review policy are used as ‘credit risk management technique’ by 16 (88.9%), 15 (83.3%) and 14 (77.8%) banks respectively. Portfolio management is applied by twelve (66.7%) banks. Similarly 10 (55.6%) banks are making use of RAROC. Only three (16.7%) of the sample PSBs are making use of other tools like collateral, credit audit and problem loan management as a tool of credit risk management in their bank. Findings of survey show that limits play another important role at which the approval is required from the credit approval authority. Results show that 13(72.2%) of the selected PSBs and four (50%) of the selected PBs, the approval of credit approval committee is taken by one PSBs and three PBs. The size-wise analysis indicates that that majority of banks seek the approval from the credit approval authorities, when the credit is above Rs. 1 cr. Next question was that at what level these committees are working in the banks and the result says that majority of the banks (76.9%) have their credit approval committee at Head office level. In, 12 (66.7%) PSBs, the approval committees are set up at zonal level and same is true in the case of one PBs. Next question was regarding the use of models for the evaluation of their credit portfolio, and it came to light that most of the banks favored CRISIL’s models and internally designed models. Around 90% of the banks in India make the annual review of their loan policy and board of directors in more than 80% of banks performs this exercise. The survey also brought out that 73.1% of the banks have clearly defined their off-balance sheet exposure, study of ‘financial performance’, ‘operating efficiency’ and ‘management quality’ are assumed as more important aspects in PSBs in comparison to PBs for evaluating inter-bank exposure, use of derivatives in banks for credit risk management is almost negligible and for capital charge calculation, almost 85% of the banks have favored standardized approach of credit risk (Bodla and Richa 2009: 66).

3. Comparative study of Russian/ Indian Credit Risk Management Approaches

In this comparative study it is very important to discuss the differences and similarities approach of credit risk management in Russia and India and at the same time it is also necessary to compare both of the countries credit risk management approaches in a analytical manner.
Differences

- Russian bank balance sheet data, which are still based on Russian accounting practices, are of questionable quality and lack the transparency of books prepared in accordance with internationally accepted standards, as these balance sheets can easily be manipulated, whereas in India banks follow international accounting standards to maintain balance sheets.

- Standard and Poor’s, Moody’s and Fitch rating agencies could be used in the IRB or EWS. However, such ratings are fundamentally lacking in Russia’s case, as the top international rating agencies only rate a couple dozen Russian banks and the ratings they do provide are consistently low; S&P rated 22 Russian banks in September 2004 with only three rating categories: CCC, B or BB (state-owned Vneshtorgbank was the sole BB rating). Second, these ratings tend to be conservative and rarely get changed (Löffler 2004 and Altman and Rijken 2004, detail the reasons for rating stability and related loss of information). Russia itself has only a few credit rating agencies, and they hardly compare with the international agencies in the eyes of Russian financial experts or the world (Soest et al., 2003: 4), whereas in India, along with Standard and Poor’s, Moody and Fitch, Crisil, ICRA, ONICRA, CARE are used for rating purposes.

- Credit bureaus, which are just getting started in Russia, are important developments that will allow for much more efficiency in banks’ lending decisions (Gardner 2007: 13). Whereas in India, credit bureaus exist since long help in maintaining and providing database for the credit rating.

- While dealing with credit risk management Logit and Probit models are used frequently in Russia, and Merton model has limited application. On the other hand in India most of the banks favored CRISIL’s model and internally designed models.

- While banks in Russia are becoming more and more sophisticated and aspiring to complete securitization deals, the legal framework has not been so quick to follow. Securitization-specific legislation, the Mortgage-Backed Securities Law (the “MBS Law), which defines a type of bond that can be used in domestic mortgage securitization, introduces the concept of an SPV, and provides for limited true-sale concepts was announcement by the Russian Federal Financial Markets Services in 2006. On the other hand, In India, earlier securitization was the only option available to banks for managing their credit risks. But now banks averse to securitization due to costs/legal/tax/regulatory reasons could resort to usage of credit default swaps for credit risk management. This is of even greater relevance in India as initially only the few large banks are expected to emerge as the protection sellers thus leading to concentration risk. Sharing/diversification of risks through the use of CDS may lead to a false perception of the asset quality in the minds of the investors and thus result in inflated asset prices.
Similarities

- Both Russia and India have undergone economic transition, introducing major economic reforms especially banking reforms in order to improve profitability and economic efficiency.
- Both Russia and India during transition process suffered from the problem of various banking risks namely operational risk, foreign exchange risk, liquidity risk but especially rising credit risk and non-performing assets, which is a proxy of credit risk.
- Both Russia and India suffered from credit risk of high magnitude during 1990s, but after 2000, the percentage of credit risk declined to a significant amount, yet in present scenario it is likely to rise.
- Both Russia and India suffered from the problem of NPA, which is proxy of credit risk. Study says that NPA in both Russia and India depends upon several macro-economic factors like GDP, INFL, RINT affect both the countries, whereas UNEMPL is significant in Russia and REX is significant in India.
- In order to reduce the magnitude and threat of credit risk from the banking sector, proper and appropriate credit risk management is required and it is present in both the countries yet, it need to be updated and should be made more analytical and empirical.
- It is all the more important for both the countries to have proper banking risk management in order to make the banking sector more robust and resilient, resultantly, it will be in a position to absorb shock of financial crisis

4. Model: Empirical and Quantitative Analysis of Credit Risk in Russian and Indian Banking Sector

Various micro-economic and macro-economic factors affect credit risk in banking sector. At macro level, GDP growth, inflation rate, unemployment rate, real interest rate affect credit risk and at the bank level, real loan growth and bank size play an important role in influencing problem loans (Das and Ghosh 2007: 2). In order to study credit risk in Russian and Indian banking sector, I have taken various variables namely GDP, INFL, RINT, UNEMPL, REX. For the empirical study of credit risk in Russian and Indian banks, two hypothesis are taken which are given below
Hypothesis Testing: Methodology

Testing Hypothesis 1:
The range of Credit Risk of the Russian banking system depends on specific macro economic factors.

For the first hypothesis, we have taken the Non-Performing Assets (NPA) as the dependent variable, which is a suitable indicator for the credit risk. Moreover, the Non-Performing Assets (NPA) is also relatively easy to measure and analyze.

While the systematic credit risk of the Russian banking system depends on the various macro economic factors, so in this case, there are four control variables: the Gross Domestic Product (GDP), the Inflation Rates (INFL), the Real Rate of Interest (RINT), and the Unemployment Rate (UNEMPL). Therefore the model comes in the following form in case of Russia.

Model: 1
\[
\log(NPA) = \beta_0 + \beta_1 GDP + \beta_2 INFL + \beta_3 RINT + \beta_4 UNEMPL + \epsilon_i \quad \ldots \ldots (1)
\]

Testing Hypothesis 2:
The range of credit risk of the Indian banking system depends on specific macro economic factors.

For the second hypothesis consequently, Non-Performing Assets (NPA) will be considered as a proxy for the credit risk. The explanatory variable is still the Gross Domestic Product (GDP), the Inflation Rate (INFL), the Real Rate of Interest (RINT), plus another controlling variable: Real Exchange Rate (REX). Since all of the controlling variables are often considered to be the determinant of the credit risk, the associations are expected to be positive for the interest rate and exchange rate and the negative for the GDP and inflation. The regression equation for the second hypothesis (India) is described as follows:

Model: 2
\[
\log(NPA) = \beta_0 + \beta_1 GDP + \beta_2 INFL + \beta_3 RINT + \beta_4 REX + \epsilon_i \quad \ldots \ldots (2)
\]

IV. Empirical Results: The regression results are reported in Table - 2 below.
### Table 5(a): Estimation results

<table>
<thead>
<tr>
<th>Dependent</th>
<th>LOG(NPA)</th>
<th>LOG(NPA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model :--&gt;</td>
<td>RUSSIA (1)</td>
<td>INDIA (2)</td>
</tr>
<tr>
<td>Independent</td>
<td>Coefficient</td>
<td>P - value</td>
</tr>
<tr>
<td>Intercept ((\beta_0))</td>
<td>12.40192 7.045008*</td>
<td>0.0009</td>
</tr>
<tr>
<td>GDP</td>
<td>-0.115576 -3.974805*</td>
<td>0.0106</td>
</tr>
<tr>
<td>INFL</td>
<td>0.286722 2.608189**</td>
<td>0.0478</td>
</tr>
<tr>
<td>RINT</td>
<td>-0.252936 -3.051447*</td>
<td>0.0284</td>
</tr>
<tr>
<td>UNEMPL</td>
<td>-0.014625 -0.049225</td>
<td>0.9626</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.898115</td>
<td>0.914616</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.816608</td>
<td>0.846309</td>
</tr>
<tr>
<td>D -W Statistics</td>
<td>2.42</td>
<td>2.01</td>
</tr>
<tr>
<td>No. of Observation</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

* Indicates a significance level at 1%  
** Indicates a significance level at 5%  
*** Indicates a significance level at 10%

The results in the first column (first hypothesis) shows a negative and significant relationship between the growth of the credit risk (Log (NPA)) and the level GDP, real interest rate (RINT) and the unemployment (UNEMPL) except the inflation rate. The other controlling variable such as inflation rates has shown the expected positive signs. However, all the variables under consideration have proven to have a significant relationship with the credit risk in case of Russia.

The second column (Second hypothesis) shows the estimation when the macro variables are related with the aspect of the credit risk (NPA). The results show that the GDP and the inflation rate is negatively associated with credit risk (NPA). This finding is most compatible with the argument that the lower levels of GDP and the inflation rate, higher the credit risk in case of India.
On the other hand, the variables i.e. the real interest rate (RINT) and the exchange rate, shows the expected sign of positive and the association is significant (at 10% level of significance) for the real interest rate. Therefore, it means that the higher the rate of interest and inflation rate, higher will be the rate of credit risk.

Common Risk Management Approach

After going through the study of both the country’s banking sector, in one way and the other, their banks suffer from the banking risks especially credit risks in the form of overdue loans and non-performing assets. The study of credit risk management has gained undoubtedly major significance and the major cause of serious banking problems over the years continues to be directly related to lax credit standards for borrowers and counterparties, poor portfolio risk management, or a lack of attention to deterioration in the credit standing of a bank’s counterparties. Since exposure to credit risk continues to be the leading source of problems in banks worldwide, banks and their supervisors should be able to draw useful lessons from past experiences.

In order to manage credit risk properly, it is important to have proper credit risk model, which can be properly used to manage credit risk in banking sector. Credit risk modeling has gained importance as the consequence of three factors. First, banks are becoming increasingly quantitative in their treatment of credit risk. Second, new markets are emerging in credit derivatives and the marketability of existing loans is increasing through securitization and the loan sales market. Third, regulators are concerned to improve the current system of bank capitalization especially as it relates to credit risk. Conventional credit scoring models which been used in Russia and India are linear probability model, logit model, linear discriminant analysis and advanced credit risk models

In Russia, in order to find out the probability of default in Russian banks, Probit and Logit model have been used for an early warning system. The models also could be used by commercial banks in IRB framework for estimating risk in line with the Basel II accord.

After going through this comparative approach study, in the end it can be said, that banking sector being involved in the business of credit culture, have to bear various risks, among them, credit risk that was discussed in this study. Since, in both the countries banking sector suffered from credit risk partly due to overdue loans inherited from Soviet legacy and centrally planned economies and in India overdue
loans increased due to directed credit lending policy and priority sector lending. Since 2000, both the countries have shown an improvement in reducing the problem of overdue loans, partly due to credit risk management and also legal and institutions involved in this procedure. In this prevailing recession, there are signs of rising overdue loans in both the countries, as a result, credit risk management has utmost important role to play in order to promote safety and security as well as profitability in the banking sector for both the countries.

The principal difficulties with CRM models are obtaining sufficient hard data for estimating the model parameters such as ratings, default probabilities and loss given default and identifying the risk factors that influence the parameter, as well as the correlation between risk factors. Because of these difficulties one should be aware that credit systems are only as good as the quality of the data behind them. The reputation of a bank is very important for corporate clients. A corporation seeks to develop relationship with a reputable banking entity with a proven track record of high quality service and demonstrated history of safety and sound practices. Therefore, it is imperative to adopt the advanced Basel-II (See Appendix 4) methodology for credit risk. The Basel Committee has acknowledged that the current uniform capital standards are not sensitive and suggested a risk based capital approach. Reserve Bank of India’s risk based supervision reforms are a forerunner to the Basel Capital Accord-II. For banks in India with the ‘emerging markets’ tag attached to them going down the Basel-II path could be an effective strategy to compete in very complex global banking environment. Indian banks need to prepare themselves to be competed among the world’s largest banks. As our large banks consolidate their balance sheets size and peruse aspirations of large international presence, it is only expected that they adopt the international best practices in credit risk management.