

## RISK MANAGEMENT ARCHITECTURE IN BANKS UNDER RESERVE BANK OF INDIA GUIDELINES

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### ABSTRACT:

*Risk Management has assumed greater importance in the backdrop of failure of many banks globally. Basel Committee on Banking Supervision (BCBS) consisting of senior executives of banks, Supervisory Authorities (RBI) from various countries, brought out guidelines for Basel-I in 1988, Basel-II in 1999 and Basel-III in 2011. Based on these guidelines, RBI issued comprehensive guidelines from time to time (Basel-II during 2002 and Basel-III in June 2013 and also revised guidelines of RBI issued during July every year). The objectives of the guidelines are to improve risk management system, sufficient capital adequacy, risk governance, supervisory oversight by RBI, Management control. Broadly the steps involved include risk identification, risk assessment, risk monitoring, risk mitigation and control and risk reporting (internally) and risk disclosure (externally).*

**Key words :** Basel-II, Basel-III, Risk Management Architecture, Capital Adequacy (CRAR), Supervisory Review and Evaluation Process (SREP) and Risk Capital assessment and adequacy (Pillar-2) and , Market Discipline (Risk Disclosures - Pillar-3, Market Risk, Credit Risk, Operational Risk, Risk identification, Risk Assessment, Risk Monitoring, Risk Control, Risk Reporting, Risk Training.

### DEFINITION OF RISK:

(a) What is 'RISK':

'R' is for Return: Whether banks are able to achieve an appropriate Return for risks they take.

'I' is for Immunisation: Whether banks have internal controls in place to minimize risk of losses.

'S' is for Systems: Whether banks have systems and procedures to measure and manage various types of risks.

'K' is of Knowledge : Whether banks have professionally qualified, skilled and knowledgeable people for effectively managing various risks in banks.

(b) Risk is a combination of 'Danger' + 'Opportunity'. Risk may be viewed as a 'trade-off between higher rewards' that potentially come with opportunity and 'higher risk' that have to be borne as a consequence of danger.

(c) Risk creates opportunity -> Opportunity creates value -> Value creates shareholders' wealth.

(d) Risk is the 'Deviation of actual returns from expected returns'.

(e) Banking is basically a 'risk-based business' since the bank accepts a 'fair banking risk' in its commercial business.

(f) Risk is premised on Murphy's Law : 'What can go wrong, will go wrong' (unless otherwise controlled).

### BASEL-II FRAMEWORK:

The objectives of Basel-II risk framework are –



- (i) To align capital with risk profile of the bank,
- (ii) Safety and soundness of the financial system (in the backdrop of major failure of banks globally).

RBI issued comprehensive guidelines covering the entire gamut of risk management framework, inter alia, risk identification, risk assessment/measurement, risk reporting and disclosures. Risk framework covers the following aspects :

- (i) Pillar-1: Risk Management architecture for Market Risk, Credit Risk, and Operational Risk as well as Minimum Capital Charge for these risks, at 9% of Risk Weighted Assets for Market Risk, Credit Risk and 15% of average gross earnings for last 3 years for Operational Risk.
- (ii) Pillar-2: Supervisory Review and Evaluation Process (SREP) and Internal Capital Adequacy Process (ICAAP) for risks other than those mentioned under Pillar-1.
- (iii) Pillar-3: Market Discipline: Risk disclosures of the bank in the prescribed format (DF-1 to DF-10), as an integral part of Audited Annual Report of the Bank. Under Basel-III, five more reports are added for capital disclosures, etc, taking total risk disclosure reports to DF-15.

### **RISK MANAGEMENT ARCHITECTURE IN BANKS:**

As per RBI guidelines from time to time, the banks should put in place an effective risk management architecture which includes the following aspects:

- i) Active Board and Senior Management Oversight :

Board level control should be exercised on the management of risk across the bank. Top management should be aware of the risk profile of the bank on an ongoing basis. Board level committee called Audit, Risk, and Compliance Committee (ARCC) should meet regularly to review the risk profile and take decisions relating thereto.

- ii) Risk Management Departments :

Banks should establish risk management departments such as, Market Risk Management Department, Credit Risk Management Department, Operational Risk Management Department, etc for identifying, assessing, monitoring, controlling and reporting of various risks in banks and also decentralize the decision making system relating to various types of risks faced by the bank.

- iii) Various Committees :

Various committees and sub-committees should be set up by the bank for monitor and control risks. These include (a) Risk Management Committee, Asset-Liability Management Committee, Credit Risk Management Committee, Business Continuity Management Committee, IT Risk Management Committee and Compliance Committee.

- iv) Approved Policies :

Banks are required to prepare and put in place approved policies such as, Asset-Liability Management Policy, Integrated Risk Management Policy, Market Risk Management Policy, Middle Office Procedure document, Credit Risk Management Policy and procedure document, Business Continuity Management Policy and Evacuation Procedure document, Investment Policy, Treasury Procedures Manual, Money Market Policy and Procedure document, Foreign Exchange Risk Management Policy and Procedure document, Fraud Risk Management Policy, etc.

- v) Comprehensive Internal Control and Limits :

For the purpose of monitoring the risks with the risk appetite of the bank, approved risk limits should be put in place such as, Net Overnight Open Position Limit (fixed by RBI for each bank), Day Light limit, Aggregate Gap Limit, Individual (time-bucket) Gap Limit, Foreign



Exchange forward contract limit for customers, Inter-bank forex limits, Val-at-Risk (VaR) limit, Call and Notice money limit (RBI limit – 300% of tier-1 and tier-2 capital), Overseas Borrowings limit (RBI limit – 50% of tier-1 capital).

vi) Appropriate Management Information System (MIS) for monitoring and reporting risks: Effective MIS system facilitates to report the risk profile of the bank to the top management swiftly. Example: Automated Data Flow system without manual intervention as per RBI, system for generation of various reports for management, software for calculation of Value-at-risk on daily basis.

vii) Risk Capital Calculation :

Banks are required to calculate Minimum Capital Adequacy on the Risk Weighted Assets of the bank at the rate prescribed by RBI on an ongoing basis. Further, additional capital is required to be provided for protecting the banks for the risks under Pillar-2 and also for liquidity risk under the latest guidelines of RBI for Basel-III. Bank should also maintain 'Economic Capital' which is higher than 'Regulatory Capital of RBI' Economic Capital is required to be maintained by banks to meet unexpected loss arising from unforeseen events – economic downturn, global market collapse, huge frauds, etc while, for expected losses 'provision' is made by the bank from out of profit every year.

viii) Separate risk management framework independent of Operations Department and with clear delineation of levels of responsibility for management of risk. Example: Middle office (Risk Management Department) should be independent of Front office (Treasury Department) and Back Office (Department for Treasury Accounting, Payments and Reconciliation of Treasury transactions).

ix) Periodical review and evaluation of risk management system (under Pillar-2) for assessment of risks and providing capital therefor, under Internal Capital Adequacy Assessment Process.

x) Risk Training should be provided internally and externally, as may be decided by the bank, to re-jig the skill and knowledge in the domain of risk management for the officials engaged in the risk management departments. Suitably qualified Risk Management Professionals should also be recruited by the bank to handled risk management process.

xi) Risk awareness to staff should be created by the bank, for sensitizing the staff regarding risk in their area of operations and take measures to safeguard the bank against the onslaught of risks.

### **VARIOUS RISKS UNDER PILLAR-1 ( MARKET RISK) :**

(i) Market Risk (MR) :

(a) Definition: "Market Risk is defined as the possibility (risk of loss to the bank caused due to changes in the market variables" (viz. price and interest rate movements).

(b) Risks covered under Market Risk are (1) Price Risk (shares and commodities), (2) Interest Rate Risk (securities), (3) Exchange Rate Risk (foreign exchange transactions).

Types of Market Risks:

(a) Equity / Commodities Price Risk: It relates to the risk, where changes in prices of equities / commodities might adversely affect the bank's financial conditions.

(b) Exchange Rate Risk: It is the risk that a bank may suffer losses as a result of adverse exchange rate movements during a period in which it has an open position, either spot or forward, or a combination of the two, in the foreign currency.

(c) Interest Rate Risk: It is the risk to the financial condition of a bank due to adverse movements in interest rates.

(ii) Liquidity risk :

Liquidity risk is defined as the potential inability to meet the bank's liabilities as they become due. It arises when the bank is unable to generate cash to cope with a decline in deposits or increase in assets. It originates from the mismatches in the maturity pattern of assets and liabilities. (Liquidity Risk is comprehensively covered under RBI guidelines based on Basel-III).

Types of Liquidity Risk:

(a) Funding Risk: It arises due to unanticipated withdrawal / non-renewal of deposits resulting in funding mismatch. (example: interest rate changes by banks will result in flying of deposits to attractive interest rates).

(b) Time Risk: This risk arises due to non-receipt of expected inflows of funds (example: performing assets turning into non-performing assets).

(c) Call Risk: It arises due to crystallization of contingent liabilities and unable to undertake profitable business opportunities when desirable. (example: Invocation of Bank Guarantee issued by the bank due to non-performance of contract by the customer of the bank).

(iii) Approaches under Market Risk :

(a) Standardised Measurement Approach (Risk Weighted Assets Method)  
(Introduced with effect from 31.3.2005).

(b) Internal Model Approach (also known as Value-at-Risk method)  
(to be introduced by the bank with effect from 31.03.2011 subject to approval by RBI, based on Risk Management architecture for each bank).

(iv) Market Risk Management : There are various steps involved in the management and control of Market Risk, as mentioned below :

(a) Various Policies and procedure documents (as mentioned elsewhere in this research paper)

(b) Various approved limit : Treasury Limits for control, Liquidity limits for various time-buckets as per RBI guidelines (5%, 10%, 15%, 20%) and for other buckets limits are to be approved by the bank's board.

(c) Marking to Market, the position and securities, calculation of open position in the bank's 'Trading Book'.

(d) Monitoring various approved limits : Approved prudential limits, stop loss limits, etc should be fixed and monitored / controlled by the banks.

(e) Value-at-Risk : This is a risk management tool which is applied for measuring the probable loss on the position, portfolio or assets based on certain parameters to calculate the risk on a daily basis for the information of top management. (Parameters : Marked to Market value, Volatility factor, 99% confidence level (2.33 standard deviation), and holding period (maximum 10 days) as per RBI guidelines.

(f) Reporting of overrides, breaches for limits, procedures and exception reporting to top management / various Committees for ratification.

(g) Back Testing and Stress Testing results should be analysed, validated for management decisions.



(h) Control Reports to RBI and Management hierarchy to be submitted for control. (examples : Treasury Report, Structural Liquidity Report, Dynamic Liquidity Report, Monthly Aggregate Position Report, Duration Analysis Report, Capital charge report, etc.

### **MANAGEMENT OF CREDIT RISK :**

(i) Definition of Credit Risk :

“Credit Risk is defined as the possibility of losses associated with diminution in the credit quality of borrowers or counterparties in a bank’s portfolio, losses stem from outright default due to inability or unwillingness of a customer or counterparty to meet commitments in relation to lending, trading, settlement and other financial transactions.”

(ii) Approaches for Credit Risk : Under Credit Risk Management, 3 approaches are recommended by RBI viz. (a) Standardised Approach (introduced in banks with effect from 31.3.2005), (b) Foundation Internal Rating Based Approach (FIRB) (Introduced by banks with effect from 31.3.2014 subject to approval by RBI), (c) Advanced Internal Rating Based Approach (AIRB).

(iii) Tools for Credit Risk Management : The following tools are to be put in place by banks as per RBI instructions :

(a) Exposure Ceiling : Prudential Limit is linked to Capital Funds - single borrower limit is 15% and for group exposure it is 40% of capital funds.

(b) Review / Renewal : All loans and advances should be reviewed periodically to assess the health of the borrowal units.

(c) Risk Rating Model : Comprehensive risk scoring system on a six to nine point scale to be put in place by the bank. Rating by the external agencies shall be arranged for borrowers. Rating should be reviewed periodically to assess the downgrade, if any.

(d) Risk-based Scientific Pricing : Pricing of loans should be linked to risk profile/risk rating of the borrowers. Higher the risk, higher the interest rate and vice-versa. Risk Adjusted Return on Capital (RAROC) method has to be applied.

(e) Portfolio Management : Effective credit management is essential to avoid the possibility of concentration risk / exposures to a particular borrower, group, sector or industry. (RBI instructions - Expand credit, Contract credit, and Hold credit - should be followed by banks). ‘Dun and Bradstreet’ also provides sectoral performance indicators on monthly basis, for assessing credit expansion and credit dispensation by banks.

(f) Key risk Parameters under Internal Rating Based Approach :

(i) Probability of Default (PD) - Probability that a borrower will default within one year horizon.

(ii) Loss Given Default (LGD) - Bank’s economic loss upon the default of debtor / borrower.

(iii) Exposures at Default (EAD) - Gross exposure / potential gross exposure under a facility (i.e. the amount that is legally owned to the bank at the time of default by the borrower.

(iv) Effective Maturity (M) - Effective maturity of the underlying should be gauged at the longest possibility remaining time before the borrower is scheduled to fulfil its obligation.



### **MANAGEMENT OF OPERATIONAL RISK (OR) :**

(j) "Operational Risk" is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events".

(ii) Approached : (a) Basic Indicator Approach (effective from 31.3.2006), (b) Standardised Approach (introduced in banks with effect from 30.9.2010 subject to RBI approval for each bank), (c) Advanced Measurement Approach.

(iii) Capital Charge for Operational Risk : 15% of average gross earnings for the last three years.

(iv) Operational Risk categories :

(a) People Risk : Incompetence, unsuitability, malafides, frauds, etc.

(b) Process Risk :

(1) Model / methodology error, inappropriate or incorrect inputs, inappropriate use of results, etc.

(2) Transaction Risk : Product complexity, execution / booking / settlement errors, documentation / contracts errors, etc.

(3) Operational Control Risk : Inadequate systems, procedures, control (ineffective internal control).

(c) System Risk (Information and Communication Technology Risk) :

Systems failure, programming error, information risk, telecommunication failure, etc.

(d) External Risk : Major political and Regulatory changes / compliance requirements, competition, etc.

(v) Key elements of Operational Risk Management Process :

(a) Appropriate policies and procedures (Operational Risk Management Policy, Business Continuity Management Policy, Evacuation Process procedure document, etc.)

(b) Efforts to identify and measure operational risk (relates to people, process, system and external events).

(c) Effective monitoring and reporting.

(d) Sound system of internal control measures.

(e) Appropriate testing and verification of operational risk framework.

(vi) Operational Risk Assessment :

(a) Self Risk Assessment : Bank assesses its operations and activities against a list of potential operational risk vulnerabilities.

(b) Risk Mapping : Various business units, organizational functions or process flows are mapped by risk type, to identify weakness for prioritizing management action. (High frequency, Lower severity (amount) of operational losses, and Low frequency, High severity of operational losses to be mapped).

(c) Key Risk Indicators (KRIs) : KRIs are statistics which provide insight into the bank's risk position. Such indicators may include the number of failed trades, staff turnover rates and



frequency of severity of errors and omissions. (example : trade confirmations are not received for foreign exchange transactions to avoid the possibility of dummy/fake transactions)

(vii) Operational Risk Control Mechanism :

- (a) Internal Controls (checks and balances, maker-checker, four-eye principle).
- (b) Operational Loss Limits to be approved by the bank every year.
- (c) Risk based Internal Audit, Audit Committee. Audit should be risk focused instead of transactions-based.
- (d) Insurance to be arranged for assets to protect against fire loss.
- (e) Risk awareness and education to staff members. Staff must be risk-sensitised to be aware of risks embedded in all types of transactions handled by them.

### **RISK ASSESSMENT UNDER PILLAR-2 OF BASEL-II :**

Pillar-2 of Basel-II under RBI guidelines cover the following aspects of risk framework :

(i) Supervisory Review and Evaluation Process (SREP) to be conducted the Local Regulator. Reserve Bank of India is the Local Regulator in India. They are entrusted with responsibility for the supervisory oversight of the banks for risk management, under Basel-II risk management framework.

(ii) Internal Capital Adequacy Assessment Process (ICAAP) - This is self assessment of risks by the bank and to assess the capital requirement and capital adequacy of individual bank(s). This is required to be reviewed/audited by an external auditor and certified that the assessment carried out by the bank reflects true risk profile of the bank and the Capital to Risk Weight Assets (CRAR) has been correctly and appropriately calculated as per RBI guidelines.

(iii) SREP and ICAAP re two important components of Pillar-2 of Basel-II risk framework. Objectives of Pillar-2 are briefly presented hereunder :

- (a) To ensure Supervisory oversight by the Local Regulator (RBI) in respect of risk management architecture in banks as per their guidelines.
- (b) To assess the risk profile of banks by themselves through self-assessment internally, under ICAAP.
- (c) To ensure that banks have adequate capital to support all types of risks in their business (in addition to those mentioned under Pillar-1).
- (d) To provide, additional capital for all these risks over and above minimum of 9% for Pillar-1 risks namely, Market Risk, Credit Risk and Operational Risk.

**(iv) Supervisory oversight by RBI :** Supervisor's (RBI's) responsibilities include the following :

- (a) RBI should evaluate the bank's Internal Capital Adequacy Assessment Process Policy (ICAAP Policy).
- (b) RBI should take appropriate action if they are not satisfied with the result of ICAAP assessment done by the banks, based on Auditors' remarks.
- (c) RBI should review and evaluate bank's compliance with the regulatory capital ratios (CRAR ratios).
- (d) RBI should ensure regulatory compliance by banks to hold capital in excess of the minimum regulatory capital of 9% to cover the additional risks assessed under Pillar-2.
- (e) RBI should seek to intervene at an early stage to prevent capital from falling below the minimum level of 9%.

(f) RBI should require rapid remedial action if capital is not maintained or restored at the mandatory level.

(g) Risk Based Supervision (RBS) and Risk Based Internal Audit (RBIA) were introduced as a part of risk focused control. These include the following aspects.

(v) RBI conducts annual inspection of banks under Banking Regulation Act 1949. RBI conducts on-site inspection (actual visit to banks for audit) and off-site inspection (based on reports submitted by banks to RBI - CAMELS rating, SPARC rating).

The scope of on-site inspection (audit) largely covers the following aspects :

(a) Capital :

CRAR, ICAAP, Basel-III capital, preparedness for higher approaches under Basel-III (additional capital requirements recommended by RBI for banks starting from 31.3.2016 in a phased manner towards liquidity risk).

(b) Asset Quality :

Credit Policy, Loan Pricing Policy, Rating models, Review/Renewal of advances, Credit concentration risk (sector-wise), Structured loans, NPA recovery and management, suit filed accounts, Staff accountability, Investment Policy and portfolio classification (HFT, AFS, HTM books).

(c) Management :

Risk Management architecture various policies, committees, management oversight and control of risks.

(d) Earnings :

Analysis of earnings perspectives of banks based on historical data. Net Interest Income (NII) (Interest received on loans / investments minus interest paid on deposits) and Net Income Margin (NIM) (percentage of net income to total standard assets).

(e) Liquidity :

Liquidity position of banks to meet maturity liabilities in time. Cushion for liquidity available. Liquidity Mismatch Ratios and Stable Funding Ratios. Approved Policy for Liquidity Funding, Liquid assets available to tide over liquidity crisis if any arising.

(f) Systems :

This includes systems and controls of banks. Know Your Customers (KYC) norms, compliance with regulatory guidelines for KYC/AML/TF, effectiveness of internal control systems in banks, whistle blower policy, verification of various audit reports and action taken reports by banks, house-keeping, Vigilance Policy and Fraud Risk management policy and procedure for reporting, Suspicious transactions reporting to Financial Intelligence Unit (FIU) at Govt. of India and Reserve Bank of India, to detect and off-set the possibility of external frauds and overseas inward funds remittances through banking channel.

**(vi) Supervisory Programme for Assessment of Risk and Capital (SPARC) :**

Reserve Bank of India introduced revised Risk Based Supervision methodology in November 2013 which is known as "Supervisory Programme for Assessment of Risk and Capital" (SPARC) :



**OBJECTIVES OF RBS (SPARC) :**

- (a) SPARC has been developed by RBI to protect the depositors' interests and ensuring financial health of individual banks. (example : low NPAs, No reputation risk, etc).
- (b) SPARC is intended to make the supervisory process for the banks efficient and effective wherein RBI would apply differentiated supervision to each bank based on its risk profile (example : for banks with higher risk, inspection will be conducted by RBI every year and for those less risk profile, inspection will be once in two years).
- (c) Under SPARC, a detailed quantitative assessment and qualitative assessment of risk would be made by RBI during their inspection. (example : ICAAP covers these two types).
- (d) RBI applies Integrated Risk and Impact Scoring (IRIS) Model to estimate the bank's failure score and impact of failure score.
- (e) IRIS model also helps RBI to estimate the capital add-on required for banks if risk profile is higher, in the opinion of RBI (example : additional Regulatory Capital may be imposed on banks by RBI, over and above the minimum capital prescribed by RBI).
- (f) Based on IRIS model, RBI awards rating for banks (SPARC rating of banks will replace CAMELS rating in course of time in future).
- (g) SPARC focuses on evaluating both present and future risks, identifying incipient problems and facilitates prompt intervention and early corrective action.
- (h) SPARC enables RBI to conduct effective inspection of banks and suggests control measures to contain various risks.

**(vii) Focus of Risk Based Audit in Banks :**

The objectives of risk based audit introduced in banks by RBI, are as follows :

- (a) To build a strong understanding in risk management framework;
- (b) To enhance solutions in dealing with risk exposures in the bank;
- (c) To develop and implement a risk-based annual audit plan methodology;
- (d) To test effectiveness of internal control mechanism to mitigate risks;
- (e) To apply the risk-based principles in the audit programme (risk-based audit and checking, instead of transaction-based);
- (f) To assess the gaps in risk measurement and control and suggest remedial action plans with target dates for completion.

**INTERNAL CAPITAL ADEQUACY ASSESSMENT PROCESS (ICAAP):**

This comprises of bank's procedures and measures designed to ensure the following points :

- (a) An appropriate identification and measurement of risks;
- (b) An adequate level of internal capital in relation to the bank's risk profile;
- (c) Implementation and further development of suitable risk management and internal control systems in the bank.

**(ii) Important aspects of ICAAP:**

- (a) Every bank should have an approved ICAAP Policy;
- (b) ICAAP should encompass bank-wide risk profile;
- (c) It should validate internal control process and its effectiveness;
- (d) It should be risk-based process;
- (e) It should be under the oversight of the bank's board;
- (f) ICAAP should include stress testing and scenario analysis;



(g) ICAAP should be reviewed by the banks every year to reassess the risk profile of banks (Risk level: High, Medium, Low, and Direction of Risks: Increasing, Decreasing, and Stable).

**(iii) Principles of ICAAP:**

- (a) Bank should have a comprehensive internal control process for assessing its Capital Adequacy in relation to its own risk profile.
- (b) ICAAP is the responsibility of the Bank.
- (c) ICAAP should be proportionate to the nature, size, risk profile and complexity of the bank.
- (d) ICAAP should be forward-looking.
- (e) ICAAP should be based on adequate measurement and assessment processes.
- (f) ICAAP should be formal - the capital policy and management responsibility should be fully documented.
- (g) ICAAP should form an integral part of the Management Process and Decision-making culture of the Bank.
- (h) ICAAP should be reviewed regularly by the bank and audited by an external auditor (preferably CISA qualified professional or a Chartered Accountant).
- (i) ICAAP should produce a reasonable outcome of comprehensive risk assessment and profile of the bank.

**(iv) Scope of ICAAP:** ICAAP should cover assessment of Pillar-1 and Pillar-2 risks and illustratively the following risks:

- (a) Interest Rate Risk in Banking Book (example : interest payable and receivable);
- (b) Credit Concentration Risk (sector wise higher exposure of loans) (example : Cement sector, IT sector, Diamond Manufacturing Sector, etc);
- (c) Liquidity Risk (insufficiency of funds to honour maturing liabilities in time);
- (d) Settlement Risk (net amount receivable from other banks under foreign exchange transactions, also known as Herstat Risk) (Herstat Bank- German bank failed due to this type of risk).
- (e) Reputation Risk (payment of penalty to RBI for non-compliance with KYC norms, overdrawing Subsidiary General Ledger accounts with RBI, and also internal frauds may affect image of the bank).
- (f) Strategic and Business Risk (defective of obsolete business model and processes).
- (g) Outsourcing Risk ( services outsourced, confidentiality risk, data leakage to other banks may pose risk).
- (h) Legal Risk and Documentation Risk (incomplete documents, legal enforceability of defective documents).
- (i) Information, Communication and Technology (ICT) Risk (sharing of pass-word, uncontrolled access to different modules without any restrictions / without assessing need-based).
- (j) Compliance Risk (Regulatory Risk – breach of Statutory Liquidity Reserve (SLR) and Cash Reserve Ratio (CRR) which are statutorily mandatory to be maintained by banks with RBI).
- (k) Model Risk (defect in parameters set in the system in the calculation of VaR).
- (l) Residual Risk (risk still remaining after mitigation (example : inter-bank forex forward contracts)).



- (m) Risk of weaknesses in the credit risk mitigants (example : reduction in value of securities offered to the bank, low realizable value of securities due to prolonged legal cases, etc).
- (n) Off-Balance Sheet exposures (contingent liabilities, tax disputes, etc) and Securitisation Risk.
- (o) Counter-party credit risk (default by the borrowers' customers leading to default by borrower to bank – As per RBI, risk management policy should be prepared by borrowers who are enjoying forex forward contracts limits with banks).

Banks should provide additional capital under pillar-2 for all these risks over and above the minimum capital of 9% under Pillar-1.

**(v) Policy of ICAAP :**

It is an essential requirement for banks to prepare and approve the ICAAP Policy and also get it audited /reviewed by an external auditor and submit the audited copy to Reserve Bank of India on or before 30<sup>th</sup> June every year. ICAAP Policy of the bank, inter-alia should include the following :

- (a) Risk identification, Measurement, Mitigation, Diversification, Transfer.
- (b) Internal Controls, Monitoring, Reporting, Review Mechanism, and Top Management oversight.
- (c) Support of Risk Focused Internal Audit and External Audit.
- (d) Assumption made and basis thereof.
- (e) Additional capital that may be required.
- (f) Policy initiative suggested.
- (g) Impact of the whole bank / consolidated / sub-consolidated level.

**MARKET DISCIPLINE (RISK DISCLOSURES) UNDER PILLAR-3 OF BASEL-II :**

Market Discipline means disclosure of risk profile of the bank to market participants namely, Govt., RBI, Market Analysts, Investors, Stake-holders, Regulators (SEBI), for information and risk analysis. RBI guidelines on Risk Disclosures under Market Discipline, includes the following aspects:

- (i) Set of risk disclosures by the banks to the outside world. There are ten disclosure statements viz. DF-1 to DF-10 under Basel-II.
- (ii) Complement to Pillar-1 and Pillar-2 guidelines and reflect the risk profile of the bank.
- (iii) It should be consistent with the bank's policy regarding risk management framework.
- (iv) Contributes to safe and sound banking environment.
- (v) Comprehensive disclosures enhances comparability between banks (by RBI and others).
- (vi) It should not be in contravention of Accounting Standards (ICAI guidelines of Accounting Standards (AS) and International Financial Reporting Standards (IFRS).
- (vii) Risk disclosures should be an integral part of Annual Report of the Bank and should be published in the press and also put up in the web-site of the bank for public information.

**RISK MANAGEMENT TOOLS:**

- (i) **Value-at-Risk (VaR):** VaR is a risk measuring tool. It is defined as the probability of potential loss which might occur on the asset(s) or position (example: foreign exchange open

position / trading position) of the bank, due to market movements within a prescribed confidence level and pre-determined time interval. As per RBI guidelines under Basel-II framework, banks should calculate VaR on a daily basis by 'marking to market' the trading positions and assets at 99% confidence level (which is equivalent to 2.33 standard deviation) for a maximum period 10 days holding period. There are three VaR models (all system driven) are widely applied in banks for calculation of VaR, namely,

- (a) Variance – Co-variance model;
- (b) Historical Simulation Model (mostly applied by banks);
- (c) Monte Carlo Model (complex model)

VaR is generally calculated with the help of system-driven software (example : Kondor VaR, Riskpro, etc) daily after the end of day operations and reports are generated and submitted to the top management and RBI daily. VaR limit is approved and fixed by the Bank management. Daily report should be submitted to RBI and Management. Breaches if any, should be suitably explained for post-facto ratification by the Management and by the respective Risk Management Committee(s).

Monte Carlo Model is an advanced and complex model and it has not been introduced in the banks at present.

#### **(ii) Back Testing Method:**

This is applied at the end of specified period (say one month, quarter, etc) and the results are compared with VaR results (which is approximation) and analysed. Based on the outcome of results, corrective actions are initiated by the bank(s) to avoid the possibility of loss in future.

#### **(iii) Stress Testing :**

RBI issued guidelines with regard to stress testing. Stress Testing Policy has to be approved by the Bank's board. Stress Test consists of

- (a) Normal Stress Testing,
- (b) Scenario Analysis.

Normal Stress Test is conducted for –

- (i) Interest rate risk in the banking book;
- (ii) Credit Risk – Impact on Capital adequacy;
- (iii) Credit Risk – Non-performing Assets;
- (iv) Liquidity Risk;
- (v) Foreign Exchange Risk (for various currency opening positions)
- (vi) Additional Stress Tests for –

Interest rate movement (interest rate curve) upward, downward, flattening, parallel shifting.

- (a) Duration Gap Analysis is to be carried out to measure the impact on Market Value of Equity (MVE) based on (interest) Risk Sensitive Assets and Risk Sensitive Liabilities.
- (b) Under Basel-III guidelines, (i) Liquidity Stress Test Ratio, (ii) Liquidity Coverage Ratio and (iii) Net Stable Funding Ratio are to be calculated by the banks.

#### **(a) Scenario Analysis :**

Banks should also assume various scenarios to assess the possible loss which might occur. A few examples are : (i) Economic downturn impacting the business, (ii) Profit is reduced by certain percentage, (iii) Credit Rating of customers goes down by one notch; (iv) Non-

performing assets level increases by 1% across the board (certain percentage of advances turning into sub-standard, doubtful assets and loss assets may also be assumed).

**(iv) Risk Profile Templates (RPT) :**

Risk Profile Templates have been introduced by RBI. This is a dynamic document in a standardized format, which captures, catalogues, assesses, aggregates and controls various risks that a bank is exposed to. RPT is a comprehensive assessment report, which should be submitted to RBI at half-yearly intervals (after approval by the Board of the Bank). RPT includes the following risks :

- (i) Credit Risk,
- (ii) Market Risk,
- (iii) Operational Risk,
- (iv) Liquidity Risk,
- (v) Capital Risk,
- (vi) Management Risk,
- (vii) Earnings-at-risk,
- (viii) Group Risk

**BASEL-III GUIDELINES UNDER RBI :**

Basel-III documents were issued by RBI with a view to protecting the banks against the liquidity risk which had shaken the global banks. The objectives of Basel-III framework are as under :

- (i) Improving quality, consistency and transparency of capital base of the bank;
- (ii) Enhancing Risk coverage (in addition to default risk, deterioration in credit worthiness of counterparty is considered by Credit Value Adjustment method);
- (iii) Enhancing total capital requirement : Capital Conservation Buffer for tier-1 capital (common equity capital) by 2.5% of Risk Weighted Assets (RWA) in a phased manner from 31.3.2016 to 31.3.2019;
- (iv) Introduction of counter cyclical capital buffer upto 2.5% (0 to 2.5%) of Common Equity Capital (to protect against excessive credit growth);
- (v) Introduction of Leverage Ratios (Liquidity Coverage Ratios for short term and Net Stable Funding Ratios for long term).
- (vi) Revised Provisioning Norms are to be followed by the banks. 'Expected Loss' based measure for provisioning has to be followed instead of 'incurred loss' provisioning method which is followed at present.
- (vii) Additional disclosure reports for capital structure under Pillar-3.

**CONCLUSION:**

Risk Management architecture should be adopted by the bank mandatorily in terms of Basel-I, II and III risk management framework under Reserve Bank of India guidelines.

- (i) Banks should maintain Capital to Risk Weighted Assets Ratio (CRAR) (capital adequacy ratio) at a minimum of 9% of Risk Weighted Assets of the banks. It should provide more than the mandatory minimum for other risks of the banks, in terms of internal assessment made by them. Additionally, core capital should be increased by 2.5% in phased manner starting from 31.3.2016 upto 31.3.2019 under Basel-III for managing liquidity risk, as per RBI guidelines.





- (ii) Management of the banks are responsible for putting in place various risk policies and procedures and also for effective risk management in the banks.
- (iii) Local Regulatory (Reserve Bank of India) has supervisory responsibility to Oversee the compliance with various risk management guidelines issued by them under Basel-I, II and III documents from time to time.
- (iv) Banks should mandatorily disclose their risk profile as a part of audited annual report for the information of the external world.

#### **REFERENCES:**

- (1) Reserve Bank of India Master Circulars on 'Risk Management framework in Banks' from 2002 onwards till date.
- (2) Revised guidelines of Reserve Bank of India issued during July every year.