CHAPTER -2

Chapter 2

REVIEW OF LITERATURE

2.1 Introduction

The review of literature is presented in two parts. The first part describes various policy guidelines in home and abroad. Other literatures in the relevant field are included in the second part.

2.2 International Policy Framework For Credit Risk

2.2.1 Risk Management in the Context Of Basel Accords

The factors that contributed to the growth of Risk Management are:

i) Globalisation: The world has become a global village with the integration of financial systems through close cooperation between nations

ii) Deregulation: In the Indian context as in the case of many developing countries, the factors of deregulation both in interest rates, credit dispensation, exchange rates etc. have necessitated that Banks should manage their affairs and a proper Risk Management System in place is a sine-qua-non for the survival and growth of the organisation

iii) Development of sophisticated products: The evolution of modern Banking has seen the birth of many complex products and derivatives and unless these are monitored through proper Internal Controls and compliance, can lead to disastrous consequences

iv) Competition: With liberalisation came a new generation Private Sector Banks leading to stiff competition threatening the profitability and growth of the existing Banks. This called for a revamping of procedures and systems to keep pace with the new entrants.

v) International Best Practices and Basel requirements:

The current focus on Risk Management emerges from the requirements of the Basel Accords.

The Basel Committee on Banking Supervision (BCBS) is a Committee established by the Central Bank Governors of the Group of Ten (G-10) countries at the end of 1974. The members of the Committee came from Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Spain, Sweden, Switzerland, United Kingdom and the United States. The Committee does not possess any formal authority and its recommendations are not mandatory. It only formulates broad supervisory standards and guidelines and recommendations. It is up to the regulatory authorities of the concerned countries to implement them or not. The Committee encourages that Banks worldwide achieve convergence towards common approaches and common standards.

The Governors of Central Banks of the G-10 countries formed the Basel Committee as the Committee on Banking Regulations and Supervisory Practices at the end of 1974 following serious upheavals in international currency and Banking markets. On June 26th, 1974 in the aftermath of messy liquidation of a Frankfurt bank, several banks had released Deutschmark to the Bank Herstatt in Frankfurt in exchange for dollar payments deliverable in New York but due to the differences

in the time zones, there was a lag in the dollar payment to the counter-party Banks, and before the dollar payments could be effected in New York, during this gap, the Bank Herstatt was liquidated by German Regulators (Rao, August, 2011). This incident triggered the G-10 nations to form BCBS under the aegis of the Bank for International Settlements (BIS). The Committee reports to the Committee of Central Bank Governors of the G-10 Countries, which meets Governors' endorsement and commitment for its major initiatives.

The first meeting of the committee took place in February 1975 and since then meetings have been held regularly three or four times a year. The committee does not possess any formal transnational supervisory authority. Rather, it formulates broad supervisory standards and guidelines and recommends statements of best practices in the expectation that individual authorities will take steps to implement those which are best suited to their own national systems.

Basel I refers to a round of deliberations by Central Bankers from around the world. In 1988, BCBS published a set of minimal capital requirements for Banks. This is also known as the 1988 Basel Accord, and was enforced by law in the G-10 countries in 1992, with Japanese Banks permitted an extended transition period.

According to, Basel Committee on Banking Supervision, (1988):

> Basel I, primarily focused on credit risk. Assets of Banks were classified and grouped in five categories according to credit risk, carrying risk weights of zero (for example home country sovereign debt), ten, twenty, fifty, and up to one hundred percent. Banks with international presence are required to hold capital equal to 8 % of the risk-weighted assets. The Basel I framework was

designed to establish minimum levels of capital for internationally active Banks.

However, its simplicity encouraged over 100 countries across the world to not only adopt the Basel I framework but also apply it across the entire banking segment without restricting it to the internationally active Banks. Thus, the voluntary adoption of Basel I framework by several countries has made it, de facto, a globally accepted standard, though not all countries are fully compliant with all the aspects.

The Capital measurement system was not intended to be static but to evolve over a period time. In November 1991, it was amended to give clarification of general provisions which could be included in capital. In April 1995, BIS issued an amendment to recognize the effects of bilateral netting of bank's credit exposure in derivative products. Another task was to refine the framework to address risks other than credit risk, which was the focus of the 1988 accord. In January 1996, the market risks arising from bank's open positions were incorporated.

In addition to the work on capital standards, particular supervisory questions which the Committee has addressed include the supervision of Banks' foreign exchange positions, the management of Banks' international lending (i.e. Country risk), the management of Banks' off–balance–sheet exposures, the prevention of criminal use of the banking system, the supervision of large exposures, risk management guidelines for derivatives and the management of interest rate risk. Other topics currently being addressed include the supervision of financial conglomerates, risk management issues relating to reporting, disclosure and accounting.

As the Basel I framework is seen as a "one-size-fits-all" model which measures risk broadly, it is necessary for the regulator to discriminate among Banks on the basis of their risk profiles. Therefore, it is now widely viewed as outmoded, and a more comprehensive set of guidelines, known as Basel II was introduced and also implemented by several countries. The introduction of Basel II over Basel I became fundamental for a number of reasons. Among these, Basel I envisages

□ Permits limited differentiation among risk assets for capital requirements

□ No capital requirement for operational risk

□ A difficulty in considering new instruments and methods for managing credit

□ The presence of capital arbitrage in some areas such as securitization with preference given to businesses for which regulatory capital requirements are low or do not exist

Basel II seeks to remedy the situation by modifying and adopting a more risk sensitive approach to capital requirements. It imposes the provision of capital for operational risk also, which was not covered under Basel I.

2.2.2 BASEL II Accord: The Three Pillar Approach

The salient features of the Basel II guidelines are as under:

The edifice of Basel Accord rests on three pillars.

Pillar I Pillar I prescribes capital requirements for credit risk, market risk and operational risk.

Credit Risk: For the risk which is by far the most important one faced by Banks, three approaches are stipulated:

a) Standardised approach: As per this approach, varied risk weights are to be assigned for different exposures based on the rating given by any of the approved external credit rating agencies.

b) Internal Rating-based Approach (IRB approach): This is also known as the foundation approach as per which Bank itself rate the borrowers. This presupposes that Banks put in place robust internal rating system. It is also necessary that the Rating Department is independent of business units which take credit decisions. This is complex as Banks require past data at least for 3-5 years for computing the Probability of Default (PD).

c) IRB Advanced Approach: This is more sophisticated approach requiring 5-7 years data for computing the Loss Given Default (LGD).

Operational **R**isk: Three approaches have been prescribed for Operational Risk as under:

A) Basic Indicator Approach (BIA): As per BIA, a highly simplified method of computing capital is given, requiring not much of past data. 15% of Gross average income (positive) for the last three years is to be provided.

B) The Standardised Approach (TSA): This is a little cumbersome method as the gross income has to be mapped for various business lines. Capital has to be computed on the basis of 'beta' factors provided by the RBI.

C)Advanced Measurement Approach(AMA): Under this approach capital charge is based on average 'loss' due to operational risk in the last five years added with the expected loss for the next year.

3. **M**arket **R**isk: Two approaches are prescribed namely,

A) Standard duration approach, which is to be initially followed by all Banks. Capital charge under this method is computed on the basis of duration of the investment;

B) Model Approach: As per this approach, Banks have to develop Internal Risk Management Models. This is a more sophisticated approach and Indian Banks will take more time to develop these models.

Pillar II

As per the requirements of this Pillar, Banks are required to establish robust risk management system. Such a system is subject to supervisory review and if the regulator is not satisfied with the Risk Profile of the Bank and its Risk Management System. In such a case, Central banks have the prerogative to prescribe additional requirements. Banks are also required to prepare Internal Capital Adequacy Assessment Procedure (ICAAP) policy. The Board of the Bank has to approve the ICAAP policy. ICAAP should capture risk categories other than those covered under Pillar I such as Legal Risk, Concentration Risk and Reputation Risk. These risks captured will have to be incorporated under ICAAP policy and will be outside the capital requirements under Pillar I. The Board has to also approve a stress testing policy to carry out stress testing and scenario testing. Pillar II also requires that the ratings of credit exposures based on internal rating models are independently validated. Under operational Risk, Banks are required to put in place a Risk Management System based on self-assessment of operational

risk by Branches. The Board has to also approve a risk mitigation plan based on self-assessment.

Pillar III Pillar III deals with disclosure requirements.

It stipulates that periodical disclosures are made to various agencies like the Regulator, the Board of the Bank and market participants about various parameters which indicate the Risk Profile of the Bank. To ensure market discipline Banks are required to put such disclosures on their respective Websites also.

The Efficacy of Basel II

Banking Supervisors and Analysts worldwide felt that Basel II would soon become outmoded as it also contained various loopholes. It is argued that the sophisticated risk measures give the larger Banks an unfair advantage as they are able to implement them with ease due to their skills and IT systems. But Banks in the developing countries would find it an uphill task to implement these sophisticated models. The capital requirements for these Banks will be generally more in comparison and to that extent result in restricting their access to credit or by making it more expensive. More risk sensitive measures are required for the larger, more sophisticated Banks, whereas the less sophisticated measures that are simpler to calculate, due to their lower risk sensitivity may be adequate for smaller Banks.

The second shortcoming of the Accord is that better credit risks will be advantageous as Banks move towards true pricing for risk. Previous experience from the United States of America and the United Kingdom, however, reveals that with these systems the improved risk sensitivity means that Banks are mostly eager to lend to their high risk borrowers, with a comparatively higher prices. With this

the borrowers previously 'locked out' of the banking system got their chance to develop a good credit history.

According to Rao (August, 2011):

> A more serious criticism is that the operation of Basel II will lead to a more pronounced business cycle. This criticism arises because the credit models used for Pillar 1 compliance typically use a one year time horizon. This would mean that, during a downturn in the business cycle, Banks would need to reduce lending as their models forecast increased losses, increasing the magnitude of the downturn. Regulators should be aware of this risk and can be expected to include it in their assessment of the bank models used.

Basel II Framework is basically a Risk Management Exercise and does not seek to change the business models of the Banks. Instead, it requires the Banks to have a holistic view of their risk profiles and fine-tune/update their Risk Management practices and formulate an Internal Capital Adequacy Assessment Process robust enough to capture all possible risks the Banks are facing or are likely to face. It expects Banks to initiate adequate and appropriate Risk Mitigation measures through effective Systems and Procedures.

Capital Management is only an off-shoot of the exercise, intended to graduate from Capital Adequacy (or Capital Sufficiency) to Capital Efficiency. It is aimed at minimizing the possible losses and optimizing the revenues. Further, Banks are expected to assess their own risk profile and provide appropriate capital, consistent with the risks. Providing excess capital is no insulation from the risks the Banks are facing. In fact, at times, excess capital leads to inefficient use of capital. May

be, with this objective in mind, Basel II envisages under Pillar II, that Banks develop a realistic Internal Capital Adequacy Assessment Process (ICAAP) consistent with the risks profile and provide appropriate capital, which eventually leads to the concept of Economic Capital.

Banking Industry, primarily deals with financial services and faces with many financial risks. Hence, it is imperative that Banks have to identify and measure various risks faced by them and initiate suitable remedial measures to prevent or mitigate them. Hence, any Economic System to achieve a robust growth and sustain the same, needs to encourage and ensure a sound Banking System. Banking being one of the important barometers of the stability of the Economic System, the Regulators across the globe have been defining and re-defining the regulatory interventions, so as to ensure a sound Banking System in particular and stable Economic System in general.

With ever-growing and multi-dimensional banking business models, invariably, there appears to be an opaque area that always hides the risks even from the sharp and trained vision of the risk managers. Robust Risk Management practices will help Banks to identify, measure and mitigate the unexpected losses (apart from the expected losses, which the Banks in any case take care of, as a normal business practice) and eventually will lead to lesser losses.

Banks have to develop appropriate Risk Management Practices that can identify the risks, measure them as far as possible and initiate appropriate remedial measures to mitigate them, without compromising the business objectives and growth plans. In fact, the Banks ought to put in place robust Risk Management

Practices not only to insulate them from the possible losses but also to be internationally competitive.

Risk Assessment should form an integral part of the Banks' Management and Decision Making Process, across all levels of decision-making, day-in and day-out. A self-assessment of Banks' risk-profile is desirable, to gauge their preparedness and stability in case of sudden unforeseen shocks. This would facilitate better business sense.

2.2.3 BASEL III

The US sub-prime crisis brought to the fore that things can go wrong despite the capital adequacy requirements as per Basel II, which is supposed to be a more sophisticated Risk Management tool. The US Banks have all affirmed that they are Basel compliant, and just before it fell in September 2008, Lehman Brothers stated that they had Tier 1 capital of 11 per cent as against the requirement of only 4 per cent. This lead the Basel Committee on Banking Supervision to have a relook at the capital requirements prescribed for Banks, and so Basel III is in the offing. The proposals under Basel III have two main objectives viz., i) strengthening the regulations regarding capital base and liquidity of Banks and ii) to improve the banking sector's ability to absorb shocks arising from financial and economic stress. The measures suggested by Basel III Accord are as under:

A) Increase the total capital adequacy ratio from 8 per cent to 10.5%.

B) Introduction of leverage ratio as a proportion of Tier I capital to Banks total exposures .

C) Introduction of liquidity and funding ratios.

In India, risk management was not a point of concern before the liberalized regime. But with financial sector reform as well as with the stipulation laid down by Basel committee for banking supervision, with a view to harmonize the process of banking supervision in the international level several measures were taken. Here an attempt is made to summarise the Basel accords.

Box 2.1- Summary of Basel Accords For Reducing Credit Risk

Name & year of declaration of the Accord	Policy Statement
Basel1 Accord;1988	i) Defined capital in two tiers-Tier1 being shareholders' equity and retained earnings and Tier 2 being additional internal and external resources available to the bank
	ii) Banks were required to hold capital equal to at least 8% of a basket of assets
	iii) The bank has to hold at least half of its measured capital in Tier 1 form.
	iv) It set a capital requirement simply in terms of credit risk though the overall capital requirement (i.e., the 8% minimum ratio) was intended to cover other risks as well.
Basel2 Accord;2004	i) After retaining the key elements of 1988 capital accord, the new one tried to bring in significantly more risk sensitive capital requirements.
	ii) It is based on three pillars- ➢ The first pillar being the Minimum Capital requirements, which includes
	a. calculation of minimum capital requirements and constituents of capital. It includes three types of capital elements viz., Tier 1, 2 & 3.

	b. Credit risk- under the standardized approach to credit risk, exposures to various types of counterparties, e.g. sovereigns, banks and corporates, will be assigned risk weights based on assessments by external credit assessment institutions. To make the approach more risk sensitive an additional risk bucket (50%) for corporate exposures will be included. Further, certain categories of assets have been identified for the higher risk bucket (150%).
	c. Operational risk
	d. Market risk
	➢ The second pillar is supervisory review process
	➢ The third pillar of Basel Capital Accord2 is Market Discipline
	iii) It introduces capital charge for operational risk
Basel3 Accord;2012	In the backdrop of financial crisis, Basel committee suggested certain measures to mitigate risk such as i) For enhancing quality of capital **a)** Common equity and retained earnings are to be included as components of tier 1 capital instead of debt instruments. **b)** Harmonized and simplified requirements for tier2 capital. **c)** Full deduction of capital components with little risk absorption capacity such as deferred tax assets, minority interests etc. **d)** Gradual phase out of hybrid tier1 component.

	ii) For enhancing quantity of capital a) Minimum common equity tier1 : -Increased from 2% to 4.5% (An added capital conservation buffer of 2.5%) -Total common equity requirement of 7% b) Minimum Total capital: Increased from 8% to 10.5% (After inclusion of capital conservation buffer)
	iii) Increased stable long term balance sheet funding: - By introducing Net Stable Funding Ratio to encourage and incentivize banks to use stable sources to fund their activities to reduce their dependence on short-term wholesale funding.
	iv) Strengthened risk capture- calibration of counterparty credit risk modeling approaches such as Internal Model methods to stressed periods.

2.3 Risk Management Practices of RBI

RBI being the monitoring and regulatory agency has been trying to undertake and implement policies for controlling the risk of Indian banking Sector.

2.3.1 Risk Management and The Financial Stability Forum

The RBI appointed Financial Stability Forum (FSF) and the Forum has submitted its Report in April 2008. The committee has undertaken a thorough study of the causes which lead to the collapse of the international financial markets. The Forum has recommended several measures for strengthening prudential oversight of capital, liquidity and Risk Management of the Banks. It underlined the need to attain international standards to enhance transparency, valuation, changing the role

and uses of credit ratings etc. It called for strengthening the Regulator's role to respond promptly to any risk faced by individual institutions and to put in place robust mechanism to deal with stress in financial system. The Reserve Bank has issued guidelines covering these recommendations.

2.3.2 Prudential Oversight of Capital, Liquidity Risk Management

RBI has taken steps for phased implementation of Basel II norms and the same are constantly monitored on a continuous basis. In fact RBI has prescribed capital levels at higher levels as compared to the Basel II norm of 8 per cent. RBI has also issued guidelines as regards the off-balance sheet vehicles in the form of Special Purpose Vehicles (SPVs). These SPVs were major incentives for transferring sub-standard credit risks in the West and this was the major cause for the sub-prime lending and the consequent catastrophic failure of the financial system there, as these were kept beyond the reach of the Regulators. Realising the importance of the area of SPVs, Reserve Bank has issued extensive guidelines prescribing capital charge for liquidity facilities to such SPVs. RBI has also required that such SPVs should be subjected to stress testing for various risk factors.

RBI has also prescribed strict credit conversion factors, risk weights and provisioning requirements for specific off-balance sheet items including derivatives at an enhanced level. RBI has also issued guidelines prohibiting complex structures like synthetic securitisation.

The Reserve Bank has put in place broad guidelines on asset-liability management. Banks have been left free to devise their own Risk Management Strategies under the Board approved policies.

Reserve Bank has also placed restrictions on borrowing and lending in the call money market to 100 per cent of capital funds (Tier I and Tier II Capital) on a fortnightly average basis. RBI has also restricted inter-bank liabilities (IBLS) to 200 per cent of the Banks net worth. Banks with Capital to Risk Weighted Assets Ratio above 11.25 per cent are permitted such cap up to 300 per cent. To secure enhanced transparency and valuation, the valuation norms and market discipline in respect of complex financial products, RBI has issued detailed guidelines on the valuation of various instruments including derivatives.

In terms of the Recommendations of the FSF Report, Reserve Bank has issued guidelines regarding the incorporation of Risk Management and Corporate Governance aspects, prudential norms relating to derivatives, specific transparency and valuation standards etc. FSF recommended a set of disclosure requirements to allow the market participants to assess key pieces of information on capital adequacy, risk exposure, risk assessment processes and key business parameters.

2.3.3 FSF and Role of Credit Rating Agencies

As recommended by the FSA, RBI has issued detailed guidelines prescribing norms relating to the selection of credit rating agencies by Banks. The facility of 'cherry picking' of assessments provided by different credit rating agencies has been prohibited. The names of the credit rating agencies, the risk weights associated with the particular rating grades and aggregated risk weighted assets are required to be disclosed.

The aspect of formulating a framework for cross-border supervision and supervisory cooperation with overseas regulators has also been examined by the

FSF, which recommended that a system be put in place for this purpose. RBI has set up a working group to lay down a road map for adoption of a suitable framework for this purpose.

The further measures taken by the RBI on the report of the FSF include the following:

a) Institutional arrangement has been put in place to oversee the functioning of the financial markets on a daily basis

b) Institutional arrangements have been put in place for liquidity management facilities, including the liquidity adjustment facility (LAF), open market operations (OMOS) and market stabilisation scheme (MSS) besides standing facilities such as export credit refinance (ECR). The Reserve Bank has been empowered under the existing legal framework to deal with the resolution of weak and failing Banks. Enabling provisions exist in the Banking Regulation Act for voluntary amalgamation and compulsory merger of Banks under sections 44A and 45 respectively

c) The deposit insurance cover is offered by the Deposit Insurance and Credit Guarantee Corporation of India (DICGC). (FSF REPORT 2008)

2.3.4 Introduction To Risk Based Supervision: Introduction Of CAMELS AND CALCS

The traditional method of supervision during the 80's was the system of Annual Appraisal of Banks which was purely based on-site Inspections. During the 90's the system of group-wide supervisory oversight was adopted. The system of off-site monitoring of banks was introduced in 1995. Gradually supervisory rating

models such as the CAMELS AND CALCS were also developed by the Reserve Bank to provide a risk based summary view of the overall health of individual Banks. Certain important parameters were selected for rating the Banks and Grades were awarded on the basis of these supervisory ratings. Capital Adequacy, Asset Quality, Management, Earnings, Liquidity and Supervision were the parameters.

2.3.5 Prompt Corrective Action Framework

Another important milestone in the Risk Based approach to Banking supervision was the introduction of Prompt Corrective Action (PCA) Frame Work. The PCA framework enables timely intervention of the RBI when soundness parameters such as the Capital Adequacy, Asset Quality and the Return on Assets deteriorate. The financial crisis that began in Asia in the 80's has brought the importance of the PCA framework to the fore. The crisis clearly demonstrated the importance of robust and efficient domestic financial systems. Weak banking systems and poorly developed capital markets contributed to misallocation of resources that eventually led to the crisis. The key to strengthening the domestic financial system is the implementation of sound practices for regulation, supervision, settlement, and accounting and disclosure standards. The implementation of sound practices depends on incentives to do so. These can be in the form of market-based incentives, either alone or in combination with official or regulatory incentives. These have been emphasised in the Report of the **Working Group on Strengthening Financial Systems** *(of BIS / IMF / OECD / World Bank)*.

Under the PCA framework, Trigger points have been set up under three parameters, i.e. Capital to Risk Weighted Assets Ratio (CRAR), Net NPAs and ROA. Composite Rating, being the supervisor's assessment of the overall

condition of a bank, has not been taken as a trigger point. Composite Rating is a combined assessment based on the rating given on each component of CAMELS, viz. Capital adequacy, asset quality, management, earnings, liquidity and systems and controls. Supervisory ratings and actions taken based on such ratings are not made public. The triggers based on CRAR, Net NPAs and ROA take care of a bank's performance in three critical areas which are quantifiable and form an integral part of the rating framework.

For every trigger point, a set of mandatory and discretionary steps have been laid down. The steps are designed to pre-empt any deterioration in the soundness of banks. Any actions, without duly recognising the diverse profile and factors contributing to the problems in banks, however, may not achieve the desired effect. The PCA should, therefore, encompass certain actions, which should bring immediate improvements, while some action points would be initiated in alignment with the severity of the problem. Thus, a set of **Mandatory** and **Discretionary** action points, in conformity with the magnitude of problems should be in place to bring about improvement in the functioning of banks. The rationale for classifying the rule based action points into Mandatory and Discretionary is that some of the actions are essential to restore the financial health of banks while other actions will be taken at the discretion of the Central Bank depending upon the profile of each bank. In cases where banks do not show improvement, despite taking mandatory actions, some of the discretionary actions will get converted into mandatory actions. However, in exceptional cases, the Central Bank may have the right to waive mandatory provisions.

2.3.6 Offsite Surveillance and Monitoring System (OSMOS)

Another notable tool in the armoury of the Reserve Bank of India in Risk Based Supervision is the technique of Offsite monitoring and Surveillance (OSMOS) which was introduced in March 1996. OSMOS returns require quarterly reporting on assets, liabilities and off balance sheet exposures, CRAR, operating results for the quarter, asset quality and large credit exposures with respect to domestic operations by banks in India.

During the year 1999, the returns have been revised and a second tranche of returns covering liquidity and interest rate risk were introduced. OSMOS helps RBI to compute trend analysis reports on important parameters covering macro level growth/various performance indicators for placing before the Board for Financial Supervision. Such reports are prepared on quarterly, half-yearly and yearly basis.

Indian Banks having overseas presence are required to report information on assets and liabilities, problem credits, maturity mismatches, large exposures etc. on a quarterly basis. They are also required to report country exposures and operating results on an annual basis. During 2000, a revised system covering Banks with overseas presence was introduced. The revised off-site returns are intended to provide information relating to the quality and performance of investment and credit portfolio, implementation of risk management processes etc.

OSMOS is an information system used by the RBI to aid in continuous supervision between two on-site inspections. The important component of the OSMOS system consists of a set of structured returns designed to capture critical information concerning the financial health of the supervised entities at frequent intervals. The

system is highly computer driven. The set of 21 returns include monthly, quarterly, half-yearly and annual returns covering Capital Adequacy, Asset Quality, Operating Results, Structural Liquidity, Interest Rate Sensitivity etc.

2.3.7 Board For Financial Supervision

The problem of conflict of interest faced at the RBI functioning as a Central Bank and as Supervisor of the Banking System remained unresolved. This was drawing criticism both nationally and internationally, with critics arguing that the Supervisory function was being compromised. The Committee on Financial System set up by the Government of India has gone into this aspect in detail. The Committee suggested that the supervisory functions of the RBI should be separate from the more traditional central banking functions. They suggested the formation of a separate agency which would be devoted wholly to the supervisory function of Banks. Based on this recommendation the Board for financial Supervision was constituted on November 16, 1994. BSF functions under the RBI (BFS) Regulations, 1994. The Board functions under the Chairmanship of the Governor of the RBI co-opting four non-official Directors from the Central Board as Members for a term of two years. The Deputy Governors of the Reserve Bank function as ex-officio Members. The Department of Banking Supervision provides all the secretarial support to the BFS. The BFS played a very important role in securing the orderly supervisory oversight of Banks.

The Board is required to meet at least once a month. The quorum for the meeting requires the attendance of the Chairman or the Vice-Chairman (one of the Deputy Governors) and two other members.

BFS receives the advice of an Advisory Council which was constituted on November 16, 1994. The council consists of five members drawn from the fields of Banking, Law, Finance, Accountancy and Law. The Committee meets once a quarter. Another important tool of the BSF is the Audit Sub Committee constituted by the BSF in January 1995. The Committee is chaired by the Vice Chairman of BSF and two non-official members of the BSF as other members. The Representatives of the Institute of Chartered Accountants are sometimes invited to attend the meetings of the Audit Sub Committee depending on the agenda of the meeting. The main function of the Committee is to achieve improvement in the quality of the statutory audit and concurrent audit/internal audit of the banks. Aspects such as fixing of remuneration, approval of the panel of statutory auditors and branch auditors are referred to this Committee.

The decision of the BFS to implement an off-site surveillance function to provide for in-house monitoring of Banks and other credit institutions is a step forward in introducing Risk Based Supervisory frame work. The market intelligence and surveillance unit (MISU) on all supervised institutions has proved very effective as a part of prudential supervisory reporting framework.

Introduction of the Macro Prudential Indicators (MPIs) Review marked another landmark in the Risk Based Supervisory approach of the RBI since the year 2000. Aggregated Macro Prudential Indicators (AMPIs) help the Regulator to ascertain by exception the soundness of a Bank's operations through the Capital Adequacy, Asset Quality and Return on Assets, Management soundness, Liquidity, and Sensitivity to Market Risk etc.

Introduction of the International best practices and norms on Risk weighted capital adequacy requirement as per the Basel I Accord, and later as per the Basel II Accord, Accounting, Income Recognition, Provisioning and Exposure in a phased manner marked the beginning of the transformation from Micro to Macro Prudential and Risk based Regime. Measures specifically aimed at strengthening Risk Management through recognition of different components of risk, assignment of risk-weights to various asset classes, norms on connected lending, risk concentration, application of marked-to-market principle for investment portfolio and limits on deployment of funds in sensitive activities are among the important.

2.3.8 Micro-Regulation Vs. Macro Regulation

Micro regulation is intended to deal with individual Banks to identify issues specifically faced by them while Macro regulation deals with identifying factors that affect the Banking system in general. The most important aspect in micro-regulation is Credit Risk Management. Micro regulation prescribes rules relating to credit pricing, servicing, capital adequacy and asset quality norms. Credit Risk management is an upcoming and highly debated topic in the design of modern regulatory framework such as Basel II (BCBS 2006). Micro regulation plays a very important part in Credit Risk Management. Similarly in the case of Market Risk and Operational Risk too Micro regulation is important. Apart from Micro regulation, the Regulatory oversight should be broad based to deal with factors affecting the system as a whole. The recent financial crisis behoves on the Regulators to deal with the build up of systemic risk affecting the whole Banking system. What has been started to be studied as bank runs, as chief destabilizing force of banking stability (Dowd,1992) is now studied as an all encompassing

force starting with the liquidity crunch, which translates into solvency issues for otherwise healthy institutions and which may further translate as contagion across the banking sector (Brunnermier and Pedersen, 2009)

The focus of designing a prudent macro-regulation necessarily concerns three aspects related to systemic risk in a system:

a) To analyze rising correlations across banks and the destabilizing vulnerabilities they can pose to the system.

b) To discover the macroeconomic determinant of systemic stability using aggregate data.

c) To estimate the systemic risk through the modelling approaches which have been used in credit risk measurement for a risky portfolio.

After liberalization and opening up of Indian economy, an immediate reform in the financial sector was impending. Hence, Govt. of India appointed Narasimham committee in August, 1991 which submitted its report in Nov. 1991 with recommendation of Market Oriented transformation of Indian banking. Since January, 1992 RBI started implementing the policies taking into account the committee recommendations. The following table represents chronological sequence of various policies undertaken by RBI to counter Credit Risk of commercial banks.

Box 2.2- Summary of Policies undertaken to counter Credit Risk

Sl No.	Policy initiated on	Policy initiated by	Major thrust of the policy
1.	1992	RBI	New guidelines on IRAC and provisioning requirements were issued.
2.	April 1992	RBI	Risk asset ratio system for banks as Capital Adequacy Ratio measure.
3.	1993	RBI	Asset classification norms were redefined. Since 31st March, 1993 all advances irrespective of their outstanding, were classified as Standard Assets, Sub-std. Assets, Doubtful Assets, and Loss Assets.
4.	March, 1993	RBI	The norms for declaration of NPA accounts were tightened.
5.	August,1993	RBI	For recovering the banks dues, 'The recovery of Debts due to banks and Financial Institutions Act, 1993' popularly known as RDB Act was passed on 27th August.
6.	April, 1994	RBI	A scheme was introduced for collection and Dissemination of information on cases of defaulters whose outstanding balance is Rs.1 crore and above.
7.	July,1994	RBI	The Board for Financial Supervision (BFS) was set up within the Reserve Bank to attend exclusively to supervisory functions and provide effective supervision in an integrated manner over the banking system, financial institutions, non-banking financial companies.
8.	November,1995	RBI	The BFS instituted a computerised Off-site Monitoring and Surveillance (OSMOS) system for banks in November 1995as a part of crisis management framework for 'early warning system' (EWS) and as a trigger for on-site inspections of vulnerable institutions.

9.	January, 1998	RBI	Banks were instructed to disclose Capital Adequacy Ratio (Tier 1&2 capital) as a part of mandatory disclosure. Henceforth, banks were maintaining minimum of 8% CRAR.
10.	1999		Circular on CAMELS and CACS rating framework including components rating and composite rating issued. As per the circular, each of the component was to be rated separately on a scale of 1 to 100 in ascending order of performance.
11.	2000	RBI	Minimum Capital to Risk-weighted Assets ratio (CRAR) was increased to 9%.
12.	2000	GOI& SIDBI	CGTMSE, a credit guarantee fund trust was established to encourage commercial banks to move away from a Security oriented approach and provide collateral free credit facility for Micro and Small Enterprises.
13.	2002	RBI	The rating model of CACS modified to include the component 'Liquidity.
14.	2002		The Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest Act (SARFAESI) was passed for faster resolution of Stressed Assets. It was effective since 21st June, 2002.
15.	October,2002	RBI	Credit risk management framework for banks was issued.
16.	April,2004	RBI	A risk based supervision (RBS) approach that entails monitoring according to the risk profile of each institution was initiated on a pilot basis in April 2004.

17.	28th Feb,2005	RBI	3 Asset Reconstruction Companies were given the license to be formed in India.
18.	2006	SBI& HDFC	CIBIL, the first of its kind in India was formed to provide credit information to Banks.
19.	2006	RBI	BCSBI was set up and it gave the 'code of bank's commitment to customers'.
20.	2007,2009	RBI	The parameters and markings in respect of 'Earnings Appraisal' component of the rating revised for CAMELS.
21.	2011	RBI	Central Registry of Securitisation Asset Reconstruction and Security Interest of India (CERSAI) was formed and all SCBs are now required to incorporate all the security information in the Registry and consult it before taking up any new security.
22.	2014	RBI	Central Repository of Information on Large Credit (CRILC) was set up, as well as reporting format is revised for banks.

2.4 Review of Other Literature:

In colloquial language the word "risk" refers to the possibility of something undesirable to happen (Rowe, 1977). In the context of risk management in banking, quite a few studies were undertaken, which mainly focuses on identification of key risks in the banking sector. As, risk management and risk based supervision are of paramount importance for banks, hence this issue has been delved from various perspective by many agencies and researchers. Thus a careful and relevant survey of the prevalent literature is of utmost importance for

the present study. Literatures surveyed include Reports, Occasional papers, Publications, Speeches available in the website of Reserve Bank of India, Basel Committee of banking Supervision, IMF, Indian Banks Association and a number of banks in India; and Mostly descriptive researches were undertaken in this particular field, but in the context of Indian banking sector, studies concerning quantification and measurement of the key risks are hardly available. A number of studies were conducted regarding the dimensions of credit risk. Also, various authors have identified certain risks as the key factors of causing turbulence in the banking industry. For the purpose of the study, the reviewed literature were further classified into two categories based on the thrust area of research-(i) Studies on Asset Quality and Non- Performing Assets and (ii) Studies on Risk Management

2.4.1 Studies on Asset Quality and Non-Performing Assets

There exists some cross country studies on financial health and asset quality of banks. According to Hardy and Pazarbasioglu (1999), Kaminsky and Reinhert (1996) the recessions cause banking crisis. Salas and Saurina (2002) established the significant role of economic slump in increasing loan problem in Spanish banks. Meyer and Yeager (2001) found that the loan quality of local banks in U.S. is affected by local economic slowdowns. Gambera (2000) with the help of a bivariate VAR technique revealed that firm income and state annual product have considerable influence on bank loan quality in US. Kasuya (2003) in his study on NPAs of Japanese banks found that Japanese banks were also holding a large amount of non-performing assets in the inter-war period. The experiences of Japan in the inter-war period may provide useful lessons for the problem of today's Japanese banks. The paper has also considered what affects the non-performing

assets of the Japanese banks had on the financial intermediation in the inter-war period. In addition, it analyzes economic meanings of those effects. The study inferred that the prompt action in required collection and required redemption of non-performing assets might be effective in the recovery of financial intermediation. Chan, Greenbaum and Thakor (2004) explained the recent decline in bank asset quality using the notion of information reusability. Goldstein (1996)in his study on capital norms of banking sector argued that developing countries, with few exceptions, have not set national capital standard much above the Basle minimum norms and their banks have not held actual capital much above that for banks in countries with significantly more stable operating environments. Point

Rangarajan (1991) was of the view that improvement in the quality of loan assets is the true test of improved efficiency of banking system. Taori (2000) studied the management of NPA in banks and revealed that NPAs can only be controlled by preventing the chances of standard assets turning out to be NPAs. He further suggested proper risk management, strong and effective credit monitoring, co-operative working relationship between banks and borrowers as some of the basic tenets of designing NPA management policy. The similar opinion can be found in a work on NPA by Bhattacharya (2002). Several researchers viz, Ranjan and Dhal (2003), Harpreet and Parricha (2004), Ramkrishna and Bhargavi (2004), Singh (2007) and others have argued that there has been significant improvement of asset quality of commercial banks due to the introduction of reform measures. Raul (2004) pointed out that an appropriate set of substantial financial sector regulatory measure which includes changes in tax laws is crucial for the banking

system to come out of the problem of NPAs. Ghosh (2006) analysed the management of NPAs with reference to Mugberia Central Co-operative Banks and Tamluk Ghatal Central Co-operative Bank Ltd. They found that these banks were not successful in restricting the level of NPAs and suggested for changing the character from NPAs to performing Assets. Ahmed (2007) examined nonperforming assets of public sector commercial banks in Indian milieu. He observed that Public Sector Banks have been trying relentlessly for reduction and management of NPAs. He further stated that the quality of asset portfolio has improved quite notably over the period. In order to survive and compete with private and foreign banks, it is crucial for the PSBs to clean up their balance sheets by increasing the equity capital. Rajender and Suresh (2007) in a case study examined the quality of loan assets of Indian banking and suggested some of the practical strategies to make Indian banks more viable by managing the level of NPAs.

Prasad and Veena (2011) has tried to ascertain the trends of gross and net NPA in Indian Scheduled commercial banks which they have categorized as Public sector banks, Old Private sector banks, New Private sector banks and foreign banks for the period 2000-2010. Reddy (2002) in his study focuses on comparative study of Non-Performing Assets in India in the Global context - similarities and dissimilarities, remedial measures and concluded the importance of a sound understanding of the macroeconomic variables and systemic issues pertaining to banks and the economy for solving the NPA problem along with the criticality of a strong legal framework and legislative framework. Aggarwal and Mittal (2012) have tried to make a comparative profile of NPA for public sector and private

sector banks in India. K.K and Pillai (2012) using bank-group wise performance statistics for post-millennium period up to the period 2011, concluded that NPA still remains a major threat and the incremental component explained through additions to NPA poses a great question mark on efficiency of credit risk management of banks in India. The different reasons responsible for NPA as identified by various authors are classified; into systematic and situational causes (Istrate et. al. 2007) into overhand component and incremental component (Poongavanam, S. 2000; Kumar, 2005), into internal and external factors (Misra and Dhal. 2011;Muniappan. 2002), into random and non-random factors (Biswas and Deb, 2005).

2.4.2 Risk Management and Credit Risk Management

A. Studies Conducted in Abroad

Chief Risk Officer, Mr. Toevs of Commonwealth Bank of Australia (2011) states that a major failure of risk management highlighted by the global financial crisis was the inability of financial institutions to view risk on a holistic basis.

Hannan and Hanweck (1988) felt that the insolvency for Banks become true when current losses exhaust capital completely. It also occurs when the return on assets (ROA) is less than the negative capital-asset ratio.

Larosiere, former Managing Director of the International Monetary Fund, discusses the implications of the new Prudential Framework. He explains at length how the new Regulatory code could have some dangerous side effects. The increased capital requirements as decided by the Basel Committee on Banking Supervision in September 2010 will affect the amount of own funds would affect

the profitability of the Banks. The consequences of such increased capital requirements would incentivise the Banks to transfer certain operations that are heavily taxed in terms of capital requirements to shadow banking to avoid the scope of regulation. The risks of such a practice might affect the financial stability. While the Central Banking authorities might contemplate registration and supervision of such shadow banking entities like the hedge funds and other pools, such a course might be more cumbersome than expected. The author feels that the banking model which favours financial stability and economic growth might become the victim of the new prudential framework, and force Banks to search for assets with maximum returns despite the attendant risks.

Allen (2010) strongly criticises the Basel Committee on Banking Supervision announcement increasing the capital requirements as part of Basel III. The aims of increasing the capital are two-fold. Firstly the objective is to increase the amount of liquid assets held by Banks and reduce their reliance on short term funding. It also aims at limiting the extent to which Banks can achieve maturity transformation. This focus on liability management, as per him will prove counter-productive, as has been proved historically by the recent financial crisis. As a strategy to meet the new Capital Accord Banks will be forced to amass large amounts of liquid assets, in addition to the amounts they will need to repay special facilities provided by the Governments and Central Banks. The liquidity coverage ratio envisaged in the Accord also will require Banks to hold 100% liquid asset coverage against liquidity commitments, and this will seriously impair the profitability of the Banks. The eligible liquid assets for this purpose will be predominantly Govt. Securities. This might motivate Governments to rely on this

cheaper credit and some Governments may resort to abuse of this credit, thus creating a moral hazard. If a Government loses its creditworthiness, this will become 0% for Basel II purposes thus putting the Banks to a sudden jerk as the Securities would become ineligible as liquid assets. The author goes on to explain the conflict of interest of the members of the Basel Committee as some times these members are influenced by the Governments and their recommendations might not be taken as independent judgment.

Biagio (2000) feels that Banks are special as they not only accept and deploy large amounts of uncollateralised public funds in a fiduciary capacity, but also leverage such funds through credit creation. Thus Banks have a fiduciary responsibility. Banks play a crucial role in deploying funds mobilized through deposits for financing economic activity and providing the lifeline for the payments system. A well regulated Banking System is very central to the country's economy. The author examines the way Banking and other financial institutions interact with each other during different stages of economic development. They further emphasises upon having the regulatory and supervisory framework which can ensure that banks follow prudent and transparent accounting practices and are managed in accordance with the best practices for risk management.

As per Dalai, et.al.(1997) risk is intrinsic to banking. However the management of risk has gained prominence in view of the growing sophistication of banking operations, derivatives trading, securities underwriting and corporate advisory business etc. They also revealed that risks have also increased on account of the on-line electronic banking, provision of bill presentation and payment services etc.

The major risks faced by financial institutions are of course credit risk, interest rate risk, foreign exchange risk and liquidity risk.

Santomero (1997) in his well acclaimed work 'Commercial bank risk management: an analysis of the process' has outlined the types of risk, the state of risk management techniques in the banking industry of North America and identified four consecutive steps to manage basic risk. He also explains using descriptive approach how these techniques are applied to deal with the basic risks.

Nicolae and Teodora, in their paper 'Study on the risk management in Banking Institutions' has tried to identify the major risks faced by Romanian banks and the suitable measures to counter them by collecting customers and bank managers views by conducting a survey among them.

Manta (2009) in his thesis titled 'Risk management in Banking' has focused on the general risk assessment at the banking system and then studied the banking risk management practice at SC Bancpost.

Shafiq and Nasr(2010) in their study 'Risk management practices followed by commercial banks in Pakistan' has tried to explore the risk management practices being followed by the commercial banks in Pakistan based on primary data. Secondary data for the period 2000-2008 were collected and used to link the risk weighted Capital Adequacy Ratio (CRAR) to the different financial indicators like Capital Adequacy Ratio, Asset quality, Earning and Liquidity of the commercial banks that are used to measure their soundness. As the study was more or less generalized in nature they have stressed on the need for the study of specific risks.

Awojobi and Amel (2011) in their study 'Analysing Risk Management in Banks: Evidence of Bank Efficiency and Macroeconomic Impact' have tried to identify the factors which affect the efficiency of risk management (treated as Capital Adequacy Ratio) in Nigerian banks. They used time series data for 2003-2009 with respect to bank specific variables like profitability, credit exposure etc., and macroeconomic variables like GDP growth and inflation rate and so on.

Credit risk is the likelihood that a borrower will not pay its debt on time or failed to make repayment at all (Sinkey 2002; Coyle 2000). It is the possibility that the actual return on a loan portfolio will deviate from the expected return (Conford, 2000). Credit risk management is the identification, measurement, monitoring and control of risk arising from the possibility of default payment of a loan contract (Coyle, 2000).

Dalai et.al. (1997) have expressed that Credit risk management requires that Banks develop loan assessment policies and administration of loan portfolio, fixing prudential per borrower, per group limits etc. They further stressed that the tendency for excessive dependence on collateral should also be looked into and figured out the other weaknesses in Credit Risk Management are inadequate risk pricing, absence of loan review mechanism and post sanction surveillance.

Yuzbasioglu, et.al (2011) in their article studied credit efficiency relationship within the Turkish banking sector, calculated efficiency values for some selective banks for the period from 2003-2007 were calculated, Banixia Frontier Analyst VZA software package was used for calculating efficiency score. Using correlation it was found that the increase in the credits causes the efficiency to increase. While the riskiness status of the sector is good, the increase in the non-performing credits

negatively affects the new credits approved, but the affect still remains at a low level.

Tetteh (2012) in his study attempted to assess the extent to which the implementation of credit risk management strategies by the bank has reduced the amount of non-performing loans. Using primary data he tried to measure the credit risk of a single bank using the models like Probability of Default (PD) Models, Loss Given Default (LGD) Models, and Exposure at Default (EAD) Models, developed by Baixauli and Alvarez (2009). He identified that along with traditional asset-to-asset approach to risk management; the portfolio approach is utilized to complement risk management efforts since the latter relied on a credit model and provides a complete view of portfolio credit risk.

Afriyie and Akotey conducted a study on 'Credit risk management and profitability of selected rural banks in Ghana' using secondary data from the financial statements of ten banks from the period of 2006 to 2010 (five years) and used Panel regression formula to predict the relationship between credit risk management and rural banks financial performance.

Berger and Deyoung (1997) in their well-known work 'Problem loans and cost efficiency in Commercial Banks' has tried to evaluate the relationship among loan quality, cost efficiency, and bank capital using Granger Causality test. Luy (2010) in his research work, tried to assess the credit risk management framework of a Joint stock Vietnamese commercial bank and its effectiveness in a single transaction office. Ahmad and Ariff (2007) in their article "Multi-country study of bank credit risk determinants," have developed an econometric model to test key

determinants of credit risk of commercial banks in some selected emerging economy banking systems compared with the major developed economies.

B. Studies Conducted in India

In India various researches were carried out with regard to the problems of Non Performing Assets (NPA) both considering macro as well as microeconomic variables. In the context of Risk management in banks most of the authors are confined to theoretical framework of the concept and nature of risks faced by the banks. Only a few studies are carried out to measure the dimensions of risk. Some studies tried to identify the determinants of credit risk.

Goyal and Agarwal (2010) in their work 'Risk management in Indian Banks: Some emerging issues' have tried to identify the major risks and discussed the importance of risk management. They also put forward their views regarding the challenges and opportunities of banking Industry while accomplishing Basel-II. Raghavan (2003) conducted a study on risk management in Indian context have given a theoretical framework of the problem.

Bagchi (2003) observed that in the world of finance more specifically in Banking, Credit Risk is the most predominant risk in Banking and occupies roughly 90-95 per cent of risk segment. The remaining fraction is on account of Market Risk, Operations Risk etc. He feels that so much of concern on operational risk is misplaced, as it may be just one to two per cent of Bank's risk and for this small fraction, instituting an elaborate mechanism may be unwarranted. He further stressed that a well laid out Risk Management System should give its best attention to Credit Risk and Market Risk.

Arora and Agarwal (2009) in their study 'Banking risk management in India and RBI supervision' have tried to critically examine the current risk management practices as directed by RBI and supervision process undertaken by RBI. They took a sample of 3 banks and using both primary and secondary data tried to go for a theoretical underpinning of the various models and techniques used by the banks for managing the three basic risks. At the same time, they have given a description of the risk based supervision techniques used by various banks of some selected countries. On the basis of their observation they have tried to develop a comprehensive model (software) for enabling the regulator to just enter the rating of individual risks and to get the final risk matrix of the bank generated. Kaur (2011) has tried to discuss the typology and common practice adopted by the banks to manage risks. K.S. and Kumari (2010) have given a theoretical outline of the type of credit risk and the tools employed to manage credit risk in banks.

Bodla and Verma (2009) in their study 'Credit risk management framework at banks in India' have carried out a survey of 26 Scheduled commercial banks except foreign banks and concluded that Credit risk management structure is entirely in line with Basel Accords &RBI guidelines and is in the right direction. Thiagarajan, Ayyappan and Ramachandran (2011) in their study 'Credit Risk Determinants of Public and Private Sector Banks in India' has tried to predict the determinants of the credit risk in the Indian commercial banking sector by using an econometric model. The model has used bank level data for 22 public sector banks and 15 private sector banks and tried to identify the crucial factors contributing to the credit risk. The study revealed that there is a significant inverse relationship between the GDP and the credit risk for both public and private sector banks. The

study divulges the vital role played by both macroeconomic and bank specific factors in determining the credit risk of the commercial banking sector.

Das and Ghosh (2007) has tried to identify the credit risk determinants of some selected Indian banks for the period 1994-2005 using econometric model. The findings reveal that at the macro level, GDP growth and at the bank level, real loan growth, operating expenses and bank size play an important role in influencing problem loans.

Muninarayanappa and Nirmala (2004) outlined the concept of credit risk management in banks. They highlighted the objectives and factors that determine the direction of bank's policies on credit risk management. The challenges related to internal and external factors in credit risk management are also highlighted. They concluded that success of credit risk management require maintenance of proper credit risk environment, credit strategy and policies. Thus the ultimate aim should be to protect and improve the loan quality.

2.5 Research Gap:

Summarizing the review of literature undertaken above, it is observed that the area of banking risk management has remained quite unexplored despite a good number of researches having been carried out in the context of Indian Banking Sector in various dimensions. Studies like (Goyal & Agarwal, 2010; Raghavan, 2003; Kaur,2011)were basically limited to theoretical framework of risk management.

The available literature revealed that study related to risk estimation in banking sector is at nascent stage. Least attempt has been put forth to quantify and estimate

the risk profile of banking sector of a particular country or to make a comparative study of the risk profiles of different countries.

Only a few researches (Bodla & Verma, 2009; Tetteh, 2012) looked upon the implications of the available policy framework for risk management. Mostly empirical study were conducted both in India and abroad to highlight the practices of risk management in banking.

Moreover, researches pertaining to credit risk management were mostly confined to the study of NPA whereas least emphasis is given on proper identification of credit risk factors and on measuring their impact on bank performance. Hence the present study is an attempt to envisage the nature and quantum of risk encompassing Indian banking sector.